

Overview

HP Elite Dragonfly Max



- 1. Internal Microphones
- 2. IR Camera LEDs
- 3. Webcam and IR Camera
- 4. Privacy Camera Shutter
- 5. Webcam LED

Left

- 6. Glass Clickpad
- 7. WWAN SIM (Nano)
- 8. Nano Security Lock Slot (Lock sold separately)
- 9. Power Button
- 10. SuperSpeed USB Type-A 5Gbps signaling rate

Overview



Right

1. HDMI 2.0 port (Cable not included)
 2. Audio Combo Jack
 3. Thunderbolt™ 4 with USB4 Type-C® 40Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4)¹
 4. Thunderbolt™ 4 with USB4 Type-C® 40Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4)¹
 5. Touch Fingerprint Sensor (Select models)
1. SuperSpeed USB 20Gbps is not available with Thunderbolt™ 4.

Overview

AT A GLANCE

- Windows 11 Pro, other Windows OS, or FreeDOS preinstalled
- Choice of 11th Generation Intel® Core™ i7 supporting, vPro® and non vPro®
- Ultralim x360 with 100% touch (10-Point Multi-Touch), chemically- strengthened Corning® Gorilla® Glass 5, direct bond; 13.3" diagonal HP Sure View Reflect with Anti-Sparkle, Brightview 1000 nits
- Integrated Intel® HD Graphics
- Enhanced security features including 2021 HP Sure Start, HP Sure View, HP Sure Click, HP Sure Recover, Sure BIO, hardware TPM 2.0, touch fingerprint sensor, face recognition with IR camera, Nano lock slot, wake on FPS, intrusion detection
- Passed MIL-STD 810H¹ testing
- Weight starting at 2.49 lb
- 4 cell long life polymer 56.2Wh battery
- Supports wireless LAN and wireless WAN options for connectivity on the go, including 5G
- From 256 GB up to 2 TB Solid State Drives
- 16 GB/32 GB LPDDR4 total system memory
- 5MP + IR webcam, face authentication, Windows Hello certified; HP Privacy Camera
- HP Quiet Keyboard (1.3mm travel), full-size, spill-resistant, ambient light-sensing backlight keyboard with integrated lattice, HP DuraKeys, ClickPad - MS PTP, optional HP Rechargeable Active Pen with USB-A holder)
- HP Eye Ease Low Blue Light
- Wide-range Mic Array (4x mics - two front-facing and two world-facing)
- Recycled material, ocean-bound plastics

1. MIL-STD 810H is not intended to demonstrate fitness of U.S. Department of Defense 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 Max

PRODUCT COLORS

Sparkling Black

OPERATING SYSTEM

Preinstalled

Windows 11 Pro ²
Windows 11 Home – HP recommends Windows 11 Pro for business ²
Windows 10 Pro ^{1,2}
Windows 10 Home – HP recommends Windows 11 Pro for business ^{1,2}
FreeDOS

1. Device comes with Windows 10 and a free Windows 11 upgrade or may be preloaded with Windows 11. Upgrade timing may vary by device. Features and app availability may vary by region. Certain features require specific hardware (see Windows 11 Specifications).

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>.

NOTE: HP tested Windows 10, version 1909 on this platform. For testing information on newer versions of Windows 10, please see <https://support.hp.com/document/c05195282>.

PROCESSORS

Intel® Core™ i7-1185G7 (3.0 GHz base frequency, up to 4.8 GHz frequency with Intel® Turbo Boost Technology, 12 MB L3 cache, 4 cores), supports Intel® vPro® Technology^{2,3,4 5}

Intel® Core™ i7-1165G7 (2.8 GHz base frequency, up to 4.7 GHz with Intel® Turbo Boost Technology, 12 MB L3 cache, 4 cores)^{2,3,4 5}

Processor Family

11th Generation Intel® Core™ i7 processor (i7- 1185G7, i7- 1165G7)⁵

2. Multicore 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.

3. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

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

5. In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.

Technical Specifications

CHIPSET

Chipset is integrated with processor

GRAPHICS

Integrated

Intel® Iris® Xe Graphics⁶

Supports

Support HD decode, DX12, HDMI 2.0⁷

6. Intel® Iris® Xe Graphics capabilities require system to be configured with Intel® Core™ i7 processors and dual channel memory. Intel® Iris® Xe Graphics with Intel® Core™ i7 processors and single channel memory will only function as UHD graphics.

7. HDMI cable sold separately.

DISPLAY

Touch

33.8 cm (13.3") diagonal FHD bent, Anti-Sparkle WLED UMA eDP 1.4+PSR, Brightview 1000 nits, 100% sRGB, Touch with HP Sure View Reflect integrated privacy screen (1920 x 1080), HP Eye Ease Low Blue Light^{8,9,10,11,47}

8. FHD/HD content required to view FHD/HD images.

9. Resolutions are dependent upon monitor capability, and resolution and color depth settings.

10. Actual brightness will be lower with touchscreen or Sure View.

11. HP Sure View integrated privacy screen is an optional feature that must be configured at purchase and is designed to function in landscape orientation.

47. Your computer display is shipped from the factory in low blue light mode for improved eye comfort and safety. Also, blue light mode automatically adjusts blue light emissions when you are using the computer at night or for reading.

STORAGE AND DRIVES

Primary M.2 Storage

2 TB PCIe® Gen3x4 NVMe™ M.2 SSD TLC¹²

1 TB PCIe® Gen3x4 NVMe™ M.2 SSD TLC¹²

512 GB PCIe® Gen3x4 NVMe™ M.2 SSD TLC¹²

256 GB PCIe® NVMe™ Value M.2 SSD¹²

12. 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.

Technical Specifications

MEMORY

Maximum Memory

32 GB LPDDR4X-4266 SDRAM¹³

Memory

32 GB LPDDR4X-4266 SDRAM¹³

16 GB LPDDR4X-4266 SDRAM¹³

Memory Slots

LPDDR4X, system runs at 4266

Supports Dual Channel Memory

13. Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed.

NETWORKING/COMMUNICATIONS

WLAN

Intel® Dual Band Wi-Fi® 6 AX201 802.11a/b/g/n/ac/ax (2x2) WLAN and Bluetooth® 5 Combo, vPro®¹⁴

Intel® Dual Band Wi-Fi® 6 AX201 802.11a/b/g/n/ac/ax (2x2) WLAN and Bluetooth® 5 Combo, non-vPro®¹⁴

WWAN

Intel® XMM™ 7360 LTE-Advanced Cat 9¹⁶

Qualcomm® Snapdragon™ X55 5G LTE Cat 20¹⁷

Miracast

Native Miracast Support¹⁸

14. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 (802.11ax) is backwards compatible with prior 802.11 specs.

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. Qualcomm® 5G module is optional and must be configured at the factory. Module designed for 5G networks as carriers deploy Evolved-Universal Terrestrial Radio Access New Radio Dual Connectivity (ENDC) with both 100Mhz of 5G NR and LTE channel bandwidth, using 256QAM 4x4, requires activation and separately purchased service contract. 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. 5G LTE not available on all products, in all regions. Backwards compatible to 4G LTE and 3G HSPA technologies. 5G LTE module is available where carrier supported.

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

Technical Specifications

AUDIO/MULTIMEDIA

Audio

Audio by Bang & Olufsen
4 digital Microphones
4 Integrated stereo speakers

Camera

5MP Infrared Integrated Camera with manual privacy shutter

Sensors

Ambient light sensor
Hall effect sensor
HP Tamper Lock¹⁵
Magnetometer
Accelerometer + Gyroscope + eCompass
IC Accelerometer HP2DCTR LGA-12
IR Thermal Sensor

15. HP Tamper Lock must be enabled by the customer or your administrator.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

HP Modernized Keyboard, spill resistant, Backlit
Backlit, Spill-resistant, with HP Dura Keys

Pointing Device

Glass Clickpad
Microsoft Precision Touchpad Default Gestures Support

Function Keys

F1 - Display Switching
F2 - Blank or Privacy
F3 - Brightness Down
F4 - Brightness Up
F5 - Audio Mute
F6 - Volume Down
F7 - Volume Up
F8 - Mic Mute
F9 - Backlit Toggle
F10 - Insert
F11 - Airplane Mode
F12 - HP Command Center (Programmable Key)
Num Lock
Print Screen
Delete

Technical Specifications

SOFTWARE AND SECURITY

Preinstalled Software

BIOS

HP BIOSphere Gen6 ¹⁹
 HP Drive Lock & Automatic Drive Lock
 BIOS Update via Network
 HP Secure Erase ²⁰
 Absolute Persistence Module ²¹
 HP LAN-Wireless Protection
 USB enable/disable (via BIOS)

Software

HP Connection Optimizer ²²
 HP Hotkey Support
 myHP
 HP Support Assistant ²³
 HP QuickDrop ²⁷
 HP Noise Cancellation Software
 Touchpoint Customizer for Commercial
 HP Notifications
 HP Privacy Settings
 HP Wireless Button Driver
 HP Power Manager
 Tile App ²⁴
 HP PC Hardware Diagnostics Windows
 Buy Microsoft Office (sold separately)
 Microsoft Defender
 HP Smart Support ⁴⁹

Manageability Features

HP Driver Packs (download) ²⁵
 HP Manageability Integration Kit Gen4 (download) ²⁶
 HP Client Catalog (download)
 HP Client Management Script Library (download)
 HP Image Assistant (download)

Security Management

HP Fingerprint Sensor ²⁸
 HP Wolf Pro Security Edition ²⁹
 HP Sure Click ³⁰
 HP Sure Sense ³¹
 HP Sure Start Gen6 ³²
 HP Sure Admin ³³
 HP Sure Recover Gen4 ³⁴
 HP Sure Run Gen4 ³⁵
 HP Client Security Manager Gen7 ³⁶
 TPM 2.0 Embedded Security Chip (Common Criteria EAL4+ Certified) (FIPS 140-2 Level 2 Certified)
 Secured-Core PC Enable ⁴⁶

¹⁹. HP BIOSphere Gen6 requires Windows 10 and is available on select HP Pro and Elite PCs. Features may vary depending on the platform and configurations.

²⁰. HP Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method. HP Secure Erase does not support platforms with Intel® Optane™.

²¹. Absolute firmware module is shipped turned off and can only be activated with the purchase a license subscription and full activation of the software agent. License subscriptions can be purchased for terms ranging multiple years. Service is

Technical Specifications

limited, check with Absolute for availability outside the U.S. Certain conditions apply. For full details visit:

<https://www.absolute.com/about/legal/agreements/absolute/>.

22. HP Connection Optimizer requires Windows 10.

23. HP Support Assistant internet access required.

24. Tile is an optional feature that must be configured at the factory and requires Windows 10. Some features require optional subscription to Tile Premium. Tile application for Windows 10 available for download from the Windows Store. Mobile phone app available for download from App Store and Google Play. Requires iOS 11 and greater or Android 6.0 and greater see <https://support.thetileapp.com/hc/en-us/articles/200424778> for more information. HP Tile will function as long as the PC has battery power.

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://www8.hp.com/us/en/ads/clientmanagement/overview.html>.

27. Quick Drop requires Internet access and Windows 10 PC preinstalled with HP QuickDrop app and either an Android device (phone or tablet) running Android 7 or higher with the Android HP QuickDrop app, and /or an iOS device (phone or tablet) running iOS 12 or higher with the iOS HP QuickDrop app.

28. HP Fingerprint sensor is an optional feature that must be configured at purchase.

29. HP Wolf Pro Security Edition (including HP Sure Click Pro and HP Sure Sense Pro) is available preloaded on select SKUs and, depending on the HP product purchased, includes a paid 1-year or 3-year license. The HP Wolf Pro Security Edition software is licensed under the license terms of the HP Wolf Security Software - End-User license Agreement (EULA) that can be found at: https://support.hp.com/us-en/document/ish_3875769-3873014-16 as that EULA is modified by the following:

“7. Term. Unless otherwise terminated earlier pursuant to the terms contained in this EULA, the license for the HP Wolf Pro Security Edition (HP Sure Sense Pro and HP Sure Click Pro) is effective upon activation and will continue for either a twelve (12) month or thirty-six (36) month license term (“Initial Term”). At the end of the Initial Term you may either (a) purchase a renewal license for the HP Wolf Pro Security Edition from HP.com, HP Sales or an HP Channel Partner, or (b) continue using the standard versions of HP Sure Click and HP Sure Sense at no additional cost with no future software updates or HP Support.30. HP Sure Click requires Windows 10 Pro or Enterprise. See https://bit.ly/2PrLT6A_SureClick for complete details.

31. HP Sure Sense is available on select HP PCs and is not available with Windows10 Home.

32. HP Sure Start Gen6 is available on select HP PCs and requires Windows 1033. HP Sure Admin requires Windows 10, HP BIOS, HP Manageability Integration Kit from <http://www.hp.com/go/clientmanagement> and HP Sure Admin Local Access Authenticator smartphone app from the Android or Apple store.

34. HP Sure Recover Gen4 is available on select HP PCs and requires an open network connection. You must back up important files, data, photos, videos, etc. before using HP Sure Recover to avoid loss of data. Network based recovery using Wi-Fi is only available on PCs with Intel Wi-Fi Module.

35. HP Sure Run Gen4 is available on select HP PCs and requires Windows 10.

36. HP Client Security Manager Gen7 requires Windows and is available on the select HP Elite and Pro PCs.

46. Secured-core PC enable requires an Intel® vPro®, AMD Ryzen™ Pro processor or Qualcomm® processor with SD850 or higher and requires 8 GB or more system memory. Secured-core PC functionality can be enabled from the factory.

49. HP Smart Support is available to commercial customers through your HP Service Representative and HP Factory Configuration Services; or it can be downloaded at: <http://www.hp.com/smart-support>. HP Smart Support automatically collects the telemetry necessary upon initial boot of the product to deliver device-level configuration data and health insights.

Technical Specifications

POWER

Power Supply

HP Smart 65 W USB Type-C adapter ³⁷

HP Smart 65 W Slim USB Type-C adapter³⁷

Primary Battery

HP Long Life 4-cell, 56Wh polymer ^{38,39}

HP Fast Charge Technology (50% in 30 minutes) ⁴⁰

Power Cord

1.0m power cord

Battery Life⁴¹

Up to 13 hours and 15 minutes

Battery Weight

0.259 kg

37. Availability may vary by country.

38. Battery is internal and not replaceable by customer. Serviceable by warranty.

39. Actual battery Watt-hours (Wh) will vary from design capacity. Battery capacity will naturally decrease with shelf life, time, usage, environment, temperature, system configuration, loaded apps, features, power management settings and other factors.

40. Supports HP Fast Charge with 65W AC Adapter. Recharges the battery up to 50% within 30 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/-10% due to System tolerance.

41. Windows 10 MM18 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 www.bapco.com for additional details.

WEIGHTS & DIMENSIONS

Product Weight

Starting at 1.06 kg (2.33 lb)⁴²

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

42. Weight will vary by configuration.

Technical Specifications

PORTS/SLOTS

Ports

2 Thunderbolt™ 4 with USB4 Type-C® 40Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4)⁴⁸

1 SuperSpeed USB Type-A 5Gbps signaling rate (Charging port)

1 Headphone/microphone combo jack

1 HDMI 2.0⁷

7. HDMI cable sold separately.

48. SuperSpeed USB 20Gbps is not available with Thunderbolt™ 4.

SERVICE AND SUPPORT

1-year and 3-year limited warranties and 90 day software limited warranty options depending on country.

Batteries have a default one year limited warranty except for HP Long Life batteries which will follow the one or three year warranty of 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 Pack Services are optional extended service contracts that go beyond the standard limited warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: <http://www.hp.com/go/cpc>.⁴³

43. 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 www.hp.com/go/cpc. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

Technical Specifications

CERTIFICATION AND COMPLIANCE

ENERGY STAR® certified ⁴⁴
EPEAT® 2019 Gold in the U.S. ⁴⁵
TCO 8.0 Certified

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

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	20V, 3.25A
	Integrated Graphics	Intel UMA
	Max Operating Power	UMA
Temperature	Operating	32° to 95° F (0° to 35° C)
	Non-operating	41° to 95° F (5° to 35° C) (writing optical)
Shock	Non-operating	Comply SVTP
	Operating	Comply SVTP
Random Vibration	Non-operating	Comply SVTP
	Operating	Comply SVTP
Altitude (unpressurized)	Non-operating	Comply SVTP

Technical Specifications

DISPLAYS

1. Actual brightness will be lower with touchscreen or Sure View.

Note: All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.

13.3 in FHD (1920 x 1080) Anti-Sparkle UWVA sRGB NB2Y 1000 eDP 1.4+PSR 100 PrivacyG4 Plus bent LCD Panel	Outline Dimensions (W x H)	299.06 x 175.14 mm (max)
	Active Area	293.76 x 165.24 mm
	Weight	220 g (max)
	Diagonal Size	13.3 inch
	Thickness	3.9 mm (max)
	Interface	eDP 1.4 + PSR (4 lane)
	Surface Treatment	Anti-Sparkle
	Touch Enabled	Yes
	Contrast Ratio	1500:1
	Refresh Rate	60 Hz
	Brightness	1000 nits ¹
	Pixel Resolution	1920 x 1080 (FHD)
	Format of LCD Pixel Arrangement	RGB
	Backlight	LED
	Color Gamut Coverage	72%
	Color Depth	8 bits
	Viewing Angle	UWVA 85/85/85/85

Technical Specifications

STORAGE

NOTE: 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.

SSD 1TB 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 3500 MB/s
	Maximum Sequential Write	Up To 3037 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
<hr/>		
SSD 2TB 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 3500 MB/s
	Maximum Sequential Write	Up To 3000 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

Technical Specifications

SSD 512GB 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	1500 MB/s~ 3500 MB/s
	Maximum Sequential Write	1000 MB/s~ 1800 MB/s
	Logical Blocks	300 MB/s~ 2956 MB/s
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security (Option); TRIM; L1.2

SSD 256GB 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

Technical Specifications

NETWORKING/COMMUNICATIONS

Intel® Wi-Fi 6¹ AX201 and Wireless LAN Standards Bluetooth® 5 (802.11ax 2x2, vPro®, supporting gigabit file transfer speed⁵) (vPro®)

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

Interoperability

Features Wi-Fi 6 technology

Frequency Band

802.11b/g/n/ax
• 2.402 – 2.482 GHz
802.11a/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

• 802.11b: 1, 2, 5.5, 11 Mbps
• 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
• 802.11n: max 300Mbps
• 802.11ac : 1733Mbps
• 802.11ax : max 2.4Gbps

Modulation

Direct Sequence Spread Spectrum
OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
, 1024QAM

Security³

• 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
• WPA3 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 Power²r

• 802.11b : +17dBm minimum
• 802.11g : +16dBm minimum
• 802.11a : +17dBm minimum

Technical Specifications

	<ul style="list-style-type: none"> • 802.11n HT20(2.4GHz) : +14dBm minimum • 802.11n HT40(2.4GHz) : +13dBm minimum • 802.11n HT20(5GHz) : +14dBm minimum • 802.11n HT40(5GHz) : +13dBm minimum • 802.11ac VHT80(5GHz) : +10dBm minimum • 802.11ac VHT160(5GHz) : +10dBm minimum • 802.11ax HE40(2.4GHz) : +12dBm minimum • 802.11ax HE80(5GHz) : +10dBm minimum • 802.11ax HE160(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/Modern Standby: 10mW • Radio disabled: 8 mW 	
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity⁴	<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(VHT80) : -84dBm maximum • 802.11ac, MCS9(VHT80) : -59dBm maximum • 802.11ac, MCS9(VHT160) : -58.5dBm maximum • 802.11ax, MCS11(HE40): -57dBm maximum • 802.11ax, MCS11(HE80): -54dBm maximum • 802.11ax, MCS11(HE160): -53.5dBm 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 with CNVi Interface	
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: 2.8g 2. Type 1216: 1.3g	
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)

Technical Specifications

LED Activity

LED Amber – Radio OFF; LED White – Radio ON

HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1/5.2 Wireless Technology

Bluetooth Specification	4.0/4.1/4.2/5.0/5.1/5.2 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 data rate ¹ ; throughput up to 2.17 Mbps BLE: 1 Mbps data rate ¹ ; throughput up to 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) Advanced Audio Distribution Profile (A2DP) BT5.2 ESR9/10 Compliance

Technical Specifications

LE Advertisement Extensions

Channel Selection Algo

Limited High Duty Cycle Non-Connectable Advertising

2Mbps LE

LE Long Range

Security & Manageability Intel® vPro™ support with appropriate Intel® chipset components

1. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 (802.11ax) is backwards compatible with prior 802.11 specs.
 2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
 3. Check latest software/driver release for updates on supported security features.
 4. 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).
 5. Wi-Fi 6 is designed to support gigabit data rate when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 80MHz and higher channels.
-

Technical Specifications

Intel® Wi-Fi® 6¹ AX201 and Bluetooth®⁵ (802.11ax 2x2, nonvPro®, supporting gigabit file transfer speeds⁵) (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
	Interoperability Frequency Band	Features Wi-Fi 6 technology 802.11b/g/n/ax • 2.402 – 2.482 GHz 802.11a/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	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: max 300Mbps • 802.11ac : 1733Mbps • 802.11ax : max 2.4Gbps
	Modulation	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM , 1024QAM
	Security³	• 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 • WPA3 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 Power²	• 802.11b : +17dBm minimum • 802.11g : +16dBm minimum • 802.11a : +17dBm minimum • 802.11n HT20(2.4GHz) : +14dBm minimum • 802.11n HT40(2.4GHz) : +13dBm minimum

Technical Specifications

	<ul style="list-style-type: none"> • 802.11n HT20(5GHz) : +14dBm minimum • 802.11n HT40(5GHz) : +13dBm minimum • 802.11ac VHT80(5GHz) : +10dBm minimum • 802.11ac VHT160(5GHz) : +10dBm minimum • 802.11ax HE40(2.4GHz) : +12dBm minimum • 802.11ax HE80(5GHz) : +10dBm minimum • 802.11ax HE160(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 Sensitivity⁴	<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(VHT80) : -84dBm maximum • 802.11ac, MCS9(VHT80) : -59dBm maximum • 802.11ac, MCS9(VHT160) : -58.5dBm maximum • 802.11ax, MCS11(HE40): -57dBm maximum • 802.11ax, MCS11(HE80): -54dBm maximum • 802.11ax, MCS11(HE160): -53.5dBm 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 with CNVi Interface	
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: 2.8g 2. Type 1216: 1.3g	
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	

Technical Specifications

HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1/5.2 Wireless Technology

Bluetooth Specification	4.0/4.1/4.2/5.0/5.1/5.2 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 data rate ¹ ; throughput up to 2.17 Mbps BLE: 1 Mbps data rate ¹ ; throughput up to 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) BT5.2 ESR9/10 Compliance LE Advertisement Extensions Channel Selection Algo

Technical Specifications

Limited High Duty Cycle Non-Connectable Advertising
2Mbps LE
LE Long Range

1. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 (802.11ax) is backwards compatible with prior 802.11 specs.
2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
3. Check latest software/driver release for updates on supported security features.
4. 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).
5. Wi-Fi 6 is designed to support gigabit data rate when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 80MHz and higher channels.

Technical Specifications

**Qualcomm®
Snapdragon™ X55 5G
Modem¹**

**Technology/Operating
bands**

WCDMA/HSDPA/HSUPA/HSPA+ operating bands:

Band 1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL)
Band 2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL)
Band 4: 1710 to 1755 MHz (UL), 2110 to 2155 MHz (DL)
Band 5: 824 to 849 MHz (UL), 869 to 894 MHz (DL)
Band 6: 830 to 840 MHz (UL), 875 to 885 MHz (DL)
Band 8: 880 to 915 MHz (UL), 925 to 960 MHz (DL)
Band 9: 1750 to 1785 MHz (UL), 1845 to 1880 MHz (DL)
Band 19: 830 to 845 MHz (UL), 875 to 890 MHz (DL)

LTE FDD/TDD operating bands:

Band 1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL)
Band 2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL)
Band 3: 1710 to 1785 MHz (UL), 1805 to 1880 MHz (DL)
Band 4: 1710 to 1755 MHz (UL), 2110 to 2155 MHz (DL)
Band 5: 824 to 849 MHz (UL), 869 to 894 MHz (DL)
Band 7: 2500 to 2570 MHz (UL), 2620 to 2690 MHz (DL)
Band 8: 880 to 915 MHz (UL), 925 to 960 MHz (DL)
Band 12: 699 to 716 MHz (UL), 729 to 746 MHz (DL)
Band 13: 777 to 787 MHz (UL), 746 to 756 MHz (DL)
Band 14: 788 to 798 MHz (UL), 758 to 768 MHz (DL)
Band 17: 704 to 716 MHz (UL), 734 to 746 MHz (DL)
Band 18: 815 to 830 MHz (UL), 860 to 875 MHz (DL)
Band 19: 830 to 845 MHz (UL), 875 to 890 MHz (DL)
Band 20: 832 to 862 MHz (UL), 791 to 821 MHz (DL)
Band 25: 1850 to 1915 MHz (UL), 1930 to 1995 MHz (DL)
Band 26: 814 to 849 MHz (UL), 859 to 894 MHz (DL)
Band 28: 703 to 748 MHz (UL), 758 to 803 MHz (DL)
Band 29: 717 to 728 MHz (DL)
Band 30: 2305 to 2315 MHz (UL), 2350 to 2360 MHz (DL)
Band 34: 2010 to 2025 MHz (UL/DL)
Band 38: 2570 to 2620 MHz (UL/DL)
Band 39: 1880 to 1920 MHz (UL/DL)
Band 40: 2300 to 2400 MHz (UL/DL)
Band 41: 2496 to 2690 MHz (UL/DL)
Band 42: 3400 to 3600 MHz (UL/DL)
Band 46: 5150 to 5925 MHz (DL)
Band 48: 3550 to 3700 MHz (UL/DL)
Band 66: 1710 to 1800 MHz (UL), 2110 to 2200 MHz (DL)

5G NR Sub 6GHz:

n1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL)
n2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL)
n3: 1710 to 1785 MHz (UL), 1805 to 1880 MHz (DL)
n5: 824 to 849 MHz (UL), 869 to 894 MHz (DL)
n7: 2500 to 2570 MHz (UL), 2620 to 2690 MHz (DL)
n8: 880 to 915 MHz (UL), 925 to 960 MHz (DL)
n12: 699 to 716 MHz (UL), 729 to 746 MHz (DL)
n20: 832 to 862 MHz (UL), 791 to 821 MHz (DL)

Technical Specifications

	n28: 703 to 748 MHz (UL), 758 to 803 MHz (DL) n41: 2496 to 2690 MHz (UL/DL) n66: 1710 to 1800 MHz (UL), 2110 to 2200 MHz (DL) n77: 3300 to 4200 MHz (UL/DL) n78: 3300 to 3800 MHz (UL/DL) n79: 4400 to 5000 MHz (UL/DL)
Wireless protocol standards	5G NR Air Interface 3GPP Rel15 5G NR sub-6 LTE Rel14 20 layers and 2 Gbps downlink (DL) throughput – 4 × 4 MIMO across 5x CA 200 Mbps uplink (UL) throughput – 40 MHz ULCA and 256 QAM WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
GPS	Standalone, A-GPS (MS-A, MS-B)
GPS bands	GPS: L1 (1575.42MHz) GLONASS: L1 (1602MHz) BeidouB1(1561.098MHz) Galileo E1 (1575.42)
Maximum data rates	5G sub 6G : 3.8 Gbps LTE: ue-CategoryDL 20, (DL : 2 Gbps) ue-CategoryUL 18, (UL: 200Mbps) 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	5G Sub 6 : 2500 mA LTE: 1,300 mA (peak); 1100 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average)
Form Factor	M.2, 3042-S3 Key B
Weight	8 g
Dimensions (Length x Width x Thickness)	42 mm × 30 mm × 2.6 mm

1. Qualcomm® 5G module is optional and must be configured at the factory. Module designed for 5G networks as carriers deploy Evolved-Universal Terrestrial Radio Access New Radio Dual Connectivity (ENDC) with both 100Mhz of 5G NR and LTE channel bandwidth, using 256QAM 4x4, requires activation and separately purchased service contract. 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. 5G LTE not available on all products, in all regions. Backwards compatible to 4G LTE and 3G HSPA technologies. 5G LTE module is available where carrier supported.

Technical Specifications

POWER

AC Adapter 65 Watt nPFC Slim USB Type-C® Straight 1 m	Dimensions	88x53.5x21mm
	Weight	unit: 220g +/- 10g
	Input	100 to 240 VAC
	Input Efficiency	81.5% min at 115 Vac/ 230Vac @ 5V/3A 86.7% min at 115 Vac/ 230Vac @ 9V/3A 88% min at 115 Vac/ 230Vac @ 12V/5A 89% min at 115 Vac/ 230Vac @ 15V/4.33A 89% min at 115 Vac/ 230Vac @ 20V/3.25A
	Input frequency range	47 ~ 63 Hz
	Input AC current	1.6 A at 90 VAC and maximum load
	Output power	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) 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% Storage Humidity 5% to 95%
	EMI and Safety Certifications	Eg: *CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950, EN60950, UL60950, IEC 62368-1, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. * MTBF - over 100,000 hours at 25°C ambient condition.

AC Adapter 65 Watt nPFC Standard USB Type-C® Straight 1 m	Dimensions	90.0x51x28.5mm
	Weight	unit: 250g +/- 10g
	Input	100 to 240 VAC
	Input Efficiency	81.5% min at 115 Vac/ 230Vac @ 5V/3A 86.7% min at 115 Vac/ 230Vac @ 9V/3A 88% min at 115 Vac/ 230Vac @ 12V/5A 89% min at 115 Vac/ 230Vac @ 15V/4.33A 89% min at 115 Vac/ 230Vac @ 20V/3.25A
	Input frequency range	47 ~ 63 Hz
	Input AC current	1.6 A at 90 VAC and maximum load
	Output power	65 W
	DC output	5V/9V/12V/15V/20V
	Hold-up time	5ms at 115 Vac input
	Output current limit	8.0A Max.
	Connector	USB TYPE C
	Environmental Design	Operating temperature 32°F to 95°F (0° to 35°C)

Technical Specifications

	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%
	Safety Certifications	Eg: *CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950, EN60950, UL60950, IEC 62368-1, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. * MTBF - over 100,000 hours at 25°C ambient condition.

HP 4-cell Long Life Li-Ion(56Wh)	Dimensions (H x W x L)	5.25x85.00x274.00 mm
	Weight	0.259 kg
	Cells/Type	4cell Lithium-Ion Polymer cell / 446872
	Energy	Voltage 8.8V/7.7V
		Amp-hour capacity 7.3Ah/7.0Ah
		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

FINGERPRINT READER

Model:	Model: Synaptics Validity VFS7552 touch sensor
Mobile Voltage Operation:	Mobile Voltage Operation: 3.0V to 3.6V
Operating Temperature:	Operating Temperature: 0~60°C
Current Consumption Image:	Current Consumption Image: 100mA Max
Low Latency Wait For Finger:	Low Latency Wait For Finger: 260 uA
Capture Rate:	Capture Rate: <30msec per image
ESD Resistance:	ESD Resistance: IEC 61000-4-2 4B (+15KV)
Detection Matrix:	Detection Matrix: 363 dpi / 7.4x6mm sensor area
FRR (False Reject Rate) / FAR (False Acceptance Rate):	FRR (False Reject Rate) / FAR (False Acceptance Rate): FRR ~ 1% @ 1:50K FAR

Technical Specifications

ENVIRONMENTAL DATA

Eco-Label Certifications & declarations	<p>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:</p> <ul style="list-style-type: none"> • IT ECO declaration • US ENERGY STAR® • US Federal Energy Management Program (FEMP) • EPEAT® Gold registered in the United States. See http://www.epeat.net for registration status in your country. • TCO 8.0 • China Energy Conservation Program (CECP) • China State Environmental Protection Administration (SEPA) • Taiwan Green Mark • Korea Eco-label • Japan PC Green label* 		
Sustainable Impact Specifications	<ul style="list-style-type: none"> • Ocean-bound plastic in speaker enclosure and bezel¹ • 10% post-consumer recycled plastic² • Low halogen³ • Bulk packaging available <p>1. Percentage of ocean-bound plastic contained in each component varies by product 2. Recycled plastic content percentage is based on the definition set in the IEEE 1680.1-2018 standard. 3. External power supplies, WWAN modules, power cords, cables and peripherals excluded. 100% outer box packaging and corrugated cushions made from sustainably sourced certified and recycled fibers.</p>		
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 (Sort idle)	5.07 W	5.26 W	4.92 W
Normal Operation (Long idle)	0.73 W	0.82 W	0.78 W
Sleep	0.73 W	0.82 W	0.78 W
Off	0.30 W	0.32 W	0.29 W
	<p>Note: 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</p>		

Technical Specifications

	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, 50Hz
Normal Operation (Short idle)	16 BTU/hr	16 BTU/hr	16 BTU/hr
Normal Operation (Long idle)	3 BTU/hr	3 BTU/hr	2 BTU/hr
Sleep	3 BTU/hr	3 BTU/hr	2 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 BTU/hr
	*NOTE: 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)	
Typically Configured – Idle	2.7	13.8	
Fixed Disk – Random writes	3.0	19.8	
Optical Drive – Sequential reads	3.4	22.7	
Longevity and Upgrading	This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the spare parts are available throughout the warranty period and or for up to “5” years after the end of production.		
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 (EPEAT) standard at the Gold level, see www.epeat.net• Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.• This product is 11.07% recycle-able when properly disposed of at end of life.		
Packaging Materials	External:	PAPER/Corrugated	215 g

Technical Specifications

		PAPER/Corrugated	49 g
	Internal:	PLASTIC/polypropylene	3 g
		PLASTIC/Polyethylene low density	111 g
		PAPER/Molded pulp	102 g
		PAPER/Molded pulp	154 g
	The plastic packaging material contains at least 0% recycled content.		
	The corrugated paper packaging materials contains at least 64% recycled content.		
RoHS Compliance	<p>HP Inc. complies fully with materials regulations. We were among the first companies to extend the restrictions in the European Union (EU) Restriction of Hazardous Substances (RoHS) Directive to our products worldwide through the HP GSE. HP has contributed to the development of related legislation in Europe, as well as China, India, and Vietnam.</p> <p>We believe the RoHS directive and similar laws play an important role in promoting industry-wide elimination of substances of concern. We have supported the inclusion of additional substances—including PVC, BFRs, and certain phthalates—in future RoHS legislation that pertains to electrical and electronics products.</p> <p>We met our voluntary objective to achieve worldwide compliance with the new EU RoHS requirements for virtually all relevant products by July 2013, and we will continue to extend the scope of the commitment to include further restricted substances as regulations continue to evolve.</p> <p>To obtain a copy of the HP RoHS Compliance Statement, see HP RoHS position statement.</p>		
Material Usage	<p>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/supplychain/gen_specifications.html):</p> <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• Bis(2-Ethylhexyl) phthalate (DEHP)• Benzyl butyl phthalate (BBP)• Dibutyl phthalate (DBP)• Diisobutyl phthalate (DIBP)• Formaldehyde• Halogenated Diphenyl Methanes• Lead carbonates and sulfates• Lead and Lead compounds• 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)		

Technical Specifications

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 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 Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html ISO 14001 certificates: http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842 and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf</p>

COUNTRY OF ORIGIN

China

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

Type	Description	Part Number
Audio	HP Wired Thunderbolt Audio Module	3AQ21AA,3AQ21UT,3AQ21ET
	HP Wired USB-A UC SPK Phone Black Widow	4VW02AA
Case	HP Business 13.3 Sleeve	2UW00AA,2UW00UT,2UW00ET
	HP Business 14.1 Sleeve	2UW01A6
	HP Business 14.1 Sleeve	2UW01AA,2UW01UT,2UW01ET
	HP Business 15.6 Case	2SC66A6
	HP Business 15.6 Top Load	2SC66AA,2SC66UT,2SC66ET
	HP Business 17.3 Backpack	2SC67A6
	HP Business 17.3 Backpack	2SC67AA,2SC67UT,2SC67ET
	HP Business Slim 14.1 Top Load	2SC65A6
	HP Business Slim 14.1 Top Load	2SC65AA,2SC65UT,2SC65ET
	HP Business Slim 17.3 Top Load	2UW02A6
	HP Business Slim 17.3 Top Load	2UW02AA,2UW02UT,2UW02ET
	HP Executive 14.1 Tote	6KD10AA,6KD10UT,6KD10ET
	HP Executive 15.6 Backpack	6KD07AA,6KD07UT,6KD07ET
	HP Executive 15.6 Top Load	6KD06AA,6KD06UT,6KD06ET
	HP Executive 17.3 Backpack	6KD05AA,6KD05UT,6KD05A9,6KD05ET
	HP Executive 17.3 Top Load	6KD08AA,6KD08UT,6KD08ET
	HP Executive Convertible 14.1 Tote	5KN27AA
	HP Executive Leather 15.6 Top Load	6KD09AA,6KD09UT,6KD09ET
	HP Executive Slim 14.1 Top Load	6KD04AA,6KD04UT,6KD04ET
	HP Prelude G2 15.6 Backpack	1E7D6A6
	HP Prelude G2 15.6 Backpack	2Z8P3AA,1E7D6AA
	HP Prelude G2 15.6 Top Load	1E7D7A6
	HP Prelude G2 15.6 Top Load	2Z8P4AA,1E7D7AA
	HP Prelude Pro Recycled 15.6 Backpack	1X644A6
	HP Prelude Pro Recycled 15.6 Backpack	1X644AA,1X644UT,1X644ET
	HP Prelude Pro Recycled 15.6 Top Load	1X645A6
	HP Prelude Pro Recycled 15.6 Top Load	1X645AA,1X645UT,1X645ET
	HP Renew Business 14.1 Laptop Bag AMO	3E5F9A6
	HP Renew Business 14.1 Laptop Bag	3E5F9AA,3E5F9UT,3E5F9ET
	HP Renew Business 14.1 Laptop Sleeve	3E2U7AA,3E2U7UT,3E2U7ET
	HP Renew Business 14.1 Sleeve	3E2U7A6
	HP Renew Business 15.6 Laptop Bag	3E5F8A6
	HP Renew Business 15.6 Laptop Bag	3E5F8AA,3E5F8UT,3E5F8ET
	HP Renew Business 17.3 Laptop Backpack	3E2U5A6
	HP Renew Business 17.3 Laptop Backpack	3E2U5AA,3E2U5UT,3E2U5ET
	HP Renew Business 17.3 Laptop Bag	3E2U6AA,3E2U6UT
Digital Pen	HP Rechargeable Active Pen G3	6SG43AA

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

Docks	HP USB-C/A 120W G2 Universal Dock	5TW13AA, 5TW13ET, 5TW13UT
	HP Thunderbolt 120W G2 Dock	6HP48AA, 2UK37AA, 2UK37ET
	HP Thunderbolt 120W G2 Dock w/Audio	3YE87AA, 3YE87ET
	HP Thunderbolt 230W G2 Dock	2UK38AA, 2UK38UT, 2UK38ET
	HP Thunderbolt 230W G2 Dock w/Combo Cable	3TR87AA, 3TR87UT, 3TR87ET
	HP USB-C 120W G5 Dock	26D32AA, 5TW10XX
	HP USB-C Mini Dock	1PM64AA, 1PM64UT, 1PM64ET
	HP USB-C Travel Dock G2	7PJ38AA, 7PJ38UT, 7PJ38ET
Input/Output	HP WL USB Agnes Keyboard	T6U20AA, T6U20UT
	HP Collaboration WL Wanda Bluetooth Keyboard	Z9N39AA, Z9N39UT
	HP Wired Desktop 320K Keyboard	9SR37AA, 9SR37UT, 9SR37ET
	HP 125 WD USB Keyboard	266C9AA, 266C9UT, 266C9ET
	HP Wireless Rechargeable 950MK Mouse and Keyboard	3M165AA, 3M165UT
	HP USB Essential Keyboard/Mouse	H6L29AA
	HP Wired Desktop 320MK Mouse and Keyboard	9SR36AA, 9SR36UT, 9SR36ET
	HP Slim Wireless Keyboard and Mouse	T6L04AA, T6L04UT
	HP Wired Desktop 320M Mouse	9VA80AA, 9VA80UT, 9VA80ET
	HP Wired Mouse	265A9AA, 265A9UT, 265A9ET
	HP LSR Wired Mouse	265D9AA, 265D9UT, 265D9ET
	HP USB 320M Wired Mouse	9VA80AA, 9VA80UT, 9VA80ET
	HP Comfort Grip USB Wireless Mouse	H2L63AA, H2L63UT
	HP Bluetooth Fingerprint Reader USB Mouse	4TS44AA, 4TS44UT, 4TS44ET
	HP Bluetooth Travel Bluetooth Mouse	6SP30AA, 6SP30UT, 6SP30ET
	HP Creator USB-A+Bluetooth 935 Wireless Mouse Black	1D0K8AA, 1D0K8ET, 1D0K8UT
	HP Presenter Bluetooth 4.2 Bluetooth Mouse	2CE30AA, 2CE30UT, 2CE30ET
	HP UltraMobile USB-A Wireless Mouse	H6F25AA, H6F25UT
	HP USB-A Fingerprint Reader USB Mouse	4TS44AA, 4TS44UT, 4TS44ET
	HP USB-A Laser 3 Button USB Mouse	H4B81AA, H4B81ET
	HP USB Premium USB Mouse	1JR32AA, 1JR32UT
	HP USB Premium Wireless Mouse	1JR31AA, 1JR31UT
	HP USB Travel USB Mouse	G1K28AA, G1K28ET
	HP Multi-Device 635 Black Wireless Mouse	1D0K2AA
	HP USB-A+Bluetooth Travel Bluetooth Mouse	6SP30AA, 6SP30UT, 6SP30ET
	HP HDMI to DVI Adapter	F5A28AA
	HP HDMI to VGA Adapter	H4F02AA, H4F02UT, H4F02ET
	HP USB 3.0 to Gigabit Adapter	N7P47AA
	HP USB-C to 4.5mm Adapter	4ST73AA
	HP USB-C to HDMI 2.0 Adapter	2PC54AA, 1WC36UT, 1WC36AA
	HP USB-C to RJ45 Adapter	V8Y76AA, V7W66AA, V7W66UT
	HP USB-C to USB-A Adapter	N2Z63AA, N2Z63UT
	HP 4.5 mm and USB-C Dock Adapter G2	6LX61AA
	HP USB-C to USB-A Hub Jake	Z8W90AA, Z6A00XX
	HP USB-C to USB-C Cable Blight	5AR72AA

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

Power	HP USB-C to VGA Adapter	P7Z54AA, N9K76AA, N9K76UT
	HP 45W USB-C G2 Zeus AC Power Adapter	1HE07AA, 1HE07UT
	HP 45W USB-C LC Dali AC Power Adapter	1MZ01AA
	HP 65W USB-C Auto Chevy AC Power Adapter	5TQ76AA, 5TQ76UT, 5TQ76ET
	HP 65W USB-C Hades AC Power Adapter	X7W50AA, 1HE08XX
	HP 65W USB-C LC AC Power Adapter	1P3K6AA
	HP 90W USB-C Gaia AC Power Adapter	2LN85AA
	HP USB Power Bank	N9F71AA, N9F71UT
	HP USB-C Essential Power Bank	3TB55AA, 3TB55UT
Storage	HP USB DVD-Writer EXT ODD	Y3T76AA, F2B56AA, F2B56UT, F2B56ET
Security	HP Nano Cable Lock	1AJ39AA, 1AJ39UT
	HP Sure Key Cable Lock	6UW42AA
	HP Nano Master Keyed Cable Lock	1AJ40AA, 1AJ40UT

Summary of Changes

Date of change:	Version History:		Description of change:
January 29, 2021	V1 to V2	Update	USB Ports
February 10, 2021	V2 to V3	Added	Environmental Data
March 1, 2021	V3 to V4	Added	Low Blue Light feature, Update Processors and Storage Section
March 4, 2021	V4 to V5	Update	Battery Life and Low Blue Light Disclaimer
March 9, 2021	V5 to V6	Added	Brightview to Display section
April 1, 2021	V6 to V7	Updated	Environmental Data
April 16, 2021	V7 to V8	Update	Options and Accessories
April 19, 2021	V8 to V9	Update	TechSpecs
May 6, 2021	V9 to V10	Add	HP Smart Support
May 21, 2021	V10 to V11	Update	Options and Accessories section
May 27, 2021	V11 to V12	Update	HP Pro Security Edition to HP Wolf Pro Security Edition
June 11, 2021	V12 to V13	Remove	HP WorkWell from Software and Security section
September 7, 2021	V13 to V14	Update	Techspecs in Networking and Power section
October 22, 2021	V14 to V15	Update	Windows 10 with Free upgrade to Windows 11 when available in OS section and footnote
November 17, 2021	V15 to V16	Update	Networking Qualcomm® 5G Disclaimers
December 8, 2021	V16 to V17	Update	OS footnotes and Wi-Fi 6 footnotes
December 14, 2021	V17 to V18	Update	Windows OS section

Copyright © 2021 HP Development Company, L.P. The only warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Intel, Core, Iris and Intel vPro are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Bluetooth is a trademark owned by its proprietor and used by HP Inc. under license. USB Type-C® and USB-C® are registered trademarks of USB Implementers Forum. ENERGY STAR is a registered trademark of the U.S. Environmental Protection Agency. All other trademarks are the property of their respective owners.