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SmartFly info Rock Pi 4B

SmartFly info Rock Pi 4B RK3399 Single Board Computer Kit User Manual

Model: Rock Pi 4B | Brand: SmartFly info

1. Introduction

The ROCK Pi 4B is a Single Board Computer (SBC) designed in an ultra-small form factor. It provides a robust and highly capable platform for various applications, catering to makers, IoT enthusiasts, hobbyists, and PC DIY enthusiasts. This manual provides essential information for setting up, operating, and maintaining your Rock Pi 4B.

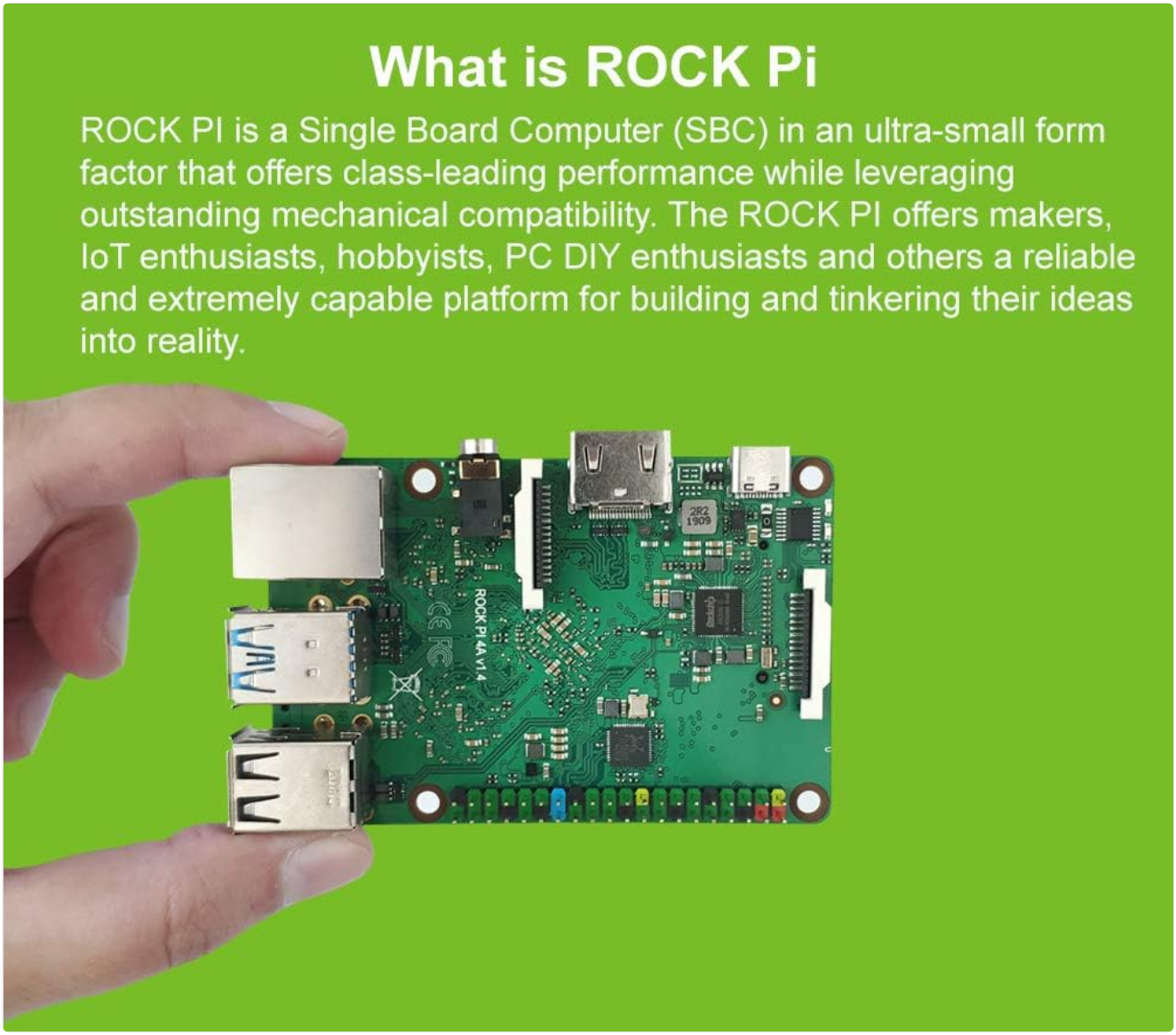


Figure 1: The Rock Pi 4B Single Board Computer.

The Rock Pi 4B is built around a modern and powerful hexa-core ARM-based RK3399 System-on-Chip (SoC). All models are equipped with LPDDR4 3200Mb/s RAM and offer optional high-performance eMMC modules for storage. It features maker-friendly expansion options, including a 40-pin GPIO interface for connecting various inputs and outputs.

2. Key Features

- **Processor:** RK3399 64-bit hexa-core SoC (Dual Cortex-A72 @ 1.8GHz, Quad Cortex-A53 @ 1.4GHz)
- **Graphics:** MaliT860MP4 GPU, supporting OpenGL ES 1.1/2.0/3.0/3.1/3.2, Vulkan 1.0, Open CL 1.1/1.2, DX11.
- **Memory:** LPDDR4 4GB RAM (3200Mb/s)
- **Storage:** Optional eMMC module (16G/32G/64G/128G), TF card slot (up to 128G), M.2 connector for NVMe SSD (up to 2TB).
- **Connectivity:** 802.11ac Wi-Fi, Bluetooth 5.0, Gigabit Ethernet with PoE support (requires additional HAT).
- **Ports:** HDMI 2.0 (up to 4K@60), MIPI DSI, MIPI CSI, USB 3.0 OTG x1, USB 2.0 HOST x2, USB Type-C PD 2.0 for power.
- **Expansion:** 40-pin GPIO interface.
- **Operating System Support:** Android, Debian, Ubuntu.



Figure 2: The Rock Pi 4B supports various operating systems.

3. Package Contents

Verify that all items listed below are included in your package:

- 1x ROCK Pi 4B Board (4GB RAM)
- 1x 16G eMMC Module
- 1x 5V-3A Power Supply
- 1x Type-C Cable
- 1x Heat sink



Figure 3: Contents of the Rock Pi 4B kit.

4. Setup and Overview

This section provides an overview of the Rock Pi 4B board and its various components and connectors.

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Video 1: Detailed overview of the Rock Pi 4B board components and features.

4.1. Board Layout (Top Side)

The top side of the Rock Pi 4B features several key components and connectors:

- **40-pin GPIO:** A color-coded header compatible with Raspberry Pi accessories for general-purpose input/output.
- **MIPI CSI & DSI Connectors:** Compatible with Raspberry Pi camera and display modules.
- **USB-C Power Connector:** For power input, supporting USB PD 2.0 and QC3.0/2.0 adapters (9V/2A, 12V/1.5A).
- **HDMI 2.0:** Supports up to 4K UHD resolution at 60 frames per second.

- **3.5mm Audio Jack:** For audio output.
- **Gigabit Ethernet:** For network connectivity, with PoE support requiring an additional HAT.
- **USB Ports:** Two USB 3.0 ports (one with OTG functionality) and two USB 2.0 ports. The USB 3.0 OTG port has a switch to toggle between host and device modes.
- **Wireless Chip:** Integrated 802.11ac Wi-Fi and Bluetooth 5.0.



Figure 4: Rock Pi 4B (top) features integrated Wi-Fi and Bluetooth, unlike the Rock Pi 4A (bottom).



Figure 5: Gigabit Ethernet and USB 3.0 ports on the Rock Pi 4B.

4.2. Board Layout (Bottom Side)

The underside of the board houses additional features:

- **Rockchip RK3399 SoC:** The central processing unit.
- **LPDDR4 RAM:** Memory modules for system operation.
- **M.2 Slot:** For NVMe SSDs, supporting up to 2TB for high-speed storage.
- **eMMC Flash Module Connector:** For optional industrial-compatible eMMC storage modules (up to 128GB).
- **Micro SD Card Slot:** Supports up to 128GB for additional storage.
- **RTC Battery Connector:** For a real-time clock battery.

5. Operating System Support

The Rock Pi 4B is compatible with a variety of operating systems, offering flexibility for different projects and applications. Supported operating systems include:

- Android
- Debian

- Ubuntu

Refer to the official Rock Pi documentation for detailed installation guides and available images for each operating system.

6. Technical Specifications

Below are the detailed technical specifications for the Rock Pi 4B:

Feature	Specification
Processor	RK3399 64bit hexa core (Dual Cortex-A72 @ 1.8GHz, Quad Cortex-A53 @ 1.4GHz)
GPU	MaliT860MP4 GPU (OpenGL ES 1.1/2.0/3.0/3.1/3.2, Vulkan 1.0, Open CL 1.1/1.2, DX11)
RAM	4 GB LPDDR4 (3200Mb/s)
Storage Options	eMMC module (16G/32G/64G/128G), TF card slot (up to 128G), M.2 connector for NVMe SSD (up to 2TB)
Display	HDMI 2.0 (up to 4K@60), MIPI DSI 2 lanes (FPC connector)
Audio	3.5mm dual channel headphone/HDMI/microphone input HD codec (up to 24-bit/96kHz audio)
Camera	MIPI CSI 2 lanes (FPC connector, up to 800MP camera)
Network	Gigabit Ethernet with PoE support (requires HAT), 802.11ac Wi-Fi, Bluetooth 5.0
USB Ports	USB 3.0 OTG x1, USB 2.0 HOST x2
Power Input	USB Type-C PD 2.0 (supports QC3.0/2.0 adapter, 9V/2A, 12V/1.5A)
Dimensions	85mm x 54mm (8-layer board)
Item Weight	5.9 ounces

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Brand model	Rock Pi4 model A	Rock Pi4 model B
CPU:	RK3399 64bit hexa core processor Dual Cortex-A72, freqency 1.8Ghz with quad Cortex-A53, frequency 1.4Ghz	RK3399 64bit hexa core processor Dual Cortex-A72, freqency 1.8Ghz with quad Cortex-A53, frequency 1.4Ghz
GPU	Mali T860MP4 gpu, supports OpenGL ES 1.1 /2.0 /3.0 /3.1 /3.2, Vulkan 1.0, Open CL 1.1 1.2, DX11.	Mali T860MP4 gpu, supports OpenGL ES 1.1 /2.0 /3.0 /3.1 /3.2, Vulkan 1.0, Open CL 1.1 1.2, DX11.
VPU:	4K VP9, Dual VOP	4K VP9, Dual VOP
Memory:	LPDDR4 64bit dual channel LPDDR4@3200Mb/s, 1GB/2GB/4GB optional	LPDDR4 64bit dual channel LPDDR4@3200Mb/s, 1GB/2GB/4GB optional
Storage:	eMMC module Optional industrial compatible high performance eMMC module, 8G/16G/32G/64G/128G available uSD card uSD slot supports up to 128G uSD card M.2 SSD M.2 connector supports up to 2T M.2 NVME SSDeMMC socket up to 128GB	eMMC module Optional industrial compatible high performance eMMC module, 8G/16G/32G/64G/128G available uSD card uSD slot supports up to 128G uSD card M.2 SSD M.2 connector supports up to 2T M.2 NVME SSDeMMC socket up to 128GB

Figure 6: Comparison of key specifications between Rock Pi 4 Model A and Model B (Part 1).

Display:	HDMI HDMI 2.0 up to 4k@60 MIPI DSI MIPI DSI 2 lanes via FPC connector HDMI and MIPI DSI can work at the same time, support mirror mode or extend mode. Compatible with official Raspberry Pi Display	HDMI HDMI 2.0 up to 4k@60 MIPI DSI MIPI DSI 2 lanes via FPC connector HDMI and MIPI DSI can work at the same time, support mirror mode or extend mode. Compatible with official Raspberry Pi Display
Audio:	3.5mm dual channel headphone/HDMI/micro phone input HD codec that supports up to 24-bit/96kHz audio.	3.5mm dual channel headphone/HDMI/micro phone input HD codec that supports up to 24-bit/96kHz audio.
Camera	MIPI CSI MIPI CSI 2 lanes via FPC connector, support up to 800MP camera Compatible with official Raspberry Pi Camera	MIPI CSI MIPI CSI 2 lanes via FPC connector, support up to 800MP camera Compatible with official Raspberry Pi Camera
Ethernet	GbE LAN	GbE LAN with PoE support additional HAT is required for powering from PoE
Wifi/BT	None	802.11 ac wifi Bluetooth 5.0 with on board antenna
USB:	USB 3.0 OTG x1 hardware switch for host/device switch, upper one USB 3.0 HOST x1 dedicated USB3.0 channel, lower one USB 2.0 HOST x2	USB 3.0 OTG x1 hardware switch for host/device switch, upper one USB 3.0 HOST x1 dedicated USB3.0 channel, lower one USB 2.0 HOST x2

Figure 7: Comparison of key specifications between Rock Pi 4 Model A and Model B (Part 2).

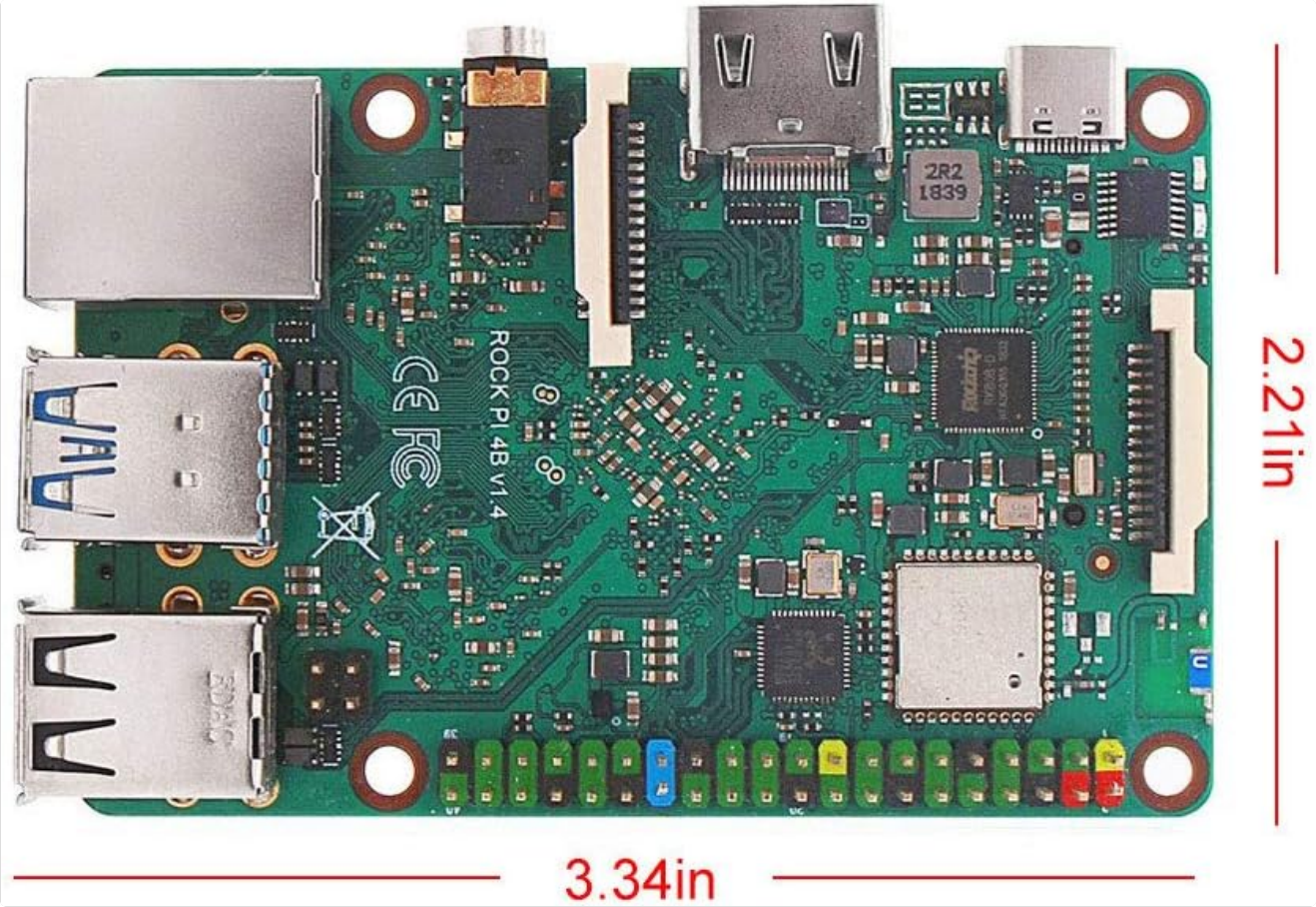


Figure 8: Physical dimensions of the Rock Pi 4B board.

7. Maintenance

To ensure the longevity and optimal performance of your Rock Pi 4B, consider the following maintenance tips:

- **Keep it Cool:** Ensure adequate ventilation, especially when running demanding applications. The included heatsink should be installed to dissipate heat from the SoC.
- **Cleanliness:** Keep the board free from dust and debris. Use compressed air or a soft brush for cleaning.
- **Power Supply:** Always use a stable and appropriate power supply (5V-3A USB Type-C PD) to prevent damage.
- **Static Electricity:** Handle the board with care to avoid electrostatic discharge (ESD), which can damage sensitive components.

8. Troubleshooting

If you encounter any issues with your Rock Pi 4B, consider the following general troubleshooting steps:

- **No Power:** Verify the power supply is correctly connected and providing the correct voltage and current. Ensure the USB-C cable is functional.
- **No Display:** Check HDMI cable connections and ensure your display is set to the correct input. Test with a different display or cable if possible.
- **Operating System Issues:** Re-flash your eMMC module or SD card with a fresh OS image. Ensure the image is compatible with the Rock Pi 4B.
- **Peripheral Not Detected:** Check USB connections. For the USB 3.0 OTG port, ensure the host/device switch is in the correct position.
- **Overheating:** Confirm the heatsink is properly installed. Reduce workload or improve ventilation if the board feels excessively hot.

For more specific issues or advanced troubleshooting, refer to the official Rock Pi documentation or contact technical support.

9. Warranty and Support

For technical assistance or product-related inquiries, please contact the SmartFly info tech-support team. You can typically find contact information by clicking on the "WayPonDEV" seller link on the product page and submitting a question. Responses are generally provided within 24 hours.

Specific warranty details are not provided in the product description. Please refer to your purchase documentation or contact the seller directly for warranty information.

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