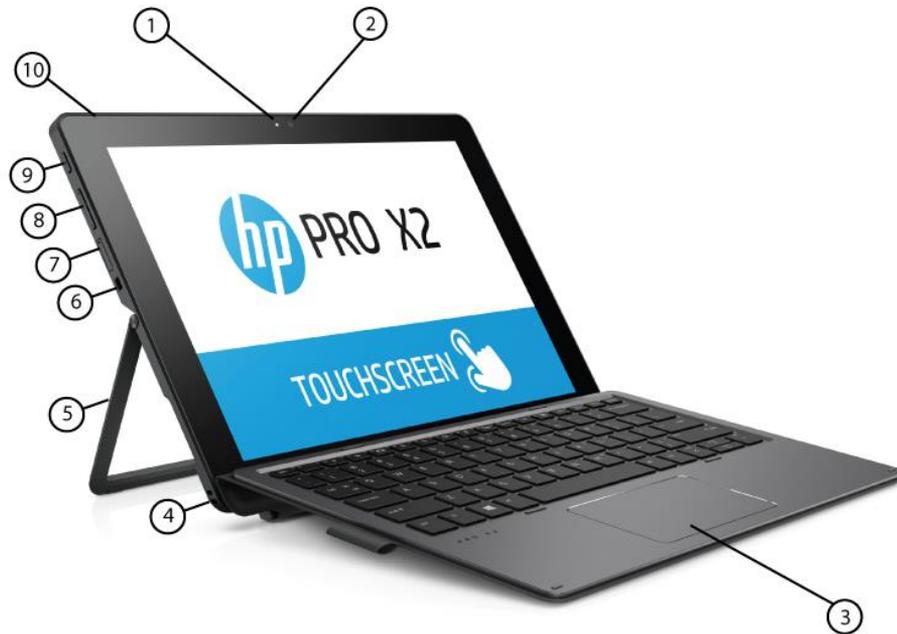


Overview

HP Pro x2 612 G2



Right View

- | | |
|----------------------------|------------------------------|
| 1. Front-facing camera LED | 6. Security cable slot |
| 2. Webcam | 7. Micro SD memory card slot |
| 3. Touchpad | 8. Volume controls |
| 4. Pen Lanyard Slots | 9. Power button |
| 5. Kickstand | 10. Smart card reader |

Overview



Left side view

1. Front-facing camera LED
2. Webcam
3. Audio-out/Audio-in combo jack
4. USB-A 3.0
5. Micro SIM Card Slot (only available on configurations with WWAN enabled)
6. Indicator LEDs: Battery Light
 - White: battery charge is greater than 90%
 - Amber: battery charge is from 0 to 90%
 - Off: battery is not charging
7. USB Type-C™ 3.1
8. Guide pins
9. Pogo pins

Overview



Top and Side

- | | |
|----------------------|--------------------------------|
| 1. Smart card reader | 5. Security cable slot |
| 2. Speakers (2) | 6. Micro SD memory card slot |
| 3. Power button | 7. Optional NFC |
| 4. Volume controls | 8. Optional fingerprint reader |

Overview



Dedicated Skype for Business keys

1. Present
2. Call answer / initiate
3. Call end

Overview

At A Glance

- The fanless design and up to 11 hours of battery life¹ lets you work, surf, and connect with colleagues
- Windows 10 versions
- 7th Generation Intel® Core™ (Y-series) processors, some with vPro™² support** or Intel® Pentium® processors
- Intel® HD Graphics 615
- 12" diagonal FHD BrightView WUXGA+ UWVA ultra-slim LED-backlit touch screen (1920 x1280) with direct bonded, Corning® Gorilla® Glass 4
- Up to 8 GB of memory and up to 512 GB storage
- Weight starting at 1.87 lbs for tablet
- Height starting at 9.1mm for tablet
- Designed to pass MIL-STD-810g testing³
- With integrated stereo speakers, front and rear facing web camera and integrated microphone
- Security features include TPM 2.0/1.2, integrated smart card reader, optional pad fingerprint reader, and optional NFC
- Wireless connectivity with WLAN and optional WWAN
- Protect your device and data using the latest HP security technology solutions: HP Sure Start, HP BIOSphere and HP Client Security
- Standard commercial 1 year limited warranty with extended service available with optional HP Care Packs
- New collaboration keyboard with dedicated collaboration keys, multitouch gestures enabled for clickpad and backlit keyboard0064

1. 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 www.bapco.com for additional details.

2. vPro™ support not available on all configurations.

3. MIL STD 810G testing is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Damage under the MIL STD test conditions or any 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.

Features

PRODUCT NAME

HP Pro x2 612 G2

OPERATING SYSTEM

Preinstalled Windows 10 Pro 64¹
Windows 10 Pro 64 (National Academic License)²
Windows 10 Home 64¹
Windows 10 Home Single Language 64¹
Windows 10 IoT 64 Enterprise LTSB for Retail^{1,3}

Web Supported Windows 10 Enterprise 64¹

Note: Your product does not support Windows 8 or Windows 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>.

1. Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.
2. Some devices for academic use will automatically be updated to Windows 10 Pro Education with the Windows 10 Anniversary Update. Features vary; see <https://aka.ms/ProEducation> for Windows 10 Pro Education feature information.
3. Available March 2017.

PROCESSOR

7th Generation Intel® Core™ M3, i5, i7 and Pentium Processors:

Intel® Pentium® 4410Y with Intel Graphics 615
(1.5 GHz, 2 MB cache, 2 cores)

Intel® Core™ M3-7Y30 with Intel Graphics 615
(1 GHz, up to 2.6 GHz, 4 MB cache, 2 cores)

Intel® Core™ i5-7Y54 with Intel Graphics 615
(1.2 GHz, up to 3.3 GHz, 4 MB cache, 2 cores)

Features

Intel® Core™ i5-7Y57 with Intel Graphics 615, vPro™ Support
(1.2 GHz, up to 3.2 GHz, 4 MB cache, 2 cores)

Intel® Core™ i7-7Y75 with Intel Graphics 615, vPro™ Support
(1.3 GHz, up to 3.6 GHz, 4 MB cache, 2 cores)

1. 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 is not a measurement of higher performance.

CHIPSET

Chipset is integrated with processor

GRAPHICS

Integrated

Intel® HD Graphics 615¹

Discrete

Intel® UMA Graphics (GT2)

With shared video memory

1. HD content required to view HD images.

DISPLAY

Internal

30.48 cm (12") diagonal FHD BrightView WUXGA+ UWVA ultra-slim LED-backlit (1920 x 1280) touch screen chemically-strengthened Corning® Gorilla® Glass 4 top cover directly bonded to display

1. HD content required to view HD images.

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

| | |
|-------------------------|---------------------------------------|
| Refresh Rate | 60 Hz |
| Brightness | 340 nits (typical) |
| Pixel Resolution | Format 1920 x 1280 (WUXGA+) |
| | Configuration RGB Stripe |
| Interface | eDP 1.3 |
| LCD Mode | IPS/FFS/VA |
| PPI | 192 ppi |
| Viewing Angle | UWVA 85/85/85/85 (Left/Right/Down/Up) |

Features

External

24-bit + 8 bit alpha channel (standard)
Up to 30-bit per pixel color depth (Wide Color Gamut)

STORAGE

Supports M.2 Solid State Drive SS 2280
128 GB SATA-3 SS VALUE SSD
256GB 2280 M2 PCIe-3x4 SS NVMe TLC
256GB 2280 M2 SATA-3 Self Encrypted OPAL2 TLC
256GB 2280 PCIe NVMe Value
360GB 2280 PCIe-3x4 NVMe TLC
512GB 2280 M2 PCIe-3x4 SS NVMe TLC
512GB 2280 PCIe NVMe Value
512GB 2280 M2 SATA-3 Three Layer Cell Federal Information Processing Standard

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

MEMORY

LPDDR3 1866 (Transfer rates up to 1866 MT/s)
Supports Dual Channel Memory
Memory Soldered Down
Non-accessible
Not upgradeable

Configurations

4 GB
8 GB

Memory Maximum

Up to 8 GB

NETWORKING/COMMUNICATIONS

Broadband Wireless (WWAN)^{1,2,3}

HP hs3210 HSPA+ Mobile Broadband Module
HP lt4120 Qualcomm® Snapdragon™ X5 LTE Mobile Broadband Module

Wireless LAN (WLAN)

Intel® Dual Band Wireless-AC 8260 802.11 a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 combo (vPro)
Intel® Dual Band Wireless-AC 8260 802.11 a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 combo (non-vPro)

Features

Optional GPS

HP Graff GNSS Module ²

Near Field Communications (NFC)

HP Module with NXP NFC Controller NPC100²

Support for Miracast (Windows 10) ⁴

1. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications 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 802.11ac WLAN devices.

2. Sold separately or as an optional feature.

3. Mobile Broadband requires separately purchased service contract and factory configuration. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, and in all regions.

4. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. For more information: <http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast>

AUDIO/MULTIMEDIA

Audio on Tablet

Integrated stereo speakers (DTS)

Integrated dual-microphone array

Camera – Front

Integrated 5 MP (1080p)

- 1080p format for video
- 5 MP for still capture
- Supports videoconferencing* and still image capture
- High quality fixed focus lens
- Video capture at various resolutions up to 1920x1080 resolution (1080p) and up to 30 fps
- M-JPEG compression supports higher frame rates for video capture and videoconferencing*
- Improved low light sensitivity
- Improved dynamic range

Camera – Back

Integrated 8 MP with flash (1080p)

- 1080p format for video
- 8 MP for still capture
- Supports videoconferencing* and still image capture
- High quality auto focus lens
- Video capture at various resolutions up to 1920x1080 resolution (1080p) and up to 30fps
- M-JPEG compression supports higher frame rates for video capture and videoconferencing*

Features

- Improved low light sensitivity
- Improved dynamic range

Sensors on Tablet

Accelerometer Magnetometer, Gyro (Combo chip)
Proximity (SAR for WWAN)
Ambient light sensor

[*Internet access required.](#)

ACTIVE PEN

HP Active Pen with Bluetooth® App Launch

| | |
|---|--|
| Pen Technology | Wacom AES |
| Digitizer | N/A, shared with touch |
| Dimensions | 147.4 x 9.5 mm |
| Weight | 17.5 g |
| Power | AAAA battery and 319 coin cell x2 |
| System Requirements | Windows 10 |
| Tip Diameter | 1 mm |
| Pen Tips | Three extra elastomer pen tips for replacement |
| Pressure Sensitivity (Y/N) | Yes (2048 levels) |
| Buttons (Y/N) | Yes, 3 |
| Resolution | 2540 ppi |
| Report rate | 133hz |
| Hover Capability (Y/N) | Yes |
| Hover Height (mm) | 10mm+ |
| Palm Rejection (Y/N) | Yes |
| Tilt Angle (Y/N) | >60 degrees from vertical |
| Battery Life Based on Continuous Usage | 7.5 month+ |

KEYBOARD

Optional HP Pro x2 612 G2 Collaboration Keyboard¹

Kit Contents: HP Pro x2 612 G2 Collaboration Keyboard and documentation

Weight: 2.65 lbs (1203g)

1. Sold separately or as an optional feature.

Keyboard Features

- Backlit
- HP DuraKeys
- ClickPad™ (91 x 51 mm) with image sensor, multi-touch gestures enabled, on/off function and LED indicator

Features

- 165° max opening angle
- Docking connector to tablet
- Wipeable back cover
- Full size 81/82-key island-style backlit keyboard with full row of function keys and LED indicators

ClickPad

Glass with chemical etched surface

Supports 2-way scroll

Taps enabled as default

Gestures enabled by default - 2 Finger Scrolling, 2 Finger Zoom (Pinch)

Keyboard Features (Collaboration Keyboard only)

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

F10 – Number Lock

F11 – Wireless On/Off F12

– Calendar

Dedicated Skype keys:

Present

Call answer/initiate

Call end

Delete

SOFTWARE AND SECURITY

BIOS

HP BIOSphere Gen3

HP SureStart Gen3¹⁰

HP DriveLock | HP Automatic DriveLock

BIOS Update via Network

Master Boot Record Security

Power On Authentication

Features

Secure Erase¹
Absolute Persistence Module²
Pre-boot Authentication

Communication / Connectivity

HP Mobile Connect Pro (Windows 10 only)³
Native Miracast Support⁴
HP LAN-WLAN Protection
HP MAC Address Manager
HP Wireless Wakeup
HP SureConnect
HP Workwise
HP Velocity

HP Value Add Software

HP ePrint Driver + JetAdvantage⁵
HP Hotkey Support - CMIT
HP Recovery Manager
HP Jumpstart
HP Support Assistant
HP Noise Cancellation Software
HP Notifications

Microsoft Products

Buy Office
Bing Search
Skype⁶

Manageability

HP Driver Packs⁷
HP SoftPaq Download Manager (SDM)
HP System Software Manager (SSM)⁷
HP BIOS Config Utility (BCU)⁷
HP Client Catalog⁷
HP MIK for Microsoft SCCM⁷
LANDESK Management⁸

For more information on HP Client Management Solutions refer to: <http://www.hp.com/go/clientmanagement>.

Client Security Software



Features

HP Client Security Suite Gen3¹⁰

- HP Security Manager (including Credential Manager and Password Manager)
- HP Drive Lock
- HP Fingerprint Sensor
- HP Password Manager
- Absolute Persistence Module
- Power On Authentication

Microsoft Defender¹¹

Security Hardware

Trusted Platform Module (TPM) 2.0 (Infineon SLB9670). Common Criteria EAL4+ Certified.

Downgradable to TPM 1.2. Convertible to FIPS 140-2 Certified mode.¹²

HP Fingerprint Reader (On select models) (Upgrade Option)

1. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.

2. 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.

3. HP Mobile Connect Pro is only available on preconfigured devices with WWAN. For geographic availability refer to <http://www.hp.com/go/mobileconnect>

4. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. For more information: <http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast>

5. Requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see <http://www.hp.com/go/eprintcenter>). Requires optional broadband module. Broadband use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Separately purchased data plans or usage fees may apply. Print times and connection speeds may vary.

6. Skype is not offered in China.

7. Not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>

8. Subscription required.

9. Sure Start Gen 3 is available on HP Elite products equipped with Intel® 7th generation processors.

10. HP Client Security Suite Gen3 requires Windows and Intel® or AMD 7th generation processors.

11. Microsoft Defender requires Windows 10.

12. This product ships with TPM 2.0 with option to downgrade to TPM 1.2. Upgrade utility is available via HP Customer Support

Features

POWER

Power Supply

HP 45 W USB Type-C™ AC adapter

HP 65 W USB Type-C™ AC adapter

- USB Type-C™ DC integrated cord (1.8m)
- AC Power cord (1m)
- AC Adapter Weight: 245g +/- 10g

Primary Battery

4-cell, long life 41 Wh Li-ion²

Supports battery fast charge (65W adapter only).

Power cord

Duckhead Power Cord (3.28 feet /1.0 m)

Battery life¹

Windows 10 battery time:

Up to 10 hours *

* Units enabled with 65w adapters or higher can support fast charging of the battery from 0-45% in 30 minutes while the system is off.

1. 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 www.bapco.com for additional details.
2. 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.

WEIGHTS & DIMENSIONS

Weight¹

Tablet only

Starting at 1.87 lbs (850 g)

Tablet with Collaboration Keyboard

2.65 lbs (1203 g)

1. Weight will vary by configuration.

Dimensions - (w x d x h)

Features

Tablet

11.81 x 8.65 x 0.36 in (300 x 219.3 x 9.1 mm)

Tablet with Collaboration Keyboard

11.81 x 8.65 x 0.57 in (300 x 219.3 x 14.6 mm)

NOTE: Height varies depending upon where on the notebook the measurement is made.

PORTS/SLOTS

Tablet**Ports**

1 USB Type-C™ (docking, charging, and USB 3.1)

1 USB A 3.0

1 headphone/microphone combo

Slots

1 Micro SIM drawer (optional)

1 Micro SD Media Reader drawer - supports microSD, microSDHC, microSDXC

SERVICE AND SUPPORT

HP Services offers 3-year and 1-year limited warranties and 90 day software limited warranty options depending on country. 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. HP Care Pack Services ¹ 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>.

1. HP Care Packs are sold separately. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit www.hp.com/go/cpc. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

Features

DISPLAY

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

| | | | | |
|--|--|------------------------|----------------------|--|
| 12.0" diagonal LED-backlit BV UWVA eDP 1.3 Ultra-slim (1920 x 1280 – Full HD*) Chemically-strengthened Corning® Gorilla® Glass 4 top cover directly bonded to display | Outline Dimensions (W x H x D) | 267.7 x 184.4 (mm) max | | |
| | Active Area | 253.44 x 168.96 (mm) | | |
| | Weight | 200 g max | | |
| | Diagonal Size | 12.0 (inch) | | |
| | Surface Treatment | Bright-View (BV) | | |
| | Touch enabled | Yes | | |
| | Contrast Ratio | 800:1 (typical) | | |
| | Refresh Rate | 60 Hz | | |
| | Brightness | 340 nits | | |
| | Pixel Resolution | Format | 1920 x 1280 (WUXGA+) | |
| | | Configuration | RGB | |
| | Interface | eDP 1.3 + PSR | | |
| | LCD Mode | LED | | |
| | PPI | 192 | | |
| Viewing Angle | UWVA 85/85/85/85 | | | |

STORAGE

| | | | | |
|-----------------------------------|------------------------------|--|---------------------------------|--|
| 128 GB SATA-3 SS VALUE SSD | Drive Weight | 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 | | |
| | Performance | Maximum Sequential Read | Maximum Sequential Write | |
| | | 535 MB/s | 515 MB/s | |
| | Logical Blocks | 250,069,680 | | |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] | | |
| | Features | ATA Security; DIPM; TRIM; DEVSLP | | |

Features

| | | | |
|---|------------------------------|--|---------------------------------|
| 256GB 2280 M2 PCIe-3x4 SS NVMe TLC | Drive Weight | 0.02 lb (10 g) | |
| | Capacity | 256 GB | |
| | Height | 0.09 in (2.3 mm) | |
| | Width | 0.87 in (22 mm) | |
| | Interface | PCIe NVMe Gen3X4 | |
| | Performance | Maximum Sequential Read | Maximum Sequential Write |
| | | 2600 MB/s | 900 MB/s |
| | Logical Blocks | 500,118,192 | |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] | |
| | Features | ATA Security (Option) TRIM; L1.2 | |

| | | | |
|--|------------------------------|---|---------------------------------|
| 256GB 2280 M2 SATA-3 Self Encrypted OPAL2 TLC | Drive Weight | 0.02 lb (10 g) | |
| | Capacity | 256 GB | |
| | Height | 0.09 in (2.3 mm) | |
| | Width | 0.87 in (22 mm) | |
| | Interface | ATA-8, SATA 3.0 | |
| | Performance | Maximum Sequential Read | Maximum Sequential Write |
| | | 530 MB/s | 515 MB/s |
| | Logical Blocks | 500,118,192 | |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] | |
| | Features | ATA Security; TCG Opal 2.0 DIPM; TRIM; DEVSLP | |

| | | | |
|---------------------------------------|---------------------|--------------------------------|---------------------------------|
| 256GB 2280 PCIe NVMe Value | Drive Weight | 0.02 lb (10 g) | |
| | Capacity | 256 GB | |
| | Height | 0.09 in (2.3 mm) | |
| | Width | 0.87 in (22 mm) | |
| | Interface | PCIe NVMe Gen3X4 | |
| | Performance | Maximum Sequential Read | Maximum Sequential Write |
| | | 1700 MB/s | 600 MB/s |
| Logical Blocks | 500,118,192 | | |

Features

Operating Temperature 32° to 158°F (0° to 70°C) [ambient temp]
Features ATA Security; TCG Opal 2.0 ; FIPS; TRIM; L1.2

360GB 2280 PCIe-3x4 NVMe TLC

Drive Weight 0.02 lb (10 g)
Capacity 360GB
Height 0.09 in (2.3 mm)
Width 0.87 in (22 mm)
Interface PCIe NVMe Gen3X4
Performance **Maximum Sequential Read** **Maximum Sequential Write**
 1700 MB/s 600 MB/s
Logical Blocks 703,282,608

Operating Temperature 32° to 158°F (0° to 70°C) [ambient temp]
Features ATA Security (Option); TRIM; L1.2

512GB 2280 M2 PCIe-3x4 SS NVMe TLC

Drive Weight 0.02 lb (10 g)
Capacity 512 GB
Height 0.09 in (2.3 mm)
Width 0.87 in (22 mm)
Interface PCIe NVMe Gen3X4
Performance **Maximum Sequential Read** **Maximum Sequential Write**
 2600 MB/s 1400 MB/s
Logical Blocks 1,000,215,216

Operating Temperature 32° to 158°F (0° to 70°C) [ambient temp]
Features ATA Security; TRIM; L1.2

512GB 2280 PCIe NVMe Value

Drive Weight 0.02 lb (10 g)
Capacity 512 GB
Height 0.09 in (2.3 mm)
Width 0.87 in (22 mm)
Interface PCIe NVMe Gen3X4
Performance **Maximum Sequential Read** **Maximum Sequential Write**
 1700 MB/s 600 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; TRIM; L1.2

Drive Weight 0.02 lb (10 g)

Features

| | | | |
|--|---|--|---------------------------------|
| 512GB 2280 M2 SATA-3 Three Layer Cell Federal Information Processing Standard | Capacity | 512 GB | |
| | Height | 0.09 in (2.3 mm) | |
| | Width | 0.87 in (22 mm) | |
| | Interface | PCIe NVMe Gen3X4 | |
| | Performance | Maximum Sequential Read | Maximum Sequential Write |
| | | 530 MB/s | 500 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; TRIM; L1.2 | | |

SECURITY

| | | |
|---|--|---|
| HP Fingerprint Reader (Optional – available on the Tablet) | Mobile Voltage Operation | 3.0V-3.6V |
| | Operating Temperature | 14° – 167°F (-10° – 75°C) |
| | Current Consumption | 36 mA peak |
| | Image | |
| | Low Latency Wait for Finger | 950 uA |
| | Capture Rate | 30 cm/sec |
| | ESD Resistance | IEC 61000-4-2 4B (±15KV) |
| | Detection Matrix | 200*1 (plus another secondary line) 508 dpi 10 mm sensor area |

NETWORKING/COMMUNICATIONS

HP hs3210 HSPA+ Mobile Broadband Module*

| | |
|------------------------------------|--|
| Technology/Operating bands | HSPA+: 2100 (Band1), 1900 (Band 2), 850 (Band 5), 900 (Band 8) MHz E-GPRS: 1900 (Band 2), 1800 (Band 3), 850 MHz (Band 5), 900 (Band 8) MHz |
| Wireless protocol standards | WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification E-GPRS: Class B, Multi-slot class 33, coding schemes CS1 - CS4 and MSC1 - MS |
| Maximum data rates | HSPA+: 21.6 Mbps (Download), 5.76 Mbps (Upload) E-GPRS: 296 kbps (Download), 236.8 kbps (Upload) GPRS: 107 kbps (Download), 85.6 kbps (Upload) |
| Maximum output power | HSPA+: 24 dBm E-GPRS 1800/1900: 26 dBm |

Features

| | |
|---|---|
| | E-GPRS 850/900: 27 dBm GPRS 1800/1900: 30 dBm GPRS 850/900: 33 dBm |
| Maximum power consumption | HSPA+: 1,100 mA (peak); 800 mA (average) E-GPRS: 2,800 mA (peak); 700 mA (average) |
| Form Factor | M.2, 2242-S3 Key B |
| Weight | 6 g |
| Dimensions (Length x Width x Thickness) | 1.65 x 8.66 x 0.09 in (42 x 22 x 2.38 mm) |

*Mobile Broadband requires separately purchased service contract and factory configuration. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, and in all regions.

HP It4132 LTE/HSPA+ 4G Mobile Broadband Module*

| | |
|------------------------------------|---|
| Technology/Operating bands | LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3) MHz, 850 (Band 5), 2600 (Band 7), 900 (Band 8) MHz, 800 (Band 20), 700 (Band 28) MHz. HSPA+: 2100 (Band 1), 1900 (Band 2), 850 (Band 5), 900 (Band 8) MHz E-GPRS: 1900 (Band 2), 1800 (Band 3), 850 (Band 5), 900 (Band 8) MHz |
| Wireless protocol standards | 3GPP Release 10 LTE Specification CAT.4, 20MHz BW WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification E-GPRS: Class B, Multi-slot class 12, coding schemes CS1 - CS4 and MSC1 - MSC9 |
| GPS | Standalone, A-GPS (MS-B and LTO) |
| GPS bands | 1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz |
| Maximum data rates | LTE: 150 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (Download), 5.76 Mbps (Upload) EDGE: 236.8 kbps (Download), 236.8 kbps (Upload) GPRS: 85.6 kbps(Download), 85.6 kbps (Upload) |
| Maximum output power | LTE: 23 dBm HSPA+: 23.5 dBm E-GPRS 1900/1800: 26 dBm E-GPRS 900/850: 27 dBm GPRS 1900/1800: 29.5 dBm GPRS 900/850: 32.5 dBm |
| Maximum power consumption | LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average) E-GPRS: 2,600 mA (peak); 500 mA (average) |
| Form Factor | M.2, 3042-S3 Key B |
| Weight | 6 g |

Features

Dimensions 42 x 30 x 2.3 mm
(Length x Width x Thickness)

* Mobile Broadband requires separately purchased service contract and factory configuration.
Check with service provider for coverage and availability in your area.
Connection speeds will vary due to location, environment, network conditions, and other factors.
4G LTE not available on all products, and in all regions.

HP It4120 Qualcomm® Snapdragon™ X5 LTE Mobile Broadband Module *

Technology/Operating bands LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 1700/2100 (Band 4), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 700 (Band 12 lower), 700 (Band 13 upper), 700 (Band 17 lower), 800 (Band 20), 700 (Band 28).
HSPA+: 2100 (Band 1), 1900 (Band 2), 1700/2100 (Band 4), 850 (Band 5), 900 (Band 8) MHz
EV-DO: 850 (BC0), 1900 (BC1) MHz (Only work with Verizon network)
E-GPRS: 1900 (Band 2), 1800 (Band 3), 850 (Band 5), 900 (Band 8) MHz

Wireless protocol standards 3GPP Release 10 LTE Specification CAT.4, 20MHz BW
WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
1xEVDO Release 0, A and B.
E-GPRS: Class B, Multi-slot class 12, coding schemes CS1 - CS4 and MSC1 - MSC9

GPS Standalone, A-GPS (MS-A, MS-B and XTRA)

GPS bands 1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz

Maximum data rates LTE: 150 Mbps (Download), 50 Mbps (Upload)
DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload)
HSPA+: 21Mbps (Download), 5.76 Mbps (Upload)
CDMA 1xRTT: 153.6 kbps (Download), 153.6 kbps (Upload)
EVDO Rel.A: 3.1 Mbps (Download), 1.8 Mbps (Upload)
EVDO Rel.B: 14.7 Mbps (Download), 5.4Mbps (Upload)
EDGE: 236.8 kbps (Download), 236.8 kbps (Upload)
GPRS: 85.6 kbps(Download), 85.6 kbps (Upload)

Maximum output power LTE: 23 dBm
HSPA+: 23.5 dBm
1xRTT/EVDO: 24dBm
E-GPRS 1900/1800: 26 dBm
E-GPRS 900/850: 27 dBm
GPRS 1900/1800: 29.5 dBm
GPRS 900/850: 32.5 dBm

Maximum power consumption LTE: 1,200 mA (peak); 900 mA (average)
HSPA+: 1,100 mA (peak); 800 mA (average)
1xRTT/EVDO: 1,000 mA (peak); 700 mA (average)
E-GPRS: 2,800 mA (peak); 500 mA (average)

Features

Form Factor M.2, 3042-S3 Key B

Weight 6.2 g

Dimensions 42 x 30 x 2.3 mm
(Length x Width x Thickness)

* Mobile Broadband requires separately purchased service contract and factory configuration.

Check with service provider for coverage and availability in your area.

Connection speeds will vary due to location, environment, network conditions, and other factors.

4G LTE not available on all products, and in all regions.

WLAN MODULES

Intel® Tri Band Wireless-N 18265 802.11 ac 2x2 WiFi + BT 4.2 +WiGig combo adaptor

| | |
|-------------------------------|--|
| Form Factor | Combo Module, M.2 3030-S3-A |
| Dimensions | 30.00±0.15mm by 30.00±0.15mm by 2.38mm max. |
| Weight | 4 grams |
| Operating Voltage | 3.3 Volts |
| Wireless LAN Standards | IEEE 802.11ad |
| Interoperability | Wi-Fi certified MAC and Physical Layer WiFi Alliance/WiGig Alliance Protocol Adaption Layers (PALs) (Not yet ratified) Wireless Display Extension (WDE) Wireless Serial Extension (WSE) |
| Frequency Band | Note: IP protocol is not supported 802.11ad 57 – 66 GHz Note: There are 4 bands (1, 2, 3, 4) but only 2 (bands 2 and 3) are supported in most of the countries on the planet. HP will support only bands 2 and 3, 59-64 GHz Note: Not all countries allow unlicensed operation at these frequencies |

Features

**Antenna Structure
(Remote Front End Module,
R-FEM)**

Active, Beam Steering Array of 10 x 2 Elements, 8 x 2 Active Elements
 Azimuth 8 active elements
 Elevation 2 active elements
 Vertical tilt of 20 to 30 degrees off of broadside
 Horizontal beam steering $\pm 65^\circ$, -6dB from peak gain
 Vertical beam steering $+80^\circ - 50^\circ$, -6dB from peak gain
 Azimuth beam width $\sim 20^\circ$, -6dB from peak gain
 Elevation beam width $\sim 80^\circ$, -6dB from peak gain
 Omni (no beam forming) beam width $\sim 110^\circ$, -6dB from peak gain
 Vertical Polarization
 Device side supports one R-FEM
 Dock side supports one or two R-FEMs

Data Rates (RAW)

| MCS | Rate, Mbit/s | Modulation |
|-----|--------------|----------------|
| 0 | 27.5 | $\pi/2$ -BPSK |
| 1 | 385.0 | $\pi/2$ -BPSK |
| 2 | 770.0 | $\pi/2$ -BPSK |
| 3 | 962.5 | $\pi/2$ -BPSK |
| 4 | 1155.0 | $\pi/2$ -BPSK |
| 5 | 1251.25 | $\pi/2$ -BPSK |
| 6 | 1540.0 | $\pi/2$ -QPSK |
| 7 | 1925.0 | $\pi/2$ -QPSK |
| 8 | 2310.0 | $\pi/2$ -QPSK |
| 9 | 2502.5 | $\pi/2$ -QPSK |
| 10 | 3080.0 | $\pi/2$ -16QAM |
| 11 | 3850.0 | $\pi/2$ -16QAM |
| 12 | 4620.0 | $\pi/2$ -16QAM |

**Network Architecture
Models**

Ad-hoc (Peer to Peer)

**Wireless Display Extension
(WDE)**

| | |
|----------------------------|---|
| WGA WDE support | AV PAL (WDE) as defined by WiGig alliance |
| AVC/MPEG support - encoder | WDE supports generation of MPEG-PS / MPEG-PES packets as described in the WDE standard WDE supports AVC (H264) encoder, intra only, 4:4:4 Chroma subsampling. Different visually lossless and lossy scenarios are supported by configuration |
| AVC/MPEG support - decoder | H.264 CAVLC 4:4:4 I-only sub sampling is supported |
| Type of Interface | Client device side |

Features

| | |
|--|---|
| | <ul style="list-style-type: none">• DP (Display port) v1.2a – HBR (1, 2, 4 lanes) |
| | Dock device side |
| | <ul style="list-style-type: none">• DP v1.2 – HBR (1, 2, 4 lanes)• HDMI v1.4a (through external Hub or cable adapter)• DP++ compatible |
| | Note: DP v1.2 is backward compatible with DP v1.1a |
| DP Resolution and Frame Rate Support | DP will support the following resolutions 640x480, 1280x720, 1920x1080, 1920x1200, 2560x1440, 2560x1600 and frame rates – 24, 25, 30, 50 and 60 Hz All resolutions are in progressive mode (no interlaced supported) Specifically, the following resolutions and frame rates will be supported <ul style="list-style-type: none">• 640x480p60• 1280x720p60• 1920x1080p60• 1920x1200p60• 2560x1440p60• 2560x1600p60 |
| | Note: resolution and refresh rate may change in situations where there is a bad link or strict limits on TDP |
| HDMI Resolution and Frame Rate Support | HDMI supports the following resolution and frame rates – <ul style="list-style-type: none">• 640x480p60• 1280x720p60• 1920x1080p60• 1920x1200p60• 2560x1440p60• 2560x1600p60 |
| | Note: resolution and refresh rate may change in situations where there is a bad link or strict limits on TDP |
| Color space support | YCbCr and RGB |
| DP & HDMI Color Depth Support | The following color depths are supported 8 bits per color |
| Dual display mode | The Output interface (Display Port Multi-Stream Transport, DP MST) has the ability to support dual display |

Features

| | |
|--|--|
| | mode – splitting the video stream is based on external HW (with monitors that can support it, a daisy chain approach can be used to support dual display mode) |
| Multiple Display Stream Support (MST) | <p>The following dual display mode via MST is supported</p> <ul style="list-style-type: none"> • 2 x (1280x720) • 2 x (1920x1080) • 2 x (1920x1200) <p>1920x1080 plus 1920x1200</p> <p>Support for all relevant Audio formats in Support for all relevant Audio formats in Pass-Through mode as defined in the WDE specification.</p> |
| Audio Pass-Through Support | <p>LPCM (uncompressed and uncompressible), 2-8 channels, 32KHz – 192KHz, up to 24 bits per sample (dependent on the number of channels)</p> |
| Independent Digital Audio Out Interface (Sink) | <p>Support for an independent digital Audio Out sink interface, operational upon insertion of an audio peripheral, and not dependent on monitor state (On/Off/Powered-Off)</p> <ul style="list-style-type: none"> • 4 x I2S Interfaces • Multiplexed with • S/PDIF Interface |
| Selection of Independent Audio Out Interface | <p>Selection of output interface (I²S or SPDIF) and on-board audio device capabilities is configurable on a system basis through module Flash Configuration.</p> |
| AUX/DDC Channel Interface | <p>AUX (DP) / DDC (HDMI) channel is supported.</p> <p>Note: FAUX – fast AUX (~7000Mb) is not required.</p> |
| Chosen resolution, frame rate, color space, audio capabilities | <p>WDE will inform the host graphics of the best resolution, frame rate, color space and audio capabilities based on</p> <ul style="list-style-type: none"> • Native/Supported monitor resolutions • Module Core Capabilities • Power consumption considerations |

Features

| | | | |
|--|--|--|----------------|
| | | <ul style="list-style-type: none"> Link status(physical layer rate and other services) | |
| | Hot Plug | Plug and Play through hot plug detection is not supported | |
| Wireless Serial Extension (WSE) for support of USB data flow over wireless link | WGA WSE support | USB PAL (WSE) version 1.2 (June 2013) | |
| | WSE Supported USB Ports | Single USB 2.0/3.0 Root Port | |
| | USB Hub | Supports direct connection to an external USB Hub device. Any USB devices on the Dock device should be connected to the external USB Hub. | |
| | Port Powering | Module does not support USB device powering. Any Dock device must be self-powered or powered from an external USB Hub in the Dock Device. The module is capable of managing the powering requirements of USB devices connected to the Dock USB Hub external to the module. | |
| | WSE Supported Devices | USB devices listed in 'Supported USB Peripherals over USB' below are supported, separately and simultaneously. It supports control, interrupt, bulk and isochronous flows based on the supported device capabilities. | |
| | Number of USB devices supported on Dock device | At least 12 USB devices | |
| | Number of USB Hub Tiers supported | Maximum number of Hub Tiers connected to the external Hub in the Dock device is 3. A 4 th Tier will only support non Hub devices. | |
| | Supported USB peripherals over WSE | Device Class | Comment |
| | | HID | Supported |
| | | Printer | Supported |
| Communication Device Class (CDC) | | Supported | |
| Mass Storage Class (MSC) | | Supported | |
| Hub | | Supported | |
| | Audio Class | Supported | |

Features

USB Video Class Supported (UVC)

* Wireless access point and Internet service required. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications 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 802.11ac WLAN devices.

Intel® Dual band wireless-AC 8265 802.11AC 2x2 WiFi + BT 4.2 Combo Adaptor (non-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 |
| Interoperability Frequency Band | <ul style="list-style-type: none"> Wi-Fi certified 802.11b/g/n <ul style="list-style-type: none"> • 2.402 – 2.482 GHz <p>Note: The FCC has declared as of January 1, 2015 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.</p> |
| | <ul style="list-style-type: none"> 802.11a/n <ul style="list-style-type: none"> • 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 <p>Note: Indonesia no support this band)</p> |
| 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, and 80MHz) |
| Modulation | Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM |
| Security¹ | <ul style="list-style-type: none"> • IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware |

Features

| | |
|---|---|
| | <ul style="list-style-type: none"> • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI |
| 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 : +16dBm minimum • 802.11g : +14dBm minimum • 802.11a : +14dBm minimum • 802.11n HT20(2.4GHz) : +14dBm minimum • 802.11n HT40(2.4GHz) : +12dBm minimum • 802.11n HT20(5GHz) : +14dBm minimum • 802.11n HT40(5GHz) : +12dBm minimum |
| Power Consumption | Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 50 mW (WLAN unassociated) Connect Standby: 10 mW (WLAN+BT) Radio disabled: 5 mW |
| Power Management | ACPI and PCI Express compliant power management |
| Receiver Sensitivity³ | 802.11 compliant power saving mode 802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -88dBm maximum 802.11a, 54Mbps : -74dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum 802.11ac, 1SS, MCS-0 : -86dBm maximum 802.11ac, 1SS, MCS-9 : -61dBm maximum 802.11ac, 2SS, MCS-0 : -83dBm maximum 802.11ac, 2SS, MCS-9 : -58dBm maximum |

Features

| | | |
|--------------------------|---|--------------------------------|
| 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 Or Type 1630 : 2.3 x 16.0 x 30.0 mm | |
| Weight | Type 2230 : 2.8g Or Type 1630 : 2g | |
| 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 White – Radio ON | |
| | <ol style="list-style-type: none"> 1. Check latest software/driver release for updates on supported security features. 2. Maximum output power may vary by country according to local regulations. 3. 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 Wireless Technology

| | |
|-------------------------------------|--|
| Bluetooth Specification | 4.0/4.1/4.2 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) |

Features

| 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. | | | | | | | | | | | | |
|--|---|------------|-----------|------------|------|---------|---------|----------------|---------|---------|-------|---------|---------|
| Receiver Sensitivity Legacy | <table border="1"> <thead> <tr> <th>Modulation</th> <th>0.01% BER</th> <th>0.001% BER</th> </tr> </thead> <tbody> <tr> <td>GFSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> <tr> <td>$\pi/4$-DQPSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> <tr> <td>8DPSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> </tbody> </table> | Modulation | 0.01% BER | 0.001% BER | GFSK | -80 dBm | -70 dBm | $\pi/4$ -DQPSK | -80 dBm | -70 dBm | 8DPSK | -80 dBm | -70 dBm |
| Modulation | 0.01% BER | 0.001% BER | | | | | | | | | | | |
| GFSK | -80 dBm | -70 dBm | | | | | | | | | | | |
| $\pi/4$ -DQPSK | -80 dBm | -70 dBm | | | | | | | | | | | |
| 8DPSK | -80 dBm | -70 dBm | | | | | | | | | | | |
| Power Consumption | <p>Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW</p> | | | | | | | | | | | | |
| Range | <p>Legacy Up to 33 ft (10 m) BLE Up to 99 ft (30 m)</p> | | | | | | | | | | | | |
| Electrical Interface | USB 2.0 compliant | | | | | | | | | | | | |
| Bluetooth Software Supported | Microsoft Windows Bluetooth Software | | | | | | | | | | | | |
| Link Topology | | | | | | | | | | | | | |
| Electrical Interface Bluetooth Software Supported | Point to Point, Multipoint Pico Nets up to 7 slaves | | | | | | | | | | | | |
| Security | <p>Full support of Bluetooth Security Provisions Microsoft Windows ACPI, and USB Bus Support</p> | | | | | | | | | | | | |
| Power Management Certifications | <p>Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff</p> | | | | | | | | | | | | |
| Security | All necessary regulatory approvals for supported countries, including: | | | | | | | | | | | | |
| Certifications | FCC (47 CFR) Part 15C, Section 15.247 & 15.249 | | | | | | | | | | | | |
| Bluetooth Profiles Supported | | | | | | | | | | | | | |
| Power Management Certifications | <p>ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark Serial Port Profile (SPP)¹ Service Discovery Application Profile (SDAP) Dial-Up Networking (DUN)^{1,2} Generic Object Exchange Profile (GOEP)^{1,2} Object Push Profile (OPP)^{1,2} Hard Copy Cable Replacement (HCRP)^{1,2} Personal Area Networking Profile (PAN)^{1,2} Human Interface Device Profile (HID)^{1,2} Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP) Audio Video Remote Control Profile (AVRCP)</p> | | | | | | | | | | | | |
| Certifications Bluetooth Profiles Supported | | | | | | | | | | | | | |

Features

Bluetooth V4.1/V4.2 support feature V4.1: ESR5/6/7 compliant

V4.2: ESR8 compliant, LE Secure Connection – Basic.

* Wireless access point and Internet service required. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications 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 802.11ac WLAN devices.

Intel® Dual band wireless-AC 8265 802.11AC 2x2 WiFi + BT 4.2 Combo Adaptor (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 |
| Interoperability Frequency Band | <ul style="list-style-type: none"> Wi-Fi certified 802.11b/g/n <ul style="list-style-type: none"> • 2.402 – 2.482 GHz <p>Note: The FCC has declared as of January 1, 2015 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.</p> <ul style="list-style-type: none"> 802.11a/n <ul style="list-style-type: none"> • 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 <p>Note: Indonesia no support this band)</p> |
| 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, and 80MHz) |
| Modulation | <ul style="list-style-type: none"> Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM |

Features

| | |
|---|---|
| Security¹ | <ul style="list-style-type: none">• 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• Cisco Certified Extensions, all versions through CCX4 and CCX Lite• WAPI |
| Network Architecture | Ad-hoc (Peer to Peer) |
| Models | Infrastructure (Access Point Required) |
| Roaming | IEEE 802.11 compliant roaming between access points |
| Output Power² | <ul style="list-style-type: none">• 802.11b : +16dBm minimum• 802.11g : +14dBm minimum• 802.11a : +14dBm minimum• 802.11n HT20(2.4GHz) : +14dBm minimum• 802.11n HT40(2.4GHz) : +12dBm minimum• 802.11n HT20(5GHz) : +14dBm minimum• 802.11n HT40(5GHz) : +12dBm minimum |
| Power Consumption | Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 50 mW (WLAN unassociated) Connect Standby: 10 mW (WLAN+BT) Radio disabled: 5 mW |
| Power Management | ACPI and PCI Express compliant power management |
| Receiver Sensitivity³ | 802.11 compliant power saving mode 802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -88dBm maximum 802.11a, 54Mbps : -74dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum 802.11ac, 1SS, MCS-0 : -86dBm maximum 802.11ac, 1SS, MCS-9 : -61dBm maximum 802.11ac, 2SS, MCS-0 : -83dBm maximum 802.11ac, 2SS, MCS-9 : -58dBm maximum |

Features

| | | |
|--------------------------|---|--------------------------------|
| 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 Or Type 1630 : 2.3 x 16.0 x 30.0 mm | |
| Weight | Type 2230 : 2.8g Or Type 1630 : 2g | |
| 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 White – Radio ON | |
| | <ol style="list-style-type: none"> 4. Check latest software/driver release for updates on supported security features. 5. Maximum output power may vary by country according to local regulations. 6. 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). | |

Features

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

| | |
|-------------------------------------|---|
| Bluetooth Specification | 4.0/4.1/4.2 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 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 with a maximum transmit power of + 4 dBm for BR and EDR. |

Receiver Sensitivity Legacy

| Modulation | 0.01% BER | 0.001% BER |
|----------------|-----------|------------|
| GFSK | -80 dBm | -70 dBm |
| $\pi/4$ -DQPSK | -80 dBm | -70 dBm |
| 8DPSK | -80 dBm | -70 dBm |

Power Consumption

Peak (Tx) 330 mW
Peak (Rx) 230 mW
Selective Suspend 17 mW

Range

Legacy Up to 33 ft (10 m)
BLE Up to 99 ft (30 m)

Electrical Interface

USB 2.0 compliant

Bluetooth Software Supported Link Topology

Microsoft Windows Bluetooth Software

Electrical Interface Bluetooth Software Supported Security

Point to Point, Multipoint Pico Nets up to 7 slaves

Power Management Certifications

Full support of Bluetooth Security Provisions
Microsoft Windows ACPI, and USB Bus Support

Security

Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
All necessary regulatory approvals for supported countries, including FCC (47 CFR) Part 15C, Section 15.247 & 15.249

Certifications Bluetooth Profiles Supported

Power Management Certifications

ETS 300 328, ETS 300 826
Low Voltage Directive IEC950
UL, CSA, and CE Mark

Certifications Bluetooth Profiles Supported

Serial Port Profile (SPP)¹
Service Discovery Application Profile (SDAP)
Dial-Up Networking (DUN)^{1,2}
Generic Object Exchange Profile (GOEP)^{1,2}
Object Push Profile (OPP)^{1,2}

Features

Bluetooth V4.1/V4.2 support feature

Hard Copy Cable Replacement (HCRP)^{1,2}
Personal Area Networking Profile (PAN)^{1,2}
Human Interface Device Profile (HID)^{1,2}
Hands Free Profile (HFP)
Advanced Audio Distribution Profile (A2DP)
Audio Video Remote Control Profile (AVRCP)
V4.1: ESR5/6/7 compliant

V4.2: ESR8 compliant, LE Secure Connection – Basic.

* Wireless access point and Internet service required. Availability of public wireless access points limit specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.

HP Graff GNSS Module

Technology Standalone GPS, GLONASS
Operating bands GPS L1 1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
Maximum power consumption Active mode (continuous): 67 mA (peak); 26 mA (average)
Form Factor M.2, 3042-S3 Key B
Weight 4.3 g
Dimensions 42 x 30 x 2.3 mm
(Length x Width x Thickness)

* Mobile Broadband is an optional feature. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors.

Near Field Communications (NFC)

HP Module with NXP NFC Controller NPC100
Marketing name: NXP NPC100 Near Field Communication Module
Supports Windows 8, Proximity Events
Support Windows 7, PC/SC
NFC Forum Compliant

Near Field Communications Controller

Features

| | |
|--|--|
| Dimensions (L x W x H) | Module 25 mm by 10 mm by 2.0 mm |
| Chipset | NPC100 |
| System interface | I ² C |
| NFC RF standards | ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 ISO/IEC 18092 ECMA-340 NFCIP-1 Target and Initiator ECMA-320 NFCIP-2 |
| NFC Forum Support | Tag Type 1, Type 2, Type3 and Type 4, NFCIP-1 and NFCIP-2 |
| Reader (PCD-VCD) Mode(1) | ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 MIFARE 1K MIFARE 4K MIFARE DESFire FeliCa Jewel and Topaz cards |
| Card Emulation (PICC-VICC) Mode⁽¹⁾ | ISO/IEC 14443 A ISO/IEC 14443 B and B' MIFARE FeliCa |
| Frequency | 13.56 MHz |
| NFC Modes Supported | Reader/Writer, Peer-to-Peer |
| Raw RF Data Rates | 106, 212, 424, 848 kbps |
| Operating temperature | 0°C to 70°C |
| Storage temperature | -20°C to 125°C |

Features

| | | |
|---|--|---|
| Humidity | 10-90% operating 5-95% non-operating | |
| Supply Operating voltage | 2.97 to 5.5 Volts | |
| I/O Voltage | 1.8V or 3.3V | |
| Power Consumption (Booster enable, VBAT= 3.3V, VCC_BOOST = 5V) | Mode | Power Consumption, Typical⁽²⁾ |
| | Polling | 7.3 mA |
| | Detected Test Tag Type 1 | Total 283.8 mA Net Module 236.8 mA |
| | Detected Test Tag Type 2 | Total 288.8 mA Net Module 241.8 mA |
| | Detected Test Tag Type 3 | Total 287.7 mA Net Module 240.7 mA |
| | Detected Test Tag Type 4 | Total 282.3 mA Net Module 235.3 mA |
| Antenna | Antenna connector, 0.5mm pitch, 7 connector FPC. Antenna matching is external to module. | |

(1) With application or UICC support

(2) Actual Power Consumption is dependent on NFC antenna and matching circuit and on the particular polling sequence and period configured.

POWER

HP 45 W USB Type-C™ AC adapter **Dimensions** 62.0x62.0x28.5mm
Weight unit: 220g +/- 10g

Input

Input Efficiency

Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec:

5V : 81.5%

9V : 86.7%

10V : 87.5%

12V : 87.8%

15V : 87.8%

Features

| | |
|--------------------------------------|--|
| | 20V : 87.8% |
| | Input frequency range 47 ~ 63Hz |
| | Input AC current Max. 1.4 A at 90 Vac |
| Output | Output power 5V/15W 9V/27W 10V/37.5W 12V/45W 15V/45W 20V/45W |
| | DC output 5V / 9V / 10V / 12V / 15V / 20V |
| | Hold-up time 5ms at 115 Vac input |
| | Output current limit <5.0A |
| Connector | USB Type-C |
| 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, 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 65 W USB Type-C™ AC adapter | Dimensions | 74x74x28.5mm |
| | Weight | unit: 245g +/- 10g |
| | Input | |
| | Input Efficiency | |

Features

81.5% min at 115 Vac/ 230Vac @ 5V/3A
 86.7% min at 115 Vac/ 230Vac @ 9V/3A
 88% min at 115 Vac/ 230Vac @ 10V/5A
 88% min at 115 Vac/ 230Vac @ 12V/5A
 89% min at 115 Vac/ 230Vac @
 15V/4.33A
 89% min at 115 Vac/ 230Vac @
 20V/3.25A

Input frequency range

47 ~ 63 Hz

Input AC current

1.7 A at 90 VAC and maximum load

Output

Output power

65W

DC output

5V/9V/10V/12V/15V/20V

Hold-up time

5ms at 115 Vac input

Output current limit

<8.0A

Connector

USB Type C

Environmental Design

Operating temperature

32oFto 95oF (0oto 35oC)

Non-operating (storage) temperature

-4oFto 185oF (-20oto 85oC)

Altitude

0 to 16,400 ft (0 to 5000m)

Humidity

5% to 95%

Storage Humidity

5% 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 100,000 hours at 25°C ambient condition.

**4-cell, long life 41 Wh
Li-ion**

Dimensions (H x W x L)

3.4mm*91.1mm*264.58mm

Weight

170g

Cells/Type

Li-ion/polymer cell

Energy

Voltage 7.7V

Amp-hour capacity 2700mAh

Watt-hour Capacity 41.58Wh



Features

| | | |
|--|--------------------------------------|----------|
| Temperature | Operating (Charging) | 0~45°C |
| | Operating (Discharging) | -10~60°C |
| Battery Re-Charge Time | System in OFF mode or Standby | 3Hr |
| Fuel Gauge LED | | N/A |
| Optional Travel Battery Available | | N/A |

COUNTRY OF ORIGIN

China

ENVIRONMENTAL

TBD

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

| Category | Description | Part number |
|---------------|--|-------------|
| Cases | HP Elite Top Load Colombian Leather Case | T9H72AA |
| | HP Elite Top Load Herringbone Nylon Case | T9H73AA |
| | HP Elite x2 612 G2 Rugged Case | Z7T26AA |
| Docking | HP Elite USB-C™ Dock | Z9R42AA |
| | HP Elite USB-C™ Docking Station | X7W54AA |
| | HP USB-C™ Travel Hub | Z9G82AA |
| Input Devices | HP Pro x2 612 Collaboration Keyboard | 1FV38AA |
| | HP Active Pen with Bluetooth App Launch Button | T4Z24AA |
| | HP USB Type-C™ to VGA Adapter | N9K76AA |
| | HP USB Type-C™ to HDMI Adapter | N9K77AA |
| | HP USB Type-C™ to DisplayPort Adapter | N9K78AA |
| | HP USB-C™ to RJ45 Adapter | V8Y76AA |
| Power | HP 45W USB-C™ Auto Adapter | Z3Q87AA |
| Security | HP Nano Keyed Cable Lock | 1AJ39AA |
| | HP Nano Master Keyed Cable Lock | 1AJ40AA |
| | HP Nano Dual Head Keyed Cable Lock | 1AJ41AA |

Summary of Changes

| Date of change: | Version History: | | Description of change: |
|------------------------|-------------------------|--------|--|
| January 18, 2017 | Version 1 to 2 | Update | Options and Accessories section updated |
| January 23, 2017 | Version 2 to 3 | Update | Options and Accessories section updated (HP USB-C™ to RJ45 Adapter V8Y76AA) |
| January 24, 2017 | Version 3 to 4 | Update | PORTS/SLOTS Section updated (Thunderbolt™ support removed) |
| January 30, 2017 | Version 4 to 5 | Update | Multiple updates |
| February 6, 2017 | Version 5 | Update | MIL STD disclaimer updated. Battery life message updated. Footnotes of Software and Security section were updated (HP BIOS). |

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