Apple Watch Series 9 - Technical Specifications
Year introduced: 2023

Identify your Apple Watch

Material and Finish
Aluminum case

Pink

Midnight

Starlight

Silver

(PRODUCT)RED

Stainless steel case

Gold

Silver

Graphite

Size and Weight
45mm

Height: 45mm

Width: 38mm

Depth: 10.7mm

Weight (aluminum, GPS): 38.7 grams

Weight (aluminum, GPS + Cellular): 39.0 grams

Weight (stainless steel): 51.5 grams

Fits 140–245mm wrists

41mm

Height: 41mm

Width: 35mm

Depth: 10.7mm

Weight (aluminum, GPS): 31.9 grams

Weight (aluminum, GPS + Cellular): 32.1 grams

Weight (stainless steel): 42.3 grams

Fits 130–200mm wrists

Hardware and Buttons
Digital Crown

Microphone

Side button

Electrical heart sensor

Speaker/air vent

Optical heart sensor

Controls
Digital Crown with haptic feedback

Side button

Double tap gesture

Siri with on-device processing

Chip
S9 SiP with 64-bit dual-core processor

4-core Neural Engine

64GB capacity

Sensors
Electrical heart sensor

Third-generation optical heart sensor

Temperature sensing[1]

Compass

Always-on altimeter

High-g accelerometer

High dynamic range gyroscope

Ambient light sensor

Health and Wellness
ECG app[2]

Cycle Tracking app with retrospective ovulation estimates[3]

Heart Rate app

High and low heart rate notifications

Irregular rhythm notifications[4]

Medications app

Mindfulness app

Noise app

Sleep app including sleep stages

Display
Always-On Retina LTPO OLED display

Edge-to-edge display

Ion-X front glass (aluminum cases)

Sapphire front crystal (stainless steel cases)

Up to 2000 nits maximum brightness

1 nit minimum brightness

326 pixels per inch

Power and Battery Life
All-day battery life, up to 18 hours of normal use5

Up to 36 hours in Low Power Mode5

Built-in rechargeable lithium-ion battery

Fast-charge capable6

Up to 80% charge in about 45 minutes6

Learn more about Power and Battery Life

Operating System
watchOS

watchOS is the world's most advanced wearable operating system, with apps and features designed to keep you active, healthy, safe, and connected.

Learn more about watchOS

Apple Watch User Guide
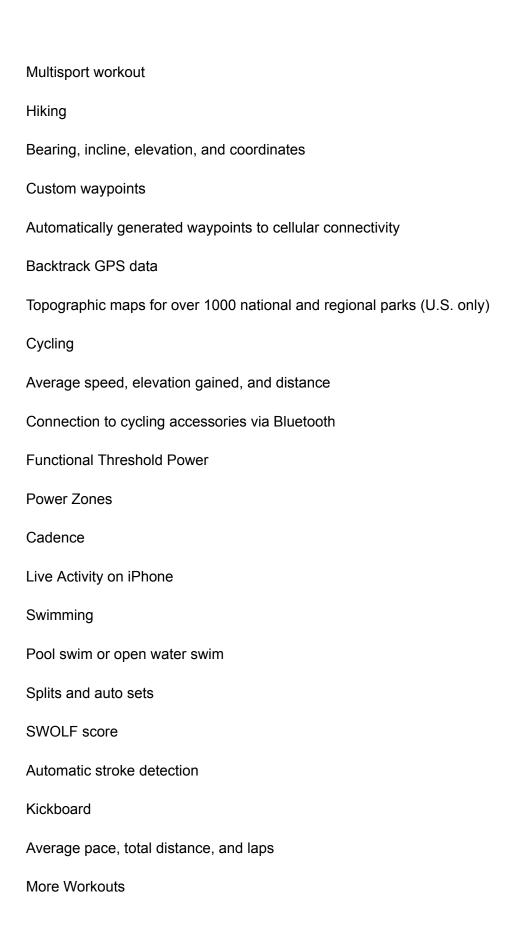
Workouts and Activity
Running

Custom interval workouts

Customizable Workout Views

Heart Rate Zones

Race Route

Stride length, ground contact time, and vertical oscillation

Automatic track detection

Multisport workout

Hiking

Bearing, incline, elevation, and coordinates

Custom waypoints

Automatically generated waypoints to cellular connectivity

Backtrack GPS data

Topographic maps for over 1000 national and regional parks (U.S. only)

Cycling

Average speed, elevation gained, and distance

Connection to cycling accessories via Bluetooth

Functional Threshold Power

Power Zones

Cadence

Live Activity on iPhone

Swimming

Pool swim or open water swim

Splits and auto sets

SWOLF score

Automatic stroke detection

Kickboard

Average pace, total distance, and laps

More Workouts

Walk

Elliptical

Rower

Stair Stepper

HIIT

Yoga

Functional Strength Training

Dance

Cooldown

Core Training

Pilates

Tai Chi

Wheelchair

Kickboxing

Multisport

Other

Safety
Emergency SOS7

International emergency calling8

Crash Detection7

Fall Detection

Durability
Water resistance 50m (swimproof)9

Dust resistance IP6X10

Connectivity
L1 GPS, GNSS, Galileo, and BeiDou

LTE and UMTS11

Wi-Fi 4 (802.11n)

Bluetooth 5.3

Second-generation Ultra Wideband chip12

Apple Pay

GymKit

Supports Apple Watch For Your Kids13

Accessibility
Built-in accessibility features supporting vision, mobility, hearing, and cognitive disabilities.

Learn more about Accessibility

Features Include:

VoiceOver

Zoom

On/Off Labels

Reduce Transparency

Increase Contrast

Color Filters

Text Size

Bold Text

Reduce Motion

Hourly Chimes

AssistiveTouch

Button Click Speed

Touch Accommodations

Auto-Answer Calls

Type to Siri

RTT Support

Audio Volume Balance

Auto Transcription

Live Speech

Accessibility Shortcut

Mono Audio

Taptic Time

Personal Voice

Environmental Requirements
Operating temperature: 32° to 95° F (0° to 35° C)

Nonoperating storage temperature: −4° to 113° F (−20° to 45° C)

Relative humidity: 5% to 90% noncondensing

Operating altitude: 0 feet to 10,000 feet (0m to 3000m)

Apple Watch Series 9 and the Environment
Apple Watch Series 9 is designed to reduce environmental impact:14

See the Apple Watch Series 9 (Aluminum) Product Environmental Report (PDF)

See the Apple Watch Series 9 (Stainless Steel) Product Environmental Report (PDF)

Progress toward Apple 2030

Apple Watch Series 9 with aluminum case and Sport Loop is one of Apple's first carbon neutral products:

30% recycled or renewable content[15]

100% of manufacturing electricity sourced from clean electricity[16]

50% or more shipped without airplanes[17]

78% emissions reduction against baseline[18]

8.1 kg CO2e total remaining emissions covered by high-quality carbon credits[19]

See Apple's commitment

Materials

100% recycled aluminum in the case

100% recycled cobalt in the battery[20]

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

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

100% recycled tungsten and copper wire in the Taptic Engine

100% recycled rare earth elements in all magnets

100% recycled copper foil in the main logic board

26% renewable plastic in the speaker

100% fiber-based packaging[21]

47% recycled content in fiber packaging

Energy

100% of manufacturing electricity for carbon neutral Apple Watch Series 9 with aluminum case and Sport Loop is sourced from clean electricity

100% of expected customer energy use matched with clean electricity[22]

Meets California Energy Commission's energy efficiency standards for battery charger systems[23]

Waste

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

Smarter chemistry[24]

Arsenic-free display glass

Mercury-, BFR-, and PVC-free

Meets European REACH regulation on nickel

Compatibility
iPhone Xs or later with iOS 17 or later

In the Box
Apple Watch Series 9

Band

Apple Watch Magnetic Fast Charger to USB-C Cable (1m)

The temperature sensing feature is not intended for medical use.

The ECG app is available on Apple Watch Series 4 and later (excluding Apple Watch SE) and can generate an ECG similar to a single-lead electrocardiogram. Intended for use by people 22 years old and over.

The Cycle Tracking app should not be used for birth control or to diagnose a health condition.

Irregular rhythm notification requires the latest version of watchOS and iOS. It is not intended for use by people under 22 years old or those who have been previously diagnosed with atrial fibrillation (AFib).

All-day battery life is based on the following use: 90 time checks, 90 notifications, 45 minutes of app use, and a 60-minute workout with music playback from Apple Watch via Bluetooth, over the course of 18 hours; Apple Watch Series 9 (GPS) usage includes connection to iPhone via

Bluetooth during the entire 18-hour test; Apple Watch Series 9 (GPS + Cellular) usage includes a total of 4 hours of LTE connection and 14 hours of connection to iPhone via Bluetooth over the course of 18 hours. Battery life in Low Power Mode is based on the following use: 180 time checks, 180 notifications, 90 minutes of app use, and a 60-minute workout with music playback from Apple Watch via Bluetooth, over the course of 36 hours; Apple Watch Series 9 (GPS) usage includes connection to iPhone via Bluetooth during the entire 36-hour test; Apple Watch Series 9 (GPS + Cellular) usage includes on-demand LTE connection and 28 hours of connection to iPhone via Bluetooth over the course of 36 hours. Testing conducted by Apple in August 2023 using preproduction Apple Watch Series 9 (GPS) and Apple Watch Series 9 (GPS + Cellular), each paired with an iPhone; all devices tested with prerelease software. Battery life varies by use, configuration, cellular network, signal strength, and many other factors; actual results will vary.

Charge times are from 0–80% and 0–100% using the included Apple Watch Magnetic Fast Charging USB-C Cable. Testing conducted by Apple in August 2023 using preproduction Apple Watch Series 9 (GPS) and Apple Watch Series 9 (GPS + Cellular), each paired with an iPhone; all devices tested with prerelease software, Apple Watch Magnetic Fast Charging USB-C Cable (Model A2515), and Apple 20W USB-C Power Adapter (Model A2305). Charge time varies with region, settings, and environmental factors; actual results will vary.

Emergency SOS requires a cellular connection or Wi-Fi calling with an internet connection from your Apple Watch or nearby iPhone.

Requires Apple Watch Series 7, SE, Ultra, or later. For a list of supported countries and regions, see apple.com/watchos/feature-availability.

Apple Watch Series 9 has a water resistance rating of 50 meters under ISO standard 22810:2010. This means that it may be used for shallow-water activities like swimming in a pool or ocean. However, Apple Watch Series 9 should not be used for scuba diving, waterskiing, or other activities involving high-velocity water or submersion below shallow depth. Water resistance is not a permanent condition and can diminish over time. For additional information see support.apple.com/en-us/HT205000.

Apple Watch Series 9 is rated IP6X dust resistant.

Wireless service plan required for cellular service. Contact your service provider for more details. Connection may vary based on network availability. Check apple.com/watch/cellular for participating wireless carriers and eligibility. See support.apple.com/HT207578 for additional setup instructions.

Ultra Wideband availability varies by region.

Not all features will be available if the Apple Watch is set up through Apple Watch For Your Kids. Wireless service plan required for cellular service. Contact your service provider for more details. Check apple.com/watch/cellular for participating wireless carriers and eligibility.

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.

Our manufacturing electricity is sourced from clean electricity, including a mix of supplier and Apple clean energy projects.

50% of all carbon neutral products by weight are planned, as of product launch, to be shipped via non-air modes of transportation over the lifetime of the products.

Carbon reductions are calculated against a baseline scenario: 1) No use of clean electricity for manufacturing or product use, beyond what is already available on the latest modeled 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 transportation modes (air, rail, ocean, ground) by product line across three years (fiscal years 2017 to 2019) to best capture the baseline transportation emissions of our products.

For more information about our use of carbon credits, please see the Product Environmental Report.

All cobalt claims are on a mass balance allocation.

Based on retail packaging as shipped by Apple. Breakdown of U.S. retail packaging by weight. Adhesives, inks, and coatings are excluded from our calculations of plastic content and packaging weight.

Apple is matching 100% of expected electricity consumption only for carbon neutral aluminum Apple Watch Series 9, Apple Watch SE, and Apple Watch Ultra 2 combinations.

Apple Watch Series 9 meets California Energy Commission's Energy Efficiency Standards for Small Battery Charger Systems as outlined in the California Code of Regulations.

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 cords in India, Thailand (for two-prong AC power cords), and South 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.

The ability to measure blood oxygen is no longer available on Apple Watch units sold by Apple in the United States beginning January 18, 2024. These are indicated with part numbers ending in LW/A. Learn how to identify your Apple Watch.

Apple Watch Ultra 2, Apple Watch Series 9, and Apple Watch SE require iPhone Xs or later with iOS 17 or later.