1. Introduction to Raspberry Pi 5

1.1. Preparation before use

To use Raspberry Pi5, you need the following equipment:

A Raspberry Pi motherboard;

A power supply;

An SD card and a card reader;

You can set up Raspberry Pi as an interactive computer with a desktop, or as a headless computer that can only be accessed through the network. To set up Raspberry Pi as a headless computer, you don't need to prepare any additional peripherals. You can pre-configure the host name, user account, network connection, and SSH when installing the operating system.

If you want to use the interactive Raspberry Pi with a desktop directly, you 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 has a CPU performance improvement of 2 to 3 times compared to Raspberry Pi 4. In addition, it is equipped with an 800MHz VideoCore VII GPU, which can provide a significant increase in graphics performance, dual 4Kp60 display output through HDMI, and state-of-the-art camera support through a redesigned Raspberry Pi image signal processor. It provides consumers with a smooth desktop experience and opens the door to new applications for industrial customers.

This is the first full-size Raspberry Pi computer using silicon materials made in-house by Raspberry Pi. RP1 provides most of the I/O functions for Raspberry Pi 5 and brings a huge change in peripheral performance and functionality. Aggregate USB bandwidth has been more than doubled, allowing faster data transfer to external UAS drives and other high-speed peripherals; the dedicated dual-channel 1Gbps MIPI camera and display interface used on earlier models has been replaced by a pair of four-channel 1.5Gbps MIPI transceivers, increasing the total bandwidth by three times, supporting any combination of up to two cameras or displays; peak SD card performance is doubled by supporting SDR104 high-speed mode; the platform showcases a single-channel PCI Express 2.0 interface for the first time, providing support for high-bandwidth peripherals.

1.3. Parameter comparison with Raspberry Pi 4B

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, support HDR

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

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

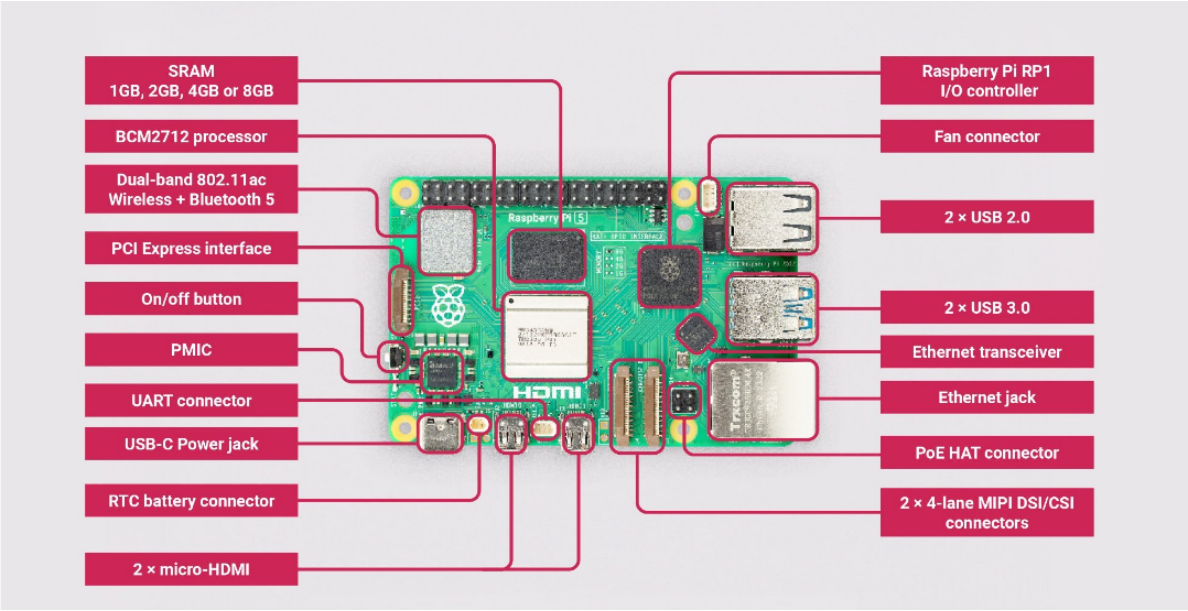
·802.11ac dual-band Wi-Fi and Bluetooth 5.0 (support BLE)

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

·Fan interface

·Power button

1.4. Functional distribution



1.5. Dimensions (unit: mm)