## Overview

**HP 240 G7 Notebook PC**

| | |
|---|---|
| 1. Webcam LED | **Left** |
| 2. Webcam | 7. Hard drive indicator LED |
| 3. Internal microphone | 8. SD Card slot |
| 4. Touchpad | 9. USB 2.0 port |
| 5. Touchpad button | 10. Security lock slot (Lock sold separately) |
| 6. Power indicator LED | 11. Power button |

Overview



**Right**

1. AC Smart Pin adapter plug
2. RJ-45/Ethernet port
3. HDMI port (Cable not included)

4. USB 3.1 Gen 1 port
5. USB 3.1 Gen 1 port
6. Audio combo jack

## At A Glance

## Overview

- Preinstall with Windows 10 versions, FreeDOS or Ubuntu
- Choice of 8th or 7th Generation Intel® Core™, Intel® Pentium®, or Intel® Celeron® processors
- 14" (35.56 cm) diagonal HD Anti-Glare Display
- Choice of Integrated Intel® UHD Graphics 620, HD Graphics 620, UHD Graphics 605, UHD Graphics 600 Graphics or Switchable Discrete Graphics AMD Radeon™ 520
- Dark Ash Silver color with texture pattern
- Up to 1 TB Hard Drive or 256 GB M.2 PCIe Value Solid State Drive
- Weight starting at 1.52 kg (3.4 lbs)
- Security features including FW TPM 2.0 and security lock slot (Lock not included)
- Full size textured island-style keyboard
- Touchpad with gestures support
- HP webcam with single digital microphone and HD (supporting WDR- Wide Dynamic Range) or VGA camera
- Two USB 3.1 (Gen 1) ports and One USB 2.0 port
- Wireless LAN (WLAN) up to 802.11ac to keep you connected
- Up to 12 hours 15 mins (Intel® 7th generation CPU, HD display, Solid State Drive & 3-cell 41 WHr battery)

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

# PRODUCT NAME

HP 240 G7 Notebook PC

# OPERATING SYSTEM

**Preinstalled**       Windows 10 Pro 64[1]
Windows 10 Home 64[1]
Windows 10 Home Single Language 64[1]
Windows 10 Pro 64 (National Academic only)[1,2]
FreeDOS
Ubuntu

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.

# PROCESSOR

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

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

Intel® Core™ i7-8550U with Intel® UHD graphics 620 (1.8 GHz base frequency, up to 4 GHz with Intel® Turbo Boost Technology, 8 MB cache, 4 cores)[3,4,5,6]

Intel® Core™ i5-8250U with Intel® UHD Graphics 620 (1.6 GHz base frequency, up to 3.4 GHz with Intel® Turbo Boost Technology, 6 MB cache, 4 cores)[3,4,5,6]

Intel® Core™ i3-7020U with Intel® HD Graphics 620 (2.3 GHz, 3 MB cache, 2 cores)[3,4,6]

Intel® Pentium® Silver Processor N5000 with Intel® UHD Graphics 605 (1.1 GHz base frequency, up to 2.7 GHz burst frequency, 4 MB cache, 4 cores)[3,4,6]

Intel® Celeron® Processor N4000 with Intel® UHD Graphics 600 (1.1 GHz base frequency, up to 2.6 GHz burst frequency, 4 MB cache, 2 cores)[3,4,6]

**Processor Family**

8th Generation Intel® Core™ i7 processor (i7-8565U, i7-8550U)[6]

8th Generation Intel® Core™ i5 processor (i5-8265U, i5-8250U)[6]

7th Generation Intel® Core™ i3 processor (i3-7020U)[6]

Intel® Pentium® processor (N5000 is Windows 10 only)[6]

Intel® Celeron® processor (N4000 is Windows 10 only)[6]

Features

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.

# CHIPSET

Intel® SOC Chipset

# GRAPHICS

**Integrated**
Intel® UHD Graphics 620[7]
Intel® HD Graphics 620[7]
Intel® UHD Graphics 605[7]
Intel® UHD Graphics 600[7]

**Discrete**
AMD Radeon™ RX 520 (2 GB GDDR5 dedicated)[8]

**Supports**
Support HD decode, DX12, HDMI 1.4b[9]

7. HD content required to view HD images.

8. AMD Dynamic Switchable Graphics technology requires an Intel processor, plus an AMD Radeon™ discrete graphics configuration and is not available on FreeDOS and Linux OS. With AMD Dynamic Switchable Graphics technology, full enablement of all discrete graphics video and display features may not be supported on all systems (e.g. OpenGL applications will run on the integrated GPU or the APU as the case may be).

9. HDMI cable sold separately.

# DISPLAY

Features

### Internal

**Non-Touch**
35.56 cm (14") diagonal HD SVA eDP anti-glare WLED-backlit slim-flat, 220 cd/m², 45% NTSC (1366 x 768)[7,10]

**HDMI**
Port supports resolutions up to 1920 x 1200 external resolution @60 Hz

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

# STORAGE AND DRIVES

**Primary Storage**
1 TB 5400 rpm SATA[11]
500 GB 7200 rpm SATA[11]
500 GB 5400 rpm SATA[11]

**Primary M.2 Storage**
128 GB M.2 SATA-3 TLC Solid State Drive [11]
256 GB M.2 SATA-3 TLC Solid State Drive [11]
256 GB PCIe® NVMe™ M.2 Value Solid State Drive [11]

11. 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

Features

### *Standard*

**Maximum Memory**
16 GB DDR4-2400 SDRAM [12]
16 GB DDR4-2133 SDRAM [12]

**Memory**
16 GB DDR4-2400 SDRAM (2 X 8 GB)[12]
12 GB DDR4-2400 SDRAM (4 GB + 8 GB[12]
8 GB DDR4-2400 SDRAM (1 x 8 GB)
8 GB DDR4-2400 SDRAM (2 x 4 GB)[12]
4 GB DDR4-2400 SDRAM (1 x 4 GB)
16 GB DDR4-2133 SDRAM (2 X 8 GB)[12]
12 GB DDR4-2133 SDRAM (4 GB + 8 GB)[12]
8 GB DDR4-2133 SDRAM (1 x 8 GB)
8 GB DDR4-2133 SDRAM (2 x 4 GB)[12]
4 GB DDR4-2133 SDRAM (1 x 4 GB)

**Memory Slots**
2 SODIMM (Intel® 8th & 7th Generation Intel® Core™ processor)
DDR4 PC4 SODIMMS, system runs at 2400 (Intel 7th Gen (KBL) runs at 2133)
Supports Dual Channel Memory
1 SODIMM (Intel® Pentium®, Celeron® processors)
All slots are customer non-accessible / non-upgradeable

**NOTE:** All slots are customer non-accessible / non-upgradeable.

12. 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

Features

### WLAN
Realtek 802.11ac (2x2) WLAN and Bluetooth® 4.2 Combo (MU-MIMO supported)[13]
Realtek 802.11ac (1x1) WLAN and Bluetooth® 4.2 Combo (MU-MIMO supported)[13]
Realtek 802.11b/g/n (1x1) and Bluetooth® 4.2 Combo[13]

### Miracast
Compatible with Miracast-certified devices [14]

### Ethernet
Integrated 10/100/1000 GbE NIC [15]

13. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited.
14. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.
15. The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

# AUDIO/MULTIMEDIA

### Audio
2 Integrated stereo speakers
### Camera
HP TrueVision HD Camera [7,16]
### Webcam
VGA webcam [16,17]

7. HD content required to view HD images.
16. Sold separately or as an optional feature.
17. Internet access required.

# KEYBOARDS/TOUCHPAD

Features

**Keyboard**
Full size island-style keyboard

**Pointing Device**
Touchpad with multi-touch gesture support

**Function Keys**
F1 - Open " How to get help in Windows 10" webpage
F2 - Brightness Down
F3 - Brightness Up
F4 - Display Switching
F5 - Blank
F6 - Mute
F7 - Volume Down
F8 -Volume Up
F9 - Previous
F10 - Play/Pause
F11 - Next
F12 - Airplane mode

# SOFTWARE AND SECURITY

**Preinstalled Software**

HP JumpStart
HP Documentation
HP Setup Integrated OOBE
HP SSRM
HP Audio Switch
HP Support Assistant [18]
McAfee LiveSafe™

**Security Management**
TPM 2.0[19]
Security lock slot (Lock sold separately)

18. HP Support Assistant requires Windows and Internet access.
19. Firmware TPM is version 2.0. Hardware TPM is v1.2, which is a subset of the TPM 2.0 specification version v0.89 as implemented by Intel Platform Trust Technology (PTT).

# POWER

Features

### Power Supply

HP Smart 65 W External AC power adapter [20,22]
HP Smart 65 W EM External AC power adapter [20,22]
HP Smart 45 W External AC power adapter [20]

### Primary Battery

HP Long Life 3-cell, 41 Wh Li-ion [21]
Support battery fast charging - Approximately 90% in 90 minutes[22]

### Battery Life

Up to 12 hours 15 mins (Intel® 7th generation CPU, HD display, Solid State Drive & 3-cell 41 WHr battery) [23]

### Power Cord

1M (3.28 feet) length power cord

### Battery Weight

0.18 kg
0.39 lb

20. Availability may vary by country.
21. Battery is internal and not replaceable by customer. Serviceable by warranty.
22. Recharges the battery up to 90% within 90 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 90% capacity, charging will return to normal. Charging time may vary +/- 10% due to System tolerance.
23.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.

# WEIGHTS & DIMENSIONS

**Product Weight**
Starting at 3.3 lbs[24]
Starting at 1.52 kg[24]

**Product Dimensions** (W x D x H)
13.19 x 9.21 x 0.78 in
33.5 x 23.4 x 1.99 cm

24. Weight will vary by configuration.

# PORTS/SLOTS

Features

### Ports/Connectors

2 USB 3.1 Gen 1
1 USB 2.0
1 HDMI v1.4b[9]
1 RJ-45
1 AC power
1 Headphone/microphone combo jack

### Expansion Slots

1 multi-format digital media reader
Supports SD, SDHC, SDXC

9. HDMI cable sold separately.

# 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.[25]

25. 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.

Technical Specifications

## SYSTEM UNIT

**Stand-Alone Power Requirements (AC Power)**

| | |
|---|---|
| Nominal Operating Voltage | 19.5 V |
| Average Operating Power | Win 10 |
| Integrated graphics | 7.69W |
| Max Operating Power | Discrete < 65W |
| | UMA < 45W |

**Temperature**

| | |
|---|---|
| Operating | 32° to 95° F (0° to 35° C) (not writing optical) |
| | 41° to 95° F (5° to 35° C) (writing optical) |
| Non-operating | -4° to 140° F (-20° to 60° C) |

**Relative Humidity**

| | |
|---|---|
| Operating | 10% to 90%, non-condensing |
| Non-operating | 5% to 95% |

**Shock**

| | |
|---|---|
| Operating | 40 G, 2 ms duration, half-sine |
| Non-operating | 240 G, 2 ms duration, half-sine |

**Random Vibration**

| | |
|---|---|
| Operating | 1.043 grms |
| Non-operating | 3.5 grms |

**Planned Industry Standard Certifications**

| | |
|---|---|
| UL | Yes |
| CSA | No |
| FCC Compliance | Yes |
| ENERGY STAR® | Yes[26] |
| EPEAT® 2019 | Yes, Silver in U.S.[27] |
| 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 |

26. Configurations of the HP 240 G7 that are ENERGY STAR® certified[2] are identified as HP 240 G7 ENERGY STAR on HP websites and on http://www.energystar.gov.

27. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit

Technical Specifications

http://www.epeat.net for more information.

## DISPLAYS

**14" HD WLED Anti-Glare diagonal (1366 x 768) slim-flat (3.0mm), SVA, eDP**

| | |
|---|---|
| **Outline Dimensions** (W x H x D) | 320.9 x 250.6 x 3.0 |
| **Active Area** | 309.5 x 174.05 |
| **Weight** | 270g max |
| **Diagonal Size** | 14.0 (inch) |
| **Thickness** | 3.0 (mm) max |
| **Interface** | eDP 1.2 |
| **Surface Treatment** | AG |
| **Contrast Ratio** | 600:1 (typ. AG) |
| **Refresh Rate** | 60Hz |
| **Brightness** | 220nits typical |
| **Pixel Resolution** | 1366 x 768 (HD) |
| **Format of LCD Pixel Arrangement** | RGB |
| **Backlight** | LED |
| **Color Gamut Coverage** | 45% of NTSC |
| **Color Depth** | 6 bits |
| **Viewing Angle** | 45/45/20/40 |

## STORAGE AND DRIVES

**500 GB 5400 rpm SATA Dard Drive**

| | |
|---|---|
| **Drive Weight** | 92g(0.20lb) |
| **Rotation speed** | 5400 rpm |
| **Cache Buffer** | Up to 128MB |
| **Height** | 7.0 +/- 0.2 mm (0.28 +/-.008 in) |
| **Width** | 69.85 +/- 0.25 mm (2.750 +/- 0.010 in) |
| **Interface** | ATA-8, SATA 3.0 |
| **Transfer Rate** | 600 MB/s |
| **Seek Time** | Single Track: 2 ~ 1.5 ms<br>Average: 11 ~ 16 ms<br>Maximum: 18 ~ 22 ms |
| **Logical Blocks** | 976,773,168 |
| **Operating Temperature** | 0° to 60°C |
| **Security Features** | ATA Security |
| **Features** | S.M.A.R.T., NCQ, Ultra DMA |

## Technical Specifications

| 500 GB 7200 rpm SATA Hard Drive | | |
|---|---|---|
| | **Drive Weight** | 92g(0.20lb) |
| | **Rotation speed** | 7200 rpm |
| | **Cache Buffer** | Up to 128MB |
| | **Height** | 7.0 +/- 0.2 mm (0.28 +/-.008 in) |
| | **Width** | 69.85 +/- 0.25 mm (2.750 +/- 0.010 in) |
| | **Interface** | ATA-8, SATA 3.0 |
| | **Transfer Rate** | Single Track: 2 ~ 1.5 ms;<br>Average: 11 ~ 13 ms;<br>Maximum: 18 ~ 22 ms |
| | **Seek Time** | 976,773,168 |
| | **Logical Blocks** | 0° to 60°C |
| | **Operating Temperature** | ATA Security |
| | **Security Features** | S.M.A.R.T., NCQ, Ultra DMA |
| | **Features** | 976,773,168 |

| 1 TB 5400 rpm SATA Hard Drive | | |
|---|---|---|
| | **Drive Weight** | 90g(0.198lb) |
| | **Rotation speed** | 5400 rpm |
| | **Cache Buffer** | Up to 128MB |
| | **Height** | <7.2mm |
| | **Width** | 69.85 +/- 0.25 mm (2.750 +/- 0.010 in) |
| | **Interface** | ATA-8, SATA 3.0 |
| | **Transfer Rate** | 600 MB/s |
| | **Seek Time** | Single Track: 2 ~ 1.5 ms;<br>Average: 11 ~ 16 ms;<br>Maximum: 18 ~ 22 ms |
| | **Logical Blocks** | 976,773,168 |
| | **Operating Temperature** | 0° to 60°C |
| | **Security Features** | ATA Security |
| | **Features** | S.M.A.R.T., NCQ, Ultra DMA |

| 128 GB 2280 M2 SATA-3 TLC Solid State Drive | | |
|---|---|---|
| | **Drive Weight** | 0.02 lb (10 g) |
| | **NAND Type/Size** | TLC/128GB |
| | **Height** | 0.09 in (2.3 mm) |
| | **Width** | 0.87 in (22 mm) |
| | **Interface** | ATA-8, SATA 3.0 |
| | **Transfer Rate** | 550MB/s |
| | **Logical Blocks** | 250,069,680 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Security Features** | ATA Security |
| | **Features** | DIPM; TRIM; DEVSLP |

Technical Specifications

| 256 GB 2280 M2 SATA-3 TLC Solid State Drive | Drive Weight | 0.02 lb (10 g) |
|---|---|---|
| | **Height** | 0.09 in (2.3 mm) |
| | **Width** | 0.87 in (22 mm) |
| | **Interface** | ATA-8, SATA 3.0 |
| | **Transfer Rate** | 550MB/s |
| | **Logical Blocks** | 500,118,192 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Security Features** | ATA Security |
| | **Features** | DIPM; TRIM; DEVSLP |

| 256 GB 2280 M2 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) |
| | **Weight** | 0.01 lb (6 g) ~ 0.02 lb (10 g) |
| | **Interface** | PCIe NVMe Gen3x2 |
| | **Maximum Sequential Read** | Up To 1500 MB/s |
| | **Maximum Sequential Write** | Up To 1000 MB/s |
| | **Logical Blocks** | 500,118,192 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Features** | DIPM; TRIM; DEVSLP |

| 16 GB Intel Optane Solution PCIe Gen3x2 M.2 SSD | Form Factor | M.2 2280 |
|---|---|---|
| | Capacity | 16 GB |
| | NAND Type | 3D Xpoint |
| | Height | 0.09 in (2.3 mm) |
| | Width | 0.87 in (22 mm) |
| | Interface | PCIe NVMe Gen3x2 |
| | Maximum Sequential Read | 1350MB/s |
| | Maximum Sequential Write | 290MB/s |
| | Logical Blocks | 31,257,387 |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |

# NETWORKING/COMMUNICATIONS
## WLAN

| Realtek RTL8822BE 802.11 ac 2x2 WLAN and Bluetooth® 4.2 Combo Adapter (MU- | Wireless LAN Standards | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g |
|---|---|---|

## Technical Specifications

| | | |
|---|---|---|
| **MIMO supported)** | | IEEE 802.11n<br>IEEE 802.11ac |
| | **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, and 80MHz)

**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: +14dBm minimum
- 802.11g: +12dBm minimum
- 802.11a: +12dBm minimum
- 802.11n HT20(2.4GHz): +12dBm minimum
- 802.11n HT40(2.4GHz): +12dBm minimum
- 802.11n HT20(5GHz): +10dBm minimum
- 802.11n HT40(5GHz): +10dBm minimum
- 802.11ac VHT80(5GHz): +10dBm minimum

**Power Consumption**

Transmit mode: 2.0 W
Receive mode: 1.6 W
Idle mode (PSP)180 mW (WLAN Associated)
Idle mode: 50 mW (WLAN unassociated)
Connected Standby/Modern Standby: 10mW
Radio disabled: 8 mW

## 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 enclosu<br><br>Two embedded dual band 2.4/5 GHz antennas are provided to the card to sup<br>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)<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) |
| **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 er
rate of 10% for 802.11a/g (OFDM modulation).


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

| | |
|---|---|
| **Bluetooth® Specification** | 4.0/4.1/4.2 Compliant |
| **Frequency Band** | 2402 to 2480 MHz |
| **Number of Available Channels** | Legacy: 0~79 (1 MHz/CH)<br>BLE: 0~39 (2 MHz/CH) |
| **Signaling Data Rate** | Legacy: 3 Mbps Signaling data rate[1]<br>BLE: 1 Mbps Signaling data rate[1] |

1.  Actual throughput may vary.

Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channe

Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymme
(3-DH5) or 864 kbps symmetric (3-EV5)

## Technical Specifications

|  | | |
|---|---|---|
| | **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. |
| **Realtek RTL8723DE 802.11 bgn (1x1) WLAN and Bluetooth® 4.2 Combo Adapter** | **Wireless LAN Standards** | IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n |
| | **Interoperability** | Wi-Fi® certified |
| | **Frequency Band** | 802.11b/g/n<br><br>• 2.402 - 2.482 GHz |
| | **Data Rates** | • 802.11b: 1, 2, 5.5, 11 Mbps<br>• 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11n: MCS 0 ~ MCS 7, (20MHz, and 40MHz) |
| | **Modulation** | Direct Sequence Spread Spectrum<br>BPSK, QPSK, CCK, 16-QAM, 64-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: +14dBm minimum<br>• 802.11g: +12dBm minimum<br>• 802.11n HT20(2.4GHz): +12dBm minimum<br>• 802.11n HT40(2.4GHz): +12dBm 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>802.11g, 6Mbps: -86dBm maximum<br>802.11g, 54Mbps: -72dBm maximum<br>802.11n, MCS07: -67dBm maximum |

## Technical Specifications

| | | |
|---|---|---|
| **Antenna type** | High efficiency antenna. | |
| | One embedded dual band 2.4/5 GHz antenna is provided to the card to suppor WLAN 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 er rate of 10% for 802.11a/g (OFDM modulation).

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

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

1. Actual throughput may vary.

Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channe

Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymme (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. |

| | | |
|---|---|---|
| **Realtek RTL8821CE 802.11** | **Wireless LAN Standards** | IEEE 802.11a |

## Technical Specifications

| | | |
|---|---|---|
| **ac 1x1 WLAN and Bluetooth® 4.2 Combo Adapter (MU-MIMO supported)** | | 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 |

- 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, and 80MHz)

**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: +14dBm minimum
- 802.11g: +12dBm minimum
- 802.11a: +12dBm minimum
- 802.11n HT20(2.4GHz): +12dBm minimum
- 802.11n HT40(2.4GHz): +12dBm minimum
- 802.11n HT20(5GHz): +10dBm minimum
- 802.11n HT40(5GHz): +10dBm minimum
- 802.11ac VHT80(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)

Technical Specifications

- Connected Standby 10mW
- 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 |
| **Antenna type** | High efficiency antenna.<br><br>One embedded dual band 2.4/5 GHz antenna is provided to the card to suppor<br>WLAN 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 er
rate of 10% for 802.11a/g (OFDM modulation).

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

| | |
|---|---|
| **Bluetooth® Specification** | 4.0/4.1/4.2 Compliant |
| **Frequency Band** | 2402 to 2480 MHz |
| **Number of Available Channels** | Legacy: 0~79 (1 MHz/CH)<br>BLE: 0~39 (2 MHz/CH) |
| **Signaling Data Rate** | Legacy: 3 Mbps Signaling data rate[1]<br>BLE: 1 Mbps Signaling data rate[1] |

1. Actual throughput may vary.

Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channe

Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymme
(3-DH5) or 864 kbps symmetric (3-EV5)

## Technical Specifications

|  |  |  |
|---|---|---|
|  | **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. |
| **Realtek Ethernet (10/100/1000)** | **Ethernet Features** | 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<br>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)<br>Jumbo Frame 9K<br>Auto MDI/MDIX Crossover cable detection |
|  | **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 |
|  | **Performance Features** | TCP/IP/UDP Checksum Offload (configurable)<br>Protocol Offload (ARP & NS)<br>Large send offload and Giant send offload<br>Receiving Side Scaling |
|  | **Manageability** | Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake 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 |
|  | **Interface** | PCI Express 1.1 to support ASPM L1 |
|  | **NIC Device Driver Name** | Realtek PCIe GBE Ethernet Family Controller |

# POWER

# QuickSpecs

## Technical Specifications

| HP 65W Smart AC adapter | **Dimensions** (H x W x D) | 108 x 47 x 37.4mm | |
|---|---|---|---|
| | **Weight** | 250 g | |
| | **Input** | 100 to 240 VAC | |
| | | **Input Efficiency** | 88.0 % at 115 VAC and  89.0 % at 230VAC |
| | | **Input frequency range** | 50~ 60 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** | The power supply shall limit the maximum steady state output current to an average current of 11 Amperes. |
| | **Connector** | 4.5mm Barrel Type, | |
| | **Environmental Design** | **Operating temperature** | 32°F to 95°F (0°C to 35° C) |
| | | **Non-operating (storage) temperature** | -4°F to 185°F (-20°C to 85°C) |
| | | **Altitude** | -4°F to 185°F (-20°C to 85°C) |
| | | **Humidity** | The power supply can be operated at 5,000 m above sea level |
| | | **Storage Humidity** | |
| | **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. | |

| 45 W AC adapter | **Dimensions** (H x W x D) | 95 x 40 x 26.5mm | |
|---|---|---|---|
| | **Weight** | 200 g | |
| | **Input** | 100 to 240 VAC | |
| | | **Input Efficiency** | 87.8 % at 115 VAC and  88.5 % at 230VAC |
| | **Input** | **Input frequency range** | 50~ 60 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** | The power supply shall limit the maximum steady state output current to an average current of 8 Amperes. |
| | **Connector** | 4.5mm Barrel Type | |
| | **Environmental Design** | **Operating temperature** | 32°F to 95°F (0°C to 35° C) |
| | | **Non-operating (storage) temperature** | -4°F to 185°F (-20°C to 85°C) |
| | | **Altitude** | -4°F to 185°F (-20°C to 85°C) |
| | | **Humidity** | The power supply can be operated at 5,000 m above sea level |

## Technical Specifications

|  |  |  |
|---|---|---|
| | **Storage Humidity** | |
| **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. | |

**HP 65 W Smart AC adapter (EM)**

| | | |
|---|---|---|
| **Dimensions** (H x W x D) | 102 x 55 x 30mm | |
| **Weight** | 270 g | |
| **Input** | 100 to 240 VAC | |
| | **Input Efficiency** | 88.0 % at 115 VAC and  89.0 % at 230VAC |
| | **Input frequency range** | 50~ 60 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** | The power supply shall limit the maximum steady state output current to an average current of 11 Amperes. |
| **Connector** | 4.5mm Barrel Type, | |
| **Environmental Design** | **Operating temperature** | 32°F to 95°F (0°C to 35° C) |
| | **Non-operating (storage) temperature** | -4°F to 185°F (-20°C to 85°C) |
| | **Altitude** | The power supply can be operated at 5,000 m above sea level |
| | **Humidity** | The power supply shall withstand without degradation with 95% relative humidity, non-condensing, both operating and non-operating. |
| | **Storage Humidity** | |
| **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. | |

**HP 3-cell Li-Ion Long Life - Fast Charge (41 WHr)**

| | |
|---|---|
| **Dimensions** (H x W x L) | 6.0 x 186.85 x 90.2 mm (0.236 x 7.35 x 3.55 inch) |
| **Weight** | 0.18 kg (0.39 lb) |
| **Cells/Type** | 3cell Lithium-Ion Polymer cell / 515974 |
| **Voltage** | 11.4V |
| **Amp-hour capacity** | 3.6Ah |
| **Watt-hour capacity** | 41Wh |
| **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 |

## Technical Specifications

| **HP 3-cell Li-Ion Long Life - Fast Charge (41 WHr)** | | |
|---|---|---|
| **Dimensions** | 6.0 x 186.85 x 90.2 mm (0.236 x 7.35 x 3.55 inch) |
| **Weight** | 0.19 kg (0.41 lb) |
| **Cells/Type** | 3cell Lithium-Ion Prismatic cell / 496080 |
| **Voltage** | 11.55V |
| **Amp-hour capacity** | 3.615Ah/3.63Ah |
| **Watt-hour capacity** | 41Wh |
| **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 |

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

| Category | Description | Part Number |
|---|---|---|
| **Cases** | HP Essential Top Load Case | H2W17AA#xxx |
| | HP Essential Backpack (up to 15.6") | H1D24AA |
| | HP Essential Messenger Case (up to 17.3") | H1D25AA |
| **Docking** | HP 3005PR USB3 Port Replicator | Y4H06AA |
| | HP USB Travel Dock | T0K30AA |
| **Input/Output** | HP Slim USB Keyboard and Mouse | T6T83AA |
| | HP Slim Wireless Keyboard and Mouse | T6L04AA |
| | HP 3-Button USB Laser Mouse | H4B81AA |
| | HP USB Travel Mouse | G1K28AA |
| | HP Comfort Grip Wireless Mouse | H2L63AA |
| | HP Ultra Mobile Wireless Mouse | H6F25AA#xxx |
| | HP HDMI to DVI Adapter | F5A28AA |
| **Power** | HP 45W Smart AC Adapter 4.5mm | H6Y88AA#XXX |
| | HP 65W Smart AC Adapter | H6Y89AA#xxx |
| | HP 65W Slim AC Adapter | H6Y82AA#xxx |
| **Storage** | HP External USB Optical Drive | F2B56AA |
| **Memory** | HP 4GB 2666Mhz DDR4 | 4VN05AA |
| | HP 8GB 2666Mhz DDR4 | 4VN06AA |
| **UCC** | HP Stereo USB Headset | T1A67AA |
| | HP Stereo 3.5mm Headset | T1A66AA |
| | HP UC Wired Headset | K7V17AA |
| **Displays** | HP S140u 14-inch Portable Display | G8R65AA |
| | HP ProDisplay P223 21-5-inch Monitor | X7R61AA |
| | HP ProDisplay P232 23-inch Monitor | K7X31AA |
| | HP ProDisplay P240va 23.8-inch Monitor | N3H14AA |
| | HP EliteDisplay S14 14-inch USB-C Portable Monitor | 3HX46AA |

## Summary of Changes

| Date of change: | Version History: | | Description of change: |
|---|---|---|---|
| March 1, 2019 | From v1 to v2 | Removed | USB-C Travel Dock |
| March 4, 2019 | From v2 to v3 | removed | Battery Life |
| March 25, 2019 | From v3 to v4 | Added | Battery Life |
| May 17, 2019 | From v4 to v5 | Updated | Battery Life |
| June 13, 2019 | From v5 to v6 | Updated | EPEAT |
| July 2, 2019 | From v6 to v7 | Updated | Battery Life |
| July 5, 2019 | From v7 to v8 | Updated | Color Gamut |
| September 6, 2019 | From v8 to v9 | Updated | i5-8265U and i7-8565U Processors |