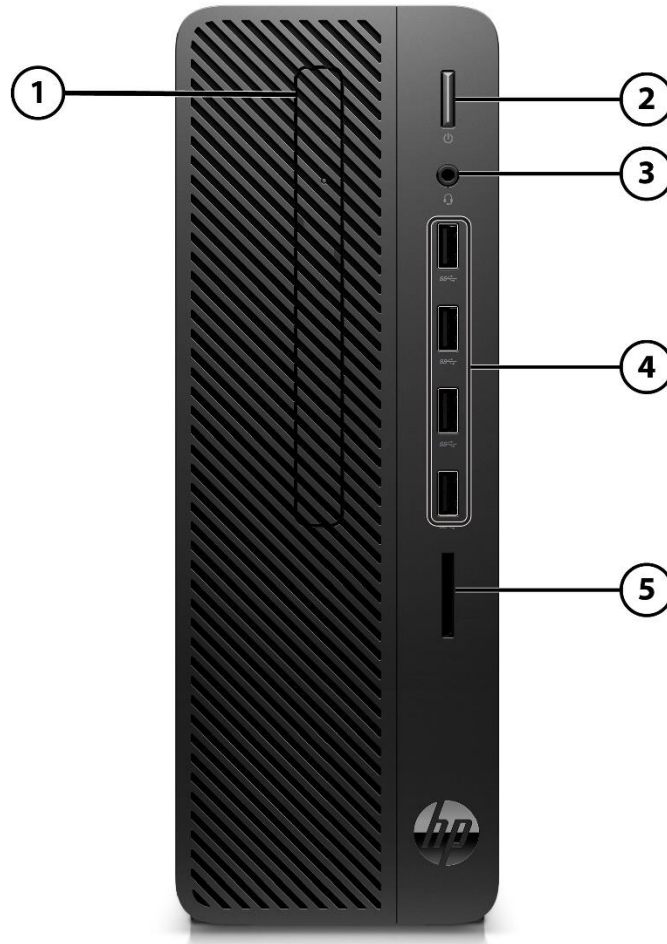


Overview

HP 290 G2 Small Form Factor Business PC



Front

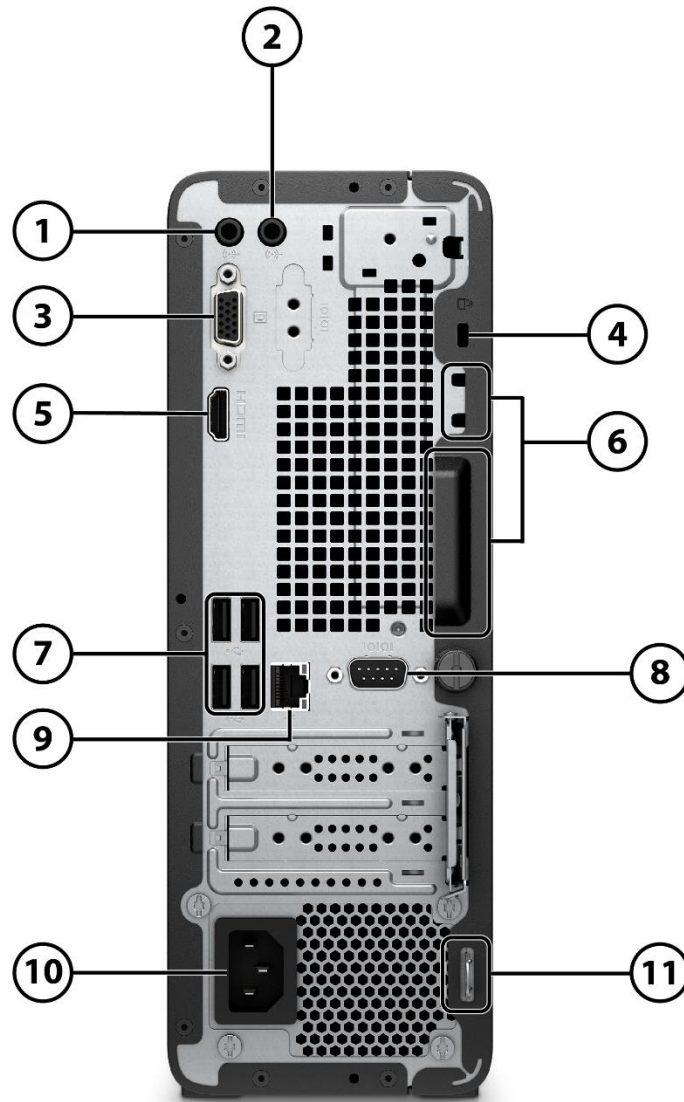
1. Slim-height Bay - supporting an optical disk drive (optional)
2. Power Button
3. Microphone/Headphone Combo Jack
4. (4) USB 3.1 Gen 1 Ports
5. SD Media Card Reader

Not Shown

- Slots
- (1) PCI Express x16
 - (1) PCI Express x1
 - (1) M.2 for WLAN
 - (1) M.2 2242/2280 storage
- Bays
- (1) 3.5" or (2) 2.5" internal storage with caddy (share bay)
 - (1) 9.5mm internal optical drive bay

Overview

HP 290 G2 Small Form Factor Business PC



Back

- | | |
|---------------------------|--------------------------------------|
| 1. Audio Line out | 6. Integrated accessories cable lock |
| 2. Audio Line in | 7. (4) USB 2.0 port |
| 3. VGA Port ¹ | 8. Serial Port (optional) |
| 4. Standard lock slot | 9. RJ-45 Network Connector |
| 5. HDMI Port ¹ | 10. Power Cord Connector |
| | 11. Padlock Loop |

Not Shown

- Parallel Port (Optional via PCIe x1 slot)
- 4 Serial Port (Optional via PCIe slot)²

1. Port will be covered up when configured with processor which is without internal graphics.
2. Available to selected regions.

AT A GLANCE



Standard Features and Configurable Modules

AT A GLANCE

- Windows 10 Pro, Windows 10 Home or FreeDOS
- Intel® B365 chipset supporting Intel® 8th and 9th generation processors, featuring Intel® UHD Graphics
- Supports an optional discrete graphics card
- Integrated 10/100/1000 Ethernet Controller or 802.11 a/b/g/n/ac (1x1) Wi-Fi® and Bluetooth® 4.2 Combo
- Up to 32GB DDR4-2666 Unbuffered Memory (UDIMM)
- Independent monitor support via VGA and HDMI interfaces
- TPM 2.0 support (firmware)¹
- Supports both Hard Disk Drives and SATA TLC / M.2 PCIe NVMe Solid State Drives
- 8 USB Ports (including 4 USB 3.1 Gen1 ports)
- 180W Full range 115V/230V
- Security cable lock supported (sold separately)
- Optional Care Services available; terms and conditions vary by country; certain restrictions and exclusions apply²

1. TPM feature will not be supported on machine pre-configured with FreeDOS, In some cases, machines pre-configured with Windows OS might ship with TPM turned off.

2. HP Care Services sold separately. Service levels and response times for HP Care Services 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

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

Standard Features and Configurable Modules

OPERATING SYSTEMS

Preinstalled (Windows)

Windows 10 Pro 64¹
Windows 10 Home 64¹

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.microsoft.com>.

PROCESSORS

Intel® Celeron® Processors^{2,3}

CPU Intel Celeron G4900 Dual Core 3.1GHz 2400MHz 54W (3.1 GHz, 2 MB cache, 2 cores)
CPU Intel Celeron G4930 Dual Core 3.2GHz 2400MHz 54W (3.2GHz, 2 MB cache, 2 cores)

Intel® Pentium®^{2,3}

CPU Intel Pentium G5400 Dual Core 3.7GHz 2400MHz 54W (3.7 GHz, 4 MB cache, 2 cores)
CPU Intel Pentium G5420 Dual Core 3.8GHz 2400MHz 54W (3.8GHz, 4 MB cache, 2 cores)
CPU Intel Pentium G5500 Dual Core 3.8GHz 2400MHz 54W (3.8 GHz, 4 MB cache, 2 cores)
CPU Intel Pentium G5600 Dual Core 3.9GHz 2400MHz 54W (3.9 GHz 4 MB cache, 2 cores)
CPU Intel Pentium G5620 Dual Core 3.8GHz 2400MHz 54W (3.8GHz, 4 MB cache, 2 cores)

Intel 8th Processors

Intel® Core™ i3^{2,3}

CPU Intel Core i3-8100 Quad Core 3.6GHz 2400MHz 65W (3.6 GHz, 6 MB cache, 4 cores)

Intel® Core™ i5^{2,3}

CPU Intel Core i5-8400 6C 2.8GHz 2666MHz 65W (2.8GHz, turbo up to 4GHz, 9 MB cache, 6 cores)

Intel® Core™ i5^{2,3}

CPU Intel Core i5-8500 6C 3.0GHz 2666MHz 65W (3GHz, turbo up to 4.1GHz, 9 MB cache, 6 cores)

Intel® Core™ i7^{2,3}

CPU Intel Core i7-8700 6C 3.2GHz 2666MHz 65W (3.2GHz, turbo up to 4.6GHz, 12 MB cache, 6 cores)

Intel 9th Processors

Intel® Core™ i3^{2,3}

CPU Intel Core i3-9100 4C 3.6GHz 2400MHz 65W (3.6GHz, turbo up to 4.2GHz, 6 MB cache, 4 cores)
CPU Intel Core i3-9300 4C 3.7GHz 2400MHz 62W (3.7GHz, turbo up to 4.3GHz, 8 MB cache, 4 cores)

Intel® Core™ i5^{2,3}

CPU Intel Core i5-9400 6C 2.9GHz 2666MHz 65W (2.9GHz, turbo up to 4.1GHz, 9 MB cache, 6 cores)*
CPU Intel Core i5-9400F 6C 2.9GHz 2666MHz 65W (2.9GHz, turbo up to 4.1GHz, 9 MB cache, 6 cores)
CPU Intel Core i5-9500 6C 3GHz 2666MHz 65W (3GHz, turbo up to 4.4GHz, 9 MB cache, 6 cores)
CPU Intel Core i5-9500F 6C 3GHz 2666MHz 65W (3GHz, turbo up to 4.4GHz, 9 MB cache, 6 cores)
CPU Intel Core i5-9600 6C 3.1GHz 2666MHz 65W (3.1GHz, turbo up to 4.6GHz, 9 MB cache, 6 cores)

Standard Features and Configurable Modules

Intel® Core™ i7^{2,3}

CPU Intel Core i7-9700 8C 3.0GHz 2666MHz 65W (3.0GHz, turbo up to 4.7GHz, 12 MB cache, 8 cores)

2. 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 8th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on <http://www.support.hp.com>

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.

***NOTE:** Only available on selected region

CHIPSET

Intel® B365 Chipset

GRAPHICS

Integrated^{4,5}

Intel® UHD

Graphics 630 (integrated on 8th and 9th Core i processors)

Intel® UHD

Graphics 610 (integrated on Pentium and Celeron)

Discrete Graphics

AMD Radeon™ R7 430 2GB GFX

NVIDIA® GeForce® GT730 2GB GFX

4. HD content required to view HD images.

5. Integrated Intel software is available on select models only and requires separately purchased projector, tv or computer monitor with an integrated or external receiver. External receivers connect to the projector, tv or computer monitor via a standardVGA,HDMI cable, also sold separately.

MEMORY

Both slots are customer accessible / upgradeable, Supports Dual Channel Memory

| Form Factor | Type | Maximum | # of Slots |
|-------------------|--|----------------|---------------------|
| Small Form Factor | DDR4 2666 (Transfer rates up to 2666 MT/s) | 32 GB capacity | 2 DIMM ⁶ |
| | 4 GB DDR4-2666 UDIMM (1x4GB) | | |
| | 8 GB DDR4-2666 UDIMM (1x8GB) | | |
| | 8 GB DDR4-2666 UDIMM (2x4GB) | | |
| | 16 GB DDR4-2666 UDIMM (1x16GB) | | |
| | 16 GB DDR4-2666 UDIMM (2x8GB) | | |

6. 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.

Standard Features and Configurable Modules

STORAGE AND DRIVES

SATA3 - 3.5" or 2.5" 6Gb/s HDDs*

2TB 7200 RPM SATA Hard Disk Drive

1TB 7200 RPM SATA Hard Disk Drive

500GB 7200 RPM SATA Hard Disk Drive

128GB 2.5" TLC SSD

256GB 2.5" TLC SSD

M.2 Solid State Drives

128GB M.2 NVMe

256GB M.2 NVMe

512GB M.2 NVMe

SD Card Reader⁷

SD/SDHC/SDXC SD Card Reader

7. Card sold separately.

OPTICAL DISC DRIVES

DVD-ROM 9.5mm⁸

DVD-Writer 9.5mm⁸

8. Optical drives are optional or add on features. Duplication of copyrighted material is strictly prohibited. Actual speeds may vary. Double Layer media compatibility will widely vary with some home DVD players and DVD-ROM drives.

NETWORKING/COMMUNICATIONS

Networking

Integrated 10/100/1000M GbE LAN

Wi-Fi[®] and Bluetooth^{®9}

802.11a/b/g/n/ac (1x1) Wi-Fi[®] and Bluetooth[®] 4.2 Combo

9. Wireless cards are optional or add-on features and requires separately purchased wireless access point and internet service. Availability of public wireless access points limited.

AUDIO/MULTIMEDIA

Integrated Hi-Definition Audio

Combo Jack, Headphone/ Microphone

Line-in/ Line-out (3.5mm)

Standard Features and Configurable Modules

KEYBOARDS/POINTING DEVICES/BUTTONS AND FUNCTIONS KEYS

Keyboard

USB Business Slim Wired Keyboard
HP USB Wired Keyboard
Business Slim USB Antimicrobial Wired Keyboard (China)
No KB Option

Mouse

Antimicrobial USB Mouse (China)
HP Optical USB Mouse
Universal Wired USB Mouse
USB Hardened Mouse (India)
No Mouse Option

PORTS

Front

Slim-height Bay - supporting an optical disk drive (optional)
(4) USB 3.1 Gen 1 Ports
SD Media Card Reader
Microphone/Headphone Combo Jack
Power Button

Not Shown

(1) PCI Express x16
(1) PCI Express x1
(1) M.2 for WLAN
(1) M.2 2242/2280 storage

Rear

Audio Line out
Audio Line in
HDMI Port
Standard lock slot
VGA Port
Serial Port (optional)
(4) USB 2.0 port
RJ-45 Network Connector
Power Cord Connector
Padlock loop
Integrated Accessories Cable Lock

Standard Features and Configurable Modules

Not Shown

- (1) Parallel Port (Optional via PCIe1 slot)
- (1) 4x Serial port (Optional via PCIe1 slot)¹⁰

10. Available for selected regions

BAYS

- (1) 3.5" or (2) 2.5" internal storage with caddy (share bay)
 - (1) 9.5mm internal optical drive bay
-

SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

Security and Protection

McAfee* LiveSafe™¹¹

Productivity

Buy Office (sold separately)
Dropbox¹²

ODD Playback

sMedio True DVD for HP

Movies

Netflix¹⁴

App Stores and Content Purchasing

Amazon¹³

HP Utilities and Support

HP Documentation
HP JumpStarts
HP Audio Switch¹⁴
HP Support Assistant¹⁵

BTB

HP Setup Integrated OOBE

Hardware Enabling Drivers or software utility

HP System Event Utility

***NOTE:** Available for LA region only.

11. Free 1-year subscription of McAfee LiveSafe service included. Internet access required and not included. Subscription required after expiration

12. New Dropbox users are eligible to get 25 GB of Dropbox space free for 12 months from date of registration. For complete details and terms of use, including cancellation policies, visit the Dropbox website at <https://www.dropbox.com/help/space/hp-promotion>. Internet service required and not included.

Standard Features and Configurable Modules

13. Internet access required and not included.

14. Easily switch between speaker and microphone sources with intuitive controls and a consistent app experience

15. For more information visit hp.com/go/hpsupportassistant [Link will vary outside of the U.S.] HP Support Assistant is available for Android and Windows based PCs.

POWER

Power Supply

180 W

ENERGY® STAR® Libra2 EPA90 (Gold) Full range 115V/230V

WEIGHT AND DIMENSIONS

(configured with 1 HDD and 1 ODD)

Chassis (W x H x D)

3.74 x 10.63 x 11.65 in (95 x 270 x 296 mm)

System Weight

8.82 lbs / 4 kg*

*NOTE: Weight varies by configuration and component

UNIT ENVIRONMENTAL AND OPERATING CONDITIONS

General Unit Operating Guidelines

Environmental and 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.
- 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:

32° to 104° F (0° to 40° C)¹⁶

Non-operating:

-22° to 140° F (-30° to 60° C)

Relative Humidity

Operating:

10% to 90% (non-condensing at ambient)

Non-operating:

0% to 95% (non-condensing at ambient)

Maximum Altitude (unpressurized)

Operating:

10,000 ft (3048 m)

Non-operating:

30,000 ft (9144 m)

16. 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.

Standard Features and Configurable Modules

SERVICE AND SUPPORT

On-site Warranty¹⁷: Available three-year (3-3-3) or one-year (1-1-1) limited warranty (varies by country) delivers on-site, next business day¹⁸ service for parts and labor and complimentary limited technical support¹⁹. Three-year onsite and labor are not available in all countries. Service offers terms up to 5 years by choosing an optional HP Care Pack²⁰. To choose the right level of service for your HP product, visit HP Care Pack Central: <http://www.hp.com/go/cpc>.

17. Terms and conditions may vary by country. Certain restrictions and exclusions apply. Other warranty variations may be offered in your region.

18. 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.

19. Technical support applies only to HP-configured and third-party HP qualified hardware and software.

20. 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.

GRAPHICS

Technical Specifications - Graphics

GRAPHICS

| | | | |
|---|--|-------------|------------|
| Intel® UHD Graphics 630 (integrated on Core i7/i5/i3 processors) Intel® UHD Graphics 610 (integrated on Pentium and Celeron) | | | |
| DisplayPort™ | Multimode capable; supports HDCP, DisplayPort™ Audio (2 streams), HBR2 link rates and Multi-Stream Technology for a maximum of 3 displays (including the integrated panel) | | |
| Maximum Graphics Memory | Microsoft Windows 7 | Windows 8.1 | Windows 10 |
| | Up to 1.7GB | Up to 1.8GB | >4 GB |
| | <i>Note: the actual amount of maximum graphics memory can be less than the amounts listed above depending upon your computer's configuration.</i> | | |
| Maximum Color Depth | 32 bits/pixel | | |
| Graphics/Video API Support | 8th and 9th Generation Intel® Core™ processors: <ul style="list-style-type: none"> • With Intel® UHD Graphics 630 • DirectX 12, OpenGL 4.4, OpenCL 2.0, Intel® Quick Sync Video Pentium and Celeron <ul style="list-style-type: none"> • With Intel® UHD Graphics 610 • DirectX 12, OpenGL 4.4, OpenCL 2.0, Intel® Quick Sync Video | | |
| Supported Display Resolutions and Refresh Rates | Max. Resolution (VGA) 2048 x 1536@60Hz Max. Resolution (HDMI) 4096 x 2160@60Hz | | |
| <i>Note: other resolutions may be available but are not recommended as they may not have been tested and qualified by HP.</i> | | | |
| <i>* Only supported on displays connected to the external DisplayPort connector.</i> | | | |

Technical Specifications - Graphics

NVIDIA® GeForce® GT 730 2GB Graphics Card

| | |
|-------------------------------------|---|
| Engine Clock | 902 MHz |
| Memory Clock | 1250 MHz |
| Memory Size(width) | 2GB(64-bit) |
| Memory Type | 256M x 32 GDDR5 @2pcs |
| Max. Resolution(DVI) | 2560x1600@60Hz |
| Max. Resolution(HDMI) | 4096x2160@60Hz |
| Multi Display Support | 2 displays |
| HDCP Compliance | Yes |
| Rear I/O connectors(bracket) | DVI+DP |
| Cooling(active/passive) | Active fan-sink (Active cooling with dynamic speed) |
| Total power consumption(W) | <35W |
| PCB form-factor with bracket | LP PCB with FH/LP bracket |

AMD Radeon™ R7 430 2GB Graphics Card

| | |
|-------------------------------------|---|
| Engine Clock | 780 MHz |
| Memory Clock | 1100 MHz |
| Memory Size(width) | 2GB(64-bit) |
| Memory Type | 256M x 32 GDDR5 |
| Max. Resolution(VGA) | 2048x1536 |
| Max. Resolution(DP) | 4096x2160@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

STORAGE

HP 2 TB* 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive*

| | |
|------------------------------|---------------------------------|
| Capacity | 2 TB |
| Rotational Speed | 7,200 rpm |
| Interface | SATA 6Gb/s NCQ |
| Buffer Size | 64 MB |
| Logical Blocks | 3,907,029,168 |
| Seek Time | Read: <8.5 ms Write: <9.5 ms |
| Height | 1.028 in/26.11 mm |
| Width | 4.0 in/101.6 mm |
| Operating Temperature | 32° to 140° F (0° to 60° C) |

1TB 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive

| | |
|------------------------------|---|
| Capacity | 1 TB |
| Rotational Speed | 7,200 rpm |
| Interface | Serial ATA 3.0 (6.0 Gb/s) |
| Buffer Size | 32 MB |
| Logical Blocks | 1,953,525,168 |
| Seek Time | Read: <8.5 ms Write: <9.5 ms Full-Stroke: 21 ms |
| Height | 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) |

500GB 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive

| | |
|-------------------------|---|
| Capacity | 500 GB |
| Rotational Speed | 7,200 rpm |
| Drive Type | Serial ATA 3.0 (6.0 Gb/s) |
| Interface | 32 MB |
| Buffer Size | 976,773,168 |
| Seek Time | Single Track: 2.0 ms Average: 11 ms Full-Stroke: 21 ms |
| Height | 1 in/2.54 cm |
| Width | Media diameter: 3.5 in/8.89 cm Physical size: 4 in/10.2 cm |

Technical Specifications - Storage

Operating Temperature 41° to 131° F (5° to 55° C)

128 GB M.2 2280 PCIe NVMe Three Layer Cell SSD

Drive Weight < 10g
Capacity 128 GB
Height 2.38mm
Length 80mm
Width 22mm
Interface PCIe Gen3x4
Maximum Sequential Read Up to 2800MB/s
Maximum Sequential Write Up to 600MB/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

256 GB M.2 2280 PCIe NVMe Three Layer Cell SSD

Drive Weight < 10g
Capacity 256 GB
Height 2.38mm
Length 80mm
Width 22mm
Interface PCIe Gen3x4
Maximum Sequential Read Up to 2700MB/s
Maximum Sequential Write Up to 1000MB/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

512 GB M.2 2280 PCIe NVMe Three Layer Cell SSD

Drive Weight < 10g
Capacity 512 GB
Height 2.38mm
Length 80mm
Width 22mm
Interface PCIe Gen3x4
Maximum Sequential Read Up to 2900MB/s
Maximum Sequential Write Up to 1100MB/s

Technical Specifications - Storage

| | |
|------------------------------|--|
| Logical Blocks | 1,000,215,216 |
| Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| Features | APST; ASPM L1.2; NVME spec 1.2 |

256 GB M.2 2280 PCIe NVMe SSD

| | |
|---------------------------------|--|
| Drive Weight | < 10g |
| Capacity | 256 GB |
| Height | 2.38mm |
| Length | 80mm |
| Width | 22mm |
| Interface | PCIe Gen3 |
| Maximum Sequential Read | Up to 1600MB/s |
| Maximum Sequential Write | Up to 780MB/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 |

512 GB M.2 2280 PCIe NVMe SSD

| | |
|---------------------------------|--|
| Drive Weight | < 10g |
| Capacity | 512 GB |
| Height | 2.38mm |
| Length | 80mm |
| Width | 22mm |
| Interface | PCIe Gen3 |
| Maximum Sequential Read | Up to 1600MB/s |
| Maximum Sequential Write | Up to 860MB/s |
| Logical Blocks | 1,000,215,216 |
| Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| Features | APST; ASPM L1.2; NVME spec 1.2 |

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 |

Technical Specifications - Storage

| | |
|---------------------------------|--|
| 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 |

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 |

Technical Specifications – Optical Disc Drives

OPTICAL DISC DRIVES

HP 9.5mm Desktop G2 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) |
| 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 \pm 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) |

HP 9.5mm Desktop G2 Slim DVD-ROM 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) |
| 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 |

Technical Specifications – Optical Disc Drives

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 \pm 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

High Definition Audio

| | |
|----------------------------|--|
| Type | Integrated |
| HD Audio Codec | Realtek ALC3601 |
| Audio I/O Ports | Front side Combo jack for supporting CTIA, Rear side Line-in/ Line-out/ Mic-in jacks |
| Wavetable Syntheses | Yes |
| Analog Audio | Yes |
| Internal Speaker | NA |
| DAC Sampling Rates | 16 to 24-bit; 44.1K/ 48 K/96K / 192K Hz |
| ADC Sampling Rates | 16 bit, 44.1K/ 48K/ 96K/ 192K Hz |

Technical Specifications - Power

POWER SUPPLY

| | |
|--|---|
| 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 |
| Rated Input Current with Energy Efficient* Power Supply | 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*20mm (linear type) |

Technical Specifications – Weights and Dimensions

WEIGHTS AND DIMENSIONS

| | |
|---------------------------------------|--|
| Chassis (W x H x D) | 3.74 x 10.63 x 11.65 in (95 x 270 x 296 mm) |
| System Volume | 463.16cu in 7.6L |
| System Weight* | 8.82 lbs / 4 kg |
| Packaged (H x W x D) | 13.46 x 7.72 x 19.65 in 342 x 196 x 499 mm |
| Shipping Weight* | 13.2 lb / 6 kg |
| Shipping Weight (Molded Pulp)* | 13.86 lb / 6.3 kg |
| Palletization Profile | 12-units per layer 6 layer max 72 per pallet Footprint (H x W x D) 85.91 x 39.37 x 47.24 in (2182 x 1000 x 1200 mm) |

*NOTE: Weight varies by configuration and component

Technical Specifications – Networking

NETWORKING

10/100/1000 Integrated NIC

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

Realtek 802.11ac (1x1) Wi-Fi® and Bluetooth® 4.2 Combo *

| | | |
|---|---|--|
| Wireless LAN Standards¹ | <p>IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac</p> <p>1. Wireless access point and Internet service required and not included. Availability of public wireless access points limited.</p> | |
| Interoperability | Wi-Fi® certified modules | |
| Frequency Bands | 802.11b/g/n | <p>•2.402 – 2.482 GHz</p> <p>Note: The FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.</p> |
| | 802.11a/n | <p>•4.9 – 4.95 GHz (Japan)</p> <p>•5.15 – 5.25 GHz</p> <p>•5.25 – 5.35 GHz</p> <p>•5.47 – 5.725 GHz</p> <p>•5.825 – 5.850</p> |

Technical Specifications – Networking

| | |
|---|--|
| Data Rates | <ul style="list-style-type: none"> • 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 | <p>Direct Sequence Spread Spectrum</p> <p>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM</p> |
| Security² | <ul style="list-style-type: none"> • IEEE and 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 <p>2 Check latest software/driver release for updates on supported security features.</p> |
| Network Architecture Models | <p>Ad-hoc (Peer to Peer)</p> <p>Infrastructure (Access Point Required)</p> |
| Roaming | IEEE 802.11 compliant roaming between access points |
| Output Power³ | <ul style="list-style-type: none"> • 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 <p>3. Maximum output power may vary by country according to local regulations.</p> |
| Power Consumption | <ul style="list-style-type: none"> • 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 10mW • Radio disabled 8 mW |
| Power Management | <p>ACPI and PCI Express compliant power management</p> <p>802.11 compliant power saving mode</p> |
| Receiver Sensitivity⁴ | 802.11b, 1Mbps : -93.5dBm maximum |

Technical Specifications – Networking

| | | |
|--------------------------|--|--|
| | <p>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</p> <p>4 Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).</p> | |
| Antenna type | <p>High efficiency antenna. One embedded dual band 2.4/5 GHz antenna is provided to the card to support WLAN communications and Bluetooth communications</p> | |
| Form Factor | <p>PCI-Express M.2 MiniCard</p> | |
| Dimensions | <p>Type 2230 : 2.3 x 22.0 x 30.0 mm</p> | |
| Weight | <p>Type 2230 : 2.8g</p> | |
| Operating Voltage | <p>3.3v +/- 9%</p> | |
| Temperature | <p>Operating: Non-operating:</p> | <p>14° to 158° F (-10° to 70° C) -40° to 176° F (-40° to 80° C)</p> |
| Humidity | <p>Operating: Non-operating:</p> | <p>10% to 90% (non-condensing) 5% to 95% (non-condensing)</p> |
| Altitude | <p>Operating: Non-operating:</p> | <p>0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)</p> |
| LED Activity | <p>LED Amber – Radio OFF; LED White – Radio ON</p> | |

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

| | |
|-------------------------------------|---|
| Bluetooth Specification | <p>4.0/4.1/4.2 Compliant</p> |
| Frequency Band | <p>2402 to 2480 MHz</p> |
| Number of Available Channels | <p>Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)</p> |
| Data Rates and Throughput | <p>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)</p> |
| Transmit Power | <p>The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.</p> |
| Receiver Sensitivity Legacy | |
| Power Consumption | <p>Peak (Tx) 330 mW Peak (Rx) 230 mW</p> |

Technical Specifications – Networking

| | |
|--|--|
| | Selective Suspend 17 mW |
| Range | Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH) |
| Electrical Interface | USB 2.0 compliant |
| Bluetooth Software Supported Link Topology | Microsoft Windows Bluetooth Software |
| Power Management Certifications | Microsoft Windows ACPI, and USB Bus Support |
| Certifications 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) |

After-Market Options (availability may vary by region)

AFTER MARKET OPTIONS

| <u>Type</u> | <u>Description</u> | <u>Part #</u> |
|--------------------|--|----------------------|
| Memory | HP 4GB DDR4-2666 DIMM | 3TK85AA |
| | HP 8GB DDR4-2666 DIMM | 3TK87AA |
| | HP 16GB DDR4-2666 DIMM | 3TK83AA |
| Storage | HP 500GB SATA 6.0Gb/s Hard Drive | QK554AA |
| | HP 1TB 7200rpm SATA 6Gbps Hard Drive | QK555AA |
| | HP Turbo Drive Gen2 256GB M.2 SSD Drive | 1CA51AA |
| | HP 256GB SATA TLC Non-SED Solid State Drive | P1N68AA |
| | HP 9.5mm G3 8/6/4 SFF G4 400 SFF/MT DVD Writer | 1CA53AA |
| Graphics | Nvidia® GT 730 2GB DP Card | Z9H51AA |
| | AMD Radeon™ R7 430 2GB 2DP Card | 5JW82AA |
| Security | HP Business PC Security Lock V3 Kit | 3XJ17AA |
| | HP Keyed Cable Lock 10mm kit | T1A62AA |
| Adapters | HP PCIe x1 Parallel Port Card | N1M40AA |
| | HP HDMI Standard Cable Kit | T6F94AA |
| | HP USB to Serial Port Adapter | J7B60AA |
| Networking | Intel Ethernet I210-T1 GbE NIC Card | E0X95AA |
| Input | HP USB Mouse | QY777AA |
| | HP USB Hardened Mouse | P1N77AA |
| | HP USB Grey v2 Mouse | Z9H74AA |
| | HP USB Keyboard | QY776AA |
| | HP USB Business Slim Keyboard | N3R87AA |
| | HP Conferencing Keyboard | K8P74AA |
| | HP USB Antimicrobial Slim Keyboard and Mouse | Z9H50AA |
| Others | HP Business Headset v2 | T4E61AA |
| | HP S101 Speaker bar | 5UU40AA |

