



OMEN MAX Gaming Laptop 16-ak0020ca (B81K4UA)

Overview



Built to surpass limits

The OMEN 16 MAX gaming laptop provides unparalleled performance both at-home or on-the-go. With next-gen NVIDIA® GPUs and AMD Ryzen™ AI CPUs[1], a new Unleashed Mode for manual overclocking, and a thermal architecture built to cut down on both throttling and long term wear, dedicated gamers can achieve their best for years to come.



Performance you control

Throttle less and carry more with the latest AMD Ryzen™ AI CPUs[1] and next-gen NVIDIA® RTX™ graphics.



Instant pair with HyperX

Seamlessly connect up to three compatible HyperX devices to your laptop at once with Instant Pair.



Put your throttling on ice

Self-cleaning fans, a vapor chamber, and liquid metal ensure your laptop stays cool and reduces maintenance.



Light the way you play

Customize your lattice-less RGB keyboard and other lighting options in OGH to represent your unique style.

Features



Get a fresh perspective

From a rejuvenated Start menu, to new ways to connect to your favorite people, news, games, and content—Windows 11 is the place to think, express, and create in a natural way.^[2]



Wide Quad Extended Graphics Array Display

Get lost in the captivating definition with 2560 × 1600 pixels.^[5]

3ms response time

How fast your display's pixels respond is crucial for a smooth picture. With a 3-millisecond response time, your action-filled content will look crisp and fluid without motion blur.^[7]



AMD Ryzen™ AI 300 Series processors with AMD Radeon™ graphics

Dive into a world of generative AI tools and digital assistants on advanced AI PCs powered by AMD Ryzen™ AI 300 series processors (on select models).^[3]

Eyesafe® Certified Display

Eyesafe® certified displays meet TÜV low blue light requirements and Eyesafe® standards for protecting your eyes from harmful blue light without distorting colors to reduce eyestrain when working for long periods of time.^[6]

Flicker-free

Using DC Dimming technology that controls brightness by adjusting direct current rather than cycling the backlight, we can eliminate screen flickering for more comfortable viewing.^[8]

[1] Multi-core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. AMD's numbering is not a measurement of clock speed. Max Boost clock frequency performance varies depending on hardware, software and overall system configuration. Features and software that require a NPU may require software purchase, subscription or enablement by a software or platform provider, and third-party software may have specific configuration or compatibility requirements. Potential NPU inferencing performance varies by use, configuration, software and other factors.

[2] Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows is automatically updated and enabled. High speed internet and Microsoft account required. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.

[3] Multi-core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. AMD's numbering is not a measurement of clock speed.

[5] WQXGA content is required to view WQXGA images.

[6] All performance specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower. Eyesafe® Display for Low

Blue Light is the Display Compliance Test Specification quality. See <https://eyesafe.com> for more details. Display measured diagonally

[7] All performance specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary, either higher or lower.

[8] The flicker-free capability eliminates screen flickering through integrating DC-dimming LED backlights.

Specifications

Operating system	Windows 11 Home
Product color	Shadow black aluminum
Processor family	AMD Ryzen™ AI 9 processor
Processor	AMD Ryzen™ AI 9 HX 375 (up to 5.1 GHz max boost clock, 24 MB L3 cache, 12 cores, 24 threads) ^[6,7]
Chipset	AMD integrated SoC
Memory	32 GB DDR5-5600 MT/s (2 x 16 GB)
Internal Storage	1 TB PCIe® Gen4 NVMe™ M.2 SSD
Product design	Sandblasted and paint finish
Graphics	Discrete
Graphics (discrete)	NVIDIA® GeForce RTX™ 5070 Laptop GPU (8 GB GDDR7 dedicated)
Graphics	Integrated
Graphics (integrated)	AMD Radeon™ 890M Graphics
Display	40.6 cm (16") diagonal, WQXGA (2560 x 1600), 60-240 Hz, 3 ms response time, IPS, micro-edge, anti-glare, Low Blue Light, 500 nits, 100% sRGB
Display	16" diagonal, WQXGA (2560 x 1600), 60-240 Hz, 3 ms response time, IPS, micro-edge, anti-glare, Low Blue Light, 500 nits, 100% sRGB
Display size (diagonal)	40.6 cm (16")
Display size (diagonal)	16"
Audio	DTS:X® Ultra; Dual speakers; HP Audio Boost; HyperX
Dimensions (W x D x H)	35.65 x 26.9 x 2.29 cm (front); 35.65 x 26.9 x 2.75 cm (rear)
Dimensions (W x D x H)	14.04 x 10.59 x 0.9 in (front); 14.04 x 10.59 x 1.08 in (rear)
Weight	2.48 kg
Weight	5.48 lb
Keyboard	Full-size, per key RGB backlit, shadow black keyboard with numeric keypad and NKRO Anti-Ghosting Key technology
Pointing device	HP Imagepad
Input devices	IR thermal sensor
Camera	HP True Vision 1080p FHD IR camera with temporal noise reduction and integrated dual array digital microphones
Ports	2 USB Type-A 10Gbps signaling rate; 1 AC smart pin; 1 HDMI 2.1; 1 headphone/microphone combo; 1 RJ-45; 2 USB Type-C® 40Gbps signaling rate (USB Power Delivery 3.1, DisplayPort™ 2.1, HP Sleep and Charge) ^[19,42]
Package dimensions (W x D x H)	9.4 x 42.8 x 33.2 cm
Package weight	4.74 kg

Network interface	Integrated 10/100/1000 GbE LAN
Wireless	MediaTek Wi-Fi 7 MT7925 (2x2) and Bluetooth® 5.4 wireless card
Power supply type	280 W Smart AC power adapter
Battery type	6-cell, 83 Wh Li-ion polymer ([23])
Battery recharge time	Supports battery fast charge: approximately 50% in 30 minutes ^[5]
Energy star certified	ENERGY STAR® certified
Sustainable impact specifications	Ocean-bound plastic in bezel; Keyboard keycaps and scissors contain post-consumer recycled plastic; Recycled metal in cover and hinge cap(s)
Security management	Camera privacy shutter; Trusted Platform Module (Firmware TPM) support
Software included	McAfee Online Protection 30-day trial
Software - Productivity & finance	1 month trial for new Microsoft 365 customers ^[24]
Cloud service	25 GB Dropbox storage for 12 months ^[1]
UPC number	198990364506

Additional specifications

Aspect ratio	16:10
Battery capacity	83
Battery capacity uom	Wh
Battery cells number	6
Battery type	Li-ion polymer
Bluetooth version	Bluetooth® 5.4
Brightness	500 nits
Camera Infrared	IR
Camera brand	HP True Vision
Camera microphone	integrated dual array digital microphones
Camera resolution (vertical)	1080p
Camera resolution standard	FHD
Color	Shadow black
Color gamut	100% sRGB
Display	40.6 cm (16") diagonal WQXGA display
Display	16" diagonal WQXGA display
Display bezel	Micro-edge
Display brightness	500
Display brightness uom	nits
Display panel technology	IPS
Display refresh rate	240
Display refresh rate uom	Hz
Display resolution (pixels)	2560 x 1600
Display resolution standard	WQXGA
Display response time	3
Display response time uom	ms
Display size (diagonal) uom	"
Display size (diagonal, imperial)	16
Display size (diagonal, metric)	40.6
Display size (diagonal, metric) uom	cm
Display surface treatment	Anti-glare
ECC memory	non-ECC
Ecolabels	EPEAT® Gold with Climate+

Ethernet (RJ-45)	1
Flicker-free	Yes ^[45]
Graphics card brand	NVIDIA®
Graphics card family	GeForce
Graphics card memory size	8
Graphics card memory size uom	GB
Graphics card memory type	GDDR7
HDMI out – version	2.1
HDMI –out	1
Headphone/microphone combo	1
Keyboard backlight	RGB backlit
Keyboard backlit zone	per key
Keyboard color	Shadow black
Keyboard keypad	Numeric keypad
Keyboard size	Full-size
Keyboard technology	NKRO Anti-Ghosting Key technology
Memory and storage	32 GB memory;1 TB SSD storage
Memory layout (slots & size)	2 x 16 GB
Memory module type	SODIMM
Memory size	32
Memory size uom	GB
Memory speed	5600
Memory speed uom	MT/s
Memory type	DDR5
Model Number	RTX™ 5070
Neural Processing Unit	AMD Ryzen™ AI (55 NPU TOPS)
Number of User-accessible Memory Slots	2
Number of memory slots	2
Package depth, imperial (most common size)	16.85
Package depth, metric (most common size)	42.8
Package dimensions (W x D x H)	3.7 x 16.85 x 13.07 in
Package height, imperial (most common size)	13.07
Package height, metric (most common size)	33.2

Package weight	10.45 lb
Package width, imperial (most common size)	3.7
Package width, metric (most common size)	9.4
Packaging unit of measure (imperial)	in
Packaging unit of measure (metric)	cm
Playbook TS icon OS	https://h10003.www1.hp.com/digmedialib/prodimg/lowres/c03905482.png
Playbook TS icon battery life	https://h10003.www1.hp.com/digmedialib/prodimg/lowres/c03905264.png
Playbook TS icon connectivity	https://h10003.www1.hp.com/digmedialib/prodimg/lowres/c08201987.png
Playbook TS icon dimensions NB	https://h10003.www1.hp.com/digmedialib/prodimg/lowres/c08250394.png
Playbook TS icon display NB	https://h10003.www1.hp.com/digmedialib/prodimg/lowres/c08205649.png
Playbook TS icon graphics	https://h10003.www1.hp.com/digmedialib/prodimg/lowres/c08169202.png
Playbook TS icon memory	https://h10003.www1.hp.com/digmedialib/prodimg/lowres/c08267700.png
Playbook TS icon processor	https://h10003.www1.hp.com/digmedialib/prodimg/lowres/c08201972.png
Playbook TS icon storage	https://h10003.www1.hp.com/digmedialib/prodimg/lowres/c08192819.png
Playbook TS icon weight imperial	https://h10003.www1.hp.com/digmedialib/prodimg/lowres/c05790117.png
Playbook TS icon weight metric	https://h10003.www1.hp.com/digmedialib/prodimg/lowres/c08267650.png
Processor Brand	AMD
Processor NPU Tops	55
Processor cache	24 MB L3
Processor core	12
Processor family	Ryzen™ AI
Processor maximum frequency	5.1
Processor maximum frequency uom	GHz
Processor model	9 HX 375
Processor threads	24
Product brand name	HP
Product long name specifications	OMEN MAX Gaming Laptop 16-ak0020ca, Windows 11 Home, 16", AMD Ryzen™ AI, 32GB RAM, 1TB SSD, NVIDIA® GeForce RTX™ 5070, WQXGA, Shadow black
Product long name specifications V2	OMEN MAX Gaming Laptop 16, Windows 11 Home, 16", AMD Ryzen™ AI, 32GB RAM, 1TB SSD, NVIDIA® GeForce RTX™ 5070, WQXGA, Shadow black
Product short name specifications	OMEN MAX Gaming Laptop 16-ak0020ca, 16", AMD Ryzen™ AI, 32GB RAM, 1TB SSD

Screen-to-body ratio (without speakers)	88.81% ^[18]
Storage capacity	1
Storage capacity uom 01	TB
Storage form factor 01	M.2
Storage interface 01	PCIe® Gen 4
Storage interface protocol 01	NVMe™
Storage type	SSD
Storage type 01	SSD
Touchscreen	No
UNSPSC code	43211503
USB Type-A	2
USB Type-C	2
Wireless Model	MT7925
Wireless antenna	2x2
Wireless standard	Wi-Fi 7
Wireless supplier	MediaTek

[1] 25 GB of free Dropbox storage for 12 months from date of registration. For complete details and terms of use, including cancellation policies, visit the Dropbox website at <https://www.dropbox.com/help/space/hp-promotion>. Internet service required and not included.

[5] Recharges your battery up to 50% within 30 minutes when the system is off using “shut down” command, using HP adapter provided with the notebook or recommended power adapter disclosed in specifications (see <http://store.hp.com>). After charging has reached 50% capacity, charging speed will return to normal speed. Charging time may vary +/-10% due to System tolerance. Available on select HP products.

[6] Multi-core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. AMD’s numbering is not a measurement of clock speed.

[7] Max Boost clock frequency performance varies depending on hardware, software and overall system configuration.

[18] Percent of active plus nonactive viewing area to active viewing area plus border. Measure with lid vertical to the desk.

[19] For best results with HP Sleep and Charge, use a USB charging protocol standard cable or cable adapter with an external device.

[24] Must activate within 180 days of Windows activation.

[42] For optimal performance and battery chargeability while gaming and rendering, use the power adapter that ships with the PC. You can use the 100W/20V Type-C adapter or power bank when running light loading tasks. System-off charging is only supported on 20V Type-C adapter or power bank.

[45] The Flicker-free capability is eliminating screen flickering through integrating DC-dimming LED backlights or LED emissions. OLED panel is functional with DC-DIMMING when above 100nits.

Accessories for PC

Power

★ : Recommended

Power Adapters

HP 140W USB-C Laptop Charger

B7NK0AA

HP 140W USB-C Laptop Charger

B7NM4AA

HP 330W Smart AC Adapter

BF7A6AA

HP 330W Smart AC Adapter

BF7C7AA

Monitors

HP Home Monitors

★ : Recommended

OMEN by HP Displays

OMEN 27 inch FHD 180Hz Gaming Monitor - OMEN 27 G2	AV4K1AA
OMEN 27 inch FHD 180Hz Gaming Monitor - OMEN 27 G2	AV4K1AS
OMEN 27 inch FHD 180Hz Gaming Monitor - OMEN 27 G2	AV4K1E9
OMEN 27 inch FHD 180Hz Gaming Monitor - OMEN 27 G2	AV4K2A6
OMEN 27 inch FHD 180Hz Gaming Monitor - OMEN 27 G2	AV4K2AA
OMEN 27 inch QHD 180Hz Gaming Monitor - OMEN 27q G2	AV4H6AA
OMEN 27 inch QHD 180Hz Gaming Monitor - OMEN 27q G2	AV4H6AS
OMEN 27 inch QHD 180Hz Gaming Monitor - OMEN 27q G2	AV4H6E9
OMEN 27 inch QHD 180Hz Gaming Monitor - OMEN 27q G2	AV4H7A6
OMEN 27 inch QHD 180Hz Gaming Monitor - OMEN 27q G2	AV4H7AA
OMEN 27 inch QHD 280Hz Gaming Monitor - OMEN 27qs G2	AW3V0AA
OMEN 27 inch QHD 280Hz Gaming Monitor - OMEN 27qs G2	AW3V0AS
OMEN 27 inch QHD 280Hz Gaming Monitor - OMEN 27qs G2	AW3V0E9
OMEN 27 inch QHD 280Hz Gaming Monitor - OMEN 27qs G2	AW3V1A6
OMEN 27 inch QHD 280Hz Gaming Monitor - OMEN 27qs G2	AW3V1AA
OMEN 34 inch WQHD 180Hz Curved Gaming Monitor - OMEN 34c G2	AV4C1AA
OMEN 34 inch WQHD 180Hz Curved Gaming Monitor - OMEN 34c G2	AV4C1AS
OMEN 34 inch WQHD 180Hz Curved Gaming Monitor - OMEN 34c G2	AV4C1E9
OMEN 34 inch WQHD 180Hz Curved Gaming Monitor - OMEN 34c G2	AV4E7A6
OMEN 34 inch WQHD 180Hz Curved Gaming Monitor - OMEN 34c G2	AV4E7AA
OMEN Transcend 31.5 inch UHD 240Hz OLED Gaming Monitor - OMEN Transcend 32	9R181AA
OMEN Transcend 31.5 inch UHD 240Hz OLED Gaming Monitor - OMEN Transcend 32	9R181E9
OMEN by HP 23.8 inch FHD 165Hz Gaming Monitor - OMEN 24	780D9AA
OMEN by HP 23.8 inch FHD 165Hz Gaming Monitor - OMEN 24	780D9AS
OMEN by HP 23.8 inch FHD 165Hz Gaming Monitor - OMEN 24	780D9E9
OMEN by HP 23.8 inch FHD 165Hz Gaming Monitor - OMEN 24	780F0A6
OMEN by HP 23.8 inch FHD 165Hz Gaming Monitor - OMEN 24	780F0AA
OMEN by HP 27 inch FHD 165Hz Gaming Monitor - OMEN 27	780F9AA
OMEN by HP 27 inch FHD 165Hz Gaming Monitor - OMEN 27	780F9AS

OMEN by HP 27 inch FHD 165Hz Gaming Monitor - OMEN 27	780F9E9
OMEN by HP 27 inch FHD 165Hz Gaming Monitor - OMEN 27	780G0AA
OMEN by HP 27 inch FHD 240Hz Gaming Monitor - OMEN 27s	780G5AA
OMEN by HP 27 inch FHD 240Hz Gaming Monitor - OMEN 27s	780G5AS
OMEN by HP 27 inch FHD 240Hz Gaming Monitor - OMEN 27s	780G5E9
OMEN by HP 27 inch FHD 240Hz Gaming Monitor - OMEN 27s	780G6AA
OMEN by HP 27 inch QHD 165Hz Gaming Monitor - OMEN 27q	780H4AA
OMEN by HP 27 inch QHD 165Hz Gaming Monitor - OMEN 27q	780H4AS
OMEN by HP 27 inch QHD 165Hz Gaming Monitor - OMEN 27q	780H4E9
OMEN by HP 27 inch QHD 165Hz Gaming Monitor - OMEN 27q	780H5AA
OMEN by HP 27 inch QHD 240Hz Gaming Monitor - OMEN 27qs	780J4AA
OMEN by HP 27 inch QHD 240Hz Gaming Monitor - OMEN 27qs	780J4AS
OMEN by HP 27 inch QHD 240Hz Gaming Monitor - OMEN 27qs	780J4E9
OMEN by HP 27 inch QHD 240Hz Gaming Monitor - OMEN 27qs	780J5AA
OMEN by HP 27 inch UHD 144Hz Gaming Monitor - OMEN 27k	780G8AA
OMEN by HP 27 inch UHD 144Hz Gaming Monitor - OMEN 27k	780G8AS
OMEN by HP 27 inch UHD 144Hz Gaming Monitor - OMEN 27k	780G8E9
OMEN by HP 27 inch UHD 144Hz Gaming Monitor - OMEN 27k	780G9AA
OMEN by HP 31.5 inch QHD 165Hz Curved Gaming Monitor - OMEN 32c	780K6AA
OMEN by HP 31.5 inch QHD 165Hz Curved Gaming Monitor - OMEN 32c	780K6AS
OMEN by HP 31.5 inch QHD 165Hz Curved Gaming Monitor - OMEN 32c	780K6E9
OMEN by HP 31.5 inch QHD 165Hz Curved Gaming Monitor - OMEN 32c	780K7AA
OMEN by HP 31.5 inch QHD 165Hz Gaming Monitor - OMEN 32q	780K0AA
OMEN by HP 31.5 inch QHD 165Hz Gaming Monitor - OMEN 32q	780K0AS
OMEN by HP 31.5 inch QHD 165Hz Gaming Monitor - OMEN 32q	780K0E9
OMEN by HP 31.5 inch QHD 165Hz Gaming Monitor - OMEN 32q	780K1AA
OMEN by HP 31.5 inch UHD 144Hz Smart Gaming Monitor - OMEN 32x	99Z68AA
OMEN by HP 31.5 inch UHD 144Hz Smart Gaming Monitor - OMEN 32x	99Z68AS
OMEN by HP 31.5 inch UHD 144Hz Smart Gaming Monitor - OMEN 32x	99Z68E9
OMEN by HP 31.5 inch UHD 144Hz Smart Gaming Monitor - OMEN 32x	99Z69AA
OMEN by HP 34 inch WQHD 165Hz Curved Gaming Monitor - OMEN 34c	780K8AA
OMEN by HP 34 inch WQHD 165Hz Curved Gaming Monitor - OMEN 34c	780K8AS
OMEN by HP 34 inch WQHD 165Hz Curved Gaming Monitor - OMEN 34c	780K8E9
OMEN by HP 34 inch WQHD 165Hz Curved Gaming Monitor - OMEN 34c	780K9AA

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