RASPBERRY PI 5

HARDWARE OVERVIEW

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WHAT IS RASPBERRY PI 5?

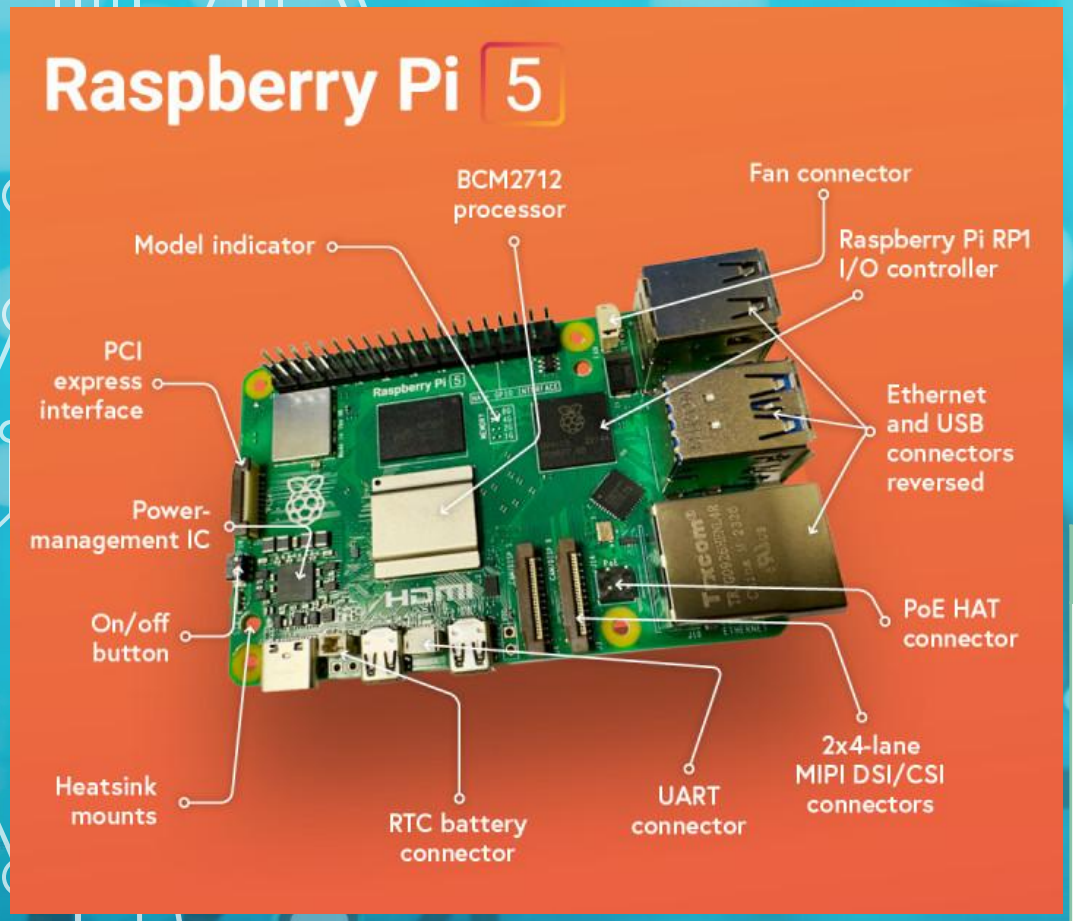
The Raspberry Pi 5, launched in October 2023, is the latest small, low-cost computer made by the Raspberry Pi Foundation. It's designed to be cheap, small, and powerful.

27W USB-C POWER SUPPLY

During normal use, the Raspberry Pi 5 uses less power and stays cooler than the Raspberry Pi 4. But during very heavy tasks, it can use up to 12W, compared to 8W on the Pi 4.

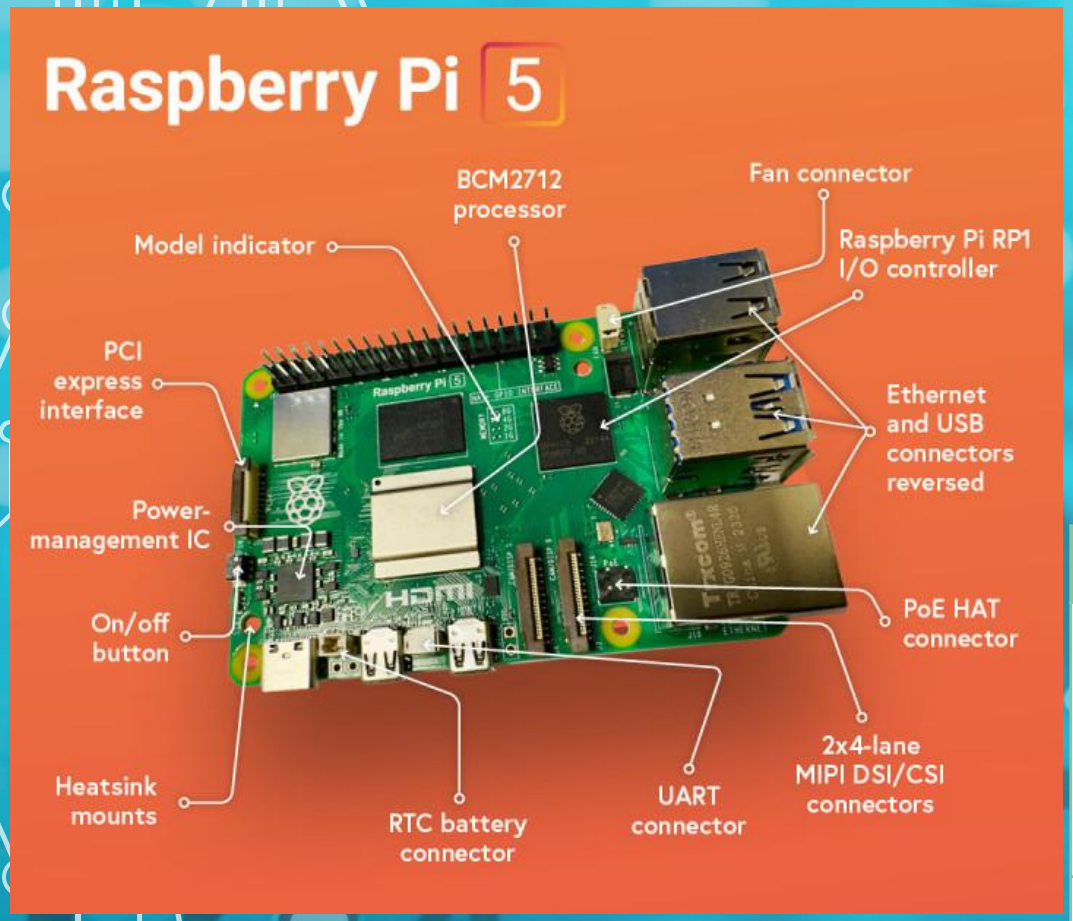
Power specifications:

- Specification
- Input voltage: 100 - 240 v.a.c
- Input AC frequency: 50-60Hz
- Output voltage: 5.1V
- Output current: 5.0A
- Output power: 25.5W
- Average active efficiency: 89.0%
- Efficiency at low load (10 %): 87.9%
- No-load power consumption: 0.1W
- Connector: USB-C
- Cable: 1.2m 17AWG, white or black



WHAT ARE THE KEY SPECIFICATIONS?

Specification	Function
Broadcom BCM2712 2.4GHz quad-core 64-bit Arm Cortex-A76 CPU, with Cryptographic Extension, 512KB per-core L2 caches, and a 2MB shared L3 cache	Helps run everything: apps, operating system, and more.
VideoCore VII GPU, supporting OpenGL ES 3.1, Vulkan 1.2	It powers images, video, and games.
Dual 4Kp60 HDMI® display output with HDR support	Let you connect two monitors.
4Kp60 HEVC decoder	Allows the Pi to play high-quality 4K videos smoothly.



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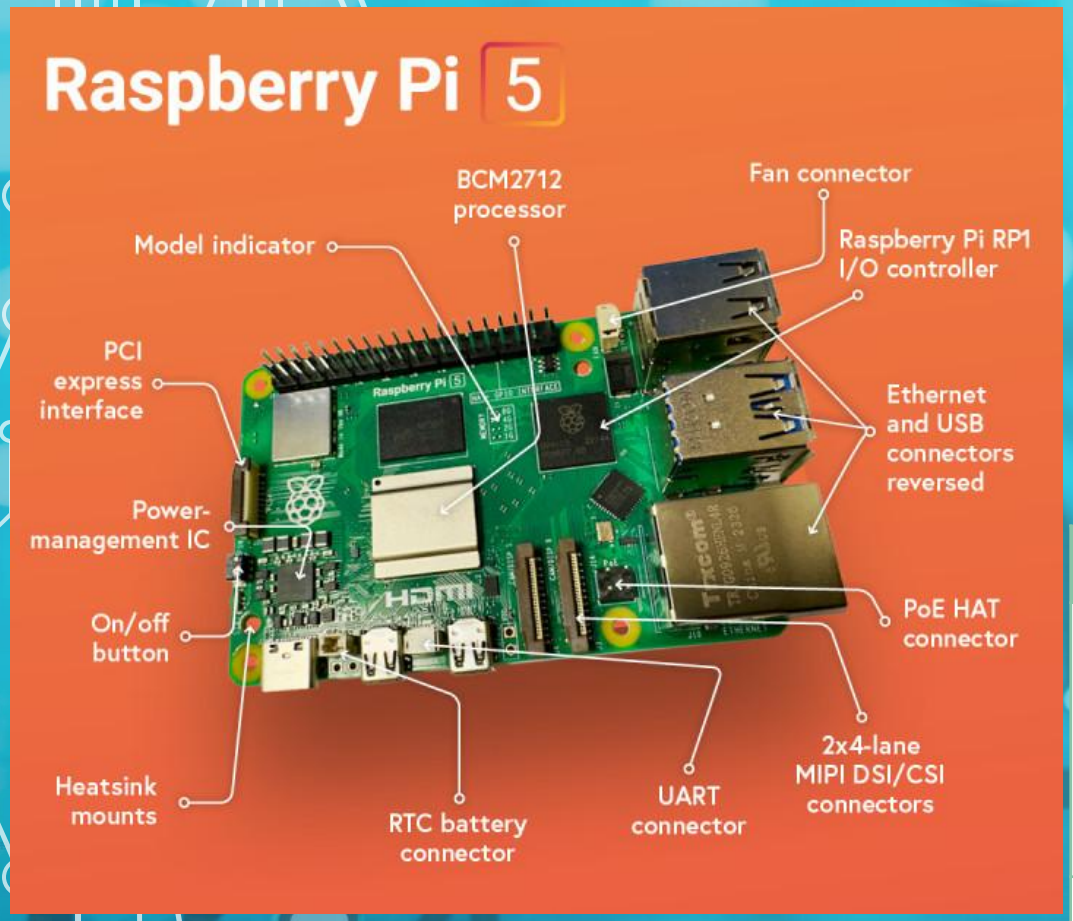
LPDDR4X-4267 SDRAM (options for 2GB, 4GB, 8GB and 16GB)	The more RAM you have, the more apps and tasks you can run at once.
Dual-band 802.11ac Wi-Fi®	Lets the Pi connect to the internet wirelessly, on both 2.4GHz and 5GHz networks..
Bluetooth 5.0 / Bluetooth Low Energy (BLE)	Connect wireless devices like keyboards, mice, headphones, or sensors.
microSD card slot, with support for high-speed SDR104 mode	Holds the operating system and your files.



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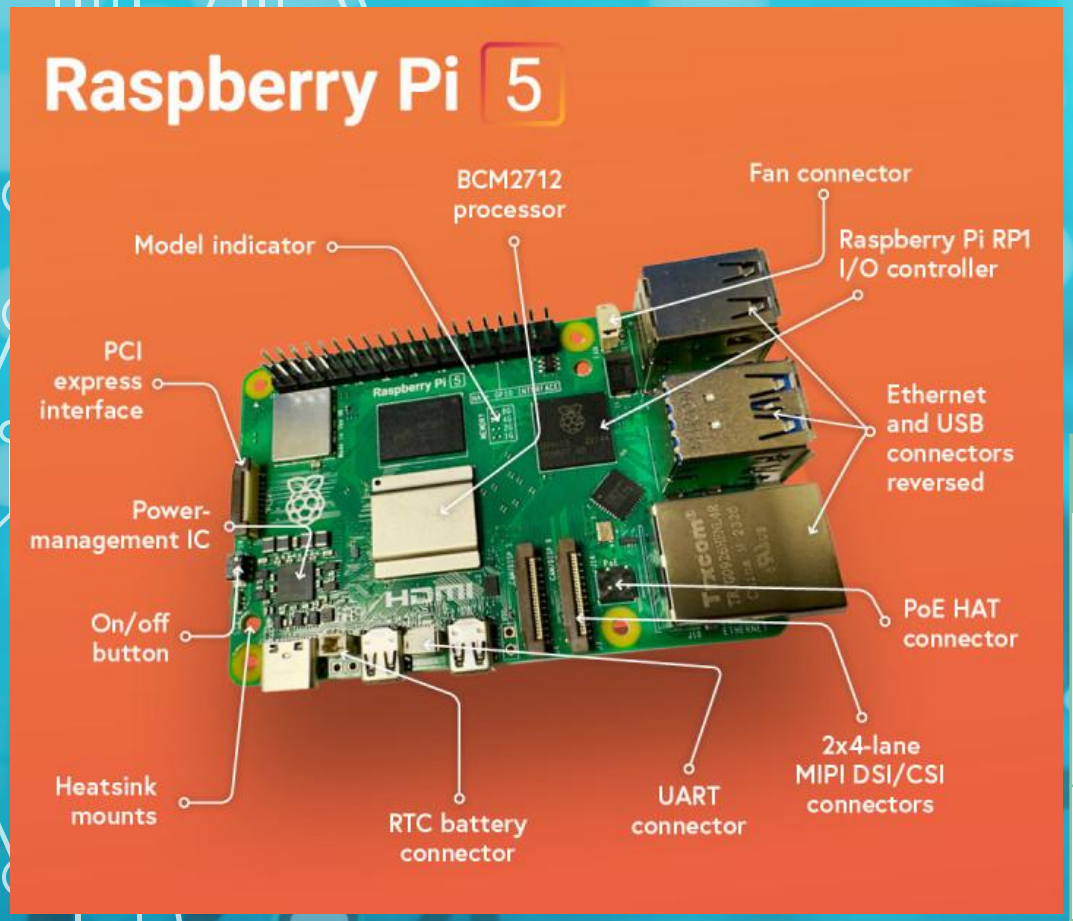
2 × USB 3.0 ports, supporting simultaneous 5Gbps operation	High-speed ports for things like external hard drives, fast flash drives, cameras.
2 × USB 2.0 ports	Standard-speed ports for things like keyboard, mouse, printers.
Gigabit Ethernet, with PoE+ support (requires separate PoE+ HAT)	Wired internet connection, very fast and stable.
2 × 4-lane MIPI camera/display transceivers	Used in robotics, AI projects, etc.



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Specification	Function
PCIe 2.0 x1 interface for fast peripherals (requires separate M.2 HAT or other adapter)	For high-speed accessories like SSD storage (with adapter).
5V/5A DC power via USB-C, with Power Delivery support	Power Delivery helps manage charging safely and efficiently.
Raspberry Pi standard 40-pin header	A set of pins for connecting sensors, LEDs, motors, and other electronics.
Real-time clock (RTC), powered from external battery (New feature)	Keeps track of the time, even when the Pi is off.
Power button (New feature)	Turn the Pi on or off just like a regular computer

HARDWARE IMPROVEMENTS OVER PREVIOUS GENERATIONS

- **Processor up to 3x faster CPU performance.**
- **Enhance video (smoother 4K graphics).**
- **Memory faster with lower power.**
- **Improve connectivity with USB (3 – Gbps), camera, and display bandwidth.**
- **In-house silicon.**
- **Benchmarks: single and multi-thread tests show 75–80 % higher scores in some synthetic tests.**
- **The Pi 5 is hotter and demands better cooling (thermal throttling observed above ~82 °C)**

Tasks that need a lot of power, like AI, coding, or working with images, will run better, but you need to keep an eye on the temperature and make sure it gets enough power.

Faster data transfer, fewer slowdowns with USB or storage, and more options for high-speed devices.

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