MacBook Pro (16-inch, 2024) - Tech Specs

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Switch from PC to Mac

Explore All Apple Watch

Apple Watch Series 10

Apple Watch Ultra 2

Apple Watch For Your Kids

Explore TV & Home

Explore TV & Home

Shop TV & Home

Shop Apple TV 4K

TV & Home Accessories

More from TV & Home

Beats by Dr. Dre

Apple Account and Password

5 total resultsQuick LinksIf you forgot your Apple ID passwordIf you forgot the passcode for your iPhone, iPad, or iPod touchView, change, or cancel your subscriptionsUpdate iOS on your deviceContact Apple Support

If you forgot your Apple ID password

If you forgot the passcode for your iPhone, iPad, or iPod touch

View, change, or cancel your subscriptions

Update iOS on your device

Apple M4 Pro chip

14?core CPU with 10 perform-ance cores and 4 efficiency cores

14?core CPU with 10 perform-ance cores and 4 efficiency cores

Hardware-accelerated H.264, HEVC, ProRes and ProRes RAW

Hardware-accelerated H.264, HEVC, ProRes and ProRes RAW

ProRes encode and decode engine

M4 Max with 14?core CPU and 32?core GPU (410GB/s memory bandwidth) or M4 Max with 16?core CPU and 40?core GPU (546GB/s memory bandwidth)

Apple M4 Max chip

14?core CPU with 10 perform-ance cores and 4 efficiency cores, 16?core CPU with 12 perform-ance cores and 4 efficiency cores

32?core GPU, 40?core GPU

410GB/s memory bandwidth, 546GB/s memory bandwidth

Hardware-accelerated H.264, HEVC, ProRes and ProRes RAW

Two video encode engines

Two ProRes encode and decode engines

M4 Max with 16?core CPU and 40?core GPU (546GB/s memory bandwidth)

Apple In-telli-gence 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

Liquid Retina XDR display

16.2-inch (diagonal) Liquid Retina XDR display;23456x2234 native resolution at 254 pixels per inch

XDR (Extreme Dynamic Range)

XDR brightness: 1,000 nits sustained full-screen, 1,600 nits peak3(HDR content only)

SDR brightness: up to 1,000 nits (outdoor)

ProMotion technology for adaptive refresh rates up to 120Hz

Fixed refresh rates: 47.95Hz, 48.00Hz, 50.00Hz, 59.94Hz, 60.00Hz

Apple M4 Pro chip

36GB (M4 Max with 14?core CPU) or 48GB (M4 Pro and M4 Max with 16?core CPU) or 64GB or 128GB (M4 Max with 16?core CPU)

Apple M4 Max chip

48GB, 64GB or 128GB (M4 Max with 16?core CPU)

Up to 24 hours video streaming

Up to 17 hours wireless web

140W USB-C Power Adapter

USB-C to MagSafe 3 Cable

USB-C to MagSafe 3 Cable

Fast-charge capable with included 140W USB-C Power Adapter

Fast-charge capable with included 140W USB-C Power Adapter

Up to 21 hours video streaming

Up to 21 hours video streaming

Up to 14 hours wireless web

Up to 14 hours wireless web

140W USB-C Power Adapter

140W USB-C Power Adapter

USB-C to MagSafe 3 Cable

USB-C to MagSafe 3 Cable

Fast-charge capable with included 140W USB-C Power Adapter

Fast-charge capable with included 140W USB-C Power Adapter

Apple M4 Pro chip

1TB, 2TB or 4TB

1TB, 2TB or 4TB

Apple M4 Max chip

2TB, 4TB or 8TB

2TB, 4TB or 8TB

Three Thunderbolt 5 (USB-C) ports with support for:

Three Thunderbolt 5 (USB-C) ports with support for:

Thunderbolt 5 (up to 120Gb/s)

Thunderbolt 5 (up to 120Gb/s)

Thunderbolt 4 (up to 40Gb/s)

Thunderbolt 4 (up to 40Gb/s)

USB 4 (up to 40Gb/s)

USB 4 (up to 40Gb/s)

Simultaneously supports full native resolution on the built-in display at 1 billion colours and:

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

Simultaneously supports full native resolution on the built-in display at 1 billion colours and:

Up to four external displays: up to three external displays with 6K resolution at 60Hz over Thunderbolt and one external display with up to 4K resolution at 144Hz over HDMI

Up to three external displays: up to two external displays with 6K resolution at 60Hz over Thunderbolt and one external display with up to 8K resolution at 60Hz or one external display with 4K resolution at 240Hz over HDMI

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

Supported formats include HEVC, H.264, AV1 and ProRes

HDR with Dolby Vision, HDR10+/HDR10 and HLG

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

Backlit Magic Key-board with:

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

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

12MP Center Stage camera with support for Desk View

1080p HD video recording

Advanced image signal processor with computational video

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

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

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

Line voltage:100V to 240V AC

Operating temperature:10° to 35° C (50° to 95° F)

Storage temperature:?25° to 45° C (?13° to 113° F)

Relative humidity:0% to 90% non?condensing

Operating altitude:tested up to 3,000 metres (10,000 feet)

Maximum storage altitude:4,500 metres (15,000 feet)

Maximum shipping altitude:10,500 metres (35,000 feet)

Height:1.68 cm (0.66 inches)

Width:35.57 cm (14.01 inches)

Depth:24.81 cm (9.77 inches)

Weight (M4 Pro):2.14 kg (4.7 pounds)6

Weight (M4 Max):2.15 kg (4.7 pounds)6

macOS is the most advanced desktop operating system in the world. macOS Sequoia helps you be productive and creative in new ways ? with Apple In-telli-gence,1iPhone Mirroring, window tiling, major updates to Safari and more.

Learn more about latest operating system

Accessi-bility 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.

Learn more about Accessi-bility

140W USB-C Power Adapter

USB-C to MagSafe 3 Cable (2m)

Polishing cloth (only with nano-texture display option)

Con-fig-ure your MacBook Pro with these options atapple.com:

M4 Max with 14?core CPU, 32?core GPU and 16?core Neural Engine

M4 Max with 16?core CPU, 40?core GPU and 16?core Neural Engine

36GB unified memory (M4 Max with 14?core CPU)

36GB unified memory (M4 Max with 14‑core CPU)

48GB unified memory (M4 Pro and M4 Max with 16‑core CPU)

48GB unified memory (M4 Pro and M4 Max with 16‑core CPU)

64GB unified memory (M4 Max with 16‑core CPU)

64GB unified memory (M4 Max with 16‑core CPU)

128GB unified memory (M4 Max with 16‑core CPU)

128GB unified memory (M4 Max with 16‑core CPU)

1TB, 2TB or 4TB SSD (M4 Pro and M4 Max)

1TB, 2TB or 4TB SSD (M4 Pro and M4 Max)

8TB SSD (M4 Max)

8TB SSD (M4 Max)

MacBook Pro and the Environment

The 16-inch MacBook Pro is designed to reduce environmental impact:8

See the 16-inch MacBook Pro Product En-viron-men-tal Report (PDF)

Progress towards Apple 2030

Over 45% of manufacturing electricity sourced from low-carbon electricity10

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45% emissions reduction against business-as-usual scenario as modelled by Apple11

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100% recycled aluminium in the enclosure

100% recycled aluminium in the enclosure

100% recycled rare earth elements in all magnets

100% recycled rare earth elements in all magnets

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

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

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

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

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 11 components

Over 45% of manufacturing electricity for the 16-inch MacBook Pro is sourced from low-carbon electricity10

50% recycled content in fibre packaging

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

Mercury-, BFR- and PVC?free

Declared noise emission values in accordance with ECMA-109

LWA,mis the mean A-weighted sound power level, rounded to the nearest 0.1 B.

LpA,mis the mean A-weighted sound pressure level measured at operator position (rounded to the nearest 1 dB).

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

Kvis the statistical adder for computing upper-limit of A-weighted sound power level.

The quantity,LWA,c(formerly calledLWAd) may be computed from the sum ofLWA,mandKv.

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

Configuration tested: M4 Max, 16-core CPU / 40-core GPU, 48GB unified memory, 2TB storage.

Apple Intelligence is available in beta on all Mac models with M1 and later, with Siri and device language set to English (Australia, Canada, Ireland, New Zealand, South Africa, UK or US), as a macOS Sequoia software update. Additional features and languages will be available in April, with more languages coming over the course of the year. Languages supported in 2025 include Chinese, English (India, Singapore), French, German, Italian, Japanese, Korean, Portuguese, Spanish and Vietnamese.

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).

In temperatures less than 25° C.

1GB = 1 billion bytes and 1TB = 1 trillion bytes; actual formatted capacity less.

1GB = 1 billion bytes and 1TB = 1 trillion bytes; actual formatted capacity less.

Wi?Fi 6E available in countries and regions where supported.

Weight varies by configuration and manufacturing process.

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., cam-era and microphone) are not compatible with iPhone Mirroring.

Data accurate as of product launch.

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.

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.

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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.

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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.

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.

Actual rating of 99.6 watt-hours. Testing conducted by Apple August to October 2024 using pre?production 16-inch MacBook Pro systems with Apple M4 Pro, 14?core CPU, 20?core GPU, 48GB of RAM and 512GB SSD; and pre?production 16-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. Seeapple.com/uk/batteriesfor more information.

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