1. Introduction to Raspberry PI 5

This chapter introduces information about Raspberry Pi 5.

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1.1. Preparation before use

To use the Raspberry Pi, you will need the following:

A Raspberry Pi motherboard;

apower;

An SD card and a card reader;

You can set up a Raspberry Pi as an interactive computer with a desktop, or as a headless computer that can only be accessed over the network. To set up a Raspberry Pi as a headless computer, there is no need to prepare any additional peripherals. You can pre-configure the hostname, user account, network connection and SSH when installing the operating system .

If you want to use the Raspberry Pi directly with a desktop interactable, you will need the following additional accessories:

A monitor and HDMI cable;

A set of keyboard and mouse.

1.2. Introduction

Raspberry Pi 5 uses a 64-bit quad-core Arm Cortex-A76 processor running at 2.4GHz, which improves CPU performance by 2 to 3 times compared to Raspberry Pi 4. Additionally, it features an 800MHz VideoCore VII GPU that delivers a massive graphics performance boost, dual 4Kp60 display outputs via HDMI, and state-of-the-art camera support via a redesigned Raspberry Pi image signal processor. It provides consumers with a smooth desktop experience and opens new application doors for industrial customers.

This is the first full-size Raspberry Pi computer to use silicon made in-house. The RP1 provides most of the I/O functionality for the Raspberry Pi 5 and brings a huge change in peripheral performance and functionality. Aggregate USB bandwidth has more than doubled, allowing for faster data transfer to external UAS drives and other high-speed peripherals; the dedicated dual-lane 1Gbps MIPI camera and display interface used on earlier models has been replaced by a pair of quad-lane 1.5Gbps MIPI Transceiver replacement, total bandwidth is tripled, supporting any combination of up to two cameras or displays; peak SD card performance is doubled by supporting SDR104 high-speed mode; the platform debuts a single-lane PCI Express 2.0 interface for high-speed Bandwidth peripherals are supported.

1.3. Comparison with Raspberry Pi 4B parameters

product	Raspberry Pi 5	Raspberry Pi 4B
CPU Central processing unit	Broadcom BCM2712	Broadcom BCM2711
	Quad-core Cortex-A76 (ARM v8) 64-bit SoC	Quad-core Cortex-A72 (ARM v8) 64-bit SoC
	The main frequency is 2.4GHz	The main frequency is 1.5GHz
buffer memory	L1 cache: 64KB data+ 64KB Instruction per core	L1 cache: 32KB data+ 48KB Instruction per core
	L2 cache: 512KB Per-core	L2 cache: 1MB shared
	L3 cache: 2MB shared	L3 cache: None
GPU	800 MHz VideoCore VII	600 MHz VideoCore VI
	Support OpenGL ES3.1、Vulkan 1.2	Support OpenGL ES3.0
internal storage	LPDDR4X-4267 SDRAM	LPDDR4-3200 SDRAM
Operating system and data storage	The MicroSD card slot supports high-speed SDR104 mode	Micro SD card slot
USB interface	2 x USB3.0, supporting 5Gbps synchronous operation	2 x USB 3.0、2 x USB 2.0
	2 x USB2.0 (The position is symmetric to PI4B)	
CSI interface	2X4lane MIPI Camera Or Display bidirectional transmission interface 22pin	1X2lane MIPICamera 15pin large mouth
DSI interface		1X2laneMIPI Display15Pin large mouth
HDMI	Two MicroHDMI ports	Two Micro HDMI ports
	Can support dual-channel 4Kp60 support HDR	support single 4Kp60 or double 4Kp30
PCIe	A PCIe 2.0x1 interface FPC connector	None
Audio and video composite Output interface	None (provide a pair of pads with 0.1-inch spacing)	Yes
power input	5V/5ADC via USB-C interface (PD support)	5V/5ADC via USB-C interface (PD not supported)
Other interfaces	The 5V/5ADC is interfaced through GPIO	The 5V/3ADC is interfaced through GPIO
	POE via separate new POEHAT (Change of network port position)	POE via the stand-alone POEHAT
power switch	The on/off switch button	None
Real-time clock(RTC)	RTC battery connector (2 pinsJST)	None
UART	Special UART interface (3 pins JST)	None
Fan interface	PWM control and tacho Feedback (4 pins JST)	None

Its main features are as follows:

·Quad-core Arm Cortex-A76 @ 2.4GHz

·Dual 4kp60 HDMI display output, supports HDR

·VideoCore VII graphics card, supports OpenGL-ES 3.1, Vulkan 1.2

·Raspberry Pi connector for PCIe (1 2.0 port, additional HAT required)

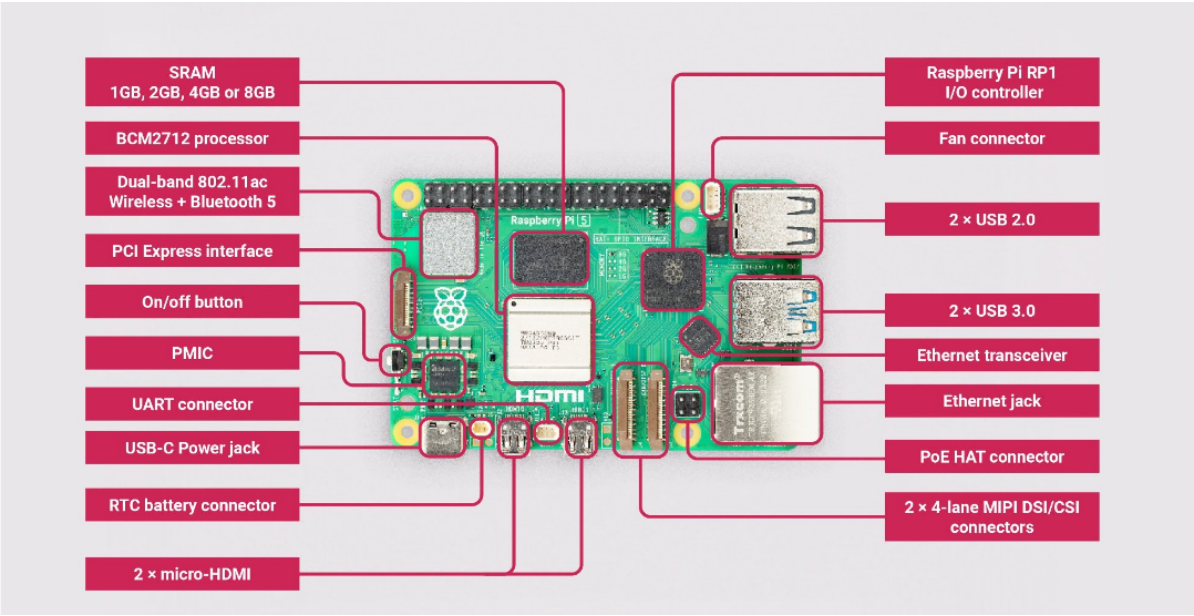
·802.11ac dual-band Wi-Fi and Bluetooth 5.0 (supports BLE)

·Real-time clock (RTC) and RTC battery interface

·Fan interface

·Power button

1.4. Function distribution



1.5. Dimensional drawing (unit: mm)