



## MacBook Pro (14-inch, M4, 2024) - Tech Specs

Year introduced: 2024

<b>Finish</b>	Space Black Silver
<b>Chip</b>	<b>Apple M4 chip</b> 10-core CPU with 4 performance cores and 6 efficiency cores 10-core GPU Hardware-accelerated ray tracing 16-core Neural Engine 120GB/s memory bandwidth <b>Media Engine</b> Hardware-accelerated H.264, HEVC, ProRes and ProRes RAW Video decode engine Video encode engine ProRes encode and decode engine AV1 decode
<b>Apple Intelligence<sup>1</sup></b>	Apple Intelligence is the personal intelligence system that helps you write, express yourself and get things done effortlessly. With

groundbreaking privacy protections, it gives you peace of mind that no one else can access your data — not even Apple.

[Learn more about Apple Intelligence](#)

<b>Display</b>	<p><b>Liquid Retina XDR display</b></p> <p>14.2-inch (diagonal) Liquid Retina XDR display;<sup>2</sup> 3024x1964 native resolution at 254 pixels per inch</p> <p><b>XDR (Extreme Dynamic Range)</b></p> <p>1,000,000:1 contrast ratio</p> <p>XDR brightness: 1,000 nits sustained full-screen, 1,600 nits peak<sup>3</sup> (HDR content only)</p> <p>SDR brightness: up to 1,000 nits (outdoor)</p> <p><b>Colour</b></p> <p>1 billion colours</p> <p>Wide colour (P3)</p> <p>True Tone technology</p> <p><b>Refresh rates</b></p> <p>ProMotion technology for adaptive refresh rates up to 120Hz</p> <p>Fixed refresh rates: 47.95Hz, 48.00Hz, 50.00Hz, 59.94Hz, 60.00Hz</p> <p><b>Configurable with:</b></p> <p>Nano-texture display</p>
<b>Memory</b>	<p>16GB or 24GB unified memory</p> <p><b>Configurable to:</b></p> <p>24GB or 32GB</p>
<b>Battery and Power</b>	<p><b>M4<sup>4</sup></b></p> <p>Up to 24 hours video streaming</p> <p>Up to 16 hours wireless web</p> <p>72.4-watt-hour lithium-polymer battery</p> <p>70W USB-C Power Adapter</p> <p>USB-C to MagSafe 3 Cable</p> <p>Fast-charge capable with 96W USB-C Power Adapter</p>
<b>Storage<sup>6</sup></b>	<p>512GB or 1TB SSD<sup>7</sup></p> <p><b>Configurable to:</b></p> <p>1TB or 2TB</p>
<b>Charging and Expansion</b>	<p><b>SDXC card slot</b></p> <p><b>HDMI port</b></p> <p><b>3.5mm headphone jack</b></p> <p><b>MagSafe 3 port</b></p> <p>Three Thunderbolt 4 (USB-C) ports with support for:</p> <p>Charging</p> <p>DisplayPort</p> <p>Thunderbolt 4 (up to 40Gb/s)</p> <p>USB 4 (up to 40Gb/s)</p>
<b>Display Support</b>	<p>Simultaneously supports full native resolution on the built-in display at 1 billion colours and:</p>

Up to two external displays with up to 6K resolution at 60Hz over Thunderbolt, or one external display with up to 6K resolution at 60Hz over Thunderbolt and one external display with up to 4K resolution at 144Hz over HDMI

One external display supported at 8K resolution at 60Hz or one external display at 4K resolution at 240Hz over HDMI

**Thunderbolt 4 digital video output**

Support for native DisplayPort 1.4 output over USB-C

**Thunderbolt 5 digital video output**

Support for native DisplayPort 2.1 output over USB-C

**HDMI digital video output**

Support for one display with up to 8K resolution at 60Hz or 4K resolution at 240Hz

**Video Playback**

Supported formats include HEVC, H.264, AV1 and ProRes  
HDR with Dolby Vision, HDR10+/HDR10 and HLG

**Audio Playback**

Supported formats include AAC, MP3, Apple Lossless, FLAC, Dolby Digital, Dolby Digital Plus and Dolby Atmos

**Keyboard and Trackpad**

**Backlit Magic Keyboard with:**

78 (US) or 79 (ISO) keys including 12 full-height function keys and 4 arrow keys in an inverted "T" arrangement

Touch ID

Ambient light sensor

Force Touch trackpad for precise cursor control and pressure-sensing capabilities; enables Force clicks, accelerators, pressure-sensitive drawing and Multi-Touch gestures

**Wireless**

**Wi-Fi**

Wi-Fi 6E (802.11ax)<sup>8</sup>

**Bluetooth**

Bluetooth 5.3

**Camera**

12MP Center Stage camera with support for Desk View

1080p HD video recording

Advanced image signal processor with computational video

**Audio**

High-fidelity six-speaker sound system with force-cancelling woofers

Wide stereo sound

Support for Spatial Audio when playing music or video with Dolby Atmos on built-in speakers

Spatial Audio with dynamic head tracking when using AirPods (3rd generation), AirPods 4, AirPods Pro, AirPods Pro 2 and AirPods Max

Studio-quality three-mic array with high signal-to-noise ratio and directional beamforming

3.5mm headphone jack with advanced support for high-impedance headphones

HDMI port supports multi-channel audio output

<b>Operating Requirements</b>	<p>Line voltage: 100V to 240V AC</p> <p>Frequency: 50Hz to 60Hz</p> <p>Operating temperature: 10° to 35° C (50° to 95° F)</p> <p>Storage temperature: -25° to 45° C (-13° to 113° F)</p> <p>Relative humidity: 0% to 90% non-condensing</p> <p>Operating altitude: tested up to 3,000 metres (10,000 feet)</p> <p>Maximum storage altitude: 4,500 metres (15,000 feet)</p> <p>Maximum shipping altitude: 10,500 metres (35,000 feet)</p>					
<b>Size and Weight</b>	<p>Height: 1.55 cm (0.61 inches)</p> <p>Width: 31.26 cm (12.31 inches)</p> <p>Depth: 22.12 cm (8.71 inches)</p> <p>Weight: 1.55 kg (3.4 pounds)<sup>9</sup></p>					
<b>Operating System</b>	<p>macOS</p> <p>macOS is the most advanced desktop operating system in the world. macOS Sequoia helps you be productive and creative in new ways — with Apple Intelligence,<sup>1</sup> iPhone Mirroring, window tiling, major updates to Safari and more.</p> <p><a href="#">Learn more about latest operating system</a></p>					
<b>Accessibility</b>	<p>Accessibility features help people with disabilities get the most out of their new MacBook Pro. With built-in support for vision, hearing, mobility and learning, you can create and do amazing things.</p> <p><a href="#">Learn more about Accessibility</a></p> <p><b>Features include:</b></p>					
<b>Built-in Apps<sup>10</sup></b>	<table> <tr> <td data-bbox="630 1182 790 1317"> <p>Voice Control</p> <p>VoiceOver</p> <p>Zoom</p> <p>Increase Contrast</p> <p>Reduce Motion</p> </td> <td data-bbox="965 1182 1118 1294"> <p>Siri and Dictation</p> <p>Switch Control</p> <p>Closed Captions</p> <p>Text to Speech</p> </td> </tr> </table> <table> <tr> <td data-bbox="630 1435 790 1742"> <p>App Store</p> <p>Books</p> <p>Calendar</p> <p>Contacts</p> <p>FaceTime</p> <p>Find My</p> <p>Freeform</p> <p>GarageBand</p> <p>Home</p> <p>iMovie</p> <p>iPhone Mirroring</p> </td> <td data-bbox="853 1435 1007 1742"> <p>Keynote</p> <p>Mail</p> <p>Maps</p> <p>Messages</p> <p>Music</p> <p>News</p> <p>Notes</p> <p>Numbers</p> <p>Pages</p> <p>Photo Booth</p> <p>Photos</p> </td> <td data-bbox="1077 1435 1230 1742"> <p>Podcasts</p> <p>Preview</p> <p>QuickTime Player</p> <p>Reminders</p> <p>Safari</p> <p>Shortcuts</p> <p>Stocks</p> <p>Time Machine</p> <p>TV</p> <p>Voice Memos</p> <p>Weather</p> </td> </tr> </table>	<p>Voice Control</p> <p>VoiceOver</p> <p>Zoom</p> <p>Increase Contrast</p> <p>Reduce Motion</p>	<p>Siri and Dictation</p> <p>Switch Control</p> <p>Closed Captions</p> <p>Text to Speech</p>	<p>App Store</p> <p>Books</p> <p>Calendar</p> <p>Contacts</p> <p>FaceTime</p> <p>Find My</p> <p>Freeform</p> <p>GarageBand</p> <p>Home</p> <p>iMovie</p> <p>iPhone Mirroring</p>	<p>Keynote</p> <p>Mail</p> <p>Maps</p> <p>Messages</p> <p>Music</p> <p>News</p> <p>Notes</p> <p>Numbers</p> <p>Pages</p> <p>Photo Booth</p> <p>Photos</p>	<p>Podcasts</p> <p>Preview</p> <p>QuickTime Player</p> <p>Reminders</p> <p>Safari</p> <p>Shortcuts</p> <p>Stocks</p> <p>Time Machine</p> <p>TV</p> <p>Voice Memos</p> <p>Weather</p>
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<b>In the Box</b>	<p>14-inch MacBook Pro</p> <p>70W USB-C Power Adapter (M4 or M4 Pro with 12-core CPU)</p> <p>USB-C to MagSafe 3 Cable (2m)</p> <p>Polishing cloth (only with nano-texture display option)</p>					
<b>Configure to Order</b>	<p>Configure your MacBook Pro with these options at <a href="#">apple.com</a>:</p> <p>24GB or 32GB unified memory</p> <p>1TB or 2TB SSD</p>					

96W USB-C Power Adapter  
Nano-texture display

## MacBook Pro and the Environment

### Environmental impact

The 14-inch MacBook Pro is designed to reduce environmental impact:<sup>11</sup>

[See the 14-inch MacBook Pro Product Environmental Report \(PDF\)](#)

### Progress towards Apple 2030

More than 35% recycled content<sup>12</sup>

45% of manufacturing electricity sourced from low-carbon electricity<sup>13</sup>

More than 45% emissions reduction against business-as-usual scenario as modelled by Apple<sup>14</sup>

[See Apple's commitment](#)

### Materials

100% recycled aluminium in the enclosure

100% recycled rare earth elements in all magnets

100% recycled tin in the solder of multiple printed circuit boards

100% recycled copper in multiple printed circuit boards and a thermal module component

100% recycled gold in the plating of multiple printed circuit boards

90% recycled steel in the keyboard feature plate

35% or more recycled plastic in 15 components

### Energy

45% of manufacturing electricity for the 14-inch MacBook Pro is sourced from low-carbon electricity<sup>13</sup>

ENERGY STAR® certified<sup>15</sup>

### Packaging

100% fibre-based packaging<sup>16</sup>

51% recycled content in fibre packaging

### Waste

No established final assembly sites generate waste sent to landfill as part of Apple's Zero Waste Programme

### Smarter chemistry<sup>17</sup>

Arsenic-free glass

Mercury-, BFR- and PVC-free

Declared noise emission values in accordance with ECMA-109

## Acoustic Performance

	Sound Power Level $L_{WA,m}$ (B)	Sound Pressure Level Operator Position $L_{pA,m}$ (dB)
Idle	1.3 ( $K_v = 0.3$ )	3
Wireless web	1.3 ( $K_v = 0.3$ )	4

1.  $L_{WA,m}$  is the mean A-weighted sound power level, rounded to the nearest 0.1 B.

2.  $L_{pA,m}$  is the mean A-weighted sound pressure level measured at operator position (rounded to the nearest 1 dB).

3. 1 B (bel) = 10 dB (decibel).

4.  $K_v$  is the statistical adder for computing upper-limit of A-weighted sound power level.

5. The quantity,  $L_{WA,c}$  (formerly called  $L_{WAd}$ ) may be computed from the sum of  $L_{WA,m}$  and  $K_v$ .

6. The wireless web test browses 6 tabs with a mix of content including media.

7. Configuration tested: M4, 10-core CPU / 10-core GPU, 16GB unified memory, 1TB storage.

1. Apple Intelligence is available in beta on all Mac models with M1 and later, with Siri and device language set to US English, as a macOS Sequoia update. English (Australia, Canada, Ireland, New Zealand, South Africa, UK) language support available this December. Some features and support for additional languages, like Chinese, English (India, Singapore), French, German, Italian, Japanese, Korean, Portuguese, Spanish, Vietnamese and others, will be coming over the course of the next year.
2. The displays on the 14-inch and 16-inch MacBook Pro have rounded corners at the top. When measured as a standard rectangular shape, the screens are 14.2 inches and 16.2 inches diagonally (actual viewable area is less).
3. In temperatures less than 25° C.
4. Testing conducted by Apple August to October 2024 using pre-production 14-inch MacBook Pro systems with Apple M4, 10-core CPU, 10-core GPU, 24GB of RAM and 1TB SSD. Wireless web battery life tested by browsing 25 popular websites while connected to Wi-Fi. Video streaming battery life tested with 1080p content in Safari while connected to Wi-Fi. Display brightness set to 8 clicks from the bottom and keyboard backlight was off. Battery life varies by use and configuration. See [apple.com/uk/batteries](https://apple.com/uk/batteries) for more information.
5. Testing conducted by Apple August to October 2024 using pre-production 14-inch MacBook Pro systems with Apple M4 Pro, 14-core CPU, 20-core GPU, 24GB of RAM and 1TB SSD; and pre-production 14-inch MacBook Pro systems with Apple M4 Max, 14-core CPU, 32-core GPU, 36GB of RAM and 2TB SSD. Wireless web battery life tested by browsing 25 popular websites while connected to Wi-Fi. Video streaming battery life tested with 1080p content in Safari while connected to Wi-Fi. Display brightness set to 8 clicks from the bottom and keyboard backlight was off. Battery life varies by use and configuration. See [apple.com/uk/batteries](https://apple.com/uk/batteries) for more information.
6. 1GB = 1 billion bytes and 1TB = 1 trillion bytes; actual formatted capacity less.
7. Price varies depending on storage capacity.
8. Wi-Fi 6E available in countries and regions where supported.
9. Weight varies by configuration and manufacturing process.
10. iMovie, GarageBand, Pages, Numbers and Keynote are available on the Mac App Store. Downloading apps requires an Apple Account and a device that is compatible with the OS version required for each app. iPhone Mirroring is not available in all countries and regions. Some iPhone features (e.g., camera and microphone) are not compatible with iPhone Mirroring.
11. Data accurate as of product launch.
12. Product recycled or renewable content is the mass of certified recycled material relative to the overall mass of the device, not including packaging or in-box accessories.
13. We estimate the percentage of electricity-related emissions in our manufacturing that is sourced from low-carbon electricity by attributing to our carbon model low-carbon energy procured by our suppliers in the prior fiscal year, based on the supplier manufacturing allocations at time of product launch. Included in this number is only low-carbon electricity that Apple or its suppliers have procured as part of Apple's Supplier Clean Energy Programme.
14. Carbon reductions are calculated against a business-as-usual scenario as modelled by Apple: 1) No use of clean electricity for manufacturing or product use, beyond what is already available on the latest modelled grid (based on regional emissions factors). 2) Apple's carbon intensity of key materials as of 2015 (our baseline year for our 2030 product carbon-neutrality goal). Carbon intensity of materials reflects use of recycled content and production technology. 3) Apple's average mix of transport modes (air, rail, sea, land) by product line across three years (fiscal years 2017 to 2019) to best capture the baseline transport emissions of our products.
15. ENERGY STAR and the ENERGY STAR mark are registered trademarks owned by the US Environmental Protection Agency.
16. Based on retail packaging as shipped by Apple. Breakdown of US retail packaging by weight. Adhesives, inks and coatings are excluded from our calculations of plastic content and packaging weight.
17. Apple's Regulated Substances Specification describes Apple's restrictions on the use of certain chemical substances in materials in Apple products, accessories, manufacturing processes, and packaging used for shipping products to Apple's end customers. Restrictions are derived from international laws or directives, regulatory agencies, eco-label requirements, environmental standards and Apple policies. Every Apple product is free of PVC and phthalates except for AC power leads in India, Thailand (for two-pin AC power leads) and the Republic of Korea, where we continue to seek government approval for our PVC and phthalates replacement. Apple products comply with the European Union Directive 2011/65/EU and its amendments, including exemptions for the use of lead such as high-temperature solder. Apple is working to phase out the use of these exempted substances for new products where technically possible.

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Helpful?  Yes  No

Support MacBook Pro (14-inch, M4, 2024) - Tech Specs