

Overview

HP Elite Dragonfly Notebook PC



Left

- | | |
|---------------------------|---|
| 1. Internal Microphones | 6. Glass Clickpad |
| 2. IR Camera LEDs | 7. WWAN SIM (Nano) |
| 3. Webcam and IR Camera | 8. Nano Security Lock Slot (Lock sold separately) |
| 4. Privacy Camera Shutter | 9. Power Button |
| 5. Webcam LED | 10. USB 3.1 Gen 1 Charging Port |

NOTE: All units have a SIM card slot and icon but units that do not support WWAN are shipped with a non-removable SIM slot plug

Overview



Right

- | | | | |
|----|--------------------------------|----|-------------------------------|
| 1. | HDMI port (Cable not included) | 4. | USB Type-C™ with Thunderbolt™ |
| 2. | Audio Combo Jack | 5. | Touch Fingerprint Sensor |
| 3. | USB Type-C™ with Thunderbolt™ | | |

Overview

AT A GLANCE

- Precision Machined CNC Mg Unibody with Narrow borders, a chassis that is .63 inches (1.61 cm) thin and with a starting weight of 2.2 lbs. (1 Kg)¹
- A 360° convertible notebook with 4 usage modes
- Integrated HP Privacy Camera, with a physical shutter to protect from malicious surveillance
- Choice of 8th Generation Intel® Core™ i7, i5 and i3 processors
- Display choices include 33.78 cm (13.3") diagonal IPS FHD touch screen or UHD HDR-400 touch screen. Brightness choices up to 1000 Nits. Get added protection in open or public places with the optional HP Sure View Gen3 integrated privacy screen²
- Ultimate connectivity with 4G/LTE WWAN, WLAN, USB Type-C™, USB Type-A, HDMI and Thunderbolt™ Docking
- Engage teams, clients, and vendors with the crystal-clear audio by Bang & Olufsen and the high-performance HP Premium Collaboration Keyboard
- The updated optional HP Rechargeable Active Pen G3
- Never forget your password with your choice of simple authentication methods, including the IR camera for face recognition and Touch Fingerprint Sensor for Windows Hello
- Choice of solid state drives up to 2 TB
- DDR3 Memory up to 16 GB
- Up to 24 hours 30 mins of battery life (FHD, 4-cell 56 WHr battery) and Up to 14 hours of battery life (UHD, 4-cell 56 WHr battery)³
- Preinstalled with Windows 10 versions or FreeDOS
- Undergoes 19 MIL-STD 810g tests⁴

1. Starting weight less than 1kg is only available in certain configurations.

2. Touch-enabled display and Sure View privacy panel will lower actual brightness.

3. Windows 10 MM14 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 <http://www.bapco.com> for additional details

4. MIL-STD-810G testing is conducted on all HP EliteBook products. Testing is not intended to demonstrate fitness of U.S. Department of Defense (DoD) contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Accidental damage requires an optional HP Accidental Damage Protection Care Pack

NOTE: See important legal disclosures for all listed specs in their respective features sections.

Technical Specifications

PRODUCT NAME

HP Elite Dragonfly Notebook PC

OPERATING SYSTEM

Preinstalled	Windows 10 Pro 64 ¹ Windows 10 Pro 64 (National Academic License) ² Windows 10 Home 64 ¹ Windows 10 Home Single Language 64 Windows 10 Pro (Windows 10 Enterprise available with a Volume Licensing Agreement) ¹ FreeDOS
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1. Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always applied and additional requirements may apply over time for updates. See <http://www.windows.com/>.
2. Some devices for academic use will automatically be updated to Windows 10 Pro Education with the Windows 10 Anniversary update. See <https://aka.ms/ProEducation> for Windows 10 Pro Education feature information.

PROCESSORS

- Intel® Core™ i7-8665U processor with Intel® UHD Graphics 620 (1.9 GHz base frequency, up to 4.8 GHz with Intel® Turbo Boost Technology, up to 8 MB L3 cache, 4 cores) supports Intel® vPro™ Technology^{3,4,5,6,7}
- Intel® Core™ i7-8565U processor with Intel® UHD Graphics 620 (1.8 GHz base frequency, up to 4.6 GHz with Intel® Turbo Boost Technology, up to 8 MB L3 cache, 4 cores)^{3,4,5}
- Intel® Core™ i5-8365U processor with Intel® UHD Graphics 620 Graphics (1.6 GHz base frequency, up to 4.1 GHz with Intel® Turbo Boost Technology, up to 8 MB L3 cache, 4 cores) supports Intel® vPro™ Technology^{3,4,5,6,7}
- Intel® Core™ i5-8265U processor with Intel® UHD Graphics 620 (1.6 GHz base frequency, up to 3.9 GHz with Intel® Turbo Boost Technology, up to 8 MB L3 cache, 4 cores)^{3,4,5}
- Intel® Core™ i3-8145U processor with Intel® UHD Graphics 620 (2.1 GHz base frequency, up to 3.9 GHz with Intel® Turbo Boost Technology, up to 6 MB L3 cache, 2 cores)^{3,4,5}

Processor Family	8th Generation Intel® Core™ i7 processor (i7-8665U, i7-8565U) ⁸ 8th Generation Intel® Core™ i5 processor (i5-8365U, i5-8265U) ⁸ 8th Generation Intel® Core™ i3 processor (i3-8145U) ⁸
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3. Multicore is designed to improve performance of certain software products. Not all customers or software applications will need use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software. Intel's numbering, branding and/or naming is not a measurement of higher performance.
4. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
5. Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See <http://www.intel.com/technology/turboboost> for more information.
6. Some functionality of vPro, such as Intel Active management technology and Intel Virtualization technology, requires additional hardware in order to run. Availability of future "virtual appliances" applications for Intel vPro technology is dependent on 3rd party software. Compatibility with future "virtual appliances" is yet to be determined.
7. For full Intel® vPro™ functionality, Windows, a vPro supported processor, vPro enabled chipset, vPro enabled WLAN card and network are required.
8. In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products with Intel® 8th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.

Technical Specifications

CHIPSET

Integrated with processor

GRAPHICS

Integrated
Intel® UHD Graphics 620

Supports
Support HD Decode, DX12, HDMI 1.4b⁸

8. HD content required to view HD images.

DISPLAY

Touch
33.8 cm (13.3") diagonal FHD IPS eDP + PSR BrightView WLED-backlit Ultraslim direct bonded touch screen with Corning® Gorilla NTSC (1920 x 1080)^{8,9,10}
33.8 cm (13.3") diagonal FHD IPS eDP + PSR BrightView WLED-backlit Ultraslim direct bonded touch screen with Corning® Gorilla View Integrated Privacy Screen, 1000 nits, 72% NTSC (1920 x 1080)^{8,9,10, 11,47}
33.8 cm (13.3") diagonal 4K IPS eDP + PSR BrightView WLED-backlit Ultraslim direct bonded touch screen with Corning® Gorilla® NTSC (3840 x 2160)^{8,9,10}

Displays support
Supports dual display through the dock

Display Size (Diagonal)
13.3", 33.8cm (13.3")

8. HD content required to view HD images.
9. Sold separately or as an optional feature.
10. Resolutions are dependent upon monitor capability, and resolution and color depth settings.
11. HP Sure View integrated privacy screen is an optional feature that must be configured at purchase and is designed to function in portrait orientation.
47. Touch-enabled display and Sure View privacy panel will lower actual brightness.

Technical Specifications

Docking station model	Total number of supported displays (Including the notebook display)	Max. resolutions supported	Dock Connectors	Technical limitations
HP UltraSlim Docking Station	3	Dual 2.5K @ 60Hz	2xDP, 1xVGA	Dual 2.5k only with both displays into DP
HP Thunderbolt Dock G2	3	Dual 4K @ 60Hz	2xDP, 1xVGA, 1xTB, 1xUSB-C alt-mode	Dual 4k (4096 x 2160) only with: <ul style="list-style-type: none">• 1 DP + TB port or• USB-C alt mode + TB port Dual 4K (3840 x 2160) with any of the DP, TB or USB-C alt mode video ports
HP Elite USB-C Dock G4	3	Dual 2K @ 60Hz Single 4K @ 60Hz (3840 x 1440)	1xHDMI, 2xDP	
HP USB-C Universal Dock	3	Dual 4K @ 60Hz Single 5K @ 60Hz	2xDP	
HP USB-C Travel Dock	2	Single 2K @ 60Hz	1xHDMI, 1xVGA	Single external display Only HDMI or VGA at the time
HP USB-C Mini Dock	2	Single 4K @ 30Hz	1xHDMI, 1xVGA	Single external display Only HDMI or VGA at the time

STORAGE AND DRIVES

Technical Specifications

Primary M.2 Storage

- 128 GB SATA-3 SS TLC¹²
- 256 GB PCIe® NVMe™ SS Value¹²
- 256 GB PCIe® Gen3x4 NVMe™ SS TLC¹²
- 256 GB SATA TLC SED OPAL 2¹²
- 256 GB Intel® PCIe® NVMe™ QLC M.2 SSD with 16 GB Intel® Optane™ memory H10^{12,13,14}
- 512 GB PCIe® NVMe™ SS Value¹²
- 512 GB PCIe® Gen3x4 NVMe™ SS TLC¹²
- 512 GB SATA TLC SED OPAL 2¹²
- 512 GB SATA-3 SS TLC FIPS-140-2¹²
- 512 GB Intel® PCIe® NVMe™ QLC M.2 SSD with 32 GB Intel® Optane™ memory H10^{12, 13,14}
- 1 TB PCIe® Gen3x4 NVMe™ SS TLC¹²
- 2 TB PCIe® Gen3x4 NVMe™ SS TLC¹²

12. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) recovery software.

13. Intel® Optane™ memory system acceleration does not replace or increase the DRAM in your system. Requires 8th Gen or higher processor, BIOS version with Intel® Optane™ supported, Windows 10 64-bit, and an Intel® Rapid Storage Technology (Intel® RST) driver.

14. Intel® Optane™ memory H10 only for Intel® PCIe® NVMe™ QLC M.2 SSD.

MEMORY

Maximum Memory

- 16 GB LPDDR3-2133 SDRAM

Memory

- 8 GB LPDDR3-2133 SDRAM
- 16 GB LPDDR3-2133 SDRAM

Memory Slots

- Memory soldered down
- Supports Dual Channel Memory
- System runs at: 2133

NETWORKING/COMMUNICATIONS

Technical Specifications

WLAN

Intel® AX200 Wi-Fi 6 (2x2) and Bluetooth® 5 Combo, vPro™^{15,47}
Intel® AX200 Wi-Fi 6 (2x2) and Bluetooth® 5 Combo, non-vPro™¹⁵

WWAN

Intel® XMM™ 7360 LTE-Advanced Cat 9¹⁶
Intel® XMM™ 7560 LTE-Advanced Pro Cat 16¹⁷

Miracast

Native Miracast Support¹⁸

Ethernet

No Direct Ethernet Support - Ethernet via HP accessories

15. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Not compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft and are not final. If the final specifications are released, it may affect the ability of the notebook to communicate with other 802.11ax devices.

16. WWAN module is an optional feature, requires factory configuration and requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.

17. Gigabit class Category 16 4G LTE module is optional and must be configured at the factory. Module designed for up to 1 Gbps download speeds. Carriers deploy 5 carrier aggregation and 100Mhz channel bandwidth, requires activation and separately purchased service contract. Connection speeds will vary due to network, location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.

18. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming devices.

47. For full Intel® vPro™ functionality, Windows, a vPro supported processor, vPro enabled chipset, vPro enabled WLAN card and vPro enabled BIOS are required.

AUDIO/MULTIMEDIA

Audio

Bang & Olufsen
4 Premium Stereo Speakers; 1609 x 2pcs, 1338 x 2pcs
Microphones (Multi Array including World-Facing 3rd Mic)
4 Discrete Amplifiers

Camera

Hybrid HD RGB 720p + IR Camera^{8,19}

Webcam

IR Camera
Camera Privacy Shutter

Sensors

Accelerometer
Magnetometer
Gyroscope
Ambient light sensor
Hall Sensor

8. HD content required to view HD images.
19. Internet access required.

Technical Specifications

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

HP Premium Collaboration Keyboard
Backlit, Spill-resistant, with HP Dura Keys

Pointing Device

Glass Clickpad
Microsoft Precision Touchpad Default Gestures Support

Function Keys

- F1 - Display Switching
- F2 - Sure View (blank if not supported)
- F3 - Brightness Down
- F4 - Brightness up
- F5 - Audio Mute
- F6 - Volume Down
- F7 - Volume Up
- F8 - Mic Mute
- F9 - Kybd Backlight
- F10 - NumLock
- F11 - Wireless
- F12 - Calendar
- > Share/Present
- > Pick Up/Accept/ Answer/Hold
- > Hang Up/Decline/ Reject
- > Delete
- > FN key lock

Hidden Function Keys:

- Fn+R = Break
- Fn+S = Sys Rq
- Fn+C = Scroll Lock
- Fn+E = Insert
- Fn+W = Pause

SOFTWARE AND SECURITY

Preinstalled Software

BIOS

- HP BIOSphere Gen5²⁰
- HP Drive Lock & Automatic Drive Lock²¹
- BIOS Update via Network
- Master Boot Record Security
- Power On Authentication
- Secure Erase²²
- Absolute Persistence Module²³
- Pre-boot Authentication

Software

Technical Specifications

HP Connection Optimizer
HP Image Assistant
HP Hotkey Support
HP JumpStart
HP Support Assistant²⁴
HP Noise Cancellation Software
Buy Office (sold separately)

Manageability Features

HP Driver Packs²⁵
HP System Software Manager (SSM)
HP BIOS Config Utility (BCU)
HP Client Catalog
HP Manageability Integration Kit Gen3²⁶

Client Security Software

HP Client Security Manager Gen5²⁷
HP Fingerprint Sensor²⁸
HP Power On Authentication
Windows Defender²⁹

Security Management

Pre-boot Authentication
TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified)
USB enable/disable (via BIOS)
Power-on password (via BIOS)
Setup password (via BIOS)
Support for chassis padlocks and cable lock devices
HP Sure Click³⁰
HP Sure Start Gen5³¹
HP Sure Run Gen2³²
HP Sure Recover Gen2³³
HP Sure Sense³⁴
HP Sure Admin

20. HP BIOSphere Gen5 is available on select HP Pro and Elite PCs. See product specifications for details. Features may vary depending on configurations.

21. HP Drive Lock & Automatic Drive Lock is not supported on NVMe drives

22. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation Erase does not support platforms with Intel® Optane™.

23. Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions range from terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/company/legal/agreements/computrace-agent> an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Drive Erase customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens for

24. HP Support Assistant requires Windows and Internet access.

25. HP Driver Packs not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.

26. HP Manageability Integration Kit can be downloaded from <http://www.hp.com/go/clientmanagement>.

27. HP Client Security Manager Gen5 requires Windows and is available on the select HP Pro and Elite PCs. See product specifications for details.

Technical Specifications

- 28. HP Fingerprint Sensor sold separately or as an optional feature.
 - 29. Windows Defender Opt in and internet connection required for updates.
 - 30. HP Sure Click is available on most HP PCs and supports Microsoft® Internet Explorer and Chromium™. Supported attachments include Microsoft Office (Word, Excel, PowerPoint) and PDF files in read only mode, when Microsoft Office or Adobe Acrobat are installed.
 - 31. HP Sure Start Gen5 is available on select HP PCs with Intel processors. See product specifications for availability.
 - 32. HP Sure Run Gen2: See product specifications for availability.
 - 33. HP Sure Recover Gen2: See product specifications for availability. Requires an open, wired network connection. Not available on units with multiple internal storage drives. You must back up important files, data, photos, videos, etc. before using HP Sure Recover to avoid data loss. HP Sure Recover (Gen1) does not support platforms with Intel® Optane™.
 - 34. HP Sure Sense requires Windows 10. See product specifications for availability. On units with WWAN shipping to China, HP Sure Sense is available via Softpaq download.
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POWER

Power Supply

HP Smart 65 W USB Type-C™ adapter³⁵
Supports HP Fast Charging (Up to 50% in 45 minutes)³⁶

Primary Battery

HP Long Life 2-cell, 38 Wh Li-ion polymer³⁷
HP Long Life 4-cell, 56.2 Wh Li-ion polymer³⁷

Power Cord

Duckhead power cord (C5NS), 1.0m, Sticker, Premium Black³⁵
Power Cord C5 Sticker, Premium 1.0m³⁵

Battery life

Up to 24 hours 30 mins of battery life (FHD, 4-cell 56 WHr battery)³⁸
Up to 14 hours of battery life (UHD, 4-cell 56 WHr battery)³⁸

Battery Weight

56Whr: Starting at 0.48 lb/.22 Kg
38Whr: Starting at 0.35 lb/.16 Kg

- 35. Availability may vary by country.
 - 36. Recharges the battery up to 50% within 45 minutes when the system is off or in standby mode. Power adapter with a minimum 65W output is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/-10% due to system configuration.
 - 37. Battery is internal and not replaceable by customer. Serviceable by warranty.
 - 38. Windows 10 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 <http://www.bapco.com> for additional details.
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WEIGHTS & DIMENSIONS

Technical Specifications

Product Weight

Starting at 2.2 lb (Does not include power adapter)³⁹
Starting at 0.99 kg (Does not include power adapter)³⁹

Product Dimensions (w x d x h)

11.98 x 7.78 x 0.63 in
30.43 x 19.75 x 1.61 cm

39. Weight will vary by configuration.

PORTS/SLOTS

Ports

- 2 Thunderbolt™ (USB Type-C™ connector, support Power Delivery 3.0)
- 1 USB 3.1 Gen 1 (Charging)
- 1 HDMI 1.4⁴⁰
- 1 External Nano SIM slot for WWAN⁴¹
- 1 Headphone/Microphone Combo

40. HDMI cable sold separately.
41. SIM slot is not user accessible without WWAN configuration.

SERVICE AND SUPPORT

HP Services offers 1-year limited warranties and 90 day software limited warranty options depending on country. Batteries have a limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform. Refer to <http://www.hp.com/support/batterywarranty/> for additional battery information. On-site service and extended coverage is also available. HP Care Packs are optional extended service contracts that go beyond the standard limited warranties. To choose the right level of service for your product, use the HP Care Pack Services Lookup Tool at: <http://www.hp.com/go/cpc>.⁴²

42. HP Care Packs are sold separately. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit <http://www.hp.com/go/cpc>. HP service is subject to applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service. Warranty provided with your HP Product.

COMPATIBILITY

HP USB-C Travel Dock	TC
HP Slim Wireless Keyboard and Mouse	TE
65W USB-C Power Adapter	1P
HP External Portable USB3.0 HDD	KE
HP Keyed Cable lock	TC

Technical Specifications

CERTIFICATION AND COMPLIANCE

ENERGY STAR® certified
EPEAT® 2019 Gold in U.S.⁴³
Low halogen⁴⁴
TCO 8.0 Certified

43. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit <http://www.epeat.net> for more information.

44. External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.

ENVIRONMENTAL & INDUSTRY

Eco-Label Certifications & declarations	This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks: <ul style="list-style-type: none">IT ECO declarationUS ENERGY STAR®EPEAT® Gold registered in the United States. Based on US EPEAT registration according to IEEE 1680.1-2018 EPEAT. Status varies by country. See http://www.epeat.net for more information.		
System Configuration	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a "Typically Configured Notebook"?		
Energy Consumption (in accordance with US ENERGY STAR® test method)	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)	5.92 W	6.03 W	6.02 W
Normal Operation (Long idle)	1.93 W	2.04 W	1.87 W
Sleep	0.49 W	0.47 W	0.49 W
Off	0.30 W	0.31 W	0.30 W
	Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.		
Heat Dissipation*	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation (Short idle)	20 BTU/hr	21 BTU/hr	21 BTU/hr
Normal Operation (Long idle)	6 BTU/hr	7 BTU/hr	6 BTU/hr
Sleep	1 BTU/hr	1 BTU/hr	2 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 BTU/hr
	Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.		
Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	Sound Power (L _{WAd} , bels)		Sound Pressure (L _{pAm} , decibels)

Technical Specifications

Typically Configured - Idle	2.6	15	
Fixed Disk - Random writes	3.2	27	
Longevity and Upgrading	This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include: <ul style="list-style-type: none">• 3 USB ports• 1 PC card slot (type I/II)• 1 ExpressCard/54 slot• 1 IEEE 1394 Port• 2 SODIMM memory slots• Optional expansion base docking station• 1 multi-bay II storage port• Interchangeable HDD Spare parts are available throughout the warranty period and or for up to "5"? years after the end of production.		
Batteries	This battery(s) in this product comply with EU Directive 2006/66/EC Batteries used in the product do not contain: Mercury greater the 1ppm by weight Cadmium greater than 20ppm by weight Battery size: CR2032 (coin cell) Battery type: Lithium		
Additional Information	<ul style="list-style-type: none">• This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.• This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.• This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).• This product is in compliance with the IEEE 1680.1 (EPEAT) standard at the <Silver> level, see http://www.epeat.net• Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.• This product contains 9.8% post-consumer recycled plastic (by wt.)• This product is 95.2% recycle-able when properly disposed of at end of life.		
Packaging Materials	External:	PAPER/Corrugated	264 g
	Internal:	PLASTIC/Polyethylene low density - LDPE	14 g
		PLASTIC/Polyethylene Expanded - EPE	38 g
		PLASTIC/Polypropylene - PP	3 g
Material Usage	This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf): <ul style="list-style-type: none">• Asbestos• Certain Azo Colorants• Certain Brominated Flame Retardants - may not be used as flame retardants in plastics• Cadmium• Chlorinated Hydrocarbons• Chlorinated Paraffins• Formaldehyde• Halogenated Diphenyl Methanes• Lead carbonates and sulfates• Lead and Lead compounds		

Technical Specifications

	<ul style="list-style-type: none">• Mercuric Oxide Batteries• Nickel - finishes must not be used on the external surface designed to be frequently handled or carried by the user.• Ozone Depleting Substances• Polybrominated Biphenyls (PBBs)• Polybrominated Biphenyl Ethers (PBBEs)• Polybrominated Biphenyl Oxides (PBBOs)• Polychlorinated Biphenyl (PCB)• Polychlorinated Terphenyls (PCT)• Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.• Radioactive Substances• Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)
Packaging Usage	<p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none">• Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.• Eliminate the use of ozone-depleting substances (ODS) in packaging materials.• Design packaging materials for ease of disassembly.• Maximize the use of post-consumer recycled content materials in packaging materials.• Use readily recyclable packaging materials such as paper and corrugated materials.• Reduce size and weight of packages to improve transportation fuel efficiency.• Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.
End-of-life Management and Recycling	<p>HP Inc. offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p> <p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.</p>
HP Inc. Corporate Environmental Information	<p>For more information about HP's commitment to the environment:</p> <p>Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html</p> <p>Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html</p> <p>ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf</p>

SYSTEM UNIT

Technical Specifications

Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	AC 15V (Type-C)
	Average Operating Power	Win10
	Integrated Graphics	Yes, Intel
	Max Operating Power	UMA<45 W
Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical)
	Non-operating	41° to 95° F (5° to 35° C) (writing optical)
Relative Humidity	Operating	32° to 95° F (0° to 35° C) (not writing optical)
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperat
Shock	Operating	40 G, 2 ms, half-sine
	Non-operating	240 G, 2 ms, half-sine
Random Vibration	Operating	0.75 grms
	Non-operating	1.50 grms
Altitude (unpressurized)	Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
Planned Industry Standard Certifications	UL	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR®	Yes ⁴⁵
	EPEAT®	EPEAT® 2019 Gold in U.S. ⁴⁶
	ICES	Yes
	Australia	Yes
	NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	KC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCI or BELUS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
	SABS	Yes

45. Configurations of the HP Elite Dragonfly Notebook PC that are ENERGY STAR® certified are identified as HP Elite Dragonfly Notebook PC with ENERGY STAR on HP websites and on <http://www.energystar.gov>.
46. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit <http://www.epeat.org> for more information.

DISPLAYS

Technical Specifications

Panel LCD 13.3 inch diagonal FHD (1920 x 1080) BrightView WLED UWVA 72% NTSC 400 nits eDP 1.4+PSR2 bent LP NWBZ	Outline Dimensions (W x H)	299.06 x 176.54 mm (max) (FPC folding included)
	Active Area	293.76 x 165.24 mm (typ.)
	Weight	175 g (max)
	Diagonal Size	13.3 inch
	Thickness	2.0mm / 3.8mm (PCB) (max)
	Interface	eDP 1.4
	Surface Treatment	BrightView
	Touch Enabled	Yes
	Contrast Ratio	1500:1 (typ.)
	Refresh Rate	60 Hz
	Brightness	400nits
	Pixel Resolution	1920 x 1080 (FHD)
	Format of LCD Pixel Arrangement	RGB Stripe
	Backlight	LED
	Color Gamut Coverage	72% of NTSC (sRGB 100%) (typ.)

Color Depth	8 bit
Viewing Angle	UWVA 85/85/85/85

Panel LCD 13.3 inch diagonal UHD (3840 x 2160) BrightView WLED UWVA HDR-400 sRGB 95% NTSC cg 550 nits eDP 1.4+PSR2 bent NWBZ	Outline Dimensions (W x H)	299.06 x 176.54 mm (max) (FPC folding included)
	Active Area	293.76 x 165.24 mm (typ.)
	Weight	200 g (max)
	Diagonal Size	13.3 inch
	Thickness	2.0mm / 3.8mm (PCB) (max)
	Interface	eDP 1.4
	Surface Treatment	BrightView
	Touch Enabled	Yes
	Contrast Ratio	1400:1 (typ.) 1000:1 (HDR off) (min)
	Refresh Rate	60 Hz
	Brightness	550 nits
	Pixel Resolution	3840 x 2160 (UHD)
	Format of LCD Pixel Arrangement	RGB Stripe
	Backlight	LED
	Color Gamut Coverage	sRGB 95% (min)

Color Depth	8 bits + 2 FRC
Viewing Angle	UWVA 85/85/85/85

Technical Specifications

Panel LCD 13.3 inch diagonal FHD (1920 x 1080) BrightView WLED UWVA 72% NTSC 1000 nits eDP 1.4+PSR2 bent Privacy NWBZ	Outline Dimensions (W x H)	299.06 x 177.54 mm (max) (FPC folding included)
	Active Area	293.76 x 165.24 mm (typ.)
	Weight	195 g (max)
	Diagonal Size	13.3 inch
	Thickness	3.8 mm (max)
	Interface	eDP 1.4 + PSR2 (4 lane)
	Surface Treatment	Bright-view (BV)
	Touch Enabled	Yes
	Contrast Ratio	2000:1 (typ.)
	Refresh Rate	60 Hz
	Brightness*	1000 nits
	Pixel Resolution	1920 x 1080 (FHD)
	Format of LCD Pixel Arrangement	RGB
	Backlight	LED
	Color Gamut Coverage	72% of NTSC
	Color Depth	8 bits
	Viewing Angle	UWVA 85/85/85/85

*Touch-enabled display and Sure View privacy panel will lower actual brightness.

STORAGE

SSD 128 GB 2280 M2 SATA-3 TLC	Form Factor	M.2 2280
	Capacity	128 GB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	ATA-8, SATA 3.0
	Maximum Sequential Read	Around 540 ~ 560 MB/s
	Maximum Sequential Write	Around 500 ~ 530 MB/s
	Logical Blocks	250,069,680
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	DIPM; TRIM; DEVSLP

Technical Specifications

SSD 1 TB 2280 PCIe-3x4 NVMe
Three Layer Cell single-sided

Form Factor	M.2 2280
Capacity	1 TB
NAND Type	TLC
Height	0.09 in (2.3 mm)
Width	0.87 in (22 mm)
Weight	0.02 lb (10 g)
Interface	PCIe NVMe Gen3X4
Maximum Sequential Read	Up To 2800 MB/s
Maximum Sequential Write	Up To 1600 MB/s
Logical Blocks	2,000,409,264
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
Features	ATA Security (Option); TRIM; L1.2

SSD 256 GB 2280 M2 PCIe-3x4
SS NVMe TLC

Form Factor	M.2 2280
Capacity	256 GB
NAND Type	TLC
Height	0.09 in (2.3 mm)
Width	0.87 in (22 mm)
Weight	0.02 lb (10 g)
Interface	PCIe NVMe Gen3X4
Maximum Sequential Read	2580 MB/s~ 2600 MB/s
Maximum Sequential Write	900 MB/s~ 1000 MB/s
Logical Blocks	500,118,192
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
Features	ATA Security (Option); TRIM; L1.2

SSD 256 GB 2280 M2 SATA-3 Self
Encrypted OPAL2 Three Layer
Cell

Form Factor	M.2 2280
Capacity	256 GB
NAND Type	TLC
Height	0.09 in (2.3 mm)
Width	0.87 in (22 mm)
Weight	0.02 lb (10 g)
Interface	ATA-8, SATA 3.0
Maximum Sequential Read	530 MB/s~ 560 MB/s
Maximum Sequential Write	500 MB/s~ 530 MB/s
Logical Blocks	500,118,192
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
Features	ATA Security; TCG OPAL 2.0; DIPM; TRIM; DEVSLP

Technical Specifications

SSD 2 TB 2280 PCIe-3x4 NVMe Three Layer Cell single-sided	Form Factor	M.2 2280
	Capacity	2 TB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Up To 3000 MB/s
	Maximum Sequential Write	Up To 2100 MB/s
	Logical Blocks	3,907,029,168
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security; TCG OPAL 2.0; DIPM; TRIM; DEVSLP

SSD 512 GB 2280 M2 PCIe-3x4 SS NVMe TLC	Form Factor	M.2 2280
	Capacity	512 GB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	2800 MB/s~ 2900 MB/s
	Maximum Sequential Write	1000 MB/s~ 1800 MB/s
	Logical Blocks	1,000,215,215
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security (Option); TRIM; L1.2

SSD 512 GB 2280 PCIe-3x4 NVMe Self Encrypted OPAL2 Three Layer Cell	Form Factor	M.2 2280
	Capacity	512 GB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	2800 MB/s~ 2900 MB/s
	Maximum Sequential Write	1000 MB/s~ 1800 MB/s
	Logical Blocks	1,000,215,215
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security (Option); TCG Opal 2.0; TRIM; L1.2

Technical Specifications

SSD 512 GB 2280 PCIe NVMe Value	Form Factor	M.2 2280
	Capacity	512 GB
	NAND Type	QLC/TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe
	Maximum Sequential Read	Up To 1700 MB/s
	Maximum Sequential Write	Up To 1500 MB/s
	Logical Blocks	1,000,215,215
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security; TRIM; L1.2
SSD 256 GB 2280 PCIe NVMe Value	Form Factor	M.2 2280
	Capacity	256 GB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe
	Maximum Sequential Read	Up To 1700 MB/s
	Maximum Sequential Write	Up to 1300 MB/s
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security, TRIM; L1.2
512 GB 2280 PCIe-3x2x2 NVMe+SSD 32 GB 3D Xpoint	Form Factor	M.2 2280
	Capacity	512 GB
	NAND Type	QLC+3D Xpoint
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe Gen3X2X2
	Maximum Sequential Read	Up To 2400 MB/s
	Maximum Sequential Write	Up To 1300 MB/s
	Logical Blocks	1,000,215,215
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security, TRIM; L1.2

Technical Specifications

256 GB 2280 PCIe-3x2x2 NVMe+SSD 16 GB 3D Xpoint	Form Factor	M.2 2280
	Capacity	256 GB
	NAND Type	QLC+3D Xpoint
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe Gen3X2X2
	Maximum Sequential Read	Up To 1450 MB/s
	Maximum Sequential Write	Up To 500 MB/s
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security, TRIM; L1.2

1. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) is reserved for system recovery software.

NETWORKING/COMMUNICATIONS

Intel® Wi-Fi 6 ⁴ AX200 and Bluetooth® 5.0 802.11ax (2 x 2) (Supporting gigabit file transfer speeds) vPro™1*	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v
	Frequency Band	<ul style="list-style-type: none">802.11b/g/n/ax 2.402 - 2.482 GHz802.11a/n/ac/ax 4.9 - 4.95 GHz (Japan) 5.15 - 5.25 GHz 5.25 - 5.35 GHz 5.47 - 5.725 GHz 5.825 - 5.850 GHz
	Data Rates	<ul style="list-style-type: none">802.11b: 1, 2, 5.5, 11 Mbps802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)802.11ax: MCS0 ~ MCS11, (1SS and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)

Technical Specifications

Modulation	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM , 1024QAM
Security ²	<ul style="list-style-type: none">• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only• AES-CCMP: 128 bit in hardware• 802.1x authentication• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.• WPA2 certification• IEEE 802.11i• WAPI
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power	<ul style="list-style-type: none">• 802.11b: +18.5dBm minimum• 802.11g: +17.5dBm minimum• 802.11a: +18.5dBm minimum• 802.11n HT20(2.4GHz): +15.5dBm minimum• 802.11n HT40(2.4GHz): +14.5dBm minimum• 802.11n HT20(5GHz): +15.5dBm minimum• 802.11n HT40(5GHz): +14.5dBm minimum• 802.11ac VHT80(5GHz): +11.5dBm minimum• 802.11ac VHT160(5GHz): +11.5dBm minimum• 802.11ax HT40(2.4GHz): +10dBm minimum• 802.11ax VHT160(5GHz): +10dBm minimum
Power Consumption	<ul style="list-style-type: none">• Transmit mode 2.0 W• Receive mode 1.6 W• Idle mode (PSP) 180 mW (WLAN Associated)• Idle mode 50 mW (WLAN unassociated)• Connected Standby 10mW• Radio disabled 8 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity ³	<ul style="list-style-type: none">• 802.11b, 1Mbps: -93.5dBm maximum• 802.11b, 11Mbps: -84dBm maximum• 802.11a/g, 6Mbps: -86dBm maximum• 802.11a/g, 54Mbps: -72dBm maximum• 802.11n, MCS07: -67dBm maximum• 802.11n, MCS15: -64dBm maximum• 802.11ac, MCS0: -84dBm maximum• 802.11ac, MCS9: -59dBm maximum• 802.11ax, MCS11(HT40): -59dBm maximum• 802.11ax, MCS11(VHT160): -58.5dBm maximum
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Form Factor	PCI-Express M.2 MiniCard
Dimensions	1. Type 2230: 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm

Technical Specifications

Weight	1. Type 2230: 2.8 g 2. Type 126: 1.3 g	
Operating Voltage	3.3 v +/- 9%	
Temperature	Operating	14° to 158° F (-10° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Amber - Radio OFF LED OFF - Radio ON	

HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1 Wireless Technology

Bluetooth Specification	4.0/4.1/4.2/5.0/5.1 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)
Signaling Data Rate	Legacy: 3 Mbps signaling data rate ¹ 2.17 Mbps BLE: 1 Mbps signaling data rate ¹ 0.2 Mbps 1. Actual throughput may vary.
	Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
Transmit Power	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 9.5 dBm for BR and EDR.
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
Bluetooth Software Supported	Microsoft Windows Bluetooth Software
Power Management	Microsoft Windows ACPI, and USB Bus Support
Certifications	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Power Management Certifications	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
Bluetooth Profiles Supported	BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan BT4.2 ESR08 Compliance LE Secure Connection- Basic/Full LE Privacy 1.2 -Link Layer Privacy LE Privacy 1.2 -Extended Scanner Filter Policies LE Data Packet Length Extension FAX Profile (FAX) Basic Imaging Profile (BIP)2 Headset Profile (HSP) Hands Free Profile (HFP)

Technical Specifications

Advanced Audio Distribution Profile (A2DP)

1. Wireless access point and Internet service is required. Availability of public wireless access point is limited.

2. Check latest software/driver release for updates on supported security features.

3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

4. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ax devices. Only available in countries where 802.11ax is supported.

*For full Intel® vPro™ functionality, Windows, a vPro supported processor, vPro enabled chipset, vPro enabled WLAN card and discrete TPM 2.0 are required. See <http://Intel.com/vpro>.

Intel® Wi-Fi 6 ¹ AX200 and Bluetooth 5.0 (802.11ax 2 x 2, non-vPro, supporting gigabit file transfer speeds) non-vPro	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v
	Frequency Band	<ul style="list-style-type: none">802.11b/g/n/ax 2.402 - 2.482 GHz802.11a/n/ac/ax 4.9 - 4.95 GHz (Japan) 5.15 - 5.25 GHz 5.25 - 5.35 GHz 5.47 - 5.725 GHz 5.825 - 5.850 GHz
	Data Rates	<ul style="list-style-type: none">802.11b: 1, 2, 5.5, 11 Mbps802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)802.11ax: MCS0 ~ MCS11, (1SS and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)
	Modulation	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM
	Security ²	<ul style="list-style-type: none">IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode onlyAES-CCMP: 128 bit in hardware802.1x authenticationWPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.WPA2 certificationIEEE 802.11iWAPI

Technical Specifications

Network Architecture	Ad-hoc (Peer to Peer)	
Models	Infrastructure (Access Point Required)	
Roaming	IEEE 802.11 compliant roaming between access points	
Output Power	<ul style="list-style-type: none">802.11b: +18.5dBm minimum802.11g: +17.5dBm minimum802.11a: +18.5dBm minimum802.11n HT20(2.4GHz): +15.5dBm minimum802.11n HT40(2.4GHz): +14.5dBm minimum802.11n HT20(5GHz): +15.5dBm minimum802.11n HT40(5GHz): +14.5dBm minimum802.11ac VHT80(5GHz): +11.5dBm minimum802.11ac VHT160(5GHz): +11.5dBm minimum802.11ax HT40(2.4GHz): +10dBm minimum802.11ax VHT160(5GHz): +10dBm minimum	
Power Consumption	<ul style="list-style-type: none">Transmit mode 2.0 WReceive mode 1.6 WIdle mode (PSP) 180 mW (WLAN Associated)Idle mode 50 mW (WLAN unassociated)Connected Standby 10mWRadio disabled 8 mW	
Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity ³	<ul style="list-style-type: none">802.11b, 1Mbps: -93.5dBm maximum802.11b, 11Mbps: -84dBm maximum802.11a/g, 6Mbps: -86dBm maximum802.11a/g, 54Mbps: -72dBm maximum802.11n, MCS07: -67dBm maximum802.11n, MCS15: -64dBm maximum802.11ac, MCS0: -84dBm maximum802.11ac, MCS9: -59dBm maximum802.11ax, MCS11(HT40): -59dBm maximum802.11ax, MCS11(VHT160): -58.5dBm maximum	
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications	
Form Factor	PCI-Express M.2 MiniCard	
Dimensions	1. Type 2230: 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm	
Weight	1. Type 2230: 2.8 g 2. Type 126: 1.3 g	
Operating Voltage	3.3v +/- 9%	
Temperature	Operating	14° to 158° F (-10° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Amber - Radio OFF LED OFF - Radio ON	

HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1 Wireless Technology

Technical Specifications

Bluetooth Specification	4.0/4.1/4.2/5.0/5.1 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)
Signaling Data Rate	Legacy: 3 Mbps signaling data rate ¹ 2.17 Mbps BLE: 1 Mbps signaling data rate ¹ 0.2 Mbps 1. Actual throughput may vary.
Transmit Power	Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 9.5 dBm for BR and EDR.
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
Bluetooth Software Supported	Microsoft Windows Bluetooth Software
Power Management	Microsoft Windows ACPI, and USB Bus Support
Certifications	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Power Management Certifications	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
Bluetooth Profiles Supported	BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan BT4.2 ESR08 Compliance LE Secure Connection- Basic/Full LE Privacy 1.2 -Link Layer Privacy LE Privacy 1.2 -Extended Scanner Filter Policies LE Data Packet Length Extension FAX Profile (FAX) Basic Imaging Profile (BIP) ² Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ax devices. Only available in countries where 802.11ax is supported.

2. Check latest software/driver release for updates on supported security features.

3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

Intel® XMM™ 7360 LTE-Advanced CAT9 ¹	Technology/Operating bands	FDD LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 1700/2100 (Band 4), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 1400 (Band 11), 700 (Band 12 lower), 700 (Band 13 upper), 700 (Band 17 lower), 850 (Band 18 lower), 850 (Band 19 upper), 800 (Band 20), 1400 (Band 21), 850 (Band 26), 700 (Band 28), 700 (Band 29 RX only), 2300 (Band 30), 1700/2100 (Band 66).
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Technical Specifications

	TDD LTE: 2600 (Band 38), 1900 (Band 39), 2400 (Band 40), 2500 (Band 41). HSPA+: 2100 (Band 1), 1900 (Band 2), 1700/2100 (Band 4), 850 (Band 5), 900 (Band 8) MHz
Wireless protocol standards	3GPP Release 11 LTE Specification CAT.9, DL 60MHz BW throughput up to 450Mbps; UL 20MHz throughput up to 50Mbps WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
GPS	Standalone, A-GPS (MS-A, MS-B)
GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 MHz
Maximum data rates	LTE: 450 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (Download), 5.76 Mbps (Upload)
Maximum output power	LTE: 23 dBm HSPA+: 23.5 dBm
Maximum power consumption	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average)
Form Factor	M.2, 3042-S3 Key B
Weight	5.8 g
Dimensions (Length x Width x Thickness)	42 x 30 x 2.3 mm

1. Mobile Broadband is an optional feature. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products or in all countries.

Intel® XMM™ 7560 LTE-Advanced Pro DL CAT16 ¹	Technology/Operating bands	FDD LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 1700/2100 (Band 4), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 700 (Band 12 lower), 700 (Band 13 upper), 700 (Band 14 upper), 700 (Band 17 lower), 850 (Band 18 lower), 850 (Band 19 upper), 800 (Band 20), 1900 (Band 25), 850 (Band 26), 700 (Band 28), 700 (Band 29 RX only), 2300 (Band 30), 1700/2100 (Band 66). TDD LTE: 2600 (Band 38), 1900 (Band 39), 2400 (Band 40), 2500 (Band 41), 3500 (Band 42), 5200 (Band 46 RX only) HSPA+: 2100 (Band 1), 1900 (Band 2), 1700/2100 (Band 4), 850 (Band 5), 900 (Band 8) MHz
	Wireless protocol standards	3GPP Release 12 LTE Specification DL-CAT.16, DL 100MHz BW throughput up to 978Mbps; UL-CAT.7 20MHz throughput up to 75Mbps WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
	GPS	Standalone, A-GPS (MS-A, MS-B)
	GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 MHz
	Maximum data rates	LTE: 978 Mbps (Download), 75 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (Download), 5.76 Mbps (Upload)
	Maximum output power	LTE: 23 dBm in all band except B41 LTE B41 HPUE = 26dBm HSPA+: 23.5 dBm
	Maximum power consumption	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average)
	Form Factor	M.2, 3042-S3 Key B
	Weight	6 g

Technical Specifications

Dimensions (Length x Width x Thickness)	42 x 30 x 2.3 mm
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1. Gigabit class Category 16 4G LTE module is optional and must be configured at the factory. Module designed for up to 1 Gbps download speeds as carriers deploy 5 carrier aggregation and 100Mhz channel bandwidth, requires activation and separately purchased service contract. Backwards compatible to HSPA 3G technologies. Check with service provider for coverage and availability in your area. Connection, upload and download speeds will vary due to network, location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.

POWER

AC Adapter 65 Watt nPFC Slim USB type C Straight 1.8 m	Dimensions	88.0 x 53.5 x 21.0 mm	
	Weight	220 g +/- 10 g	
Output	Input	100 to 240 VAC	
	Input Efficiency	Average Efficiency of 25%, 50%, 75% condition with 115Vac/230Vac Spec 5V: 81.5% 9V: 86.7% 12V: 88.0% 15V: 89.0% 20V: 89.0%	
	Input frequency range	48 ~ 63 Hz	
	Input AC current	Max. 1.7 A at 90 Vac	
	Output power	5V/15W 9V/27W 12V/60W 15V/65W 20V/65W	
	DC output	5V / 9V / 12V / 15V / 20V	
	Hold-up time	5ms at 115 Vac input	
	Output current limit	<8.0A	
	Connector	USB Type-C	
	Environmental Design	Operating temperature	32°F to 95°F (0° to 35°C)
EMI and Safety Certifications		Non-operating (storage) temperature	-4°F to 185°F (-20° to 85°C)
		Altitude	0 to 16,400 ft (0 to 5000m)
		Humidity	20% to 95%
		Storage Humidity	10% to 95%
		CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.	

Technical Specifications

AC Adapter 65 Watt nPFC USB type C Straight 1.8 m C6NS	Dimensions	74 x 74 x 28.5 mm		
	Weight	unit: 245 g +/- 10 g		
	Input	100 to 240 VAC		
	Output	Input Efficiency	81.5% min at 115 Vac/ 230Vac @ 5V 86.7% min at 115 Vac/ 230Vac @ 9V 88% min at 115 Vac/ 230Vac @ 10V 88% min at 115 Vac/ 230Vac @ 12V 89% min at 115 Vac/ 230Vac @ 15V 89% min at 115 Vac/ 230Vac @ 20V	
		Input frequency range	47 ~ 63 Hz	
		Input AC current	1.7 A at 90 VAC and maximum load	
		Output power	65 W	
		DC output	5V/9V/10V/12V/15V/20V	
		Hold-up time	5ms at 115 Vac input	
		Output current limit	<8.0A	
	Connector	Non-Standard C6		
	Environmental Design	Operating temperature	32°F to 95°F (0°to 35°C)	
		Non-operating (storage) temperature	-4°F to 185°F (-20° to 85°C)	
		Altitude	0 to 16,400 ft (0 to 5000m)	
		Humidity	5% to 95%	
Safety Certifications	Storage Humidity	5% to 95%		
	CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B CCC, NOM-1 NYCE. MTBF - over 100,000 hours at 25°C ambient condition.			
HP 4-cell Long Life Li-Ion (56 WHr)	Dimensions (H x W x L)	5.25 x 85.00 x 274.00 mm		
	Weight	0.259 kg		
	Cells/Type	4cell Lithium-Ion Polymer cell / 446872		
	Energy	Voltage	8.8 V / 7.7 V	
		Amp-hour capacity	7.3 Ah / 7.0 Ah	
		Watt-hour capacity	56 Wh	
		Operating (Charging)	32° to 113° F (0° to 45° C)	
	Temperature	Operating (Discharging)	14° to 122° F (-10° to 60° C)	
		Optional Travel Battery Available	No	

Technical Specifications

HP 2-cell Long Life Li-Ion (38 WHr)	Dimensions (H x W x L)	5.20 x 79.40 x 274.00	
	Weight	0.16 kg	
	Cells/Type	2cell Lithium-Ion Polymer cell / 4453C2	
	Energy	Voltage	8.8 V / 7.7 V
		Amp-hour capacity	4.93 Ah / 4.68 Ah
		Watt-hour capacity	38 Wh
		Operating (Charging)	32° to 113° F (0° to 45° C)
	Temperature	Operating (Discharging)	14° to 122° F (-10° to 60° C)
	Optional Travel Battery Available	No	

COUNTRY OF ORIGIN

China

Options and Accessories (sold separately and availability may vary by country)

Type	Description	Part #
Cases	HP Executive 14.1 Slim Top load	6KD04AA
	HP Executive 15.6 Top Load	6KD06AA
	HP Executive 15.6 Backpack	6KD07AA
Docking	HP Thunderbolt Dock 120W G2	2UK37AA
	HP Thunderbolt Dock w/Combo Cable G2 (Hook with 230W)	3TR87AA
	HP Thunderbolt Dock w/Audio Module	3YE87AA
	HP Audio Module (Hook base dock required)	3AQ21AA
	HP Thunderbolt Dock 120W Cable	3XB94AA
	HP Thunderbolt Dock Combo Cable	3XB96AA
	HP USB-C Dock G4	3FF69AA
	HP USB-C Universal Dock	1MK33AA
	HP USB-C Universal Dock Non Flash	3DV65AA
	HP USB-C Mini Dock	1PM64AA
	HP USB-C Dock G5	5TW10AA
	HP USB-C/A Universal Dock G2	5TW13AA
	HP EliteDisplay E223d Docking monitor	5VT82AA
	HP EliteDisplay E273d Docking monitor	5WN63AA
	HP E24d G4 FHD Advanced Docking Monitor	6PA50AA
	HP E27d G4 FHD Advanced Docking Monitor	6PA56AA
Input/Output	HP Slim Wireless Keyboard and Mouse	T6L04AA
	HP Slim USB Keyboard and Mouse	T6T83AA
	HP Wireless (Link-5) Keyboard	T6U20AA
	HP USB Essential Keyboard and Mouse	H6L29AA
	HP Conferencing Keyboard	K8P74AA
	HP USB Collaboration Keyboard	Z9N38AA
	HP Wireless Collaboration Keyboard	Z9N39AA
	HP Comfort Grip Wireless Mouse	H2L63AA
	HP X4000b Bluetooth Mouse	H3T50AA
	HP 3-Button USB Laser Mouse	H4B81AA
	HP USB Travel Mouse	G1K28AA
	HP Ultra Mobile Wireless Mouse	H6F25AA
	HP Slim Bluetooth Mouse	F3J92AA
	HP Wireless Premium Mouse	1JR31AA
	HP USB Premium Mouse	1JR32AA
	HP Elite Presenter Mouse	2CE30AA
	HP UC Speaker Phone	4VW02AA
	HP USB-C to USB-A Hub	Z6A00AA
	HP USB-C to DP	N9K78AA
	HP USB-C to VGA	N9K76AA
	HP USB-C to RJ45 Adapter	V7W66AA
	HP HDMI to DVI	F5A28AA
	HP HDMI to VGA	H4F02AA

Options and Accessories (sold separately and availability may vary by country)

	HP USB 3.0 to Gigabit Adapter	N7P47AA
	HP Elite USB-C Hub	4WX89AA
	HP USB-C to 4.5mm Adapter	4ST73AA
Power	HP 65W USB-C Power Adapter	1HE08AA
	HP 65W USB-C Slim Power Adapter	3PN48AA
	HP 65W USB-C Auto Adapter	5TQ76AA
	HP USB-C Notebook Power Bank	2NA10AA
Security	HP Nano Keyed Cable Lock	1AJ39AA
	HP Nano Dual-Head Keyed Cable Lock	1AJ41AA
	HP Nano Keyed Cable Lock	1AJ39AA
	HP Nano Dual-Head Keyed Cable Lock	1AJ41AA
	HP Sure Key Cable Lock	6UW42AA
UCC	HP Stereo 3.5mm Headset	T1A66AA
	HP Stereo USB Headset	T1A67AA
	HP UC Wireless Mono Headset	W3K08AA
	HP UC Wireless Duo Headset	W3K09AA

Summary of Changes

Date of change:	Version History:		Description of change:
October 29, 2019	V1 to V2	Added	Environmental Section
November 12, 2019	V2 to V3	Updated	Battery Life
November 18, 2019	V3 to V4	Updated	Docking section
November 25, 2019	V4 to V5	Updated	Panels in display section

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