QuickSpecs

Technical Specifications

HP ProBook 455 G7 Notebook PC

Left

1. **Internal Microphones (2)**
2. **Webcam**
3. **Privacy Shutter (Only available with webcam)**
4. **Webcam LED**
5. **Clickpad**
6. **Hard Drive LED**

7. **SD Card Reader**
8. **Thermal Vent**
9. **USB 2.0 Port**
10. **Standard Security Lock Slot (Lock sold separately)**
11. **Power Button**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 1

Technical Specifications

Right

1. **Power Connector**
2. **USB Type-C® 3.1 Gen 1 Port**
3. **Ethernet Port (RJ-45)**
4. **HDMI Port (Cable not included)**

5. **USB 3.1 Gen 1 Port**
6. **USB 3.1 Gen 1 Port**
7. **Headphone / Microphone Combo Jack**
8. **Fingerprint Sensor (select models)**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 2

Technical Specifications

At a Glance

- Preinstalled Windows 10 versions or FreeDOS
- Choice of AMD Ryzen™ 4000 series mobile processors, R7, R5 and R3
- Display include your choice of 39.62 cm (15.6") diagonal HD, Ultra Wide Viewing Angle FHD, And Privacy Panel option
- Enhanced security features including TPM2.0, HP Sure Sense, HP Sure Start, HP BIOSphere, Hardware enforced Firmware Protection, optional Fingerprint sensor (select models)[4], optional IR camera, and optional Privacy Panel
- Designed to pass 19 MIL-STD 810H testing[1]
- Weight starting at 4.41 lb (2.0kg) (Weight will vary by configuration)
- HP Long-Life Rechargeable battery, with HP Fast Charge Technology recharges 50% in 30 minutes[2]
- Up to 512 GB Solid State Drives and 1 TB Hard Drive
- Up to 16 GB total system memory
- 720p HD webcam, IR camera for face authentication with Windows Hello
- Spill-resistent and optional backlit Keyboard[3], and Clickpad with multi-touch gestures enabled, taps enabled as default

1. MIL-STD-810H testing is not intended to demonstrate fitness of U.S. Department of Defense (DoD) 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.
2. Recharges the battery up to 50% within 30 minutes when the system is off or in standby mode when used with the power adapter provided with the notebook. After charging has reached 50% capacity, charging speed will return to normal. Charging time may vary +/-10% due to System tolerance.
3. Backlit keyboard is an optional feature that must be configured at purchase
4. HP Fingerprint Sensor is an optional feature and requires configuration at purchase.

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

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 3

Technical Specifications

PRODUCT NAME

HP ProBook 455 G7 Notebook PC

OPERATING SYSTEMS

Preinstalled

Windows 10 Pro 64[1]
Windows 10 Pro 64 (National Academic only)[2]
Windows 10 Home 64[1]
Windows 10 Home Single Language 64[1]
Windows® 10 Enterprise 64 (Web Support)[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.

NOTE: Your product does not support Windows 8 or Windows 7. In accordance with Microsoft's support policy, HP does not support the Windows® 8 or Windows 7 operating system on products configured with Intel® and AMD® 7th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on http://www.support.hp.com. A full list of HP products and the Windows 10 versions tested is available on the HP support website. https://support.hp.com/us-en/document/c05195282

PROCESSORS

AMD Ryzen™ 3 4300U APU with Renoir™ Vega 6 Graphics (2.7 GHz base clock, up to 3.7 GHz max boost clock, 4 MB L3 cache, four-cores)[3,4,5,6]
AMD Ryzen™ 5 4500U APU with Renoir™ Vega 8 Graphics (2.3 GHz base clock, up to 4.0 GHz max boost clock, 4 MB L3 cache, six-cores)[3,4,5,6]
AMD Ryzen™ 7 4700U APU with Renoir™ Vega 10 Graphics (2.0 GHz base clock, up to 4.1 GHz max boost clock, 4 MB L3 cache, eight-cores)[3,4,5,6]

Processors Family
AMD Ryzen™ 4000 Series Mobile processors[6]

3. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
4. 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. AMD's numbering is not a measurement of clock speed.
5. AMD Max Burst frequency performance varies depending on hardware, software and overall system configuration.
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.

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 4

Technical Specifications

CHIPSET

Chipset is integrated with processor

GRAPHICS

Integrated
AMD Radeon™ Graphics[7]

Note: **View processor section for details.**

Supports
Support HD decode, DX12, HDMI 1.4

7. HD content required to view HD images.

DISPLAY

Internal
Non-Touch
39.6 cm (15.6") diagonal HD SVA eDP anti-glare LED backlit slim, 220 cd/m², 45% NTSC (1366 x 768)[7,8]
39.6 cm (15.6") diagonal HD SVA eDP anti-glare LED backlit slim, 220 cd/m², 45% NTSC for HD camera (1366 x 768) [7,8]
39.6 cm (15.6") diagonal HD SVA eDP anti-glare LED backlit slim, 220 cd/m², 45% NTSC for HD + IR camera (1366 x 768) [7,8]
39.6 cm (15.6") diagonal FHD IPS eDP anti-glare LED-backlit slim, 250 cd/m², 45% NTSC (1920 x 1080) [7,8]
39.6 cm (15.6"") diagonal FHD IPS eDP anti-glare LED-backlit slim, 250 cd/m², 45% NTSC for HD camera (1920 x 1080) [7,8]
39.6 cm (15.6") diagonal FHD IPS eDP anti-glare LED-backlit slim, 250 cd/m², 45% NTSC for HD + IR camera (1920 x 1080) [7,8]

39.6 cm (15.6") diagonal FHD eDP+PSR anti-glare LED-backlit flat, 1000 cd/m², 72% NTSC for HD Webcam Privacy (1920x1080) [7,8]

Supports narrow bezel

HDMI
HDMI1.4b, up to 4K 30Hz

7. HD content required to view HD images.
8. Resolutions are dependent upon monitor capability, and resolution and color depth settings.

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 5

Technical Specifications

STORAGE AND DRIVES

Primary Storage
500 GB 7200 rpm SATA[9]
1 TB 5400 rpm SATA[9]

Primary M.2 Storage
128 GB SATA TLC Solid State Drive[9]
256 GB PCIe® NVMe™ Value Solid State Drive[9]
512 GB PCIe® NVMe™ TLC Solid State Drive[9]
512 GB PCIe® NVMe™ Value Solid State Drive[9]

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

MEMORY

Maximum Memory
16 GB DDR4-3200 SDRAM[10]

Memory
16 GB DDR4-3200 SDRAM (1 x 16 GB)
12 GB DDR4-3200 SDRAM (1 x 4 GB and 1 x 8 GB)[10]
8 GB DDR4-3200 SDRAM (1 x 8 GB)
8 GB DDR4-3200 SDRAM (2 x 4 GB)[10]
4 GB DDR4-3200 SDRAM (1 x 4 GB)

Memory Slots
2 SODIMM
Both slots are customer accessible / upgradeable by IT or self-maintainers only
DDR4 PC4 SODIMMS, system runs at 3200
Supports Dual Channel Memory

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

NETWORKING/COMMUNICATIONS

WLAN
Realtek RTL8822CE 802.11 a/b/g/n/ac (2x2) Wi-Fi® + Bluetooth® 5 Combo[11]
Intel® Dual Band Wi-Fi® 6 AX200 802.11ax (2x2) and Bluetooth® 5 Combo, non-vPro™[11]
Intel® Dual Band Wireless-AC 9260 802.11 a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5 Combo, non-vPro™[11]

Ethernet
Realtek RTL8111EP 10/100/1000 GbE NIC[12]

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

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 6

Technical Specifications

12. 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.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 7

Technical Specifications

AUDIO/MULTIMEDIA

Audio
Integrated microphone (Mono or Dual Array)
2 Integrated stereo speakers

Camera
720p HD camera[7]
720p HD + IR camera[7,13]

7. HD content required to view HD images.
13. IR camera is an optional feature that must be configured at purchase.

KEYBOARDS/POINTING DEICES/BUTTONS & FUNCTION KEYS

Keyboard
HP Premium Keyboard, spill resistant with numeric keypad and optional backlit[14]

Pointing Device
Clickpad with multi-touch gesture support

Function Keys
F1 - Display Switching
F2 - Blank or SureView On/Off
F3 - Brightness Down
F4 - Brightness Up
F5 - Audio Mute
F6 - Volume Down
F7 - Volume Up
F8 - Mic Mute
F9 - Blank or Backlit Toggle
F10 - Blank
F11 - Wireless
F12 - Sleep

Hidden Functions
Fn+R - Break
Fn+S - Sys Rq
Fn+C - Scroll Lock

14. Backlit keyboard is an optional feature that must be configured at purchase.

SOFTWARE AND SECURITY

BIOS
HP BIOSphere Gen5[15]
HP Drive Lock & Automatic Drive Lock[16]
BIOS Update via Network
Master Boot Record Security
Power On Authentication
Secure Erase[17]
Absolute Persistence Module[18]

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 8

Technical Specifications

Pre-boot Authentication

Software
HP Connection Optimizer
HP Image Assistant
HP Hotkey Support
HP JumpStarts
HP Support Assistant[19]
HP Noise Cancellation Software
Buy Office (sold separately)

Manageability Features
HP Driver Packs[20]
HP System Software Manager (SSM)
HP BIOS Config Utility (BCU)
HP Client Catalog
HP Manageability Integration Kit Gen3[21]

Client Security Software
HP Client Security Manager Gen5[22]
Windows Defender[23]
HP Fingerprint Sensor[24]

Security Management
Pre-boot Authentication
TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified)[25]
USB enable/disable (via BIOS)
Power-on password (via BIOS)
Setup password (via BIOS)
Support for chassis padlocks and cable lock devices
HP Fingerprint Sensor[24]
HP Sure Sense[26]
HP Sure Click[27]
HP Sure Start Gen5[28]

15. 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.
16. HP Drive Lock & Automatic Drive Lock is not supported on NVMe drives
17. 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™.
18. Absolute firmware module is shipped turned off and can only be activated with the purchase a license subscription and full activation of the software agent. License subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. Certain conditions apply. For full details visit: https://www.absolute.com/about/legal/agreements/absolute/.
19. HP Support Assistant requires Windows and Internet access.
20. HP Driver Packs not preinstalled, however available for download at http://www.hp.com/go/clientmanagement.
21. HP Manageability Integration Kit can be downloaded from http://www.hp.com/go/clientmanagement.
22. HP Client Security Manager Gen5 requires Windows and is available on the select HP Pro and Elite PCs. See product specifications for details.
23. Windows Defender Opt in and internet connection required for updates.
24. HP Fingerprint Sensor is an optional feature and requires configuration at purchase.
25. Firmware TPM is version 2.0.

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 9

Technical Specifications

26. HP Sure Sense requires Windows 10. See product specifications for availability. On HP Elite x2 G4 units with WWAN shipping to China, HP Sure Sense is only available via Softpaq download.
27. 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.
28. HP Sure Start Gen5 is available on select HP PCs with Intel processors. See product specifications for availability.

POWER

Power Supply
HP Smart 65 W External AC power adapter[29]
HP Smart 65 W EM External AC power adapter[29]
HP Smart 65 W USB Type-C® adapter[29]
HP Smart 45 W External AC power adapter[29]
HP Smart 45 W USB Type-C® adapter[29]

Power Cord
3-wire plug - 1.8 m[29]
3-wire plug - 1.0 m[29]
2-wire plug - 1.0 m[29]
Duckhead power cord - 1.0 m[29]
Duckhead power cord - 1.8 m[29]

Primary Battery
HP Long Life 3-cell, 45 Wh Li-ion polymer[30]

Battery Life
14 hours[31]

Battery Weight
0.22 kg
0.49 lb

29. Availability may vary by country.
30. Battery is internal and not replaceable by customer. Serviceable by warranty.
31. Windows 10 MM14 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See http://www.bapco.com for additional details..

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 10

Technical Specifications

WEIGHTS & DIMENSIONS

Weight
Starting at 4.41 lb[32]
Starting at 2.0 kg[32]

Dimensions (w x d x h)
14.37 x 10.11 x 0.75 in
36.49 x 25.69 x 1.89 cm

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

PORTS/SLOTS

Ports
1 USB 3.1 Type-C® Gen 1 (Power delivery, DisplayPort™)
2 USB 3.1 Gen 1
1 USB 2.0 (powered port)
1 HDMI 1.4[33]
1 RJ-45
1 AC power
1 stereo headphone/microphone combo jack

Expansion Slots
1 SD
Supports SD, SDHC, SDXC

33. HDMI cable sold separately.

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 11

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)

Nominal Operating Voltage	19V
Average Operating Power	8.1 W
Integrated graphics	Yes (AMD Radeon™ Graphics)
Max Operating Power	Discrete < 65 W
	UMA < 45 W

Temperature

Operating	32° to 95° F (0° to 35° C) (Not writing optical)
Non-operating	-4° to 140° F (-20° to 60° C) (Writing optical)

Relative Humidity

Operating	10% to 90%, non-condensing
Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature

Shock

Operating	40 G, 2 ms, half-sine
Non-operating	200 G, 2 ms, half-sine

Random Vibration

Operating	0.75 grms
Non-operating	1.50 grms

Altitude (unpressurized)

Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)

Planned Industry Standard Certifications

UL	Yes
CSA	Yes
FCC Compliance	Yes
Energy Star®	Selected models[35]
EPEAT® 2019	Yes, Gold in U.S.[36]
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

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 12

Technical Specifications

Saudi Arabian Compliance (ICCP)	**Yes**
SABS	**Yes**

35. Configurations of the HP ProBook 455 G7 that are ENERGY STAR® qualified are identified as HP ProBook 455 G7 ENERGY STAR® on HP websites and on http://www.energystar.gov.

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

DISPLAYS

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

Panel LCD 15.6 inch diagonal HD (1366 x 768) Anti-Glare WLED SVA 45% NTSC 220 nits eDP 1.2 w/o PSR slim NB non-touch	*Outline Dimensions (W x H x D)*	**350.96 x 216.75 (max.)**
	Active Area	**344.16 x 193.59 (typ.)**
	Weight	**<370g max.**
	Diagonal Size	**15.6"**
	Thickness	**3.2mm max.**
	Interface	**eDP 1.2**
	Surface Treatment	**Anti-glare**
	Touch Enabled	**No**
	Contrast Ratio	**300:1 (typ)**
	Refresh Rate	**60Hz**
	Brightness	**220 nits typical (Panel Only)**
	Pixel Resolution	**1366 x 768 (HD)**
	Format of LCD Pixel Arrangement	**RGB**
	Backlight	**LED**
	Color Gamut Coverage	**45% of NTSC**
	Color Depth	**6 bits + Hi FRC**
	Viewing Angle	**SVA 40/40/15/30**

Panel LCD 15.6 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45% NTSC 250 nits eDP 1.2 w/o PSR slim NWBZ	*Outline Dimensions (W x H x D)*	**350.96 x 216.65 mm (max)**
	Active Area	**344.16 x 193.59 mm (typ.)**
	Weight	**370 g (max)**
	Diagonal Size	**15.6 inch**
	Thickness	**3.2 mm (max)**
	Interface	**eDP 1.2 (2 lane)**
	Surface Treatment	**Anti-Glare**
	Touch Enabled	**No**
	Contrast Ratio	**600:1 (typ.)**
	Refresh Rate	**60 Hz**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 13

Technical Specifications

Brightness	**250 nits**
Pixel Resolution	**1920 x 1080 (FHD)**
Format of LCD Pixel Arrangement	**RGB**
Backlight	**LED**
Color Gamut Coverage	**45% of NTSC**
Color Depth	**6 bits**
Viewing Angle	**UWVA 85/85/85/85**

Panel LCD 15.6 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 72% NTSC 1000 nits eDP 1.4+PSR2 flat Privacy	*Outline Dimensions (W x H x D)*	**349.52 x 204.79 mm (max)**
	Active Area	**344.16 x 193.59 mm (typ.)**
	Weight	**350 g (max)**
	Diagonal Size	**15.6 inch**
	Thickness	**2.6 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 of LCD Pixel Arrangement	**RGB**
	Backlight	**LED**
	Color Gamut Coverage	**72% of NTSC**
	Color Depth	**8 bits**
	Viewing Angle	**UWVA 85/85/85/85**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 14

Technical Specifications

STORAGE AND DRIVES

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

500 GB 7200 rpm SATA Hard Drive	*Drive Weight*	**0.20 lbs (92 g) ~ 0.21 lbs (95 g)**
	Rotation speed	**7200 rpm**
	Cache Buffer	**Up to 32 MB**
	Height	**0.28 in (7 mm)**
	Width	**2.75 in (69.85 mm)**
	Interface	**ATA-8, SATA 3.0**
	Transfer Rate	**600 MB/s**
	Seek Time	**Single Track: 2 ~ 1.5 ms** **Average: 11 ~ 13 ms** **Maximum: 18 ~ 22 ms**
	Logical Blocks	**976,773,168**
	Operating Temperature	**32° to 140° F (0° to 60° C) [top cover temp]**
	Security Features	**ATA Security**
	Features	**S.M.A.R.T., NCQ, Ultra DMA**

1 TB 5400 rpm SATA Hard Drive	*Drive Weight*	**0.21 lbs (94 g)**
	Rotation speed	**5400 rpm**
	Cache Buffer	**Up to 32 MB**
	Height	**0.28 in (7.2 mm)**
	Width	**2.75 in (69.85 mm)**
	Interface	**ATA-8, SATA 3.0**
	Transfer Rate	**600 MB/s**
	Seek Time	**Single Track: 2 ms** **Average: 12 ~ 13 ms** **Maximum: 18 ~ 22 ms**
	Logical Blocks	**1,953,525,168**
	Operating Temperature	**32° to 140° F (0° to 60° C) [top cover temp]**
	Security Features	**ATA Security**
	Features	**S.M.A.R.T., NCQ, Ultra DMA**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 15

Technical Specifications

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	**Up To 520 MB/s**
	Maximum Sequential Write	**Up To 450 MB/s**
	Logical Blocks	**250,069,680**
	Operating Temperature	**32° to 158°F (0° to 70°C) [ambient temp]**
	Features	**DIPM; TRIM; DEVSLP**

256 GB 2280 PCIe NVMe Value Solid State Drive		
	Form Factor	**M.2 2280**
	Capacity	**256 GB**
	NAND Type	**TLC**
	Height	**0.09 in (2.3 mm)**
	Width	**0.87 in (22 mm)**
	Interface	**PCIe NVMe Gen3**
	Maximum Sequential Read	**Up To 1700 MB/s**
	Maximum Sequential Write	**Up To 1300 MB/s**
	Logical Blocks	**500,118,192**
	Operating Temperature	**32° to 158°F (0° to 70°C) [ambient temp]**
	Features	**TRIM; L1.2**

512 GB 2280 M2 PCIe NVMe TLC Solid State Drive		
	Form Factor	**M.2 2280**
	Capacity	**512 GB**
	NAND Type	**TLC**
	Height	**0.09 in (2.3 mm)**
	Width	**0.87 in (22 mm)**
	Interface	**PCIe NVMe Gen3X4**
	Maximum Sequential Read	**Up To 2600 MB/s**
	Maximum Sequential Write	**Up To 1400 MB/s**
	Logical Blocks	**1,000,215,216**
	Operating Temperature	**32° to 158°F (0° to 70°C) [ambient temp]**
	Features	**TRIM; L1.2**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 16

Technical Specifications

512 GB 2280 PCIe NVMe Value Solid State Drive		
	Form Factor	**M.2 2280**
	Capacity	**512 GB**
	NAND Type	**Value**
	Height	**0.09 in (2.3 mm)**
	Width	**0.87 in (22 mm)**
	Weight	**0.02 lb (10 g)**
	Interface	**PCIe NVMe Gen3X4**
	Maximum Sequential Read	**Up To 1500 ~ 1700 MB/s**
	Maximum Sequential Write	**Up To 860 ~ 1500 MB/s**
	Logical Blocks	**1,000,215,216**
	Operating Temperature	**32° to 158°F (0° to 70°C) [ambient temp]**
	Features	**ATA Security, TRIM; L1.2**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 17

Technical Specifications

NETWORKING/COMMUNICATIONS

Intel® Wi-Fi 6[1] AX200 and Bluetooth® 5.0 802.11ax (2x2), non-vPro, supporting gigabit file transfer speeds non-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/ax**
		  2.402 – 2.482 GHz
		•802.11a/n/ac/ax
		  4.9 – 4.95 GHz (Japan)
		  5.15 – 5.25 GHz
		  5.25 – 5.35 GHz
		  5.47 – 5.725 GHz
		  5.825 – 5.850 GHz

	Data Rates	**•802.11b: 1, 2, 5.5, 11 Mbps** **•802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps** **•802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps** **•802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)** **•802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)** **• 802.11ax: MCS0 ~ MCS11, (1SS and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)**
	Modulation	**Direct Sequence Spread Spectrum** **OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM**
	Security[3]	**• IEEE compliant 64 / 128 bit WEP encryption for a/b/g mode only** **• AES-CCMP: 128 bit in hardware** **• 802.1x authentication** **• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.** **• WPA2 certification** **• IEEE 802.11i** **• WAPI**
	Network Architecture 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**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 18

Technical Specifications

	• **802.11n HT40(5GHz): +14.5dBm minimum**	
	• **802.11ac VHT80(5GHz): +11.5dBm minimum**	
	• **802.11ac VHT160(5GHz): +11.5dBm minimum**	
	• **802.11ax HT40(2.4GHz): +10dBm minimum**	
	• **802.11ax VHT160(5GHz): +10dBm minimum**	
Power Consumption	• **Transmit mode 2.0 W** • **Receive mode 1.6 W** • **Idle mode (PSP) 180 mW (WLAN Associated)** • **Idle mode 50 mW (WLAN unassociated)** • **Connected Standby 10 mW** • **Radio disabled 8 mW**	
Power Management	**ACPI and PCI Express compliant power management** **802.11 compliant power saving mode**	
Receiver Sensitivity[4]	• **802.11b, 1Mbps: -93.5dBm maximum** • **802.11b, 11Mbps: -84dBm maximum** • **802.11a/g, 6Mbps: -86dBm maximum** • **802.11a/g, 54Mbps: -72dBm maximum** • **802.11n, MCS07: -67dBm maximum** • **802.11n, MCS15: -64dBm maximum** • **802.11ac, MCS0: -84dBm maximum** • **802.11ac, MCS9: -59dBm maximum** • **802.11ax, MCS11(HT40): -59dBm maximum** • **802.11ax, MCS11(VHT160): -58.5dBm maximum**	
Antenna type	**High efficiency antenna with spatial diversity, mounted in the display enclosure** **Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications**	
Form Factor	**PCI-Express M.2 MiniCard**	
Dimensions	**1. Type 2230 : 2.3 x 22.0 x 30.0 mm** **2. Type 1216: 1.67 x 12.0 x 16.0 mm**	
Weight	**1. Type 2230 : 2.8 g** **2. Type 126: 1.3 g**	
Operating Voltage	**3.3v +/- 9%**	
Temperature	**Operating** **Non-operating**	**Operating: 14° to 158° F (−10° to 70° C)** **Non-operating: −40° to 176° F (−40° to 80° C)**
Humidity	**Operating** **Non-operating**	**Operating: 10% to 90% (non-condensing)** **Non-operating: 5% to 95% (non-condensing)**
Altitude	**Operating** **Non-operating**	**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 OFF – Radio ON**	

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

Bluetooth® Specification	**4.0/4.1/4.2/5.0/5.1 Compliant**
Frequency Band	**2402 to 2480 MHz**
Number of Available Channels	**Legacy: 0~79 (1 MHz/CH)** **BLE: 0~39 (2 MHz/CH)**
Signaling Data Rate[4]	**Legacy: 3 Mbps Signaling Data Rate 2.17 Mbps**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 19

Technical Specifications

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

1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ax devices. Only available in countries where 802.11ax is supported.
2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of
transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
3. Check latest software/driver release for updates on supported security features.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 20

Technical Specifications

Intel® 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5.0 Combo[1] Non-vPro	*Wireless LAN Standards*	**IEEE 802.11a** **IEEE 802.11b** **IEEE 802.11g** **IEEE 802.11n** **IEEE 802.11ac** **IEEE 802.11d** **IEEE 802.11e** **IEEE 802.11h** **IEEE 802.11i** **IEEE 802.11k** **IEEE 802.11r** **IEEE 802.11v**
	Interoperability	**Wi-Fi CERTIFIED™**
	Frequency Band	**•802.11b/g/n** **2.402 – 2.482 GHz** **•802.11a/n/ac** **4.9 – 4.95 GHz (Japan)** **5.15 – 5.25 GHz** **5.25 – 5.35 GHz** **5.47 – 5.725 GHz** **5.825 – 5.850 GHz**
	Data Rates	**•802.11b: 1, 2, 5.5, 11 Mbps** **•802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps** **•802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps** **•802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)** **•802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)**
	Modulation	**Direct Sequence Spread Spectrum** **BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM**
	Security[3]	**•IEEE compliant 64 / 128 bit WEP encryption for a/b/g mode only** **•AES-CCMP: 128 bit in hardware** **•802.1x authentication** **•WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.** **•WPA2 certification** **•IEEE 802.11i** **•WAPI**
	Network Architecture 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** **• 802.11ac VHT160(5GHz): +11.5dBm minimum**
	Power Consumption	**•Transmit mode 2.0 W** **•Receive mode 1.6 W** **•Idle mode (PSP) 180 mW (WLAN Associated)** **•Idle mode 50 mW (WLAN unassociated)** **•Connected Standby/Modern Standby: 10mW**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 21

Technical Specifications

	•**Radio disabled 8 mW**
Power Management	**ACPI and PCI Express compliant power management** **802.11 compliant power saving mode**
Receiver Sensitivity[4]	**802.11b, 1Mbps: -93.5dBm maximum** **802.11b, 11Mbps: -84dBm maximum** **802.11a/g, 6Mbps: -86dBm maximum** **802.11a/g, 54Mbps: -72dBm maximum** **802.11n, MCS07: -67dBm maximum** **802.11n, MCS15: -64dBm maximum** **802.11ac, MCS0: -84dBm maximum** **802.11ac, MCS9: -59dBm maximum**
Antenna type	**High efficiency antenna.** **One embedded dual band 2.4/5 GHz antenna is provided to the card to support WLAN communications and Bluetooth communications**
Form Factor	**PCI-Express M.2 MiniCard**
Dimensions	**Type 2230: 2.3 x 22.0 x 30.0 mm** **Type 1216: 1.67 x 12.0 x 16.0 mm**
Weight	**Type 2230: 2.8 g** **Type 126: 1.3 g**
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 OFF – Radio ON**

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)** **BLE: 0~39 (2 MHz/CH)**
Signaling Data Rate	**Legacy: 3 Mbps Signaling Data Rate 2.17 Mbps** **BLE: 1 Mbps Signaling Data Rate 0.2 Mbps** **1. Actual throughput may vary.**
	Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels **Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)**
Transmit Power	**The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.**
Power Consumption	**Peak (Tx) 330 mW** **Peak (Rx) 230 mW** **Selective Suspend 17 mW**
Electrical Interface	**USB 2.0 compliant**
Bluetooth Software Supported	**Microsoft Windows Bluetooth Software**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 22

Technical Specifications

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

1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited.
2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
3. Check latest software/driver release for updates on supported security features.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5.0	*Wireless LAN Standards*	**IEEE 802.11a** **IEEE 802.11b** **IEEE 802.11g** **IEEE 802.11n** **IEEE 802.11ac** **IEEE 802.11d** **IEEE 802.11e** **IEEE 802.11h** **IEEE 802.11i** **IEEE 802.11k** **IEEE 802.11r** **IEEE 802.11v**
	Interoperability	**Wi-Fi CERTIFIED™**
	Frequency Band	**•802.11b/g/n** **2.402 – 2.482 GHz** **•802.11a/n/ac** **4.9 – 4.95 GHz (Japan)** **5.15 – 5.25 GHz**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 23

Technical Specifications

	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)**
Modulation	**Direct Sequence Spread Spectrum** **BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM**
Security[3]	**•IEEE compliant 64 / 128 bit WEP encryption for a/b/g mode only** **•AES-CCMP: 128 bit in hardware** **•802.1x authentication** **•WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.** **•WPA2 certification** **•IEEE 802.11i** **•WAPI**
Network Architecture 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** **• 802.11ac VHT160(5GHz): +11.5dBm minimum**
Power Consumption	**•Transmit mode: 2.0 W** **•Receive mode: 1.6 W** **•Idle mode (PSP) 180 mW (WLAN Associated)** **•Idle mode: 50 mW (WLAN unassociated)** **•Connected Standby/Modern Standby: 10mW** **•Radio disabled: 8 mW**
Power Management	**ACPI and PCI Express compliant power management** **802.11 compliant power saving mode**
Receiver Sensitivity[4]	**802.11b, 1Mbps: -93.5dBm maximum** **802.11b, 11Mbps: -84dBm maximum** **802.11a/g, 6Mbps: -86dBm maximum** **802.11a/g, 54Mbps: -72dBm maximum** **802.11n, MCS07: -67dBm maximum** **802.11n, MCS15: -64dBm maximum** **802.11ac, MCS0: -84dBm maximum** **802.11ac, MCS9: -59dBm maximum**
Antenna type	**High efficiency antenna with spatial diversity, mounted in the display enclosure** **Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications**
Form Factor	**PCI-Express M.2 MiniCard with CNVi Interface**
Dimensions	**Type 2230: 2.3 x 22.0 x 30.0 mm** **Type 1216: 1.67 x 12.0 x 16.0 mm**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 24

Technical Specifications

Weight	**Type 2230: 2.8 g** **Type 126: 1.3 g**
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 OFF – Radio ON**

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)** **BLE: 0~39 (2 MHz/CH)**
Signaling Data Rate	**Legacy: 3 Mbps Signaling Data Rate 2.17 Mbps** **BLE: 1 Mbps Signaling Data Rate 0.2 Mbps** **1. Actual throughput may vary.** **Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels** **Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)**
Transmit Power	**The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.**
Power Consumption	**Peak (Tx) 330 mW** **Peak (Rx) 230 mW** **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** **Low Voltage Directive IEC950** **UL, CSA, and CE Mark**
Bluetooth Profiles Supported	**BT4.1-ESR 5/6/7 Compliance** **LE Link Layer Ping** **LE Dual Mode** **LE Link Layer** **LE Low Duty Cycle Directed Advertising** **LE L2CAP Connection Oriented Channels** **Train Nudging & Interlaced Scan** **BT4.2 ESR08 Compliance** **LE Secure Connection- Basic/Full** **LE Privacy 1.2 –Link Layer Privacy** **LE Privacy 1.2 –Extended Scanner Filter Policies** **LE Data Packet Length Extension**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 25

Technical Specifications

> **FAX Profile (FAX)**
> **Basic Imaging Profile (BIP)2**
> **Headset Profile (HSP)**
> **Hands Free Profile (HFP)**
> **Advanced Audio Distribution Profile (A2DP)**

1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited.
2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
3. Check latest software/driver release for updates on supported security features.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

Realtek RTK8111HSH 10/100/1000 Integrated NIC	Connector	RJ-45
	System Interface	PCIe + SMBus
	Ethernet Features	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s
	Power Management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
	Performance Features	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling Jumbo Frame 9K
	Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
	Management Interface	Auto MDI/MDIX Crossover cable detection

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c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 26

Technical Specifications

POWER

HP 45 W Smart AC adapter	Dimensions (H x W x D)	3.74 x 1.57 x 1.04 in (9.5 x 4.0 x 2.65 cm)	
	Weight	0.386 lb (175 g) max **Not including power cord. Power cord varies by country**	
	Input	90 to 265 VAC	
		Input Efficiency	87.74% at 115 VAC and 88.4% at 230 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.4 A at 90 VAC
	Output	Output power	45 W
		DC output	19.5 V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<8.0 A
	Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords	
	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 5,000 m)
		Humidity	20% to 95%
		Storage Humidity	10% to 95%
	EMI and Safety Certifications	*CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.	

HP 65 W Smart AC adapter	Dimensions	90 x 51 x 28.5 mm	
	Weight	220 g +/- 10 g **Not including power cord. Power cord varies by country**	
	Input	Input Efficiency	88% min at 115 VAC and 89.0% at 230 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	Max. 1.7 A at 90 VAC
	Output	Output power	65 W
		DC output	19.5 V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11.0 A
	Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating temperature	32°F to 95°F (0°to 35°C)

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 27

Technical Specifications

	Non-operating (storage) temperature	**-4°F to 185°F (-20°to 85°C)**
	Altitude	**0 to 16,400 ft (0 to 5000m)**
	Humidity	**20% to 95%**
	Storage Humidity	**10% to 95%**
EMI and Safety Certifications	***CE Mark - full compliance with LVD and EMC directives**	
	* Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.	
	* MTBF - over 200,000 hours at 25°C ambient condition.	

HP 65 W EM Smart AC adapter	Dimensions	**102 x 55 x 30 mm**
	Weight	**270g +/- 10g** **Not including power cord. Power cord varies by country**
	Input Efficiency	**87% min at 115V/230V**
	Input frequency range	**47 to 63 Hz**
	Input AC current	**1.7 A at 90 Vac and maximum load**
	DC output	**65 W (19.5V/3.33A)**
	Hold-up time	**5 msec at 115 VAC input**
	Output current limit	**<11 A, Over voltage protection- 29V max automatic shutdown**
	Connector	**4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords**
	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 5,000 m**
		Humidity	**0% to 95%**
		Storage Humidity	**0% to 95%**
	EMI and Safety Certifications	***CE Mark - EMC directives** *** Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; Reliability - failure rate of less than 0.1% annually within the first three years of operation.** ***MTBF - over 200,000 hours at 25°C ambient condition.**

AC Adapter 65 Watt nPFC USB Type-C®	Dimensions	**74 x 74 x 28.5 mm**	
	Weight	**245 g +/- 10 g** **Not including power cord. Power cord varies by country**	
	Input	Input Efficiency	**81.5% min at 115 Vac/ 230Vac @ 5V/3A** **86.7% min at 115 Vac/ 230Vac @ 9V/3A**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 28

Technical Specifications

		88% min at 115 Vac/ 230Vac @ 10V/5A **88% min at 115 Vac/ 230Vac @ 12V/5A** **89% min at 115 Vac/ 230Vac @ 15V/4.33A** **89% min at 115 Vac/ 230Vac @ 20V/3.25A**
	Input frequency range	**47 to 63 Hz**
	Input AC current	**1.7 A at 90 VAC and maximum load**
	Output power	**65 W**
	DC output	**5V/9V/10V/12V/15V/20V**
	Hold-up time	**5ms at 115 VAC input**
	Output current limit	**<8.0A**
Connector	**USB Type-C®**	
Environmental Design	*Operating temperature*	**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**	
	* Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.	
	* MTBF - over 200,000 hours at 25°C ambient condition.	

AC Adapter 45 Watt nPFC USB Type-C®	*Dimensions*	**94.0mm x 40.0mm x 26.5mm**
	Weight	**192.5g +/-10%** **Not including power cord. Power cord varies by country**
	Input	*Input Efficiency*
		Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec: **5V : 81.5%** **9V : 86.7%** **12V : 87.41%** **15V : 87.8%**
	Input frequency range	**47 to 63 Hz**
	Input AC current	**Max. 1.4 A at 90 VAC**
	Output power	**5V/15W** **9V/27W** **12V/36W** **15V/45W**
	DC output	**5V/9V/12V/15V**
	Hold-up time	**5ms at 115 VAC input**
	Output current limit	**<5.0 A**
Connector	**USB Type-C®**	

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 29

Technical Specifications

Environmental Design	*Operating temperature*	**32°F to 95°F (0°to 35°C)**
	Non-operating (storage) temperature	**-4°F to 185°F (-20°to 85°C)**
	Altitude	**0 to 16,400 ft (0 to 5000m)**
	Humidity	**20% to 95%**
	Storage Humidity	**10% to 95%**
EMI and Safety Certifications	***CE Mark - full compliance with LVD and EMC directives**	
	* Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.	
	* MTBF - over 200,000 hours at 25°C ambient condition.	

3 Cell WHr 45 Long Life - Polymer HP Fast Charge Technology[1]	*Dimensions (H x W x L)*	**6.0 x 184.7 x 88.9 mm**
	Weight	**0.22 kg (0.48 lb)**
	Cells/Type	**3cell Lithium-Ion**
	Voltage	**11.55 V**
	Amp-hour capacity	**3.900 Ah**
	Watt-hour capacity	**45 Wh**
	Operating (Charging)	**32˚ to 113˚ F (0˚ to 45˚ C)**
	Operating (Discharging)	**14˚ to 122˚ F (-10˚ to 60˚ C)**
	Optional Travel Battery Available	**No**

1. Recharges the battery up to 50% within 30 minutes when the system is off or in standby mode when used with the power adapter provided with the notebook. After charging has reached 50% capacity, charging speed will return to normal. Charging time may vary +/-10% due to System tolerance.

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 30

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

Type	Description	Part Number
Cases	**HP Essential Top Load Case**	**H2W17AA**
	HP Essential Backpack (up to 15.6")	**H1D24AA**
	HP 17.3 Business Backpack	**2SC67AA**
Docking	**HP USB-C Mini Dock**	**1PM64AA**
	HP Thunderbolt Dock 120W G2	**2UK37AA**
	HP TB Dock G2 w/ Combo Cable	**3TR87AA**
	HP TB Dock 120W G2 w/Audio	**3YE87AA**
	HP TB Dock 120W G2 Cable	**3XB94AA**
	HP TB Dock G2 Combo Cable	**3XB96AA**
	HP TB Dock G2 Audio Module	**3AQ21AA**
	HP USB-C/A Universal Dock G2	**5TW13AA**
	HP USB-C Dock G5	**5TW10AA**
Input / Output	**HP USB Essential Keyboard and Mouse**	**H6L29AA**
	HP Bluetooth Travel Mouse	**6SP30AA**
	HP Ultra Mobile Wireless Mouse	**H6F25AA**
	HP Comfort Grip Wireless Mouse	**H2L63AA**
	HP 3-Button USB Laser Mouse	**H4B81AA**
	HP USB Travel Mouse	**G1K28AA**
	HP HDMI to DVI Adapter	**F5A28AA**
	HP Elite USB-C Hub	**4WX89AA**
	HP USB-C Travel Hub G2	**7PJ38AA**
Power	**HP 45W Smart AC Adapter 4.5mm**	**H6Y88AA**
	65W Smart Power Adapter (w/ 4.5mm to 7.5mm DC dongle)	**H6Y89AA**
	HP 65W Slim AC Adapter	**H6Y82AA**
	HP 65W USB-C Slim Power Adapter	**3PN48AA**
	HP 65W USB-C Power Adapter	**1HE08AA**
	HP 45W USB-C Power Adapter	**1HE07AA**
	HP Power Bank	**N9F71AA**
	HP USB-C Power Bank	**2NA10AA**
Storage	**HP External USB Optical Drive**	**F2B56AA**
Security	**HP Keyed Cable Lock 10mm**	**T1A62AA**
	HP Sure Key Cable Lock	**6UW42AA**

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c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 31

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

Displays

HP E223d Docking Monitor (Santino)		**5VT82A8/5VT82AA**
HP E243d Docking Monitor (Sonny)		**1TJ76AA**
HP E273d Docking Monitor (Vito)		**5WN63A8/5WN63AA**
HP EliteDisplay E244d Monitor (Sand Dollar)		**6PA50A8/6PA50AA**
HP EliteDisplay E274d Monitor (Glomar)		**6PA56A8/6PA56AA**

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c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 32

Summary of Changes

Date of change:	Version History:		Description of change:
April 29, 2020	**V1 to V2**	**Updated**	**MIL-STD 810G to MIL-STD 810H**

Not all configuration components are available in all regions/countries.
c06543048 — DA16570 - Worldwide — Version 2 —April 29, 2020

Page 33