Overview

HP 470 G10 17 inch Notebook PC

Left

1. Internal Microphone (2)
2. Webcam
3. Camera Shutter
4. Webcam LED
5. Clickpad
6. Audio Combo Jack
7. SuperSpeed USB Type-C® 5Gbps signaling rate (Data Transfer Only)
8. HDMI Port (Cable Sold Separately)
9. SuperSpeed USB Type-A 5Gbps signaling rate1 port (USB 3.2 Gen 1)

Overview

Right

1. Power Button
2. Speakers
3. Power Connector
4. SuperSpeed USB Type-A 5Gbps signaling rate1 port (USB 3.2 Gen 1)
5. Hard Drive LED
6. Power LED
7. Fingerprint Sensor(Optional)

Overview

At a Glance

- Preinstalled with Windows 11 Pro, Windows Home or FreeDOS
- Choice of 13th generation Intel® Core™ i7, i5 and i3 processors
- NVIDIA® GeForce® MX550 (2 GB GDDR6 dedicated) (Optional)
- Fast dual channel DDR4 SODIMM memory up to 32 GB
- Choice of 17.3" diagonal HD, Ultra Wide Viewing Angle FHD, Non-Touch screen
- Full size, optional backlit keyboard and clickpad with Precision Touchpad Supported certified
- Choice of solid state drives up to 1TB
- fTPM2.0, Touch Fingerprint reader
- Supports wireless options for connectivity on the go including gigabit-data rate Wi-Fi 6
- Optimize your video calls with an HD camera and temporal noise reduction that adjusts the lighting to your environment.

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

Technical Specifications

PRODUCT NAME

HP 470 G10 17 inch Notebook PC

OPERATING SYSTEMS

Preinstalled

Windows 11 Pro [1]
Windows 11 Pro Education[1]
Windows 11 Home – HP recommends Windows 11 Pro for business [1]
Windows 11 Home Single Language – HP recommends Windows 11 Pro for business[1,2]
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 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.
2. This computer is preinstalled with Windows 11 Home Single Language.

PROCESSORS

Processor [3,4,5,6]	Cores	Number of P-cores	Number of E-cores	Threads	L3 Cache	Max Turbo Frequency		Base Frequency	
						P-cores	E-cores	P-cores	E-cores
Intel® Core™ i7-1355U	10	2	8	12	12 MB	5.0 GHz	3.7 GHz	1.7 GHz	1.2 GHz
Intel® Core™ i5-1335U	10	2	8	12	12 MB	4.6 GHz	3.4 GHz	1.3 GHz	0.9 GHz
Intel® CPU Core™ i5-1334U	10	2	8	12	12 MB	4.6 GHz	3.4 GHz	1.3 GHz	0.8 GHz
Intel® Core™ i3-1315U	6	2	4	8	10 MB	4.5 GHz	3.3 GHz	1.2 GHz	0.9 GHz

3. 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.
4. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
5. Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See www.intel.com/technology/turboboost for more information.
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.

Technical Specifications

CHIPSET

Chipset is integrated with processor

GRAPHICS

Integrated
Intel® Iris® Xᵉ Graphics [7,8]
Intel® UHD Graphics[8]

Discrete
NVIDIA® GeForce® MX550 (2 GB DDR6 dedicated) [9]

Supports
Support HD decode, DX12, HDMI 1.4b [8]

7. Intel® Iris® Xᵉ Graphics capabilities require system to be configured with Intel® Core™ i5 or i7 processors and dual channel memory. Intel® Iris® Xᵉ Graphics with Intel® Core™ i5 or 7 processors and single channel memory will only function as UHD graphics.
8. HD content required to view HD images.
9. Integrated graphics depends on processor. NVIDIA® Optimus™ technology requires an Intel processor, plus an NVIDIA® GeForce® discrete graphics configuration and is available on Windows 10 Pro OS. With NVIDIA® Optimus™ technology, full enablement of all discrete graphics video and display features may not be supported on all systems (e.g. OpenGL applications will run on the integrated GPU or the APU as the case may be).

DISPLAY

Non-Touch
43.9 cm (17.3") diagonal FHD (1920 x 1080), Anti-Glare WLED UWVA, 300 nits, 72% UWVA eDP 1.4+PSR2 slim 60Hz Narrow Bezel [8,10,11]

Display Support
HDMI v1.4b up to 1920x1080 60Hz

Display Size (Diagonal)
17.3"
43.9 cm (17.3")

8. HD content required to view HD images.
10. Sold separately or as an optional feature.
11. Resolutions are dependent upon monitor capability, and resolution and color depth settings.

Technical Specifications

STORAGE AND DRIVES

Primary M.2 Storage
1 TB PCIe® NVMe™ M.2 SSD [12]
512 GB PCIe® NVMe™ M.2 SSD [12]
256 GB PCIe® NVMe™ M.2 SSD [12]

Dual Storage (select models)
256 GB PCIe® NVMe™ M.2 QLC Solid State Drive + 1TB 5400rpm SATA
512 GB PCIe® NVMe™ M.2 QLC Solid State Drive + 1TB 5400rpm SATA

12. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10 and 11) is reserved for system recovery software.

MEMORY

Maximum Memory
32 GB DDR4-3200 MT/s SDRAM [13]

Memory
32 GB DDR4-3200 MT/s SDRAM (2 x 16 GB) [13]
16 GB DDR4-3200 MT/s SDRAM (1 x 16 GB) [13]
16 GB DDR4-3200 MT/s SDRAM (2 x 8 GB) [13]
12 GB DDR4-3200 MT/s SDRAM (1 x 8 + 1 x 4GB) [13]
8 GB DDR4-3200 MT/s SDRAM (1 x 8 GB) [13]

Memory Slots
2 SODIMM[14]
Both slots are customer non-accessible / non-upgradeable
Supports Dual Channel Memory

13. All slots are non-accessible / non-upgradeable.
14. 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
Realtek 8852BE (2X2) Wi-Fi® 6 Bluetooth® 5.3 WW WLAN Wireless Card [15]

15. 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.

AUDIO/MULTIMEDIA

Audio
Dual Speakers
Integrated dual array microphone

Speaker Power
2W/4ohm Per speaker

Camera
720p HD camera with Temporal Noise Reduction [8]

8. HD content required to view HD images.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard
Island-style ash silver backlit keyboard with numeric keypad and touchpad with image sensor [16]
Island-style ash silver keyboard with numeric keypad and Touchpad with image sensor

Pointing Device
Touchpad with multi-touch gesture support

Function Keys
ESC
F1 – help
F2 – Brightness Down
F3 - Brightness Up
F4 - Backlight Toggle
F5 - Audio Mute
F6 – Volume Down
F7 – Volume Up
F8 - Plays the previous track of an audio CD or the previous section of a DVD or a Blu-ray Disc (BD).
F9 - Starts, pauses, or resumes playback of an audio CD, a DVD, or a BD
F10 - Plays the next track of an audio CD or the next section of a DVD or a BD
F11 – Display Switching
F12 - Insert

16. Backlit keyboard is an optional feature.

SOFTWARE AND SECURITY

Software
HP Smart Health [17]
ENERGY STAR® UWP (Universal Windows Platform for Windows)
Express VPN
Microsoft Office (Microsoft office sold separately. Internet access required for activation)
WPS Office
Dropbox Promotion [18]
HP QuickDrop[19]
E-QR Code
sMedio True DVD for HP

Manageability Features
HP SSRM (HP Support Sent Recovery Media) [20]
Windows Push Button Reset Recovery[21]

Security Management
McAfee® LiveSafe™ [22]

17. HP Smart Health requires HP TechPulse, a telemetry and analytics platform that provides critical data around devices and applications and is not sold as a standalone service. HP TechPulse follows stringent GDPR privacy regulations and is ISO27001, ISO27701, ISO27017 and SOC2 Type2 certified for Information Security. Internet access with connection to TechPulse portal is required. For full system requirements, please visit http://www.hpdaas.com/requirements. Purchase of any HP TechPulse-enabled service necessitates enabling software to run on each device. HP Services Scan is provided thru Windows Update and will check entitlement on each hardware device to determine if an HP TechPulse-enabled service has been purchased, and will download applicable software automatically. To disable this feature, please follow the instructions at http://www.hpdaas.com/requirements.
18. 100 GB of free Dropbox storage for 12 months from date of registration. For complete details and terms of use, including cancellation policies, visit the Dropbox website at https://www.dropbox.com/help/space/hp-promotion . Internet service required and not included.
19. HP Quick Drop requires Internet access and Windows 10 and higher 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.
20. Sold separately or as an optional feature.
21. Must activate within 180 days of Windows activation.
22. 30-day McAfee® LiveSafe™ trial included. Internet access required and not included. Subscription required after expiration. See http://www.McAfee.com for more details.

Technical Specifications

POWER

Power Supply
HP Smart 65 W EM External AC power adapter[23]
HP Smart 45 W External AC power adapter [23]

Battery
HP Long Life 3-cell, 41 Wh Li-ion Polymer [24,25]

Power Cord
1M (3.28 feet) length power cord

Battery Life
Up to 8 hours and 4 minutes with 41Whr battery (HP Long Life 3-Cell, 41 Whr Polymer, UMA graphics, Intel U15, display set to 200 nits, 8GB memory, 256GB SSD) [26]

Battery Weight
0.38lb
175g +/-10g

23. Availability may vary by country.
24. Battery is internal and not replaceable by customer. Serviceable by warranty.
25. 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.
26. 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 4.6 lb [27]
Starting at 2.08 kg[27]

Product Dimensions (W x D x H)
15.77 x 10.14 x 0.78 in
40.07 x 25.78 x 1.99 cm

Packaging Dimensions (W x D x H) [28]
16”-17” boxes (345mm height): 1200mm x 1000mm x 1200mm

27. Weight will vary by configuration. Does not include power adapter.
28. Product packaging size varies based on options chosen. Please contact your HP representative for your packaging size details.

Technical Specifications

PORTS/SLOTS

2 SuperSpeed USB Type-A 5Gbps signaling rate
1 HDMI 1.4 [29]
1 SuperSpeed USB Type-C® 5Gbps signaling rate (Supports data transfer only and does not support charging or external monitors)
1 AC power
1 Headphone/microphone combo jack

Expansion Slots
Push-Pull Insertion/Removal

29. HDMI cable sold separately

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. 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.[30]

30. HP Care Packs are sold separately. Service levels and response ties 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

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	
Nominal Operating Voltage	19.5 V
Average Operating Power	7.69W
Integrated graphics	Yes
Discrete Graphics	N/A (Switchable graphics design)
Max Operating Power	Discrete < 65W UMA < 45W
Temperature	
Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	
Operating	10% to 90%, non-condensing
Non-operating	5% to 95%
Shock	
Operating	40 G, 2 ms, half-sine
Non-operating	200 G, 2 ms, half-sine
Random Vibration	
Operating	1.043 grams
Non-operating	3.5 grams
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	
Regulatory Model Number	TPN-I139
CSA/UL 62368-1	Yes
ENERGY STAR®	Certified [31]
EPEAT®	EPEAT® Gold in the United States [32]
FCC/ICES/CISPR/VCCI	Yes
CE MARKING	Yes
GS Mark	Yes
Related commodity should comply with ISO 9241 Standards.	
China CCC/SRRC	Yes
Taiwan BSMI/NCC	Yes
Korea KCC/KC/KES	Yes
Ukraine NSoC/TEC	Yes
EAEU Compliance	Yes
Saudi Arabian Compliance	Yes
TCO	No
WW RoHS	Yes
Low Blue Light	Yes

31. Configurations of the HP 470 G10 17 inch Notebook PC that are ENERGY STAR® qualified are identified as HP 470 G10 17 inch Notebook PC ENERGY STAR on HP websites and on http://www.energystar.gov.

Technical Specifications

32. 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.

DISPLAYS

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

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

17.3 inch FHD (1920x1080) Anti-Glare WLED UWVA 72percent cg 300nits eDP 1.2 w/o PSR slim 60Hz NWBZ	**Outline Dimensions (W x H x D)**	390.190 x 238.810 (max.)
	Active Area	381.888 x 214.812 (typ.)
	Weight	510 g(max)
	Diagonal Size	17.3 (inch)
	Surface Treatment	Anti-Glare
	Touch Enabled	No
	Contrast Ratio	1000:1 (typ)
	Refresh Rate	60Hz
	Brightness	300nits [1]
	Pixel Resolution - Format	1920 x 1080 (FHD)
	Backlight	WLED
	Pixel Resolution	RGB
	Color Gamut Coverage	NTSC72%
	Color Depth	8bits
	Viewing Angle	UWVA 85/85/85/85
	Low Blue Light	No
	Power Consumption (W, EBL@ 150nits max/ 200nits max)	3.2 (max)/3.64 (max)

Technical Specifications

STORAGE AND DRIVES

For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10 and 11) is reserved for system recovery software.

500 GB 5400 rpm SATA Hard Drive	**Rotation speed**	5400rpm
	Cache Buffer	Up to 128MB
	Interface	ATA-8, SATA 3.0
	Transfer Rate	600MB/s
	Seek Time	Single Track: 1.5ms Average: 13ms Maximum: 32ms
	Logical Blocks	976,773,168
	Security Features	ATA Security
	Features	S.M.A.R.T., NCQ, Ultra DMA
1TB 5400 rpm SATA Hard Drive	**Rotation speed**	5400rpm
	Cache Buffer	Up to 128MB
	NAND Type/Size	N/A
	Interface	ATA-8, SATA 3.0
	Transfer Rate	600MB/s
	Seek Time	Single Track: 1.5ms Average: 13ms Maximum: 32ms
	Logical Blocks	1,953,525,168
	Security Features	ATA Security
	Features	S.M.A.R.T., NCQ, Ultra DMA
2TB 5400 rpm SATA Hard Drive	**Rotation speed**	5400rpm
	Cache Buffer	Up to 128MB
	Interface	ATA-8, SATA 3.0
	Transfer Rate	600MB/s
	Seek Time	Single Track: 1.5ms Agerage: 13ms Maximum: 32ms
	Logical Blocks	3,907,029,168
	Security Features	ATA Security
	Features	S.M.A.R.T., NCQ, Ultra DMA
SSD 1TB 2280 PCIe NVMe QLC (1TB 2280 PCIe NVMe QLC 2nd Solid State Drive)	**Form Factor**	M.2 2280
	Capacity	1TB
	NAND Type	QLC
	Interface	PCIe NVMe
	Logical Blocks	2,000,409,264
	Features	Pyrite

Technical Specifications

SSD 256GB 2280 PCIe NVMe QLC (SSD 256GB 2280 PCIe NVMe QLC)	**Form Factor**	M.2 2280
	Capacity	256GB
	NAND Type	QLC
	Interface	PCIe NVMe
	Logical Blocks	500,118,192
	Features	Pyrite

SSD 512GB 2280 PCIe NVMe QLC	**Form Factor**	M.2 2280
	Capacity	512GB
	NAND Type	QLC
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe
	Logical Blocks	1,000,215,216
	Features	Pyrite

Technical Specifications

NETWORKING/COMMUNICATIONS

Realtek RTL8852BE 802.11ax 2x2 Wi-Fi + Bluetooth® 5.3 Wireless Card (802.11ax 2x2, supporting gigabit data rate) [1]	**Wireless LAN Standards**	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v
	Interoperability	Wi-Fi certified modules
	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 : max 866.7Mbps • 802.11ax : max 1201Mbps
	Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM
	Security[2]	• IEEE and WiFi certified 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[3]	• 802.11b : +18.5dBm minimum • 802.11g : +17.5dBm minimum • 802.11a : +18.5dBm minimum • 802.11n HT20(2.4GHz) : +15.5dBm minimum

Technical Specifications

	• 802.11n HT40(2.4GHz) : +14.5dBm minimum • 802.11n HT20(5GHz) : +15.5dBm minimum • 802.11n HT40(5GHz) : +14.5dBm minimum • 802.11ac VHT80(5GHz) : +11.5dBm minimum • 802.11ax HE40(2.4GHz) : +10dBm minimum • 802.11ax HE80(5GHz) : +10dBm minimum
Power Consumption	• Transmit mode :2.5 W • Receive mode :2 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 •802.11ax, MCS11(HE40): -57dBm maximum •802.11ax, MCS11(HE80): -54dBm 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 : 2.8g 2. Type 126: 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

HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1/5.2/5.3 Wireless Card

Bluetooth Specification	4.0/4.1/4.2/5.0/5.1 Compliant/5.2 Compliant/5.3 Compliant
Frequency Band	2402 to 2480 MHz

Technical Specifications

Number of Available Channels	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)
Signaling Data Rate	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps 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. 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.
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. Check latest software/driver release for updates on supported security features.
3. 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.
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

POWER

1. 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

HP 65W Smart AC adapter	**Dimensions (H x W x D)**	3.543 x 2.008 x 1.122 in (9.0 x 5.1 x 2.85 cm)	
	Weight	0.55 lb (250 g) max (Not including power cord. Power cord varies by country.)	
	Input	100-240Vac	
		Input Efficiency	88 % at 115 Vac and 89 % at 230Vac
		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	100% load 5ms at 115 Vac input/80% load 10ms 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 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 - IEC60950-1 and IEC62368-1 : 2018, EN62368-1:2014+A11, UL62368-1 Agency approvals - C-UL-US, TUV/GS, TUV/PSE, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC and CECP, CU(EAC), EAEU, KCC(Safety+EMC) and K-MEPS, NOM-001 and 029 NYCE, NRcan, NRCS, ISC, SEC, PSB, Argentina S-mark, Australia GEMS and RCM, BIS, BSMI, UAE, UKCA DoC	

HP 45W Smart AC adapter	**Dimensions (H x W x D)**	3.74 x 1.772 x 1.043 in (9.5x4.5x2.65cm)	
	Weight	0.44 lb (200 g) max (Not including power cord. Power cord varies by country.)	
	Input	100-240Vac	
		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**	45W
		DC output	19.5V
		Hold-up time	100% load 5ms at 115 Vac input/80% load 10ms at 115 Vac input
		Output current limit	< 8.0A

Technical Specifications

	Connector	4.5mm Barrel Type	
	Environmental Design	**Operating temperature**	32ºF to 95ºF (0ºto 35ºC)
		Non-operating (storage) temperature	-4ºF to 185ºF (-20ºto 85ºC)
		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 - IEC60950-1 and IEC62368-1 : 2018, EN62368-1:2014+A11, UL62368-1 Agency approvals - C-UL-US, TUV/GS, TUV/PSE, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC and CECP, CU(EAC), EAEU, KCC(Safety+EMC) and K-MEPS, NOM-001 and 029 NYCE, NRcan, NRCS, ISC, SEC, PSB, Argentina S-mark, Australia GEMS and RCM, BIS, BSMI, UAE, UKCA DoC	

HP 3-cell Long Life Li-Ion (41 Wh)[1]	**Weight**	0.185 kg (0.407 lb)	
	Cells/Type	3cell Lithium-Ion Polymer cell / 515974	
	Energy	**Voltage**	11.25V
		Amp-hour capacity	3.648Ah
		Watt-hour capacity[1]	41.04Wh
	Temperature	**Operating (Charging)**	32˚ to 113˚ F (0˚ to 45˚ C)
		Operating (Discharging)	14˚ to 122˚ F (-10˚ to 60˚ C)
		Optional Travel Battery Available	No

Technical Specifications

AUDIO

HD Stereo Codec	Realtek ALC3247
Audio I/O Ports	One Headset Combo-Jack connector support CTIA spec.
Internal Speaker Amplifier	2W class D stereo amplifier for the internal speaker only. External speakers must be powered.
Multi-streaming Capable	Playback multi-streaming can be enabled in the audio control panel to allow independent audio streams to be sent to/from the Combo jack or integrated speaker.
Sampling	Independent sampling rates for DAC's and ADC's; supports resolutions from 16 to 24-bit; 44.1 kHz to 48 kHz for DAC and ADC.
Wavetable Syntheses	Yes - Uses OS soft wavetable
Analog Audio	Yes.
# of Channels on Line-Out	0
Internal Speaker	Yes

FINGERPRINT READER

Sensor vendor	Elan eFSA80ST touch sensor
Sensor type	Capacitive
DPI resolution	508 DPI
Scan area	80 x 80 pixels array
False Rejection Rate	FRR (False Reject Rate) / FAR (False Acceptance Rate): FRR ~ 2% @ 1:50K FAR
False Acceptance Rate	
Mobile Voltage Operation	2.65V to 3.6V
Operating Temperature	32° to 95° F (0° to 35° C)
Current Consumption Image	50mA peak
Low Latency Wait For Finger	<900 uA
Capture Rate	20cm/sec
ESD Resistance	IEC 61000-4-2 (+15KV)
Detection Matrix	508 dpi / 4x4mm sensor area

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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. • China Energy Conservation Program (CECP) • China State Environmental Protection Administration (SEPA) • Taiwan Green Mark • Korea Eco-label • Japan PC Green label*		
Sustainable Impact Specifications	• 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)	9.5 W	9.47 W	10.85 W
Normal Operation (Long idle)	0.93 W	1.09 W	0.94 W
Sleep	0.93 W	1.09 W	0.94 W
Off	0.32 W	0.34 W	0.3 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)	32.5 BTU/hr	32.4 BTU/hr	37.1 BTU/hr
Normal Operation (Long idle)	3.2 BTU/hr	3.7 BTU/hr	3.2 BTU/hr
Sleep	3.2 BTU/hr	3.7 BTU/hr	3.2 BTU/hr
Off	1.1 BTU/hr	1.2 BTU/hr	1.0 BTU/hr

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	*__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	2.2	21.8	
Fixed Disk – Random writes	2.2	22.2	
Optical Drive – Sequential reads	N/A	N/A	
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 www.epeat.net • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product is 95.1% recycle-able when properly disposed of at end of life.		
Packaging Materials	**External:**	PAPER/Corrugated	275 g
		PAPER/Corrugated	51 g
		PAPER/Molded Pulp	101 g
	Internal:	PLASTIC/Polyethylene low density - LDPE	17 g
		PLASTIC/Polypropylene - PP	5 g
	The plastic packaging material contains at least 0.0% recycled content.		
	The corrugated paper packaging materials contains at least 55.6% 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.		

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	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)

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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.
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. • Plastic cushions are made from >90% recycled plastic.

COUNTRY OF ORIGIN

China

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

Type	Description	Part Number
Audio	HP Wired USB-A Stereo Headset	428K6AA
	HP Wired 3.5mm Stereo Headset	428K7AA
Cases	HP Renew Business 17.3 Laptop Backpack	3E2U5AA
	HP Renew Business 17.3 Laptop Bag	3E2U6AA
Adapter	HP USB-C to RJ45 Adapter G2	4Z527AA
	HP USB 3.0 to Gigabit RJ45 Adapter G2	4Z7Z7AA
	HP HDMI to VGA Adapter	H4F02AA
	HP USB-C to USB 3.0 Adapter	N2Z63AA
Keyboard/Combo	HP 125 WD USB Keyboard	266C9AA
	HP 320K WD USB Keyboard	9SR37AA
	HP 155 Wired Mouse and Keyboard Combo	5B8C0AA#ACJ
	HP 225 Antimicrobial Wired Mouse and Keyboard Combo	286K3AA#AB2
	HP 225 Wired Mouse and Keyboard Combo	286J4AA
	HP 235 Wireless Mouse and Keyboard Combo	1Y4D0AA
	HP Wired Desktop 320MK Mouse and Keyboard	9SR36AA
Mouse	HP 125 USB-A Wired Mouse	265A9AA
	HP 128 USB Laser Wired Mouse	265D9AA
	HP 155 USB-A Wired Mouse	5B8B7AA#ACJ
	HP 320M USB-A Wired Mouse	9VA80AA
	HP USB-A+Bluetooth Travel Bluetooth Mouse	6SP30AA
	HP USB Premium Wireless Mouse	1JR31AA
	HP 435 Bluetooth 5.0 + Wireless 2.4GHz Multi-Device Wireless Mouse	3B4Q5AA
Power	HP 65W 4.5 mm Smart AC Power Adapter	H6Y89AA
Commodity	HP USB DVD-Writer EXT ODD	F2B56AA
Video	HP 325 FHD USB-A Webcam	53X27AA

Change Log

Date of change:	Version History:		Description of change:
August 1, 2023	V1 to V2	Added	Environmental Data, updated Overview section
April 24, 2024	V2 to V3	Updated	Memory Section
July 12, 2024	V3 to V4	Added	Processor Section
August 19, 2024	V4 to V5	Added	Display Section

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