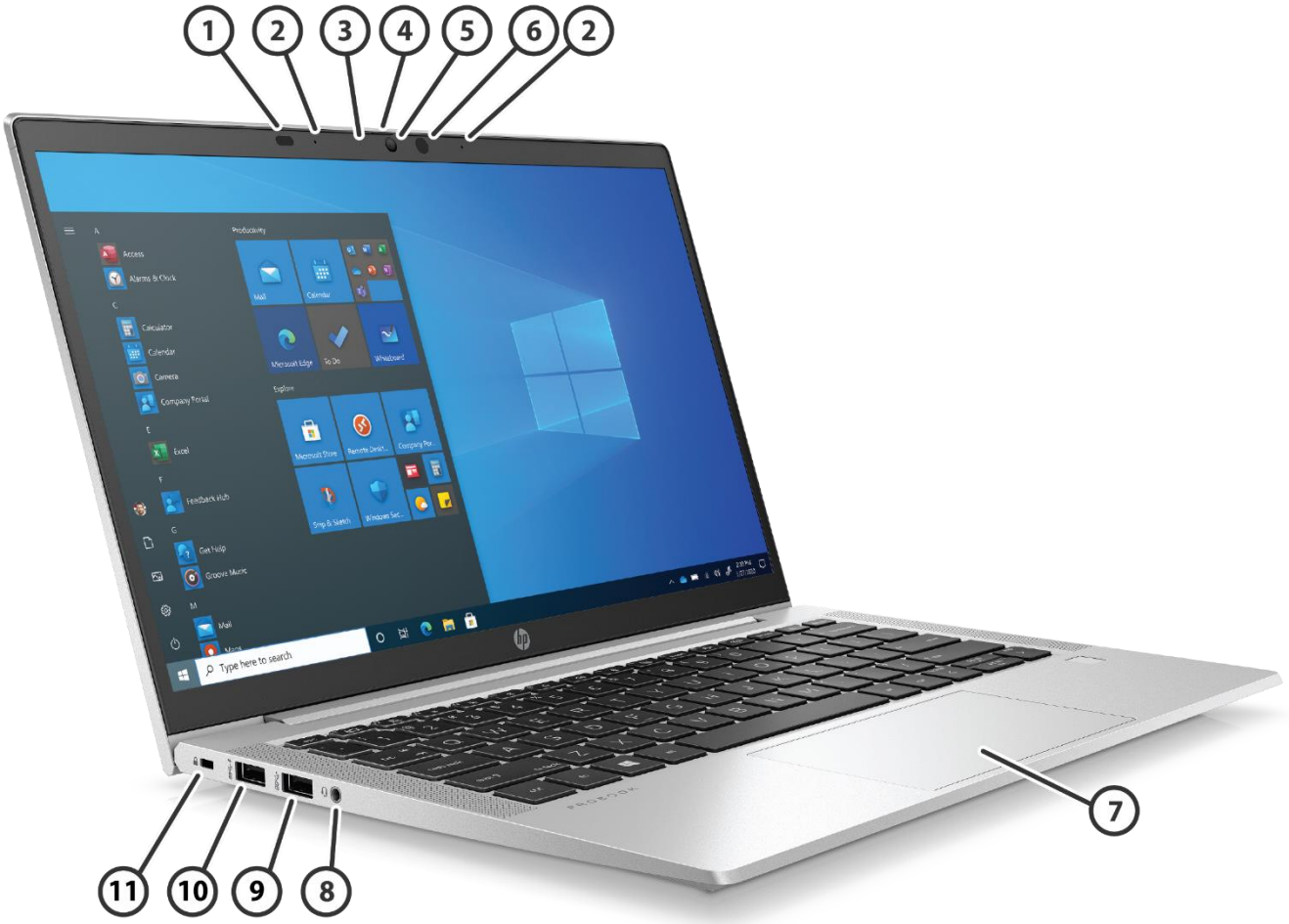
Overview

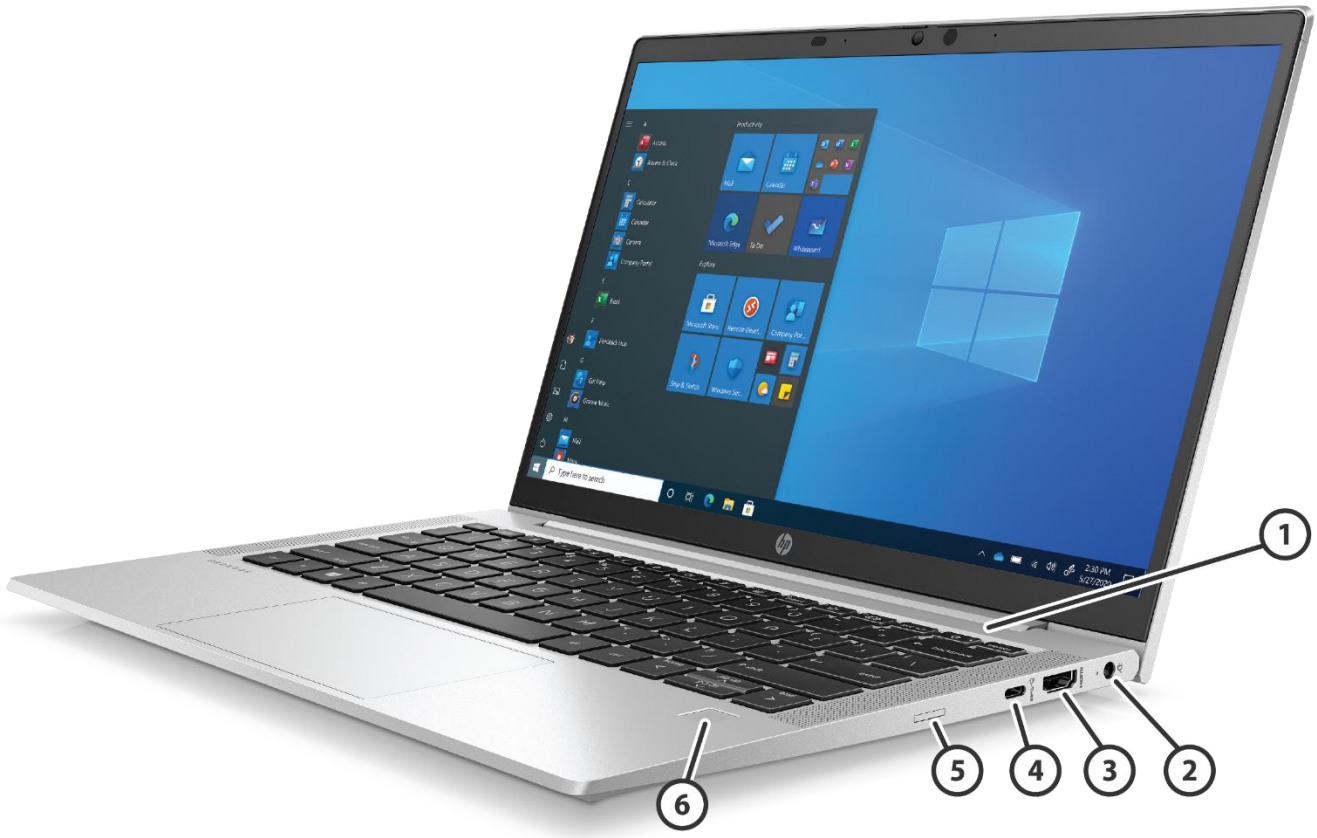
HP ProBook 635 Aero G8 Notebook PC



Left

1. Ambient Light Sensor (Optional)
2. Internal Microphones (2)
3. Webcam LED (Optional)
4. Camera Shutter (Only available with webcam)
5. HD and IR Camera (Optional)
6. IR Camera LED (Optional)
7. Glass Clickpad
8. Audio Combo Jack
9. SuperSpeed USB Type-A 5Gbps signaling rate Port
10. SuperSpeed USB Type-A 5Gbps signaling rate Charging Port
11 Nano Security Lock Slot (Lock sold separately)

Overview



Right

1. Power Button Key
2. Power Connector
3. HDMI Port (Cable not included)
4. SuperSpeed USB Type-C® 10Gbps signaling rate (Power delivery, DisplayPort™ 1.4)
5. Nano SIM Card Slot[1]
6. Touch Fingerprint Sensor (Select models)

1. All units have a SIM card tray but units that do not support WWAN are shipped with a non-removable SIM slot plug

Overview

At a Glance

- An ultralight sub-1 Kg laptop[1]
- Choice of AMD Ryzen™ 5000 Series Mobile Processors.
- Enables AMD Memory Guard to help defend against cold boot attacks with real-time encryption and decryption of system's memory with AMD Ryzen PRO Processors.
- Preinstalled with Windows 10 versions or FreeDOS
- Choice of 13.3" (33.8 cm) diagonal ultra-wide viewing angle FHD and privacy panel option
- Supports wireless options for connectivity on the go including gigabit-speed Wi-Fi® 6 and CAT9 4G/LTE WWAN
- Fast and upgradeable dual channel DDR4 SODIMM memory up to 32 GB
- Choice of solid state drives up to 1 TB
- Features quiet and responsive HP Premium Keyboard with the HP Programmable key and backlit options
- Multi-layered security with HP Sure Start Gen7, HP Privacy Camera, HP Sure View Reflect, HP Sure Recover, HP Sure Run, HP Sure Sense, HP Sure Click, and Touch Fingerprint sensor
- Supports fast charging (50% in 30 minutes) with no impact on battery recharge cycles
- Battery life up to 15 hours and 30 minutes (42Whr) and up to 20 hours (53 Whr) (AMD Ryzen™ 5000 Series Mobile Processors and 3-cell 53 Wh battery)
- Designed to support optional HP docking options including the HP Universal Dock G5 (Docks sold separately)
- Undergoes MIL-STD 810H tests [2]

1. 250 nit panel, HP Sure View Reflect, multiple SODIMMs, WWAN, 53 Wh battery, and backlit keyboard not available on configurations starting at less than 1kg.
2. MIL STD 810H testing is not intended to demonstrate fitness for 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 ProBook 635 Aero G8 Notebook PC

OPERATING SYSTEMS

Preinstalled

Windows 10 Pro 64 – HP recommends Windows 10 Pro[1]
Windows 10 Pro 64 (National Academic only)[2]
Windows 10 Home 64[1]
Windows 10 Home Single Language 64[1]
Windows 10 Pro (Windows 10 Enterprise available with a Volume Licensing Agreement)[1]
Windows 10 Enterprise 64[1] (Web support)

FreeDOS

1. 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 10 is automatically updated, which is always enabled. ISP fees may apply 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. Features vary; see https://aka.ms/ProEducation for Windows 10 Pro Education feature information.

Note: HP tested Windows 10, 20H2, 2004(20H1), 1909(19H2) on this platform. For testing information on newer versions of Windows 10, please see https://support.hp.com/document/c05195282.

Supported Versions
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

AMD Ryzen™ 7 PRO 5850U with Radeon™ Graphics (3.2 GHz base clock, up to 4.4 GHz max boost clock, 16 MB L3 cache, 8 cores) [3,4,5]
AMD Ryzen™ 5 PRO 5650U with Radeon™ Graphics (2.3 GHz base clock, up to 4.2 GHz max boost clock, 16 MB L3 cache, 6 cores)[3,4,5]
AMD Ryzen™ 7 5800U with Radeon™ Graphics (1.9 GHz base clock, up to 4.4 GHz max boost clock, 16 MB L3 cache, 8 cores)[3,4,5]
AMD Ryzen™ 5 5600U with Radeon™ Graphics (2.3 GHz base clock, up to 4.2 GHz max boost clock, 16 MB L3 cache, 6 cores) [3,4,5]
AMD Ryzen™ 3 5400U with Radeon™ Graphics (2.6 GHz base clock, up to 4.0 GHz max boost clock, 8 MB L3 cache, 4 cores) [3,4,5]

Processors Family
AMD Ryzen™ 5000 Series Mobile Processors[6]

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

Technical Specifications

4. 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. AMD's numbering is not a measurement of clock speed.

5. AMD Max Burst frequency performance varies depending on hardware, software and overall system configuration.

6. 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.

CHIPSET

Chipset is integrated with processor

GRAPHICS

Integrated
AMD Radeon™ Graphics[7]

Supports
Support HD decode, DX12, HDMI2.0

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

DISPLAY

Non-Touch
33.8 cm (13.3") diagonal FHD UWVA eDP anti-glare WLED-backlit bent, 250 nits, 45% NTSC (1920 x 1080) [7,9]
33.8 cm (13.3") diagonal FHD UWVA eDP anti-glare WLED-backlit bent, 250 nits, 45% NTSC for HD camera (1920 x 1080) [7,9]
33.8 cm (13.3") diagonal FHD UWVA eDP anti-glare WLED-backlit bent, 250 nits, 45% NTSC for HD + IR camera (1920 x 1080) [7,9]
33.8 cm (13.3") diagonal FHD UWVA eDP+PSR anti-glare, low power bent with Ambient Light Sensor, 400 nits, 100%sRGB for HD + IR camera (1920 x 1080) [7,9]
33.8 cm (13.3") diagonal FHD UWVA eDP+PSR anti-glare, low power bent with Ambient Light Sensor, 400 nits, 100%sRGB for HD + IR camera for WWAN (1920 x 1080) [7,9]
33.8 cm (13.3") diagonal FHD UWVA eDP + PSR anti-glare WLED-backlit bent, 1000 nits with HP Sure View Reflect Integrated Privacy Screen, 72% NTSC with Ambient Light Sensor and HD + IR camera (1920 x 1080) [7,9,10]
33.8 cm (13.3") diagonal FHD UWVA eDP + PSR anti-glare WLED-backlit bent, 1000 nits with HP Sure View Reflect Integrated Privacy Screen, 72% NTSC with Ambient Light Sensor and HD + IR camera for WWAN (1920 x 1080) [7,9,10]

HDMI [8]
Support resolution up to 4k @ 60Hz

7. FHD/HD content required to view FHD/HD images.
8. HDMI cable sold separately.
9. Resolutions are dependent upon monitor capability, and resolution and color depth settings.

Technical Specifications

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

NOTE: Actual brightness will be lower with touchscreen or Sure View.

STORAGE AND DRIVES

Primary M.2 Storage
1 TB PCIe® Gen3 x4 NVMe™ TLC Solid State Drive[11]
512 GB PCIe® Gen3x4 NVMe™ TLC Solid State Drive[11]
512 GB PCIe® NVMe™ Value Solid State Drive [11]
256 GB PCIe® Gen3x4 NVMe™ TLC Solid State Drive[11]
256 GB PCIe® NVMe™ Value Solid State Drive [11]
128 GB M.2 PCIe TLC Solid State Drive [11]

11. 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.

MEMORY

Maximum Storage
32 GB DDR4-3200 SDRAM

Memory
32 GB DDR4-3200 SDRAM (2 x 16 GB) [12]
16 GB DDR4-3200 SDRAM (1 x 16 GB) [12]
16 GB DDR4-3200 SDRAM (2 x 8 GB) [12]
8 GB DDR4-3200 SDRAM (1 x 8 GB) [12]
8 GB DDR4-3200 SDRAM (2 x 4 GB)[12]
4 GB DDR4-3200 SDRAM (1 x 4 GB) [12]

Memory Slots
2 SODIMM
Both slots are accessible/upgradeable by IT or self-maintainers only
DDR4 SODIMMS, system runs at 3200
Supports Dual Channel Memory

12. 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.

Technical Specifications

NETWORKING/COMMUNICATIONS

WLAN
Intel® AX200 Wi-Fi 6 (2x2) and Bluetooth® 5 Combo, non-vPro® [13]
Realtek RTL8822CE 802.11ac (2x2) and Bluetooth® 5 Combo[13]

WWAN
Intel® XMM™ 7360 LTE-Advanced Cat 9 [14]

13. 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. Wi-Fi 5 (802.11 ac) is backwards compatible with prior 802.11 specs.
14. 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.

AUDIO/MULTIMEDIA

Audio
Integrated microphone (Dual Array)
2 Integrated Stereo Speakers

Speaker Power
2W/4ohm Per speaker

Camera
720p HD camera [7,43]
720p HD+IR camera [7,43,15]

Sensors
Ambient light sensor (select models only)
Hall Sensor

7. FHD/HD content required to view FHD/HD images.
43. Sold separately or as an optional feature.
15. Internet access required.

Technical Specifications

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard
HP Premium Keyboard, spill resistant, Durakeys
Backlit keyboard [16]

Pointing Device
Clickpad with multi-touch gestures enabled, taps enabled as default
Microsoft Precision Touchpad Default Gestures Support

Function Keys
F1 - Display Switching
F2 - Blank or SureView On/Off (with LED)
F3 - Brightness Down
F4 - Brightness Up
F5 - Audio Mute (with LED)
F6 - Volume Down
F7 - Volume Up
F8 - Mic Mute (with LED)
F9 - Blank or Backlit Toggle
F10 - Insert
F11 - Airplane Mode
F12 - HP Programmable Key
Print Screen
Power Button (with LED)

Hiden Function Keys
Fn+R - Break
Fn+S - Sys Rq
Fn+C - Scroll Lock
Fn+E - Insert
Fn+W - Pause

16. Backlit keyboard is an optional feature.

Technical Specifications

SOFTWARE AND SECURITY

HP BIOSphere Gen6 [17]
HP Drive Lock & Automatic Drive Lock
BIOS Update via Network
HP Secure Erase [18]
Absolute Persistence Module[19]
HP LAN-Wireless Protection
USB enable/disable (via BIOS)

Software
HP Connection Optimizer [20]
HP Hotkey Support
myHP
HP Support Assistant [21]
HP Noise Cancellation Software
Touchpoint Customizer for Commercial
HP QuickDrop[22]
HP Notifications
HP Privacy Settings
HP Wireless Button Driver
HP Power Manager
Microsoft Defender
Buy Office (sold separately)
HP Smart Support [46]

Manageability Features
HP Driver Packs (download) [23]
HP Manageability Integration Kit for Microsoft Center Configuration manager Gen4 (download) [24]
HP Client Catalog (download)
HP Client Management Script Library (download)
HP Image Assistant (download)

Security Management
HP Wolf Pro Security Edition [25]
HP Sure Click [26]
HP Sure Sense [27]
HP Sure Start Gen7 [28]
HP Sure Admin [29]
HP Sure Recover Gen4 [30]
HP Sure Run Gen4 [31]
HP Fingerprint Sensor [32]
TPM 2.0 Embedded Security Chip (Common Criteria EAL4+ Certified) (FIPS 140-2 Level 2 Certified)
Secured-core PC Enable[33]

Is the BIOS on this notebook ISO/IEC 19678:2015 (formerly NIST 800-147) compliant?: Yes
UEFI version: 2.7
Class: Class 3

17. 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.

Technical Specifications

18. 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™.
19. 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 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/
20. HP Connection Optimizer requires Windows 10.
21. HP Support Assistant requires Windows and Internet access.
22. HP 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.
23. HP Driver Packs not preinstalled, however available for download at http://www.hp.com/go/clientmanagement.
24. HP Manageability Integration Kit can be downloaded from http://www.hp.com/go/clientmanagement.
25. 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.
26. HP Sure Click requires Windows 10. See https://bit.ly/2PrLT6A_SureClick for complete details
27. HP Sure Sense is available on select HP PCs and is not available with Windows10 Home.
28. HP Sure Start Gen7 is available on select HP PCs and requires Windows 10
29. 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.
30. HP Sure Recover Gen4 is available on select HP PCs and requires Windows 10 and 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.
31. HP Sure Run Gen4 is available on select HP PCs and requires Windows 10
32. HP Fingerprint sensor is an optional feature that must be configured at purchase.
33. 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.
46. 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.

POWER

Technical Specifications

Power Supply
HP Smart 65 W External AC power adapter [34]
HP Smart 65 W EM External AC power adapter [34]
HP Smart 65 W USB Type-C adapter [34]
HP Smart 45 W External AC power adapter [34]
HP Smart 45 W External AC power adapter, 2-prong (Japan only) [34]
HP Smart 45 W USB Type-C adapter [34]

Power Cord
3-wire plug – 1.0m [34]
2-wire plug – 1.0m [34]

Primary Battery
HP Long Life 3-cell, 42 Wh Li-ion [35,44]
HP Long Life 3-cell, 53 Wh Li-ion [35,44]
Support HP Fast Charge (Up to 50% in 30 minutes with 65W AC Adapter) [36]

Battery life
MM18 Battery life
42 Wh battery: Up to 15 hours 30 minutes[45]
53 Wh battery: Up to 20 hours[45]

Battery Weight
42W battery: 0.17 kg (0.37 lb)
53W battery: 0.21 kg (0.45 lb)

34. Availability may vary by country.
35. Battery is internal and not replaceable by customer. Serviceable by warranty.
36. Recharges your 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.
44. 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.
45. 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 http://www.bapco.com for additional details.

Technical Specifications

WEIGHTS & DIMENSIONS

Product Weight
Starting at 2.2 lb [37]
Starting at 0.99 kg [37]

Product Dimensions (w x d x h)
400 nits panels:
30.76 x 20.45 x 1.79 cm
12.11 x 8.05 x 0.71 in

1000 nits panels:
30.76 x 20.45 x 1.79 cm
12.11 x 8.05 x 0.71 in

250 nits panels:
30.76 x 20.45 x 1.92 cm
12.11 x 8.05 x 0.756 in

37. Weight will vary by configuration.

PORTS/SLOTS

Ports
1 SuperSpeed USB Type-C® 10Gbps signaling rate (Power delivery, DisplayPort™ 1.4)
2 SuperSpeed USB Type-A 5Gbps signaling rate (1 charging port)
1 HDMI 2.0 [38]
1 Headphone/microphone combo
1 AC power
1 Nano SIM card slot [39]

38. HDMI cable sold separately.
39. SIM slot is not user accessible without WWAN configuration.

Technical Specifications

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.[40]

40. 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 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

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	
Nominal Operating Voltage	19 V
Average Operating Power	2.82W
Integrated graphics	6.78W
Discrete Graphics	N/A
Max Operating Power	UMA < 45W
Temperature	
Operating	41° to 95° F (5° to 35° C)
Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	
Operating	10% to 90%, non-condensing
Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	
Operating	40 G, 2 ms, half-sine
Non-operating	200 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®	ENERGY STAR 8.0[41]
EPEAT®	EPEAT® Gold in United States[42]
ICES	Yes
Australia /	Yes
NZ A – Tick Compliance	Yes
CCC	Yes
Japan VCCI Compliance	Yes
KC	Yes
BSMI	Yes
CE Marketing Compliance	Yes
BNCI or BELUS	Yes
CIT	Yes
GOST	Yes
Saudi Arabian Compliance (ICCP)	Yes
SABS	Yes

41. Configurations of the HP ProBook 635 Aero G8 that are ENERGY STAR® qualified are identified as ProBook 635 Aero G8 ENERGY STAR on HP websites and on http://www.energystar.gov.

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

Technical Specifications

DISPLAYS

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

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

Panel LCD 13.3 inch FHD (1920 x 1080) Anti-Glare WLED UWVA 45percent cg 250nits eDP 1.2 w/o PSR bent NWBZ	**Outline Dimensions (W x H x D)**	300.56 x 177.77 mm (max) (FPC folding included)
	Active Area	293.76 x 165.24 mm
	Weight	260 g (max)
	Diagonal Size	13.3 inch
	Thickness	3.0 mm/ 5.0 mm (PCB) (max)
	Interface	eDP 1.2 (2lane)
	Surface Treatment	Anti-Glare
	Touch Enabled	No
	Contrast Ratio	600:1
	Refresh Rate	60 Hz
	Brightness	250 nits
	Pixel Resolution	1920 x 1080 (FHD)
	Format	RGB Stripe
	Backlight	LED
	Color Gamut Coverage	NTSC 45%
	Color Depth	6 bits
	Viewing Angle	UWVA 85/85/85/85

Panel LCD 13.3 inch FHD (1920x1080) Anti-Glare WLED UWVA sRGB 100percent cg 400nits eDP 1.4+PSR2 bent LP NB2Y	**Outline Dimensions (W x H x D)**	299.06 x 176.54 mm (max) (FPC folding included)
	Active Area	293.76 x 165.24 mm
	Weight	175 g (max)
	Diagonal Size	13.3 inch
	Thickness	2.0 mm / 3.8 mm (PCB) (max)
	Interface	eDP 1.4 w/ PSRII (2 lane)
	Surface Treatment	Anti-Glare
	Touch Enabled	No
	Contrast Ratio	1500:1
	Refresh Rate	60 Hz
	Brightness	400 nits
	Pixel Resolution	1920 x 1080 (FHD)
	Format	RGB Stripe
	Backlight	LED
	Color Gamut Coverage	sRGB 100%
	Color Depth	8 bits
	Viewing Angle	UWVA 85/85/85/85

Technical Specifications

Panel LCD 13.3inch FHD (1920x1080) Anti-Glare WLED UWVA 72percent cg 1000nits eDP 1.4+PSR PrivacyG4	**Outline Dimensions (W x H x D)**	299.06 x 176.54 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-glare (AG)
	Touch Enabled	No
	Contrast Ratio	1500:1
	Refresh Rate	60 Hz
	Brightness	1000 nits
	Pixel Resolution	1920 x 1080 (FHD)
	Format	RGB
	Backlight	LED
	Color Gamut Coverage	NTSC 72%
	Color Depth	8 bits
	Viewing Angle	UWVA 85/85/85/85

Technical Specifications

STORAGE AND DRIVES[1]

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.

SSD 128GB 2280 PCIe-3x2 Three Layer Cell	**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	PCIe NVMe Gen3x2 or Gen 3x4
	Maximum Sequential Read	Up to 3100 MB/s
	Maximum Sequential Write	Up to 1400 MB/s
	Logical Blocks	250,069,680
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security (Option); TRIM; L1.2

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; TRIM; L1.2

Technical Specifications

SSD 256GB 2280 PCIe NVMe Value	**Form Factor**	M.2 2280
	Capacity	256 GB
	NAND Type	Value
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe Gen3
	Maximum Sequential Read	Up to 2200 MB/s
	Maximum Sequential Write	Up to 1400 MB/s
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security (optional); TRIM; L1.2

SSD 512GB 2280 PCIe NVMe Value	**Form Factor**	M.2 2280
	Capacity	512 GB
	NAND Type	Value
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe Gen3
	Maximum Sequential Read	Up to 2400 MB/s
	Maximum Sequential Write	Up to 1750 MB/s
	Logical Blocks	1,000,215,215
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security (optional); TRIM; L1.2

SSD 256GB 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)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Up to 3500 MB/s
	Maximum Sequential Write	Up to 2200 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

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	Up to 3500 MB/s
	Maximum Sequential Write	Up to 2956 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

NETWORKING / COMMUNICATIONS

Intel® Wi-Fi 6[1] AX200 + Bluetooth® 5 (802.11ax 2x2, non-vPro®, supporting gigabit data rate) non-vPro®[5]	**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	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
	Security[3]	• IEEE 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 Power[2]	• 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

	• 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	• 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 Sensitivity[4]	• 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
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

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)

Technical Specifications

Signaling Data Rate	Legacy: 3 Mbps signaling data rate[6] 2.17 Mbps BLE: 1 Mbps signaling data rate[1] 0.2 Mbps 6. 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.

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. Only available in countries where 802.11ax is supported.
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 5 or 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

Realtek RTL8822CE 802.11ac 2x2 Wi-Fi + Bluetooth5[1]	**Wireless LAN Standards**	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v
	Interoperability	Wi-Fi® CERTIFIED modules
	Frequency Band	• 802.11b/g/n 2.402 – 2.482 GHz • 802.11a/n/ac 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 : max 866.7Mbps
	Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
	Security[3]	• IEEE 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 Power[2]	• 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

Technical Specifications

Power Consumption	• 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 Sensitivity[4]	• 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	
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** **Non-operating**	14° to 158° F (–10° to 70° C) –40° to 176° F (–40° to 80° C)
Humidity	**Operating** **Non-operating**	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	**Operating** **Non-operating**	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF LED Off – Radio ON	

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

Bluetooth Specification	4.0/4.1/4.2/5.0 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)

Technical Specifications

Signaling Data Rate	Legacy: 3 Mbps signaling data rate[5] throughput up to2.17 Mbps BLE: 1 Mbps signaling data rate[1] throughput up to 0.2 Mbps 5. 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 + 4 dBm for BR and EDR.

1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 5 (802.11 ac) 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).

Technical Specifications

Intel® XMM™ 7360 LTE-Advanced[1]	**Technology/Operating bands**	FDD LTE: LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 1700 (Band 4), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 1400 (Band 11), 700 (Band 12), 700 (Band 13) 700 (Band 17), 850 (Band 18), 850 (Band 19), 800 (Band 20), 1450 (Band 21), 850 (Band 26) 700 (Band 28) MHz, 700 (Band 29), 2300 (Band 30), 2100 (Band 66) MHz TDD LTE: 2600 (Band 38), 1900 (Band 39), 2300 (Band 40), 2500 (Band 41) MHz HSPA+: 2100 (Band 1), 1900 (Band 2), 1700 (Band 4), 850 (Band 5), 900 (Band 8) MHz
	Wireless protocol standards	3GPP Release 11 LTE Specification CAT.9, MAX 60MHz aggregation BW WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
	GPS	Standalone, A-GPS (MS-B and LTO)
	GPS bands	GPS 1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 ± 2.046 MHz
	Maximum data rates	LTE: 450 Mbps (DL 3CA), 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	6 g
	Dimensions (Length x Width x Thickness)	42 x 30 x 2.3 mm

1. 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.

Technical Specifications

POWER

AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1m	**Dimensions**	95 x 45 x 26.8 mm	
	Weight	200 g +/- 10 g	
	Input	**Input Efficiency**	87.74 % at 115 Vac and 88.4 % at 230Vac
		Input frequency range	47 ~ 63 Hz
		Input AC current	Max. 1.4 A at 90 Vac
	Output	**Output power**	45 W
		DC output	19.5 V
		Hold-up time	5 ms at 115 Vac input
		Output current limit	<8.0A
	Connector	4.5mm Barrel Type	
	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	20% to 95%
		Storage Humidity	10% to 95%
	EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.	

Technical Specifications

AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1m 2prong	**Dimensions**		95 x 45 x 26.8 mm
	Weight		200 g +/- 10 g
	Input	**Input Efficiency**	87.74 % at 115 Vac and 88.4 % at 230Vac
		Input frequency range	47 ~ 63 Hz
		Input AC current	Max. 1.4 A at 90 VAC
	Output	**Output power**	45 W
		DC output	19.5 V
		Hold-up time	5 ms at 115 Vac input
		Output current limit	<8.0A
	Connector		4.5mm Barrel Type
	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	20% to 95%
		Storage Humidity	10% to 95%
	EMI and Safety Certifications		CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.

Technical Specifications

AC Adapter 65 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1m	**Dimensions (H x W x D)**	90 x 51 x 28.5mm	
	Weight	230g +/-10%	
	Input	**Input Efficiency**	88.0 % at 115 Vac and 89.0 % at 230 Vac
		Input frequency range	47 ~ 63 Hz
		Input AC current	Max. 1.7 A at 90 Vac
	Output	**Output power**	65W
		DC output	19.5V
		Hold-up time	5 ms at 115 Vac input
		Output current limit	<11.0A
	Connector	4.5mm Barrel Type	
	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 5,000 m)
		Humidity	20% to 95%
		Storage Humidity	10% to 95%
	EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.	

Technical Specifications

AC Adapter 65 Watt Smart nPFC EM Barrel 4.5mm New EM	**Dimensions (H x W x D)**	102 x 55 x 30mm	
	Weight	250g +/-10%	
	Input	**Input Efficiency**	88.0 % at 115 Vac and 89.0 % at 230 Vac
		Input frequency range	47 ~ 63 Hz
		Input AC current	Max. 1.7 A at 90 Vac
	Output	**Output power**	65W
		DC output	19.5V
		Hold-up time	5 ms at 115 Vac input
		Output current limit	<11.0A
	Connector	4.5mm Barrel Type	
	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 5,000 m)
		Humidity	20% to 95%
		Storage Humidity	10% to 95%
	EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.	

AC Adapter 45 Watt nPFC Standard USB Type-C® Straight 1m	**Dimensions (H x W x D)**	94.0 x 40.0 x 26.5 mm	
	Weight	192.5g +/-10%	
	Input	**Input Efficiency**	Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec: 5V: 81.5% 9V: 86.7% 12V: 87.41% 15V: 87.8%
		Input frequency range	47 ~ 63 Hz
		Input AC current	Max. 1.4 A at 90 Vac
	Output	**Output power**	5V/15W 9V/27W 12V/36W 15V/45W
		DC output	5V/9V/12V/15V
		Hold-up time	5 ms at 115 Vac input

Technical Specifications

	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 5,000 m)
		Humidity	20% to 95%
		Storage Humidity	10% to 95%
	EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.	

AC Adapter 65 Watt nPFC Standard USB type C® Straight 1m	**Dimensions**	90.0 x 51 x 28.5mm	
	Weight	250 g +/- 10 g	
	Input	**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	**Output power**	65 W
		DC output	5V/9V/12V/15V/20V
		Hold-up time	5 ms 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)
		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%
	EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.	

Technical Specifications

Battery CC 3 Cell 53 Wh Long Life -PL Fast Charge	**Dimensions (H x W x L)**	7.3 x 52.9 x 267.11mm (0.287 x 2.082 x 10.516 inch)
	Weight	0.205kg (0.45 lb)
	Cells/Type	3cell Lithium-Ion Polymer cell / 645180
	Voltage	11.55V
	Amp-hour capacity	4.59Ah
	Watt-hour capacity	53 Wh
	Temperature	32˚ to 113˚ F (0˚ to 45˚ C)
	Operating (Charging)	32˚ to 122˚ F (0˚ to 50˚ C)
	Operating (Discharging)	14˚ to 140˚ F (-10˚ to 60˚ C)
	Warranty	Depends on system offering
	Optional Travel Battery Available	No

Battery GR 3 Cell 42 Wh Long Life -PL Fast Charge	**Dimensions (H x W x L)**	5.8 x 61.5 x274.4 mm (0.228 x 2.42 x 10.80 inch)
	Weight	0.168 kg (0.37 lb)
	Cells/Type	3cell Lithium-Ion Polymer cell / 485083
	Energy	
	Voltage	11.4V
	Amp-hour capacity	3.64Ah
	Watt-hour capacity	42 Wh
	Temperature	
	Operating (Charging)	32˚ to 113˚ F (0˚ to 45˚ C)
	Operating (Discharging)	14˚ to 122˚ F (-10˚ to 60˚ C) **Warranty:** Depends on system offering
	Fuel Gauge LED	NA

Technical Specifications

ENVIRONMENTAL DATA

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: • 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	• Ocean-bound plastic in (part(s)) • 14.12% post-consumer recycled plastic • External Power Supply 90% Efficiency • Low halogen • Outside Box and corrugated cushions are 100% sustainably sourced and recyclable • Molded Paper Pulp Cushion inside box is 100% sustainably sourced and recyclable • Bulk packaging available		
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)	5.66 W	5.41 W	5.68 W
Normal Operation (Long idle)	0.93 W	1.28 W	1.02 W
Sleep	0.93 W	1.28 W	1.02 W
Off	0.36 W	0.38 W	0.36 W
	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 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)	19 BTU/hr	18 BTU/hr	19 BTU/hr
Normal Operation (Long idle)	3 BTU/hr	4 BTU/hr	3 BTU/hr

Technical Specifications

Sleep	3 BTU/hr	4 BTU/hr	3 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	2.5	14.4	
Fixed Disk – Random writes	2.6	16.9	
Optical Drive – Sequential reads	3.3	25.8	
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	• 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 http://www.epeat.net • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product is 95.3% recycle-able when properly disposed of at end of life.		
Packaging Materials	**External:**	PAPER/Corrugated	261 g
	Internal:	PLASTIC/polypropylene	3 g
		PLASTIC/Polyethylene low density	14 g
		PAPER/Molded pulp	170 g
	The plastic packaging material contains at least 0% recycled content.		
	The corrugated paper packaging materials contains at least 54.5% recycled content.		
RoHS Compliance	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. 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.		

Technical Specifications

	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. To obtain a copy of the HP RoHS Compliance Statement, see HP RoHS position statement.
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/supplychain/gen_specifications.html): • 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)
Packaging Usage	HP follows these guidelines to decrease the environmental impact of product packaging: • 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.

Technical Specifications

End-of-life Management and Recycling	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. 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.
HP, Inc. Corporate Environmental Information	For more information about HP's commitment to the environment: 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
footnotes	• Percentage of ocean-bound plastic contained in each component varies by product • Recycled plastic content percentage is based on the definition set in the IEEE 1680.1-2018 standard. • 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. • Fiber cushions made from 100% recycled wood fiber and organic materials.

FINGERPRINT READER

Model	Synaptics Validity VFS7604 touch sensor
Mobile Voltage Operation	3.0V to 3.6V
Operating Temperature:	0~60°C
Current Consumption Image:	100mA Max
Low Latency Wait For Finger	260 uA
Capture Rate: Image transmitter output frequency	9.6MHz
ESD Resistance	IEC 61000-4-2 4B (+/-15KV)
Detection Matrix	363 dpi / 7.4x6mm sensor area
FRR (False Reject Rate) / FAR (False Acceptance Rate)	FRR <1% @ 1:50K FAR

Technical Specifications

Country of Origin

China

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

Type	Description	Part Number
Cases	HP Prelude Pro Top Load	1X645AA
	HP Prelude Pro Backpack	1X644AA
Docking	HP USB-C Mini Dock	1PM64AA
	HP USB-C Travel Dock G2	7PJ38AA
Input/Output	HP WL USB Agnes Keyboard	T6U20AA
	HP Slim Wireless Keyboard and Mouse	T6L04AA
	HP Wireless USB Premium Keyboard	Z9N41AA
	HP Wireless Rechargeable 950MK Mouse and Keyboard	3M165AA
	HP 235 WL Mouse and Keyboard Combo	1Y4D0AA
	HP Wired Desktop 320MK Mouse and Keyboard	9SR36AA
	HP Wired Desktop 320K Keyboard	9SR37AA
	HP Wired Desktop 320M Mouse	9VA80AA
	HP 125 Wired Keyboard	266C9AA
	HP 225 Wired Mouse and Keyboard Combo	286J4AA
	HP Wired Mouse	265A9AA
	HP LSR Wired Mouse	265D9AA
	HP Bluetooth Travel Bluetooth Mouse	6SP30AA
	HP Comfort Grip USB Wireless Mouse	H2L63UT
	HP Creator USB-A+Bluetooth 935 Wireless Mouse Black	1D0K8AA
	HP USB Travel USB Mouse	G1K28AA
	HP USB-A+Bluetooth Multi-Device 635 Wireless Mouse Black	1D0K2AA
	HP X4000b Bluetooth Mouse	H3T50AA
	HP Wireless Premium Mouse	1JR31AA
	HP USB Premium Mouse	1JR32AA
	HP USB Fingerprint Mouse	4TS44AA
	HP Elite Presenter Mouse	2CE30AA
	HP HDMI to DVI Adapter	F5A28AA
	HP HDMI to VGA Adapter	H4F02AA
	HP USB-C to DisplayPort Adapter	N9K78AA
	HP USB-C to HDMI 2.0 Adapter	1WC36AA
	HP USB-C to RJ45 Adapter	V7W66AA
	HP USB-C to USB-A Hub	Z6A00AA
	HP USB-C to VGA Adapter	N9K76AA
	HP USB to Gig RJ45 Adapter	N7P47AA
Power	HP 45W Smart AC Adapter 4.5mm	H6Y88AA
	HP 45W Smart Power Adapter 2 prong -4.5mm (Japan only)	L6F60AA

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

	HP 65W Smart Power Adapter (w/ 4.5mm to 7.5mm DC dongle)	H6Y89AA
	HP 65W Slim AC Adapter	H6Y82AA
	HP 65W USB-C Slim Power Adapter	3PN48AA
	HP 45W USB-C LC Dali AC Power Adapter	1MZ01AA
	HP USB-C Essential Power Bank	3TB55AA
Storage	HP External USB Optical Drive	F2B56AA
Memory	HP 4GB DDR4 3200 Memory	286H5AA
	HP 8GB DDR4 3200 Memory	286H8AA
	HP 16GB DDR4 3200 Memory	286J1AA
Security	HP Sure Key Cable Lock	6UW42AA
	HP Nano Keyed Cable Lock	1AJ39AA

Summary of Changes

Date of change:	Version History:		Description of change:
April 20, 2021	V1 to V2	Updated	Memory Section and Input/ Output Section Updated
April 26, 2021	V2 to V3	Updated	BIOS information in Software section/Environmental Data
May 6, 2021	V3 to V4	Added	HP Smart Support
May 11, 2021	V4 to V5	Updated	Product Dimensions
May 27, 2021	V5 to V6	Update	HP Pro Security Edition to HP Wolf Pro Security Edition
June 11, 2021	V6 to V7	Removed	HP WorkWell from Software and Security Section
July 15, 2021	V7 to V8	Update	Storage and Drives section, At a Glance and Networking section