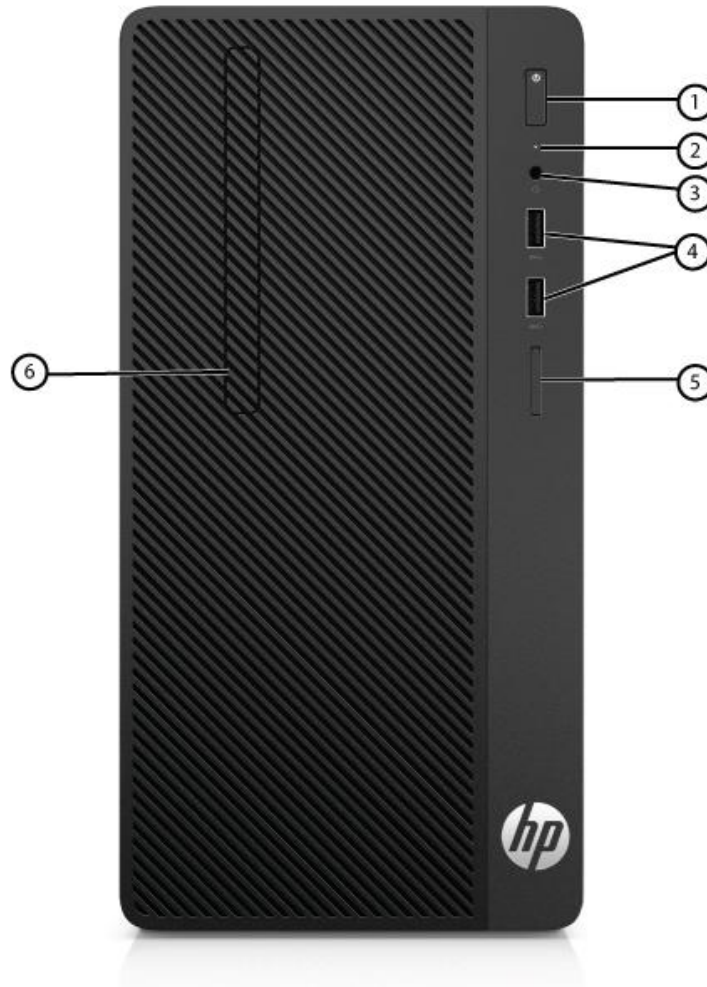


Overview

HP Desktop Pro Microtower Business PC



Front

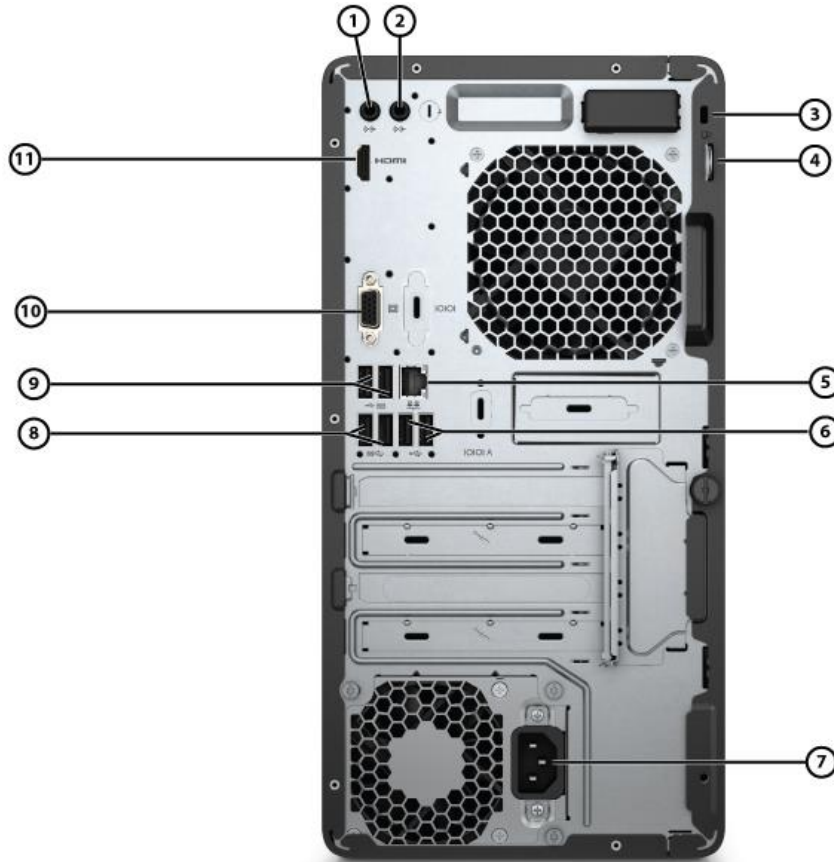
1. Power Button
2. PC Status LED
3. Microphone/Headphone Combo Jack
4. (2) USB 3.0 Ports
5. SD Media Card Reader (optional)
6. 5.25" Slim-height Bay - supporting an optical disk drive (optional)

Not Shown

- Slots (1) PCI Express x16 TLC 3.0 Graphics Connector
(1) PCI Express x1 2.0 Accessory Connector
(1) PCI 2.3 (optional, select countries only)
(1) M.2 for WLAN
- Bays (1) 3.5" internal storage drive bay
(1) 3.5" internal storage drive bay (optional)

Overview

HP Desktop Pro Microtower Business PC

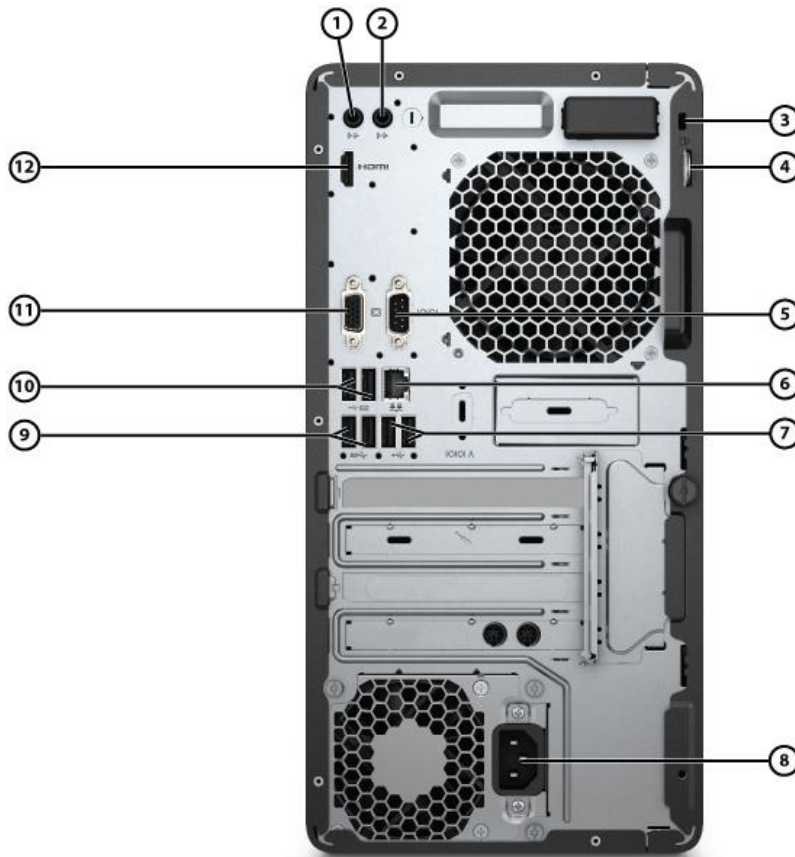


Back

- | | |
|----------------------------|---------------------------|
| 1. Audio Line In Connector | 7. Power Cord Connector |
| 2. Audio-out connector | 8. (2) USB 2.0 Ports |
| 3. Cable Lock Slot | 9. (2) USB 3.0 Ports |
| 4. Pad Lock Slot | 10. VGA monitor connector |
| 5. RJ-45 (network) jack | 11. HDMI connector |
| 6. (2) USB 2.0 Ports | |

Overview

HP Desktop Pro Microtower Business PC (Legacy) - Available in selected countries only



Back

- | | |
|----------------------------|---------------------------|
| 1. Audio Line In Connector | 7. (2) USB 2.0 Ports |
| 2. Audio-out connector | 8. Power Cord Connector |
| 3. Cable Lock Slot | 9. (2) USB 2.0 Ports |
| 4. Pad Lock Slot | 10. (2) USB 3.0 Ports |
| 5. Serial port | 11. VGA monitor connector |
| 6. RJ-45 (network) jack | 12. HDMI connector |

Overview

AT A GLANCE

- Windows 10 Pro , Windows 10 Home, NeoKylin Linux (selected countries only) or FreeDOS 2.0
- Intel® H110 chipset supporting Intel® 6th and 7th generation Intel® Celeron®, Pentium®, Core™ i3, i5 and i7 processors featuring Intel® HD Graphics
- Supports an optional discrete graphics card
- Integrated 10/100/1000 Ethernet Controller
- Supports Wake-on-LAN (WOL)
- Up to 32GB DDR4 Unbuffered Memory (UDIMM)
- Supports both Hard Disk and Solid State Drives
- Independent monitor support via VGA & HDMI video interfaces
- TPM 2.0 support
- High definition audio
- 8 USB ports (including 4 USB 3.0 ports)
- Security cable lock supported (sold separately)
- Protected by HP Services; terms and conditions vary by country; certain restrictions and exclusions apply

Standard Features and Configurable Modules

CHIPSET

Intel® H110 Chipset

PROCESSORS

NOTE: 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 is not a measurement of higher performance.

Intel® 7th Generation Core™ i7 Processors*

Intel® Core™ i7-7700 Processor

65W

Up to 4.2 GHz Max. Turbo Frequency (3.6 GHz base frequency)

8 MB SmartCache cache, 4 cores, 8 threads

Intel® HD Graphics 630

Supports DDR4 memory up to 2400 MT/s data rate

Intel® 7th Generation Core™ i5 Processors*

Intel® Core™ i5-7600 Processor

65W

Up to 4.1 GHz Max. Turbo Frequency (3.5 GHz base frequency)

6 MB cache, 4 cores, 4 threads

Intel® HD Graphics 630

Supports DDR4 memory up to 2400 MT/s data rate

Intel® Core™ i5-7500 Processor

65W

3.4 GHz base frequency

6 MB cache, 4 cores, 4 threads

Intel® HD Graphics 630

Supports DDR4 memory up to 2400 MT/s data rate

Intel® Core™ i5-7400 Processor

65W

3.0 GHz base frequency

6 MB cache, 4 cores, 4 threads

Intel® HD Graphics 630

Supports DDR4 memory up to 2400 MT/s data rate

Intel® 7th Generation Core™ i3 Processors*

Intel® Core™ i3-7300 Processor

51W

4.0 GHz base frequency

4 MB cache, 2 cores, 4 threads

Intel® HD Graphics 630

Supports DDR4 memory up to 2400 MT/s data rate

Intel® Core™ i3-7100 Processor

51W

3.9 GHz base frequency

3 MB cache, 2 cores, 4 threads

Intel® HD Graphics 630

Standard Features and Configurable Modules

Supports DDR4 memory up to 2400 MT/s data rate

Intel® 7th Generation Pentium® Processors*

Intel® Pentium® G4560 Processor

54W

3.5 GHz Base Frequency

3 MB cache, 2 cores, 4 threads

Intel® HD Graphics 610

Supports DDR4 memory up to 2400 MT/s data rate

Intel® 6th Generation Core™ i7 Processors

Intel® Core™ i7-6700 Processor

65W

Up to 4.0 GHz Max. Turbo Frequency (3.4 GHz base frequency)

8 MB cache, 4 cores, 8 threads

Intel® HD Graphics 530

Supports DDR4 memory up to 2133 MT/s data rate

Intel® 6th Generation Core™ i5 Processors

Intel® Core™ i5-6500 Processor

65W

Up to 3.6 GHz Max. Turbo Frequency (3.2 GHz base frequency)

6 MB cache, 4 cores, 4 threads

Intel® HD Graphics 530

Supports DDR4 memory up to 2133 MT/s data rate

Standard Features and Configurable Modules

Intel® 6th Generation Core™ i5 Processors

Intel® Core™ i5-6600 Processor

65W
Up to 3.9 GHz Max. Turbo Frequency (3.3 GHz base frequency)
6 MB cache, 4 cores, 4 threads
Intel® HD Graphics 530
Supports DDR4 memory up to 2133 MT/s data rate

Intel® 6th Generation Pentium® Processors

Intel® Core™ i3-6100 Processor

51W
3.7 GHz base frequency
3 MB cache, 2 cores, 4 threads
Intel® HD Graphics 530
Supports DDR4 memory up to 2133 MT/s data rate

Intel® 6th Generation Celeron® Processors

Intel® Pentium® G4500 Processor

51W
3.5 GHz Base Frequency
3 MB cache, 2 cores, 2 threads
Intel® HD Graphics 530
Supports DDR4 memory up to 2133 MT/s data rate

Intel® 6th Generation Celeron® Processors

Intel® Celeron® G3900 Processor

51W
2.8 GHz Base Frequency
2 MB cache, 2 cores, 2 threads
Intel® HD Graphics 510
Supports DDR4 memory up to 2133 MT/s data rate

Intel® 6th Generation Celeron® Processors

Intel® Celeron® G3930 Processor

51W
2.9 GHz Base Frequency
2 MB cache, 2 cores, 2 threads
Intel® HD Graphics 610
Supports DDR4 memory up to 2133 MT/s data rate

***NOTE:** 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>

Standard Features and Configurable Modules

GRAPHICS

Integrated

Intel® Integrated HD Graphics Varies by Processor

Discrete (optional for selected countries only)

NVIDIA® GeForce® GT 730 1GB PCIe x8 HDMI

NVIDIA® GeForce® GT 730 2GB PCIe x8 DP & HDMI

AMD Radeon™ R5 420 Card

AMD Radeon™ R7 430 Card

MEMORY*

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

| Form Factor | Type | Maximum | # of Slots |
|-------------|--|----------------|------------|
| Microtower | DDR4-2400 (Transfer rates up to 2400 MT/s) | 32 GB capacity | 2 DIMM |

4GB DDR4-2400 DIMM (1x4GB)

8GB DDR4-2400 DIMM (1x8GB)

16GB DDR4-2400 DIMM (1x16GB)

* Full availability of 4 GB or more of memory requires a 64-bit operating system. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

Memory modules support data transfer rates up to 2400 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*

SATA 3.5" 6Gb/s HDDs*

500GB 7200 RPM SATA Hard Disk Drive

1TB 7200 RPM SATA Hard Disk Drive

2 TB 7200 RPM SATA Hard Disk Drive

Solid State Drives 2.5" *

128GB SATA SSD

256GB SATA SSD

Multi-format Digital Media Card Reader (optional)**

HP 6-in-1 SD Media Card Reader (optional)

*For storage drives, GB = 1 billion bytes, TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB of system disk is reserved for system recovery software.

**Card sold separately

OPTICAL DISC DRIVES*

HP 9.5mm Desktop G3 Slim DVD-ROM Drive

HP 9.5mm Desktop G3 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. Duplication of copyrighted material is strictly prohibited. Actual speeds may vary. Double Layer discs can store more data than single layer discs. Double Layer media compatibility will widely vary with some home DVD players and drives.

AUDIO/MULTIMEDIA

Integrated Hi-Definition Audio: Internal amplifier (Conexant CX20632 Audio Codec)

Combo Microphone/Headphone Jack

Line-out and Line-in rear port (3.5mm)

Standard internal speaker

NETWORKING

Ethernet (RJ-45)

Integrated 10/100/1000M Gigabit Ethernet Controller - Realtek RTL8111HSH-CG GbE Ethernet

Optional : Intel® Ethernet I210-T1 PCIe x1 Gb Network Interface Card

Supports Wake-on-LAN (WOL)

Wireless (Optional)*

Intel® 3168 802.11AC 1x1 Wi-Fi +Bluetooth® M.2 Combo Card non-vPro™ (optional)

* Wireless access point and Internet service required and not included. Availability of public wireless access points limited.

Standard Features and Configurable Modules

PORTS

Front I/O Ports

Two (2) USB 3.0 ports

One (1) Microphone/Headphone Combo Jack (CTIA)

Rear I/O Ports

Four (4) USB 2.0 ports

Two (2) USB 3.0 ports

One (1) RJ45 network connection

One (1) Audio Line out

One (1) Audio Line in

One (1) VGA

One (1) HDMI

Optional, select countries only

One (1) PS/2 port

One (1) Serial

One (1) Parallel

Internal I/O Ports

One (1) PCIe x 16 (3.0)

One (1) PCIe x 1 (2.0)

One (1) M.2 for WLAN

One (1) PCI 2.3 (optional, select countries only)

BAYS

One (1) 3.5" Hard Disc Drive Bay

One (1) 3.5" / 2.5" Hard Disc Drive Bay (no bracket required)

One (1) 9.5 mm Slim ODD Bay

One (1) SD Card Reader bay (Optional)

KEYBOARDS AND POINTING DEVICES**

Keyboards

Universal USB Wired Keyboard

HP PS/2 Business Slim Keyboard (optional, select countries only)

HP PS/2 Keyboard (optional, select countries only)

HP USB Antimicrobial Keyboard (China only)

HP USB Business Slim Keyboard

Mice

HP USB Mouse (not available for India)

HP USB Hardened Mouse (India only)

HP PS/2 Mouse (optional, select countries only)

HP USB Antimicrobial Mouse (China only)

**Keyboards and mouse are optional or add-on features.

Standard Features and Configurable Modules

SERVICE AND SUPPORT

On-site Warranty 1: Available three-year (3-3-3) or one-year (1-1-1) 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>.

NOTE 1: Terms and conditions may vary by country. Certain restrictions and exclusions apply. Other warranty variations may be offered in your region.

NOTE 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.

NOTE 3: Technical telephone support applies only to HP-configured and third-party HP qualified hardware and software.

NOTE 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.

Operating Systems & Software

OPERATING SYSTEMS

Preinstalled (Windows)

Windows 10 Pro 64¹

Windows 10 Pro 64 (National Academic License)³

Windows 10 Home 64¹

Windows 10 Home Single Language 64¹

Windows 7 Professional 64 (available through downgrade rights from Windows 10 Pro)^{2,4}

Pre-installed (Other)

FreeDOS 2.0

NeoKylin Linux 64 (Select countries only)

Web-supported

Windows 10 Enterprise 64¹

Windows 7 Enterprise 64⁴

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. This system is preinstalled with Windows 7 Pro software also comes with a license and media for Windows 10 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.
3. 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.
4. Only available with 7th generation (Intel) processors.

Operating Systems & Software

SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

Preinstalled (varies by country)

Multimedia

CyberLink Power Media Player CMIT (select platforms only)

CyberLink Power2Go (select platforms only)

Communication / Connectivity

HP Velocity (select platforms only)

HP Value Add Software

HP ePrint Driver + JetAdvantage¹

HP Hotkey Support - CMIT

HP Recovery Manager

HP Recovery Disc Creator (Windows 7 only)

HP Support Assistant

HP Jumpstart

Foxit PhantomPDF Express (Windows 7 only)

Microsoft Products

Buy Office

Skype²

Manageability

Discover HP Touchpoint Manager³

Security

Microsoft Security Essentials⁴ (Windows 7 only)

Microsoft Defender

1. 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/eprintcenter>). Print times and connection speeds may vary.
2. Skype is not offered in China.
3. HP Touchpoint Manager requires purchase of a subscription and supports Android™, iOS and Windows 7 or higher operating systems and PCs, notebooks, tablets and smartphones from various manufacturers. Not available in all countries see <http://www.hp.com/touchpoint> for availability information.
4. Opt in and internet connection required for updates.

Technical Specifications

UNIT ENVIRONMENT AND OPERATING CONDITIONS

General Unit Operating Guidelines

- 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)* 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) |

*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.

POWER SUPPLY*

- 180W HE (full range)
180W active PFC 82/85/82% efficient at 20/50/100% load(115V)
Operating Voltage Range: 90 - 264VAC
Rated Voltage Range: 100 - 240VAC
Rated Line Frequency: 50 - 60HZ
Operating Line Frequency: 47 - 63HZ
Rated Input Current: 180W/2.3A
Rated Input Current with Energy Efficient* Power Supply: 180W/2.3A
DC Output: +12V
Power Supply Fan: 70mm variable speed
Power cord length: 6.0 ft. (1.83 m)
- 310W HE (full range) – Selected countries only
310W active PFC 82/85/82% efficient at 20/50/100% load(115V)
Operating Voltage Range: 90 - 264VAC
Rated Voltage Range: 100 - 240VAC
Rated Line Frequency: 50 - 60HZ
Operating Line Frequency: 47 - 63HZ
Rated Input Current: 310W/4A
Rated Input Current with Energy Efficient* Power Supply: 310W/4A
DC Output: +12V
Power Supply Fan: 70mm variable speed
Power cord length: 6.0 ft. (1.83 m)

Technical Specifications

- The harmonic input current requirements must be met under the following operating conditions:
Load Requirements: 50% and 100%
Input Voltage: 230Vac/50Hz.
For active power factor correction the power factor at 50% & 100% loads shall be greater than 0.9 over the entire nominal input voltage range (100-127VAC and 200-240VAC).

| Condition | 87/90/87% | Input Voltage |
|--------------------|-----------|---------------|
| 10% of Rated Load | 84%, | 115Vac/60HZ |
| 20% of Rated Load | 87% | 115Vac/60HZ |
| 50% of Rated Load | 90% | 115Vac/60HZ |
| | PF>0.9 | |
| 100% of Rated Load | 87% | 115Vac/60HZ |
| | PF>0.9 | 230Vac/50HZ |

*Note: All power supplies are not available in every region.

Technical Specifications

DIMENSIONS AND WEIGHT (configured with 1 HDD and 1 ODD)

Chassis
(WxDxH in vertical orientation) 6.69 x 10.79 x 13.31 in
17 x 27.4 x 33.8 cm

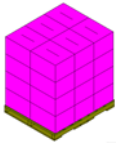
System Weight 12.02 lbs / 5.45 kg

PACKAGING DIMENSIONS AND WEIGHT (configured with 1 HDD and 1 ODD)

Dimensions 19.65 x 15.35 x 11.73 in
49.9 x 39 x 29.8 cm

Weight 17.17 lbs / 7.79 kg

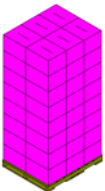
PACKAGING DIMENSIONS AND WEIGHT BY AIR PALLETIZATION



Dimensions 1200*1000*[120+298*4(height of units)=1312]mm

Weight 24(cartons)*7.79(kg per unit)+ 8.4 (kg for pallet) =195.36 (kg for palletization)

PACKAGING DIMENSIONS AND WEIGHT BY OCEAN/TRUCK PALLETIZATION



Dimensions 1200*1000*[120+298*8(height of units)=2504]mm

Weight 48(cartons)*7.79(kg per unit)+ 8.4 (kg for pallet) =382.32 (kg for palletization)

Technical Specifications

SECURITY FEATURES

Trusted Platform Module (TPM) 2.0
Security cable slot

CERTIFICATIONS

EPEAT® Silver* 1.0
CECP (China Only)
SEPA (China Only)
WEEE (Waste, Electric and electronic equipment)
ENERGY STAR® 6.1
EuP Lot 3
CEL Level 1
FCC
UL
RoHS 2.06 Compliance

*EPEAT® registered where applicable/supported. EPEAT registration varies by country. See www.epeat.net for registration status by country.

Technical Specifications - Graphics

| Intel® HD Graphics (integrated) | | | |
|--|--|-------------|------------|
| 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) | | |
| Memory | The BIOS has options for selecting the dedicated memory size of 128MB, 256MB or 512MB Additional 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 Graphics Memory | Microsoft Windows 7 | Windows 8.1 | Windows 10 |
| | Up to 1.7GB | Up to 1.8GB | >4 GB |
| Note: the actual amount of maximum graphics memory can be less than the amounts listed above depending upon your computer's configuration. | | | |
| Maximum Color Depth | 32 bits/pixel | | |
| Graphics/Video API Support | 6th Generation Core™ processors: <ul style="list-style-type: none"> • Next Generation Intel® Clear Video Technology HD Support is a collection of video playback and enhancement features that improve the end user's viewing experience <ul style="list-style-type: none"> ○ Encode/transcode HD content ○ Playback of high definition content including Blu-ray Disc ○ Superior image quality with sharper, more colorful images • DirectX Video Acceleration (DXVA) support for accelerating video processing <ul style="list-style-type: none"> ○ Full AVC/VC1/MPEG2/HEVC HW Decode • Advanced Scheduler 2.0, 1.0 • Windows 7, Windows 8.1, Windows 10, Linux OS Support • DirectX 12.1 • OpenGL 4.4 • Open CL 1.2 (Intel® HD Graphics 510) • Open CL 1.2/2.0 (Intel® HD Graphics 530) | | |

Supported Display Resolutions and Refresh Rates

Note: other resolutions may be available but are not recommended as they may not have been tested and qualified by HP. For All in One platforms, resolutions higher than the integrated panel resolution are not supported on the integrated panel.

| Resolution | Refresh Rate | VGA | DisplayPort™ | HDMI | Standard |
|------------|--------------|-----|--------------|------|----------------------|
| 640 x 480 | 60, 75, 85 | X | X | X | VESA DMT, CVT 0.31M3 |
| 720 x 400 | 70 | X | X | X | IBM VGA |
| 800 x 600 | 60, 75, 85 | X | X | X | VESA DMT, CVT0.48M3 |
| 1024 x 768 | 60, 75, 85 | X | X | X | VESA DMT, CVT 0.79M3 |
| 1152 x 864 | 60, 75, 85 | X | X | X | VESA DMT, CVT 0.83MA |

Technical Specifications - Graphics

| | | | | | |
|-------------|------------------|----|---|---|------------------------------------|
| 1280 x 720 | 60, 75, 85 | X | X | X | VESA DMT, CVT 0.92M9, CEA-770.3 |
| 1280 x 768 | 60, 60RB, 75, 85 | X | X | X | VESA DMT, CVT 0.98M9/0.98M9-R |
| 1280 x 800 | 60, 75, 85 | X | X | X | VESA DMT |
| 1280 x 960 | 60, 75, 85 | X | X | X | VESA DMT |
| 1280 x 1024 | 60, 75, 85 | X | X | X | VESA DMT, CVT 1.31M4 |
| 1366 x 768 | 60, 60RB | X | X | X | VESA DMT |
| 1440 x 900 | 60, 60RB | X | X | X | VESA DMT |
| 1600 x 900 | 60, 60RB, 75, 85 | X | X | X | VESA DMT |
| 1680 x 1050 | 60, 60RB, 75 | X | X | X | VESA DMT, CVT 1.76MA/1.76MA-R |
| 1920 x 1080 | 60 | X | X | X | VESA DMT, CVT 2.07M9, SMPTE 274M |
| 1920 x 1200 | 60, 60RB, 75, 85 | X* | X | X | DMT, CVT 2.30MA/2.30MA-R |
| 1600 x 1200 | 60, 75, 85 | X* | X | X | VESA DMT, 1.92M3 |
| 1920 x 1440 | 60, 75, 85 | | X | X | VESA DMT, CVT 2.76M3 |
| 2048 x 1536 | 60,75 | | X | X | CVT 3.15M3 |
| 2560 x 1440 | 59.951 | | X | X | CVT 3.69M9-R |
| 2560 x 1600 | 60, 60RB | | X | X | VESA DMT, CVT 4.10MA/4.10MA-R |
| 3840 x 2160 | 24 | | X | X | CVT-RBv1/v2 (8.29M9-R), SMPTE 274M |
| 3840 x 2160 | 25 | | X | X | CVT-RBv1/v2 (8.29M9-R), SMPTE 274M |
| 3840 x 2160 | 30 | | X | X | CVT-RBv1/v2 (8.29M9-R), SMPTE 274M |
| 3840 x 2160 | 50 | | X | X | CVT-RBv1/v2 (8.29M9-R), SMPTE 274M |
| 3840 x 2160 | 60 | | X | X | CVT-RBv1/v2 (8.29M9-R), SMPTE 274M |
| 4096 x 2160 | 24 | | X | X | CVT-RBv1/v2 (8.85M-R), SMPTE 274M |
| 4096 x 2160 | 25 | | X | X | CVT-RBv1/v2 (8.85M-R), SMPTE 274M |
| 4096 x 2160 | 30 | | X | X | CVT-RBv1/v2 (8.85M-R), SMPTE 274M |
| 4096 x 2160 | 50 | | X | X | CVT-RBv1/v2 (8.85M-R), SMPTE 274M |
| 4096 x 2160 | 60 | | X | X | CVT-RBv1/v2 (8.85M-R), SMPTE 274M |
| 1920 x 1080 | 60 | | X | X | VESA (SMPTE 274M) |
| 1920 x 1080 | 50 | | X | X | SMPTE 274M |
| 1920 x 1080 | 30 | | X | X | SMPTE 274M |
| 1920 x 1080 | 24 | | X | X | SMPTE 274M |
| 1280 x 720 | 60 | | X | X | VESA (CEA-770.3) |
| 1280 x 720 | 50 | | X | X | SMPTE 296M |
| 720 x 480 | 60 | | X | X | MHL (CEA-770.2) |
| 720 x 576 | 50 | | X | X | ITU-R BT.1358 |

Technical Specifications - Graphics

| | | | | | |
|---------------------------------|----|--|---|---|----------------|
| 640 x 480 | 60 | | X | X | CEA (VESA DMT) |
| * 60Hz refresh rate only on VGA | | | | | |

NVIDIA® GeForce® GT 730 1GB PCIe x8 HDMI Graphics Card

| | |
|-------------------------------|--|
| Memory | 1GB GDDR5 64-bit wide frame buffer operating at 2.5GHz. |
| Controller Clock Speed | NVIDIA® Kepler™ GPU operating at 901 MHz |
| Multi-display Support | A maximum of 2 displays are supported by the card |
| Graphics /API support | Supports Microsoft DirectX 12, OpenGL 4.4 and OpenCL 2 API, Shade Model 5 and DirectCompute 11 |
| Output Connectors | 1 x Dual-Link DVI-I; 1x HDMI; Includes DVI to VGA adapter |

Supported Display Resolutions and Refresh Rates

Note: other resolutions may be available but are not recommended as they may not have been tested and qualified by HP

| Resolution | Refresh Rate* | VGA (DVI-VGA adapter) | DVI-D | HDMI | Standard |
|-------------|------------------|-----------------------------|-------|------|----------------------------------|
| 640 x 480 | 60, 75, 85 | X | X | X | VESA DMT, CVT 0.31M3 |
| 720 x 400 | 70 | X | X | X | IBM VGA |
| 800 x 600 | 60, 75, 85 | X | X | X | VESA DMT, CVT0.48M3 |
| 1024 x 768 | 60, 75, 85 | X | X | X | VESA DMT, CVT 0.79M3 |
| 1152 x 864 | 60, 75, 85 | X | X | X | VESA DMT, CVT 0.83MA |
| 1280 x 720 | 60, 75, 85 | X | X | X | VESA DMT, CVT 0.92M9, CEA-770.3 |
| 1280 x 768 | 60, 60RB, 75, 85 | X | X | X | VESA DMT, CVT 0.98M9/0.98M9-R |
| 1280 x 800 | 60, 75, 85 | X | X | X | VESA DMT |
| 1280 x 960 | 60, 75, 85 | X | X | X | VESA DMT |
| 1280 x 1024 | 60, 75, 85 | X | X | X | VESA DMT, CVT 1.31M4 |
| 1366 x 768 | 60, 60RB | X | X | X | VESA DMT |
| 1440 x 900 | 60, 60RB | X | X | X | VESA DMT |
| 1600 x 900 | 60, 60RB, 75, 85 | X | X | X | VESA DMT |
| 1680 x 1050 | 60, 60RB, 75 | X | X | X | VESA DMT, CVT 1.76MA/1.76MA-R |
| 1920 x 1080 | 60 | X | X | X | VESA DMT, CVT 2.07M9, SMPTE 274M |
| 1920 x 1200 | 60, 60RB, 75, 85 | X | X | X | DMT, CVT 2.30MA/2.30MA-R |

Technical Specifications - Graphics

| | | | | | |
|-------------|------------|---|---|---|------------------------------------|
| 1600 x 1200 | 60, 75, 85 | X | X | X | VESA DMT, 1.92M3 |
| 1920 x 1440 | 60, 75, 85 | X | X | X | VESA DMT, CVT 2.76M3 |
| 2048 x 1536 | 60,75 | X | X | X | CVT 3.15M3 |
| 2560 x 1440 | 59.951 | | X | X | CVT 3.69M9-R |
| 2560 x 1600 | 60, 60RB | | X | X | VESA DMT, CVT 4.10MA/4.10MA-R |
| 3840 x 2160 | 24 | | | X | CVT-RBv1/v2 (8.29M9-R), SMPTE 274M |
| 3840 x 2160 | 25 | | | X | CVT-RBv1/v2 (8.29M9-R), SMPTE 274M |
| 3840 x 2160 | 30 | | X | X | CVT-RBv1/v2 (8.29M9-R), SMPTE 274M |
| 3840 x 2160 | 50 | | | | CVT-RBv1/v2 (8.29M9-R), SMPTE 274M |
| 3840 x 2160 | 60 | | | | CVT-RBv1/v2 (8.29M9-R), SMPTE 274M |
| 4096 x 2160 | 24 | | | X | CVT-RBv1/v2 (8.85M-R), SMPTE 274M |
| 4096 x 2160 | 25 | | | X | CVT-RBv1/v2 (8.85M-R), SMPTE 274M |
| 4096 x 2160 | 30 | | | X | CVT-RBv1/v2 (8.85M-R), SMPTE 274M |
| 4096 x 2160 | 50 | | | | CVT-RBv1/v2 (8.85M-R), SMPTE 274M |
| 4096 x 2160 | 60 | | | | CVT-RBv1/v2 (8.85M-R), SMPTE 274M |
| 1920 x 1080 | 60 | | X | X | VESA (SMPTE 274M) |
| 1920 x 1080 | 50 | | X | X | SMPTE 274M |
| 1920 x 1080 | 30 | | X | X | SMPTE 274M |
| 1920 x 1080 | 24 | | X | X | SMPTE 274M |
| 1280 x 720 | 60 | | X | X | VESA (CEA-770.3) |
| 1280 x 720 | 50 | | X | X | SMPTE 296M |
| 720 x 480 | 60 | | X | X | MHL (CEA-770.2) |

* >60 refresh rates only for analog (VGA) signaling

Technical Specifications - Graphics

NVIDIA® GeForce® GT 730 2GB PCIe x8 DP Graphics Card

| | |
|-------------------------------|---|
| Memory | 2GB GDDR5 64-bit wide frame buffer operating at 2.5GHz. |
| Controller Clock Speed | NVIDIA® Kepler™ GPU operating at 902 MHz |
| Multi-display Support | A maximum of 2 displays are supported by the card |
| Graphics /API support | Supports Microsoft DirectX 12, OpenGL 4.4 |
| Output Connectors | 1 x Dual-Link DVI-I; 1x DP; Includes DVI to VGA adapter |
| Max. Resolution (DVI) | 2560 x 1600 x 30 bpp @ 60Hz (Dual Link) |
| Max. Resolution (DP) | 4096 x 2160 x 24 bpp @ 60 Hz (DP1.2) |

NVIDIA® GeForce® GT 730 2GB PCIe x8 HDMI Graphics Card

| | |
|-------------------------------|---|
| Memory | 2GB GDDR5 64-bit wide frame buffer operating at 2.5GHz. |
| Controller Clock Speed | NVIDIA® Kepler™ GPU operating at 902 MHz |
| Multi-display Support | A maximum of 2 displays are supported by the card |
| Graphics /API support | Supports Microsoft DirectX 12, OpenGL 4.4 |
| Output Connectors | 1 x Dual-Link DVI-I; 1x HDMI; Includes DVI to VGA adapter |
| Max. Resolution (DVI) | 2560 x 1600 x 30 bpp @ 60Hz (Dual Link) |
| Max. Resolution (DP) | 4096 x 2160 x 24 bpp @ 60 Hz (DP1.2) |

Technical Specifications – Hard Disk and Solid State Storage

| 500GB* 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive | | |
|---|--------------------------------|--------|
| Formatted Capacity | 500,107,862,016 bytes | |
| Spindle Speed | 7,200 rpm | |
| Interface | Serial ATA 3.0 (6.0 Gb/s) | |
| Buffer Size | 16 MB | |
| Logical Blocks | 976,773,168 | |
| Seek Time (average) | Single Track: | 2.0 ms |
| | Average: | 11 ms |
| | Full-Stroke: | 21 ms |
| Height (nominal) | 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) | |
| <p>*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.</p> | | |

| HP 1 TB* 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive* | | |
|---|--------------------------------|--------|
| Formatted Capacity | 1,000,204,886,016 bytes | |
| 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 (average) | Single Track: | 2.0 ms |
| | Average: | 11 ms |
| | Full-Stroke: | 21 ms |
| Height (nominal) | 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) | |

Technical Specifications – Hard Disk and Solid State Storage

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

| | | |
|-----------------------------------|-----------------------------|---------|
| Formatted Capacity | 2 TB | |
| Rotational Speed | 7,200 rpm | |
| Interface | SATA 6Gb/s NCQ | |
| Cache, Multisegmented (MB) | 64 MB | |
| Seek Time (average) | Read | <8.5 ms |
| | Write | <9.5 ms |
| Height | 1.028 in/26.11 mm | |
| Width | 4.0 in/101.6 mm | |
| Depth | 5.787 in/146.99 mm | |
| Weight | 1.38 lb/626 g | |
| Operating Temperature | 32° to 140° F (0° to 60° C) | |

*NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and 36 GB (for Windows 8.1/10) of system disk is reserved for the system recovery software.

128GB SATA 2.5" Value (Non-SED) Solid State Drive

| | | |
|-------------------------------|-----------------------------|----------------|
| Unformatted Capacity | 128 GB | |
| Architecture | TLC NAND Flash | |
| Interface | SATA 3.2 (6.0 Gb/s) | |
| Form Factor | 2.5 inch | |
| Dimensions (W x H x D) | 6.98 x 0.7 x 10.05 cm | |
| Weight | 31g | |
| Bandwidth Performance | Sustained Sequential Read: | Up to 510 MB/s |
| | Sustained Sequential Write: | Up to 330 MB/s |
| | Random Read: | Up to 38K IOPs |

Technical Specifications – Hard Disk and Solid State Storage

| | | |
|---|--|-----------------------------|
| | Random Write: | Up to 70K IOPs |
| Power | DC power requirement: | 5 VDC 5%-100 mV ripple p-p |
| | Total power consumption: | 50mW (active); 20mW (idle) |
| Useful Drive Life | 72TB written, up to 40GB/day for 5 years | |
| Environmental (all conditions, non-condensing) | Operating Temperature: | 32° to 158° F (0° to 70° C) |
| | Relative Humidity: | 5% to 95% |
| | Shock: | 1,500 G/0.5 ms |
| <p>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."</p> | | |

| 256GB SATA 2.5" Value (Non-SED) Solid State Drive | | |
|--|-----------------------------|----------------------------|
| Unformatted Capacity | 256 GB | |
| Architecture | TLC NAND Flash | |
| Interface | SATA 3.2 (6.0 Gb/s) | |
| Form Factor | 2.5 inch | |
| Dimensions (W x H x D) | 6.98 x 0.7 x 10.05 cm | |
| Weight | 31g | |
| Bandwidth Performance | Sustained Sequential Read: | Up to 510 MB/s |
| | Sustained Sequential Write: | Up to 330 MB/s |
| | Random Read: | Up to 38K IOPs |
| | Random Write: | Up to 70K IOPs |
| Power | DC power requirement: | 5 VDC 5%-100 mV ripple p-p |
| | Total power consumption: | 50mW (active); 20mW (idle) |

Technical Specifications – Hard Disk and Solid State Storage

| | | |
|--|--|-----------------------------|
| Useful Drive Life | 72TB written, up to 40GB/day for 5 years | |
| Environmental (all conditions, non-condensing) | Operating Temperature: | 32° to 158° F (0° to 70° C) |
| | Relative Humidity: | 5% to 95% |
| | Shock: | 1,500 G/0.5 ms |
| 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 - Removable Storage

| HP 9.5mm Desktop G3 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) | |
| | 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) |
| *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. | | |

Technical Specifications - Removable Storage

| HP 9.5mm Desktop G3 Slim DVD-ROM Drive | | |
|---|---|---|
| Height | 9.5mm | |
| 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) |
| 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 (all conditions non-condensing) | Temperature | 41° to 122° F (5° to 50° C) |
| | Relative Humidity | 10% to 80% |
| | Maximum Wet Bulb Temperature (operating) | 84° F (29° C) |

Technical Specifications - Audio

High Definition Audio

| | |
|-----------------------------------|--|
| Type | Integrated |
| HD Stereo Codec | Conexant CX20632 |
| Audio I/O Ports | 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-In can be retasked to function as a microphone input |
| | Rear Line-Out |
| | Front Headphone-Out |
| | All ports are 3.5mm and support stereo (see above tables for system configurations) |
| Internal Speaker Amplifier | 2W class D mono amplifier for the internal speaker only. External speakers must be powered externally. |
| Multi-streaming Capable | Playback 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 integrated speaker. |
| Sampling | Independent sampling rates for DAC's and ADC's; supports resolutions from 16 to 24-bit; 44.1 kHz to 192 kHz for DAC and 44.1 kHz to 96 kHz for ADC |
| Wavetable Syntheses | Yes – Uses OS soft wavetable |
| Analog Audio | Yes |
| # of Channels on Line-Out | Stereo (Left & Right channels) |
| Internal Speaker | Yes |
| External Speaker Jack | 2W class D mono amplifier for the internal speaker only. External speakers must be powered externally. |

Technical Specifications - Networking

| Realtek RTL8111HSH-CG GbE | | |
|----------------------------------|-------------------------------|--|
| 10/100/1000 NIC | 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 |

Technical Specifications - Networking

| Intel® 3168 802.11AC 1x1 Wi-Fi +Bluetooth® M.2 Combo Card non-vPro™* | |
|---|---|
| Wireless LAN Standards | IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac |
| Interoperability | Wi-Fi certification |
| Frequency Bands | 802.11b/g/n 2.402 – 2.482 GHz 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. |
| | 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 Note: Indonesia only supports 5.725 - 5.825 GHz (CH149 - CH161) |
| 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 ~ MCS7, (1SS) (20MHz, 40MHz, and 80MHz) |
| Modulation | Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM |
| Security¹ | <ul style="list-style-type: none"> • 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 |
| ¹ Check latest software/driver release for updates on supported security features. | |

Technical Specifications - Networking

| | |
|---|--|
| Network Architecture Models | Ad-hoc (Peer to Peer) Infrastructure (Access Point Required) |
| Roaming | 802.11r Fast Roaming |
| Output Power² | <ul style="list-style-type: none"> 802.11b : +16dBm minimum 802.11g : +14dBm minimum 802.11a : +14dBm minimum 802.11n HT20(2.4GHz) : +14dBm minimum 802.11n HT40(2.4GHz) : +12dBm minimum 802.11n HT20(5GHz) : +14dBm minimum 802.11n HT40(5GHz) : +12dBm minimum 802.11ac 80MHz(5GHz) : +11dBm minimum <p>² Maximum output power may vary by country according to local regulations.</p> |
| Power Consumption | Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 50 mW (WLAN unassociated) Connect Standby: 10 mW (WLAN+BT) Radio disabled: 5 mW |
| Power Management | ACPI and PCI Express compliant power management 802.11 compliant power saving mode |
| Receiver Sensitivity³ | 802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -88dBm maximum 802.11a, 54Mbps : -74dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum 802.11ac, 1SS, MCS-0 : -86dBm maximum 802.11ac, 1SS, MCS-9 : -61dBm maximum 802.11ac, 2SS, MCS-0 : -83dBm maximum 802.11ac, 2SS, MCS-9 : -58dBm maximum |
| | 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). |
| Antenna type | High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth® communications |
| Form Factors | PCI-Express M.2 MiniCard |
| Dimensions | Type 2230 : 2.3 x 22.0 x 30.0 mm Or Type 1630 : 2.3 x 16.0 x 30.0 mm |

Technical Specifications - Networking

| Weight | Type 2230 : 2.8g Or Type 1630 : 2g | | | | | | | | | | | | | |
|--|--|---|------------|-----------|------------|------|---------|---------|-----------|---------|---------|-------|---------|---------|
| Operating Voltage | 3.3v +/- 9% | | | | | | | | | | | | | |
| Temperature | Operating: Non-operating: | 14° to 158° F (-10° to 70° C) -40° to 176° F (-40° to 80° C) | | | | | | | | | | | | |
| Humidity | Operating: Non-operating: | 10% to 90% (non-condensing) 5% to 95% (non-condensing) | | | | | | | | | | | | |
| Altitude | Operating: Non-operating: | 0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m) | | | | | | | | | | | | |
| LED Activity | LED Amber – Radio OFF; LED White – Radio ON | | | | | | | | | | | | | |
| * Wireless access point and Internet service required and not included. Availability of public wireless access points limited. | | | | | | | | | | | | | | |
| HP Integrated Module with Bluetooth® 4.0/4.1/4.2 Wireless Technology | | | | | | | | | | | | | | |
| Bluetooth® Specification | 4.0/4.1/4.2 Compliant | | | | | | | | | | | | | |
| Frequency Band | 2402 to 2480 MHz | | | | | | | | | | | | | |
| Number of Available Channels | Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH) | | | | | | | | | | | | | |
| 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. | | | | | | | | | | | | | |
| Receiver Sensitivity Legacy | <table border="1"> <thead> <tr> <th>Modulation</th> <th>0.01% BER</th> <th>0.001% BER</th> </tr> </thead> <tbody> <tr> <td>GFSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> <tr> <td>π/4-DQPSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> <tr> <td>8DPSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> </tbody> </table> | | Modulation | 0.01% BER | 0.001% BER | GFSK | -80 dBm | -70 dBm | π/4-DQPSK | -80 dBm | -70 dBm | 8DPSK | -80 dBm | -70 dBm |
| Modulation | 0.01% BER | 0.001% BER | | | | | | | | | | | | |
| GFSK | -80 dBm | -70 dBm | | | | | | | | | | | | |
| π/4-DQPSK | -80 dBm | -70 dBm | | | | | | | | | | | | |
| 8DPSK | -80 dBm | -70 dBm | | | | | | | | | | | | |
| Power Consumption | Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW | | | | | | | | | | | | | |

Technical Specifications - Networking

| | |
|--|---|
| Range | Legacy Up to 33 ft (10 m) BLE Up to 99 ft (30 m) |
| Electrical Interface | USB 2.0 compliant |
| Bluetooth® Software Supported Link Topology | Microsoft Windows Bluetooth® Software |
| Electrical Interface Bluetooth® Software Supported Security | Point to Point, Multipoint Pico Nets up to 7 slaves |
| | Full support of Bluetooth® Security Provisions |
| Power Management Certifications | Microsoft Windows ACPI, and USB Bus Support |
| | Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff |
| Security | All necessary regulatory approvals for supported countries, including: |
| Certifications Bluetooth® Profiles Supported | FCC (47 CFR) Part 15C, Section 15.247 & 15.249 |
| Power Management Certifications | ETS 300 328, ETS 300 826 |
| | Low Voltage Directive IEC950 |
| Certifications Bluetooth® Profiles Supported | UL, CSA, and CE Mark |
| | Serial Port Profile (SPP) ¹ Service Discovery Application Profile (SDAP) Dial-Up Networking (DUN) ^{1,2} Generic Object Exchange Profile (GOEP) ^{1,2} Object Push Profile (OPP) ^{1,2} Hard Copy Cable Replacement (HCRP) ^{1,2} Personal Area Networking Profile (PAN) ^{1,2} Human Interface Device Profile (HID) ^{1,2} Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP) |
| | Audio Video Remote Control Profile (AVRCP) |
| Bluetooth® V4.1/V4.2 support feature | V4.1: ESR5/6/7 compliant |
| | V4.2: ESR8 compliant, LE Secure Connection – Basic. |

Technical Specifications - Networking

| High Definition Audio | | | |
|--|--|---|---------------------|
| 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: <ul style="list-style-type: none"> • 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 PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system. | | |
| Energy Consumption (in accordance with US ENERGY STAR® test method) | 115VAC, 60Hz | 230VAC, 50Hz | 100VAC, 50Hz |
| Normal Operation (Short idle) | 18.70 W | 17.00 W | 16.89 W |
| Normal Operation (Long idle) | 16.57 W | 16.16 W | 15.97 W |
| Sleep | 1.13 W | 1.12 W | 1.12 W |
| Off | 0.49 W | 0.54 W | 0.52 W |
| | Note: Energy efficiency data listed is for an ENERGY STAR® compliant 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® compliant 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. | | |
| Heat Dissipation* | 115VAC, 60Hz | 230VAC, 50Hz | 100VAC, 50Hz |
| Normal Operation (Short idle) | 64 BTU/hr | 58 BTU/hr | 58 BTU/hr |
| Normal Operation (Long idle) | 57 BTU/hr | 55 BTU/hr | 55 BTU/hr |
| Sleep | 4 BTU/hr | 4 BTU/hr | 4 BTU/hr |
| Off | 2 BTU/hr | 2 BTU/hr | 2 BTU/hr |
| | *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 | 3.4 | 24 | |
| Fixed Disk – Random writes | 3.5 | 25 | |
| 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: <ul style="list-style-type: none"> • 6 USB ports • 2 memory slots • 1 Mini PCIe half-length slot • 1 MXM 3.0 Type A - 35W slot • 1 M.2 slot • 1 2.5" internal bay supporting up to Two 2.5" hard drives (HDD/SSD/SED/SSHD) • 1 5.25" external supporting optical drive Spare parts are available throughout the warranty period and or for up to "5" years after the end of production. | | |

Technical Specifications - Networking

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|-------------------------------|---|---|--------|---|--|
| Batteries | <p>This battery(s) in this product comply with EU Directive 2006/66/EC</p> <p>Batteries used in the product do not contain: Mercury greater the 1ppm by weight Cadmium greater than 20ppm by weight</p> <p>Battery size: CR2032 (coin cell) Battery type: Lithium</p> | | | | |
| Additional Information | <ul style="list-style-type: none"> • 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 8.1% post-consumer recycled plastic (by wt.) • This product is 93.5% recycle-able when properly disposed of at end of life. | | | | |
| Packaging Materials | External: | PAPER/Corrugated | 1122 g | | |
| | Internal: | PLASTIC/Polystyrene Expanded – EPS | 176 g | | |
| | | PLASTIC/Polyethylene low density - LDPE | 24 g | | |
| | The Plastic packaging material is made from 0% recycled content. | | | The paper packaging materials contains at least 25% recycled content. | |
| Material Usage | <p>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):</p> <ul style="list-style-type: none"> • 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) | | | | |

Technical Specifications - Networking

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|---|--|
| | <ul style="list-style-type: none"> • 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 | <p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none"> • 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 | <p>Hewlett-Packard 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.</p> <p>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.</p> |
| HP, Inc. Corporate Environmental Information | <p>For more information about HP's commitment to the environment:</p> <p>Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html</p> <p>Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html</p> <p>ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf</p> |

After-Market Options (availability may vary by region)

| Type | Description | Part # |
|-------------------|--|-------------------------------|
| Displays | HP v194 18.5-inch Display | V5E94AA V5E94A6 V5E94A8 |
| | HP v197 18.5 –inch Display | V5J61AA |
| | HP v214a 20.7 –inch Display | 1FR84AA |
| Memory | HP 4GB DDR4-2400 DIMM | Z9H59AA |
| | HP 8GB DDR4-2400 DIMM | Z9H60AA |
| | HP 16GB DDR4-2400 DIMM | Z9H57AA |
| Storage | HP 500GB 3.5" SATA 6.0Gb/s Hard Drive | QK554AA |
| | HP 1TB 7200rpm SATA 6Gbps Hard Drive | QK555AA |
| | HP 9.5mm G3 8/4 SFF G4 400 SFF/MT DVD-Writer | 1CA53AA |
| | | |
| Graphics | NVIDIA GeForce GT730 1&2GB PCIe x8 DP GFX | N3R90AA |
| | AMD Radeon R5 420 | 1MX31AA |
| | AMD Radeon R7 430 | 1MX32AA |
| Security | HP UltraSlim Cable Lock Kit | H4D73AA |
| | HP Business PC Security Lock Kit | PV606AA |
| | | |
| Adapters | HP USB to Serial Adapter | J7B60AA |
| Networking | Intel® 7265 802.11ac PCIe x1 Card | N4G85AA |
| | Intel Ethernet I210-T1 GbE NIC Card | E0X95AA |
| Multimedia | HP Business Headset v2 | T4E61AA |
| | HP USB Business Speaker v2 | N3R89AA |
| Input | HP USB Keyboard | QY776AA |
| | HP Conferencing Keyboard | K8P74AA |
| | HP USB Antimicrobial Keyboard and Mouse (China Only) | K7X25AA |
| | HP USB Mouse | QY777AA |

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Change Log

| Date of change: | Version History: | Change | Description of change: |
|-----------------|------------------|--------|------------------------|
| March 13, 2018 | V1 to V2 | Added | Environmental data |
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