## Overview

### HP EliteBook 830 G6 Notebook PC
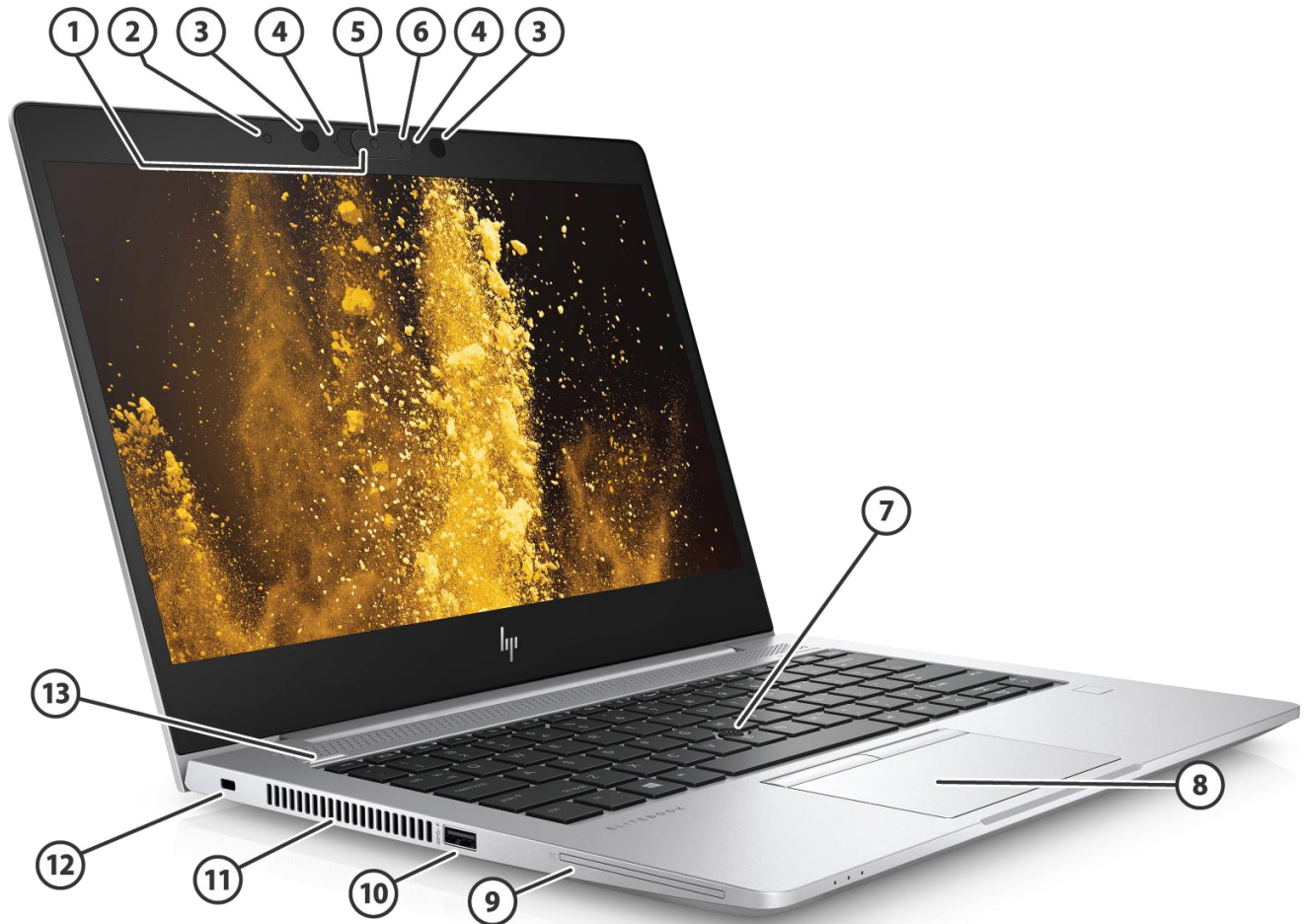


**Left**

1. HD and IR Camera (Optional)
2. Ambient Light Sensor (Optional)
3. IR Camera LEDs (Optional)
4. Internal Microphones
5. Camera Shutter
6. HD Camera LED
7. Pointstick

8. Glass Clickpad
9. Smartcard Reader (Optional)
10. USB 3.1 Gen 1 Charging Port
11. Vents
12. Standard Security Lock Slot (Lock sold separately)
13. Power Button

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 1

## Overview



**Right**

1. Power Connector
2. USB Type-C™ with Thunderbolt™
3. Docking Connector
4. Ethernet Port
5. HDMI Port (Cable not included)

6. USB 3.1 Gen 1 Port
7. Audio Combo Jack
8. SIM Card Slot[1]
9. Touch Fingerprint Sensor (Optional)

1. All units have a SIM card stray but units that do not support WWAN are shipped with a non-removable SIM slot plug

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 2

## Overview

### At a Glance

- Eye-catching Ultraslim design, premium precision-crafted machined aluminum (CNC) chassis for clean, crisp, premium look and feel
- 8th Generation Intel® Core™ i5, i7 Processors
- Preinstalled with Windows 10 versions or FreeDOS
- Designed to support all HP docking options including HP's traditional Ultraslim mechanical dock and all-new Thunderbolt dock[2]
- Featuring HP Collaboration Keyboard with Clickpad to manage most commonly used conferencing functions with a single keystroke
- Innovative world-facing third mic improves inbound ambient noise cancellation while 360 degree mic pick-up allows everyone to clearly hear and be heard
- Optional ultrabright displays with ambient light sensor
- Choice of displays:
  - 33.8 cm (13.3") diagonal FHD IPS Anti-Glare LED-backlit non-touch, 250 nits, 45% NTSC
  - 33.8 cm (13.3") diagonal FHD IPS Anti-Glare LED-backlit non-touch, 400 nits, 72% NTSC
  - 33.8 cm (13.3") diagonal FHD IPS Anti-Glare LED-backlit non-touch, 1000 nits, 72% NTSC with HP Sure View (Available 3Q 2019)
  - 33.8 cm (13.3") diagonal FHD IPS Anti-Glare On-Cell LED-backlit touch, 250 nits, 45% NTSC
  - 33.8 cm (13.3") diagonal FHD IPS Anti-Glare On-Cell LED-backlit touch, 1000 nits, 72% NTSC with HP Sure View (Available 3Q 2019)
- Enterprise grade security with HP Sure Sense[5], HP SureStart Gen5, HP Privacy Camera, HP Sure View Gen3[1], HP Sure Run Gen2, HP Sure Recover Gen2 with Embedded Reimaging[2], HP Sure Click, SmartCard Reader[2] and Touch Fingerprint reader[2]
- Ultimate connectivity with optional CAT16 4G/LTE WWAN, and Thunderbolt™ Docking (dock sold separately)
- Supports fast charging (50% in 30 minutes) with no impact on battery recharge cycles[3]
- Flexible wireless connectivity options
- Choice of solid state drives up to 2 TB and DDR4 memory up to 32 GB
- Passed 19 MIL-STD 810G tests[4]
- UMA graphics: Up to 19 hours (Intel® 8th generation CPU and 3-cell 50 WHr battery)

1. HP Sure View Gen3 integrated privacy screen is an optional feature that must be configured at purchase and is designed to function in landscape orientation.
2. Sold separately or as an optional feature
3. Recharges your battery up to 50% within 30 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/-10% due to System tolerance.
4. MIL STD 810G testing is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use.  Test results are not a guarantee of future performance under these test conditions. Accidental damage requires an optional HP Accidental Damage Protection Care Pack.
5. HP Sure Sense requires Windows 10. See product specifications for availability.

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

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 3

## Technical Specifications

### PRODUCT NAME

**HP EliteBook 830 G6 Notebook PC**

---

### OPERATING SYSTEMS

**Preinstalled**
Windows 10 Pro 64 – HP recommends Windows 10 Pro[1]
Windows 10 Pro 64 (National Academic License)[2]
Windows 10 Home 64[1]
Windows 10 Home Single Language 64[1]
Windows 10 Pro (Windows 10 Enterprise available with a Volume Licensing Agreement)[1]
FreeDOS

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

---

### PROCESSORS

Intel® Core™ i7-8665U with Intel® UHD Graphics 620 (1.9 GHz base frequency, up to 4.8 GHz with Intel® Turbo Boost Technology, 8 MB L3 cache, 4 cores) [3,4,5,6]

Intel® Core™ i7-8565U with Intel® UHD Graphics 620 (1.8 GHz base frequency, up to 4.6 GHz with Intel® Turbo Boost Technology, 8 MB L3 cache, 4 cores)[3,4,5,6]

Intel® Core™ i5-8365U with Intel® UHD Graphics 620 (1.6 GHz base frequency, up to 4.1 GHz with Intel® Turbo Boost Technology, 6 MB L3 cache, 4 cores) [3,4,5,6]

Intel® Core™ i5-8265U with Intel® UHD Graphics 620 (1.6 GHz base frequency, up to 3.9 GHz with Intel® Turbo Boost Technology, 6 MB L3 cache, 4 cores)[3,4,5,6]

Intel® Core™ i3-8145U with Intel® UHD Graphics 620 (2.1 GHz base frequency, up to 3.9 GHz with Intel® Turbo Boost Technology, 4 MB L3 cache, 2 cores)[3,4,5,6]

**Processor Family**

8th Generation Intel® Core™ i7 processor (i7-8665U and i7-8565U)[6]

8th Generation Intel® Core™ i5 processor (i5-8365U and i5-8265U)[6]

8th Generation Intel® Core™ i3 processor (i3-8145U) [6]

3. Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering, branding and/or naming is not a measurement of higher performance.
4. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
5. Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See http://www.intel.com/technology/turboboost for more information.
6. In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on http://www.support.hp.com.

## Technical Specifications

### CHIPSET

Chipset is integrated with processor

### GRAPHICS

**Integrated**
Intel® UHD Graphics 620[7]

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

7. HD content required to view HD images.
8. HDMI cable sold separately.

### DISPLAY

**Non-Touch**
33.8 cm (13.3") diagonal FHD IPS eDP anti-glare WLED-backlit slim, 250 nits, 45% NTSC (1920 x 1080)[7,9,10]
33.8 cm (13.3") diagonal FHD IPS eDP anti-glare WLED-backlit slim for HD camera, 250 nits, 45% NTSC (1920 x 1080)[7,9,10]
33.8 cm (13.3") diagonal FHD IPS eDP anti-glare WLED-backlit slim for HD+IR camera, 250 nits, 45% NTSC (1920 x 1080) [7,9,10]
33.8 cm (13.3") diagonal FHD IPS eDP anti-glare WLED-backlit slim for WWAN, 250 nits, 45% NTSC (1920 x 1080) [7,9,10]
33.8 cm (13.3") diagonal FHD IPS eDP anti-glare WLED-backlit slim for HD camera and WWAN, 250 nits, 45% NTSC (1920 x 1080) [7,9,10]
33.8 cm (13.3") diagonal FHD IPS eDP anti-glare LED-backlit slim for HD+IR camera and WWAN, 250 nits, 45% NTSC (1920 x 1080) [7,9,10]
33.8 cm (13.3") diagonal FHD IPS eDP + PSR anti-glare WLED-backlit ultraslim with Ambient Light Sensor for HD+IR camera, 400 nits, 72% NTSC (1920 x 1080) [7,9,10]
33.8 cm (13.3") diagonal FHD IPS eDP + PSR anti-glare WLED-backlit ultraslim with Ambient Light Sensor for HD+IR camera and WWAN, 400 nits, 72% NTSC (1920 x 1080) [7,9,10]
33.8 cm (13.3") diagonal FHD IPS eDP + PSR WLED-backlit ultraslim with HP Sure View Gen3 Integrated Privacy Screen, Ambient Light Sensor for HD+IR camera and WWAN, 1000 nits, 72% NTSC (1920 x 1080) [7,9,10,11] (Available 3Q 2019)

**Touch**
33.8 cm (13.3") diagonal FHD IPS eDP anti-glare on-cell WLED-backlit slim touch screen for HD+IR camera, 250 nits, 45% NTSC (1920 x 1080)[7,9,10]
33.8 cm (13.3") diagonal FHD IPS eDP anti-glare on-cell WLED-backlit slim touch screen for HD+IR camera and WWAN, 250 nits, 45% NTSC (1920 x 1080)[7,9,10]
33.8 cm (13.3") diagonal FHD IPS eDP + PSR anti-glare on-cell WLED-backlit ultraslim touch screen with HP Sure View Gen3 Integrated Privacy Screen, Ambient Light Sensor for HD+IR camera and WWAN, 1000 nits, 72% NTSC (1920 x 1080) [7,9,10,11] (Available 3Q 2019)

**HDMI 1.4b**
Supports resolution up to 4k @ 60Hz via DP and @ 30Hz via HDMI

**Displays support**
Supports 3 independent displays if used with optional HP UltraSlim Docking Station.2

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

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 5

## Technical Specifications

11. HP Sure View Gen3 integrated privacy screen is an optional feature that must be configured at purchase and is designed to function in landscape orientation.

| Docking station model | Total number of supported displays (incl. the notebook) display) | Max. resolutions supported | Dock Connectors | Technical limitations |
|---|---|---|---|---|
| HP UltraSlim Docking Station (Quest) | 3 | Dual 2.5K @ 60Hz | 2xDP, 1xVGA | Dual 2.5k only with both displays intoDP |
| HP Thunderbolt Dock G2 | 3 | Dual 4K @ 60Hz | 2xDP, 1xVGA, 1xTB, 1xUSB-C alt-mode | Dual 4k (4096 x 2160) only with: • 1 DP + TB port or • USB-C alt mode + TB port<br><br>Dual 4K (3840 x 2160) with any of the DP, TB or USB-C alt mode video ports |
| HP Elite USB-C Dock G4 | 3 | Dual 2K @ 60Hz Single 4K @ 60Hz (3840 x 1440) | 1xHDMI, 2xDP | |
| HP USB-C Universal Dock | 3 | Dual 4K @ 60Hz Single 5K @ 60Hz | 2xDP | |
| HP USB-C Travel Dock | 2 | Single 2K @ 60Hz | 1xHDMI, 1xVGA | Single external display Only HDMI or VGA at the time |

## STORAGE AND DRIVES

**Primary Storage**
128 GB SATA-3 SS TLC[12]
256 GB PCIe NVMe Value SS TLC[12]
256 GB PCIe Gen3x4 NVMe SS TLC[12]
256 GB SATA-3 SS TLC Opal 2[12]
512 GB PCIe NVMe Value[12]
512 GB PCIe Gen3x4 NVMe SS TLC[12]
512 GB Intel® PCIe® NVMe™ QLC + 32 GB Intel® Optane™ (Memory Planned to be available Q3 2019)[12]
512 GB PCIe Gen3x4 NVMe SS TLC Opal 2[12]
512 GB SATA-3 SS TLC FIPS-140-2[12]
1 TB PCIe Gen3x4 NVMe SS TLC[12]
2 TB PCIe Gen3x4 NVMe SS TLC[12]

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

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 6

## Technical Specifications

### MEMORY

**Maximum Memory**
32 GB DDR4-2400 SDRAM[13]

**Memory**
32 GB DDR4-2400 SDRAM (2 X 16 GB)[13]
16 GB DDR4-2400 SDRAM (1 X 16 GB) [13]
16 GB DDR4-2400 SDRAM (2 X 8 GB)[13]
8 GB DDR4-2400 SDRAM (1 x 8 GB)[13]
8 GB DDR4-2400 SDRAM (2 x 4 GB)[13]
4 GB DDR4-2400 SDRAM (1 x 4 GB)[13]

**Memory Slots**
2 SODIMM
Both slots are customer accessible / upgradeable
DDR4 SODIMMS, system runs at 2400
Supports Dual Channel Memory

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

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 7

## Technical Specifications

### NETWORKING/COMMUNICATIONS

#### WLAN
Intel® Dual Band Wireless-AC 9560 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5 Combo, vPro™[14]
Intel® Dual Band Wireless-AC 9560 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5 Combo, non-vPro™[14]
Intel® Wi-Fi 6 AX200 802.11a/b/g/n/ac/ax (2x2) and Bluetooth® 5 Combo, vPro™[15]
Intel® Wi-Fi 6 AX200 802.11a/b/g/n/ac/ax (2x2) Bluetooth® 5 Combo, non-vPro™[15]

#### WWAN
Intel® XMM™ 7360 LTE-Advanced Cat 9[16]
Intel® XMM™ 7560 LTE-Advanced Pro Cat 16[17]
Intel® XMM™ 7262 LTE-Advanced Cat 6[16]

#### NFC
NPC300 Near Field Communication module

#### Miracast
Native Miracast Support[18]

#### Ethernet
Intel® I219-LM 10/100/1000 GbE, vPro™[19]
Intel® I219-V 10/100/1000 GbE, non-vPro™[19]

14. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.
15. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ax devices.
16. WWAN module is an optional feature, requires factory configuration and requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.
17. Gigabit class Category 16 4G LTE module is optional and must be configured at the factory. Module designed for up to 1 Gbps download speeds as carriers deploy 5 carrier aggregation and 100Mhz channel bandwidth, requires activation and separately purchased service contract. Backwards compatible to HSPA 3G technologies. Check with service provider for coverage and availability in your area. Connection, upload and download speeds will vary due to network, location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.
18. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.
19. The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 8

## Technical Specifications

### AUDIO/MULTIMEDIA

#### Audio
Audio by Bang & Olufsen
2 Integrated stereo speakers
Integrated 3 Multi Array Microphone

#### Camera
720p HD camera[7,9]
720p HD IR camera[7,9]

#### Sensors
Ambient light sensor (Select models only)

7. HD content required to view HD images.
9. Sold separately or as an optional feature.

### KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

#### Keyboard
HP Premium Collaboration Keyboard, backlit and spill resistant with drain
Backlit keyboard available as an option

#### Pointing Device
Clickpad with multi-touch gestures enabled, taps enabled as default
Microsoft Precision Touchpad Default Gestures Support

#### Function Keys
F1 - Display Switching
F2 - Blank or Privacy
F3 - Brightness Down
F4 - Brightness Up
F5 - Audio Mute
F6 - Volume Down
F7 - Volume Up
F8 - Mic Mute
F9 - Blank or Backlit Toggle
F10 - numlk
F11 - Wireless
F12 – Calendar
Share/Present
Call Answer
Call End

#### Hidden Function Keys
Fn+R - Break
Fn+S - Sys Rq
Fn+C - Scroll Lock
Fn+E - Insert
Fn+W - Pause

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 9

## Technical Specifications

### SOFTWARE AND SECURITY

**Preinstalled Software**

**BIOS**
HP BIOSphere Gen5[20]
HP Drive Lock & Automatic Drive Lock[21]
BIOS Update via Network
Master Boot Record Security
Power On Authentication
Secure Erase[22]
Absolute Persistence Module[23]
Pre-boot Authentication

**Software**
HP Native Miracast Support[24]
HP Connection Optimizer
HP Image Assistant
HP Hotkey Support
HP JumpStart
HP Support Assistant[25]
HP Noise Cancellation Software
Buy Office (sold separately)

**Manageability Features**
HP Driver Packs[26]
HP System Software Manager (SSM)
HP BIOS Config Utility (BCU)
HP Client Catalog
HP Manageability Integration Kit Gen3[27]
Ivanti Management Suite
HP Cloud Recovery[28]

**Client Security Software**
HP Client Security Manager Gen5[29]
HP Fingerprint Sensor[30]
HP Power On Authentication
Windows Defender[31]

**Security Management**
Pre-boot Authentication
TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified)
SATA 0,1 port disablement (via BIOS)
Serial, USB enable/disable (via BIOS)
Power-on password (via BIOS)
Setup password (via BIOS)
Support for chassis padlocks and cable lock devices
HP Sure Click[32]
HP Sure Start Gen5[33]
HP Sure Run Gen2[34]
HP Sure Recover Gen2[35]
HP Sure Sense[36]

**TPM**
Model: Infineon SLB9670
Version: 7.85

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 10

## Technical Specifications

Revision: TPM 2.0
FIPS 140-2 Compliant: Yes

**Smartcard Reader**
Model number: Alcor AU9560
FIPS 201 Compliant: Yes

**IPv6 Certification:**
Yes

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

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

Graphics (Intel Video Driver): TBD
WWAN: TBD
WLAN: TBD

**Is the BIOS on this notebook ISO/IEC 19678:2015 (formerly NIST 800-147) compliant?:**
Yes
UEFI version: 2.6

20. HP BIOSphere Gen5 is available on select HP Pro and Elite PCs. See product specifications for details. Features may vary depending on the platform and configurations.

21. HP Automatic Drive Lock is not supported on NVMe drives.

22. HP Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method.   HP Secure Erase does not support platforms with Intel® Optane™.

23. Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit:

http://www.absolute.com/company/legal/agreements/ computrace-agreement. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.

24. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.

25. HP Support Assistant requires Windows and Internet access.

26. HP Driver Packs not preinstalled, however available for download at http://www.hp.com/go/clientmanagement.

27. HP Manageability Integration Kit can be downloaded from http://www.hp.com/go/clientmanagement.

28. HP Cloud Recovery is available for HP Elite and Pro desktops and laptops PCs with Intel® or AMD processors and requires an open, wired network connection. Note: You must back up important files, data, photos, videos, etc. before use to avoid loss of data. Detail please refer to: https://support.hp.com/us-en/document/c05115630

29. HP Client Security Manager Gen5 requires Windows and is available on the select HP Pro and Elite PCs. See product specifications for details.

30. HP Fingerprint Sensor sold separately or as an optional feature.

31. Windows Defender Opt in and internet connection required for updates.

32. HP Sure Click is available on select HP platforms and supports Microsoft Internet Explorer, Google Chrome™, and Chromium™. Supported attachments include Microsoft Office (Word, Excel, PowerPoint) and PDF files in read only mode, when Microsoft Office or Adobe Acrobat are installed.

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 11

## Technical Specifications

33. HP Sure Start Gen5 is available on select HP PCs with Intel processors. See product specifications for availability.

34. HP Sure Run Gen2:  See product specifications for availability.

35. HP Sure Recover Gen2: See product specifications for availability. Requires an open, wired network connection. Not available on platforms with multiple internal storage drives. You must back up important files, data, photos, videos, etc. before using HP Sure Recover to avoid loss of data.  HP Sure Recover (Gen1) does not support platforms with Intel® Optane™.

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

### POWER

**Power Supply**
HP Smart 45 W External AC power adapter[37]
HP Smart 45 W External AC power adapter, 2-prong (Japan only)[37]
HP Smart 65 W External AC power adapter[37]
HP Smart 65 W EM External AC power adapter[37]
45 W USB Type-C™ adapter[37]
65 W USB Type-C™ adapter[37]

**Primary Battery**
HP Long Life 3-cell, 50 Wh Li-ion[38]

**Battery Life**
UMA graphics: Up to 19 hours (Intel® 8th generation CPU and 3-cell 50 WHr battery)[39]

**Power Cord**
2-wire plug - 1m[37]
3-wire plug - 1m[37]
3-wire plug - 1.8m[37]
Duckhead power cord - 1.0m[37]
Duckhead power cord - 1.8m[37]

**Battery Weight**
193 +/- 10g

37. Availability may vary by country.

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

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

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 12

## Technical Specifications

### WEIGHTS & DIMENSIONS

**Product Weight**
Starting at 2.94 lb (non-touch); Starting at 3.18 lb (touch)[40]
Starting at 1.33 kg (non-touch); Starting at 1.44 kg (touch)[40]

**Product Dimensions (W x D x H)**
**Non-Touch**
12.22 x 9.03 x 0.7 in
31.04 x 22.93 x 1.77 cm

**Touch**
12.22 x 9.03 x 0.7 in
31.04 x 22.93 x 1.78 cm

40. Weight will vary by configuration.

### PORTS/SLOTS

1 Thunderbolt™ (USB Type-C™ connector)
2 USB 3.1 Gen 1 (1 charging)
1 docking connector
1 HDMI 1.4[8]
1 RJ-45
1 AC power
1 Headphone/microphone combo jack
1 SIM card slot[41]
1 Smartcard reader (Optional)
Standard Security Lock Slot (Lock sold separately)

8. HDMI cable sold separately.
41. All units have a SIM card slot and icon but units that do not support WWAN are shipped with a non-removable SIM slot plug

### SERVICE AND SUPPORT

HP Services offers 1-year limited warranties and 90 day software limited warranty options depending on country. Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform. 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.[42]

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

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 13

# QuickSpecs

## Technical Specifications

### SYSTEM UNIT

| | | |
|---|---|---|
| **Stand-Alone Power Requirements (AC Power)** | **Nominal Operating Voltage** | 19 V |
| | **Average Operating Power** | Win10 |
| | **Integrated Graphics** | 6.78W |
| | **Max Operating Power** | UMA < 45W |
| **Temperature** | **Operating** | 32° to 95° F (0° to 35° C) |
| | **Non-operating** | -4° to 140° F (-20° to 60° C) |
| **Relative Humidity** | **Operating** | 10% to 90%, non-condensing |
| | **Non-operating** | 5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature |
| **Shock** | **Operating** | 40 G, 2 ms, half-sine |
| | **Non-operating** | 200 G, 2 ms, half-sine |
| **Random Vibration** | **Operating** | 0.75 grms |
| | **Non-operating** | 1.50 grms |
| **Altitude (unpressurized)** | **Operating** | -50 to 10,000 ft (-15.24 to 3,048 m) |
| | **Non-operating** | -50 to 40,000 ft (-15.24 to 12,192 m) |
| **Planned Industry Standard Certifications** | **UL** | Yes |
| | **CSA** | Yes |
| | **FCC Compliance** | Yes |
| | **ENERGY STAR® qualified** | Select models[43] |
| | **EPEAT® 2019** | Yes, Silver in U.S.[44] |
| | **ICES** | Yes |
| | **Australia** | Yes |
| | **NZ A-Tick Compliance** | Yes |
| | **CCC** | Yes |
| | **Japan VCCI Compliance** | Yes |
| | **KC** | Yes |
| | **BSMI** | Yes |
| | **CE Marking Compliance** | Yes |
| | **BNCI or BELUS** | Yes |
| | **CIT** | Yes |
| | **GOST** | Yes |
| | **Saudi Arabian Compliance (ICCP)** | Yes |
| | **SABS** | Yes |

43. Configurations of the HP Elitebook 830 G6 that are ENERGY STAR® certified are identified as HP Elitebook 830 G6 ENERGY STAR on HP websites and on http://www.energystar.gov.
44. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit http://www.epeat.net for more information.

# QuickSpecs

## Technical Specifications

### ENVIRONMENTAL & INDUSTRY

<table>
<tr><td rowspan="2"><strong>Environmental Data</strong></td><td><strong>Eco-Label Certifications & declarations</strong></td><td>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:<br><ul><li>IT ECO declaration</li><li>US ENERGY STAR®</li><li>US Federal Energy Management Program (FEMP)</li><li>Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit http://www.epeat.net for more information.</li><li>TCO 8.0</li><li>China Energy Conservation Program (CECP)</li><li>China State Environmental Protection Administration (SEPA)</li><li>Taiwan Green Mark</li><li>Korea Eco-label</li><li>Japan PC Green label*</li></ul></td></tr>
<tr><td><strong>System Configuration</strong></td><td>The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a "Typically Configured Notebook".</td></tr>
</table>

| **Energy Consumption (in accordance with US ENERGY STAR® test method)** | **115VAC, 60Hz** | **230VAC, 50Hz** | **100VAC, 50Hz** |
|---|---|---|---|
| Normal Operation (Short idle) | 5.04 W | 4.88 W | 5.04 W |
| Normal Operation (Long idle) | 3.70 W | 3.37 W | 3.40 W |
| Sleep | 0.90 W | 0.89 W | 0.91 W |
| Off | 0.37 W | 0.36 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.

| **Heat Dissipation*** | **115VAC, 60Hz** | **230VAC, 50Hz** | **100VAC, 50Hz** |
|---|---|---|---|
| Normal Operation (Short idle) | 17 BTU/hr | 16 BTU/hr | 17 BTU/hr |
| Normal Operation (Long idle) | 12 BTU/hr | 11 BTU/hr | 11 BTU/hr |
| Sleep | 3 BTU/hr | 3 BTU/hr | 3 BTU/hr |
| Off | 1 BTU/hr | 1 BTU/hr | 1 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 | 2.5 | 14.5 |

## Technical Specifications

| | | | |
|---|---|---|---|
| Fixed Disk – Random writes | 2.7 | 17.6 | |
| Optical Drive – Sequential reads | 3.4 | 27.7 | |

| | |
|---|---|
| **Longevity and Upgrading** | This product can be upgraded, possibly extending its useful life by several years.  Upgradeable features and/or components contained in the product may include:<br>• 3 USB ports<br>• 1 PC card slot (type I/II)<br>• 1 ExpressCard/54 slot<br>• 1 IEEE 1394 Port<br>• 2 SODIMM memory slots<br>• Optional expansion base docking station<br>• 1 multi-bay II storage port<br>• Interchangeable HDD<br><br>Spare parts are available throughout the warranty period and or for up to "5" years after the end of production. |
| **Batteries** | This battery(s) in this product comply with EU Directive 2006/66/EC<br><br>Batteries used in the product do not contain:<br>Mercury greater the1ppm by weight<br>Cadmium greater than 20ppm by weight<br><br>Battery description: BCR1620 (coin cell)<br>Battery type: Lithium<br>Battery description:  6-cell high capacity Lithium-Ion battery (optional 8 cell available) |
| **Additional Information** | • This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.<br>• This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.<br>• This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).<br>• This product is in compliance with the IEEE 1680.1 (EPEAT) standard at the Silver level, see http://www.epeat.net<br>• Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.<br>• This product contains 6.14% post-consumer recycled plastic (by wt.) according to IEEE 1680.1-2018 standard, criterion 4.2.1.1.<br>• This product is 96.0% recycle-able when properly disposed of at end of life. |

| **Packaging Materials** | **External:** | PAPER/Corrugated | 261 g |
|---|---|---|---|
| | **Internal:** | PLASTIC/EPE (Expanded Polyethylene) | 63 g |
| | | PLASTIC/Polyethylene low density | 14 g |
| | | PLASTIC/PP | 3 g |
| | The plastic packaging material contains at least 50% recycled content. | | |
| | The corrugated paper packaging materials contains at least 75% recycled content. | | |

| | |
|---|---|
| **RoHS Compliance** | HP Inc. complies fully with materials regulations. We were among the first companies to extend the restrictions in the European Union (EU) Restriction of Hazardous Substances (RoHS) Directive to our products worldwide through the |

Not all configuration components are available in all regions/countries.

c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 16

## Technical Specifications

| | | |
|---|---|---|
| | | HP GSE. HP has contributed to the development of related legislation in Europe, as well as China, India, and Vietnam. <br><br> 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. <br><br> 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. <br><br> To obtain a copy of the HP RoHS Compliance Statement, see HP RoHS position statement. |
| | **Material Usage** | This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf): <br><br> • Asbestos <br> • Certain Azo Colorants <br> • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics <br> • Cadmium <br> • Chlorinated Hydrocarbons <br> • Chlorinated Paraffins <br> • Formaldehyde <br> • Halogenated Diphenyl Methanes <br> • Lead carbonates and sulfates <br> • Lead and Lead compounds <br> • Mercuric Oxide Batteries <br> • Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user. <br> • Ozone Depleting Substances <br> • Polybrominated Biphenyls (PBBs) <br> • Polybrominated Biphenyl Ethers (PBBEs) <br> • Polybrominated Biphenyl Oxides (PBBOs) <br> • Polychlorinated Biphenyl (PCB) <br> • Polychlorinated Terphenyls (PCT) <br> • Polyvinyl Chloride (PVC) – except for wires and cables, has been voluntarily removed from most applications. <br> • Radioactive Substances <br> • Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO) |
| | **Packaging Usage** | HP follows these guidelines to decrease the environmental impact of product packaging: <br><br> • Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials. <br><br> • Eliminate the use of ozone-depleting substances (ODS) in packaging materials. <br><br> • Design packaging materials for ease of disassembly. <br><br> • Maximize the use of post-consumer recycled content materials in packaging materials. <br><br> • Use readily recyclable packaging materials such as paper and corrugated materials. |

Not all configuration components are available in all regions/countries.

c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 17

## Technical Specifications

| | | |
|---|---|---|
| | | • Reduce size and weight of packages to improve transportation fuel efficiency.<br>• Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards. |
| | **End-of-life Management and Recycling** | Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.<br><br>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities.  This information (product disassembly instructions) is posted on the Hewlett Packard web site at:  http://www.hp.com/go/recyclers.  These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment. |
| | **HP, Inc. Corporate Environmental Information** | For more information about HP's commitment to the environment:<br><br>Global Citizenship Report<br>        http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html<br>Eco-label certifications<br>        http://www8.hp.com/us/en/hp-information/environment/ecolabels.html<br>ISO 14001 certificates:<br>http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842<br>http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf |

## DISPLAYS

**Panel LCD 13.3 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45 percent cg 250 nits eDP 1.2 w/o PSR slim**

| | |
|---|---|
| **Outline Dimensions (W x H x D)** | 300.56 x 187.77 mm (max) (w/ PCB & w/o bracket) |
| **Active Area** | 293.76 x 165.24 mm (typ.) |
| **Weight** | 260 g (max) |
| **Diagonal Size** | 13.3 inch |
| **Thickness** | 3.0 mm (max) |
| **Interface** | eDP 1.2 (2 lane) |
| **Surface Treatment** | Anti-Glare |
| **Touch Enabled** | No |
| **Contrast Ratio** | 600:1 (typ.) |
| **Refresh Rate** | 60 Hz |
| **Brightness** | 250 nits (typ.) |
| **Pixel Resolution** | 1920 x 1080 (FHD) |
| **Format** | NTSC |
| **Backlight** | LED |
| **Color Gamut Coverage** | 45% |
| **Color Depth** | 6 bits |
| **Viewing Angle** | UWVA 85/85/85/85 |

Not all configuration components are available in all regions/countries.

c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 18

## Technical Specifications

**Panel LCD 13.3 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45 percent cg 250 nits eDP slim On-cell Touch**

| | |
|---|---|
| **Outline Dimensions (W x H x D)** | 300.56 x 187.77 |
| **Active Area** | 293.76 x 165.24 mm (typ.) |
| **Weight** | 268 g (max) |
| **Diagonal Size** | 13.3 inch |
| **Thickness** | 3.2 mm (max) |
| **Interface** | eDP 1.2 |
| **Surface Treatment** | Anti-Glare On-cell |
| **Touch Enabled** | Yes |
| **Contrast Ratio** | 600:1 (typ.) |
| **Refresh Rate** | 60 Hz |
| **Brightness** | 250 nits |
| **Pixel Resolution** | 1920 x 1080 (FHD) |
| **Format** | NTSC |
| **Backlight** | LED |
| **Color Gamut Coverage** | 45% |
| **Color Depth** | 6 bits |
| **Viewing Angle** | UWVA 85/85/85/85 |

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 19

# QuickSpecs

---

## Technical Specifications

**Panel LCD 13.3 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 72 percent cg 400 nits eDP 1.4+PSR2 Slim**

| | |
|---|---|
| **Outline Dimensions (W x H x D)** | 299.06 x 185.54 mm (max) |
| **Active Area** | 293.76 x 165.24 mm (typ.) |
| **Weight** | 170 g (max) |
| **Diagonal Size** | 13.3 inch |
| **Thickness** | 2.0 mm (max) |
| **Interface** | eDP 1.4 + PSR2 (2 lane) |
| **Surface Treatment** | Anti-Glare |
| **Touch Enabled** | No |
| **Contrast Ratio** | 1200:1 (typ.) |
| **Refresh Rate** | 60 Hz |
| **Brightness** | 400 nits |
| **Pixel Resolution** | 1920 x 1080 (FHD) |
| **Format** | NTSC |
| **Backlight** | LED |
| **Color Gamut Coverage** | 72% |
| **Color Depth** | 8 bits |
| **Viewing Angle** | UWVA 85/85/85/85 |

---

**Panel LCD 13.3 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 72 percent cg 1000 nits eDP 1.4+PSR2 flat Privacy**

| | |
|---|---|
| **Outline Dimensions (W x H x D)** | 315.31 x 195.498 mm (max) |
| **Active Area** | 309.312 x 173.988 mm (typ.) |
| **Weight** | 265 g (max) |
| **Diagonal Size** | 13.3 inch |
| **Thickness** | 3.0 mm (max) |
| **Interface** | eDP 1.4 + PSR2 (4 lane) |
| **Surface Treatment** | Anti-Glare |
| **Touch Enabled** | No |
| **Contrast Ratio** | 2000:1 (typ.) |
| **Refresh Rate** | 60 Hz |
| **Brightness** | 1000 nits |
| **Pixel Resolution** | 1920 x 1080 (FHD) |
| **Format** | RGB |
| **Backlight** | LED |
| **Color Gamut Coverage** | 72% |
| **Color Depth** | 8 bits |
| **Viewing Angle** | UWVA 85/85/85/85 |

---

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 20

# QuickSpecs

## Technical Specifications

| Panel LCD 13.3 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 72 percent cg 1000 nits eDP+PSR flat On-cell Touch Privacy | | |
|---|---|
| **Outline Dimensions (W x H x D)** | 299.06 x 186.54 mm (max) |
| **Active Area** | 293.76 x 165.24 mm (typ.) |
| **Weight** | 260 g (max) |
| **Diagonal Size** | 13.3 inch |
| **Thickness** | 3.2 mm (max) |
| **Interface** | eDP 1.4 + PSR2 (4 lane) |
| **Surface Treatment** | Anti-Glare On-cell |
| **Touch Enabled** | YES |
| **Contrast Ratio** | 2000:1 (typ.) |
| **Refresh Rate** | 60 Hz |
| **Brightness** | 1000 nits |
| **Pixel Resolution** | 1920 x 1080 (FHD) |
| **Format** | RGB |
| **Backlight** | LED |
| **Color Gamut Coverage** | 72% |
| **Color Depth** | 8 bits |
| **Viewing Angle** | UWVA 85/85/85/85 |

## STORAGE AND DRIVES

| SSD 128 GB 2280 M2 SATA-3 TLC | |
|---|---|
| **Form Factor** | M.2 2280 |
| **Capacity** | 128 GB |
| **NAND Type** | TLC |
| **Height** | 0.09 in (2.3 mm) |
| **Width** | 0.87 in (22 mm) |
| **Weight** | 0.02 lb (10 g) |
| **Interface** | ATA-8, SATA 3.0 |
| **Maximum Sequential Read** | Around 540 ~ 560 MB/s |
| **Maximum Sequential Write** | Around 380 ~ 530 MB/s |
| **Logical Blocks** | 250,069,680 |
| **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| **Features** | ATA Security; DIPM; TRIM; DEVSLP |

| SSD 1 TB 2280 PCIe-3x4 NVMe Three Layer Cell single-sided | |
|---|---|
| **Form Factor** | M.2 2280 |
| **Capacity** | 1 TB |
| **NAND Type** | TLC |
| **Height** | 0.09 in (2.3 mm) |
| **Width** | 0.87 in (22 mm) |
| **Weight** | 0.02 lb (10 g) |
| **Interface** | PCIe NVMe Gen3X4 |

# QuickSpecs

## Technical Specifications

| | | |
|---|---|---|
| | **Maximum Sequential Read** | Around 3200 ~ 3480 MB/s |
| | **Maximum Sequential Write** | Around 2400 ~ 3037 MB/s |
| | **Logical Blocks** | 2,000,409,264 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Features** | ATA Security; TRIM; L1.2 |
| **SSD 256 GB 2280 M2 PCIe-3x4 SS NVMe TLC** | **Form Factor** | M.2 2280 |
| | **Capacity** | 256 GB |
| | **NAND Type** | TLC |
| | **Height** | 0.09 in (2.3 mm) |
| | **Width** | 0.87 in (22 mm) |
| | **Weight** | 0.02 lb (10 g) |
| | **Interface** | PCIe NVMe Gen3X4 |
| | **Maximum Sequential Read** | Around 2900 ~ 3167 MB/s |
| | **Maximum Sequential Write** | Around 1300 ~ 1663 MB/s |
| | **Logical Blocks** | 500,118,192 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Features** | ATA Security; TRIM; L1.2 |
| **SSD 256 GB 2280 M2 SATA-3 Self Encrypted OPAL2 Three Layer Cell** | **Form Factor** | M.2 2280 |
| | **Capacity** | 256 GB |
| | **NAND Type** | TLC |
| | **Height** | 0.09 in (2.3 mm) |
| | **Width** | 0.87 in (22 mm) |
| | **Weight** | 0.02 lb (10 g) |
| | **Interface** | ATA-8, SATA 3.0 |
| | **Maximum Sequential Read** | Around 530 ~ 560 MB/s |
| | **Maximum Sequential Write** | Around 500 ~ 530 MB/s |
| | **Logical Blocks** | 500,118,192 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Features** | ATA Security; TCG OPAL 2.0; DIPM; TRIM; DEVSLP |
| **SSD 256 GB 2280 PCIe NVMe Value** | **Form Factor** | M.2 2280 |
| | **Capacity** | 256 GB |
| | **NAND Type** | TLC |
| | **Height** | 0.09 in (2.3 mm) |
| | **Width** | 0.87 in (22 mm) |
| | **Weight** | 0.02 lb (10 g) |
| | **Interface** | PCIe NVMe Gen3X4 |
| | **Maximum Sequential Read** | Around 1500 ~ 1700 MB/s |

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 22

# QuickSpecs

## Technical Specifications

|  |  |  |
| --- | --- | --- |
|  | **Maximum Sequential Write** | Around 780 ~ 1300 MB/s |
|  | **Logical Blocks** | 500,118,192 |
|  | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
|  | **Features** | ATA Security; TRIM; L1.2 |

| | | |
| --- | --- | --- |
| **2 TB 2280 PCIe-3x4 NVMe Three Layer Cell single-sided** | **Form Factor** | M.2 2280 |
| | **Capacity** | 2 TB |
| | **NAND Type** | TLC |
| | **Height** | 0.09 in (2.3 mm) |
| | **Width** | 0.87 in (22 mm) |
| | **Weight** | 0.02 lb (10 g) |
| | **Interface** | PCIe NVMe Gen3X4 |
| | **Maximum Sequential Read** | Around 2900 ~ 3000 MB/s |
| | **Maximum Sequential Write** | Around 2100 MB/s |
| | **Logical Blocks** | 3,907,029,168 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Features** | ATA Security; TRIM; L1.2 |

| | | |
| --- | --- | --- |
| **SSD 512 GB 2280 M2 PCIe-3x4 SS NVMe TLC** | **Form Factor** | M.2 2280 |
| | **Capacity** | 512 GB |
| | **NAND Type** | TLC |
| | **Height** | 0.09 in (2.3 mm) |
| | **Width** | 0.87 in (22 mm) |
| | **Weight** | 0.02 lb (10 g) |
| | **Interface** | PCIe NVMe Gen3X4 |
| | **Maximum Sequential Read** | Around 2700 ~ 3400 MB/s |
| | **Maximum Sequential Write** | Around 1390 ~ 2956 MB/s |
| | **Logical Blocks** | 1,000,215,215 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Features** | ATA Security; TRIM; L1.2 |

| | | |
| --- | --- | --- |
| **SSD 512 GB 2280 M2 SATA-3 Three Layer Cell Federal Information Processing Standard** | **Form Factor** | M.2 2280 |
| | **Capacity** | 512 GB |
| | **NAND Type** | TLC |
| | **Height** | 2.6 mm Max |
| | **Width** | 0.87 in (22 mm) |
| | **Weight** | 0.02 lb (10 g) |
| | **Interface** | ACS-3, SATA 3.2 |
| | **Maximum Sequential Read** | Around 530 MB/s |
| | **Maximum Sequential Write** | Around 400 MB/s |

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 23

# QuickSpecs

## Technical Specifications

| | | |
|---|---|---|
| | **Logical Blocks** | 1,000,215,216 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Features** | ATA Security; TCG Opal 2.0; FIPS; DIPM; TRIM; DEVSLP |

| | | |
|---|---|---|
| **SSD 512 GB 2280 PCIe NVMe Value** | **Form Factor** | M.2 2280 |
| | **Capacity** | 512 GB |
| | **NAND Type** | TLC/QLC |
| | **Height** | 0.09 in (2.3 mm) |
| | **Width** | 0.87 in (22 mm) |
| | **Weight** | 0.02 lb (10 g) |
| | **Interface** | PCIe NVMe Gen3X4 |
| | **Maximum Sequential Read** | Around 1500 ~ 1700 MB/s |
| | **Maximum Sequential Write** | Around 860 ~ 1500 MB/s |
| | **Logical Blocks** | 1,000,215,215 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Features** | ATA Security; TRIM; L1.2 |

| | | |
|---|---|---|
| **SSD 512 GB 2280 PCIe-3x4 NVMe Self Encrypted OPAL2 Three Layer Cell** | **Form Factor** | M.2 2280 |
| | **Capacity** | 512 GB |
| | **NAND Type** | TLC |
| | **Height** | 0.09 in (2.3 mm) |
| | **Width** | 0.87 in (22 mm) |
| | **Weight** | 0.02 lb (10 g) |
| | **Interface** | PCIe NVMe Gen3X4 |
| | **Maximum Sequential Read** | Around 2900 ~ 3400 MB/s |
| | **Maximum Sequential Write** | Around 1000 ~ 2500 MB/s |
| | **Logical Blocks** | 1,000,215,216 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Features** | ATA Security; TCG Opal 2.0; FIPS; DIPM; TRIM; DEVSLP |

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 24

# QuickSpecs

## Technical Specifications

### NETWORKING/COMMUNICATIONS

**Intel® 9560**
**802.11a/b/g/n/ac (2x2)**
**Wi-Fi® and Bluetooth® 5.0**
**Combo[1] vPro**

| | |
|---|---|
| **Wireless LAN Standards** | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n<br>IEEE 802.11ac |
| **Interoperability** | Wi-Fi® certified |
| **Frequency Band** | **802.11b/g/n**<br>•2.402 – 2.482 GHz<br>**802.11a/n**<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 |
| **Data Rates** | •802.11b: 1, 2, 5.5, 11 Mbps<br>•802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>•802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>•802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)<br>•802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz & 160MHz) |
| **Modulation** | Direct Sequence Spread Spectrum<br>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM |
| **Security[3]** | •IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only<br>•AES-CCMP: 128 bit in hardware<br>•802.1x authentication<br>•WPA, WPA2:  802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>•WPA2 certification<br>•IEEE 802.11i<br>•Cisco Certified Extensions, all versions through CCX4 and CCX Lite<br>•WAPI |
| **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: +18.5dBm minimum<br>•802.11g: +17.5dBm minimum<br>•802.11a: +18.5dBm minimum<br>•802.11n HT20(2.4GHz): +15.5dBm minimum<br>•802.11n HT40(2.4GHz): +14.5dBm minimum<br>•802.11n HT20(5GHz): +15.5dBm minimum<br>•802.11n HT40(5GHz): +14.5dBm minimum<br>•802.11ac VHT80(5GHz): +11.5dBm minimum<br>•802.11ac VHT160(5GHz): +11.5dBm 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 10mW<br>•Radio disabled 8 mW |

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 25

# QuickSpecs

## Technical Specifications

| | |
|---|---|
| **Power Management** | ACPI and PCI Express compliant power management<br>802.11 compliant power saving mode |
| **Receiver Sensitivity** [3] | 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: -84dBm maximum<br>802.11ac, MCS9: -59dBm maximum |
| **Antenna type** | High efficiency antenna with spatial diversity, mounted in the display enclosure<br>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications |
| **Form Factor** | PCI-Express M.2 MiniCard |
| **Dimensions** | Type 2230: 2.3 x 22.0 x 30.0 mm |
| **Weight** | Type 2230: 2.8g |
| **Operating Voltage** | 3.3v +/- 9% |

| | | |
|---|---|---|
| **Temperature** | Operating | 14° to 158° F (–10° to 70° C) |
| | Non-operating | –40° to 176° F (–40° to 80° C) |
| **Humidity** | Operating | 10% to 90% (non-condensing) |
| | Non-operating | 5% to 95% (non-condensing) |
| **Altitude** | Operating | 0 to 10,000 ft (3,048 m) |
| | Non-operating | 0 to 50,000 ft (15,240 m) |
| **LED Activity** | LED Amber – Radio OFF; LED White – Radio ON | |

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

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

| | |
|---|---|
| **Bluetooth Specification** | 4.0/4.1/4.2/5.0 Compliant |
| **Frequency Band** | 2402 to 2480 MHz |
| **Number of Available Channels** | Legacy: 0~79 (1 MHz/CH)<br>BLE: 0~39 (2 MHz/CH) |
| **Signaling Data Rate** | Legacy: 3 Mbps signaling data rate[1] 2.17 Mbps<br>BLE: 1 Mbps signaling data rate[1] 0.2 Mbps<br>1. Actual throughput may vary.<br><br>Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels<br><br>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 |

Not all configuration components are available in all regions/countries.

c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 26

# QuickSpecs

## Technical Specifications

|  |  |
|---|---|
|  | Selective Suspend 17 mW |
| **Electrical Interface** | USB 2.0 compliant |
| **Bluetooth Software Supported Link Topology** | Microsoft Windows Bluetooth Software |
| **Power Management** | Microsoft Windows ACPI, and USB Bus Support |
| **Certifications** | FCC (47 CFR) Part 15C, Section 15.247 & 15.249 |
| **Power Management Certifications** | ETS 300 328, ETS 300 826<br>Low Voltage Directive IEC950<br>UL, CSA, and CE Mark |
| **Bluetooth Profiles Supported** | BT4.1-ESR 5/6/7 Compliance<br>LE Link Layer Ping<br>LE Dual Mode<br>LE Link Layer<br>LE Low Duty Cycle Directed Advertising<br>LE L2CAP Connection Oriented Channels<br>Train Nudging & Interlaced Scan<br>BT4.2 ESR08 Compliance<br>LE Secure Connection- Basic/Full<br>LE Privacy 1.2 –Link Layer Privacy<br>LE Privacy 1.2 –Extended Scanner Filter Policies<br>LE Data Packet Length Extension<br>FAX Profile (FAX)<br>Basic Imaging Profile (BIP)2<br>Headset Profile (HSP)<br>Hands Free Profile (HFP)<br>Advanced Audio Distribution Profile (A2DP) |
| **Security & Manageability** | Intel® vPro™ support with appropriate Intel® chipset components |

Not all configuration components are available in all regions/countries.

c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 27

# QuickSpecs

## Technical Specifications

| | | |
|---|---|---|
| **Intel® 9560**<br>**802.11a/b/g/n/ac (2x2)**<br>**Wi-Fi® and Bluetooth® 5.0**<br>**Combo[1] non-vPro** | **Wireless LAN Standards** | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n<br>IEEE 802.11ac |
| | **Interoperability** | Wi-Fi® certified |
| | **Frequency Band** | **802.11b/g/n**<br>•2.402 – 2.482 GHz<br><br>**802.11a/n**<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 |
| | **Data Rates** | •802.11b: 1, 2, 5.5, 11 Mbps<br>•802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>•802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>•802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)<br>•802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, , 80MHz & 160MHz) |
| | **Modulation** | Direct Sequence Spread Spectrum<br>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM |
| | **Security[3]** | •IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only<br>•AES-CCMP: 128 bit in hardware<br>•802.1x authentication<br>•WPA, WPA2:  802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>•WPA2 certification<br>•IEEE 802.11i<br>•Cisco Certified Extensions, all versions through CCX4 and CCX Lite<br>•WAPI |
| | **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: +18.5dBm minimum<br>•802.11g: +17.5dBm minimum<br>•802.11a: +18.5dBm minimum<br>•802.11n HT20(2.4GHz): +15.5dBm minimum<br>•802.11n HT40(2.4GHz): +14.5dBm minimum<br>•802.11n HT20(5GHz): +15.5dBm minimum<br>•802.11n HT40(5GHz): +14.5dBm minimum<br>•802.11ac VHT80(5GHz): +11.5dBm minimum<br>•802.11ac VHT160(5GHz): +11.5dBm 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 10mW<br>•Radio disabled 8 mW |

Not all configuration components are available in all regions/countries.<br>c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 28

# QuickSpecs

## Technical Specifications

| | |
|---|---|
| **Power Management** | ACPI and PCI Express compliant power management<br>802.11 compliant power saving mode |
| **Receiver Sensitivity [3]** | 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: -84dBm maximum<br>802.11ac, MCS9: -59dBm maximum |
| **Antenna type** | High efficiency antenna with spatial diversity, mounted in the display enclosure<br>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications |
| **Form Factor** | PCI-Express M.2 MiniCard |
| **Dimensions** | Type 2230: 2.3 x 22.0 x 30.0 mm |
| **Weight** | Type 2230: 2.8g |
| **Operating Voltage** | 3.3v +/- 9% |

| | | |
|---|---|---|
| **Temperature** | Operating | 14° to 158° F (–10° to 70° C) |
| | Non-operating | –40° to 176° F (–40° to 80° C) |
| **Humidity** | Operating | 10% to 90% (non-condensing) |
| | Non-operating | 5% to 95% (non-condensing) |
| **Altitude** | Operating | 0 to 10,000 ft (3,048 m) |
| | Non-operating | 0 to 50,000 ft (15,240 m) |
| **LED Activity** | LED Amber – Radio OFF; LED White – Radio ON | |

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

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

| | |
|---|---|
| **Bluetooth Specification** | 4.0/4.1/4.2/5.0 Compliant |
| **Frequency Band** | 2402 to 2480 MHz |
| **Number of Available Channels** | Legacy: 0~79 (1 MHz/CH)<br>BLE: 0~39 (2 MHz/CH) |
| **Signaling Data Rate** | Legacy: 3 Mbps signaling data rate[1] 2.17 Mbps<br>BLE: 1 Mbps signaling data rate[1] 0.2 Mbps<br>1. Actual throughput may vary.<br><br>Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels<br><br>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 |

Not all configuration components are available in all regions/countries.<br>c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 29

# QuickSpecs

## Technical Specifications

|  |  |
|---|---|
|  | Selective Suspend 17 mW |
| Bluetooth Software Supported Link Topology | Microsoft Windows Bluetooth Software |
| Power Management | Microsoft Windows ACPI, and USB Bus Support |
| Certifications | FCC (47 CFR) Part 15C, Section 15.247 & 15.249 |
| Power Management Certifications | ETS 300 328, ETS 300 826<br>Low Voltage Directive IEC950<br>UL, CSA, and CE Mark |
| **Bluetooth Software Supported** | BT4.1-ESR 5/6/7 Compliance<br>LE Link Layer Ping<br>LE Dual Mode<br>LE Link Layer<br>LE Low Duty Cycle Directed Advertising<br>LE L2CAP Connection Oriented Channels<br>Train Nudging & Interlaced Scan<br>BT4.2 ESR08 Compliance<br>LE Secure Connection- Basic/Full<br>LE Privacy 1.2 –Link Layer Privacy<br>LE Privacy 1.2 –Extended Scanner Filter Policies<br>LE Data Packet Length Extension<br>FAX Profile (FAX)<br>Basic Imaging Profile (BIP)2<br>Headset Profile (HSP)<br>Hands Free Profile (HFP)<br>Advanced Audio Distribution Profile (A2DP) |

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 30

# QuickSpecs

## Technical Specifications

**Intel® 22260 802.11a/b/g/n/ac/ax (2x2) Wi-Fi® 6 and Bluetooth® 5.1 Combo[1] vPro**

| | |
|---|---|
| **Wireless LAN Standards** | IEEE 802.11a |
| | IEEE 802.11b |
| | IEEE 802.11g |
| | IEEE 802.11n |
| | IEEE 802.11ac |
| | IEEE 802.11ax |
| | IEEE 802.11d |
| | IEEE 802.11e |
| | IEEE 802.11h |
| | IEEE 802.11i |
| | IEEE 802.11k |
| | IEEE 802.11r |
| | IEEE 802.11v |
| **Interoperability** | Wi-Fi® certified |
| **Frequency Band** | **802.11b/g/n** |
| | •2.402 – 2.482 GHz |
| | **802.11a/n** |
| | •4.9 – 4.95 GHz (Japan) |
| | •5.15 – 5.25 GHz |
| | •5.25 – 5.35 GHz |
| | •5.47 – 5.725 GHz |
| | •5.825 – 5.850 GHz |
| **Data Rates** | •802.11b: 1, 2, 5.5, 11 Mbps |
| | •802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps |
| | •802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps |
| | •802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) |
| | •802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz & 160MHz) |
| **Modulation** | Direct Sequence Spread Spectrum |
| | BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM |
| **Security[3]** | •IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only |
| | •AES-CCMP: 128 bit in hardware |
| | •802.1x authentication |
| | •WPA, WPA2:  802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. |
| | •WPA2 certification |
| | •IEEE 802.11i |
| | •Cisco Certified Extensions, all versions through CCX4 and CCX Lite |
| | •WAPI |
| **Network Architecture Models** | Ad-hoc (Peer to Peer) |
| | Infrastructure (Access Point Required) |
| **Roaming** | IEEE 802.11 compliant roaming between access points |
| **Output Power[2]** | •802.11b: +18.5dBm minimum |
| | •802.11g: +17.5dBm minimum |
| | •802.11a: +18.5dBm minimum |
| | •802.11n HT20(2.4GHz): +15.5dBm minimum |
| | •802.11n HT40(2.4GHz): +14.5dBm minimum |
| | •802.11n HT20(5GHz): +15.5dBm minimum |
| | •802.11n HT40(5GHz): +14.5dBm minimum |
| | •802.11ac VHT80(5GHz): +11.5dBm minimum |

# QuickSpecs

## Technical Specifications

| | |
|---|---|
| | • 802.11ac VHT160(5GHz): +11.5dBm minimum<br>• 802.11ax HT40(2.4GHz): +10dBm minimum<br>• 802.11ax VHT160(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 10mW<br>• Radio disabled 8 mW |
| **Power Management** | ACPI and PCI Express compliant power management<br>802.11 compliant power saving mode |
| **Receiver Sensitivity [3]** | • 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: -84dBm maximum<br>• 802.11ac, MCS9: -59dBm maximum<br>• 802.11ax, MCS11(HT40): -59dBm maximum<br>• 802.11ax, MCS11(VHT160): -58.5dBm maximum |
| **Antenna type** | High efficiency antenna with spatial diversity, mounted in the display enclosure<br>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications |
| **Form Factor** | PCI-Express M.2 MiniCard |
| **Dimensions** | 1. Type 2230: 2.3 x 22.0 x 30.0 mm<br>2. Type 1216: 1.67 x 12.0 x 16.0 mm |
| **Weight** | 1. Type 2230: 2.8g<br>2. Type 126: 1.3g |
| **Operating Voltage** | 3.3v +/- 9% |

| | | |
|---|---|---|
| **Temperature** | Operating | 14° to 158° F (−10° to 70° C) |
| | Non-operating | −40° to 176° F (−40° to 80° C) |
| **Humidity** | Operating | 10% to 90% (non-condensing) |
| | Non-operating | 5% to 95% (non-condensing) |
| **Altitude** | Operating | 0 to 10,000 ft (3,048 m) |
| | Non-operating | 0 to 50,000 ft (15,240 m) |

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

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

| | |
|---|---|
| **Bluetooth Specification** | 4.0/4.1/4.2/5.0/5.1 Compliant |
| **Frequency Band** | 2402 to 2480 MHz |
| **Number of Available Channels** | Legacy: 0~79 (1 MHz/CH)<br>BLE: 0~39 (2 MHz/CH) |

# QuickSpecs

## Technical Specifications

| | |
|---|---|
| **Signaling Data Rate** | Legacy: 3 Mbps signaling data rate[1] 2.17 Mbps<br>BLE: 1 Mbps signaling data rate[1] 0.2 Mbps<br>1. Actual throughput may vary.<br><br>Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels<br>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 Link Topology | Microsoft Windows Bluetooth Software |
| Power Management | Microsoft Windows ACPI, and USB Bus Support |
| Certifications | FCC (47 CFR) Part 15C, Section 15.247 & 15.249 |
| Power Management Certifications | ETS 300 328, ETS 300 826<br>Low Voltage Directive IEC950<br>UL, CSA, and CE Mark |
| **Bluetooth Software Supported** | BT4.1-ESR 5/6/7 Compliance<br>LE Link Layer Ping<br>LE Dual Mode<br>LE Link Layer<br>LE Low Duty Cycle Directed Advertising<br>LE L2CAP Connection Oriented Channels<br>Train Nudging & Interlaced Scan<br>BT4.2 ESR08 Compliance<br>LE Secure Connection- Basic/Full<br>LE Privacy 1.2 –Link Layer Privacy<br>LE Privacy 1.2 –Extended Scanner Filter Policies<br>LE Data Packet Length Extension<br>FAX Profile (FAX)<br>Basic Imaging Profile (BIP)2<br>Headset Profile (HSP)<br>Hands Free Profile (HFP)<br>Advanced Audio Distribution Profile (A2DP) |
| **Security & Manageability** | Intel® vPro™ support with appropriate Intel® chipset components |

Not all configuration components are available in all regions/countries.<br>c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 33

# QuickSpecs

## Technical Specifications

| | | |
|---|---|---|
| **Intel® 22260 802.11a/b/g/n/ac/ax (2x2) Wi-Fi® 6 and Bluetooth® 5.1 Combo[1] non-vPro** | **Wireless LAN Standards** | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n<br>IEEE 802.11ac<br>IEEE 802.11ax<br>IEEE 802.11d<br>IEEE 802.11e<br>IEEE 802.11h<br>IEEE 802.11i<br>IEEE 802.11k<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 |
| | **Data Rates** | •802.11b: 1, 2, 5.5, 11 Mbps<br>•802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>•802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>•802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)<br>•802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, ,80MHz & 160MHz)<br>• 802.11ax: MCS0 ~ MCS11, (1SS and 2SS) (20MHz, 40MHz, ,80MHz & 160MHz) |
| | **Modulation** | Direct Sequence Spread Spectrum<br>OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM |
| | **Security[3]** | •IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only<br>•AES-CCMP: 128 bit in hardware<br>•802.1x authentication<br>•WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>•WPA2 certification<br>•IEEE 802.11i<br>•Cisco Certified Extensions, all versions through CCX4 and CCX Lite<br>•WAPI |
| | **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: +18.5dBm minimum<br>•802.11g: +17.5dBm minimum<br>•802.11a: +18.5dBm minimum<br>•802.11n HT20(2.4GHz): +15.5dBm minimum<br>•802.11n HT40(2.4GHz): +14.5dBm minimum<br>•802.11n HT20(5GHz): +15.5dBm minimum<br>•802.11n HT40(5GHz): +14.5dBm minimum |

# QuickSpecs

## Technical Specifications

|  |  |
|---|---|
|  | •802.11ac VHT80(5GHz): +11.5dBm minimum |
|  | •802.11ac VHT160(5GHz): +11.5dBm minimum |
|  | •802.11ax HT40(2.4GHz): +10dBm minimum |
|  | •802.11ax VHT160(5GHz): +10dBm minimum |
| **Power Consumption** | •Transmit mode 2.0 W<br>•Receive mode 1.6 W<br>•Idle mode (PSP) 180 mW (WLAN Associated)<br>•Idle mode 50 mW (WLAN unassociated)<br>•Connected Standby 10mW<br>•Radio disabled 8 mW |
| **Power Management** | ACPI and PCI Express compliant power management<br>802.11 compliant power saving mode |
| **Receiver Sensitivity** [3] | •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: –84dBm maximum<br>• 802.11ac, MCS9: –59dBm maximum<br>•802.11ax, MCS11(HT40): –59dBm maximum<br>•802.11ax, MCS11(VHT160): –58.5dBm maximum |
| **Antenna type** | High efficiency antenna with spatial diversity, mounted in the display enclosure<br>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications |
| **Form Factor** | PCI-Express M.2 MiniCard |
| **Dimensions** | 1. Type 2230: 2.3 x 22.0 x 30.0 mm<br>2. Type 1216: 1.67 x 12.0 x 16.0 mm |
| **Weight** | 1. Type 2230: 2.8g<br>2. Type 126: 1.3g |
| **Operating Voltage** | 3.3v +/- 9% |
| **Temperature** | Operating 14° to 158° F (−10° to 70° C)<br>Non-operating −40° to 176° F (−40° to 80° C) |
| **Humidity** | Operating 10% to 90% (non-condensing)<br>Non-operating 5% to 95% (non-condensing) |
| **Altitude** | Operating 0 to 10,000 ft (3,048 m)<br>Non-operating 0 to 50,000 ft (15,240 m) |

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

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

| | |
|---|---|
| **Bluetooth Specification** | 4.0/4.1/4.2/5.0/5.1 Compliant |
| **Frequency Band** | 2402 to 2480 MHz |
| **Number of Available Channels** | Legacy: 0~79 (1 MHz/CH)<br>BLE: 0~39 (2 MHz/CH) |

Not all configuration components are available in all regions/countries.

c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 35

# QuickSpecs

## Technical Specifications

| | |
|---|---|
| **Signaling Data Rate** | Legacy: 3 Mbps signaling data rate[1] to 2.17 Mbps<br>BLE: 1 Mbps signaling data rate[1] 0.2 Mbps<br>1. Actual throughput may vary.<br><br>Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels<br>Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) |
| **Transmit Power** | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 9.5 dBm for BR and EDR. |
| **Power Consumption** | Peak (Tx) 330 mW<br>Peak (Rx) 230 mW<br>Selective Suspend 17 mW |
| **Bluetooth Software Supported Link Topology** | Microsoft Windows Bluetooth Software |
| **Power Management** | Microsoft Windows ACPI, and USB Bus Support |
| **Certifications** | FCC (47 CFR) Part 15C, Section 15.247 & 15.249 |
| **Power Management Certifications** | ETS 300 328, ETS 300 826<br>Low Voltage Directive IEC950<br>UL, CSA, and CE Mark |
| **Bluetooth Software Supported** | BT4.1-ESR 5/6/7 Compliance<br>LE Link Layer Ping<br>LE Dual Mode<br>LE Link Layer<br>LE Low Duty Cycle Directed Advertising<br>LE L2CAP Connection Oriented Channels<br>Train Nudging & Interlaced Scan<br>BT4.2 ESR08 Compliance<br>LE Secure Connection- Basic/Full<br>LE Privacy 1.2 –Link Layer Privacy<br>LE Privacy 1.2 –Extended Scanner Filter Policies<br>LE Data Packet Length Extension<br>FAX Profile (FAX)<br>Basic Imaging Profile (BIP)2<br>Headset Profile (HSP)<br>Hands Free Profile (HFP)<br>Advanced Audio Distribution Profile (A2DP) |

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 36

# QuickSpecs

## Technical Specifications

| Intel ® XMM 7360 LTE-Advanced CAT9 | Technology/Operating bands | FDD LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 1700/2100 (Band 4), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 1400 (Band 11), 700 (Band 12 lower), 700 (Band 13 upper), 700 (Band 17 lower), 850 (Band 18 lower), 850 (Band 19 upper), 800 (Band 20), 1400 (Band 21), 850 (Band 26), 700 (Band 28), 700 (Band 29 RX only), 2300 (Band 30), 1700/2100 (Band 66).<br>TDD LTE: 2600 (Band 38), 1900 (Band 39), 2400 (Band 40), 2500 (Band 41).<br>HSPA+: 2100 (Band 1), 1900 (Band 2), 1700/2100 (Band 4), 850 (Band 5), 900 (Band 8) MHz |
|---|---|---|
| | Wireless protocol standards | 3GPP Release 11 LTE Specification CAT.9, DL 60MHz BW throughput up to 450Mbps; UL 20MHz throughput up to 50Mbps<br>WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification |
| | GPS | Standalone, A-GPS (MS-A, MS-B) |
| | GPS bands | 1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 MHz |
| | Maximum data rates | LTE: 450 Mbps (Download), 50 Mbps (Upload)<br>DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload)<br>HSPA+: 21Mbps (Download), 5.76 Mbps (Upload) |
| | Maximum output power | LTE: 23 dBm<br>HSPA+: 23.5 dBm |
| | Maximum power consumption | LTE: 1,200 mA (peak); 900 mA (average)<br>HSPA+: 1,100 mA (peak); 800 mA (average) |
| | Form Factor | M.2, 3042–S3 Key B |
| | Weight | 5.8 g |
| | Dimensions (Length x Width x Thickness) | 42 x 30 x 2.3 mm |

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.

| Intel ® XMM 7262 LTE-Advanced CAT6 | Technology/Operating bands | FDD LTE: 2100 (Band 1), 1800 (Band 3), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 800 (Band 20), 700 (Band 28),<br>HSPA+: 2100 (Band 1), 850 (Band 5), 900 (Band 8) |
|---|---|---|
| | Wireless protocol standards | 3GPP Release 11 LTE Specification CAT.6, DL 40MHz BW throughput up to 300Mbps; UL 20MHz throughput up to 50Mbps<br>WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification |
| | GPS | Standalone, A-GPS (MS-A, MS-B and XTRA) |
| | GPS bands | 1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz |
| | Maximum data rates | LTE: 300 Mbps (Download), 50 Mbps (Upload)<br>DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload)<br>UMT:  384 kbps (Download), 384 kbps (Upload) |
| | Maximum output power | LTE: 23 dBm<br>HSPA+: 23.5 dBm |

# QuickSpecs

## Technical Specifications

| | | |
|---|---|---|
| **Maximum power consumption** | | LTE: 1,200 mA (peak); 900 mA (average)<br>HSPA+: 1,100 mA (peak); 800 mA (average) |
| **Form Factor** | | M.2, 3042-S3 Key B |
| **Weight** | | 6 g |
| **Dimensions (Length x Width x Thickness)** | | 42 x 30 x 2.3 mm |

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.

| | | |
|---|---|---|
| **Intel® XMM™ 7560 LTE-Advanced Pro** | **Technology/Operating bands** | FDD LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 1700/2100 (Band 4), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 700 (Band 12 lower),<br>700 (Band 13 upper), 700 (Band 14 upper), 700 (Band 17 lower), 850 (Band 18 lower),<br>850 (Band 19 upper), 800 (Band 20), 1900 (Band 25), 850 (Band 26), 700 (Band 28),<br>700 (Band 29 RX only), 2300 (Band 30), 1700/2100 (Band 66).<br>TDD LTE: 2600 (Band 38), 1900 (Band 39), 2400 (Band 40), 2500 (Band 41), 3500 (Band 42),<br>5200 (Band 46 RX only)<br>HSPA+: 2100 (Band 1), 1900 (Band 2), 1700/2100 (Band 4),<br>850 (Band 5), 900 (Band 8) MH |
| | **Wireless protocol standards** | 3GPP Release 12 LTE Specification DL-CAT.16, DL 100MHz BW throughput up to 978Mbps; UL-CAT.13 40MHz throughput up to 150Mbps<br>WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification |
| | **GPS** | Standalone, A-GPS (MS-B and LTO) |
| | **GPS bands** | GPS 1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 ± 2.046 MHz |
| | **Maximum data rates** | LTE: 978 Mbps (Download), 150 Mbps (Upload)<br>DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload)<br>HSPA+: 21Mbps (Download), 5.76 Mbps (Upload) |
| | **Maximum output power** | LTE: 23 dBm in all bands except B41<br>LTE B41 HPUE: 26dBm<br>HSPA+: 23.5 dBm |
| | **Maximum power consumption** | LTE: 1,200 mA (peak); 900 mA (average)<br>HSPA+: 1,100 mA (peak); 800 mA (average) |
| | **Form Factor** | M.2, 3042-S3 Key B |
| | **Weight** | 6 g |
| | **Dimensions (Length x Width x Thickness)** | 42 x 30 x 2.3 mm |

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

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 38

# QuickSpecs

## Technical Specifications

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.

| | | |
|---|---|---|
| **Near Field Communications Controller (optional)** | **Dimensions (L x W x H)** | Module 17 mm by 10 mm by 2.0 mm |
| | **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** | Tag Type 1, Type 2, Type3 and Type 4, NFCIP-1 and NFCIP-2 |
| | **Reader (PCD-VCD) Mode (1)** | 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 cards |
| | **Card Emulation (PICC-VICC) Mode (1)** | 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, 212, 424, 848 kbps |
| | **Operating temperature** | -25 C to 80°C |
| | **Storage temperature** | -20°C to 125°C |
| | **Humidity** | 10-90% operating<br>5-95% non-operating |
| | **Supply Operating voltage** | 2.7 to 5.5 Volts |
| | **I/O Voltage** | 1.8V or 3.3V |
| **Power Consumption (Booster enable, VBAT= 3.3V, VCC_BOOST = 5V)** | **Mode** | Power Consumption, Typical |
| | **Polling** | 710.93 mW |
| | **Detected Test Tag Type 1** | 152.09 mW |
| | **Detected Test Tag Type 2** | 341.26 mW |
| | **Detected Test Tag Type 3** | 383.76 mW |
| | **Detected Test Tag Type 4** | 312.26 mW |
| | **Antenna** | Antenna connector, 0.3mm pitch, 7 connector FPC. Antenna matching is external to module. |

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 39

# QuickSpecs

## Technical Specifications

| Intel® i219LM 10/100/1000 Integrated NIC | Connector | RJ-45 |
|---|---|---|
| | **System Interface** | PCI(Intel proprietary) + SMBus |
| | **Data rates supported** | 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)<br>100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)<br>1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40)<br>Auto-Negotiation (Automatic Speed Selection)<br>Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s |
| | **IEEE Compliance** | IEEE 802.1p QoS (Quality of Service) Support<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<br>Jumbo Frame 9K |
| | **Power consumption** | Cable Disconnection: 25mW<br>100Mbps Full Run: 450mW<br>1000bp Full Run: 1000mW<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 standby and hibernation (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 |
| | **Security & Manageability** | Intel® vPro™ support with appropriate Intel® chipset components |

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.

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 40

# QuickSpecs

## Technical Specifications

| Intel® i219v 10/100/1000 Integrated NIC | | |
|---|---|---|
| | **Connector** | RJ-45 |
| | **System Interface** | PCI(Intel proprietary) + SMBus |
| | **Data rates supported** | 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)<br>100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)<br>1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40)<br>Auto-Negotiation (Automatic Speed Selection)<br>Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s |
| | **IEEE Compliance** | IEEE 802.1p QoS (Quality of Service) Support<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<br>Jumbo Frame 9K |
| | **Power consumption** | Cable Disconnection: 25mW<br>100Mbps Full Run: 450mW<br>1000bp Full Run: 1000mW<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 standby and hibernation (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 |

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.

# QuickSpecs

## Technical Specifications

### POWER

| AC Adapter 45 Watt nPFC Wall Mount USB type C Straight 1.8m C6NS | **Dimensions (H x W x D)** | 62.0 x 62.0 x 28.5mm | |
|---|---|---|---|
| | **Weight** | unit: 220g +/- 10g | |
| | **Input** | **Input Efficiency** | Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec:<br>5V: 81.5%<br>9V: 86.7%<br>10V: 87.5%<br>12V: 87.8%<br>15V: 87.8%<br>20V: 87.8% |
| | | **Input frequency range** | 47 ~ 63Hz |
| | | **Input AC current** | Max. 1.4 A at 90 Vac |
| | **Output** | **Output power** | Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec: |
| | | **DC output** | 5V: 81.5% |
| | | **Hold-up time** | 9V: 86.7% |
| | | **Output current limit** | 10V: 87.5% |
| | **Connector** | Non-Standard C6 | |
| | **Environmental Design** | **Operating temperature** | 32oF to 95oF (0oto 35oC) |
| | | **Non-operating (storage) temperature** | -4oF to 185oF (-20oto 85oC) |
| | | **Altitude** | 0 to 16,400 ft (0 to 5000m) |
| | | **Humidity** | 20% to 95% |
| | | **Storage Humidity** | 10% to 95% |
| | **EMI and Safety Certifications** | *CE Mark - full compliance with LVD and EMC directives<br>* Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.<br>* MTBF - over 200,000 hours at 25°C ambient condition. | |

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 42

# QuickSpecs

## Technical Specifications

| AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5 mm Right Angle 1.8 m | Dimensions (H x W x D) | | 95.0x40.0x26.5mm |
|---|---|---|---|
| | Weight | | unit: 200g +/- 10g |
| | Input | Input Efficiency | 87.74 % at 115 Vac and 88.4 % at 230Vac |
| | | Input frequency range | 47 ~ 63 Hz |
| | | Input AC current | Max. 1.4 A at 90 Vac |
| | Output | Output power | 45W |
| | | DC output | 19.5V |
| | | Hold-up time | 5ms at 115 Vac input |
| | | Output current limit | <8.0A |
| | Connector | | C6 |
| | Environmental Design | Operating temperature | 32° to 95°F (0° to 35°C) |
| | | Non-operating (storage) temperature | -4° to 185°F (-20° to 85°C) |
| | | Altitude | 0 to 16,400 ft (0 to 5000m) |
| | | Humidity | 20% to 95% |
| | | Storage Humidity | 10% to 95% |
| | EMI and Safety Certifications | | *CE Mark – full compliance with LVD and EMC directives<br>* Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.<br>* MTBF - over 200,000 hours at 25°C ambient condition. |

| AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5 mm Right Angle 1.8 m 2prong | Dimensions (H x W x D) | | 95.0 x 40.0 x 26.5mm |
|---|---|---|---|
| | Weight | | unit: 200g +/- 10g |
| | Input | Input Efficiency | 87.74 % at 115 Vac and 88.4 % at 230Vac |
| | | Input frequency range | 47 ~ 63 Hz |
| | | Input AC current | Max. 1.4 A at 90 Vac |
| | Output | Output power | 45W |
| | | DC output | 19.5V |
| | | Hold-up time | 5ms at 115 Vac input |
| | | Output current limit | <8.0A |
| | Connector | | C8 |
| | Environmental Design | Operating temperature | 32° to 95°F (0° to 35°C) |
| | | Non-operating (storage) temperature | -4° to 185°F (-20° to 85°C) |
| | | Altitude | 0 to 16,400 ft (0 to 5000m) |

# QuickSpecs

## Technical Specifications

| | | |
|---|---|---|
| | **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, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.<br>* MTBF - over 200,000 hours at 25°C ambient condition. | |

| | | | |
|---|---|---|---|
| **AC Adapter 65 Watt nPFC USB type C Straight 1.8m C6NS** | **Dimensions (H x W x D)** | 74 x 74 x 28.5 mm | |
| | **Weight** | unit: 245g +/- 10g | |
| | **Input** | **Input Efficiency** | 81.5% min at 115 Vac/ 230Vac @ 5V/3A<br>86.7% min at 115 Vac/ 230Vac @ 9V/3A<br>88% min at 115 Vac/ 230Vac @ 10V/5A<br>88% min at 115 Vac/ 230Vac @ 12V/5A<br>89% min at 115 Vac/ 230Vac @ 15V/4.33A<br>89% min at 115 Vac/ 230Vac @ 20V/3.25A |
| | | **Input frequency range** | 47 to 63 Hz |
| | | **Input AC current** | 1.7 A at 90 VAC and maximum load |
| | **Output** | **Output power** | 65W |
| | | **DC output** | 5V/9V/10V/12V/15V/20V |
| | | **Hold-up time** | 5ms at 115 Vac input |
| | | **Output current limit** | <8.0A |
| | **Connector** | Non-Standard C6 | |
| | **Environmental Design** | **Operating temperature** | 32°F to 95°F (0° to 35°C) |
| | | **Non-operating (storage) temperature** | –4°F to 185°F (–20° to 85°C) |
| | | **Altitude** | 0 to 16,400 ft (0 to 5000m) |
| | | **Humidity** | 5% to 95% |
| | | **Storage Humidity** | 5% to 95% |
| | **EMI and Safety Certifications** | *CE Mark - full compliance with LVD and EMC directives<br>* Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.<br>* MTBF - over 100,000 hours at 25°C ambient condition. | |

| | | | |
|---|---|---|---|
| **AC Adapter 65 Watt Smart nPFC EM Barrel 4.5mm New EM** | **Dimensions (H x W x D)** | 102 x 55 x 30 mm | |
| | **Weight** | unit: 250g +/- 10g | |
| | **Input** | **Input Efficiency** | 88.0 % at 115 Vac and 89.0 % at 230Vac |
| | | **Input frequency range** | 47 ~ 63 Hz |

Not all configuration components are available in all regions/countries.

c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 44

# QuickSpecs

## Technical Specifications

| | | |
|---|---|---|
| | Input AC current | Max. 1.7 A at 90 Vac |
| **Output** | **Output power** | 65W |
| | **DC output** | 19.5V |
| | **Hold-up time** | 5ms at 115 Vac input |
| | **Output current limit** | <11.0A |
| **Connector** | C6 | |
| **Environmental Design** | **Operating temperature** | 32°F to 95°F (0° to 35°C) |
| | **Non-operating (storage) temperature** | -4°F to 185°F (-20° to 85°C) |
| | **Altitude** | 0 to 16,400 ft (0 to 5000m) |
| | **Humidity** | 20% to 95% |
| | **Storage Humidity** | 10% to 95% |
| **EMI and Safety Certifications** | *CE Mark - full compliance with LVD and EMC directives<br>* Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.<br>* MTBF - over 100,000 hours at 25°C ambient condition. | |

| | | | |
|---|---|---|---|
| **AC Adapter 65 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m** | **Dimensions (H x W x D)** | 90.0 x 51 x 28.5mm | |
| | **Weight** | unit: 230g +/- 10g | |
| | **Input** | **Input Efficiency** | 88.0 % at 115 Vac and 89.0 % at 230Vac |
| | | **Input frequency range** | 47 ~ 63 Hz |
| | | **Input AC current** | Max. 1.7 A at 90 Vac |
| | **Output** | **Output power** | 65W |
| | | **DC output** | 19.5V |
| | | **Hold-up time** | 5ms at 115 Vac input |
| | | **Output current limit** | <11.0A |
| | **Connector** | Non-Standard C6 | |
| | **Environmental Design** | **Operating temperature** | 32°F to 95°F (0° to 35°C) |
| | | **Non-operating (storage) temperature** | 32°F to 95°F (0° to 35°C) |
| | | **Altitude** | 0 to 16,400 ft (0 to 5000m) |
| | | **Humidity** | 20% to 95% |
| | | **Storage Humidity** | 10% to 95% |
| | **EMI and Safety Certifications** | *CE Mark - full compliance with LVD and EMC directives<br>* Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. | |

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 45

# QuickSpecs

## Technical Specifications

* MTBF - over 100,000 hours at 25°C ambient condition.

| **Battery SS 3 Cell 50 WHr Long Life -PL** | **Dimensions (H x W x D)** | | L 278.7mm x W 76.3mm x H 7.1mm |
| --- | --- | --- | --- |
| | **Weight** | | 193 +/- 10g |
| | **Cells/Type** | | 3cell Lithium-Ion Polymer cell / P604883A1 |
| | **Energy** | **Voltage** | 11.55V |
| | | **Amp-hour capacity** | 4.113Ah/ 4.330Ah |
| | | **Watt-hour capacity** | 50Wh |
| | **Temperature** | **Operating (Charging)** | 0˚ to 50˚ C |
| | | **Operating (Discharging)** | -10˚ to 60˚ C |
| | | **Warranty** | based on system offering |
| | | **Optional Travel Battery Available** | No |

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 46

# QuickSpecs

## Technical Specifications

**Country of Origin**

China

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 47

# QuickSpecs

**HP EliteBook 830 G6 Notebook PC**

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

| Type | Description | Part Number |
|---|---|---|
| Cases | HP Essential Top Load Case (up to 15.6") | H2W17AA#xxx |
| | HP Slim Ultrabook Top Load | F3W15AA#xxx |
| | HP Basic/Essential Backpack | H1D24AA#xxx |
| | HP Exec Midnight 15.6" Backpack | 1KM16AA#xxx |
| | | |
| Docking | HP UltraSlim Docking Station | D9Y32AA#xxx |
| | HP UltraSlim Docking Station TAA US | E5C22AV#ABA |
| | HP Thunderbolt Dock 120W G2 | 2UK37AA |
| | HP Thunderbolt Dock 230W G2 | 2UK38AA |
| | HP TB Dock Audio Module | 3AQ21AA |
| | HP TB Dock 120W G2 cable | 3XB94AA |
| | HP TB Dock G2 combo cable | 3XB96AA |
| | HP USB-C Universal Dock | 1MK33AA#xxx |
| | HP Elite 90W Thunderbolt 3 Dock | 1DT93AA#xxx |
| | HP USB-C Dock G4 | 3FF69AA#xxx |
| | HP USB-C Mini Dock | 1PM64AA#xxx |
| | HP USB-C Travel Dock | T0K29AA#xxx |
| | HP USB Travel Dock | T0K30AA#xxx |
| | HP USB-C Universal Dock w/4.5mm Adapter | 2UF95AA |
| | HP USB-C Universal Dock w/4.5mm Adapter - non-flash version | 3DV65AA |
| | HP USB-C Dock G5 | 5TW10AA#XXX |
| | HP USB-C/A Universal Dock G2 | 5TW13AA#XXX |
| | HP Adjustable Dual Display Stand | AW664AA#xxx |
| | HP Display and Notebook Stand II | E8G00AA#xxx |
| | HP TB Dock G2 w/ Combo Cable | 3TR87AA |
| | HP TB Dock 120W G2 w/ Audio | 3YE87AA |
| | | |
| Input/Output | HP Slim Wireless Keyboard and Mouse | T6L04AA#xxx |
| | HP Slim USB Keyboard and Mouse | T6T83AA#xxx |
| | HP Wireless (Link-5) Keyboard | T6U20AA#xxx |
| | HP USB Essential Keyboard and Mouse | H6L29AA#xxx |
| | HP Conferencing Keyboard | K8P74AA#xxx |
| | HP USB Collaboration Keyboard | Z9N38AA#xxx |
| | HP Wireless Collaboration Keyboard | Z9N39AA#xxx |
| | HP Comfort Grip Wireless Mouse | H2L63AA#xxx |
| | HP X4000b Bluetooth Mouse | H3T50AA#xxx |
| | HP 3-Button USB Laser Mouse | H4B81AA#xxx |
| | HP USB Travel Mouse | G1K28AA#xxx |
| | HP Ultra Mobile Wireless Mouse | H6F25AA#xxx |
| | HP Slim Bluetooth Mouse to AMO | F3J92AA#xxx |
| | HP Wireless Premium Mouse | 1JR31AA#xxx |
| | HP USB Premium Mouse | 1JR32AA#xxx |

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

| | | |
|---|---|---|
| | HP Essential USB Mouse | 2TX37AA#xxx |
| | HP Elite Presenter Mouse | 2CE30AA#xxx |
| | HP USB-C to USB 3.0 Adapter | N2Z63AAA#xxx |
| | HP USB-C to USB-A Hub | Z6A00AA#xxx |
| | HP USB-C to DP | N9K78AA#xxx |
| | HP USB-C to VGA | N9K76AA#xxx |
| | HP HDMI to DVI | F5A28AA#xxx |
| | HP HDMI to VGA | H4F02AA#xxx |
| | HP USB-C to HDMI 2.0 Adapter | 1WC36AA#xxx |
| **Power** | HP 65W Slim AC Adapter | H6Y82AA#xxx |
| | HP 90W Slim AC Adapter | H6Y83AA#xxx |
| | HP 90W Slim Combo AC Adapter w/ USB | H6Y84AA#xxx |
| | HP 45W Smart AC Adapter | H6Y88AA#xxx |
| | HP 65W Smart AC Adapter | H6Y89AA#xxx |
| | HP 90W Smart AC Adapter | H6Y90AA#xxx |
| | HP 45W 2-prong 4.5 mm DC jack AC Adapter | L6F60AA#ABJ |
| | HP 45W USB-C Power Adapter | 1HE07AA#xxx |
| | HP 65W USB-C Power Adapter | 1HE08AA#xxx |
| | 65W USB-C Slim Power Adapter | 3PN48AA |
| | HP Notebook Power Bank | N9F71AA#xxx |
| | HP USB-C Notebook Power Bank | 1TZ86AA#xxx |
| | HP 45W USB-C Power Adapter | 1HE07AA#xxx |
| | HP 65W USB-C Power Adapter | 1HE08AA#xxx |
| **UCC** | HP Stereo 3.5mm Headset | T1A66AA#xxx |
| | HP Stereo USB Headset | T1A67AA#xxx |
| | HP UC Wireless Mono Headset | W3K08AA#xxx |
| | HP UC Wireless Duo Headset | W3K09AA#xxx |
| **Storage** | HP USB External DVDRW Drive | F2B56AA#xxx |
| | HP 256GB M2 PCIe NVME SSD TLC (2280) | 1FU87AA#xxx |
| | HP 512GB M2 PCIe NVME SSD TLC 2280) | 1FU88AA#xxx |
| **Security** | HP Docking Station Cable Lock | AU656AA#xxx |
| | HP Essential Combination Lock | T0Y16AA#xxx |
| | HP Combination Lock | T0Y15AA#xxx |
| | HP Keyed Cable lock | T0Y14AA#xxx |
| | HP Keyed Cable Lock 10mm | T1A62AA#xxx |
| | HP Dual Head Keyed Cable Lock | T1A64AA#xxx |
| **Displays** | HP EliteDisplay E243d 23.8-inch Docking Monitor | 1TJ76AA |
| | HP EliteDisplay E243 23.8-inch Monitor | 1FH47AA |

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 49

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

HP EliteDisplay E273q 27-inch Monitor                                                    1FH52AA

## Change Log

| Date of change: | Version History: | | Description of change: |
|---|---|---|---|
| May 28, 2019 | From V1 to V2 | Updated | Sure View Gen3 |
| May 30, 2019 | From V2 to V3 | Updated | Lock Slot |
| June 7, 2019 | From V3 to V4 | Added | Environmental Section |
| June 10, 2019 | From V4 to V5 | Added | HP Cloud Recovery |

Not all configuration components are available in all regions/countries.
c06308181 — DA 16443 - Worldwide — Version 5 — June 10, 2019

Page 51