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Uputstvo za upotrebu (EN)

HP laptop 250 G8 (2W8Z5EA)



Tehnoteka je online destinacija za upoređivanje cena i karakteristika bele tehnike, potrošačke elektronike i IT uređaja kod trgovinskih lanaca i internet prodavnica u Srbiji. Naša stranica vam omogućava da istražite najnovije informacije, detaljne karakteristike i konkurentne cene proizvoda.

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https://tehnoteka.rs/p/hp-laptop-250-g8-2w8z5ea-akcija-cena/

Overview

HP 250 G8 Notebook PC



Left

1. Internal dual digital microphone
2. Webcam LED
3. Webcam
4. Touchpad
5. Touchpad buttons
6. Audio combo jack
7. Power indicator LED
8. Hard drive indicator LED
9. SuperSpeed USB Type-C® 5Gbps signaling rate[1] (Data Transfer Only)
10. HDMI Port (Cable sold separately)
11. RJ-45 / Ethernet port
12. Power button

1. SuperSpeed USB 20Gbps is not available.

Overview



Right

1. AC Smart Pin Adapter Plug
2. SuperSpeed USB Type-A 5Gbps signaling rate [1] port (USB 3.2 Gen 1)
3. SuperSpeed USB Type-A 5Gbps signaling rate[1] port (USB 3.2 Gen 1)
4. SD Card slot
5. Fingerprint Reader (Selected models)

1. SuperSpeed USB 20Gbps is not available.

Overview

At a Glance

- Windows 11 Pro, other Windows OS, or FreeDOS preinstalled
- A new compact narrow bezel design with thinner & lighter chassis
- Choice of 11th or 10th Generation Intel® Core™ i7, i5 and i3 processors and Intel® Pentium®, or Intel® Celeron® processors
- Choice of 39.62 cm (15.6") diagonal HD and FHD SVA Anti-Glare WLED or FHD IPS Anti-Glare WLED
- Optional NVIDIA GeForce MX130/MX330/MX350 discrete graphics with 2 GB GDDR5 video memory
- Security features including Firmware TPM 2.0 and Fingerprint Reader (selected models)
- Weight starting at 3.84 lbs (1.74 kgs)
- MM18 Battery life up to 9 hours and 45 minutes[1]
- Wireless LAN (WLAN) up to 802.11ac or 802.11ax to keep you connected
- One SuperSpeed USB Type-C® 5Gbps signaling rate[2] (Data Transfer Only), Two SuperSpeed USB Type-A 5Gbps signaling rate[2] port
- Choice of Solid State Drives up to 1 TB and Hard Drive up to 2 TB
- Dual channel DDR4 SODIMM memory up to 16 GB
- HP webcam with dual digital microphone and HD (supporting WDR- Wide Dynamic Range)
- GML-R 6W CPU offers fanless design with cooling fin[3]

1. 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.
2. SuperSpeed USB 20Gbps is not available.
3. Other CPU are still equipped with the cooling fan.

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

Technical Specifications

PRODUCT NAME

HP 250 G8 Notebook PC

OPERATING SYSTEMS

Preinstalled

Windows 11 Pro [2]
Windows 11 Pro Education [2]
Windows 11 Home – HP recommends Windows 11 Pro for business [2]
Windows 11 Home Single Language – HP recommends Windows 11 Pro for business [2]
Windows 10 Pro [1,2]
Windows 10 Pro Education [1,2]
Windows 10 Home – HP recommends Windows 11 Pro for business [1,2]
Windows 10 Home Single Language – HP recommends Windows 11 Pro for business [1,2]
FreeDOS

1. Device comes with Windows 10 and a free Windows 11 upgrade or may be preloaded with Windows 11. Upgrade timing may vary by device. Features and app availability may vary by region. Certain features require specific hardware (see Windows 11 Specifications).
2. Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows is automatically updated and enabled. High speed internet and Microsoft account required. ISP fees may apply and additional requirements may apply over time for updates. See http://www.windows.com.

PROCESSORS

Intel® Core™ i7-1165G7 processor (2.8 GHz base frequency, up to 4.7 GHz frequency with Intel® Turbo Boost Technology, 12 MB cache, 4 cores) [3,4 5,6]
Intel® Core™ i5-1135G7 processor (2.4 GHz base frequency, up to 4.2 GHz frequency with Intel® Turbo Boost Technology, 8 MB cache, 4 cores) [3,4 5,6]
Intel® Core™ i3-1115G4 processor with Intel® UHD Graphics (3.0 GHz base frequency, up to 4.1 GHz frequency with Intel® Turbo Boost Technology, 6 MB cache, 2 cores) [3,4 5,6]
Intel® Core™ i7-1065G7 (1.3 GHz base frequency, up to 3.9 GHz with Intel® Turbo Boost Technology, 8 MB cache, 4 cores) [3,4 5,6]
Intel® Core™ i5-1035G1 processor with Intel® UHD Graphics (1.0 GHz base frequency, up to 3.6 GHz with Intel® Turbo Boost Technology, 6 MB cache, 4 cores) [3,4 5,6]
Intel® Core™ i3-1005G1 processor with Intel® UHD Graphics (1.2 GHz base frequency, up to 3.4GHz with Intel® Turbo Boost Technology, 4 MB cache, 2 cores) [3,4 5,6]
Intel Core ™ i3 – 1125G4 processor with Intel® UHD Graphics (2.0 GHz base frequency, up to 3.7 GHz frequency with Intel® Turbo Boost Technology, 8 MBcache, 4 cores) [3,4 5,6]
Intel® Pentium® Silver N5030 Processor with Intel® UHD Graphics 605 (1.1 GHz base frequency, up to 3.1 GHz burst frequency, 4 MB cache, 4 cores) [3,4,6]
Intel® Celeron® N4020 Processor with Intel® UHD Graphics 600 (1.1 GHz base frequency, up to 2.8 GHz burst frequency, 4 MB cache, 2 cores) [3,4,6]
Intel® Pentium® Gold 7505 Processor with Intel® UHD Graphics (2.0 GHz base frequency, up to 3.5 GHz Standard, 4 MB cache, 2 cores) [3,4,6]
Intel® Celeron® N4120 Processor with Intel® UHD Graphics 600 (1.1 GHz base frequency, up to 2.6 GHz burst frequency, 4 MB cache, 4 cores) [3,4,6]

Processors Family
11th Generation Intel® Core™ i7 processor (i7-1165G7) [7]
11th Generation Intel® Core™ i5 processor (i5-1135G7) [7]

Technical Specifications

11th Generation Intel® Core™ i3 processor (i3-1115G4) [7]
10th Generation Intel® Core™ i7 processor (i7-1065G7) [7]
10th Generation Intel® Core™ i5 processor (i5-1035G1) [7]
10th Generation Intel® Core™ i3 processor (i3-1005G1) [7]
Intel® Pentium® Silver Processor (N5030) [7]
Intel® Pentium® Gold Processor (7505) [7]
Intel® Celeron® processor (N4020) [7]
Intel® Celeron® processor (4120) [7]

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. AMD Max Boost frequency performance varies depending on hardware, software and overall system configuration.
7. 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
Intel® Iris® Xᵉ Graphics[33]
Intel® Iris® Plus graphics[33]
Intel® UHD Graphics
Intel® UHD Graphics 605
Intel® UHD Graphics 600

Discrete
NVIDIA® GeForce® MX130 (2 GB DDR5 dedicated) [9]
NVIDIA® GeForce® MX330 (2 GB DDR5 dedicated) [9]
NVIDIA® GeForce® MX350 (2 GB DDR5 dedicated) [9]

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

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).
33. 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.

Technical Specifications

DISPLAYS

Non-Touch
39.6 cm (15.6") diagonal, HD (1366 x 768), SVA , Anti-Glare WLED, 250nits, eDP micro-edge, 45% NTSC [8,10,11]
39.6 cm (15.6") diagonal, FHD (1920 x 1080), IPS, Anti-Glare WLED, 250nits eDP micro-edge, 45% NTSC [8,10,11]
39.6 cm (15.6") diagonal, FHD (1920 x 1080), SVA, Anti-Glare WLED, 250nits eDP micro-edge, 45% NTSC [8,10,11]

HDMI
Port supports resolutions up to 1920 x 1080 external resolution @60 Hz

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.

STORAGE AND DRIVES

Primary Storage
2 TB 5400 rpm SATA [12]
1 TB 5400 rpm SATA [12]
500 GB 7200 rpm SATA [12]
500 GB 5400 rpm SATA [12]

Primary M.2 Storage
128 GB M.2 SATA-3 TLC Solid State Drive [12]
256 GB M.2 SATA-3 TLC Solid State Drive [12]
256 GB PCIe® NVMe™ M.2 QLC Solid State Drive [12]
512 GB PCIe® NVMe™ M.2 QLC Solid State Drive [12]
512 GB PCIe® NVMe™ M.2 TLC Solid State Drive [12]
1 TB PCIe® NVMe™ M.2 QLC Solid State Drive [12]
256 GB Intel® PCIe® NVMe™ QLC M.2 SSD with 16 GB Intel® Optane™ memory H10 [12,13,14]
512 GB Intel® PCIe® NVMe™ QLC M.2 SSD with 32 GB Intel® Optane™ memory H10 [12,13,14]
2 TB 5400 rpm SATA with 16 GB Intel® Optane™ memory [12,13]
1 TB 5400 rpm SATA with 16 GB Intel® Optane™ memory [12,13]

Dual Storage [35]
128 GB M.2 SATA-3 TLC Solid State Drive + 1 TB 5400rpm SATA [12]
256 GB PCIe® NVMe™ M.2 QLC Solid State Drive + 1 TB 5400rpm SATA [12]

12. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) is reserved for system recovery software.
13. Intel® Optane™ memory system acceleration does not replace or increase the DRAM in your system. Requires 8th Gen or higher Intel® Core™ processor, BIOS version with Intel® Optane™ supported, Windows 10 64-bit, and an Intel® Rapid Storage Technology (Intel® RST) driver.
14. Intel® Optane™ memory H10 only for Intel® PCIe® NVMe™ QLC M.2 SSD.
35. GML-R don't support dual storage due to design limitation.

Technical Specifications

MEMORY

Maximum Memory
16 GB DDR4-3200 SDRAM[15]

Memory
16 GB DDR4-3200 SDRAM (2 x 8 GB) [15]
16 GB DDR4-2666 SDRAM (2 X 8 GB) [15]
12 GB DDR4-3200 SDRAM (4 GB (1 x 4 GB) and 8 GB (1 x 8 GB) [15]
12 GB DDR4-2666 SDRAM (4 GB (1 x 4 GB) and 8 GB (1 x 8 GB) [15]
8 GB DDR4-3200 SDRAM (1 x 8 GB) [15]
8 GB DDR4-2666 SDRAM (1 x 8 GB) [15]
8 GB DDR4-2400 SDRAM (1 x 8 GB) [15]
8 GB DDR4-3200 SDRAM (2 x 4 GB) [15]
8 GB DDR4-2666 SDRAM (2 x 4 GB) [15]
4 GB DDR4-3200 SDRAM (1 x 4 GB) [15]
4 GB DDR4-2666 SDRAM (1 x 4 GB) [15]
4 GB DDR4-2400 SDRAM (1 x 4 GB) [15]

Memory Slots
DDR4 SODIMMS, system runs at 2666 [34]
2 SODIMM (Intel 10th & 11th Generation Intel Core processor) (Core i 3/5/7 speed runs up to 2666)
Supports Dual Channel Memory

1 SODIMM (Intel Pentium/Celeron speed runs up to 2400)
Support Single Channel Memory

NOTE: All slots are customer non-accessible / non-upgradeable

15. 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.
34. DDR4 3200 bridges to DDR4 2666.

Technical Specifications

NETWORKING/COMMUNICATIONS

WLAN
Realtek RTL8822CE 802.11ac 2x2 Wi-Fi® + Bluetooth® 5.0 Wireless Card [16]
Realtek RTL8822CE 802.11a/b/g/n/ac (1x1) Wi-Fi® with Bluetooth® 5.0 Wireless Card [16]
Intel® Dual Band Wi-Fi 6 AX201 802.11a/b/g/n/ac/ax (2x2) WLAN and Bluetooth® 5.2 Wireless Card, non-vPro® [17]

Miracast
Compatible with Miracast-certified devices (For Win10) [18]

Ethernet
Realtek 10/100/1000 GbE NIC [19]

16. Wi-Fi supporting gigabit speeds (802.11ac) is achievable when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 160MHz channels.
17. 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.
18. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.
19. The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

AUDIO/MULTIMEDIA

Audio
2 Integrated stereo speakers
Integrated dual digital microphone

Camera
HP TrueVision HD Camera [8]

8. HD content required to view HD images.

Technical Specifications

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard
Full Size Textured island-style Keyboard

Pointing Device
Touchpad with multi-touch gesture support (PTP certified)

Function Keys
F1 - Open " How to get help in Windows 10" webpage
F2 - Brightness Down
F3 - Brightness Up
F4 - Display Switching
F5 - Blank
F6 - Mute
F7 - Volume Down
F8 -Volume Up
F9 - Previous
F10 - Play/Pause
F11 - Next
F12 - Airplane mode

SOFTWARE AND SECURITY

Preinstalled Software
Software
HP Support Assistant [20]
Native Miracast Support [21]
HP documentation
HP Setup Integrated OOBE
HP SSRM
HP Audio Switch
HP JumpStarts
McAfee LiveSafe™ [19]
Xerox® DocuShare® 30 day free trial offer[30]
HP QuickDrop
HP Smart Support [31]

Security Management
Firmware TPM 2.0 [22]
Fingerprint Reader (Select models)

19. 30 days free trial
20. HP Support Assistant requires Windows and Internet access.
21. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.
22. Firmware TPM is version 2.0. which is a subset of the TPM 2.0 specification version v0.89 as implemented by Intel Platform Trust Technology (PTT).32. Firmware TPM is version 2.0.
30. Simply sign up and start using Xerox® DocuShare® Go. No credit card. No obligation. Data will become unavailable unless a subscription is entered before the end of the 30 day free trial period. See visit http://www.xerox.com/docusharego for details.
31. 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

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

Primary Battery
HP Long Life 3-cell, 41 Wh Li-ion (Polymer) [24, 32]

Power Cord
1M (3.28 feet) length power cord

MM18 Battery life
Up to 9 hours and 45 minutes [25]

Battery Weight
0.19 kg
0.42 lb

23. Availability may vary by country.
24. Battery is internal and not replaceable by customer. Serviceable by warranty.
25. Windows 10 MM18 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See www.bapco.com for additional details.
32. 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.

Technical Specifications

WEIGHTS & DIMENSIONS

Product Weight [26]
Starting at 3.84 lb
Starting at 1.74 kg

Product Dimensions (w x d x h)
14.09 x 9.53 x 0.78 in
35.8 x 24.2 x 1.99 cm

26. Weight will vary by configuration. Does not include power adapter.

PORTS/SLOTS

Ports
2 SuperSpeed USB Type-A 5Gbps signaling rate (USB 3.2 Gen 1) [27]
1 SuperSpeed USB Type-C® 5Gbps signaling rate[27] (Supports data transfer only and does not support charging or external monitors)
1 HDMI v1.4b [28]
1 RJ-45
1 AC Power
1 Headphone/microphone combo jack

Expansion Slots
Support SD/SDHC/SDXC
1 Multi-format digital media reader

27. SuperSpeed USB 20Gbps is not available.
28. HDMI cable sold separately.

SERVICE AND SUPPORT

1-year limited warranty 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. [29]

29. 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	19.5 V
Average Operating Power	TBD
Integrated graphics	6.37W
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	240 G, 2 ms, half-sine
Random Vibration	
Operating	1.043 grms
Non-operating	3.5 grms
Altitude (unpressurized)	
Operating	-15 m to 3048 m (-50 ft to 10000 ft)
Non-operating	-15 m to 12192 m (-50 ft to 40000 ft)
Planned Industry Standard Certifications	
UL	Yes
CSA	No
FCC Compliance	Yes
ENERGY STAR®	Yes
EPEAT®	Yes
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

Technical Specifications

Saudi Arabian Compliance (ICCP)	Yes
SABS	Yes
UKRSERTCOMPUTER	Yes

DISPLAYS

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

Panel LCD 15.6 inch FHD (1920x1080) Anti-Glare WLED UWVA 45percent cg 250nits eDP 1.2 w/o PSR slim NWBZ	**Outline Dimensions (W x H x D)**	350.96 x 216.75 (max.) x 3.2 (max.) mm
	Active Area	344.16 x 193.59 mm
	Weight	370g max.
	Diagonal Size	15.6"
	Surface Treatment	AG
	Touch enabled	None
	Contrast Ratio	600:1 (typ.)
	Refresh Rate	60Hz
	Brightness	250nits typ.
	Pixel Resolution	
	Configuration	1920 x 1080 (FHD)
	Interface	eDP 1.2 w/o PSR
	LCD Mode	IPS/PLS/AHVA
	PPI	142
	Viewing Angle	UWVA 85/85/85/85
Panel LCD 15.6-in FHD (1920x1080) Anti-Glare WLED SVA 45percent cg 250nits eDP 1.2 w/o PSR NWBZ ultraslim	**Outline Dimensions (W x H x D)**	350.96 x 216.75 (max.) x 3.2 (max.) mm
	Active Area	344.16 x 193.59 mm
	Weight	360g max.
	Diagonal Size	15.6"
	Surface Treatment	AG
	Touch enabled	None
	Contrast Ratio	300:1 (typ.)
	Refresh Rate	60Hz
	Brightness	250nits typ.
	Pixel Resolution	
	Configuration	1920 x 1080 (FHD)
	Interface	eDP 1.2 w/o PSR
	LCD Mode	TN
	PPI	142
	Viewing Angle	UWVA 45/45/15/35

Technical Specifications

Panel LCD 15.6-in HD (1366x768) Anti-Glare WLED SVA 45percent cg 250nits eDP 1.2 w/o PSR NWBZ ultraslim	**Outline Dimensions (W x H x D)**	351.03 x 216.75 (max.) x 3.2 (max.) mm
	Active Area	344.23 x 193.54 mm
	Weight	360g max.
	Diagonal Size	15.6"
	Surface Treatment	AG
	Touch enabled	None
	Contrast Ratio	300:1 (typ.)
	Refresh Rate	60Hz
	Brightness	250nits typ.
	Pixel Resolution	
	Configuration	1366 x 768 (HD)
	Interface	eDP 1.2 w/o PSR
	LCD Mode	TN
	PPI	101
	Viewing Angle	UWVA 40/40/15/30

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) is reserved for system recovery software.

HDD 1TB 5400RPM 7mm SATA (HDD 1TB 5400RPM 2.5in)	**Drive Weight**	0.21 lbs (95 g)
	Capacity	1TB
	Height	0.28 in (7 mm)
	Width	2.75 in (69.85 mm)
	Interface	ATA-8, SATA 3.0
	Maximum Sequential Read	Up to 100 MB/s
	Maximum Sequential Write	Up to 100 MB/s
	Logical Blocks	1,953,525,168
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	S.M.A.R.T., NCQ, Ultra DMA
HDD 2TB 5400RPM 7mm SATA 2.5in (HDD 2TB 5400RPM SATA 2.5in 2nd)	**Drive Weight**	0.21 lbs (95 g)
	Capacity	2TB
	Height	Up to 128MB
	Width	0.28 in (7 mm)
	Interface	2.75 in (69.85 mm)
	Maximum Sequential Read	Up to 100 MB/s
	Maximum Sequential Write	Up to 100 MB/s
	Logical Blocks	3,907,029,168
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	S.M.A.R.T., NCQ, Ultra DMA
HDD 500GB 5400RPM 7mm SATA	**Drive Weight**	0.21 lbs (95 g)
	Capacity	500GB
	Height	0.28 in (7 mm)
	Width	2.75 in (69.85 mm)
	Interface	ATA-8, SATA 3.0
	Maximum Sequential Read	Up to 100 MB/s
	Maximum Sequential Write	Up to 100 MB/s
	Logical Blocks	976,773,168
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	S.M.A.R.T., NCQ, Ultra DMA

Technical Specifications

HDD 500GB 7200RPM 7mm SATA (HDD 500GB 7200RPM 2.5in)	**Drive Weight**	0.21 lbs (95 g)
	Capacity	500GB
	Height	0.28 in (7 mm)
	Width	2.75 in (69.85 mm)
	Interface	ATA-8, SATA 3.0
	Maximum Sequential Read	Up to 120 MB/s
	Maximum Sequential Write	Up to 120 MB/s
	Logical Blocks	976,773,168
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	S.M.A.R.T., NCQ, Ultra DMA
SSD 128GB 2280 M2 SATA-3 TLC (SSD 128GB 2280 M2 SATA-3 TLC)	**Drive Weight**	0.01 lb (6 g) ~ 0.02 lb (10 g)
	Capacity	128 GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	ATA-8, SATA 3.0
	Maximum Sequential Read	Up to 100MB/s
	Maximum Sequential Write	Up to 400MB/s
	Logical Blocks	250,069,680
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	DIPM; TRIM; DEVSLP
SSD 1TB 2280 PCIe NVMe QLC (SSD 1TB 2280 PCIe NVMe QLC)	**Drive Weight**	0.01 lb (6 g) ~ 0.02 lb (10 g)
	Capacity	1TB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X2
	Maximum Sequential Read	Up to 1500MB/s
	Maximum Sequential Write	Up to 750MB/s
	Logical Blocks	2,000,409,264
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	L1.2

Technical Specifications

SSD 16GB 2280 PCIe-3x2 NVMe 3D Xpoint (SSD 16GB 2280 PCIe-3x2 NVMe 3D Xpoint)	**Drive Weight**	0.01 lb (6 g) ~ 0.02 lb (10 g)
	Capacity	16GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X2
	Maximum Sequential Read	900MB/s
	Maximum Sequential Write	145MB/s
	Logical Blocks	28,181,188
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM, L1.2
SSD 256GB 2280 M2 SATA-3 TLC (SSD 256GB 2280 M2 SATA-3 Three Layer Cell)	**Drive Weight**	0.01 lb (6 g) ~ 0.02 lb (10 g)
	Capacity	256GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X2
	Maximum Sequential Read	Up to 2900 MB/s
	Maximum Sequential Write	Up to 1100 MB/s
	Logical Blocks	500,118,191
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	DIPM; TRIM; DEVSLP
SSD 256GB 2280 PCIe NVMe QLC (SSD 256GB 2280 PCIe NVMe QLC)	**Drive Weight**	0.01 lb (6 g) ~ 0.02 lb (10 g)
	Capacity	256GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X2
	Maximum Sequential Read	Up to 1500MB/s
	Maximum Sequential Write	Up to 750MB/s
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM, L1.2

Technical Specifications

SSD 256GB 2280 PCIe-3x2x2 NVMe+SSD 16GB 3D Xpoint (SSD 256GB 2280 PCIe-3x2x2 NVMe +SSD 16GB 3D Xpoint)	**Drive Weight**	0.01 lb (6 g) ~ 0.02 lb (10 g)
	Capacity	256GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X2
	Maximum Sequential Read	1450MB/s
	Maximum Sequential Write	500MB/s
	Logical Blocks	500,188,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM, L1.2
SSD 512GB 2280 M2 PCIe-3x4 SS NVMe TLC (SSD 512GB M.2 2280 PCIe NVMe Three Layer Cell w/Caddy 2nd)	**Drive Weight**	0.01 lb (6 g) ~ 0.02 lb (10 g)
	Capacity	512GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X2
	Maximum Sequential Read	Up to 3000MB/s
	Maximum Sequential Write	Up to 150MB/s
	Logical Blocks	1,000,215,216
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM, L1.2
SSD 512GB 2280 PCIe NVMe QLC (SSD 512GB 2280 PCIe NVMe QLC)	**Drive Weight**	0.01 lb (6 g) ~ 0.02 lb (10 g)
	Capacity	512GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X2
	Maximum Sequential Read	Up to 1500MB/s
	Maximum Sequential Write	Up to 750MB/s
	Logical Blocks	1,000,215,216
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM, L1.2

Technical Specifications

SSD 512GB 2280 PCIe NVMe QLC (SSD 512GB 2280 PCIe NVMe QLC)	**Drive Weight**	0.01 lb (6 g) ~ 0.02 lb (10 g)
	Capacity	512GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X2
	Maximum Sequential Read	Up to 1500MB/s
	Maximum Sequential Write	Up to 750MB/s
	Logical Blocks	1,000,215,216
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM, L1.2
SSD 512GB 2280 PCIe-3x2x2 NVMe+SSD 32GB 3D Xpoint (SSD 512GB 2280 PCIe-3x2x2 NVMe +SSD 32GB 3D Xpoint)	**Drive Weight**	0.01 lb (6 g) ~ 0.02 lb (10 g)
	Capacity	512GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X2
	Maximum Sequential Read	2400MB/s
	Maximum Sequential Write	1300MB/s
	Logical Blocks	1,000,215,215
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM, L1.2

Technical Specifications

NETWORKING/COMMUNICATIONS

Intel® Wi-Fi 6 AX201 + Bluetooth® 5.2 Wireless Card (802.11ax 2x2, non-vPro®, supporting gigabit file transfer speeds) non-vPro®[1,2]	**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: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, ,80MHz & 160MHz) • 802.11ax: MCS0 ~ MCS11, (1SS and 2SS) (20MHz, 40MHz, ,80MHz & 160MHz)
	Modulation	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM
	Security[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 • IEEE 802.11i • WAPI
	Network Architecture	Ad-hoc (Peer to Peer)
	Models	Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power[4]	• 802.11b: +18.5dBm minimum • 802.11g: +17.5dBm minimum • 802.11a: +18.5dBm minimum

Technical Specifications

	• 802.11n HT20(2.4GHz): +15.5dBm minimum • 802.11n HT40(2.4GHz): +14.5dBm minimum • 802.11n HT20(5GHz): +15.5dBm minimum • 802.11n HT40(5GHz): +14.5dBm minimum • 802.11ac VHT80(5GHz): +11.5dBm minimum • 802.11ac VHT160(5GHz): +11.5dBm minimum • 802.11ax HT40(2.4GHz): +10dBm minimum • 802.11ax VHT160(5GHz): +10dBm minimum	
Power Consumption	• 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[5]	• 802.11b, 1Mbps: -93.5dBm maximum • 802.11b, 11Mbps: -84dBm maximum • 802.11a/g, 6Mbps: -86dBm maximum • 802.11a/g, 54Mbps: -72dBm maximum • 802.11n, MCS07: -67dBm maximum • 802.11n, MCS15: -64dBm maximum • 802.11ac, MCS0: -84dBm maximum • 802.11ac, MCS9: -59dBm maximum • 802.11ax, MCS11(HT40): -59dBm maximum • 802.11ax, MCS11(VHT160): -58.5dBm maximum	
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications	
Form Factor	PCI-Express M.2 MiniCard with CNVi Interface	
Dimensions	1. Type 2230: 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm	
Weight	1. Type 2230: 2.8 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	

Technical Specifications

1. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 (802.11ax) is backwards compatible with prior 802.11 specs.
2. 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
3. Check latest software/driver release for updates on supported security features.
4. 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.
5. 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).

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

Bluetooth Specification	4.0/4.1/4.2/5.0/5.1/5.2 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)
Signaling Data Rate	Legacy: 3 Mbps signaling data rate[6] 2.17 Mbps BLE: 1 Mbps signaling data rate[6] 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.

Technical Specifications

Realtek 802.11a/b/g/n/ac (1x1) Wi-Fi® and Bluetooth® 5.0 Wireless Card [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: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)
	Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
	Security[2]	• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • WAPI
	Network Architecture	Ad-hoc (Peer to Peer)
	Models	Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power[3]	• 802.11b : +14dBm minimum • 802.11g : +12dBm minimum • 802.11a : +12dBm minimum • 802.11n HT20(2.4GHz) : +12dBm minimum • 802.11n HT40(2.4GHz) : +12dBm minimum • 802.11n HT20(5GHz) : +10dBm minimum • 802.11n HT40(5GHz) : +10dBm minimum • 802.11ac VHT80(5GHz) : +10dBm minimum
	Power Consumption	• Transmit mode: 2.0 W

Technical Specifications

	• 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	Type 2230 : 2.3 x 22.0 x 30.0 mm	
Weight	Type 2230 : 2.8g	
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	

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. 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).

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

Bluetooth Specification	4.0/4.1/4.2/5.0 Compliant

Technical Specifications

	Frequency Band	2402 to 2480 MHz
	Number of Available Channels	Legacy : 0~79 (1 MHz/CH)BLE : 0~39 (2 MHz/CH)
	Data Rates and Throughput	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.

Realtek RTL8822CE 802.11ac 2x2 Wi-Fi®+ Bluetooth® 5 Wireless Card [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: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)
	Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
	Security[2]	• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.

Technical Specifications

	• WPA2 certification • IEEE 802.11i • WAPI	
Network Architecture	Ad-hoc (Peer to Peer)	
Models	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 • 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	
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 : 2.8g 2. Type 126: 1.3g	
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)

Technical Specifications

LED Activity	LED Amber – Radio OFF LED Off – Radio ON

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. 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).

HP Integrated Module with Bluetooth® 4.0/4.1/4.2/5.0 Wireless Card 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)
Data Rates and Throughput	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.

Technical Specifications

POWER

AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m	**Dimensions (H x W x D)**	95.0x40.0x26.5mm	
	Weight	unit: 200g +/- 10g	
	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**	45W
		DC output	19.5V
		Hold-up time	5ms at 115 Vac input
		Output current limit	<8.0A
	Connector	C6 (3pin/with grounded, with Smart ID DC connector)	
	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 Smart nPFC EM Barrel 4.5mm New EM	**Dimensions**	102x55x30mm	
	Weight	unit: 250g +/- 10g	
	Input	**Input Efficiency**	88.0 % at 115 Vac and 89.0 % 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	5ms at 115 Vac input
		Output current limit	<11.0A
	Connector	C6 (3pin/with grounded, with Smart ID DC connector)	
	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%

Technical Specifications

		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 Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m	**Dimensions**		90.0x51x28.5mm
	Weight		unit: 230g +/- 10g
	Input	**Input Efficiency**	88.0 % at 115 Vac and 89.0% 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	5ms at 115 Vac input
		Output current limit	<11.0A
	Connector		C6 (3pin/with grounded, with Smart ID DC connector)
	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 HT 3 Cell 41 Wh Long Life -PR+PL Fast Charge (Battery 3 Cell Wh 41 Long Life -PR+PL Fast)	**Dimensions**	6.0mm x 186.85mm x 90.2mm	
	Weight	192g	
	Cells/Type	3cell Lithium-Ion Prismatic cell / 496080	
	Energy	Voltage	11.55V
		Amp-hour capacity	3615mAh
		Watt-hour capacity	41Wh
	Temperature	Operating (Charging)	0°C ~ 45°C
		Operating (Discharging)	-10°C ~ 60°C
	Fuel Gauge LED	N/A	
	Warranty	1000 cycles > 65% (at 23˚C)	
	Optional Travel Battery Available	No	

FINGERPRINT READER

Model	Elan eFSA80ST touch sensor
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: Image transmitter output frequency	20cm/sec
ESD Resistance	IEC 61000-4-2 (+15KV)
Detection Matrix	508 dpi / 4x4mm sensor area
FRR (False Reject Rate) / FAR (False Acceptance Rate)	FRR ~ 2% @ 1:50K FAR

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
	HP Prelude Top Load 15.6	1E7D7AA
	HP Prelude Backpack 15.6	1E7D6AA
Docking	HP 4.5 mm and USB-C®Dock Adapter G2	6LX61AA
Input/Output	HP USB Essential Keyboard/Mouse	H6L29AA
	HP Wired Desktop 320MK Mouse and Keyboard	9SR36AA
	HP Slim Wireless Keyboard & Mouse	T6L04AA
	HP Wired Desktop 320K Keyboard	9SR37AA
	HP Slim Wireless Keyboard (Link-5)	T6U20AA
	HP 3-Button USB Laser Mouse	H4B81AA
	HP Essential USB Mouse	2TX37AA
	HP USB Travel Mouse	G1K28AA
	HP Bluetooth Travel Mouse	6SP30AA
	HP Comfort Grip Wireless Mouse	H2L63AA
	HP Wired Desktop 320M Mouse	9VA80AA
	HP HDMI to VGA Adapter	H4F02AA
	HP HDMI to DVI	F5A28AA
Power	HP 45W Smart AC Adapter	H6Y88AA
	HP 65W Smart AC Adapter	H6Y89AA
	HP 65W Slim Adapters (w/ detachable DC cable + TIPS)	H6Y82AA
Storage	HP External USB Optical Drive	F2B56AA

Summary of Changes

Date of change:	Version History:		Description of change:
4 November 2020	V1 to V2	Updated	Removed - Intel® Iris® Xᵉ Graphics from processor name and added Iris footnote in graphics section
December 14, 2020	V2 to V3	Updated	USB Information
February 25, 2021	V3 to V4	Update	Xerox DocuShare offer value
March 2, 2021	V4 to V5	Added	Fingerprint Reader Specs and update System Unit and At a Glance
April 20, 2021	V5 to V6	Update	TechSpecs/Memory Modules
May 6, 2021	V6 to V7	Added	HP Smart Support
July 6, 2021	V7 to V8	Added	Battery disclaimer
October 12, 2021	V8 to V9	Updated	Windows 10 with Free upgrade to Windows 11 when available in OS section and footnote. Removed Windows 10 Pro (Windows 10 Enterprise available with a Volume Licensing Agreement)
October 15, 2021	V9 to V10	Removed	Memory from Options and Accessories section
November 2, 2021	V10 to V11	Added	At a glance section
November 11, 2021	V11 to V12	Updated	Processors section
December 13, 2021	V12 to V13	Updated	OS footnotes and Wi-Fi 6 footnotes
April 4, 2022	V13 to V14	Added	Memory Slot section and footnote
April 26, 2022	V14 to V15	Added	Dual Storage footnote
July 21, 2022	V15 to V16	Removed	HP USB-C®/A Universal Dock G2 from Docking Options
August 8, 2022	V16 to V17	Updated	Memory Slots
March 6, 2023	V17 to V18	Updated	Storage and Drives section
March 13, 2023	V18 to V19	Updated	Bluetooth in Networking and Communication section
March 22, 2023	V19 to V20	Updated	USB Type C® description
	V20 to V21		

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