

Overview

HP ProBook 640 G7 Notebook PC



Left

- | | |
|-------------------------------|--|
| 1. Webcam (Select models) | 6. Smart Card Reader (Select models) |
| 2. Internal Microphones (2) | 7. Audio Combo Jack |
| 3. Camera Privacy Shutter | 8. USB 3.1 Gen 1 Port |
| 4. Webcam LED (Select models) | 9. Security Lock Slot (Lock sold separately) |
| 5. Clickpad | 10. Power Button |

Overview



Right

- 1. Micro SD Card Slot
- 2. Power Connector
- 3. Docking Connector
- 4. VGA Port
- 5. Ethernet Port
- 6. HDMI Port (Cable not included)
- 7. USB 3.1 Gen 1 port
- 8. USB 3.1 Gen 1 Charging Port
- 9. USB Type-C® Charging Port
- 10. HDD light
- 11. Fingerprint Reader

Overview

AT A GLANCE

- Windows 10 versions
- Precision-crafted slim design with fingerprint resistant modern, fresh and comfortable natural silver finish
- Choice of 10th Generation Intel® Core™ processors, with integrated graphics
- HP Advanced keyboard, spill resistant with backlit design
- Large Clickpad with gestures support
- Enhanced security features including TPM2.0, HP Privacy Camera, Smart Card Reader, Touch Finger Print Reader, HP Sure Sense¹ and HP Sure Start Gen5
- LED-backlit display 35.56 cm (14") diagonal, FHD
- HDMI port for connecting to high-resolution displays
- Optional HD webcam² with dual-microphone array for video conferencing
- Three USB 3.1 Gen1 ports (1 charging) and one USB-C™ port (PD+DP 1.2, Gen1)
- 802.11 AX WLAN module
- Battery life up to TBD hours³ with fast charging technology⁴
- Passed MIL-STD 810H test⁵
- Compliance with FCC (Class B)

1. HP Sure Sense requires Windows 10. See product specifications for availability.

2. Sold separately or as an optional feature.

3. Windows 10 MM14 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See <http://www.bapco.com> for additional details.

4. Recharges up to 90% within 90 minutes when the system is off or in standby mode when used with the power adapter provided with the notebook. After charging has reached 90% capacity, charging speed will return to normal. Charging time may vary +/-10% due to System tolerance.

5. MIL-STD 810H is not intended to demonstrate fitness of U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Accidental damage requires an optional HP Accidental Damage Protection Care Pack.

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

Technical Specifications

PRODUCT NAME

HP ProBook 640 G7 Notebook PC

OPERATING SYSTEM

Preinstalled Windows 10 Pro 64¹

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/>.

PROCESSORS

Intel® Core™ i7-10610U processor with Intel® UHD Graphics (1.8 GHz base frequency, up to 4.9 GHz with Intel® Turbo Boost Technology, 8 MB L3 cache, 4 cores), supports Intel® vPro™ Technology^{2,3,4}.

Intel® Core™ i5-10310U processor with Intel® UHD Graphics (1.6 GHz base frequency, up to 4.4 GHz with Intel® Turbo Boost Technology, 6 MB L3 cache, 4 cores), supports Intel® vPro™ Technology^{2,3,4}.

Processor Family

10th Generation Intel® Core™ i7 processor (i7-10610U models)⁴

10th Generation Intel® Core™ i5 processor (i5-10310U models)⁴

2. Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering, branding and/or naming is not a measurement of higher performance.

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

4. 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® UHD graphics 620⁵

5. HD content required to view HD images.

Technical Specifications

DISPLAY

Non-Touch FHD

35.56 cm (14") diagonal FHD IPS eDP anti-glare LED-backlit, 250 cd/m², 45% NTSC (1920 x 1080)^{5,6}

35.56 cm (14") diagonal FHD IPS eDP anti-glare LED-backlit, 250 cd/m², 45% NTSC, for HD camera (1920 x 1080)^{5,6}

5. HD content required to view HD images.

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

Docking station model	Total number of supported displays (incl. the notebook display)	Max. resolutions supported	Dock Connectors	Technical limitations
HP UltraSlim Docking Station	3	Dual 2.5K @ 60Hz	2xDP, 1xVGA	Dual 2.5k only with both displays into DP
HP Thunderbolt Dock G2	3	Single 4K@60Hz (3840 x 2160)	2xDP, 1xVGA, 1xTB, 1xUSB-C alt-mode	System will perform at USB 3.0 Gen1 speeds when connected to the dock (5Gbits) Thunderbolt port will function as a USB 2.0 port with data and power out (15W) only.
HP USB-C Dock G4	3	Dual 2K @ 60Hz Single 4K @ 60Hz (3840 x 1440)	1xHDMI, 2xDP	
HP USB-C Universal Dock	3	Dual 4K @ 60Hz Single 5K @ 60Hz	2xDP	
HP USB-C Travel Dock	2	Single 2K @ 60Hz	1xHDMI, 1xVGA	Single external display Only HDMI or VGA at the time
HP USB-C Mini Dock	2	Single 4K @ 30Hz	1xHDMI, 1xVGA	Single external display Only HDMI or VGA at the time

Technical Specifications

STORAGE AND DRIVES

Primary M.2 Storage

256 GB PCIe® Gen3x4 NVMe™ M.2 SED SSD TLC⁷

512 GB PCIe® Gen3x4 NVMe™ M.2 SED SSD TLC⁷

256 GB PCIe® Gen3x4 NVMe™ M.2 SSD TLC⁷

512 GB PCIe® Gen3x4 NVMe™ M.2 SSD TLC⁷

7. 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 Memory

32 GB DDR4-2400 SDRAM⁸

Memory

8 GB Total System Memory (8 GB x 1)⁸

16 GB Total System Memory (16 GB x 1)⁸

32 GB Total System Memory (16 GB x 2)⁸

Memory Slots

2 SODIMM

Both slots are customer accessible / upgradeable

DDR4 SODIMMS, System runs at: 2666

Supports Dual Channel Memory

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

NETWORKING/COMMUNICATIONS

WLAN

Intel® AX200 Wi-Fi 6⁹ (2x2) and Bluetooth® 5 Combo, vPro™

WPAN Bluetooth

Bluetooth® 5.0 supported via all supported WLAN modules

Ethernet

Intel® Ethernet Connection I219-LM 10/100/1000 vPro™¹⁰

9. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft and are

Technical Specifications

not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ax devices. Only available in countries where 802.11ax is supported.

10. 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 array microphone

Webcam

720p HD HP Privacy Camera^{5,11,12}

5. HD content required to view HD images.

11. Sold separately or as an optional feature.

12. Internet access required.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

HP Advanced Keyboard

Pointing Device

Dual Point, Spill-resistant with drain, DuraKeys & Backlit¹¹

11. Sold separately or as an optional feature.

Function Keys

ESC: system information

F1 - Display Switching

F2 - Blank

F3 - Brightness Down

F4 - Brightness Up

F5 - Speaker Mute

F6 - Volume Down

F7 - Volume Up

F8 - Mic Mute

F9 - Backlight Toggle (for backlit keyboard) or Blank

F10 - NumLock

F11 - Wi-fi® Toggle

F12 - Sleep

Clickpad requirements

On/off control by driver

Technical Specifications

Taps enabled as default

Gestures

Win 10

Disabled by default

3 Finger Flick

2 Finger Rotate

Momentum Motion

1 Finger Vertical Scroll

Win 10

Support PTP with Miniport driver

Settings enabled by default by MSFT

2 Finger Scrolling

2 Finger Zoom (Pinch)

OSD (enable/disable)

3 finger tap - Cortana

3 finger flick –App switch

4 finger tap – Action Center

SOFTWARE AND SECURITY

Preinstalled Software

BIOS

HP BIOSphere Gen5¹³

HP Drive Lock & Automatic Drive Lock¹⁴

BIOS Update via Network

Master Boot Record Security

Power On Authentication

Secure Erase¹⁵

Absolute Persistence Module¹⁶

Pre-boot Authentication

Software

HP Native Miracast Support¹⁷

HP Connection Optimizer

HP Image Assistant

HP Hotkey Support

HP JumpStart

HP Support Assistant¹⁸

HP Noise Cancellation Software

Buy Office (sold separately)

HP Smart Support³⁸

Technical Specifications

Manageability Features

HP Driver Packs¹⁹
HP System Software Manager (SSM)
HP BIOS Config Utility (BCU)
HP Client Catalog
HP Manageability Integration Kit Gen3²⁰
HP Cloud Recovery²¹

Client Security Software

HP Client Security Suite Gen5²²
Power On Authentication
HP Fingerprint Sensor
HP Power On Authentication
Windows Defender²³

Security Management

Pre-boot Authentication
TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified)²⁴
USB enable/disable (via BIOS)
Power-on password (via BIOS)
Setup password (via BIOS)
Support for chassis padlocks and cable lock devices
HP Sure Click²⁵
HP Sure Start Gen5²⁶
HP Sure Sense²⁷

Security

TPM

Model: Infineon SLB9670
Version: 7.85
Revision: TPM 2.0
FIPS 140-2 Compliant: Yes

Smartcard Reader

Model number: Alcor AU9560
FIPS 201 Compliant: Yes

IPv6 Compliance

Yes

MD5 Hash: Please follow the instructions below to access MD5 Hash.

Log-on to <http://hp.com/support>, enter your product name, select software and drivers, select OS, select driver. After selecting the driver, click on “Associated files” and then click on “Download”. When opening the file, under “Purpose” you should see the appropriate “SOFTPAQ MD5:” Field

Is the BIOS on this notebook ISO/IEC 19678:2015 (formerly NIST 800-147) compliant?:

Yes

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UEFI version: 2.6

13. HP BIOSphere Gen5 is available on select HP Pro and Elite PCs. See product specifications for details. Features may vary depending on the platform and configurations.
14. HP Drive Lock & Automatic Drive Lock is not supported on NVMe drives
15. 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™.
16. Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/company/legal/agreements/computrace-agreement>. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
17. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.
18. HP Support Assistant requires Windows and Internet access.
19. HP Driver Packs not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.
20. HP Manageability Integration Kit can be downloaded from <http://www.hp.com/go/clientmanagement>.
21. HP Cloud Recovery is available for HP Elite and Pro desktops and laptops PCs with Intel® or AMD processors and requires an open, wired network connection. Note: You must back up important files, data, photos, videos, etc. before use to avoid loss of data. Detail please refer to: <https://support.hp.com/us-en/document/c05115630>
22. HP Client Security Manager Gen5 requires Windows and is available on the select HP Pro and Elite PCs. See product specifications for details.
23. Windows Defender Opt in and internet connection required for updates.
24. Firmware TPM is version 2.0. Hardware TPM is v1.2, which is a subset of the TPM 2.0 specification version v0.89 as implemented by Intel Platform Trust Technology (PTT).re TPM is version 2.0. Hardware TPM is v1.2, which is a subset of the TPM 2.0 specification version v0.89 as implemented by Intel Platform Trust Technology (PTT).
25. HP Sure Click is available on most HP PCs and supports Microsoft® Internet Explorer and Chromium™. Supported attachments include Microsoft Office (Word, Excel, PowerPoint) and PDF files in read only mode, when Microsoft Office or Adobe Acrobat are installed.
26. HP Sure Start Gen5 is available on select HP PCs with Intel processors. See product specifications for availability.
27. HP Sure Sense requires Windows 10. See product specifications for availability.
28. HP Smart Support is available to commercial customers through your HP Service Representative and HP Factory Configuration Services; or it can be downloaded at: <http://www.hp.com/smart-support>. HP Smart Support automatically collects the telemetry necessary upon initial boot of the product to deliver device-level configuration data and health insights.

Technical Specifications

POWER

Power Supply

HP Smart 65 W External AC power adapter^{28,29}

Primary Battery

HP Long Life 3-cell, 48 Wh Li-ion^{30,31}

HP Fast Charge Technology - 90% in 90minutes^{29,32}

Battery Life

Up to TBD hours and TBD minutes

Power Cord

3-wire plug, 1.0m, Conventional²⁸

28. Availability may vary by country.

29. Supports HP Fast Charging.

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

31. Windows 10 MM14 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See <http://www.bapco.com> for additional details.

32. Recharges the battery up to 90% within 90 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 90% capacity, charging will return to normal. Charging time may vary +/-10% due to System tolerance.

WEIGHTS & DIMENSIONS

Weight³³

Starting at 3.8 lb³³

Starting at 1.73 kg³³

Dimensions (w x d x h)

13.4 x 9.5 x 0.83 in

34 x 24 x 2.09 cm

33. Weight will vary by configuration.

Technical Specifications

PORTS/SLOTS

Ports

- 1 USB 3.1 Type-C™ Gen 1 (Power delivery, DisplayPort™ 1.2)
- 3 USB 3.1 Gen 1 (1 charging)
- 1 HDMI 1.4³⁴
- 1 RJ-45
- 1 VGA
- 1 Headphone/microphone combo
- 1 AC power

Expansion Slots

- 1 Docking connector
- 1 MicroSD (multi-format digital media reader)

34. HDMI cable sold separately.

SERVICE AND SUPPORT

HP Services offers 3-year limited warranties and 90 day software support options depending on country and the SKU selected by the customer. Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform. On-site service and extended coverage is also available with HP Care Pack Services, 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 Services Lookup Tool at: <http://www.hp.com/go/cpc>.³⁵

35. HP Care Services 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	Win 10
	Integrated Graphics	10 W
	Discrete Graphics	15 W
	Max Operating Power	Discrete < 65W UMA < 45W
Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical)
	Non-operating	41° to 95° F (5° to 35° C) (writing optical)
Relative Humidity	Operating	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®	Select models ³⁶
	EPEAT® 2020	Yes, Silver in U.S. ³⁷
	ICES	Yes
	Australia / NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	KC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCI or BELUS	Yes
	CIT	Yes
	GOST	Yes
Saudi Arabian Compliance (ICCP)	Yes	
SABS	Yes	

36. Configurations of the HP ProBook 640 G7 that are ENERGY STAR® qualified are identified as HP ProBook 640 G7 ENERGY STAR on HP websites and on <http://www.energystar.gov>.

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

Technical Specifications

DISPLAYS

Panel LCD 14 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45% NTSC 250 nits eDP slim NB	Outline Dimensions (W x H)	316.17 x 197.98 mm (max)
	Active Area	309.37 x 174.02 mm (typ.)
	Weight	285 g (max)
	Diagonal Size	14.0 inch
	Thickness	3.0 mm (max)
	Interface	eDP 1.2 (2 lane)
	Surface Treatment	Anti-Glare
	Touch Enabled	No
	Contrast Ratio	600:1 (typ.)
	Refresh Rate	60 Hz
	Brightness	250 nits
	Pixel Resolution	1920 x 1080 (FHD)
	Format of LCD Pixel Arrangement	RGB
	Backlight	LED
	Color Gamut Coverage	45% of NTSC
	Color Depth	6 bits
	Viewing Angle	UWVA 85/85/85/85

Technical Specifications

STORAGE

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

Form Factor	0.02 lb (10 g)
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 2600 MB/s
Maximum Sequential Write	Up To 900 MB/s
Logical Blocks	500,118,192
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
Features	TRIM; L1.2

**SSD 512 GB 2280 M2
PCIe-3x4 SS NVMe TLC**

Form Factor	0.02 lb (10 g)
Capacity	512 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 2600 MB/s
Maximum Sequential Write	Up To 1400 MB/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 512 GB 2280 PCIe-3x4 NVMe Self Encrypted OPAL2 Three Layer Cell	Form Factor	M.2 2280
	Capacity	512 GB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Around 3000 ~ 3400 MB/s
	Maximum Sequential Write	Around 1800 ~ 2500 MB/s
	Logical Blocks	1,000,215,216
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security; TCG Opal 2.0; FIPS; DIPM; TRIM; DEVSLP

SSD 256 GB 2280 PCIe-3x4 NVMe Self Encrypted OPAL2 Three Layer Cell	Form Factor	M.2 2280
	Capacity	256 GB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	2800 ~ 3500 MB/s
	Maximum Sequential Write	1663 ~ 2200 MB/s
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
Features	ATA Security (Option); TCG Opal 2.0; TRIM; L1.2	

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

Technical Specifications

NETWORKING/COMMUNICATIONS

Intel® Wi-Fi 6** AX200 and Bluetooth® 5.0 vPro™	Wireless LAN Standards	<ul style="list-style-type: none"> 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™
	Frequency Band	<ul style="list-style-type: none"> •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	<ul style="list-style-type: none"> •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
	Security³	<ul style="list-style-type: none"> •IEEE and Wi-Fi 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 •Cisco Certified Extensions, all versions through CCX4 and CCX Lite •WAPI

Technical Specifications

Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power²	<ul style="list-style-type: none"> • 802.11b: +18.5dBm minimum • 802.11g: +17.5dBm minimum • 802.11a: +18.5dBm minimum • 802.11n HT20(2.4GHz): +15.5dBm minimum • 802.11n HT40(2.4GHz): +14.5dBm minimum • 802.11n HT20(5GHz): +15.5dBm minimum • 802.11n HT40(5GHz): +14.5dBm minimum • 802.11ac VHT80(5GHz): +11.5dBm minimum • 802.11ac VHT160(5GHz): +11.5dBm minimum • 802.11ax HT40(2.4GHz): +10dBm minimum • 802.11ax VHT160(5GHz): +10dBm minimum
Power Consumption	<ul style="list-style-type: none"> • Transmit mode 2.0 W • Receive mode 1.6 W • Idle mode (PSP) 180 mW (WLAN Associated) • Idle mode 50 mW (WLAN unassociated) • Connected Standby 10 mW • Radio disabled 8 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity⁴	<ul style="list-style-type: none"> • 802.11b, 1Mbps: -93.5dBm maximum • 802.11b, 11Mbps: -84dBm maximum • 802.11a/g, 6Mbps: -86dBm maximum • 802.11a/g, 54Mbps: -72dBm maximum • 802.11n, MCS07: -67dBm maximum • 802.11n, MCS15: -64dBm maximum • 802.11ac, MCS0: -84dBm maximum • 802.11ac, MCS9: -59dBm maximum • 802.11ax, MCS11(HT40): -59dBm maximum • 802.11ax, MCS11(VHT160): -58.5dBm maximum
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Form Factor	PCI-Express M.2 MiniCard
Dimensions	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Type 2230: 2.8g

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Operating Voltage	2. Type 126: 1.3g
	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)

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

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

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- Train Nudging & Interlaced Scan
- BT4.2 ESR08 Compliance
- LE Secure Connection- Basic/Full
- LE Privacy 1.2 –Link Layer Privacy
- LE Privacy 1.2 –Extended Scanner Filter Policies
- LE Data Packet Length Extension
- FAX Profile (FAX)
- Basic Imaging Profile (BIP)2
- Headset Profile (HSP)
- Hands Free Profile (HFP)
- Advanced Audio Distribution Profile (A2DP)

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

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

**Intel® i219LM
10/100/1000
Integrated NIC**

Connector	RJ-45
System Interface	PCI (Intel proprietary) + SMBus
Data rates supported	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s
IEEE Compliance	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet)
Performance	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload

Technical Specifications

	Receiving Side Scaling (Hash Mode Only)
	Jumbo Frame 9K
Power consumption	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000bp Full Run: 1000mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
Power Management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
Management Interface	Auto MDI/MDIX Crossover cable detection
IT Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
Security & Manageability	Intel® vPro™ support with appropriate Intel® chipset components

Intel® I219-LM 1 Gigabit Network Connection LOM (vPro)	Connector	RJ-45
	System Interface	PCI (Intel proprietary) + SMBus
	Data rates supported	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s
	IEEE Compliance	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet)
	Performance	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling (Hash Mode Only) Jumbo Frame 9K

Technical Specifications

Power consumption	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000bp Full Run: 1000mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
Power Management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
Management Interface	Auto MDI/MDIX Crossover cable detection
IT Manageability	Wake-on-LAN from modern standby or sleep state (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
Security & Manageability	Intel® vPro™ support with appropriate Intel® chipset components

Intel® I219-LM 1 Gigabit Network Connection LOM (non-vPro)	Connector	RJ-45
	System Interface	PCI (Intel proprietary) + SMBus
	Data rates supported	1. 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 2. 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 3. 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 802.3 clauses 40) 4. Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10, 100 & 1000 Mbit/s
	IEEE Compliance	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet) IEEE 802.3i 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab 1000BASE-T IEEE 802.3bz 2.5GBASE-T
	Performance	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload

Technical Specifications

	Receiving Side Scaling (Hash Mode Only)
	Jumbo Frame 9K
Power consumption	Cable Disconnection: 25mW
	100Mbps Full Run: 450mW
	1000bps Full Run: 1000mW
	WoL Enable(S3/S4/S5): 50mW
	WoL Disable(S3/S4/S5): 25mW
Power Management	ACPI compliant – multiple power modes
	Situation-sensitive features reduce power consumption
	Advanced link down power saving for reducing link down power consumption
Management Interface	Auto MDI/MDIX Crossover cable detection
IT Manageability	Wake-on-LAN from modern standby or sleep state (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only)
	PXE 2.1 Remote Boot
	Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30))
	Comprehensive diagnostic and configuration software suite
	Virtual Cable Doctor for Ethernet cable status
Security & Manageability	Intel® non-vPro™ support with appropriate Intel® chipset components

Technical Specifications

POWER

AC Adapter 65 Watt Smart nPFC Standard Barrel 4.5 mm Right Angle 1.0 m	Dimensions	90.0 x 51 x 28.5 mm	
	Weight	unit: 220 g +/- 10 g <i>Not including power cord. Power cord varies by country</i>	
	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	4.5mm Barrel Type C6	
	Environmental Design	Operating temperature	32° to 95° F (0° to 35° C)
		Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
		Altitude	0 to 16,400 ft (0 to 5000m)
		Humidity	20% to 95%
Safety Certifications	Storage Humidity	10% to 95%	
	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.		

HP 3-cell Long Life Li-Ion (48 WHr)	Dimensions (H x W x L)	8.05 x 185.15 x 95 mm	
	Weight	0.26 kg	
	Cells/Type	3cell Lithium-Ion Polymer cell / 606072	
	Energy	Voltage	11.4V
		Amp-hour capacity	4.212Ah /4.0Ah
		Watt-hour capacity	48Wh
		Temperature	Operating (Charging)
	Operating (Discharging)		14° to 122° F (-10° to 60° C)
	Optional Travel Battery Available	No	

Technical Specifications

COUNTRY OF ORIGIN

China

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

Type	Description	Part #
Cases	HP Essential Top Load Case	H2W17AA#xxx
	HP Essential Backpack (up to 15.6")	H1D24AA
	HP Essential Messenger Case (up to 17.3")	H1D25AA
Docking	HP UltraSlim Docking Station	D9Y32AA#xxx
	HP UltraSlim Docking Station TAA US	E5C22AV#ABA
	HP Thunderbolt Dock 120W G2	2UK37AA
	HP Thunderbolt Dock 120W G2 TAA	2UK37AA
	HP TB Dock G2 w/ Combo Cable	3TR87AA
	HP TB Dock 120W G2 w/ Audio	3YE87AA#xxx
	HP USB-C Universal Dock	1MK33AA#xxx
	HP USB-C/A Universal Dock G2	5TW13AA#XXX
	HP USB-C Universal Dock w/4.5mm Adapter	2UF95AA
	HP USB-C Universal Dock NF	3DV65AA
	HP USB-C Dock G4	3FF69AA#xxx
	HP USB-C Dock G5	5TW10AA#XXX
	HP USB-C Mini Dock	1PM64AA#xxx
	HP USB-C Travel Dock	T0K29AA#xxx
	HP USB Travel Dock	T0K30AA#xxx
	HP TB Dock Audio Module	3AQ21AA
	HP TB Dock 120W G2 cable	3XB94AA
	HP TB Dock G2 combo cable	3XB96AA
	HP Adjustable Dual Display Stand	AW664AA#xxx
	HP Display and Notebook Stand II	E8G00AA#xxx
HP USB-C Mini Dock	1PM64AA#xxx	
Input/Output	HP Slim USB Keyboard and Mouse	T6T83AA#xxx
	HP Slim Wireless Keyboard and Mouse	T6L04AA#xxx
	HP USB Essential Keyboard and Mouse	H6L29AA
	HP Ultra Mobile Wireless Mouse	H6F25AA#xxx
	HP Comfort Grip Wireless Mouse	H2L63AA
	HP 3-Button USB Laser Mouse	H4B81AA
	HP USB Travel Mouse	G1K28AA
	HP Slim Bluetooth Mouse	F3J92AA#xxx
	HP Essential USB Mouse	2TX37AA#xxx
	HP Elite Presenter Mouse	2CE30AA#xxx
	HP HDMI to DVI Adapter	F5A28AA
	HP USB-C to DP	N9K78AA
	HP USB-C to HDMI 2.0	1WC36AA#xxx

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

	HP USB-C to USB-A Hub	Z6A00AA
	HP UC Wireless Mono Headset	W3K08AA
	HP UC Wireless Duo Headset	W3K09AA
	HP Stereo 3.5mm Headset	T1A66AA
	HP Stereo USB Headset	T1A67AA
	HP TB Dock Audio Module	3AQ21AA
	HP Thunderbolt 120W 1m cable	3AQ23AA
	HP Thunderbolt 1m combo cable	3AQ25AA
Power	HP 45W Smart AC Adapter 4.5mm	H6Y88AA#xxx
	HP 65W Smart AC Adapter	H6Y89AA#xxx
	HP 65W Slim AC Adapter	H6Y82AA#xxx
	HP 45W USB-C Power Adapter	1HE07AA#xxx
	HP 65W USB-C Power Adapter	1HE08AA#xxx
	3-cell Prismatic Battery	TBD
	HP Notebook Power Bank	N9F71AA#xxx
	HP USB-C Notebook Power Bank	2NA10AA
	HP 65W USB-C Slim Power Adapter	3PN48AA#xxx
Storage	HP External USB Optical Drive	F2B56AA
	HP 256GB TLC PCIe 3x4 NVMe M.2 SSD	1FU87AA
	HP 512GB TLC PCIe 3x4 NVMe M.2 SSD	1FU88AA
	HP 500GB 7200rpm HDD	F3B97AA
Security	HP Essential Combination Loc	TOY16AA
	HP Combination Lock	TOY15AA
	HP Keyed Cable lock	TOY14AA
	HP 14.0" Notebook Privacy Filter	J6E65AA
	HP Docking Station Cable Lock	AU656AA#XXX
	HP Keyed Cable Lock 10mm	T1A62AA
UCC	HP Conferencing Keyboard	K8P74AA#xxx
	HP Speaker Phone	K7V16AA
	HP Wired Headset	K7V17AA

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

Memory	HP 4GB DDR4 Memory	Z4Y84AA
	HP 8GB DDR4 Memory	Z4Y85AA
	HP 16GB DDR4 Memory	Z4Y86AA
Displays	HP ProDisplay P223 21.5-inch Monitor	X7R61AA
	HP ProDisplay P240va 23.8-inch Monitor	N3H14AA
	HP EliteDisplay E243 23.8-inch Monitor	1FH47AA

Summary of Changes

Date of change:	Version History:	Update	Description of change:
	V1 to V2		WPA3 certification
April 19, 2021	V2 to V3	Added	Intel I219-LM(v-Pro)/I219-V (non-vPro)
May 6, 2021	V3 to V4	Added	HP Smart Support

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