

## ROCK PI N10 Model A - RK3399Pro w/ 4GB LPDDR3 & 16GB eMMC

SKU 102110377

**Rock Pi N10 is an SBC based on SoC - RK3399Pro, which includes an NPU especially for AI and Deep learning processing.**

### Note

There are 3 types of ROCK Pi N10 which are:

- Model A: RK3399Pro 4GB LPDDR3 16GB eMMC
- Model B: RK3399Pro 6GB LPDDR3 32GB eMMC
- Model C: RK3399Pro 8GB LPDDR3 64GB eMMC

### Note

Rock Pi Wireless Module is available now, the module is compatible with Rock Pi N10 for the M.2 interface. With the help of a wireless module, you can use wifi and Bluetooth onboard.

### Key Features

- RK3399 PRO SoC which includes 6-Core CPU, GPU, and NPU.
- 4GB Dual channel LPDDR3, 16GB eMMC 5.1,  $\mu$ SD card slot(up to 128 G)and M.2 SSD connector (up to 2T)
- Support the Debian software system and Android 8.1.
- Includes an NPU that has the power of computing up to 3.0 TOPS especially for AI and deep learning processing.

## Description

Are you interested in AI or deep learning but can not find a fit board to realize your program? Don't worry, Rock pi N10 is born for AI and deep learning processing. Rock pi N10 is a new member of the Rock pi family. It carries a powerful SoC(system on chip) which is RK3399Pro. RK3399Pro is highly integrated by CPU, GPU, and NPU. RK3399Pro's CPU is a six-core CPU which includes Dual Cortex-A72(frequency 1.8GHz) and quad Cortex-A53(frequency 1.4GHz). The GPU of RK3399Pro is Mali T860MP4 which has the ability to support OpenGL ES 1.1 /2.0 /3.0 /3.1 /3.2, Vulkan 1.0, Open CL 1.1 1.2, DX1. As for NPU, the NPU can support 8/16 bit computing and up to 3.0 TOPS computing power. The NPU has a good performance for complex calculation and processing, it can be perfectly used in AI and deep learning applications.

Rock Pi N10 has plenty of resources for storage. 64 bits dual-channel 4GB LPDDR and 16GB eMMC 5.1 is embedded on the mainboard for providing enough storage for processing and saving data. Besides, the board also contains a  $\mu$ SD card slot for booting and even an M.2 SSD connector which supports up to 2T SSD for extending storage.

Rock Pi N10 is totally an interface monster. Like Raspberry 4B, Rock Pi N10 has rich interfaces for Audio, camera, display, Ethernet, USB and I/O pins. The Ethernet interface can support PoE function and has a PoE hat near the Ethernet interface. The SBC can not support wi-fi for now, but there will be an optional wi-fi module to be embedded on the board later soon.

The software system of this Rock Pi N10 board is Debian and Android 8.1. For the NPU, there is an upgraded firmware and booting procedure.

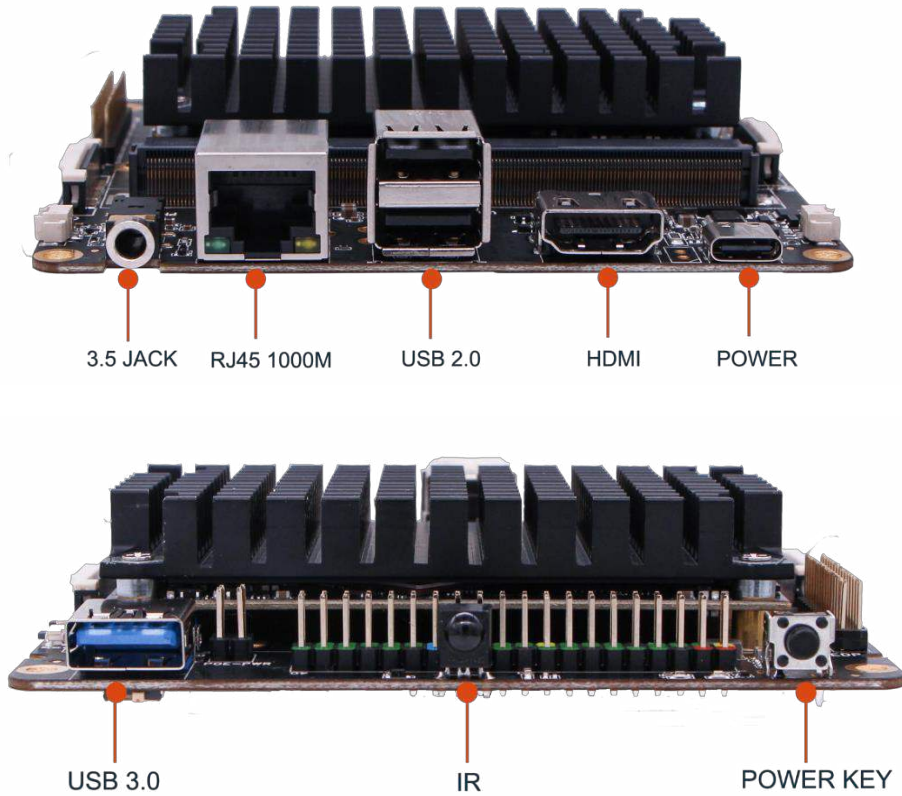
## Specification

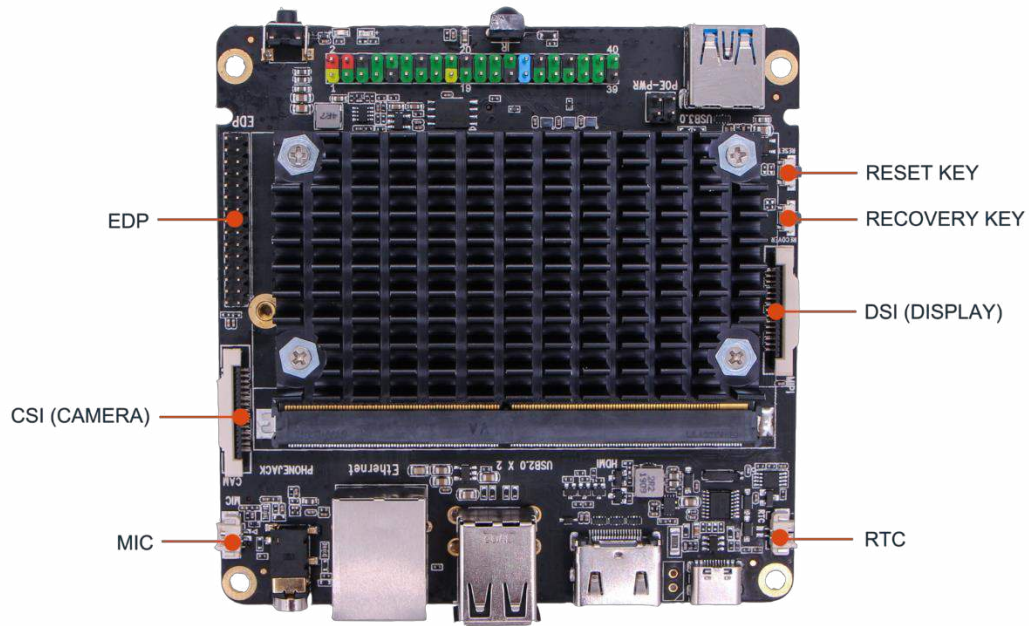
Item	Type	Details
RK3399Pro	CPU	Dual Cortex-A72, frequency 1.8GHz with quad Cortex-A53, frequency 1.4GHz
	GPU	Mali T860MP4 GPU, OpenGL ES 1.1 /2.0 /3.0 /3.1 /3.2, Vulkan 1.0, Open CL 1.1 1.2, DX1
	NPU	Support 8bit/16bit computing, up to 3.0TOPs computing

		power
Memory	4GB LPDDR	64bit dual channel LPDDR3@1866Mb/s, 3GB for CPU/GPU, 1GB for NPU
Storage	16GB eMMC	High-performance eMMC 5.1
	μSD card	μSD slot supports up to 128 GB uSD card
	M.2 SSD	M.2 connector supports up to 2T M.2 NVMD SSD
Display	HDMI	Full-size HDMI 2.0 up to 4k@60(Type A)
	MIPI DSI	MIPI DSI 2 lanes via FPC connector(HDMI and MIPI can work at the same time, support mirror mode or extend mode)
Audio	3.5 jack with mic	HD codec that supports up to 24-bit/96 kHz audio
Camera	MIPI CSI	MIPI CSI 2 lanes via FPC connector, support up to 800MP camera
Wireless	None	Optional Rock Pi wireless module
USB	USB 3.0 OTG x1	Hardware switch for host/device switch, the front one
	USB 2.0 HOST x2	
Ethernet	GbE LAN with PoE	support additional HAT is required for powering from PoE
IO	40-pin expansion header	<ul style="list-style-type: none"> <li>- 1 x UART</li> <li>- 2 x SPI bus</li> <li>- 2 x I2C bus</li> <li>- 1 x PCM/I2S</li> </ul>

		<ul style="list-style-type: none"> <li>- 1 x SPDIF</li> <li>- 1 x PWM</li> <li>- 1 x ADC</li> <li>- 6 x GPIO</li> <li>- 2 x 5V DC power in</li> <li>- 2 x 3.3V power pin</li> </ul>
Others	RTC	RTC battery connector for time backup(optional)
Power	USB PD	Support USB Type C PD 2.0, 9V/2A, 12V/2A, 15V/2A, 20V/2A
	Qualcomm® Quick Charge™	Support QC3.0/2.0 adapter, 9V/2A, 12V/1.5A

### Interface Overview





Compared with Raspberry Pi 4 and Jetson Nano

Types of SBC	Rock Pi N10(Model A/B/C)	Raspberry Pi 4B	Jetson Nano
CPU	Dual Cortex-A72@ 1.8GHz and quad Cortex-A53 1.4GHz	Quad-core ARM Cortex-A72 64-bit @ 1.5 GHz	Quad-Core ARM Cortex-A57 64-bit @ 1.42 GHz
GPU	Mali T860MP4	Broadcom VideoCore VI (32-bit)	NVIDIA Maxwell w/ 128 CUDA cores @ 921 Mhz
NPU	3.0 TOPS computing power	-	-
LPDDR	4/6/8GB LPDDR3	4GB LPDDR4	4GB LPDDR4
eMMC	16/32/64GB eMMC5.1	-	-

Networking	Gigabit Ethernet only	Gigabit Ethernet / Wifi 802.11ac	Gigabit Ethernet / M.2 Key E (for Wifi support)
Display	HDMI 2.0	2x micro-HDMI (up to 4Kp60)	HDMI 2.0 and eDP 1.4
USB	1x USB 3.0, 2x USB 2.0	2x USB 3.0, 2x USB 2.0	4x USB 3.0, USB 2.0 Micro-B
Other	40-pin GPIO	40-pin GPIO	40-pin GPIO
Video Encode	H264(1080p30) and VP8	H264(1080p30)	H.264/H.265 (4Kp30)
Video Decode	H.265(4Kp60), H.264(1080p60), VC-1, MPEG-1/2/4, VP8	H.265(4Kp60), H.264(1080p60)	H.264/H.265 (4Kp60, 2x 4Kp30)

From the table shown above, we can get some significant points. All of the SBCs above have their own advantages. Raspberry Pi 4 benefits with its cost-effective price and the strong community, and for the hardware it has a powerful CPU as well. For Jetson Nano, it has a super GPU with 128 cores to process complex images and videos. As a matter of fact, it can perform well in the AI image processing area. Rock Pi N10 has a powerful NPU for complex processing, so it is also able to perform well in the situation of AI or deep learning processing.

### Dimension

100mm x 100mm

### Part List

1 x Rock Pi N10 Model A - RK3399Pro w/ 4GB LPDDR3 & 16GB eMMC

# ECCN/HTS

HSCODE	8543909000
UPC	

