Features

# HP ZBook 8 G1i 14 Mobile Workstation


**Left**

| | | | |
|---|---|---|---|
| 1 | ACS & ALS Sensor | 9 | LED Indicator |
| 2 | Microphone (2) | 10 | USB Type-C® 10Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4) |
| 3 | IR Camera (optional) | | |
| 4 | Webcam | | |
| 5 | Camera Shutter | 11 | USB Type-A 5Gbps signaling rate (Powered) |
| 6 | IR LEDS (optional) | 12 | RJ45 Ethernet port (standard) |
| 7 | Webcam LED | 13 | Security lock slot (Integrated) |
| 8 | Nano SIM card slot (Optional) | 14 | Fingerprint reader / Power button |
| | | 15 | Touchpad |

## Features


**Right**

| | | | |
|---|---|---|---|
| 1 | HDMI 2.1 | 4 | Power Indicator LED |
| 2 | Thunderbolt™ 4 with USB Type-C® 40Gbps signaling rate (USB Power Delivery, DisplayPort™ 2.1) | 5 | Headphone/mic combo jack |
| 3 | Thunderbolt™ 4 with USB Type-C® 40Gbps signaling rate (USB Power Delivery, DisplayPort™ 2.1) | 6 | Smart Card Reader (Optional) |

Features

## PRODUCT NAME

HP ZBook 8 G1i 14 Mobile Workstation

## OPERATING SYSTEM

**Preinstalled OS**

FreeDOS
Windows 11 Home - HP recommends Windows 11 Pro for business [1]
Windows 11 Home Single Language - HP recommends Windows 11 Pro for business [1]
Windows 11 Pro (Windows 11 Enterprise available with a Volume Licensing Agreement) [1]
Windows 11 Pro [1]
Linux Ubuntu 24.04

[1] Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows is automatically updated and enabled. High speed internet and Microsoft account required. ISP fees may apply and additional requirements may apply over time for updates. See http://www.windows.com.

**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. A full list of HP products and the Windows 10 versions tested is available on the HP support website. https://support.hp.com/us-en/document/c05195282

Features

## PROCESSOR

| Name[1,2,3,4,5,7] | Cores | Number of P-cores | Number of E-cores | Number Of LP E-core | Threads | Smart Cache | Max Turbo Frequency | | Intel SIPP/vPro® Enterprise | NPU | NPU TOPs |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | P-cores | E-cores | | | |
| Intel® Core™ Ultra9 processor 285H | 16 cores | 6 | 8 | 2 | 16 | 24 MB | 5.40 GHz | 4.5 GHz | X | Intel® AI Boost | 13 |
| Intel® Core™ Ultra7 processor 265H | 16 cores | 6 | 8 | 2 | 16 | 24 MB | 5.30 GHz | 4.50 GHz | X | Intel® AI Boost | 13 |
| Intel® Core™ Ultra7 processor 255H | 16 cores | 6 | 8 | 2 | 16 | 24 MB | 5.10 GHz | 4.40 GHz | | Intel® AI Boost | 13 |
| Intel® Core™ Ultra5 processor 235H | 14 cores | 4 | 8 | 2 | 14 | 18 MB | 5.00 GHz | 4.40 GHz | X | Intel® AI Boost | 13 |
| Intel® Core™ Ultra5 processor 225H | 14 cores | 4 | 8 | 2 | 14 | 18 MB | 4.90 GHz | 4.30 GHz | | Intel® AI Boost | 13 |
| Intel® Core™ Ultra7 processor 265U | 12 cores | 2 | 8 | 2 | 14 | 12 MB | 5.30 GHz | 4.20 GHz | X | Intel® AI Boost | 12 |
| Intel® Core™ Ultra7 processor 255U | 12 cores | 2 | 8 | 2 | 14 | 12 MB | 5.20 GHz | 4.20 GHz | | Intel® AI Boost | 12 |
| Intel® Core™ Ultra5 processor 235U | 12 cores | 2 | 8 | 2 | 14 | 12 MB | 4.90 GHz | 4.10 GHz | X | Intel® AI Boost | 12 |
| Intel® Core™ Ultra5 processor 225U | 12 cores | 2 | 8 | 2 | 14 | 12 MB | 4.80 Ghz | 3.80 GHz | | Intel® AI Boost | 12 |

[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, branding and/or naming is not a measurement of higher performance.
[2] Intel Turbo Boost performance varies depending on hardware, software and overall system configuration. See http://www.intel.com/technology/turboboost for more information.
[3] Intel vPro® requires Windows 10 Pro 64 bit or higher, a vPro supported processor, vPro enabled chipset, vPro enabled wired LAN and/or Wi-Fi 6E WLAN and TPM 2.0. Some functionality requires additional 3rd party software in order to run. Features of vPro® Essentials and Enterprise vary. See http://intel.com/vpro
[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.
[5] Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
[7]Features and software that require a NPU may require software purchase, subscription or enablement by a software or platform provider, and third party software may have specific configuration or compatibility requirements. Performance varies by use, configuration, and other factors.

Features

## CHIPSET

Chipset is integrated with processor

## GRAPHICS

**Integrated**
Intel® Graphics (U Series Processors)
Intel® Arc™ 140T GPU (Ultra 7/9 H Series Processors)
Intel® Arc™ 130T GPU (Ultra 5 H Series Processors)

**Discrete**
NVIDIA RTX™ 500 Ada Laptop GPU (4 GB GDDR6 dedicated)

**Supports**
Support HDMI 2.1

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## DISPLAY

**Internal**

**Non-Touch**
35.6 cm (14") diagonal, WUXGA (1920 x 1200), LCD, UWVA, Anti-Glare, Low Blue Light, 800 nits, sRGB 100%, HP Sure View 5 [6]
35.6 cm (14") diagonal, WQXGA (2560 x 1600), Bent, LCD, 120Hz, UWVA, anti-glare, WLED, 500 nits, DCI-P3 100%, HP DreamColor
35.6 cm (14") diagonal, 2.5K (2560 x 1600), LCD, 120Hz (VRR), UWVA, Anti-Glare, WLED + Low Blue Light, 400 nits, Adobe 100% + DCI-P3 100%
35.6 cm (14") diagonal, WUXGA (1920 x 1200), LCD, UWVA, Anti-Glare, WLED + Low Blue Light, 400 nits, Low Power, sRGB 100%
35.6 cm (14") diagonal, WUXGA (1920 x 1200), LCD, UWVA, Anti-Glare, WLED, 300 nits, Low Power, sRGB 62.5%

**Touch**
35.6 cm (14") diagonal, WUXGA (1920 x 1200), LCD, Touch, UWVA, Anti-Glare, Low Blue Light, 800 nits, sRGB 100%, HP Sure View 5 [6]
35.6 cm (14") diagonal, WUXGA (1920 x 1200), LCD, Touch, UWVA, Anti-Glare, 300 nits, Low Power, sRGB 62.5%

**DisplayPort™ 1.4**
HDMI 2.0 Support resolution up to 4K @60 Hz

**Displays support**
Supports dual display through the dock

## Features

**Display Size**

14.0"

35.6 cm

## Docking (Sold Separately)

| | |
|---|---|
| **Docking station model #1** | HP USB-C™ Dock G5 |
| **Total number of supported displays (incl.the notebook) display)** | 3 |
| **Max.resolutions supported** | Multi-Function Mode: (2) 5k @ 30Hz and (1) 4k UHD @ 30Hz on any port<br>High-Resolution Mode: (2) 5k @ 60Hz on DisplayPort ports and (1) 4k UHD @ 60Hz on HDMI port |
| **Dock Connectors** | 1x HDMI 2.0, 2x DisplayPort 1.4 |
| **Technicallimitations** | Maximum resolution and display support is dependent on the maximum capability of the notebook.<br><br>Highest resolution with dual displays is two 8K@ 60Hz host in High Resolution mode.<br>Three maximum displays supported are two 5K@ 30 Hz on DP ports plus one 4K UHD@ 30 Hz on HDMI in Multi-function mode<br>The highest resolution for a non-Thunderbolt host in Multi-function mode is a single 5K dual cable (using both DP ports) + (1) 4K on HDMI port. |
| **Docking station model #2** | HP Thunderbolt™ 120W G4 Dock |
| **Total number of supported displays (incl.the notebook) display)** | 4 |
| **Max.resolutions supported** | Quad 4K @60Hz<br>Dual 8K single cable@30 for Thunderbolt hosts or USB-C hosts DisplayPort 1.4 with Display Stream Compression in High-Resolution Mode |
| **Dock Connectors** | 2x HDMI 2.0, 2x DisplayPort 1.4, 1x Thunderbolt 4, 1x USB-C 3.2 Gen 2 DisplayPort |
| **Technicallimitations** | Maximum resolution and display support is dependent on the maximum capability of the notebook.<br><br>Thunderbolt Hosts:<br>Maximum of (4) displays with maximum resolution of 5K@ 30Hz running Thunderbolt host.<br>Maximum resolution possible is dual 8K displays @ 60Hz running Thunderbolt host or running a non-Thunderbolt host in high resolution mode @30Hz<br>Non-Thunderbolt hosts:<br>The highest resolution for dual displays running a non-Thunderbolt host in multi-function mode is<br>(1) 5K dual cable (using both DP ports) +(1) 4K on USB-C DP port |

Features

Non-Thunderbolt hosts support (3) displays with a maximum resolution of (2) 5K single cable + (1) 4K UHD @ 60 Hz in high resolution mode. In multi-function mode the maximum resolution for (3) displays is (2) 5K single cable @ 30Hz + (1) 4K UHD @ 30Hz.

## STORAGE AND DRIVES

**Primary M.2 Storage**

2 TB PCIe® Gen4x4 NVMe™ SSD Three Layer Cell [6]
1 TB PCIe® Gen4x4 NVMe™ SSD Three Layer Cell [6]
1 TB PCIe® NVMe™ SSD Value [6]
512 GB PCIe® Gen4x4 NVMe™ SSD Three Layer Cell [6]
512 GB PCIe® Gen4x4 NVMe™ Self Encrypted OPAL2 SSD Three Layer Cell [6]
512 GB PCIe® NVMe™ SSD Value [6]
256 GB PCIe® NVMe™ Self Encrypted OPAL2 SSD Value [6]
256 GB PCIe® NVMe™ SSD Value [6]

## MEMORY

**Maximum Memory**

64GB DDR5-5600 MT/s (2 x 32 GB) Memory

64GB DDR5-5600 MT/s (2 x 32 GB) Memory [8]
32GB DDR5-6400 MT/s (2 x 16 GB) Memory [8]
32GB DDR5-5600 MT/s (1 x 32 GB) Memory [8]
32GB DDR5-5600 MT/s (2 x 16 GB) Memory [8]
16GB DDR5-6400 MT/s (1 x 16 GB) Memory [8]
16GB DDR5-5600 MT/s (1 x 16 GB) Memory [8]
16GB DDR5-5600 MT/s (2 x 8 GB) Memory [8]

**Memory Slots**

2 SODIMM
System runs at up to 6400 MT/s
Supports Dual Channel Memory(optional).
The memory is accessible/upgradeable by IT or self-maintainers only

Features

## NETWORKING /COMMUNICATIONS

**WLAN**
Intel® BE201 Wi-Fi 7 Bluetooth® 5.4 vPro® WW WLAN
Intel® BE201 Wi-Fi 7 Bluetooth® 5.4 non-vPro® WW WLAN
Intel® AX211 Wi-Fi 6E Bluetooth® 5.3 vPro® WW WLAN
Intel® AX211 Wi-Fi 6E Bluetooth® 5.3 WW WLAN

**WWAN**
HP 5G Sub-6 CAT19
HP 4G CAT19

**LPWAN**
Qualcomm 9205 LTE-M (CAT-M1 fSVC) [12]

**NFC**
NFC Mirage WNC XRAV-1

**Miracast**
Native Miracast Support

**Ethernet**
Intel® I219-LM (vPro®) GbE PCIe NIC

## AUDIO/MULTIMEDIA

Audio by Poly Studio
2 Integrated stereo speakers
Discrete Amplifiers
2 Integrated dual array microphone

**Speaker Power**
1W / 8 ohm per speaker

**Camera**
5MP + Infrared camera
5MP camera

**Sensors**
Ambient Light Sensor
Color Sensor with Ambient Light Sensing

## Features

Fingerprint Sensor (optional)
Hall Effect Sensor
HP Sure Platform
HP Tamper Lock [14]
Motion Sensor (select models)
Thermal Sensor

## KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

**Keyboard**
HP Premium NB Keyboard, spill-resistant, backlit, Durakey keyboard.
HP Premium NB Keyboard, spill-resistant, Privacy, backlit, Durakey, keyboard.

**Pointing Device**
Clickpad
Microsoft Precision Touchpad Default Gestures Support
Multi-touch gesture support

**Function Keys**
ESC - System information
F1 - Display Switching
F2 - Blank or Privacy
F3 - Brightness Down
F4 - Brightness Up
F5 - Blank or Keyboard Backlight
F6 - Audio Mute
F7 - Volume Down
F8 - Volume Up
F9 - Mic Mute
F10 - Play and Pause
F11 – Programmable Key
F12 - HOME
Power Button (with LED)
Insert
Delete
End
Page up
Page down
Microsoft Copilot [15]

**Hidden Keys**
Fn+R - Break, Fn+S - Sys Rq, Fn+C - Scroll Lock

## SOFTWARE AND SECURITY

**Application Software**
Buy Microsoft Office (Sold Separately)
HP Connection Optimizer
Edge Customization
HP Hotkey Support
HP Mac Address Manager
HP Notifications
HP PC Hardware Diagnostics UEFI
HP PC Hardware Diagnostics Windows
HP Privacy Settings
HP Services Scan [15]
HP Smart Support [16]
HP Support Assistant [17]
myHP
HSA Fusion for Commercial
HSA Telemetry for Commercial
Poly Lens [18]
Poly Camera Pro
Ubuntu Data Science Stack

**Manageability Features**
HP Client Catalog (download) [19]
HP Client Management Script Library (download) [20]
HP Cloud Recovery [21]
HP Connect for Microsoft Endpoint Manager
HP Driver Packs (download) [22]
HP Image Assistant (download) [23]
HP Manageability Integration Kit (download) [24]
HP Power Manager with Battery Health Manager (download) [25]

**Security Management**
Secured-Core PC Enable [26]
Windows Hello Enhanced Sign-In Security (ESS)
HP Wolf Security for Business which includes: [27]
HP Tamper Lock
HP Sure Admin [28]
HP Sure Click [29]
HP Sure Recover [30]
HP Sure Run [31]

## Features

HP Sure Sense [32]
HP Sure Start [33]

**BIOS**
Absolute Persistence Module [34]
Audio Permanent Disable
HP BIOS Recovery
HP Fingerprint Sensor [35]
BIOS Update via Network
HP BIOSphere Gen6 [36]
HP DriveLock & Automatic DriveLock
HP Secure Erase [37]
HP Wake on WLAN

**Security- TPM**
Model: Nuvoton NPCT760HACYX
Firmware Version: 7.2.4.0
TCG TPM 2.0
FIPS 140-2 Compliant: Yes

**Smartcard Reader**
Alcorlink AK9563E66-GAF-GR (QFN)
FIPS 140-2 Compliant : Yes

15. HP Services Scan is preinstalled and/or provided thru Windows Update and checks for service entitlement on each hardware device and downloads the applicable software agent automatically. To disable this feature, please follow the instructions at http://www.hpdaas.com/requirements. The HP Insights agent is a telemetry and analytics platform that provides critical data around devices and applications and is not sold as a standalone service. HP follows stringent GDPR privacy regulations and is ISO27001, ISO27701, ISO27017 and SOC2 Type2 certified for Information Security. Internet access with connection to the HP Insights agent is required. For full system requirements, please visit http://www.hpdaas.com/requirements. Not available in China.
16. HP Smart Support requires the HP Insights agent to be installed. For more information about how to enable or to download HP Smart Support, please visit http://www.hp.com/smart-support. HP Services Scan is preinstalled and/or provided thru Windows Update and will check entitlement on each hardware device to determine if an HP Insights agent-enabled service has been purchased, and will download applicable software automatically. HP Insights agent is a telemetry and analytics platform that provides critical data around devices and applications and is not sold as a standalone service. HP follows stringent GDPR privacy regulations and is ISO27001, ISO27701, ISO27017 and SOC2 Type2 certified for Information Security. Internet access is required. For full system requirements or to disable this feature, please visit https://www.hpdaas.com/requirements.
17. HP Support Assistant is available on Windows. For more information, please visit https://support.hp.com/us-en/help/hp-support-assistant.
18. Poly Lens Desktop requires a Windows OS.
19. HP Client Catalog not preinstalled, however available for download at (https://www.hp.com/us-en/solutions/client-management-solutions.html).
20. HP Client Management Script Library (https://www.hp.com/us-en/solutions/client-management-solutions.html#tab=manageability-tools).

## Features

21. HP Cloud Recovery is available for Z by HP, HP Elite and Pro desktops and laptops PCs with Intel® or AMD processors and requires an open, 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/computer.
22. HP Driver Packs not preinstalled, however available for download at http://www.hp.com/go/clientmanagement.
23. HP Image Assistant not preinstalled, however available for download at (https://ftp.ext.hp.com/pub/caps-softpaq/cmit/HPIA.html),
24. HP Manageability Integration Kit not preinstalled, however available for downloaded from https://www.hp.com/us-en/solutions/client-management-solutions.html#tab=manageability-tools.
25. HP Power Manager with Battery Health can be downloaded by entering your system information here: https://support.hp.com/in-en/document/ish_4449597-3519507-16.
26. Secured-Core PC Enable requires an Intel® vPro®, AMD Ryzen™ Pro processor or Qualcomm® processor with SD850 or higher and requires 8 GB or more system memory. Secured-core PC is enabled from the factory.
27. HP Wolf Security for Business requires Windows 10 or 11 Pro or higher, includes various HP security features and is available on HP Pro, Elite, RPOS and Workstation products. See product details for included security features.
28. HP Sure Admin requires HP G8 or newer platforms, Windows 10 or higher, HP BIOS, HP Manageability Kit or KMS Service from http://www.hp.com/go/clientmanagement and HP Sure Admin Local Access Authenticator smartphone app from the Android or Apple store.
29. HP Sure Click requires Windows 10 and higher. See https://bit.ly/2PrLT6A_SureClick for complete details.
30. HP Sure Recover is available on select HP PCs and requires Windows 10 or 11 and an open network connection. You must back up important files, data, photos, videos, etc. before using HP Sure Recover to avoid loss of data. HP Sure Recover Gen6 with Embedded Reimaging is an optional feature on select HP PCs which requires Windows 10 or 11 must be configured at purchase. You must back up important files, data, photos, videos, etc. before use to avoid loss of data.
31. HP Sure Run is available on select HP PCs and requires Windows 10 and higher.
32. HP Sure Sense requires Windows 10 and higher. See product specifications for availability. On units with WWAN shipping to China, HP Sure Sense is only available via Softpaq download.
33. HP Sure Start is available on select HP PCs and requires Windows 10 and higher.
34. Absolute Persistence firmware module is shipped turned off and can only be activated with the purchase a license subscription and full activation of the software agent. License subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. Certain conditions apply. For full details visit: https://www.absolute.com/about/legal/agreements/absolute/.
35. HP Fingerprint Reader is an optional feature that requires Windows 10 or 11 and must be configured at purchase.
36. HP BIOSphere Gen6 features may vary depending on the platform and configuration.
37. HP Secure Erase implements the methods outlined in the National Institute of Standards and Technology Special Publication 800-88r "Clear" sanitation method. HP Secure Erase does not support platforms with Intel® Optane™.

## Features

### POWER

HP 140W Slim USB Type-C® AC power adapter
HP 100W Slim USB Type-C® AC power adapter
HP 65W Standard USB Type-C® AC power adapter
HP 65W Slim USB Type-C® AC power adapter
HP 65W Standard USB Type-C® Halogen Free AC power adapter

**Battery**
HP Long Life 3 cell, 62Whr Polymer
HP Long Life 8 cell, 77Whr Polymer

**Power Cord**
3-wired plug- 1.0m

**Battery life[1]**
UMA
Up to 18 hours 30 minutes with 77Whr battery (Intel ARL i7 , UMA graphic, brightness set to 250nits on a 14-inch WUXGA  400nits LP LCD display, 2x8GB DDR5 memory, 256GB SSD)

Discrete
Up to 9 hours 15 minutes with 77Whr battery (Intel Core Ultra7 Processor 265H , DIS graphic, brightness set to 250nits on a 14-inch WUXGA 400nits LP LCD display, 2x8GB DDR5 memory, 256GB SSD)

[1]Mobile Mark 25 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.

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### WEIGHT & DIMENSIONS

**Weight**
**Product Weight- 62Whr**
Starting at 1.45 kg
Starting at 3.19 lb

**Product Weight- 77Whr**
Starting at 1.66 kg
Starting at 3.66 lb

**Product Dimensions (w x d x h)***
315.6 mm (W) x 222 mm (D) x 11.75 mm (front) x 15.50 mm (rear), 12.29 in (W) x 8.74 in (D) x .46 in (front) x .61 in (rear)

## Features

Maximum height 18.95 mm (0.75) (U Series Configurations)
Maximum height 22.9 mm (0.90) (H Series Configurations)

*Front height measurement is near the front edge where the chassis bottom cover taper begins. Back height measurement is near the back edge where the chassis bottom cover taper ends.

Features

## PORTS/SLOTS

**Left Side**
2 x Thunderbolt™ 4 with USB Type-C® 40Gbps signaling rate (USB Power Delivery, DisplayPort™ 2.1) [40]
1 x HDMI 2.1
1 x headphone/mic combo jack
1 x Smart Card Reader (Optional)

**Right Side**
1 x USB Type-C® 10Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4)
1 x USB Type-A 5Gbps signaling rate (Powered)
1 x RJ45 Ethernet port (Optional)
1 x Nano SIM card slot (Optional)
1 x Security lock slot (Integrated)

## SERVICE AND SUPPORT

1-year warranty and 90 day software limited warranty options depending on country. Batteries have a default one year limited warranty except for HP Long Life batteries which will follow the one or three year warranty of the platform. Refer to http://www.hp.com/support/batterywarranty/ for additional battery information. On-site service and extended coverage is also available. HP Care Pack Services are optional extended service contracts that go beyond the standard limited warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: http://www.hp.com/go/cpc. [53]

## Certification and Compliance

CSA/UL 62368-1
ENERGY STAR®
FCC/ICES/CISPR/VCCI
CE MARKING
GS Mark
China CCC/SRRC
Taiwan BSMI/NCC
Korea KCC/KC/KES
Ukraine NSoC/TEC
EAEU Compliance
Saudi Arabian Compliance
TCO
EPEAT® Gold [1]
Low Blue Light

[1]EPEAT® registered where applicable. EPEAT ® registration varies by country. See www.epeat.net for registration status by country.

Technical Specifications – System Unit

## SYSTEM UNIT

| | |
|---|---|
| **Stand-Alone Power Requirements (AC Power)** | |
| **Nominal Operating Voltage** | 20.0V |
| **Average Operating Power** | |
| **Integrated graphics** | Intel® Graphics / Intel® Arc™ Pro Graphics |
| **Discrete Graphics** | NVIDIA® RTX 500 Ada |
| **Max Operating Power** | Discrete < 140W<br>UMA < 100W |
| **Temperature** | |
| **Operating** | 0° to 35° C ( 32° to 95° F)<br>System performance may be reduced above 32°C (89.6°F) |
| **Non-operating** | -20° to 60° C ( -4° to 140° F)<br>System performance may be reduced above 32°C (89.6°F) |
| **Relative Humidity** | |
| **Operating** | 10% to 90 % (non-condensing) |
| **Non-operating** | 5% to 95 %, 38.7° C (101.6° F) maximum wet bulb temperature |
| **Shock** | |
| **Operating** | 40 G, 2 ms, half-sine |
| **Non-operating** | 240 G, 2 ms, half-sine |
| **Random Vibration** | |
| **Operating** | 1.043 grms |
| **Non-operating** | 3.500 grms |
| **Altitude (unpressurized)** | |
| **Operating** | 3048 m (10000 ft) |
| **Non-operating** | 12192 m (40000 ft) |
| **Planned Industry Standard Certifications** | |
| **Regulatory Model Number** | HSN-I62C-4 |

Technical Specifications – Displays

## DISPLAYS

Actual brightness will be lower with touchscreen or HP Sure View.
Availability may vary by country

**14.0 in 2.5K (2560 x 1600)
Anti-Glare UWVA WLED+LBL
AD-100 400 eDP 1.4+PSR2
120Hz (VRR) bent LCD Panel**

| | |
|---|---|
| **Outline Dimensions (W x H x D)** | 306.890 x 197.900 (max) |
| **Active Area** | 301.594 x 188.496 (typ) |
| **Weight** | 200 (max) |
| **Diagonal Size** | 14 |
| **Thickness** | 2.0 / 3.8 (max) |
| **Interface** | eDP1.4 |
| **Surface Treatment** | Anti-Glare |
| **Touch Enabled** | No |
| **Contrast Ratio** | 2000:1 (typ) |
| **Refresh Rate** | 120 (typ) |
| **Brightness** | 400 (typ) |
| **Pixel Resolution - Format** | 2560 x 1600 (2.5K) |
| **Backlight** | WLED |
| **Pixel Resolution** | RGB |
| **Color Gamut Coverage** | Adobe RGB 100% + DCI-P3 100% |
| **Color Depth** | 8 |
| **Viewing Angle** | UWVA 89/89/89/89 |
| **Low Blue Light** | Yes |
| **Power Consumption (W, EBL@ 150nits max/ 200nits max)** | 2.3 (max)/ 2.7 (max) |

**14.0 in WUXGA (1920 x 1200)
Anti-Glare UWVA LED sRGB
62.5 8bit 300 eDP 1.2 w/o PSR
Low-Power 60Hz bent LCD
Panel**

| | |
|---|---|
| **Outline Dimensions (W x H x D)** | 307.590 x 199.150 (max) |
| **Active Area** | 301.59 X 188.50(typ) |
| **Weight** | 300 (max) |
| **Diagonal Size** | 14 |
| **Thickness** | 3.0/4.8 (max) |
| **Interface** | eDP1.2 |
| **Surface Treatment** | Anti-Glare |
| **Touch Enabled** | No |

## Technical Specifications – Displays

| | |
|---|---|
| **Contrast Ratio** | 1000 : 1 (typ) |
| **Refresh Rate** | 60 (typ) |
| **Brightness** | 300 (typ) |
| **Pixel Resolution - Format** | 1920 x 1200 (WUXGA) |
| **Backlight** | WLED |
| **Pixel Resolution** | RGB |
| **Color Gamut Coverage** | sRGB 62.5% |
| **Color Depth** | 8 |
| **Viewing Angle** | UWVA 89/89/89/89 |
| **Low Blue Light** | No |
| **Power Consumption (W, EBL@ 150nits max/ 200nits max)** | 1.70 (max)/2.10(max) |

**14.0 in WUXGA (1920 x 1200) Anti-Glare UWVA LED sRGB 62.5 8bit 300 TOP eDP 1.2 w/o PSR Low-Power 60Hz bent LCD Panel**

| | |
|---|---|
| **Outline Dimensions (W x H x D)** | 307.59 x 199.15 (max) |
| **Active Area** | 301.590 x 188.500 (typ) |
| **Weight** | 300 (max) |
| **Diagonal Size** | 14 |
| **Thickness** | 3.0/4.8 (max) |
| **Interface** | eDP 1.2 |
| **Surface Treatment** | Anti-Glare |
| **Touch Enabled** | Yes |
| **Contrast Ratio** | 1000:1(typ) |
| **Refresh Rate** | 60 (typ) |
| **Brightness** | 300 (typ) |
| **Pixel Resolution - Format** | 1920 x 1200 (WUXGA) |
| **Backlight** | WLED |
| **Pixel Resolution** | RGB |
| **Color Gamut Coverage** | sRGB 62.5% |
| **Color Depth** | 8 |
| **Viewing Angle** | UWVA 89/89/89/89 |
| **Low Blue Light** | No |
| **Power Consumption (W, EBL@ 150nits max/ 200nits max)** | 1.75 (max) / 2.15 (max) |

**14.0 in WUXGA (1920 x 1200) Anti-Glare UWVA Low Blue Light sRGB 100 800 eDP**

## Technical Specifications – Displays

**1.4+PSR+IOL Sure View 5 bent LCD Panel**

| | |
|---|---|
| **Outline Dimensions (W x H x D)** | 306.890 x 197.900 (max) |
| **Active Area** | 301.590 X 188.500 (typ) |
| **Weight** | 260 (max) |
| **Diagonal Size** | 14 |
| **Thickness** | 2.2/ 3.9 (max) |
| **Interface** | eDP 1.4 |
| **Surface Treatment** | Anti-Glare |
| **Touch Enabled** | No |
| **Contrast Ratio** | 1500 : 1 (typ) |
| **Refresh Rate** | 60 (typ) |
| **Brightness** | 800 (typ) |
| **Pixel Resolution - Format** | 1920 x 1200 (WUXGA) |
| **Backlight** | WLED |
| **Pixel Resolution** | RGB |
| **Color Gamut Coverage** | sRGB 100% |
| **Color Depth** | 8 |
| **Viewing Angle** | UWVA 89/89/89/89 |
| **Low Blue Light** | Yes |
| **Power Consumption (W, EBL@ 150nits max/ 200nits max)** | 1.48 (max)/1.8(max) |

**14.0 in WUXGA (1920 x 1200) Anti-Glare UWVA Low Blue Light sRGB 100 800 TOP eDP 1.4+PSR+IOL Sure View 5 bent LCD Panel**

| | |
|---|---|
| **Outline Dimensions (W x H x D)** | 306.890 x 197.900 (max) |
| **Active Area** | 301.590 X 188.500 (typ) |
| **Weight** | 260 (max) |
| **Diagonal Size** | 14 |
| **Thickness** | 2.4 / 4.2 (max) |
| **Interface** | eDP 1.4 |
| **Surface Treatment** | Anti-Glare |
| **Touch Enabled** | Yes |
| **Contrast Ratio** | 1500 : 1 (typ) |
| **Refresh Rate** | 60 (typ) |
| **Brightness** | 800 (typ) |
| **Pixel Resolution - Format** | 1920 x 1200 (WUXGA) |
| **Backlight** | WLED |
| **Pixel Resolution** | RGB |
| **Color Gamut Coverage** | sRGB 100% |

## Technical Specifications – Displays

| | | |
|---|---|---|
| | **Color Depth** | 8 |
| | **Viewing Angle** | UWVA 89/89/89/89 |
| | **Low Blue Light** | Yes |
| | **Power Consumption (W, EBL@ 150nits max/ 200nits max)** | 1.60 (max)/ 1.97 (max) |
| **14.0 in WUXGA (1920 x 1200) Anti-Glare UWVA WLED+LBL sRGB NB2X 400 eDP 1.4+PSR2 Low-Power 100 bent LCD Panel** | | |
| | **Outline Dimensions (W x H x D)** | 307.590 x 199.550 (max) |
| | **Active Area** | 301.590 x 188.500 (typ) |
| | **Weight** | 210 (max) |
| | **Diagonal Size** | 14 |
| | **Thickness** | 2.0 / 3.8 (max) |
| | **Interface** | eDP 1.4 |
| | **Surface Treatment** | Anti-Glare |
| | **Touch Enabled** | No |
| | **Contrast Ratio** | 1000:1(typ) |
| | **Refresh Rate** | 60 (typ) |
| | **Brightness** | 400 (typ) |
| | **Pixel Resolution - Format** | 1920 x 1200 (WUXGA) |
| | **Backlight** | WLED |
| | **Pixel Resolution** | RGB |
| | **Color Gamut Coverage** | sRGB 100% |
| | **Color Depth** | 8 |
| | **Viewing Angle** | UWVA 89/89/89/89 |
| | **Low Blue Light** | Yes |
| | **Power Consumption (W, EBL@ 150nits max/ 200nits max)** | 1.29 (max) / 1.66 (max) |
| **14.0 in WQXGA DRM (2560 x 1600) Anti-Glare UWVA LED DCI-P3 NB2X 500 eDP 1.4+PSR2 100 120Hz bent LCD Panel** | | |
| | **Outline Dimensions (W x H x D)** | 307.594 x 199.546 (max) |
| | **Active Area** | 301.594 x 188.496 (typ) |
| | **Weight** | 230 (max) |
| | **Diagonal Size** | 14 |
| | **Thickness** | 2.0 / 3.8 (max) |
| | **Interface** | eDP 1.4 |

## Technical Specifications – Displays

| | |
|---|---|
| **Surface Treatment** | Anti-Glare |
| **Touch Enabled** | No |
| **Contrast Ratio** | 1200:1(typ) |
| **Refresh Rate** | 120 (typ) |
| **Brightness** | 500 (typ) |
| **Pixel Resolution - Format** | 2560 x1600 (WQXGA) |
| **Backlight** | WLED |
| **Pixel Resolution** | RGB |
| **Color Gamut Coverage** | DCI-P3 100% |
| **Color Depth** | 8 |
| **Viewing Angle** | UWVA 89/89/89/89 |
| **Low Blue Light** | No |
| **Power Consumption (W, EBL@ 150nits max/ 200nits max)** | 2.88 (max) / 3.44 (max) |

Technical Specifications – Storage

## STORAGE

### SSD 2TB 2280 PCIe-4x4 NVMe Three Layer Cell

| | |
|---|---|
| **Form Factor** | M.2 2280 |
| **Capacity** | 2TB |
| **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 Gen4X4 |
| **Maximum Sequential Read** | 6400 MB/s ±20% |
| **Maximum Sequential Write** | 5000 MB/s ±20% |
| **Logical Blocks** | 4000797360 |
| **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| **Features** | Pyrite 2.0; TRIM; L1.2 |

### SSD 1TB 2280 PCIe-4x4 NVMe Three Layer Cell

| | |
|---|---|
| **Form Factor** | M.2 2280 |
| **Capacity** | 1TB |
| **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 Gen4X4 |
| **Maximum Sequential Read** | 6400 MB/s ±20% |
| **Maximum Sequential Write** | 5000 MB/s ±20% |
| **Logical Blocks** | 2000409264 |
| **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| **Features** | Pyrite 2.0; TRIM; L1.2 |

### SSD 512GB 2280 PCIe-4x4 NVMe Three Layer Cell

| | |
|---|---|
| **Form Factor** | M.2 2280 |
| **Capacity** | 512GB |
| **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 Gen4X4 |

## Technical Specifications – Storage

| | |
|---|---|
| **Maximum Sequential Read** | 6400 MB/s ±20% |
| **Maximum Sequential Write** | 3500 MB/s ±20% |
| **Logical Blocks** | 1000215215 |
| **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| **Features** | Pyrite 2.0; TRIM; L1.2 |

**512GB PCIe-4x4 2280 NVME Self Encrypted OPAL2 Three Layer Cell Solid State Drive**

| | |
|---|---|
| **Form Factor** | M.2 2280 |
| **Capacity** | 512GB |
| **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 Gen4X4 |
| **Maximum Sequential Read** | 6400 MB/s ±20% |
| **Maximum Sequential Write** | 3500 MB/s ±20% |
| **Logical Blocks** | 1000215215 |
| **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| **Features** | TCG Opal 2.0; TRIM; L1.2 |

**SSD 1TB 2280 PCIe NVMe Value**

| | |
|---|---|
| **Form Factor** | M.2 2280 |
| **Capacity** | 1TB |
| **NAND Type** | Value |
| **Height** | 0.09 in (2.3 mm) |
| **Width** | 0.87 in (22 mm) |
| **Weight** | 0.02 lb (10 g) |
| **Interface** | PCIe NVMe Gen4X4 |
| **Maximum Sequential Read** | 3500 MB/s ±20% |
| **Maximum Sequential Write** | 2700 MB/s ±20% |
| **Logical Blocks** | 2000409264 |
| **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| **Features** | Pyrite 2.0; TRIM; L1.2 |

**SSD 512GB 2280 PCIe NVMe Value**

| | |
|---|---|
| **Form Factor** | M.2 2280 |
| **Capacity** | 512 GB |
| **NAND Type** | Value |

## Technical Specifications – Storage

| | |
|---|---|
| **Height** | 0.09 in (2.3 mm) |
| **Width** | 0.87 in (22 mm) |
| **Weight** | 0.02 lb (10 g) |
| **Interface** | PCIe NVMe Gen4X4 |
| **Maximum Sequential Read** | 3500 MB/s ±20% |
| **Maximum Sequential Write** | 1600 MB/s ±20% |
| **Logical Blocks** | 1000215215 |
| **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| **Features** | Pyrite 2.0; TRIM; L1.2 |

**SSD 256GB 2280 PCIe NVMe Value**

| | |
|---|---|
| **Form Factor** | M.2 2280 |
| **Capacity** | 256 GB |
| **NAND Type** | Value |
| **Height** | 0.09 in (2.3 mm) |
| **Width** | 0.87 in (22 mm) |
| **Weight** | 0.02 lb (10 g) |
| **Interface** | PCIe NVMe Gen4X4 |
| **Maximum Sequential Read** | 3100 MB/s ±20% |
| **Maximum Sequential Write** | 1200 MB/s ±20% |
| **Logical Blocks** | 500118192 |
| **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| **Features** | Pyrite 2.0; TRIM; L1.2 |

Technical Specifications – Networking

## NETWORKING / COMMUNICATION

**Intel® AX211 Wi-Fi 6E**
**Bluetooth® 5.3 vPro® WLAN [1]**

| | |
|---|---|
| **Wireless LAN Standards** | IEEE 802.11a<br>IEEE 802.11ac<br>IEEE 802.11ax<br>IEEE 802.11b<br>IEEE 802.11d<br>IEEE 802.11e<br>IEEE 802.11g<br>IEEE 802.11h<br>IEEE 802.11i<br>IEEE 802.11k<br>IEEE 802.11n<br>IEEE 802.11r<br>IEEE 802.11v |
| **Interoperability** | Wi-Fi certified |
| **Frequency Band** | 802.11b/g/n/ax<br>2.402 – 2.482 GHz<br>802.11a/n/ac/ax<br>4.9 – 4.95 GHz (Japan)<br>5.15 – 5.25 GHz<br>5.25 – 5.35 GHz<br>5.47 – 5.725 GHz<br>5.825 – 5.850 GHz<br>5.955 – 6.415 GHz<br>6.435 – 6.515 GHz<br>6.535 – 6.875 GHz<br>6.895 – 7.115 GHz |
| **Data Rates** | 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11b: 1, 2, 5.5, 11 Mbps<br>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps |
| **Modulation** | Direct Sequence Spread Spectrum<br>1024QAM, 16-QAM, 256-QAM, 64-QAM, BPSK, CCK, Direct Sequence Spread Spectrum, OFDM, QPSK |
| **Security** | 802.1x authentication<br>AES-CCMP: 128 bit in hardware<br>IEEE 802.11i<br>IEEE and WiFi certified 64 / 128 bit WEP encryption for a/b/g mode only<br>WAPI<br>WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. |

## Technical Specifications – Networking

| | |
|---|---|
| | WPA2 certification |
| | WPA3 (personal) certification |
| **Network Architecture Models** | Ad-hoc (Peer to Peer) |
| | Infrastructure (Access Point Required) |
| **Roaming** | IEEE 802.11 compliant roaming between access points |
| **Output Power** | • 802.11b : +17dBm minimum |
| | • 802.11g : +16dBm minimum |
| | • 802.11a : +17dBm minimum |
| | • 802.11n HT20(2.4GHz) : +14dBm minimum |
| | • 802.11n HT40(2.4GHz) : +13dBm minimum |
| | • 802.11n HT20(5GHz) : +14dBm minimum |
| | • 802.11n HT40(5GHz) : +13dBm minimum |
| | • 802.11ac VHT80(5GHz) : +10dBm minimum |
| | • 802.11ac VHT160(5GHz) : +10dBm minimum |
| | • 802.11ax HE40(2.4GHz) : +12dBm minimum |
| | • 802.11ax HE80(5GHz) : +10dBm minimum |
| | • 802.11ax HE160(5GHz) : +10dBm minimum |
| **Power Consumption** | Transmit mode : 2.0 W |
| | Receive mode : 1.6 W |
| | Idle mode (PSP) : 180 mW (WLAN Associated) |
| | Idle mode: 50 mW (WLAN unassociated) |
| | Connected Standby/Modern Standby : 10 mW |
| | Radio disabled : 8 mW |
| **Power Management** | ACPI and PCI Express compliant power management |
| **Receiver Sensitivity[2]** | • 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(VHT80) : -84dBm maximum |
| | • 802.11ac, MCS9(VHT80) : -59dBm maximum |
| | • 802.11ac, MCS9(VHT160) : -58.5dBm maximum |
| | • 802.11ax, MCS11(HE40): -57dBm maximum |
| | • 802.11ax, MCS11(HE80): -54dBm maximum |
| | • 802.11ax, MCS11(HE160): -53.5dBm maximum |
| **Antenna type** | High efficiency antenna with spatial diversity |
| | Two embedded tri-band 2.4/5/6 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications |
| **Form Factor** | PCI-Express M.2 MiniCard |
| **Dimensions** | 2.30 x 22.00 x 30.00 mm (0.09 x 0.87 x 1.18 inch) |
| **Weight** | 1. Type 2230: 2.8 g |
| | 2. Type 1216: g |

## Technical Specifications – Networking

| | |
|---|---|
| **Operating Voltage** | 3.3 v +/- 9 % |
| **Subtitle** | Integrated Bluetooth sepcifications |
| **Bluetooth Specification** | 4.0/4.1/4.2/5.0/5.1/5.2/5.3 Compliant |
| **Frequency Band** | 2402 to 2480 MHz |
| **Number of Available Channels** | Legacy : 0~79 (1 MHz/CH)<br>BLE : 0~39 (2 MHz/CH) |
| **Data Rates and Throughput** | Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) |
| **Transmit Power** | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR. |
| **Power Consumption** | Peak (Tx): 330 mW<br>Peak (Rx): 230 mW<br>Selective Suspend: 17 mW |
| **Bluetooth Software Supported** | Microsoft Windows Bluetooth Software |
| **Link Topology** | |
| **Power Management** | Microsoft Windows ACPI, and USB Bus Support |
| **Certifications** | FCC (47 CFR) Part 15C/E, Section 15.247, 15.249, 15.407; ETSI 300 328, ETSI 301 893, ETSI 303 687 |
| **Bluetooth Profiles Supported** | 2Mbps LE<br>Advanced Audio Distribution Profile (A2DP)<br>Basic Imaging Profile (BIP)<br>Bluetooth 4.1 -ESR 5/6/7 Compliance<br>Bluetooth 4.2 ESR08 Compliance<br>Bluetooth 5.2<br>Bluetooth 5.3 wireless card<br>Channel Selection Algo<br>ESR9/10 Compliance<br>FAX Profile (FAX)<br>Hands Free Profile (HFP)<br>Headset Profile (HSP)<br>LE Advertisement Extensions<br>LE Data Packet Length Extension<br>LE Dual Mode<br>LE L2CAP Connection Oriented Channels<br>LE Link Layer<br>LE Link Layer Ping<br>LE Long Range<br>LE Low Duty Cycle Directed Advertising<br>LE Privacy 1.2 –Extended Scanner Filter Policies |

## Technical Specifications – Networking

| | | |
|---|---|---|
| | | LE Privacy 1.2 –Link Layer Privacy<br>LE Secure Connection- Basic/Full<br>Limited High Duty Cycle Non-Connectable Advertising<br>Train Nudging & Interlaced Scan |

1. Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 6E is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 6E is supported.
Wi-Fi 6E is designed to support gigabit data rate when transferring files between two devices connected to the same router. Requires a wireless router, sold separately.
2. 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).

| **Intel® AX211 Wi-Fi 6E Bluetooth® 5.3 WW WLAN [1]** | **Table Values** | |
|---|---|---|
| | **Wireless LAN Standards** | IEEE 802.11a<br>IEEE 802.11ac<br>IEEE 802.11ax<br>IEEE 802.11b<br>IEEE 802.11d<br>IEEE 802.11e<br>IEEE 802.11g<br>IEEE 802.11h<br>IEEE 802.11i<br>IEEE 802.11k<br>IEEE 802.11n<br>IEEE 802.11r<br>IEEE 802.11v |
| | **Interoperability** | Wi-Fi certified |
| | **Frequency Band** | 802.11b/g/n/ax<br>2.402 – 2.482 GHz<br>802.11a/n/ac/ax<br>4.9 – 4.95 GHz (Japan)<br>5.15 – 5.25 GHz<br>5.25 – 5.35 GHz<br>5.47 – 5.725 GHz<br>5.825 – 5.850 GHz<br>5.955 – 6.415 GHz<br>6.435 – 6.515 GHz<br>6.535 – 6.875 GHz<br>6.895 – 7.115 GHz |
| | **Data Rates** | 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11b: 1, 2, 5.5, 11 Mbps<br>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps |

## Technical Specifications – Networking

| | |
|---|---|
| **Modulation** | Direct Sequence Spread Spectrum<br>1024QAM, 16-QAM, 256-QAM, 64-QAM, BPSK, CCK, Direct Sequence Spread Spectrum, OFDM, QPSK |
| **Security** | 802.1x authentication<br>AES-CCMP: 128 bit in hardware<br>IEEE 802.11i<br>IEEE and WiFi certified 64 / 128 bit WEP encryption for a/b/g mode only<br>WAPI<br>WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>WPA2 certification<br>WPA3 (personal) certification |
| **Network Architecture Models** | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required) |
| **Roaming** | IEEE 802.11 compliant roaming between access points |
| **Output Power** | • 802.11b : +17dBm minimum<br>• 802.11g : +16dBm minimum<br>• 802.11a : +17dBm minimum<br>• 802.11n HT20(2.4GHz) : +14dBm minimum<br>• 802.11n HT40(2.4GHz) : +13dBm minimum<br>• 802.11n HT20(5GHz) : +14dBm minimum<br>• 802.11n HT40(5GHz) : +13dBm minimum<br>• 802.11ac VHT80(5GHz) : +10dBm minimum<br>• 802.11ac VHT160(5GHz) : +10dBm minimum<br>• 802.11ax HE40(2.4GHz) : +12dBm minimum<br>• 802.11ax HE80(5GHz) : +10dBm minimum<br>• 802.11ax HE160(5GHz) : +10dBm minimum |
| **Power Consumption** | Transmit mode : 2.0 W<br>Receive mode : 1.6 W<br>Idle mode (PSP) : 180 mW (WLAN Associated)<br>Idle mode: 50 mW (WLAN unassociated)<br>Connected Standby/Modern Standby : 10 mW<br>Radio disabled : 8 mW |
| **Power Management** | ACPI and PCI Express compliant power management |
| **Receiver Sensitivity[2]** | • 802.11b, 1Mbps : -93.5dBm maximum<br>• 802.11b, 11Mbps : -84dBm maximum<br>• 802.11a/g, 6Mbps : -86dBm maximum<br>• 802.11a/g, 54Mbps : -72dBm maximum<br>• 802.11n, MCS07 : -67dBm maximum<br>• 802.11n, MCS15 : -64dBm maximum<br>• 802.11ac, MCS0(VHT80) : -84dBm maximum<br>• 802.11ac, MCS9(VHT80) : -59dBm maximum<br>• 802.11ac, MCS9(VHT160) : -58.5dBm maximum<br>• 802.11ax, MCS11(HE40): -57dBm maximum |

## Technical Specifications – Networking

| | |
|---|---|
| | • 802.11ax, MCS11(HE80): -54dBm maximum<br>• 802.11ax, MCS11(HE160): -53.5dBm maximum |
| **Antenna type** | High efficiency antenna with spatial diversity<br>Two embedded tri-band 2.4/5/6 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications |
| **Form Factor** | PCI-Express M.2 MiniCard |
| **Dimensions** | 2.30 x 22.00 x 30.00 mm (0.09 x 0.87 x 1.18 inch) |
| **Weight** | 1. Type 2230: 2.8 g<br>2. Type 1216: g |
| **Operating Voltage** | 3.3 v +/- 9 % |
| **Subtitle** | Integrated Bluetooth sepcifications |
| **Bluetooth Specification** | 4.0/4.1/4.2/5.0/5.1/5.2/5.3 Compliant |
| **Frequency Band** | 2402 to 2480 MHz |
| **Number of Available Channels** | Legacy : 0~79 (1 MHz/CH)<br>BLE : 0~39 (2 MHz/CH) |
| **Data Rates and Throughput** | Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) |
| **Transmit Power** | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR. |
| **Power Consumption** | Peak (Tx): 330 mW<br>Peak (Rx): 230 mW<br>Selective Suspend: 17 mW |
| **Bluetooth Software Supported** | Microsoft Windows Bluetooth Software |
| **Link Topology** | |
| **Power Management** | Microsoft Windows ACPI, and USB Bus Support |
| **Certifications** | FCC (47 CFR) Part 15C/E, Section 15.247, 15.249, 15.407; ETSI 300 328, ETSI 301 893, ETSI 303 687 |
| **Bluetooth Profiles Supported** | 2Mbps LE<br>Advanced Audio Distribution Profile (A2DP)<br>Basic Imaging Profile (BIP)<br>Bluetooth 4.1 -ESR 5/6/7 Compliance<br>Bluetooth 4.2 ESR08 Compliance<br>Bluetooth 5.2<br>Bluetooth 5.3 wireless card<br>Channel Selection Algo<br>Encryption key size control enhancements<br>ESR9/10 Compliance<br>FAX Profile (FAX) |

## Technical Specifications – Networking

| | |
|---|---|
| | Hands Free Profile (HFP)<br>Headset Profile (HSP)<br>LE Advertisement Extensions<br>LE Data Packet Length Extension<br>LE Dual Mode<br>LE L2CAP Connection Oriented Channels<br>LE Link Layer<br>LE Link Layer Ping<br>LE Long Range<br>LE Low Duty Cycle Directed Advertising<br>LE Privacy 1.2 –Extended Scanner Filter Policies<br>LE Privacy 1.2 –Link Layer Privacy<br>LE Secure Connection- Basic/Full<br>Limited High Duty Cycle Non-Connectable Advertising<br>Periodic Advertisement interval<br>Train Nudging & Interlaced Scan<br>Windows Bluetooth profiles support |

1. Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 6E is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 6E is supported.
Wi-Fi 6E is designed to support gigabit data rate when transferring files between two devices connected to the same router. Requires a wireless router, sold separately.
2. 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).

| **Intel® BE201 Wi-Fi 7 Bluetooth® 5.4 non-vPro® WW WLAN [1]** | **Table Values** | |
|---|---|---|
| | **Wireless LAN Standards** | IEEE 802.11a<br>IEEE 802.11ac<br>IEEE 802.11ax<br>IEEE 802.11b<br>IEEE 802.11be<br>IEEE 802.11d<br>IEEE 802.11e<br>IEEE 802.11g<br>IEEE 802.11h<br>IEEE 802.11i<br>IEEE 802.11k<br>IEEE 802.11n<br>IEEE 802.11r<br>IEEE 802.11v |
| | **Interoperability** | Wi-Fi certified |

## Technical Specifications – Networking

| | |
|---|---|
| **Frequency Band** | 802.11b/g/n/ax<br>2.402 – 2.482 GHz<br>802.11a/n/ac/ax<br>4.9 – 4.95 GHz (Japan)<br>5.15 – 5.25 GHz<br>5.25 – 5.35 GHz<br>5.47 – 5.725 GHz<br>5.825 – 5.850 GHz<br>5.955 – 6.415 GHz<br>6.435 – 6.515 GHz<br>6.535 – 6.875 GHz<br>6.895 – 7.115 GHz |
| **Data Rates** | 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11ac : MCS0 ~ MCS9, (20MHz, 40MHz, 80MHz, 160MHz)<br>802.11ax : MCS0 ~ MCS11, (20MHz, 40MHz, 80MHz, 160MHz)<br>802.11b: 1, 2, 5.5, 11 Mbps<br>802.11be : MCS0~13, (20MHz, 40MHz, ,80MHz, 160MHz, 320MHz)<br>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11n: MCS 0 ~ MCS 15, (20MHz, 40MHz) |
| **Modulation** | Direct Sequence Spread Spectrum<br>1024QAM, 16-QAM, 256-QAM, 4096QAM, 64-QAM, BPSK, CCK, Direct Sequence Spread Spectrum, OFDM, QPSK |
| **Security[3]** | 802.1x authentication<br>AES-CCMP: 128 bit in hardware<br>IEEE 802.11i<br>IEEE and WiFi certified 64 / 128 bit WEP encryption for a/b/g mode only<br>WAPI<br>WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>WPA2 certification<br>WPA3 (personal) certification |
| **Network Architecture Models** | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required) |
| **Roaming** | IEEE 802.11 compliant roaming between access points |
| **Output Power[2]** | • 802.11b, 1Mbps : +17dBm minimum<br>• 802.11g, 6Mpbs : +16dBm minimum<br>• 802.11a, 6Mbps : +17dBm minimum<br>• 802.11n, MCS7(HT20) : +14dBm minimum<br>• 802.11n, MCS7(HT40) : +13.5dBm minimum<br>• 802.11ac MCS9(VHT20) : 13.5dBm minimum<br>• 802.11ac MCS9(VHT40) : +13.5dBm minimum<br>• 802.11ac MCS9(VHT80) : +12.5dBm minimum<br>• 802.11ac MCS9(VHT160) : +10.5dBm minimum<br>• 802.11ax MCS11(HE20)(6GHz) : +11.5dBm minimum |

## Technical Specifications – Networking

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|---|---|
| | • 802.11ax MCS11(HE40)(6GHz) : +7.5dBm minimum<br>• 802.11ax MCS11(HE80)(6GHz) : +7.5dBm minimum<br>• 802.11ax MCS11(HE160)(6GHz) : +7.5dBm minimum<br>• 802.11be MCS13(EHT20)(6GHz) : 11.5dBm<br>• 802.11be MCS13(EHT40)(6GHz) : 7.5dBm<br>• 802.11be MCS13(EHT80)(6GHz) : 7.5dBm<br>• 802.11be MCS13(EHT160)(6GHz) : 6.5dBm<br>• 802.11be MCS13(EHT320)(6GHz) : 4.5dBm |
| **Power Consumption** | Transmit mode : 3.4 W<br>Receive mode : 1.8 W<br>Idle mode (PSP) : 180 mW (WLAN Associated)<br>Idle mode: 50 mW (WLAN unassociated)<br>Connected Standby/Modern Standby : 10 mW<br>Radio disabled : 8 mW |
| **Power Management** | ACPI and PCI Express compliant power management |
| **Receiver Sensitivity[3]** | • 802.11b, 1Mbps : -93.5dBm maximum<br>• 802.11b, 11Mbps : -85dBm maximum<br>• 802.11a/g, 6Mbps : -90.5dBm maximum<br>• 802.11a/g, 54Mbps : -72.5dBm maximum<br>• 802.11n, MCS0(HT20) : -90dBm maximum<br>• 802.11n, MCS7(HT20) : -71.5dBm maximum<br>• 802.11n, MCS0(HT40) : -88.5dBm maximum<br>• 802.11n, MCS7(HT40) : -68.5dBm maximum<br>• 802.11ac, MCS9(VHT20) : -88.5dBm maximum<br>• 802.11ac, MCS9(VHT40) : -65.5dBm maximum<br>• 802.11ac, MCS9(VHT80) : -60.5dBm maximum<br>• 802.11ac, MCS9(VHT160) : -58.5dBm maximum<br>• 802.11ax, MCS11(HE20)(6GHz) : -59.5dBm maximum<br>• 802.11ax, MCS11(HE40)(6GHz) : -56.5dBm maximum<br>• 802.11ax, MCS11(HE80)(6GHz) : -53.5dBm maximum<br>• 802.11ax, MCS11(HE160)(6GHz) : -51.5dBm maximum<br>• 802.11be, MCS13(EHT20)(6GHz) : -55.5dBm maximum<br>• 802.11be, MCS13(EHT40)(6GHz) : -53.5dBm maximum<br>• 802.11be, MCS13(EHT80)(6GHz) : -51.5dBm maximum<br>• 802.11be, MCS13(EHT160)(6GHz) : -48.5dBm maximum<br>• 802.11be, MCS13(EHT320)(6GHz) : -45.5dBm maximum |
| **Antenna type** | High efficiency antenna with spatial diversity<br>Two embedded tri-band 2.4/5/6 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications |
| **Form Factor** | PCI-Express M.2 MiniCard with CNVi Interface |
| **Dimensions** | 30.00 x 22.00 x 2.30 mm (1.18 x 0.87 x 0.09 inch) |
| **Weight** | 1. Type 2230: 3.1 g<br>2. Type 1216: 0.8 g |

## Technical Specifications – Networking

| | |
|---|---|
| **Operating Voltage** | 3.3 v +/- 5 % |
| **Subtitle** | Integrated Bluetooth sepcifications |
| **Bluetooth Specification** | 4.0/4.1/4.2/5.0/5.1/5.2/5.3/5.4 Compliant |
| **Frequency Band** | 2042 to 2480 MHz |
| **Number of Available Channels** | Legacy : 0~79 (1 MHz/CH)<br>BLE : 0~39 (2 MHz/CH) |
| **Data Rates and Throughput** | Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) |
| **Transmit Power** | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR. |
| **Power Consumption** | Peak (Tx): 330 mW<br>Peak (Rx): 230 mW<br>Selective Suspend: 17 mW |
| **Bluetooth Software Supported** | Microsoft Windows Bluetooth Software |
| **Link Topology** | |
| **Power Management** | Microsoft Windows ACPI, and USB Bus Support |
| **Certifications** | FCC (47 CFR) Part 15C/E, Section 15.247, 15.249, 15.407; ETSI 300 328, ETSI 301 893, ETSI 303 687 |
| **Bluetooth Profiles Supported** | 2Mbps LE<br>Advanced Audio Distribution Profile (A2DP)<br>Basic Imaging Profile (BIP)<br>Bluetooth 4.1 -ESR 5/6/7 Compliance<br>Bluetooth 4.2 ESR08 Compliance<br>Bluetooth 5.2<br>Bluetooth 5.3 wireless card<br>Channel Selection Algo<br>Encryption key size control enhancements<br>ESR9/10 Compliance<br>FAX Profile (FAX)<br>Hands Free Profile (HFP)<br>Headset Profile (HSP)<br>LE Advertisement Extensions<br>LE Data Packet Length Extension<br>LE Dual Mode<br>LE L2CAP Connection Oriented Channels<br>LE Link Layer<br>LE Link Layer Ping<br>LE Long Range<br>LE Low Duty Cycle Directed Advertising |

## Technical Specifications – Networking

| | |
|---|---|
| | LE Privacy 1.2 –Extended Scanner Filter Policies<br>LE Privacy 1.2 –Link Layer Privacy<br>LE Secure Connection- Basic/Full<br>Limited High Duty Cycle Non-Connectable Advertising<br>Periodic Advertisement interval<br>Train Nudging & Interlaced Scan<br>Windows Bluetooth profiles support |

1.Wi-Fi 7 requires a Wi-Fi 7 router, sold separately, to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 7 is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 7 is supported. Wi-Fi 7 is designed to support gigabit data rate when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 80MHz and higher channels.
2. 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).

| **Intel® BE201 Wi-Fi 7 Bluetooth® 5.4 vPro® WW WLAN [1]** | **Table Values** | |
|---|---|---|
| | **Wireless LAN Standards** | IEEE 802.11a<br>IEEE 802.11ac<br>IEEE 802.11ax<br>IEEE 802.11b<br>IEEE 802.11be<br>IEEE 802.11d<br>IEEE 802.11e<br>IEEE 802.11g<br>IEEE 802.11h<br>IEEE 802.11i<br>IEEE 802.11k<br>IEEE 802.11n<br>IEEE 802.11r<br>IEEE 802.11v |
| | **Interoperability** | Wi-Fi certified |
| | **Frequency Band** | 802.11b/g/n/ax<br>2.402 – 2.482 GHz<br>802.11a/n/ac/ax<br>4.9 – 4.95 GHz (Japan)<br>5.15 – 5.25 GHz<br>5.25 – 5.35 GHz<br>5.47 – 5.725 GHz<br>5.825 – 5.850 GHz<br>5.955 – 6.415 GHz<br>6.435 – 6.515 GHz |

## Technical Specifications – Networking

| | |
|---|---|
| | 6.535 – 6.875 GHz<br>6.895 – 7.115 GHz |
| **Data Rates** | 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11ac : MCS0 ~ MCS9, (20MHz, 40MHz, 80MHz, 160MHz)<br>802.11ax : MCS0 ~ MCS11, (20MHz, 40MHz, 80MHz, 160MHz)<br>802.11b: 1, 2, 5.5, 11 Mbps<br>802.11be : MCS0~13, (20MHz, 40MHz, ,80MHz, 160MHz, 320MHz)<br>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11n: MCS 0 ~ MCS 15, (20MHz, 40MHz) |
| **Modulation** | Direct Sequence Spread Spectrum<br>1024QAM, 16-QAM, 256-QAM, 4096QAM, 64-QAM, BPSK, CCK, Direct Sequence Spread Spectrum, OFDM, QPSK |
| **Security** | 802.1x authentication<br>AES-CCMP: 128 bit in hardware<br>IEEE 802.11i<br>IEEE and WiFi certified 64 / 128 bit WEP encryption for a/b/g mode only<br>WAPI<br>WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>WPA2 certification<br>WPA3 (personal) certification |
| **Network Architecture Models** | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required) |
| **Roaming** | IEEE 802.11 compliant roaming between access points |
| **Output Power** | • 802.11b, 1Mbps : +17dBm minimum<br>• 802.11g, 6Mpbs : +16dBm minimum<br>• 802.11a, 6Mbps : +17dBm minimum<br>• 802.11n, MCS7(HT20) : +14dBm minimum<br>• 802.11n, MCS7(HT40) : +13.5dBm minimum<br>• 802.11ac MCS9(VHT20) : 13.5dBm minimum<br>• 802.11ac MCS9(VHT40) : +13.5dBm minimum<br>• 802.11ac MCS9(VHT80) : +12.5dBm minimum<br>• 802.11ac MCS9(VHT160) : +10.5dBm minimum<br>• 802.11ax MCS11(HE20)(6GHz) : +11.5dBm minimum<br>• 802.11ax MCS11(HE40)(6GHz) : +7.5dBm minimum<br>• 802.11ax MCS11(HE80)(6GHz) : +7.5dBm minimum<br>• 802.11ax MCS11(HE160)(6GHz) : +7.5dBm minimum<br>• 802.11be MCS13(EHT20)(6GHz) : 11.5dBm<br>• 802.11be MCS13(EHT40)(6GHz) : 7.5dBm<br>• 802.11be MCS13(EHT80)(6GHz) : 7.5dBm<br>• 802.11be MCS13(EHT160)(6GHz) : 6.5dBm<br>• 802.11be MCS13(EHT320)(6GHz) : 4.5dBm |
| **Power Consumption** | Transmit mode : 3.4 W<br>Receive mode : 1.8 W |

## Technical Specifications – Networking

| | |
|---|---|
| | Idle mode (PSP) : 180 mW (WLAN Associated)<br>Idle mode: 50 mW (WLAN unassociated)<br>Connected Standby/Modern Standby : 10 mW<br>Radio disabled : 8 mW |
| **Power Management** | ACPI and PCI Express compliant power management |
| **Receiver Sensitivity[2]** | • 802.11b, 1Mbps : -93.5dBm maximum<br>• 802.11b, 11Mbps : -85dBm maximum<br>• 802.11a/g, 6Mbps : -90.5dBm maximum<br>• 802.11a/g, 54Mbps : -72.5dBm maximum<br>• 802.11n, MCS0(HT20) : -90dBm maximum<br>• 802.11n, MCS7(HT20) : -71.5dBm maximum<br>• 802.11n, MCS0(HT40) : -88.5dBm maximum<br>• 802.11n, MCS7(HT40) : -68.5dBm maximum<br>• 802.11ac, MCS9(VHT20) : -88.5dBm maximum<br>• 802.11ac, MCS9(VHT40) : -65.5dBm maximum<br>• 802.11ac, MCS9(VHT80) : -60.5dBm maximum<br>• 802.11ac, MCS9(VHT160) : -58.5dBm maximum<br>• 802.11ax, MCS11(HE20)(6GHz) : -59.5dBm maximum<br>• 802.11ax, MCS11(HE40)(6GHz) : -56.5dBm maximum<br>• 802.11ax, MCS11(HE80)(6GHz) : -53.5dBm maximum<br>• 802.11ax, MCS11(HE160)(6GHz) : -51.5dBm maximum<br>• 802.11be, MCS13(EHT20)(6GHz) : -55.5dBm maximum<br>• 802.11be, MCS13(EHT40)(6GHz) : -53.5dBm maximum<br>• 802.11be, MCS13(EHT80)(6GHz) : -51.5dBm maximum<br>• 802.11be, MCS13(EHT160)(6GHz) : -48.5dBm maximum<br>• 802.11be, MCS13(EHT320)(6GHz) : -45.5dBm maximum |
| **Antenna type** | High efficiency antenna with spatial diversity<br>Two embedded tri-band 2.4/5/6 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications |
| **Form Factor** | PCI-Express M.2 MiniCard with CNVi Interface |
| **Dimensions** | 30.00 x 22.00 x 2.30 mm (1.18 x 0.87 x 0.09 inch) |
| **Weight** | 1. Type 2230: 3.1 g<br>2. Type 1216: 0.8 g |
| **Operating Voltage** | 3.3 v +/- 5 % |
| **Subtitle** | Integrated Bluetooth sepcifications |
| **Bluetooth Specification** | 4.0/4.1/4.2/5.0/5.1/5.2/5.3/5.4 Compliant |
| **Frequency Band** | 2042 to 2480 MHz |
| **Number of Available Channels** | Legacy : 0~79 (1 MHz/CH)<br>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 : |

## Technical Specifications – Networking

| | |
|---|---|
| | Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) |
| **Transmit Power** | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR. |
| **Power Consumption** | Peak (Tx): 330 mW<br>Peak (Rx): 230 mW<br>Selective Suspend: 17 mW |
| **Bluetooth Software Supported** | Microsoft Windows Bluetooth Software |
| **Link Topology** | |
| **Power Management** | Microsoft Windows ACPI, and USB Bus Support |
| **Certifications** | FCC (47 CFR) Part 15C/E, Section 15.247, 15.249, 15.407; ETSI 300 328, ETSI 301 893, ETSI 303 687 |
| **Bluetooth Profiles Supported** | 2Mbps LE<br>Advanced Audio Distribution Profile (A2DP)<br>Basic Imaging Profile (BIP)<br>Bluetooth 4.1 -ESR 5/6/7 Compliance<br>Bluetooth 4.2 ESR08 Compliance<br>Bluetooth 5.2<br>Bluetooth 5.3 wireless card<br>Channel Selection Algo<br>Encryption key size control enhancements<br>ESR9/10 Compliance<br>FAX Profile (FAX)<br>Hands Free Profile (HFP)<br>Headset Profile (HSP)<br>LE Advertisement Extensions<br>LE Data Packet Length Extension<br>LE Dual Mode<br>LE L2CAP Connection Oriented Channels<br>LE Link Layer<br>LE Link Layer Ping<br>LE Long Range<br>LE Low Duty Cycle Directed Advertising<br>LE Privacy 1.2 –Extended Scanner Filter Policies<br>LE Privacy 1.2 –Link Layer Privacy<br>LE Secure Connection- Basic/Full<br>Limited High Duty Cycle Non-Connectable Advertising<br>Periodic Advertisement interval<br>Train Nudging & Interlaced Scan<br>Windows Bluetooth profiles support |

## Technical Specifications – Networking

1.Wi-Fi 7 requires a Wi-Fi 7 router, sold separately, to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 7 is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 7 is supported. Wi-Fi 7 is designed to support gigabit data rate when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 80MHz and higher channels.

2. 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 5G Sub-6 CAT19 [1]** | **Technology/Operating bands** | WCDMA/HSPA+ operating bands:<br>Band 1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL)<br>Band 2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL)<br>Band 4: 1710 to 1755 MHz (UL), 2110 to 2155 MHz (DL)<br>Band 5: 824 to 849 MHz (UL), 869 to 894 MHz (DL)<br>Band 8: 880 to 915 MHz (UL), 925 to 960 MHz (DL)<br>LTE FDD/TDD operating bands:<br>Band 1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL)<br>Band 2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL)<br>Band 3: 1710 to 1785 MHz (UL), 1805 to 1880 MHz (DL)<br>Band 4: 1710 to 1755 MHz (UL), 2110 to 2155 MHz (DL)<br>Band 5: 824 to 849 MHz (UL), 869 to 894 MHz (DL)<br>Band 7: 2500 to 2570 MHz (UL), 2620 to 2690 MHz (DL)<br>Band 8: 880 to 915 MHz (UL), 925 to 960 MHz (DL)<br>Band 12: 699 to 716 MHz (UL), 729 to 746 MHz (DL)<br>Band 13: 777 to 787 MHz (UL), 746 to 756 MHz (DL)<br>Band 14: 788 to 798 MHz (UL), 758 to 768 MHz (DL)<br>Band 17: 704 to 716 MHz (UL), 734 to 746 MHz (DL)<br>Band 18: 815 to 830 MHz (UL), 860 to 875 MHz (DL)<br>Band 19: 830 to 845 MHz (UL), 875 to 890 MHz (DL)<br>Band 20: 832 to 862 MHz (UL), 791 to 821 MHz (DL)<br>Band 25: 1850 to 1915 MHz (UL), 1930 to 1995 MHz (DL)<br>Band 26: 814 to 849 MHz (UL), 859 to 894 MHz (DL)<br>Band 28: 703 to 748 MHz (UL), 758 to 803 MHz (DL)<br>Band 29: 717 to 728 MHz (DL)<br>Band 30: 2305 to 2315 MHz (UL) 2350 to 2360 MHz (DL)<br>Band 34: 2010 to 2025 MHz (UL/DL)<br>Band 38: 2570 to 2620 MHz (UL/DL)<br>Band 39: 1880 to 1920 MHz (UL/DL)<br>Band 40: 2300 to 2400 MHz (UL/DL)<br>Band 41: 2496 to 2690 MHz (UL/DL)<br>Band 42: 3400 to 3600 MHz (UL/DL)<br>Band 43: 3400 to 3800 MHz (UL/DL)<br>Band 46: 5150 to 5925 MHz (DL)<br>Band 48: 3550 to 3700 MHz (UL/DL)<br>Band 66: 1710 to 1800 MHz (UL), 2110 to 2200 MHz (DL)<br>Band 71: 663 to 698 MHz (UL), 617 to 652 MHz (DL) |

## Technical Specifications – Networking

| | |
|---|---|
| **Wireless protocol standards** | 5GNR Air Interface<br>3GPP Rel15 5G NR sub-6<br>LTE Rel15<br>3GPP Release 8 UMTS Specification |
| **GPS** | Standalone/A-GPS (MS-A, MS-B) |
| **GPS bands** | GPS L1 (1575.42MHz), GLONASS L1 (1602MHz), Beidou B1 (1561.098MHz), Galileo E1 (1575.42MHz), QZSS (1575.42MHz) |
| **Maximum data rates** | SA 5G/NR sub-6 Peak: 4.67 Gbps(Download), 1.25 Gbps(Upload) |
| **Maximum output power** | HSPA+: 23.5 dBm<br>LTE (all bands except B41): 23.0 dBm (Not support HPUE)<br>NR (all band except n41, n77, n78, n79): 23.0 dBm (Not support HPUE)<br>NR n41, n77, n78, n79 HPUE: 26.0 dBm (Support HPUE) |
| **Maximum power consumption** | 5G Sub 6: 3,500 mA<br>LTE: 2,500 mA (peak);  mA (average) |
| **Form Factor** | M.2; 3052-S3 Key B |
| **Weight** | 8.6 g (0.303 oz) |
| **Dimensions (Length x Width x Thickness)** | 30.00 x 52.00 x 2.30 mm (1.18 x 2.05 x 0.09 inch) |
| **embedded eSIM** | Yes |

1. 5G module is optional and must be configured at the factory. Module designed for 5G NR NSA (non-standalone) networks as carriers deploy Evolved-Universal Terrestrial Radio Access New Radio Dual Connectivity (ENDC) with both 100Mhz of 5G NR and LTE channel bandwidth, using 256QAM 4x4 as defined by 3GPP. Module requires activation and separately purchased service contract. Check with service provider for coverage and availability in your area. Data connection, upload and download speeds will vary due to network, location, environment, network conditions, and other factors. Backwards compatible to 4G LTE and 3G HSPA technologies. 5G module planned to be available in select platforms and select countries, where carrier supported.

| | | |
|---|---|---|
| **HP 4G CAT19 [1]** | **.Technology/Operating bands** | WCDMA/HSPA+ operating bands:<br>Band 1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL)<br>Band 2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL)<br>Band 4: 1710 to 1755 MHz (UL), 2110 to 2155 MHz (DL)<br>Band 5: 824 to 849 MHz (UL), 869 to 894 MHz (DL)<br>Band 8: 880 to 915 MHz (UL), 925 to 960 MHz (DL)<br>LTE FDD/TDD operating bands:<br>Band 1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL)<br>Band 2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL)<br>Band 3: 1710 to 1785 MHz (UL), 1805 to 1880 MHz (DL)<br>Band 4: 1710 to 1755 MHz (UL), 2110 to 2155 MHz (DL)<br>Band 5: 824 to 849 MHz (UL), 869 to 894 MHz (DL)<br>Band 7: 2500 to 2570 MHz (UL), 2620 to 2690 MHz (DL)<br>Band 8: 880 to 915 MHz (UL), 925 to 960 MHz (DL)<br>Band 12: 699 to 716 MHz (UL), 729 to 746 MHz (DL) |

## Technical Specifications – Networking

| | | |
|---|---|---|
| | | Band 13: 777 to 787 MHz (UL), 746 to 756 MHz (DL)<br>Band 14: 788 to 798 MHz (UL), 758 to 768 MHz (DL)<br>Band 17: 704 to 716 MHz (UL), 734 to 746 MHz (DL)<br>Band 18: 815 to 830 MHz (UL), 860 to 875 MHz (DL)<br>Band 19: 830 to 845 MHz (UL), 875 to 890 MHz (DL)<br>Band 20: 832 to 862 MHz (UL), 791 to 821 MHz (DL)<br>Band 25: 1850 to 1915 MHz (UL), 1930 to 1995 MHz (DL)<br>Band 26: 814 to 849 MHz (UL), 859 to 894 MHz (DL)<br>Band 28: 703 to 748 MHz (UL), 758 to 803 MHz (DL)<br>Band 29: 717 to 728 MHz (DL)<br>Band 30: 2305 to 2315 MHz (UL) 2350 to 2360 MHz (DL)<br>Band 34: 2010 to 2025 MHz (UL/DL)<br>Band 38: 2570 to 2620 MHz (UL/DL)<br>Band 39: 1880 to 1920 MHz (UL/DL)<br>Band 40: 2300 to 2400 MHz (UL/DL)<br>Band 41: 2496 to 2690 MHz (UL/DL)<br>Band 42: 3400 to 3600 MHz (UL/DL)<br>Band 43: 3400 to 3800 MHz (UL/DL)<br>Band 46: 5150 to 5925 MHz (DL)<br>Band 48: 3550 to 3700 MHz (UL/DL)<br>Band 66: 1710 to 1800 MHz (UL), 2110 to 2200 MHz (DL)<br>Band 71: 663 to 698 MHz (UL), 617 to 652 MHz (DL) |
| | **Wireless protocol standards** | LTE Rel15<br>3GPP Release 8 UMTS Specification |
| | **GPS** | Standalone/A-GPS (MS-A, MS-B) |
| | **GPS bands** | GPS L1 (1575.42MHz), GLONASS L1 (1602MHz), Beidou B1 (1561.098MHz), Galileo E1 (1575.42MHz), QZSS (1575.42MHz) |
| | **Maximum data rates** | UE Category DL 19 (1.6 Gbps Download) , UE Category UL 18 (211 Mbps Upload) |
| | **Maximum output power** | LTE (all bands except B41): 23.0 dBm (Not support HPUE) |
| | **Maximum power consumption** | LTE: 2,500 mA (peak) |
| | **Form Factor** | M.2; 3052-S3 Key B |
| | **Weight** | 8.4 g (0.296 oz) |
| | **Dimensions (Length x Width x Thickness)** | 30.00 x 52.00 x 2.30 mm (1.18 x 2.05 x 0.09 inch) |
| | **embedded eSIM** | Yes |

1. 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. 4G LTE not available on all products or in all countries.

| | | |
|---|---|---|
| **NFC Mirage WNC XRAV-1** | **Dimensions (L x W x H)** | 17.00 x 10.00 x 2.00 mm (0.67 x 0.39 x 0.08 inch) |

## Technical Specifications – Networking

| | |
|---|---|
| **Chipset** | NPC300 |
| **System interface** | I2C |
| **NFC RF standards** | ISO/IEC 14443 A<br>ISO/IEC 14443 B<br>ISO/IEC 15693<br>ISO/IEC 18092<br>ECMA-340 NFCIP-1 Target and Initiator<br>ECMA-320 NFCIP-2 |
| **NFC Forum Support** | Type 1, Type 2, Type 3 / Type 4, NFCIP-1 / NFCIP-2 |
| **Reader (PCD-VCD) Mode** | ISO/IEC 14443 A<br>ISO/IEC 14443 B<br>ISO/IEC 15693<br>MIFARE 1K<br>MIFARE 4K<br>MIFARE DESFire<br>FeliCa<br>Jewel and Topaz |
| **Card Emulation (PICC-VICC) Mode** | ISO/IEC 14443 A<br>ISO/IEC 14443 B and B'<br>MIFARE<br>FeliCa |
| **Frequency** | 13.56 MHz |
| **NFC Modes Supported** | Reader/Writer, Peer-to-Peer |
| **Raw RF Data Rates** | 106 kbps, 212 kbps, 424 kbps, 848 kbps |
| **Operating temperature** | Operating: 0 °C to 70 °C (32 °F to 158 °F)<br>Storage: -20 °C to 125 °C (-4 °F to 257 °F) |
| **Storage temperature** | Operating: 10% - 90% (non-condensing)<br>Non-Operating: 5% - 95% (non-condensing) |
| **Humidity** | Operating: 10% - 90% (non-condensing)<br>Non-Operating: 5% - 95% (non-condensing) |
| **Supply Operating voltage** | 4.35 to 5.25 Volts |
| **I/O Voltage** | 1.8V or 3.3V |
| **Power Consumption (Booster enable, VBAT= 3.3V, VCC_BOOST = 5V)** | Booster enable, VBAT= 3.3V, VCC_BOOST = 5V |
| **Mode** | Power Consumption, Typical |
| **Polling** | 7.3 mA |
| **Detected Test Tag Type 1** | Total 283.8 mA<br>Net Module 236.8 mA |
| **Detected Test Tag Type 2** | Total 288.8 mA<br>Net Module 241.8 mA |
| **Detected Test Tag Type 3** | Total 287.7 mA<br>Net Module 240.7 mA |

## Technical Specifications – Networking

| | | |
|---|---|---|
| | **Detected Test Tag Type 4** | Total 282.3 mA<br>Net Module 235.3 mA |
| | **Antenna** | Antenna connector, 0.5mm pitch, 7 connector FPC. Antenna matching is external to module. |
| **Intel® I219-LM (vPro®) GbE PCIe NIC** | **Connector** | RJ-45 |
| | **System Interface** | PCI (Intel proprietary) + SMBus |
| | **Data rates supported** | 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 802.3 clauses 40)<br>100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)<br>10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) |
| | **IEEE Compliance** | IEEE 802.1p QoS (Quality of Service) Support<br>IEEE 802.1q VLAN support<br>IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)<br>IEEE 802.3az EEE (Energy Efficient Ethernet) |
| | **Performance** | TCP/IP/UDP Checksum offload (configurable)<br>Protocol offload (ARP & NS)<br>Large send offload and Giant send offload<br>Receiving Side Scaling (Hash Mode Only)<br>Jumbo Frame 9K |
| | **Power consumption** | Cable Disconnection: 25 mW<br>100Mbps Full Run: 450 mW<br>1000Mbps Full Run: 1000 mW<br>WoL Enable(S3/S4/S5): 50 mW<br>WoL Disable(S3/S4/S5): 25 mW |
| | **Power Management** | ACPI compliant – multiple power modes<br>Situation-sensitive features reduce power consumption<br>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)<br>Wake-on-LAN from off (Magic Packet only)<br>PXE 2.1 Remote Boot<br>Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30))<br>Comprehensive diagnostic and configuration software suite<br>Virtual Cable Doctor for Ethernet cable status |
| | **Security & Manageability** | Intel® vPro™ support with appropriate Intel® chipset components |

## Technical Specifications – Networking

| | | |
|---|---|---|
| **Intel® I219-LM (vPro®) GbE PCIe NIC** | **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)<br>2. 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)<br>3. 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 802.3 clauses 40)<br>4. 2.5 Gbit/s operation( 2.5GBASE-T;  IEEE 802.3bz Clause 126)<br>5. Auto-Negotiation (Automatic Speed Selection)<br>Full Duplex Operation at all Speeds, Half Duplex operation at 10& 100 Mbit/s |
| | **IEEE Compliance** | IEEE 802.1p QoS (Quality of Service) Support<br>IEEE 802.1q VLAN support<br>IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)<br>IEEE 802.3i 10BASE-T<br>IEEE 802.3u 100BASE-TX<br>IEEE 802.3ab 1000BAE-T<br>IEEE 802.3bz 2.5GBASE-T |
| | **Performance** | TCP/IP/UDP Checksum Offload (configurable)<br>Protocol Offload (ARP & NS)<br>Large send offload and Giant send offload<br>Receiving Side Scaling(Hash Mode Only)<br>Jumbo Frame 9K |
| | **Power consumption** | Cable Disconnection: 25mW<br>100Mbps Full Run: 450mW<br>1000Mbp Full Run: 1000mW<br>2500Mbp Full Run: 4500mW<br>WoL Enable(S3/S4/S5): 50mW<br>WoL Disable(S3/S4/S5): 25mW |
| | **Power Management** | ACPI compliant – multiple power modes<br>Situation-sensitive features reduce power consumption<br>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)<br>PXE 2.1 Remote Boot<br>Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30))<br>Comprehensive diagnostic and configuration software suite<br>Virtual Cable Doctor for Ethernet cable status |

## Technical Specifications – Networking

| | | |
|---|---|---|
| | **Security & Manageability** | Intel® non-vPro™ support with appropriate Intel® chipset components |
| **Qualcomm 9205 LTE-M (CAT-M1 fSVC) [1]** | **Technology/Operating bands** | FDD LTE:<br>1700/2100 (Band 4), 1700/2100 (Band 66), 1800 (Band 3), 1900 (Band 2), 1900 (Band 25), 2100 (Band 1), 700 (Band 12 lower), 700 (Band 13 upper), 700 (Band 14 upper), 700 (Band 28), 700 (band 85), 800 (Band 20), 800 (Band 27), 850 (Band 18 lower), 850 (Band 19 upper), 850 (Band 26), 850 (Band 5), 900 (Band 8) MHz<br><br>GSM/GPRS/EGPRS:<br>1800, 1900, 850, 900 MHz |
| | **Wireless protocol standards** | 3GPP TS 21.111 V10.0.0: USIM and IC card requirements<br>3GPP TS 27.005 V10.0.1: Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)<br>3GPP TS 27.007 V10.0.8: AT command set for User Equipment (UE)<br>3GPP TS 31.102 V10.11.0: Characteristics of the Universal Subscriber Identity Module (USIM) application<br>3GPP TS 31.11 V10.16.0: Universal Subscriber Identity Module (USIM) Application Toolkit (USAT)<br>3GPP TS 36.124 V10.3.0: Electro Magnetic Compatibility (EMC) requirements for mobile terminals and ancillary equipment<br>3GPP TS 36.521-1 V14.3.0: User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Conformance testing<br>3GPP TS 51.010-1 V10.5.0: Mobile Station (MS) conformance specification; Part 1: Conformance specification<br>3GPP TS 51.011 V4.15.0: Specification of the Subscriber Identity Module -Mobile Equipment (SIM-ME) interface |
| | **GPS** | Standalone GPS/Beidou/GLONASS/A-GPS (XTRA) |
| | **GPS bands** | 1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 MHz |
| | **Maximum data rates** | LTE FDD: 375.00 Kbps(Download), 1119.00 Kbps(Upload)<br>GPRS: 107.00 Kbps(Download), 85.60 Kbps(Upload)<br>EGPRS: 296.00 Kbps(Download), 236.80 Kbps(Upload) |
| | **Maximum output power** | LTE (all bands except B41): 21.5 dBm<br>GSM: 34.0 dBm |
| | **Maximum power consumption** | LTE: 151 mA(peak), 16 mA(average) |
| | **Form Factor** | M.2 |
| | **Weight** | 4.0 g (0.141 oz) |
| | **Dimensions (Length x Width x Thickness)** | 22.00 x 42.00 x 2.30 mm (0.87 x 1.65 x 0.09 inch) |

## Technical Specifications – Networking

| | |
|---|---|
| **embedded eSIM** | Support |

1. LPWAN (also called Mobile Narrowband) support HP Protect & Trace with Wolf Connect service through the subscription term, but do not support mobile broadband use.

Technical Specifications – Power

## POWER

Power supply availability may vary by country.

**HP 100W Slim USB-C Straight AC Power Adapter Mario II**

| | |
|---|---|
| **Dimensions** | 5.354 x 2.362 x 0.866 in (13.6x6.0x2.2cm) |
| **Weight** | 340g ± 10g (Not including power cord. Power cord varies by country.) |
| **Input** | 100-240Vac |
| **Input Efficiency** | 81.50% min at 115 Vac/ 230 Vac @5.00V<br>86.70% min at 115 Vac/ 230 Vac @9.00V<br>88.00% min at 115 Vac/ 230 Vac @12.00V<br>89.00% min at 115 Vac/ 230 Vac @15.00V<br>89.00% min at 115 Vac/ 230 Vac @20.00V |
| **Input frequency range** | 47-63Hz |
| **Input AC current** | Max. 1.6 A at 90 Vac |
| **Output** | |
| **Output power** | 5V/15W<br>9V/27W<br>12V/60W<br>15V/75W<br>20V/100W |
| **DC output** | 5V/9V/12V/15V/20V |
| **Hold-up time** | 100% load 5ms at 115 Vac input/80% load 10ms at 115 Vac input |
| **Output current limit** | 5V/9V/12V/15V<125% max current, 20V<135% max current |
| **Output Over Current Protection** | |
| **Connector** | |
| **Connector** | C6 |
| **Environmental Design** | |
| **Operating temperature** | 0° to 35° C (32° to 95° F) |
| **Non-operating (storage) temperature** | -20° to 85° C (-4° to 185° F) |
| **Altitude** | 0 to 5,000 m (0 to 16,400 ft) |
| **Humidity** | 20% to 95% |
| **Storage Humidity** | 10% to 95% |
| **EMI and Safety Certifications** | CE Mark - full compliance with LVD and EMC directives<br>Worldwide safety standards - IEC60950-1, IEC 62368-1:2014 and IEC62368-1 : 2018, EN62368-1:2020+A11, UL 62368-1<br>Agency approvals - C-UL-US, TUV/GS, TUV/PSE, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC, CU(EAC), KCC(Safety+EMC), NOM-001 NYCE, NRcan, NRCS, ISC, SEC, PSB, Argentina S-mark, |

## Technical Specifications – Power

| | |
|---|---|
| | Australia RCM, BIS, BSMI, UAE, UKCA DoC, Ukraine(CoC+DoC+RoHS+ECO) |

**AC Adapter 65 Watt nPFC Standard USB type C Straight 1.8m (Ceto)**

| | |
|---|---|
| **Dimensions** | 3.543 x 2.008 x 1.122 in (9.0x5.1x2.85cm) |
| **Weight** | 220g ± 10g (Not including power cord. Power cord varies by country.) |
| **Input** | 100-240Vac |
| **Input Efficiency** | 81.50% min at 115 Vac/ 230 Vac @5.00V<br>86.70% min at 115 Vac/ 230 Vac @9.00V<br>88.00% min at 115 Vac/ 230 Vac @12.00V<br>89.00% min at 115 Vac/ 230 Vac @15.00V<br>89.00% min at 115 Vac/ 230 Vac @20.00V |
| **Input frequency range** | 47-63Hz |
| **Input AC current** | Max. 1.6 A at 90 Vac |
| **Output** | |
| **Output power** | 5V/15W<br>9V/27W<br>12V/60W<br>15V/65W<br>20V/65W |
| **DC output** | 5V/9V/12V/15V/20V |
| **Hold-up time** | 100% load 5ms at 115 Vac input |
| **Output current limit** | < 8.0A |
| **Output Over Current Protection** | |
| **Connector** | |
| **Connector** | C6 |
| **Environmental Design** | |
| **Operating temperature** | 0° to 35° C (32° to 95° F) |
| **Non-operating (storage) temperature** | -20° to 85° C (-4° to 185° F) |
| **Altitude** | 0 to 5,000 m (0 to 16,400 ft) |
| **Humidity** | 20% to 95% |
| **Storage Humidity** | 10% to 95% |
| **EMI and Safety Certifications** | CE Mark - full compliance with LVD and EMC directives<br>Worldwide safety standards - IEC60950-1 and IEC62368-1 : 2018, EN62368-1:2014+A11, UL 62368-1<br>Agency approvals - C-UL-US, TUV/GS, TUV/PSE, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC and CECP, CU(EAC), EAEU, KCC(Safety+EMC) and K-MEPS, NOM-001 and 029 NYCE, NRcan, |

| | | |
|---|---|---|
| | | NRCS, ISC, SEC, PSB, Argentina S-mark, Australia RCM, BIS, BSMI, UAE, UKCA DoC |
| **HP 65W GaN USB-C nPFC Straight AC Power Adapter Cappy** | | |
| | **Dimensions** | 2.68 x 2.1 x 0.875 in (6.8x5.3x2.2cm) |
| | **Weight** | 105g ± 10g (Not including power cord. Power cord varies by country.) |
| | **Input** | 100-240Vac |
| | **Input Efficiency** | 81.50% min at 115 Vac/ 230 Vac @5.00V<br>86.70% min at 115 Vac/ 230 Vac @9.00V<br>89.00% min at 115 Vac/ 230 Vac @15.00V<br>89.00% min at 115 Vac/ 230 Vac @20.00V |
| | **Input frequency range** | 47-63Hz |
| | **Input AC current** | Max. 1.6 A at 90 Vac |
| | **Output** | |
| | **Output power** | 5V/15W<br>9V/27W<br>15V/65W<br>20V/65W |
| | **DC output** | 5V/9V/15V/20V |
| | **Hold-up time** | 100% load 5ms at 115 Vac input |
| | **Output current limit** | 115%-125% |
| | **Output Over Current Protection** | |
| | **Connector** | |
| | **Connector** | C6 |
| | **Environmental Design** | |
| | **Operating temperature** | 0° to 35° C (32° to 95° F) |
| | **Non-operating (storage) temperature** | -20° to 85° C (-4° to 185° F) |
| | **Altitude** | 0 to 5,000 m (0 to 16,400 ft) |
| | **Humidity** | 20% to 95% |
| | **Storage Humidity** | 10% to 95% |
| | **EMI and Safety Certifications** | CE Mark - full compliance with LVD and EMC directives<br>Worldwide safety standards - IEC60950-1 and IEC62368-1 : 2018, EN62368-1:2014+A11, UL 62368-1<br>Agency approvals - C-UL-US, TUV/GS, TUV/PSE, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC and CECP, CU(EAC), EAEU, KCC(Safety+EMC) and K-MEPS, NOM-001 and 029 NYCE, NRcan, NRCS, ISC, SEC, PSB, Argentina S-mark, Australia RCM, BIS, BSMI, UAE, UKCA DoC |

## Technical Specifications – Power

**HP 65W Slim USB-C Straight AC Power Adapter Taroko II**

| | |
|---|---|
| **Dimensions** | 3.819 x 2.106 x 0.827 in (9.7x5.35x2.1cm) |
| **Weight** | 200g ± 10g (Not including power cord. Power cord varies by country.) |
| **Input** | 100-240Vac |
| **Input Efficiency** | 81.50% min at 115 Vac/ 230 Vac @5.00V<br>86.70% min at 115 Vac/ 230 Vac @9.00V<br>88.00% min at 115 Vac/ 230 Vac @12.00V<br>89.00% min at 115 Vac/ 230 Vac @15.00V<br>89.00% min at 115 Vac/ 230 Vac @20.00V |
| **Input frequency range** | 47-63Hz |
| **Input AC current** | Max. 1.6 A at 90 Vac |
| **Output** | |
| **Output power** | 5V/15W<br>9V/27W<br>12V/60W<br>15V/65W<br>20V/65W |
| **DC output** | 5V/9V/12V/15V/20V |
| **Hold-up time** | 100% load 5ms at 115 Vac input |
| **Output current limit** | < 8.0A |
| **Output Over Current Protection** | |
| **Connector** | |
| **Connector** | C6 |
| **Environmental Design** | |
| **Operating temperature** | 0° to 35° C (32° to 95° F) |
| **Non-operating (storage) temperature** | -20° to 85° C (-4° to 185° F) |
| **Altitude** | 0 to 5,000 m (0 to 16,400 ft) |
| **Humidity** | 20% to 95% |
| **Storage Humidity** | 10% to 95% |
| **EMI and Safety Certifications** | CE Mark - full compliance with LVD and EMC directives<br>Worldwide safety standards - IEC60950-1 and IEC62368-1 : 2018, EN62368-1:2014+A11, UL 62368-1<br>Agency approvals - C-UL-US, TUV/GS, TUV/PSE, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC and CECP, CU(EAC), EAEU, KCC(Safety+EMC) and K-MEPS, NOM-001 and 029 NYCE, NRcan, NRCS, ISC, SEC, PSB, Argentina S-mark, Australia RCM, BIS, BSMI, UAE, UKCA DoC |

## Technical Specifications – Power

**HP 65W Standard USB-C Halogen Free Straight AC Power Adapter Ceto+**

| | |
|---|---|
| **Dimensions** | 3.543 x 2.008 x 1.122 in (9.0x5.1x2.85cm) |
| **Weight** | 220g ± 10g (Not including power cord. Power cord varies by country.) |
| **Input** | 100-240Vac |
| **Input Efficiency** | 81.50% min at 115 Vac/ 230 Vac @5.00V<br>86.70% min at 115 Vac/ 230 Vac @9.00V<br>88.00% min at 115 Vac/ 230 Vac @12.00V<br>89.00% min at 115 Vac/ 230 Vac @15.00V<br>89.00% min at 115 Vac/ 230 Vac @20.00V |
| **Input frequency range** | 47-63Hz |
| **Input AC current** | Max. 1.6 A at 90 Vac |
| **Output** | |
| **Output power** | 5V/15W<br>9V/27W<br>12V/60W<br>15V/65W<br>20V/65W |
| **DC output** | 5V/9V/12V/15V/20V |
| **Hold-up time** | 100% load 5ms at 115 Vac input |
| **Output current limit** | < 8.0A |
| **Output Over Current Protection** | |
| **Connector** | |
| **Connector** | C6 |
| **Environmental Design** | |
| **Operating temperature** | 0° to 35° C (32° to 95° F) |
| **Non-operating (storage) temperature** | -20° to 85° C (-4° to 185° F) |
| **Altitude** | 0 to 5,000 m (0 to 16,400 ft) |
| **Humidity** | 20% to 95% |
| **Storage Humidity** | 10% to 95% |
| **EMI and Safety Certifications** | CE Mark - full compliance with LVD and EMC directives<br>Worldwide safety standards - IEC60950-1 and IEC62368-1 : 2018, EN62368-1:2014+A11, UL 62368-1<br>Agency approvals - C-UL-US, TUV/GS, TUV/PSE, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC and CECP, CU(EAC), EAEU, KCC(Safety+EMC) and K-MEPS, NOM-001 and 029 NYCE, NRcan, NRCS, ISC, SEC, PSB, Argentina S-mark, Australia RCM, BIS, BSMI, UAE, UKCA DoC |

## Technical Specifications – Power

**HP 140W Slim USB-C Straight AC Power Adapter Daisy II**

| | |
|---|---|
| **Dimensions** | 5.433 x 2.578 x 1.122 in (13.8x6.55x2.85cm) |
| **Weight** | 415g(+/-10g) (Not including power cord. Power cord varies by country.) |
| **Input** | 100-240Vac |
| **Input Efficiency** | 81.50% min at 115 Vac/ 230 Vac @5.00V<br>86.70% min at 115 Vac/ 230 Vac @9.00V<br>88.00% min at 115 Vac/ 230 Vac @12.00V<br>89.00% min at 115 Vac/ 230 Vac @15.00V<br>89.00% min at 115 Vac/ 230 Vac @20.00V<br>89.00% min at 115 Vac/ 230 Vac @28.00V |
| **Input frequency range** | 47-63Hz |
| **Input AC current** | Max. 2.5 A at 90 Vac |
| **Output** | |
| **Output power** | 5V/15W<br>9V/27W<br>12V/60W<br>15V/75W<br>20V/100W<br>28V/140W |
| **DC output** | 5V/9V/12V/15V/20V/28V |
| **Hold-up time** | 100% load 5ms at 115 Vac input/80% load 10ms at 115 Vac input |
| **Output current limit** | 5V/9V/12V/15V/20V<125% max current, 28V<135% max current |
| **Output Over Current Protection** | |
| **Connector** | |
| **Connector** | C6 |
| **Environmental Design** | |
| **Operating temperature** | 0° to 35° C (32° to 95° F) |
| **Non-operating (storage) temperature** | -20° to 85° C (-4° to 185° F) |
| **Altitude** | 0 to 5,000 m (0 to 16,400 ft) |
| **Humidity** | 20% to 95% |
| **Storage Humidity** | 10% to 95% |
| **EMI and Safety Certifications** | CE Mark - full compliance with LVD and EMC directives<br>Worldwide safety standards - IEC60950-1, IEC 62368-1:2014 and IEC62368-1 : 2018, EN62368-1:2020+A11, UL 62368-1<br>Agency approvals - C-UL-US, TUV/GS, TUV/PSE, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC, CU(EAC), KCC(Safety+EMC), NOM-001 NYCE, NRcan, NRCS, ISC, SEC, PSB, Argentina S-mark, Australia RCM, BIS, BSMI, UAE, UKCA DoC, Ukraine(CoC+DoC+RoHS+ECO) |

## Technical Specifications – Power

**MC 62Whr Long Life Polymer Fast charge 3 cell Battery**

| | |
|---|---|
| **Dimensions (H x W x L)** | L 255.8 mm* W 67.8mm* T 7.4mm |
| **Weight** | Max 236.0g |
| **Cells/Type** | 3cell Lithium-Ion Polymer cell |
| **Energy** | |
| **Voltage** | 11.58V |
| **Amp-hour capacity** | 5355mAh / 5086mAh |
| **Watt-hour capacity** | 62Whr |
| **Temperature** | |
| **Operating (Charging)** | 0° C ~ 40° C |
| **Operating (Discharging)** | -10° C ~ 40° C |
| **Fuel Gauge LED** | |
| **Warranty** | |
| **Optional Travel Battery Available** | No |

**MW 77Whr Long Life Polymer Fast charge 8 cell Battery**

| | |
|---|---|
| **Dimensions (H x W x L)** | L 268 mm* W 73 mm* T 10.06 mm |
| **Weight** | Max 300g |
| **Cells/Type** | 8cell Lithium-Ion Polymer cell |
| **Energy** | |
| **Voltage** | 15.44V |
| **Amp-hour capacity** | 4988mAh / 4738mAh |
| **Watt-hour capacity** | 77Whr |
| **Temperature** | |
| **Operating (Charging)** | 0° C ~ 40° C |
| **Operating (Discharging)** | -10° C ~ 40° C |
| **Fuel Gauge LED** | |
| **Warranty** | |
| **Optional Travel Battery Available** | No |

Technical Specifications – Audio

## AUDIO

| | |
|---|---|
| **HD Stereo Codec** | Realtek ALC3315 |
| **Audio I/O Ports** | 3.5mm Headset: CTIA only;Headphone-out |
| **Internal Speaker Amplifier** | Cirrus Logic High-Efficiency Boosted Class D Amplifier |
| **Multi-streaming Capable** | Playback multi-streaming can be enabled in the audio control panel to allow independent audio streams to be sent to/from the front jacks or integrated speaker.,<br>Following MSFT Behavior |
| **Sampling** | DAC: Supports resolutions from 16-bit to 24-bit;48.0 kHZ to 48.0 kHz<br>ADC: Supports resolutions from 16-bit to 24-bit;44.1 kHZ to 48.0 kHz |
| **Internal Speaker** | Yes |

Technical Specifications – Fingerprint Reader

## FINGERPRINT READER

| | |
|---|---|
| **Sensor vendor** | SYNAPTICS |
| **Sensor type** | Capacitive |
| **DPI resolution** | 363 DPI |
| **Scan area** | 104 x 86 pixels |
| **False Rejection Rate** | < 3% |
| **False Acceptance Rate** | < 0.001% |
| **Mobile Voltage Operation** | 2.7 V ~ 3.6 V |
| **Operating Temperature** | 5°C ~ 60°C (41°F ~ 140°F) |
| **Current Consumption Image** | 100 mA max |
| **Low Latency Wait For Finger** | 260 uA |
| **Capture Rate** | 50 frames/sec |
| **ESD Resistance** | IEC 61000-4-2 4B (+15KV) |
| **Detection Matrix** | 363 dpi / 7.4 x 6.0 mm sensor area |

| **Fingerprint Reader** | **Second Source** |
|---|---|
| **Sensor vendor** | ELAN |
| **Sensor type** | Capacitive |
| **DPI resolution** | 363 DPI |
| **Scan area** | 56 x 56 pixels |
| **False Rejection Rate** | < 3% |
| **False Acceptance Rate** | < 0.001% |
| **Mobile Voltage Operation** | 2.8 V ~ 3.6 V |
| **Operating Temperature** | -20°C ~ 80°C (-4°F ~ 176°F) |
| **Current Consumption Image** | 100 mA max |
| **Low Latency Wait For Finger** | 300 uA |
| **Capture Rate** | 50 frames/sec |
| **ESD Resistance** | IEC 61000-4-2 4B (+15KV) |
| **Detection Matrix** | 363 dpi / 4.0 x 4.0 mm sensor area |

## ENVIRONMENTAL DATA

**Eco-Label Certifications & declarations**

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- IT ECO declaration
- US ENERGY STAR®
- US Federal Energy Management Program (FEMP)
- EPEAT® Gold registered in the United States. See http://www.epeat.net for registration status in your country.
- TCO Certified
- China Energy Conservation Program (CECP)
- China State Environmental Protection Administration (SEPA)
- Taiwan Green Mark
- Korea Eco-label
- Japan PC Green label*

**Sustainable Impact Specifications**

- Product Carbon Footprint
- At least 50% post-consumer recycled plastic[2]
- At least 80% recycled metal[3]
- Low Halogen[4]
- 100% of HP paper-based packaging is from recycled or certified sustainable sources[5]
- Bulk packaging available

**System Configuration**

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”.

| **Energy Consumption (in accordance with US ENERGY STAR® test method)** | **115VAC, 60Hz** | **230VAC, 50Hz** | **100VAC, 50Hz** |
|---|---|---|---|
| Normal Operation (Short idle) | 4.67 W | 5.11 W | 4.78 W |
| Normal Operation (Long idle) | N/A | N/A | N/A |
| Sleep | 1.15 W | 1.18 W | 1.16 W |
| Off | 0.38 W | 0.42 W | 0.38 W |

**NOTE:**

Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

## Technical Specifications – Environmental

| **Heat Dissipation*** | **115VAC, 60Hz** | **230VAC, 50Hz** | **100VAC, 50Hz** |
|---|---|---|---|
| Normal Operation (Short idle) | 16 BTU/hr | 17 BTU/hr | 16 BTU/hr |
| Normal Operation (Long idle) | N/A | N/A | N/A |
| Sleep | 3.9 BTU/hr | 4 BTU/hr | 4 BTU/hr |
| Off | 1.3 BTU/hr | 1 BTU/hr | 1.3 BTU/hr |

***NOTE:** Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

| **Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)** | Sound Power ($L_{Wad}$, bels) | Sound Pressure ($L_{pAm}$, decibels) |
|---|---|---|
| Typically Configured – Idle | 2.6 | 13.5 |
| Fixed Disk – Random writes | 2.6 | 14.0 |
| Optical Drive – Sequential reads | 3.4 | 24.5 |

**Longevity and Upgrading**

This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the

Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.

**Additional Information**

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see www.epeat.net
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product is 93.7% recycle-able when properly disposed of at end of life.

**Packaging Materials**

| | | |
|---|---|---|
| **External:** | PAPER/Corrugated | 161 g |
| | PAPER/Molded Pulp | 22 g |
| | PAPER/Paper | 102 g |

The plastic packaging material contains at least 0.0% recycled content.

The corrugated paper packaging materials contains at least 64.1% recycled content.

**RoHS Compliance**

HP Inc. complies fully with materials regulations. We were among the first companies to extend the restrictions in the European Union (EU) Restriction of Hazardous Substances (RoHS) Directive

## Technical Specifications – Environmental

to our products worldwide through the HP GSE. HP has contributed to the development of related legislation in Europe, as well as China, India, and Vietnam.

We believe the RoHS directive and similar laws play an important role in promoting industry-wide elimination of substances of concern. We have supported the inclusion of additional substances—including PVC, BFRs, and certain phthalates—in future RoHS legislation that pertains to electrical and electronics products.

We met our voluntary objective to achieve worldwide compliance with the new EU RoHS requirements for virtually all relevant products by July 2013, and we will continue to extend the scope of the commitment to include further restricted substances as regulations continue to evolve.

To obtain a copy of the HP RoHS Compliance Statement, see HP RoHS position statement.

**Material Usage**

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c05998906):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Bis(2-Ethylhexyl) phthalate (DEHP)
- Benzyl butyl phthalate (BBP)
- Dibutyl phthalate (DBP)
- Diisobutyl phthalate (DIBP)
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

## Technical Specifications – Environmental

**Packaging Usage**

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

**End-of-life Management and Recycling**

HP offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: https://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c05403198 or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: HP Product Disassembly Instruction Website. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

**HP Inc. Corporate Environmental Information**

For more information about HP's commitment to the environment:

- Sustainable Impact Report
  - https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c06040843
- Eco-label certifications
  - https://www.hp.com/us-en/sustainable-impact/document-reports.html#filters_documents_reports-=document_type-type_energy_star,type_epeat,type_tcoISO
- ISO 14001 certificates
  - https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c04777932

**Footnotes**

2. Recycled plastic is expressed as a percentage of the total weight plastic. Post-consumer recycled is based on the definition set in the EPEAT standard for computers, IEEE 1680.1-2018 standard.
3. Recycled metal is expressed as a percentage of the total weight of the metal according to ISO 14021 definitions for metal parts over 25 grams.
4. External power supplies, WWAN modules, power cords, cables and peripherals excluded. Service parts obtained after purchase may not be Low Halogen.
5. HP paper and fiber-based packaging for PCs, displays, home and office print, and supplies is reported by suppliers as recycled or certified, with a minimum of 97% by volume verified by HP. Packaging is the box that comes with the product and all paper-based materials inside the box. Packaging for personal systems accessories and spare parts is not included. Plastic cushions are made from >90% recycled plastic.

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

## OPTIONS

| Category | Description | Part Number |
|---|---|---|
| Audio/Video | TBD | TBD |
| Cases | TBD | TBD |
| Docking | TBD | TBD |
| Hub | TBD | TBD |
| Adapter | TBD | TBD |
| Keyboard/Combo | TBD | TBD |
| Mouse | TBD | TBD |
| Power | TBD | TBD |
| Commodity | TBD | TBD |

| Date of change | Version History | | Description of change |
|---|---|---|---|
| April 4, 2025 | From v1 to v2 | Changed | ENVIRONMENTAL DATA section |
| May 16, 2025 | From v2 to v3 | Changed | Format page 1 |
| August 4, 2025 | From v3 to v4 | Changed | POWER, WEIGHT & DIMENSIONS sections |
| November 17, 2025 | From v4 to v5 | Changed | WEIGHT & DIMENSIONS section |
| November 20, 2025 | From v5 to v6 | Changed | SOFTWARE AND SECURITY, WEIGHT & DIMENSIONS sections |