Overview

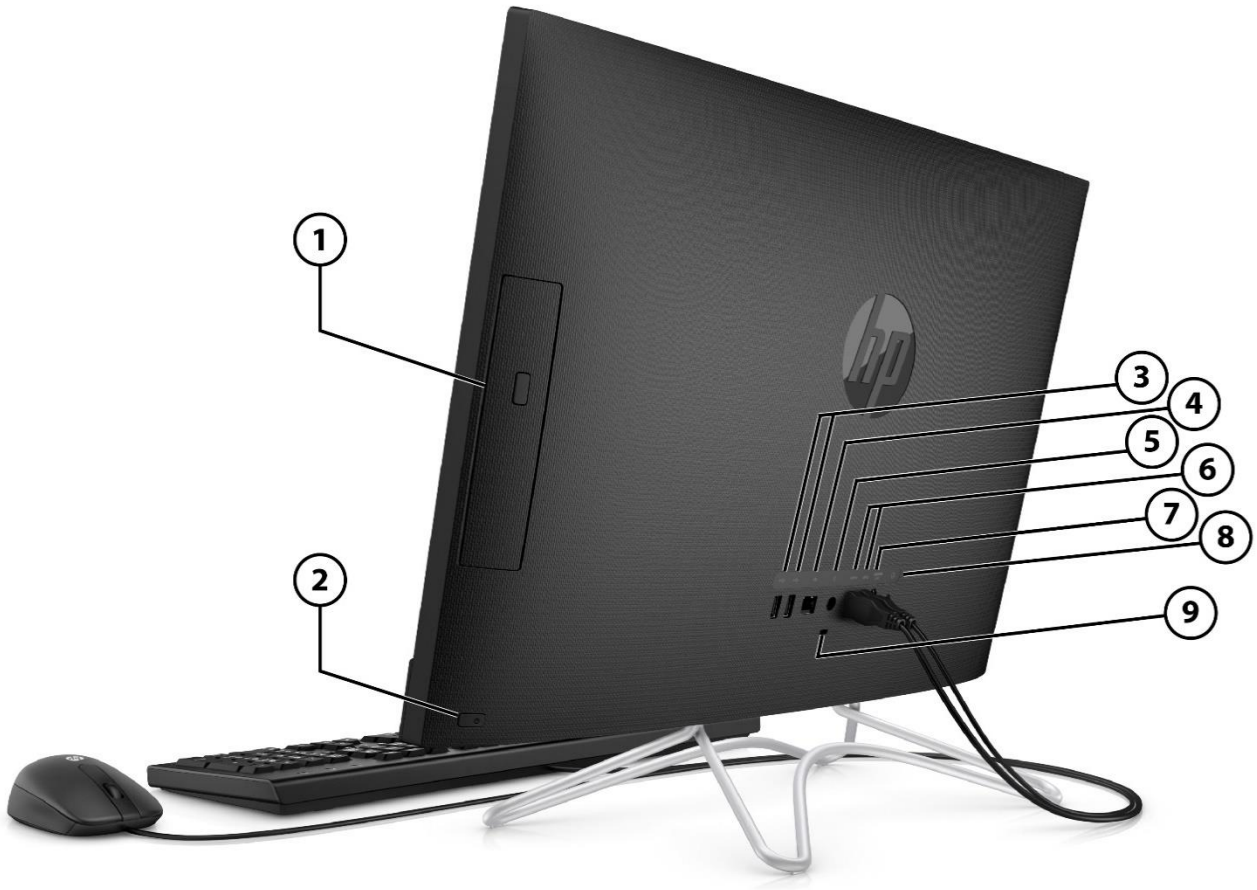
HP 200 G3 AiO

Front

1. Webcam
2. Webcam privacy shutter
3. Microphone
4. Speakers

Overview

HP 200 G3 AiO



Rear

1. Optical disc drive
2. Power button
3. Two (2) USB 2.0 ports
4. RJ-45 (network) jack
5. Power connector
6. Two (2) USB 3.1 Gen 1 ports
7. HDMI out connector
8. Microphone/Headphone Combo Jack
9. Security cable slot

Features

At a Glance

- Choice of Windows 10 Home, Windows 10 Professional, and FreeDOS
- Integrated All-in-One form factor
- 21.5-inch diagonal widescreen Full HD anti-glare display
- Choice of Intel® 8th generation Core™ processors, featuring integrated Intel® UHD Graphics
- Up to 16GB of DDR4 Synchronous Dynamic Random-Access Memory (SDRAM)
- Integrated 10/100/1000 Gigabit LAN Ethernet Controller
- Wi-Fi 802.11ac wireless connectivity
- Integrated HD audio card and stereo speakers
- Integrated HD camera (1280 x 720) with privacy webcam shutter to ensure no accidental recording to safeguard user's privacy
- Expandable storage options with up to 256GB SSD and 2TB HDD
- Optional HP Slim Tray DVD Writer 8X Optical Drive
- 3-in-1 Media Card Reader
- TPM 2.0 support
- Low halogen[1] materials, ENERGY STAR® certified and EPEAT® 2019 registered. Registration may vary by country. See http://www.epeat.net for registration status by country.
- Protected by HP Services. Terms and conditions vary by country. Certain restrictions and exclusions apply.

1. External power supplies, power cords, cables and peripherals are not low halogen. Service parts obtained after purchase may not be low halogen.

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

Features

OPERATING SYSTEMS

Preinstalled
Windows 10 Pro 64[1]
Windows 10 Home 64[1]
Windows 10 Home Single Language 64[1]
Windows 10 Pro 64 (National Academic License)[2]
Microsoft Windows® 10 Enterprise (64 bit)

Pre-installed (other) FreeDOS

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

PROCESSORS

Intel® 8th Generation Core™ Processors

8th Generation Intel® Core™ i5-8250U (1.6 GHz, 6 MB cache, 4 cores) Up to 3.4 GHz with Intel® Turbo Boost Technology

8th Generation Intel® Core™ i3-8130U (2.2 GHz, 4 MB cache, 2 cores) Up to 3.4 GHz with Intel® Turbo Boost Technology

Intel® Pentium® Processors
Intel® Pentium® Silver J5005 (1.5 GHz, 4 MB cache, 4 cores) Up to 2.8 GHz Burst Frequency

NOTE: 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.

GRAPHICS

Integrated
Intel® UHD Graphics 620
Intel® UHD Graphics 605

NOTE: Intel® integrated UHD Graphics varies by processor

DISPLAYS

HP 200 G3 All-in-One 21.5-in FHD Display
54.61 cm (21.5") diagonal FHD anti-glare LED-backlit (1920 x 1080)

STORAGE AND DRIVES[1]

M.2 SATA Solid State Drives (SSD)
128GB 2280 M2 SATA Three Layer Cell Solid State Drive
256GB 2280 M2 SATA Three Layer Cell Solid State Drive

M.2 PCIe NMVe Solid State Drives (SSD)
128GB 2280 PCIe NVMe Value Solid State Drive
256GB 2280 PCIe NVMe Value Solid State Drive

3.5 inch 7200RPM SATA Hard Disk Drives (HDD)
500GB 7200RPM 3.5in HDD
1TB 7200RPM 3.5in HDD
2TB 7200RPM 3.5in HDD

Optical Disc Drives
9.5mm Ultra Slim DVD-Writer

Media Card Reader
SD Card Reader with 3-in1 Interface (Supports SD, SDHC, SDXC)

NOTE: For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 50 GB (for Windows 10) is reserved for system recovery software.

MEMORY

Maximum
LPDDR4 SODIMM up to 2400MT/s
Memory Slots
2 SODIMM

Available Configurations
4GB (4GB x1)
8GB (4GB x2)
8GB (8GB x1)
16GB (8GB x2)

NETWORKING/COMMUNICATIONS

Wireless LAN
Realtek® RTL8821CE 802.11AC 1x1 Wi-Fi M.2 Card[3]

Ethernet (RJ-45) Integrated
Realtek® RTL8111HSH-CG Gigabit Ethernet Controller

3.Wireless LAN must be bought at purchase

Features

AUDIO/MULTIMEDIA

High Definition Audio[4]
Integrated Realtek ALC3247 Audio Codec
High performance integrated stereo speakers
3.5mm combo (microphone/headphone) jack

Webcams & Mic
Integrated 1MP HD (maximum resolution of 1280 x 720) webcam, Up to 30 frames/sec, microphone included

4. The side headset connector supports CTIA style headsets and is re-taskable as a Line-in, Microphone-in or Headphone-out port. Rear audio input ports are re-taskable as a Line-in or Microphone-in port. External speakers must be powered externally. Multi-streaming can be enabled in the audio control panel to allow independent audio streams to be sent to/from the front and rear jacks or internal speakers. This allows for different audio applications to use separate audio ports on the system. For example, the front jacks could be used with a headset for a communications application while the rear jacks are being used with external speakers and a multimedia application.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboards
HP USB Wired Keyboard

Mice
HP USB Mouse

PORTS/SLOTS

Rear I/O Ports
Two (2) USB 2.0 ports
Two (2) USB 3.1 Gen 1 ports
One (1) RJ-45 (network) jack
One (1) HDMI out connector
One (1) Microphone/Headphone Combo Jack
One (1) DC in power

Bottom I/O Ports
One (1) 3 in 1 Card reader (SD, SDHC, SDXC)

Internal I/O Ports
One (1) M.2 PCIe x1 2230 (for WLAN)
One (1) M.2 PCIe x4 2280/2230 (for storage)
One (1) SATA storage connector

Bays
One (1) 3.5" internal storage drive[11]

SOFTWARE AND SECURITY

Lifestyle

Bing Search

HP ePrint[5]

Internet Explorer Home Page (MSN or Bing)

Internet Security and Antivirus

McAfee LiveSafe (30-day subscription)[6]

HP Support

HP PC Hardware Diagnostics

HP Recovery Manager

HP Support Assistant (HPSA)

Product Setup

HP Registration

HP JumpStart

Security Features

Trusted Platform Module (TPM) 2.0 (firmware)[7,8]

Security cable slot

5. HP ePrint requires an internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see http://www.hp.com/go/businessmobileprinting.
6. 30 day trial period. Internet access required to receive updates. First update included. Subscription required for updates thereafter
7. TPM feature will not be supported on machines pre-configured with FreeDOS and Linux
8. In selected countries, machines pre-configured with Windows OS will be shipped with TPM disabled.

POWER

Power Supply

External

External 89% efficient 65-watt power adapter

WEIGHTS & DIMENSIONS

Weight

21.5 Non-Touch Product Weight (Unboxed)	**Without Stand** 4.94 kg, 10.89 lbs **Basic Stand** 5.39 kg, 11.88 lbs
21.5 Shipping Weight (Boxed)	7.76 kg, 17.11 lbs
21.5 Shipping Weight (Pallet)	260.52 kg, 574.35 lbs

Dimension

21.5 System Dimensions (including Touch, Non-Touch)	**Without Stand** 490.38 x 332.66 x 56.0 mm 19.31 x 13.10 x 2.2 in **Basic Stand** 490.38 x 390.6 x 204.11 mm 19.31 x 15.38 x 8.04 in
21.5 Shipping Dimensions (Boxed)	598 x 248 x 483 mm, 23.55 x 9.77 x 19.02 in
21.5 Shipping Dimensions (Pallet)	1200 x 1000 x 2067 mm, 47.24 x 39.37 x 81.38 in
23.8 Pallet Quantity (including Touch, Non-Touch)	32

UNIT ENVIRONMENT AND OPERATING CONDITIONS[9]

• Keep the computer away from excessive moisture, direct moisture and the extremes of heat and cold, to ensure that unit is operated within the specified operating range.
• Leave a 10.2 cm (4 in) clearance on all vented sides of the computer to permit the required airflow.
• Never restrict airflow into the computer by blocking any vents or air intakes.
• Do not stack computers on top of each other or place computers so near each other that they are subject to each other's re-circulated or preheated air.
• Occasionally clean the air vents on the front, back, and any other vented side of the computer. Lint, dust and other foreign matter can block the vents and limit the airflow.
• If the computer is to be operated within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the same operating guidelines listed above will still apply.

Temperature Range	Operating: 50° to 95° F (10° to 35° C)* Non-operating: -22° to 140° F(-30° to 60° C)
Relative Humidity	Operating: 10% to 90% (non-condensing at ambient) Non-operating: 5% to 95% (non-condensing at ambient)
Maximum Altitude (unpressurized)	Operating: 5000m Non-operating: 50000ft (15240 m)

9. Operating temperature is de-rated 1.0 deg C per 300 m (1000 ft) to 3000 m (10,000 ft) above sea level, no direct sustained sunlight. Maximum rate of change is 10 deg C/Hr. The upper limit may be limited by the type and number of options installed.

DISPLAY

HP 200 G3 All-in-One 21.5-in FHD Display
54.61 cm (21.5") diagonal FHD anti-glare LED-backlit (1920 x 1080)

Type	IPS WLED Backlit LCD
Active area (mm)	476.064 x 267.786
Native Resolution (HxV)	1920 x 1080
Aspect ratio	16:09
Pixel pitch (HxV)(mm)	0.24795 x 0.24795
Contrast ratio (typical)	1000:1
Brightness (typical)	250nits (cd/m2)
Viewing angle (typical) (HxV)	178 ° x 178 °
Backlight lamp life (to half brightness)	30,000 hours minimum
Color support	Up to 16.7 million colors with the use of FRC technology
Color gamut (typical)	NTSC 72%
Anti-glare	Yes
Default color temperature	Warm (6500K)

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

STORAGE AND DRIVES

HP 500 GB 7.2K SATA 6.0Gb/s 3.5" Hard Disk Drive	Capacity	500GB
	Rotational Speed	7,200 rpm
	Interface	SATA 6 Gb/s
	Buffer Size	32 MB
	Logical Blocks	976,773,169
	Seek Time	11 ms (Average)
	Height	26.1mm (Max)
	Width	Media diameter: 3.5 in/8.89 cm Physical size: 4 in/10.2 cm
	Operating Temperature	41° to 131° F (5° to 55° C)

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 50 GB (for Windows 10) of system disk is reserved for the system recovery software.

HP 1 TB 7.2K SATA 6.0Gb/s 3.5" Hard Disk Drive	Capacity	1TB
	Rotational Speed	7,200 rpm
	Interface	SATA 6 Gb/s
	Buffer Size	32 MB
	Logical Blocks	1,953,525,169
	Seek Time	13 ms (Average)
	Height	26.1mm (Max)
	Width	Media diameter: 3.5 in/8.89 cm Physical size: 4 in/10.2 cm
	Operating Temperature	41° to 131° F (5° to 55° C)

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 50 GB (for Windows 10) of system disk is reserved for the system recovery software.

HP 2 TB 7.2K SATA 6.0Gb/s 3.5" Hard Disk Drive	Capacity	2TB
	Rotational Speed	7,200 rpm
	Interface	SATA 6 Gb/s
	Buffer Size	64 MB
	Logical Blocks	3,907,029,168
	Seek Time	13 ms (Average)
	Height	26.1mm (Max)
	Width	Media diameter: 3.5 in/8.89 cm Physical size: 4 in/10.2 cm
	Operating Temperature	41° to 131° F (5° to 55° C)

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 50 GB (for Windows 10) of system disk is reserved for the system recovery software.

128 GB 2280 M2 SATA Three Layer Cell Solid State Drive	Drive Weight	< 10g
	Capacity	128 GB
	Height	2.23mm
	Length	80mm
	Width	22mm
	Interface	SATA 3.0 (6Gb/s)
	Maximum Sequential Read	Up to 515MB/s
	Maximum Sequential Write	Up to 320MB/s
	Logical Blocks	250,069,680
	Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
	Features	DIPM; TRIM

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 50 GB (for Windows 10) of system disk is reserved for the system recovery software.

256 GB 2280 M2 SATA Three Layer Cell Solid State Drive	Drive Weight	< 10g
	Capacity	256GB
	Height	2.23mm
	Length	80mm
	Width	22mm
	Interface	SATA 3.0 (6Gb/s)
	Maximum Sequential Read	Up to 515MB/s
	Maximum Sequential Write	Up to 450MB/s
	Logical Blocks	500,118,192
	Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
	Features	DIPM; TRIM

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 50 GB (for Windows 10) of system disk is reserved for the system recovery software.

128 GB 2280 PCIe NVMe Value Solid State Drive	Drive Weight	< 10g
	Capacity	128 GB
	Height	2.23mm
	Length	80mm
	Width	22mm
	Interface	PCIE Gen3
	Maximum Sequential Read	Up to 770MB/s
	Maximum Sequential Write	Up to 395MB/s
	Logical Blocks	250,069,680
	Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
	Features	APST; ASPM L1.2; NVME spec 1.2

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 50 GB (for Windows 10) of system disk is reserved for the system recovery software.

Technical Specifications - Storage

256 GB 2280 PCIe NVMe Value Solid State Drive	Drive Weight	< 10g
	Capacity	256 GB
	Height	2.23mm
	Length	80mm
	Width	22mm
	Interface	PCIE Gen3
	Maximum Sequential Read	Up to 1570MB/s
	Maximum Sequential Write	Up to 540MB/s
	Logical Blocks	500,118,192
	Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
	Features	APST; ASPM L1.2; NVME spec 1.2

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 50 GB (for Windows 10) of system disk is reserved for the system recovery software.

HIGH DEFINITION AUDIO

Type	Integrated
HD Audio Codec	Realtek ALC3247 Audio Codec
Audio I/O Ports	Rear 3.5mm combo (microphone/headphone) jack (32 Ohm) supporting CTIA style headset Microphone(2K Ohm)
Analog Audio	Yes
Internal Speaker Amplifier	2W per channel stereo amplifier for the internal speakers only
Internal Speaker	Yes - Stereo Speaker
DAC Sampling Rates	44.1 kHz/48 kHz/96 kHz/192 kHz
ADC Sampling Rates	44.1 kHz/48 kHz/96 kHz/192 kHz

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

INPUT/OUTPUT DEVICES

HP USB Wired Keyboard		
Physical Characteristics	Keys	104, 105 layout (depending upon country)
	Dimensions (L x W x H)	17.04 x 5.55 x 0.52 in (433 x 141 x13.2 mm)
	Weight	1.54 lb (698g)
Electrical	Operating voltage	6 VDC, +/-5%
	Power consumption	35mA (All LED on)
	System interface	USB Type A plug connector
	ESD	Contact Discharge: 8 KV Air Discharge: 15 KV
	EMI - RFI	Conforms to FCC rules for a Class B computing device
	Microsoft® PC 99 - 2001	Functionally compliant
Mechanical	Keycaps	Low-profile design
	Switch actuation	60±10g nominal peak force with tactile feedback
	Switch life	11 million keystrokes (Life tester)
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	7 ft (1.8 m)
	Microsoft PC 99 - 2001	Mechanically compliant
Environmental	Acoustics	43-dBA maximum sound pressure level
	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	-22° to 140° F (-30° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	27 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	31 in (76.2 cm) on concrete, 16-drop sequence
	Approvals	UL, FCC, CE Mark, TUV GS, VCCI, BSMI, C-Tick, KC
	Ergonomic compliance	TUVGS
	Kit contents	Keyboard, QSP
	Warranty Card	Product Notice

Technical Specifications – input/Output

USB Mouse		
Dimensions (H x L x W)	4.21 x 2.64 x 1.52 in (107 x 67 x 38.7 mmm)	
Weight	0.19lb (90g)	
Environmental	Operating temperature	50° to 122°F (10° to 50° C)
	Non-operating temperature	-22° to 140°F (-30° to 60° C)
	Operating humidity	10% to 90% (non condensing at ambient)
	Non-operating humidity	20% to 80% (non condensing at ambient)
	Operating shock	50 g, 6 surfaces
	Non-operating shock	80 g, 6 surfaces
	Operating vibration	2 g peak acceleration
	Non-operating vibration	4 g peak acceleration
Electrical	Operating voltage	6 VDC ± 5%
	Power consumption	12 mA
Mechanical	Connector	USB 2.1
	Type	3D mouse (3 keys and wheel)
	Resolution	800, 1200, 1600 DPI
	Sensor	Pixart PAN3606DL
	Tracking speed	31 inch/sec (max)
	Tracking acceleration	8G(max), 1G=9.8m/s3
	Cable length	7 ft (1.8 m)
	Color	Jack Black
	Regulatory Approvals	UL, FCC, CE Mark, TUV GS, VCCI, BSMI, C-Tick, KC

NETWORKING/COMMUNICATIONS

Realtek® RTL8111HSH-CG Gigabit Ethernet Controller	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 IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet) Jumbo Frame 9K Auto MDI/MDIX Crossover cable detection
	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
	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
	Interface	PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ
	NIC Device Driver Name	PCIe GBE Ethernet Family Controller

WLAN

Realtek® RTL8821CE 802.11AC 1x1 Wi-Fi M.2 Card	**Wireless LAN Standards**	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n 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[1]	• IEEE and Wi-Fi 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 VHT80M(5GHz) : +10dBm minimum
	Power Consumption	• Transmit mode2.0 W • Receive mode1.6 W • Idle mode (PSP)180 mW(WLAN Associated) • Idle mode50 mW(WLAN unassociated) • Connected Standby 10mW

	• Radio disabled8 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[3]	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
Form Factor	PCI-Express M.2 MiniCard
Dimensions	Type 2230: 2.3 x 22.0 x 30.0 mm
Weight	Type 2230: 2.8g
Operating Voltage	3.3v +/- 9%
Temperature	Operating 14° to 158° F (–10° to 70° C) Non-operating –40° to 176° F (–40° to 80° C)
Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
Altitude	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED White – Radio ON

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

POWER

Efficiency	65W EPS, 89% average efficiency at 115V & 230Vac (Level VI)
Operating Voltage Range	90Vac~264Vac
Rated Voltage Range	100Vac~240Vac
Rated Line Frequency	50HZ~60HZ
Operating Line Frequency	47HZ~63HZ
Rated Input Current	65W≦1.6A
Rated Input Current with Energy Efficient* Power Supply	65W≦1.6A
DC Output	+19.5V
Current Leakage (NFPA 99: 2102)	Less than 500 microamps of leakage current at 120 Vac with the ground wire disconnected, as required for Non-Patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1. Less than 100 microamps of leakage current at 120 Vac with the ground wire intact with normal polarity, as required for Non-Patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.
External Power Adapter	External power supply
Dimensions	65W: 113.5mm x 55mm x 30mm

ADDITIONAL FEATURES

	Description
SMART Technology (Self-Monitoring, Analysis and Reporting Technology)	Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted

ENVIRONMENTAL & INDUSTRY

Eco-Label Certifications & declarations

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

- IT ECO declaration
- US ENERGY STAR®
- EPEAT® 2019 registered where applicable. EPEAT® registration varies by country. See http://www.epeat.net for registration status by country.

System Configuration

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

Energy Consumption (in accordance with US ENERGY STAR® test method)	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 50Hz**
Normal Operation (Short idle)	19.076	19.109	18.911
Normal Operation (Long idle)	7.123	7.146	7.074
Sleep	0.468	0.503	0.46
Off	0.302	0.348	0.292

NOTE: Energy efficiency data listed is for an ENERGY STAR® certified product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® certified configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system. Search keyword generator on HP's 3rd party option store for solar generator accessories at http://www.hp.com/go/options

Heat Dissipation*	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 50Hz**
Normal Operation (Short idle)	65.04916	65.16169	64.48651
Normal Operation (Long idle)	24.28943	24.36786	24.12234
Sleep	1.59588	1.71523	1.5686
Off	1.02982	1.18668	0.99572

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

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	Sound Power (L_{WAd}, bels)	Sound Pressure (L_{pAm}, decibels)
Typically Configured – Idle	2.3	3.2
Fixed Disk – Random writes	2.3	3.3

Longevity and Upgrading

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

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

Batteries

This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:
Mercury greater the1ppm by weight
Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)
Battery type: Lithium

Technical Specifications – Environmental

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 38.3% post-consumer recycled plastic (by wt.)
- This product is 95.8% recycle-able when properly disposed of at end of life.

Packaging Materials

External:	PAPER/Corrugated	1369
Internal:	PLASTIC/EPS (Expanded Polyethylene)	349
	PLASTIC/Polyethylene low density	50

The plastic packaging material contains at least 100% recycled content.

The corrugated paper packaging materials contains at least 80% recycled content.

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf):

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

Packaging Usage

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

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

End-of-life Management and Recycling

HP Inc. offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

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

HP, Inc. Corporate Environmental Information

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

Global Citizenship Report
http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html
Eco-label certifications
http://www8.hp.com/us/en/hp-information/environment/ecolabels.html
ISO 14001 certifications:
http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842
and
http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

Change Log

Summary of Changes

Date of change:	Version History:		Description of change:
April 30, 2018	V1 to V2	Update	Environmental Tab
July 2, 2018	V2 to V3	Update	Optional configurations for available memory slots fixed.
July 20, 2018	V3 to V4	Update	Intel® Pentium® Silver J5005 added to Processors section. Intel® UHD Graphics 605 and NOTE added to Integrated in Graphics section.
May 29, 2019	V4 to V5	Update	EPEAT references updated
July 8, 2019	V5 to V6	Update	Internal Speaker Amplifier row added to High definition audio specs.
October 15, 2019	V6 to V7	Update	Miscellaneous Features added