ProductSheet
OMEN by HP Laptop 16-b1020nr (641K5UA)

Lift Your Play Up. Way Up

Play your best from anywhere with the OMEN by HP 16.1" Gaming Laptop PC. Powered by a 12th Gen Intel® Core™ Processor[1] and NVIDIA® Graphics. Expand your gaming world with sharper and smoother visual experiences courtesy of a high-res, fast refresh rate display. Plus, OMEN Tempest Cooling Technology[2] prevents overheating even when your game heats up.

Stay cool under pressure
With OMEN Tempest Cooling technology[2] that prevents overheating, even when your game play heats up.

High-resolution, fast refresh rate display
Visually stunning featuring a 16.1" high-res, fast refresh rate display plus long battery life to play longer.

Customize your experience with OMEN Gaming Hub
Your one-stop shop to elevate gameplay, from controlling every little performance to lighting options and more.

Featuring

Get a fresh perspective
Windows 11 provides a calm and creative space where you can pursue your passions through a fresh experience. 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. [3]

A dynamic processor that adapts to you for superior multi-tasking performance
12th Gen Intel® Core™ processors distributes performance where you need it the most — saving you time and increasing your ability to do the things you actually want. [4]

The Ultimate Play
The GeForce RTX™ 3070 is powered by Ampere—NVIDIA's 2nd gen RTX architecture. Built with enhanced RT Cores and Tensor Cores, new streaming multiprocessors, and high-speed G6 memory, it gives you the power you need to rip through the most demanding games. [5]

NVIDIA® G-SYNC™
By synchronizing the refresh rates of your GPU and display, NVIDIA® G-SYNC™ technology delivers gameplay that's sharp, fluid, and stutter-free with minimal input lag.

QHD IPS antiglare display
Get lost in the captivating QHD resolution with IPS technology. Coupled with an antiglare screen to reduce light reflection, this display provides a remarkable entertainment experience. [6]

Specifications

Operating system	Windows 11 Home
Product color	Shadow black cover and base, shadow black aluminum keyboard frame
Processor family	12th Generation Intel® Core™ i7 processor
Processor	Intel® Core™ i7-12700H (up to 4.7 GHz with Intel® Turbo Boost Technology, 24 MB L3 cache, 14 cores, 20 threads) [6,7]
Chipset	Intel® Integrated SoC
Memory	16 GB DDR5-4800 MHz RAM (2 x 8 GB)
Internal Storage	512 GB PCIe® NVMe™ TLC M.2 SSD
Product design	Paint finish cover and base, sandblasted keyboard frame
Optical drive	Optical drive not included
Graphics	Discrete
Graphics (discrete)	NVIDIA® GeForce RTX™ 3070 Laptop GPU (8 GB GDDR6 dedicated)
Graphics	Integrated
Graphics (integrated)	Intel® Iris® Xᵉ Graphics
Display	40.9 cm (16.1") diagonal, QHD (2560 x 1440), 165 Hz, 3 ms response time, IPS, micro-edge, anti-glare, Low Blue Light, 300 nits, 100% sRGB
Display	16.1" diagonal, QHD (2560 x 1440), 165 Hz, 3 ms response time, IPS, micro-edge, anti-glare, Low Blue Light, 300 nits, 100% sRGB
Display size (diagonal)	40.9 cm (16.1")
Display size (diagonal)	16.1"
Audio	Audio by Bang & Olufsen; DTS:X® Ultra; Dual speakers; HP Audio Boost
Minimum dimensions (W x D x H)	36.92 x 24.8 x 2.3 cm *(Dimensions vary by configuration)*
Minimum dimensions (W x D x H)	14.54 x 9.76 x 0.91 in
Weight	Starting at 2.3 kg *(Weight varies by configuration)*
Weight	Starting at 5.09 lb
Keyboard	Full-size, per key RGB backlit, shadow black keyboard and 26-Key Rollover Anti-Ghosting Key technology
Pointing device	HP Imagepad with multi-touch gesture support; Precision Touchpad Support
Input devices	IR Thermal sensor
Camera	HP Wide Vision 720p HD camera with temporal noise reduction and integrated dual array digital microphones
Ports	1 Thunderbolt™ 4 with USB4™ Type-C® 40Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4, HP Sleep and Charge); 1 SuperSpeed USB Type-A 5Gbps signaling rate (HP Sleep and Charge); 2 SuperSpeed USB Type-A 5Gbps signaling rate; 1 HDMI 2.1; 1 mini DisplayPort™; 1 RJ-45; 1 AC smart pin; 1 headphone/microphone combo[19,20,42]
Expansion slots	1 multi-format SD media card reader
Package dimensions (W x D x H)	6.9 x 55.2 x 34.5 cm
Package weight	4.01 kg
Network interface	Integrated 10/100/1000 GbE LAN
Wireless	Intel® Wi-Fi 6E AX211 (2x2) and Bluetooth® 5.2 combo (Supporting Gigabit data rate)
Power supply type	230 W AC power adapter
Battery type	6-cell, 83 Wh Li-ion polymer
Battery life	Up to 6 hours and 15 minutes[3]
Battery recharge time	Supports battery fast charge: approximately 50% in 30 minutes[5]
Battery weight	0.69 lb
Battery weight	315 g
Ecolabels	EPEAT® registered
Energy star certified	ENERGY STAR® certified
Special features	NVIDIA G-SYNC™ technology
Sustainable impact specifications	Ocean-bound plastic in speaker enclosure(s); Recycled metal in keyboard frame and hinge cap(s); Keyboard keycaps made with post-consumer recycled plastic
Security management	Trusted Platform Module (Firmware TPM) support

Software included	McAfee LiveSafe™
Software – Productivity & finance	1 month trial for new Microsoft 365 customers[24]
Cloud service	25 GB Dropbox storage for 12 months[1]
UPC number	196548056385

Top Recommended Displays, Accessories and Services

OMEN by HP Displays

OMEN 27u 4K Gaming Monitor	3G6W0AA
OMEN 27u 4K Gaming Monitor	3G6W1AA
OMEN 27c QHD Curved 240Hz Gaming Monitor	35D67AA
OMEN 27c QHD Curved 240Hz Gaming Monitor	35D73AA
OMEN 25i Gaming FHD Monitor	22J05AA

Port Replicators

HP Universal USB-C Multiport Hub	50H55AA
HP Universal USB-C Multiport Hub	50H98AA

Mice

OMEN Vector Wireless Mouse	2B349AA
OMEN by HP Hard Mouse Pad 200	2VP01AA
OMEN by HP Mouse Pad 300	1MY15AA
OMEN by HP Reactor Mouse	2VP02AA
OMEN Vector Mouse	8BC53AA
OMEN by HP Mouse Pad 100	1MY14AA

Keyboards

OMEN by HP Sequencer Keyboard	2VN99AA
OMEN by HP Encoder Keyboard	6YW76AA

Speakers

HP Gaming Speakers X1000	8PB07AA

Headsets

OMEN Blast Headset	1A858AA

Headphones

OMEN Dyad Earbuds	8JE67AA

Messaging Footnotes

[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. Intel's numbering, branding and/or naming is not a measurement of higher performance.

[2] Thermal solution varies by configuration.

[3] 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.

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[6] Quad high-definition (QHD) content is required to view QHD images.

Technical Specifications Footnotes

[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.

[3] Windows MobileMark 18 Battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See https://bapco.com/products/mobilemark-2018/ for additional details.

[5] Recharges your battery up to 50% within 30 minutes when the system is off (using "shut down" command). Recommended for use with the HP adapter provided with the notebook, not recommended with a smaller capacity battery charger. 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. See http://store.hp.com for a full list of product features.

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[7] Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See http://www.intel.com/technology/turboboost/ for more information.

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

[20] SuperSpeed USB 20Gbps is not available.

[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.