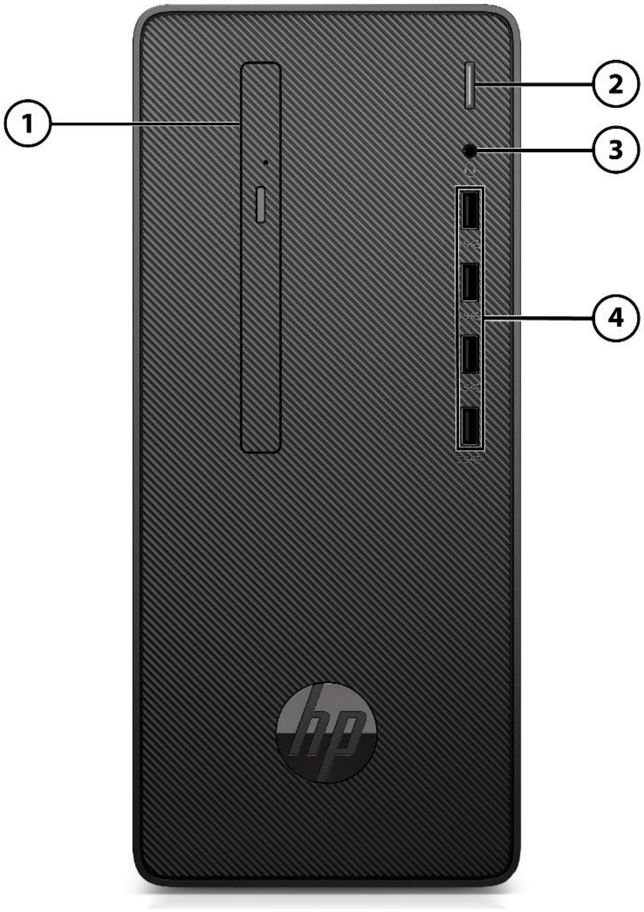
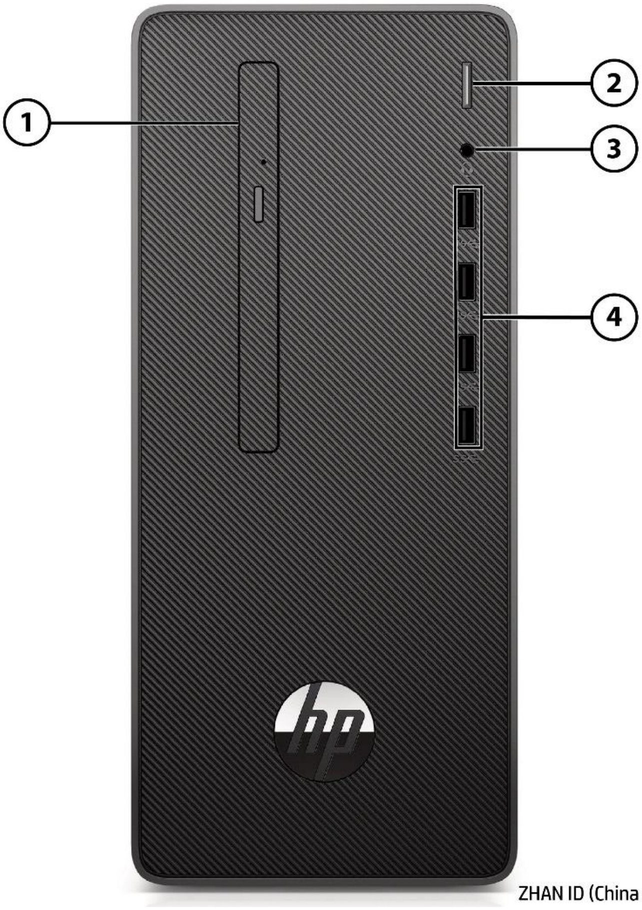
Overview

HP Desktop Pro G2





ZHAN ID (China only)

Front

1. Slim optical drive (optional)
2. Dual-state power button
3. Combo jack, Headphone/Microphone
4. (4) USB 3.1 Gen 1 port (5 Gb/s signaling data rate*)

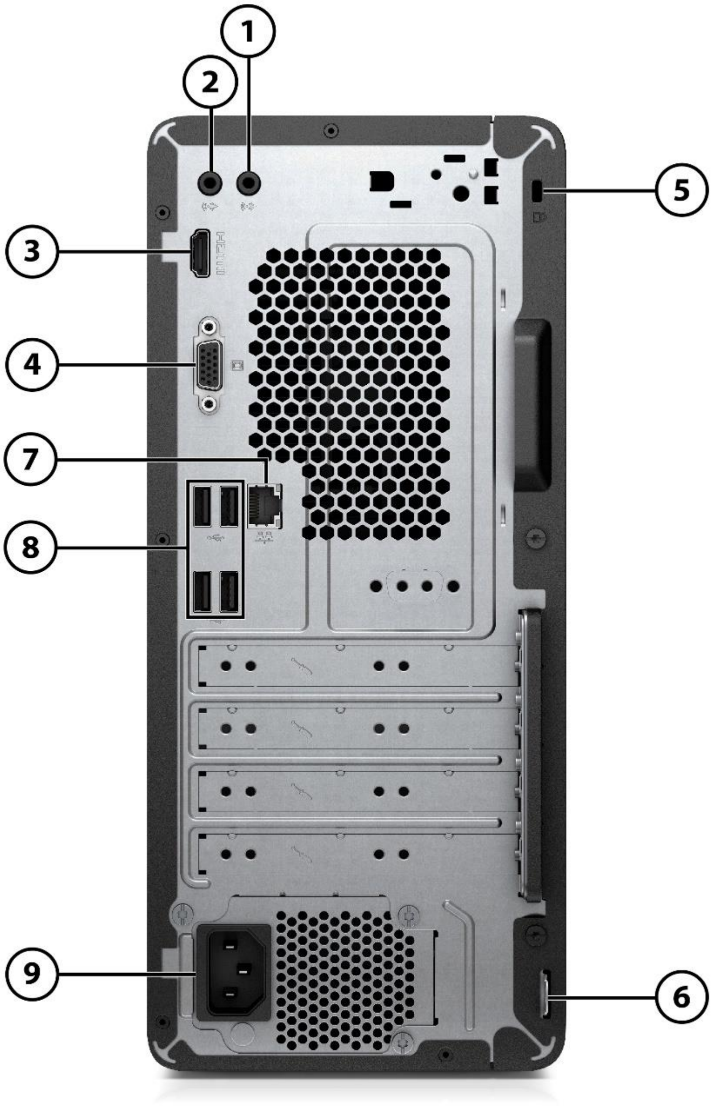
Not Shown

(1) PCI Express x16
(2) PCI Express x1
(1) PCI x1
(1) M.2 2230 socket for WLAN/BT

1*Actual throughput may vary.

Overview

HP Desktop Pro G2



Rear

1. Audio-in connector
2. Audio-out connector
3. (1) HDMI™ 2.0
4 (1) VGA Port
5. Cable lock slot
6. Padlock Loop
7. RJ-45 (network) jack
8. (4) USB2.0 ports
9. Power cord connector

Not Shown

Port

Optional serial port
Optional PS/2 port
Optional parallel port

Bay

(1) 9.5mm internal optical drive bay
(1) 3.5" internal storage drive bay or (1) 2.5" internal storage drive bay

Overview

AT A GLANCE

- Intel® H370 chipset supporting latest Intel® 8 Generation Core™ processors*. Processor support up to 65W.
- Integrated Intel® UHD Graphics and optional Radeon™ RX discrete graphics
- Supports up to 32GB DDR4-2666 Unbuffered Memory (UDIMM)
- 8 USB Ports, with USB3.1 Gen1x4 at front and USB2.0x4 at rear
- Windows 10 Pro, Windows 10 Home or FreeDos 2.0
- Integrated 10/100/1000 Ethernet Controller, with 802.11ac WiFi/ Bluetooth® as optional feature
- firmware TPM 2.0 support**
- HP Support Assistant
- High efficiency energy saving power supply
- ENERGY STAR® certified. EPEAT® registered where applicable/supported. Registration may vary by country. See www.epeat.net for registration status by country
- Protected by HP Services, including limited warranties 1-1-1 or up to 3-3-3 (terms and conditions vary by country; certain restrictions and exclusions apply); Care Packs available with up to 5 years Next Business Day Onsite Hardware Support

*Multi-Core 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.

**TPM feature will be turned off on machine pre-configured with FreeDOS. In some scenarios, machines pre-configured with Windows OS might ship with TPM turned off.

Features

PRODUCT NAME

HP Desktop Pro G2

OPERATING SYSTEM

Preinstalled	Windows® 10 Pro 64* Windows® 10 Pro 64 (National Academic License)** Windows® 10 Home 64* Windows® 10 Home Single Language 64*
Pre-installed (other)	FreeDOS

*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/.

**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.

PROCESSORS

Intel® 8th Generation Celeron® Processors

Intel® Celeron® G4900 Processor
54W
3.1 GHz base frequency
2 MB cache, 2 cores, 2 threads
Intel® UHD Graphics 610
Supports DDR4 memory up to 2400 MT/s data rate

Intel® 8th Generation Pentium® Processors

Intel® Pentium® G5400 Processor
54W
3.7 GHz base frequency
4 MB cache, 2 cores, 4 threads
Intel® UHD Graphics 610
Supports DDR4 memory up to 2400 MT/s data rate

Intel® 8th Generation Core™ Processors

Intel® Core™ i3 8100 Processor
65W
3.6 GHz base frequency
6 MB cache, 4 cores, 4 threads
Intel® UHD Graphics 630
Supports DDR4 memory up to 2400 MT/s data rate

Intel® Core™ i5 8400 Processor
65W

Features

Up to 4.0 GHz Max. Turbo Frequency (2.8 GHz base frequency)
9 MB cache, 6 cores, 6 threads
Intel® UHD Graphics 630
Supports DDR4 memory up to 2666 MT/s data rate

Intel® Core™ i5 8500 Processor
65W
Up to 4.1 GHz Max. Turbo Frequency (3.0 GHz base frequency)
9 MB cache, 6 cores, 6 threads
Intel® UHD Graphics 630
Supports DDR4 memory up to 2666 MT/s data rate

Multi-core 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.

CHIPSET

Intel® H370 Chipset

GRAPHICS

System Integrated Graphics
Intel® UHD Graphics 630 (integrated on 8th gen Core™ i5/i3 processors)
Intel® UHD Graphics 610 (integrated on Pentium® G5400, and Celeron® G4900)

Optional Discrete Graphics Solutions
AMD® Radeon™ R7 430 2GB LP 2DP
AMD® Radeon™ R7 430 2GB LP DP+VGA

MEMORY

Type
DDR4 2666 (Transfer rates up to 2666 MT/s)

Maximum
Supports up to 32 GB capacity

# of Slots
2 DIMM
4GB DDR4-2666 UDIMM (1x4GB)
8GB DDR4-2666 UDIMM (1x8GB)
8GB DDR4-2666 UDIMM (2x4GB)
16GB DDR4-2666 UDIMM (1x16GB)
16GB DDR4-2666 UDIMM (2x8GB)

Memory modules support data transfer rates up to 2666 MT/s; actual data rate is determined by the system's configured processor. See processor specifications for supported memory data rate.

Features

STORAGE AND DRIVES

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

2.5 inch SATA Hard Disk Drives (HDD)
500GB 7200RPM 2.5in SATA HDD
1TB 7200RPM 2.5in SATA HDD

2.5 inch Solid State Drives (SSD)
128GB 2.5in SATA Three Layer Cell SSD
256GB 2.5in SATA Three Layer Cell SSD

For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

OPTICAL DISK DRIVES

HP 9.5mm Slim DVD-ROM Drive
HP 9.5mm Slim DVD Writer Drive

Optical drives are optional or add on features. HD-DVD disks cannot be played on this drive. No support for DVD-RAM. Actual speeds may vary. Don't copy copyright-protected materials. Double Layer discs can store more data than single layer discs. Discs burned with this drive may not be compatible with many existing single-layer DVD drives and players.

NETWORKING/COMMUNICATIONS

Ethernet (RJ-45)
Realtek RTL8111HSH-CG Gigabit Network Connection (standard)

Wi-Fi and Bluetooth®
Realtek RTL8821CE 802.11ac 1x1 with Bluetooth® M.2 Combo Card*

*Wireless access point and internet service required. Availability of public wireless access point limited.

AUDIO/MULTIMEDIA

Integrated Hi-Definition Audio: Internal amplifier (Realtek ALC3601 Audio Codec)
Combo Microphone/Headphone Jack
Line-out and Line-in rear port (3.5mm)

Features

KEYBOARDS/POINTING DEVICES/BUTTONS AND FUNCTION KEYS

Keyboards
Business Slim PS/2 Standalone Wired Keyboard
Business Slim USB Standalone Wired Keyboard
Standalone Wired Keyboard
Business Slim USB Antimicrobial Standalone Wired Keyboard (China only)
No KB Option

Mouse
HP PS/2 Mouse
HP USB Optical Wired Mouse
USB Universal Wired Mouse
USB Antimicrobial Mouse (China only)
USB Hardened Wired Mouse
No Mouse Option

Availability may vary by country

PORTS/SLOTS

Front
Slim optical drive (optional)
Combo jack, Headphone/Microphone
(4) USB 3.1 Gen 1 port (5 Gb/s signaling data rate)*

Rear
Audio-in connector
Audio-out connector
(1) HDMI™ 2.0
(1) VGA Port
Cable lock slot
Padlock Loop
RJ-45 (network) jack
(4) USB2.0 ports
Power cord connector

Not Shown
Optional serial port
Optional PS/2 port
Optional parallel port

*Actual throughput may vary

BAYS

(1) 9.5mm internal optical drive bay
(1) 3.5" internal storage drive bay or (1) 2.5" internal storage drive bay

SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

Preinstalled Software (varies by country)
Buy Office (sold separately)
HP JumpStart
Windows 10 Redstone1 Push Button Reset Recovery - CPS
HP Support Assistant*
HP PC Hardware Diagnostics UEFI
HP System Event Utility
HP Hotkey Support
Bing Search for IE11

Security
Security lock slot (Locks sold separately)

*HP Support Assistant requires Windows and Internet access.

POWER

Power Supply

180 W
EStar Libra2 EPA90 (Gold) Full range 115V/230V

310W
EStar EPA90 (Gold) Full range 115V/230V

WEIGHT AND DIMENSIONS

Unboxed Dimensions and weight	**Unboxed Dimensions**	5.35 x 10.31 x 12.20 in (with Bezel) 13.6 x 26.18 x 31 cm (with Bezel)
	Unboxed Weight	9.52 lbs/4.32 kg*
Packaging dimensions and weight	**Packaging Dimensions**	19.65 x 9.37 x 16.14 in 499 x 238 x 410 mm
	Packaging Weight	14.54 lbs 6.6 kg*
Packaging dimensions and weight by Air palletization	**Dimensions**	1200 x 1000 x 940 mm
	Weight	140.5 kg
Packaging dimensions and weight by Ocean/truck palletization	**Dimensions**	1200 x 1000 x 2170 mm
	Weight	338.5 kg*

*Weight will vary by configuration.

Features

UNIT ENVIRONMENT AND OPERATING CONDITIONS

General Unit Operating Guidelines

Environmental & industry	• 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. • Keep the fan duct to lead airflow to chassis rear 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. • 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: -5° to 50° C Non-operating: -30° to 65° C
Relative Humidity	Operating: 15% to 90% (non-condensing at ambient) Non-operating: 15% to 90% (non-condensing at ambient)
Maximum Altitude (unpressurized)	Operating: 0° to 40° C, 7500 ft (2286 m) Non-operating: -40° to 40° C, 15,000 ft (4572 m)

SERVICE AND SUPPORT

On-site Warranty 1: Available one-year (1-1-1) or three-year (3-3-3) limited warranty (varies by country) delivers on-site, next business day 2 service for parts and labor and complimentary limited technical support.3 Three-year onsite and labor are not available in all countries. Service offers terms up to 5 years by choosing an optional HP Care Pack.4 To choose the right level of service for your HP product, visit HP Care Pack Central: http://www.hp.com/go/cpc.

1. Terms and conditions may vary by country. Certain restrictions and exclusions apply. Other warranty variations may be offered in your region.
2. On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.
3.Technical support applies only to HP-configured and third-party HP qualified hardware and software.
4. 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 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.

CERTIFICATION AND COMPLIANCE

Energy Efficiency Compliance	ENERGY STAR® certified; EPEAT® Silver

EPEAT® registered where applicable. EPEAT registration varies by country. See http://www.epeat.net for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at www.hp.com/go/options

Technical Specifications

GRAPHICS

Intel® UHD Graphics 630 (integrated on Core i5/i3 processors)
Intel® UHD Graphics 610 (integrated on Pentium G5400 and Celeron G4900)

Graphics Controller	Integrated
HDMI	Supports HDMI 1.4 features including audio, HDCP 2.2 and a maximum resolution of 3440x1440@60Hz or 4096x2160@30Hz.**
VGA	VGA Output with a maximum resolution of 2048x1536@60Hz**
Memory	The actual amount of maximum graphics memory can be >4GB.System memory is allocated for graphics as needed using Intel's Dynamic Video Memory Technology (DVMT), to provide an optimal balance between graphics and system memory use.*
Maximum Color Depth	up to 10 bits/color
Graphics/Video API Support	DirectX 12 HEVC 10b Enc/Dec HW VP9 10b Dec HW HDR Rec. 2020

*The actual amount of maximum graphics memory can be less than the amounts listed above depending upon your computer's configuration.
**Other resolutions may be available but are not recommended as they may not have been tested and qualified by HP

AMD® Radeon™ R7 430 2GB LP 2DP

Engine Clock	780 MHz
Memory Clock	1100 MHz
Memory Size(width)	2GB(128-bit)
Memory Type	128M x 32 GDDR5
Max. Resolution(DP)	4096 x 2160@60Hz
Multi Display Support	2 displays
HDCP Compliance	yes
Rear I/O connectors(bracket)	2DP
Cooling(active/passive)	Active fan-sink (Active cooling with dynamic speed)
Total power consumption(W)	<50W
PCB form-factor with bracket	LP PCB with FH/LP bracket

AMD® Radeon™ R7 430 2GB LP VGA+DP

Engine Clock	780 MHz
Memory Clock	1100 MHz
Memory Size(width)	2GB(128-bit)
Memory Type	128M x 32 GDDR5
Max. Resolution(VGA)	2048 x 1536
Max. Resolution(DP)	4096 x 2160@60Hz
Multi Display Support	2 displays
HDCP Compliance	yes
Rear I/O connectors(bracket)	VGA+DP
Cooling(active/passive)	Active fan-sink (Active cooling with dynamic speed)
Total power consumption(W)	<50W
PCB form-factor with bracket	LP PCB with FH/LP bracket

Technical Specifications

STORAGE

500GB 7200RPM 3.5in SATA HDD	**Capacity**	500 GB
	Rotational Speed	7,200 rpm
	Interface	SATA 6.0 Gb/s
	Buffer Size	32 MB
	Logical Blocks	976,773,168
	Seek Time	11 ms (Average)
	Height (nominal)	1 in/2.54 cm
	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 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

1TB 7200RPM 3.5in SATA HDD	**Capacity**	1 TB
	Rotational Speed	7,200 rpm
	Interface	SATA 6.0 Gb/s
	Buffer Size	32 MB
	Logical Blocks	1,953,525,168
	Seek Time	11 ms (Average)
	Height	1 in/2.54 cm
	Width (nominal)	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 rives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

2TB 7200RPM 3.5in SATA HDD	**Capacity**	2 TB
	Rotational Speed	7,200 rpm
	Interface	SATA 6.0 Gb/s
	Buffer Size	64 MB
	Logical Blocks	3,907,029,168
	Seek Time	11 ms (Average)
	Height	1.028 in/26.11 mm
	Width	4.0 in/101.6 mm
	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 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

Technical Specifications

500GB 7200RPM 2.5in SATA HDD	**Capacity**	500GB
	Rotational Speed	7,200 rpm
	Interface	SATA 6 Gb/s
	Buffer Size	16 MB
	Logical Blocks	976,773,168
	Seek Time	12 ms (Average)
	Height	0.267 in/6.8 mm (nominal)
	Width	2.75 in/70 mm (nominal)
	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 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

1TB 7200RPM 2.5in SATA HDD	**Capacity**	1TB
	Rotational Speed	7,200 rpm
	Interface	SATA 6 Gb/s
	Buffer Size	32 MB
	Logical Blocks	1,953,525,168
	Seek Time	12 ms (Average)
	Height	0.374 in/9.5 mm (nominal)
	Width	2.75 in/70 mm (nominal)
	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 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

128GB 2.5in SATA Three Layer Cell SSD	**Drive Weight**	<50g
	Capacity	128GB
	Height	7mm
	Length	100.45mm
	Width	69.85mm
	Interface	SATA 3.0 (6Gb/s)
	Performance	Up to Random Read/Write = 70K/40K IOPS
	Maximum Sequential Read	Up to 530MB/s
	Maximum Sequential Write	Up to 380MB/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 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

256GB 2.5in SATA Three Layer Cell SSD	**Drive Weight**	<62g
	Capacity	256GB
	Height	7mm
	Length	100.45mm
	Width	69.85mm
	Interface	SATA 3.0 (6Gb/s)
	Performance	Up to Random Read/Write = 55K/68K IOPS
	Maximum Sequential Read	Up to 530MB/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 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

HP 9.5mm Slim DVD ROM Drive	**Height**	9.5 mm height
	Orientation	Either horizontal or vertical
	Interface type	SATA/ATAPI
	Dimensions (W x H x D)	5.04 x 0.37 x 5.0 in (128 x 9.5 x 127 mm) without bezel
	Weight (max)	Up to 0.31 lb (140g) without bezel
	Read Speeds	DVD+R/-R/+RW/ -RW/+R DL /-R DL Up to 8X DVD-ROM Up to 8X CD-ROM, CD-R Up to 24X CD-RW Up to 24X
	Access time (typical reads, including settling)	Random: DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical) Full stroke: DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical) Stop Time 6 seconds (typical)
	Power	Source Slimline SATA DC power receptacle DC Power Requirement 5 VDC ± 5%-100 mV ripple p-p DC Current 5 VDC (< 1000 mA typical, 1600 mA maximum)
	Environmental conditions (operating - non-condensing)	Temperature 41° to 122° F (5° to 50° C) Relative Humidity 10% to 80% Maximum Wet Bulb Temperature 84° F (29° C)

Technical Specifications

HP 9.5mm Slim DVD Writer Drive	**Height**	9.5 mm height
	Orientation	Either horizontal or vertical
	Interface type	SATA/ATAPI
	Disc recording capacity	Up to 8.5 GB DL or 4.7 GB standard
	Dimensions (W x H x D)	5.04 x 0.37 x 5.0 in (128 x 9.5 x 127 mm) without bezel
	Weight (max)	0.31 lb (140 g) Without bezel
	Read Speeds	DVD-R DL - Up to 6X DVD+R - Up to 8X DVD+RW - Up to 8X DVD+R DL - Up to 6X DVD-R - Up to 8X DVD-RW - Up to 6X CD-R - Up to 24X CD-RW - Up to 10X DVD-RW, DVD+RW - Up to 8X DVD-R DL, DVD+R DL - Up to 8X DVD+R, DVD-R - Up to 8X DVD-ROM DL, DVD-ROM - Up to 8X CD-ROM, CD-R - Up to 24X CD-RW - Up to 24X
	Access time (typical reads, including settling)	Random DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical) Full Stroke DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical) Stop Time 6 seconds (typical)
	Power	Source Slimline SATA DC power receptacle DC Power Requirement 5 VDC ± 5%-100 mV ripple p-p DC Current 5 VDC (< 1000 mA typical, 1600 mA maximum)
	Environmental conditions (operating - non-condensing)	Temperature 41° to 122° F (5° to 50° C) Relative Humidity 10% to 80% Maximum Wet Bulb Temperature 84° F (29° C)

Technical Specifications

AUDIO

Integrated High Definition Audio

Type	Integrated
HD Stereo Codec	Realtek ALC3601
Audio I/O Ports	Front: Headset connector supports a CTIA style headset and is re-taskable as a Line-in, Line-out, Microphone-in or Headphone-out port Rear: Line-out connector; Line-in connector All ports are 3.5mm and support stereo
Internal Speaker Amplifier	Integrated amplifier drives the integrated buzzer
Multi-streaming Capable	Allows independent audio streams to be sent to/from the front and rear output jacks.
Sampling	Independent sampling rates for DAC's and ADC's; supports resolutions of 16/20/24-bit and sampling rates of 44.1/48/96/192 kHz
Analog Audio	Yes
# of Channels on Line-Out	Stereo (Left & Right channels)
Internal Speaker	No Internal speaker
External Speaker Jack	External speakers can be connected to the front headset jack or rear line out jack. External speakers must be powered externally.

POWER

Operating Voltage Range	90 – 264 VAC
Rated Voltage Range	100-240V AC
Rated Line Frequency	50/60 HZ
Operating Line Frequency	47 – 63 Hz
Rated Input Current	180W: <2.3A 310W: <4A
Rated Input Current with Energy Efficient* Power Supply	180W active PFC 87/90/87% efficient at 20/50/100% load (115V) 88/91/88% efficient at 20/50/100% load (230V) 310W active PFC 87/90/87% efficient at 20/50/100% load (115V) 88/91/88% efficient at 20/50/100% load (230V)
DC Output	+12.1V
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.
Power Supply Fan	50 x 20mm (linear type)

Technical Specifications

WEIGHT AND DIMENSIONS

Unboxed Chassis (W x D x H)	5.35 x 10.31 x 12.20 in (with Bezel) 136 x 261.8 x 310mm (with Bezel)
System Volume	672.93 cu in 11 L
Unboxed System Weight	9.52 lbs/4.32kg*
Max Supported Weight (desktop orientation)	77.0 lb 35.0 kg
Tower Stand (H x W x D)	N/A
Packaged Dimensions (W x D x H)	19.65 x 9.37 x 16.14 in 499 x 238 x 410 mm
Packaged Weight	14.54 lbs/6.6 kg*
Palletization Profile	10-units per layer 5 layer max 50 per pallet Footprint (H x W x D) - 46.85 x 39.29 x 80.71 in (1200 x 1000 x 2170 mm)**

*Weight will vary by configuration.
**Ocean/truck palletization

NETWORKING

Realtek RTK8111HSH 10/100/1000 Integrated NIC

Connector	RJ-45
System Interface	PCIe + SMBus
Data rates supported	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 Compliance	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)
Performance	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling Jumbo Frame 9K
Power consumption	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000bp Full Run: 1000mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
Power Management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
Management Interface	Auto MDI/MDIX Crossover cable detection
IT Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) 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

Realtek RTL8821CE 802.11ac 1x1 with Bluetooth® M.2 Combo 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	•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	• 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 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	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
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
Subtitle	HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology

Technical Specifications

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

Technical Specifications

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® Silver registered in the United States. See http://www.epeat.net for registration status in your 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, 60Hz**
Normal Operation (Short idle)			
Normal Operation (Long idle)			
Sleep			
Off			

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 www.hp.com/go/options

Heat Dissipation*	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation (Short idle)			
Normal Operation (Long idle)			
Sleep			
Off			

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		
Fixed Disk – Random writes		

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

Technical Specifications

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

Additional Information	• This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC. • This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC. • This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986). • This product is in compliance with the IEEE 1680 (EPEAT) standard at the <silver> level, see www.epeat.net • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product contains 0% post-consumer recycled plastic (by wt.) • This product is 95.1% recycle-able when properly disposed of at end of life.
Packaging Materials	**External:** PAPER/Corrugated **Internal:** PLASTIC/EPE (Expanded Polyethylene) PLASTIC/Polyethylene low density The Plastic packaging material is made from 10.5% recycled content. The corrugated paper packaging materials contains at least 43.8% 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)

Technical Specifications

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.

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.

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

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

Type	Description	Part #
Memory	HP 16GB DDR4-2666 DIMM (DDR4-2666) - AMO	3TK83AA
	HP 8GB DDR4-2666 DIMM (DDR4-2666) - AMO	3TK87AA
	HP 4GB DDR4-2666 DIMM (DDR4-2666) - AMO	3TK85AA
Storage	HP 500GB 7200rpm 3.5 SATA 6.0Gb/s Smart IV Hard Drive - AMO	QK554AA
	HP 1TB 7200rpm 3.5 SATA 6.0Gb/s NCQ Smart IV Hard Drive (16MB) - AMO	QK555AA
	HP 256GB SATA TLC Non-SED Solid State Drive (SSD_TLC) - AMO	P1N68AA
Graphics	AMD Radeon R7 430 2GB 2DP Card - AMO	3MQ82AA
	AMD Radeon R7 430 PCIe x16 GFX (China_Card) - AMO	1MX32AA
	HP HDMI Standard Cable Kit (HDMI) - AMO	T6F94AA
Security	HP Business PC Security Lock v3 Kit - AMO	3XJ17AA
	HP Keyed Cable Lock 10mm (Wolverine II) - AMO	T1A62AA
	HP Master Keyed Cable Lock 10mm (Wolverine II) - AMO	T1A63AA
Adapters	HP PCIe x1 Parallel Port Card (Parallel Port) - AMO	N1M40AA
	HP USB to Serial Port Adapter (Win7/8/10) - AMO	J7B60AA
Networking	Intel Ethernet I210-T1 GbE NIC (Beaver Lake) - AMO	E0X95AA
Input	HP PS/2 Business Slim Keyboard (Skylab) - AMO	N3R86AA
	HP USB Business Slim Keyboard (Skylab) - AMO	N3R87AA
	HP USB Mouse (Apollo) - AMO	QY777AA
Others	HP Business Headset v2 (Headset v2) - AMO	T4E61AA
	HP USB Business Speakers v2 (ID_Speakers) - AMO	N3R89AA

Summary of Changes

Date of change:	Version History:		
	V1 to V2		