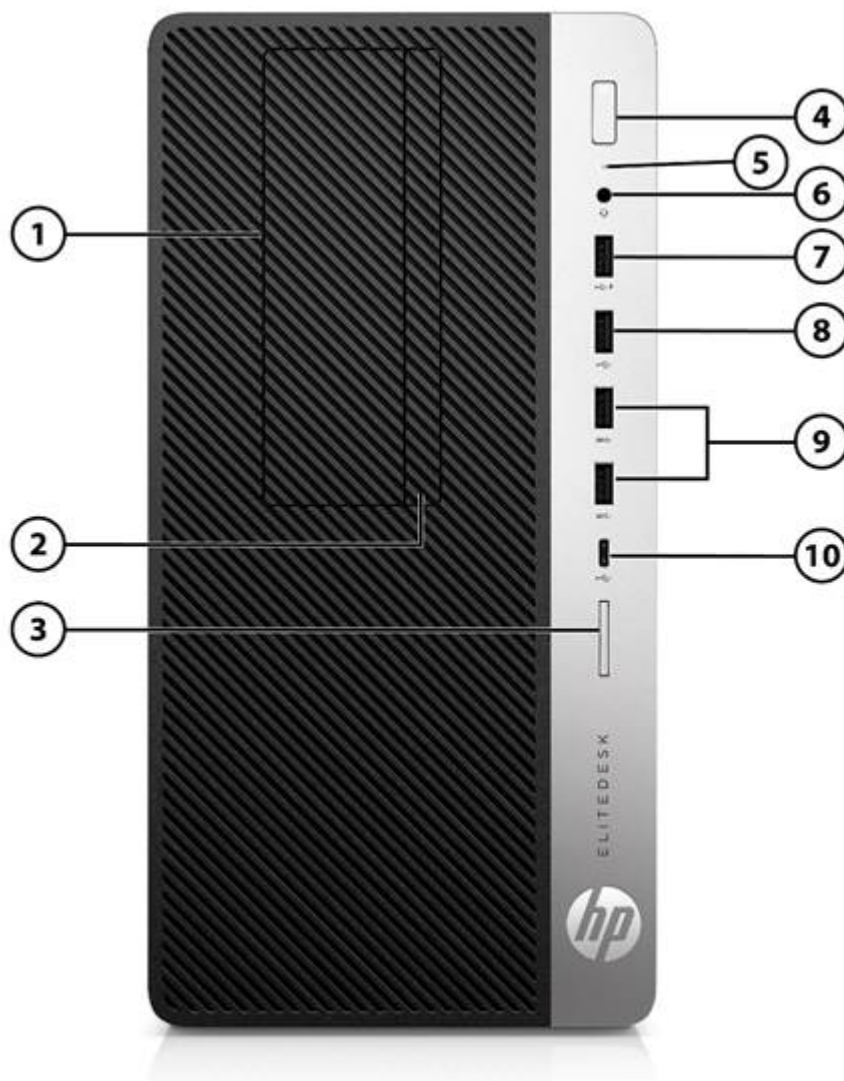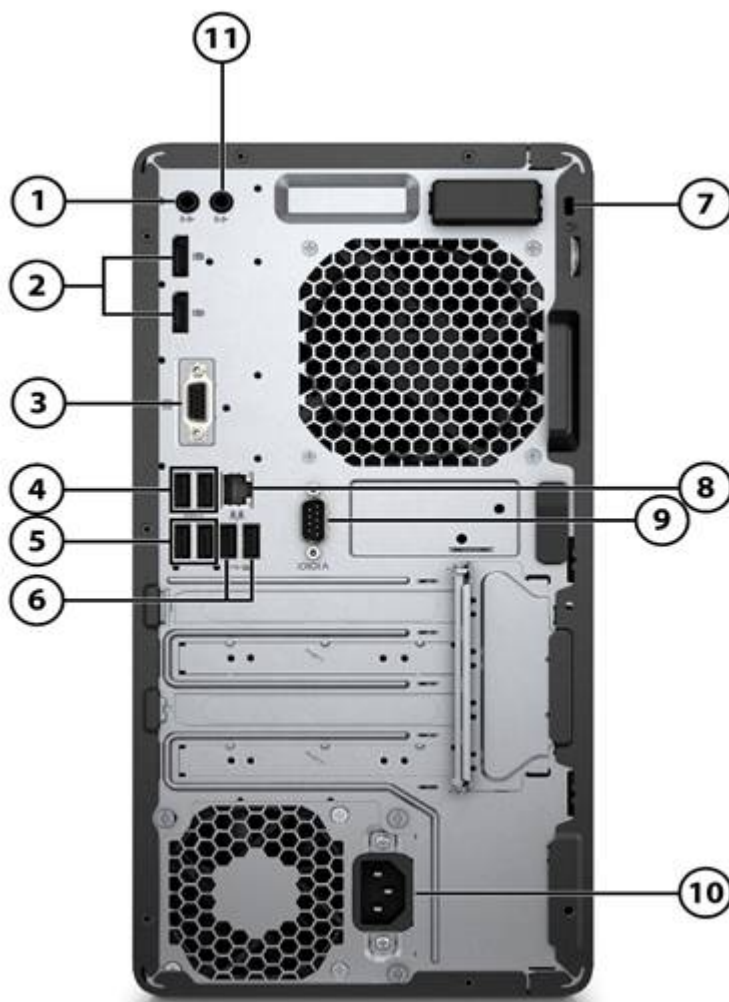Overview

HP EliteDesk 705 G4 Workstation Edition

1.	5.25-inch Half-Height Drive Bay (behind bezel)	6.	Headphone connector
2.	Slim optical drive (optional)	7.	USB 2.0 port (fast charging port)
3.	SD 4 Card Reader (optional)	8.	USB 2.0 port
4.	Dual-state power button	9.	USB 3.1 Gen 1 ports (2) (5 Gb/s signaling data rate*)
5.	Hard Drive activity light	10.	USB Type-C^{TM} port (10 Gb/s signaling data rate*)

*Actual throughput may vary

Overview

HP EliteDesk 705 G4 Workstation Edition

1. Audio-out jack for powered audio devices
2. Dual-Mode DisplayPort^{TM} 1.2 (2)
3. Optional port (DisplayPort^{TM} 1.2, HDMI, VGA or USB Type-C^{TM}) (USB-C^{TM} option has alt mode DisplayPort^{TM} 1.2 or 15W output) - shown here with VGA port installed
4. USB 3.1 Gen1 ports (2) (5 Gb/s signaling data rate*)
5. USB 2.0 ports (2)

6. USB 2.0 ports with wake from S4 (2)
7. Cable lock slot
8. RJ-45 Network Adapter

9. Optional serial port - shown here installed
10. Power connector
11. Audio-in

*Actual throughput may vary

Standard Features and Configurable Components (availability may vary by country)

AT A GLANCE

- Latest AMD® Ryzen™ PRO Processor with Radeon™ Vega Graphics[1]
- 7th generation of AMD® Pro A-Series APU[4]
- DDR4 Synchronous Dynamic Random Access Memory (SDRAM) (Transfer rates up to 2667 MT/s)[1]
- Processor support up to 95W
- Integrated AMD® Radeon™ Vega Graphics (AMD® Radeon™ on 7th gen) and optional Radeon™ RX discrete graphics
- Support for up to three monitors via two standard DisplayPort™ 1.2 connectors with multi-stream[2] and an optional third video port connector which provides the following choices: HDMI, VGA, DisplayPort™ 1.2, or USB Type-C™ with DisplayPort™ 1.2 for all platforms (see Ports section for port availability)
- Selection of discrete graphic cards to configure systems to up to 7 displays
- AMD® Radeon™ discrete graphics enabling viewing immersive VR
- Model can be configured with dual data drives in a RAID (limited configurations)
- Industry-standard AMD® DASH manageability
- HP Sure Click
- HP Sure Start Gen4
- HP Sure Run
- HP Sure Recover
- HP BIOSphere Gen4
- HP Client Security Manager Gen4
- High efficiency energy saving power supply options
- ENERGY STAR® certified. EPEAT® Gold registered where applicable/supported. Registration may vary by country. See
- http://www.epeat.net for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at http://www.hp.com/go/options.
- CCC, CECP and SEPA Certified
- Workstation chassis and all internal components and modules are manufactured with low halogen content[3]
- Arsenic-free
- Dust filter available
- Lengthy purchase lifecycles and image stability
- Protected by HP Services, including limited warranties up to 3-3-3 (terms and conditions vary by country; certain restrictions and exclusions apply); Care Packs available with up to 5 years Next Business Day Onsite Hardware Support
- Integrated Conexant Audio Codec

1. 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. AMD's numbering is not a measurement of clock speed.
2. DisplayPort™ multi-stream monitors 'daisy-chained' together.
3. External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be low halogen.

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

OPERATING SYSTEM

Standard Features and Configurable Components (availability may vary by country)

Preinstalled	Windows® 10 Pro 64[1] Windows® 10 Pro 64 (National Academic License)[2] Windows® 10 Home Single Language 64[1] FreeDos 2.0

1. Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See http://www.windows.com/.

2. Some devices for academic use will automatically be updated to Windows 10 Pro Education with the Windows 10 Anniversary Update. Features vary; see https://aka.ms/ProEducation for Windows 10 Pro Education feature information.

NOTE: Your product does not support Windows 8 or Windows 7. In accordance with Microsoft's support policy, HP does not support the Windows® 8 or Windows 7 operating system on products configured with Intel® and AMD® 7th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on http://www.support.hp.com

CHIPSET

AMD® B350 FCH

PROCESSORS

7th Generation of AMD® Pro A-Series APU[1]

AMD® PRO A6-9500 APU with Radeon™ R5 Graphics (3.5 GHz up to 3.8 GHz, 1 MB cache, 65W, 2 cores)[3]

AMD® PRO A8-9600 APU with Radeon™ R7 Graphics (3.1 GHz up to 3.4 GHz, 2 MB cache, 65W, 4 cores)[3]

AMD® PRO A10-9700 APU with Radeon™ R7 Graphics (3.5 GHz up to 3.8 GHz, 2 MB cache, 65W, 4 cores)[3]

AMD® Ryzen™ with AMD® Radeon™ Vega Graphics APU and CPU[2]

AMD® Ryzen™ 3 PRO 2200G APU with AMD® Radeon™ Vega 8 Graphics (3.5 GHz up to 3.7 GHz, 6MB, 65W, Quad Core)[4]

AMD® Ryzen™ 5 PRO 2400G APU with AMD® Radeon™ Vega 11 Graphics (3.6 GHz up to 3.9 GHz, 6MB, 65W, Quad Core)[4]

AMD® Ryzen™ 5 PRO 2600 (3.4 GHz up to 3.9 GHz, 19MB, 65W, 6 Cores)

AMD® Ryzen™ 7 PRO 2700 (3.2 GHz up to 4.1 GHz, 20MB, 65W, 8 Cores)

AMD® Ryzen™ 7 PRO 2700X (3.7 GHz up to 4.1 GHz, 20MB, 95W, 8 Cores)

1. 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. AMD's numbering is not a measurement of clock speed.

2. AMD® Ryzen PRO CPU requires discrete graphic card attached.

3. Nvidia Quadro P400 2GB Graphics card not supported.

4. Nvidia graphics cards not supported.

GRAPHICS

Standard Features and Configurable Components (availability may vary by country)

Optional Discrete Graphics Solutions

AMD® Radeon™ RX550 4GB Graphics Card

AMD® Radeon™ RX580 4GB Graphics Card

AMD® Radeon™ RX460 2GB Graphics Card

AMD® Radeon™ R7 430 2GB VGA+DP Graphics Card

AMD® Radeon™ R7 430 2GB 2DP Graphics Card

AMD® Radeon™ Pro WX 3100 4GB Graphics Card*

NVIDIA® Quadro® P400 2GB Graphics Card[2]

NVIDIA® Quadro® P1000 4GB Graphics Card[1]

NVIDIA® GTX1060 3GB Graphics Card[1]

1. Not compatible with AMD® Ryzen™ 3 PRO 2200G APU, AMD® Ryzen™ 5 PRO 2400G APU

2. Not compatible with AMD® PRO A6-9500 APU, AMD® PRO A8-9600 APU, AMD® PRO A10-9700, AMD® Ryzen™ 3 PRO 2200G APU, AMD® Ryzen™ 5 PRO 2400G APU

STORAGE

3.5 inch SATA Hard Disk Drives (HDD)

> HDD 1TB 7200RPM SATA-3 3.5in
>
> HDD 2TB 7200RPM SATA-3 3.5in
>
> HDD 500GB 7200RPM 3.5in
>
> HP 1TB 7200rpm 3.5 SATA 6.0Gb/s NCQ Smart IV Hard Drive (16MB)
>
> HP 500GB 7200rpm 3.5 SATA 6.0Gb/s Smart IV Hard Drive

2.5 inch SATA Hard Disk Drives (HDD)

> 500 GB 5400RPM 2.5in SATA SSHD
>
> 1 TB 5400RPM 2.5in SATA SSHD
>
> 2 TB 5400RPM 2.5in SATA SSHD

2.5 inch Solid State Drives (SSD)

> HDD 500GB 7200RPM 2.5in
>
> HDD 1TB 7200RPM 2.5in
>
> HDD 2TB 5400RPM 2.5in
>
> HDD 500GB 7200RPM 2.5in Self Encrypted Drive OPAL2
>
> HDD 500GB 7200RPM 2.5in Federal Information Processing Standard

2.5 inch SATA Solid State Hybrid Drives (SSHD)

> HDD 500GB 5400RPM 2.5in SSHD
>
> HDD 1TB 5400RPM 2.5in SSHD

Standard Features and Configurable Components (availability may vary by country)

2.5 inch Solid State Drives (SSD)

SSD 128GB 2.5in SATA Three Layer Cell

SSD 256GB 2.5in SATA Three Layer Cell

SSD 512GB 2.5in SATA Three Layer Cell

SSD 256GB 2.5in SATA Self Encrypted OPAL2 TLC

SSD 512GB 2.5in SATA Self Encrypted OPAL2 TLC

SSD 256GB 2.5in Federal Information Processing Standard

SSD 512GB 2.5in Federal Information Processing Standard

M.2 PCIe NMVe Solid State Drives (SSD)

SSD 128GB M.2 2280 PCIe NVMe

SSD 256GB M.2 2280 PCIe NVMe

SSD 512GB M.2 2280 PCIe NVMe

SSD 128GB M.2 2280 PCIe-3x2 NVMe Three Layer Cell

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

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

SSD 1TB M.2 2280 PCIe NVMe Three Layer Cell

SSD 256GB M.2 2280 PCIe NVMe Self Encrypted OPAL2 Three Layer Cell

SSD 512GB M.2 2280 PCIe NVMe Self Encrypted OPAL2 Three Layer Cell

SSD Intel Optane 118GB 2280 PCIe NVMe (Optane)*

HP 9.5mm Slim DVD-ROM Drive

HP 9.5mm Slim SuperMulti DVD Writer Drive

HP 9.5mm Slim Blu-Ray Writer Drive

Media Card Reader

SD 4.0 with 5-in-1 Interface (Supports SD, SDXC, SDHC, UHS-I, UHS-II)

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.
*Intel® Optane SSD 118GB 2280 Available Fall 2018

MEMORY

Max Memory Configuration

DDR4-2666 (Transfer rates up to 2666 MT/s), 64 GB, 4 DIMM

Standard Features and Configurable Components (availability may vary by country)

Memory Configuration

    4GB (1x4GB) 2666 DDR4 1.2v DIMM

    8GB (2x4GB) 2666 DDR4 1.2v DIMM

    8GB (1x8GB) 2666 DDR4 1.2v DIMM

    16GB (2x8GB) 2666 DDR4 1.2v DIMM

    16GB (1x16GB) 2666 DDR4 1.2v DIMM

    32GB (2x16GB) 2666 DDR4 1.2v DIMM

    32GB (4x8GB) 2666 DDR4 1.2v DIMM

    64GB (4x16GB) 2666 DDR4 1.2v DIMM

1. Transfer rates up to 2400 MT/s: for processors with AMD Pro A-Series APU; Transfer rates up to 2666MT/s: for processors with AMD Ryzen™ with AMD Radeon™.

NETWORKING/COMMUNICATIONS

Ethernet (RJ-45)

    Realtek® RTL8111EPH (standard)

Wireless[1]

    Intel® 9260 802.11 AC 2x2 +Bluetooth® 5 PCIe non-vPro™

    Realtek® 802.11 AC 1x1 with Bluetooth® 4.2 LE M.2 PCIe

    Realtek® 802.11 AC 2x2 with Bluetooth® 4.2 LE M.2 PCIe

1. Wireless access point and Internet service required and not included. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the system to communicate with other 802.11ac WLAN devices

KEYBOARDS AND POINTING DEVICES

Keyboards

    HP Conferencing USB Keyboard

    HP Wireless Collaboration Keyboard

    HP USB and PS/2 Washable Keyboard

    HP USB Smart Card (CCID) Keyboard

    HP USB Business Slim Keyboard

    HP USB Keyboard

    HP PS/2 Business Slim Keyboard

    HP Wireless Business Slim Keyboard and Mouse

Standard Features and Configurable Components (availability may vary by country)

Mouse

HP PS/2 Mouse

HP USB Optical Mouse

HP USB Premium Mouse

HP 1000dpi Laser Mouse USB

HP USB and PS/2 Washable Mouse

Antimicrobial USB Mouse[1]

HP Hardened USB Mouse[1]

1. Not available in all regions

SECURITY

Trusted Platform Module (TPM) 2.0 (Infineon SLB9670). Common Criteria EAL4+ Certified. FIPS 140-2 Level 2 Certified

PORTS

I/O Ports - Standard

USB 2.0	2 including 1 fast charging (front); 4 including 2 wake from S4 (rear)
USB 3.1 Gen 1	2 front; 2 rear
USB 3.0 Type-C™	1 front; 1 rear (option)
Video	2 DisplayPort™ 1.2 (rear), 1 Configurable video port (rear) (Choice of DisplayPort™ 1.2, HDMI™ 2.0, VGA, USB Type-C™ with alt mode display port or 15W output)
Audio	1 Headset (front); 1 Audio-out (rear), 1 Audio-in (rear)
Network Interface	RJ45

I/O Ports - Optional

Serial (RS-232)	1 (rear) (option)
Serial (RS-232) and PS/2 combination	1 (rear) (option)

I/O Ports - Internal Ports

Internal SATA storage connector(s)	4
Internal SATA storage connector (Data and Power)	N/A

Slots

M.2 PCIe	(1) M.2 PCIe x1 2230 (for WLAN) (1) M.2 PCIe x2 2280/2230 Combo (for storage)
PCI Express x1	3
PCI Express x16 (v3.0)	1

Standard Features and Configurable Components (availability may vary by country)

Bays

9.5mm Slim ODD	1
Secure Digital (SD) Reader	1
2.5"? internal storage drive	2
3.5"? internal storage drive	1

NOTE: The HP EliteDesk 705 G4 Workstation Edition can support a single graphics card up to 75W. When configured with dual graphics cards support is limited to 35W for each.

SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

BIOS
HP BIOSphere Gen4[17]
HP DriveLock & Automatic DriveLock
BIOS Update via Network
Master Boot Record Security
Power On Authentication
HP Secure Erase[18]
Absolute Persistence Module[19]
Pre-boot Authentication
HP Wireless Wakeup

Software
HP Native Miracast Support[15]
HP LAN-Wireless Protection
HP Velocity
HP ePrint Driver + JetAdvantage[20]
HP Hotkey Support - CMIT
HP Recovery Manager
HP Jumpstart
HP Support Assistant[21]
HP Noise Cancellation Software
Buy Office

Manageability Features
HP Driver Packs[22]
HP System Software Manager (SSM)
HP BIOS Config Utility (BCU)
HP Client Catalog
HP Manageability Integration Kit Gen2[23]
Ivanti Management Suite[24]

Client Security Software
HP Client Security Suite Gen4[25] including:
HP Security Manager[26] (including Credential Manager, HP Password Manager, HP Spare Key)
HP Device Access Manager
HP Power On Authentication
Microsoft Defender[27]

Security Management

Standard Features and Configurable Components (availability may vary by country)

HP Secure Erase[18]
TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified) (FIPS 140-2 Level 2 Certified)[32]
SATA 0,1 port disablement (viaBIOS)
RAID configurations[33]
Serial, USB enable/disable (viaBIOS)
Power-on password (viaBIOS)
Setup password (viaBIOS)
Support for chassis padlocks and cable lock devices
Integrated hood sensor
HP Sure Start Gen4[30]
HP Sure Run[35]
HP Sure Recover[36]

15. Miracast is a wireless technology your Workstation can use to project your screen to TVs, projectors, and streaming
17. HP BIOSphere Gen4 requires Intel® or AMD® 8th Gen processors. Features may vary depending on the platform and configurations.
18. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method.
19. Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: http://www.absolute.com/company/legal/agreements/computrace-agreement. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
20. HP ePrint Driver 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 www.hp.com/go/eprintcenter). Print times and connection speeds may vary.
21. HP Support Assistant requires Windows and Internet access.
22. HP Driver Packs not preinstalled, however available for download at http://www.hp.com/go/clientmanagement.
23. HP Manageability Integration Kit can be downloaded from http://www8.hp.com/us/en/ads/clientmanagement/overview.html
24. Ivanti Management Suite subscription required.
25. HP Client Security Suite Gen 4 requires Windows and Intel® or AMD® 8th generation processors.
26. HP Password Manager requires Internet Explorer or Chrome or FireFox. Some websites and applications may not be supported. User may need to enable or allow the add-on / extension in the internet browser.
27. Microsoft Defender Opt in and internet connection required for updates.
30. HP Sure Start Gen4 is available on HP Workstation products equipped with Intel® 8th generation or AMD processors
32. Firmware TPM is version 2.0. Hardware TPM is v1.2, which is a subset of the TPM 2.0 specification version v0.89 as implemented by Intel Platform Trust Technology (PTT).
33. RAID configuration is optional and does require a second hard drive.
35. HP Sure Run is available on HP Workstation products equipped with 8th generation Intel® or AMD® processors.
36. HP Sure Recover is available on HP Workstations with 8th generation Intel® or AMD® processors and requires an open, wired network connection. Not available on platforms with multiple internal storage drives, Intel® Optane™. You must back up important files, data, photos, videos, etc. before use to avoid loss of data.

ENVIRONMENTAL & INDUSTRY

Eco-Label Certifications & declarations	This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks: • IT ECO declaration • US ENERGY STAR® • EPEAT® Gold registered in the United States. See http://www.epeat.net for registration status in your country. Search keyword generator on HP's 3rd party option store for solar generator accessories at http://www.hp.com/go/options.
System Configuration	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Workstation model is based on a Typically Configured Worksation.
Energy Consumption (in accordance with US ENERGY			

Standard Features and Configurable Components (availability may vary by country)

STAR® test method)	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation (Short idle)	22.22 W	22.68 W	23.57 W
Normal Operation (Long idle)	21.41 W	21.43 W	21.75 W
Sleep	1.33 W	1.26 W	1.27 W
Off	0.95 W	0.88 W	0.92 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, 60Hz**
Normal Operation (Short idle)	76 BTU/hr	78 BTU/hr	81 BTU/hr
Normal Operation (Long idle)	73 BTU/hr	73 BTU/hr	74 BTU/hr
Sleep	5 BTU/hr	4 BTU/hr	4 BTU/hr
Off	3 BTU/hr	3 BTU/hr	3 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	3.3		25
Fixed Disk - Random writes	3.3		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: • 3 USB ports • 1 PC card slot (type I/II) • 1 ExpressCard/54 slot • 1 IEEE 1394 Port • 2 SODIMM memory slots • Optional expansion base docking station • 1 multi-bay II storage port • Interchangeable HDD Spare parts are available throughout the warranty period and or for up to 5 years after the end of production.		
Batteries	This battery(s) in this product comply with EU Directive 2006/66/EC Batteries used in the product do not contain: Mercury greater the1ppm by weight		

Standard Features and Configurable Components (availability may vary by country)

	Cadmium greater than 20ppm by weight Battery size: CR2032 (coin cell) Battery type: Lithium		
Additional Information	- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC. - This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC. - This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986). - This product is in compliance with the IEEE 1680 (EPEAT) standard at the <gold> level in the U.S. See http://www.epeat.net for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at http://www.hp.com/go/options - Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. - This product contains 0% post-consumer recycled plastic (by wt.) - This product is 95.1% recycle-able when properly disposed of at end of life.		
Packaging Materials	**External:**	PAPER/Corrugated	1272 g
	Internal:	PLASTIC/Polyethylene Expanded - EPE	280 g
		PLASTIC/Polyethylene low density - LDPE	28 g
Material Usage	This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf): - Asbestos - Certain Azo Colorants - Certain Brominated Flame Retardants - may not be used as flame retardants in plastics - Cadmium - Chlorinated Hydrocarbons - Chlorinated Paraffins - Formaldehyde - Halogenated Diphenyl Methanes - Lead carbonates and sulfates - Lead and Lead compounds - Mercuric Oxide Batteries - Nickel - finishes must not be used on the external surface designed to be frequently handled or carried by the user. - Ozone Depleting Substances - Polybrominated Biphenyls (PBBs) - Polybrominated Biphenyl Ethers (PBBEs) - Polybrominated Biphenyl Oxides (PBBOs) - Polychlorinated Biphenyl (PCB) - Polychlorinated Terphenyls (PCT) - Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications. - Radioactive Substances - Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)		
Packaging Usage	HP follows these guidelines to decrease the environmental impact of product packaging: - Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials. - Eliminate the use of ozone-depleting substances (ODS) in packaging materials. - Design packaging materials for ease of disassembly. - Maximize the use of post-consumer recycled content materials in packaging materials. - Use readily recyclable packaging materials such as paper and corrugated materials.		

Standard Features and Configurable Components (availability may vary by country)

	• Reduce size and weight of packages to improve transportation fuel efficiency. • Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.
End-of-life Management and Recycling	HP Inc. offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment. Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html ISO 14001 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

SERVICE AND SUPPORT

On-site Warranty[15]: Three-year (3-3-3) limited warranty delivers three years of on-site, next business day[16] service for parts and labor and includes free support 24 x 7[17]. 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. To choose the right level of service for your HP product, visit HP Care Pack Central: http://www.hp.com/go/cpc.[18]

15. Terms and conditions may vary by country. Certain restrictions and exclusions apply. Other warranty variations may be offered in your region.
16. 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.
17. Technical telephone support applies only to HP-configured and third-party HP qualified hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.
18. 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

Standard Features and Configurable Components (availability may vary by country)

AMD® Radeon^{TM} RX550 4GB FH PCIe x16

Engine Clock	1183MHz
Memory Clock	7 Gbps
Memory Size(width)	4 GB(128-bit)
Memory Type	GDDR5
Max. Resolution(HDMI)	4096x2160 @ 60Hz
Max. Resolution(DP)	5120x2880 @ 60Hz
Multi Display Support	3 displays
HDCP Compliance	Yes
Rear I/O connectors(bracket)	HDMI, DPx2
Cooling(active/passive)	Active fan-sink(Active cooling with dynamic speed)
Total power consumption(W)	<62W
PCB form-factor with bracket	ATX (Full height) PCB with ATX single slot bracket

AMD® Radeon^{TM} RX580 4GB FH PCIe x16

Engine Clock	1266 MHz
Memory Clock	8gbs
Memory Size(width)	4 GB(256-bit)
Memory Type	128M x 32 GDDR5
Max. Resolution(HDMI)	4096x2160@60Hz
Max. Resolution(DP)	5120x3200@60Hz
Multi Display Support	4 displays
HDCP Compliance	Yes
Rear I/O connectors(bracket)	DP*3 + HDMI
Cooling(active/passive)	Active fan-sink (Active cooling with dynamic speed)
Total power consumption(W)	<150W
PCB form-factor with bracket	ATX (Full height) PCB with ATX dual slot bracket

AMD® Radeon^{TM} RX460 2GB Graphics Card

Base GPU Clock	1200 MHz
Memory Clock	1750 MHz
Memory Size(width)	2 GB (128-bit)
Memory Type	GDDR5
Max. Resolution(DP)	5120x2880 @ 60Hz
Max. Resolution(HDMI)	4096x2160 @ 60Hz
Multi Display Support	3 display
HDCP Compliance	Yes
Rear I/O connectors(bracket)	DP + HDMI + DVI-D
Cooling(active/passive)	Active fan-sink (Active cooling with dynamic speed)
Total power consumption	75W
PCB form-factor with bracket	ATX (Full Height) PCB with ATX / Dual slot

Standard Features and Configurable Components (availability may vary by country)

AMD® Radeon™ R7 430 2GB VGA+DP Graphics Card

Engine Clock	780 MHz
Memory Clock	1100 MHz
Memory Size(width)	2 GB(128-bit)
Memory Type	128M 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

AMD® Radeon™ R7 430 2GB VGA+DP Graphics Card

Engine Clock	780 MHz
Memory Clock	1100 MHz
Memory Size(width)	2GB(128-bit)
Memory Type	128M 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

AMD® Radeon™ R7 430 2GB 2DP Graphics Card

Engine Clock	780 MHz
Memory Clock	1100 MHz
Memory Size(width)	2 GB(128-bit)
Memory Type	128M x 32 GDDR5
Max. Resolution(DP)	4096x2160@60Hz
Multi Display Support	2 displays
HDCP Compliance	yes
Rear I/O connectors(bracket)	2DP
Cooling(active/passive)	Active fan-sink(Active cooling with dynamic speed)
Total power consumption(W)	<50W
PCB form-factor with bracket	LP PCB with FH/LP bracket

Standard Features and Configurable Components (availability may vary by country)

AMD Radeon^{TM} Pro WX 3100 (4GB FH/LP PCIe x16, x8 electrical)

Base GPU Clock	1219 MHz
Memory Clock	1500 MHz
Memory Size(width)	4 GB (128-bit)
Memory Type	GDDR5
Max. Resolution(DP)	5120x2880 @ 30Hz
Multi Display Support	3
HDCP Compliance	Yes
Rear I/O connectors(bracket)	1 DP 1.4 + 2x Mini-DP 1.4
Cooling(active/passive)	Active fan-sink (Active cooling with dynamic speed)
Total power consumption	50W
PCB form-factor with bracket	Low Profile Board with ATX single slot bracket

NVIDIA® Quadro® P400 2GB Graphics Card

Engine Clock	1252 MHz
Memory Clock	2000 MHz
Memory Size(width)	2GB (64-bit)
Memory Type	256M x 32 GDDR5
Max. Resolution(DP)	5120x32880@60Hz
Multi Display Support	3 displays
HDCP Compliance	Yes
Rear I/O connectors(bracket)	mDPx3
Cooling(active/passive)	Active fan-sink (Active cooling with dynamic speed)
Total power consumption(W)	<30W
PCB form-factor with bracket	LP PCB with LP bracket

NVIDIA® Quadro® P1000 (4GB FH/LP PCIe x16)

Base GPU Clock	1265 MHz
Memory Clock	2500 MHz
Memory Size(width)	4 GB (128-bit)
Memory Type	GDDR5
Max. Resolution(DP)	5120x2880 @ 60Hz
Multi Display Support	4 displays
HDCP Compliance	Yes
Rear I/O connectors(bracket)	4x mDP
Cooling(active/passive)	Active fan-sink (Active cooling with dynamic speed)
Total power consumption	47W
PCB form-factor with bracket	Low Profile Board with ATX single slot bracket

Standard Features and Configurable Components (availability may vary by country)

NVIDIA® GTX1060 3GB Graphics Card

Base GPU Clock	1700 MHz
Memory Clock	4000 MHz
Memory Size(width)	3 GB (192-bit)
Memory Type	GDDR5
Max. Resolution(DP)	5120x3200 @ 60 Hz
Multi Display Support	4 display
HDCP Compliance	Yes
Rear I/O connectors(bracket)	DPx3 + HDMI + DVI-D
Cooling(active/passive)	Active fan-sink (Active cooling with dynamic speed)
Total power consumption	120W
PCB form-factor with bracket	ATX (Full Height) PCB with ATX / Dual slot

STORAGE

HP 500 GB 7.2K SATA 6.0Gb/s 2.5"? Hard Disk Drive

Capacity	500 GB
Rotational Speed	7,200 rpm
Interface	SATA 6 Gb/s
Buffer Size	16 MB
Logical Blocks	976,773,168
Seek Time	12 ms (Average)
Height	0.267 in/6.8 mm (nominal)
Width	2.75 in/70 mm (nominal)
Operating Temperature	41° to 131° F (5° to 55° C)

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

Standard Features and Configurable Components (availability may vary by country)

HP 1 TB 7.2K SATA 6.0Gb/s 2.5"? Hard Disk Drive

Capacity	1 TB
Rotational Speed	7,200 rpm
Interface	SATA 6 Gb/s
Buffer Size	32 MB
Logical Blocks	1,953,525,168
Seek Time	12 ms (Average)
Height	0.374 in/9.5 mm (nominal)
Width	2.75 in/70 mm (nominal)
Operating Temperature	41° to 131° F (5° to 55° C)

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

HP 500 GB SATA 6G 2.5"? 8GB Solid State Hybrid Drive (SSHD)

Capacity	500 GB
Rotational Speed	5,400 rpm
Drive Type	Solid State Hybrid Drive (SSHD) technology with NAND Flash
Interface	SATA 6 Gb/s
Buffer Size	64 MB
NAND Flash	8 GB
Seek Time	12 ms (Average)
Height	0.267 in/6.8 mm (nominal)
Width	2.75 in/70 mm (nominal)

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.

Standard Features and Configurable Components (availability may vary by country)

HP 1 TB SATA 6G 2.5" 8GB Solid State Hybrid Drive (SSHD)

Capacity	1 TB
Rotational Speed	5,400 rpm
Drive Type	Solid State Hybrid Drive (SSHD) technology with NAND Flash
Interface	SATA 6 Gb/s
Buffer Size	64 MB
NAND Flash	8 GB
Seek Time	12 ms (Average)
Height	0.374 in/9.5 mm (nominal)
Width	2.75 in/70 mm (nominal)
Operating Temperature	41° to 131° F (5° to 55° C)

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

HP 2 TB SATA 6G 2.5" 8 GB Solid State Hybrid Drive (SSHD)

Capacity	2 TB
Rotational Speed	5,400 rpm
Drive Type	Solid State Hybrid Drive (SSHD) technology with NAND Flash
Interface	SATA 6 Gb/s
Buffer Size	128 MB
NAND Flash	8 GB
Seek Time	12 ms (Average)
Height	0.374 in/9.5 mm (nominal)
Width	2.75 in/70 mm (nominal)
Operating Temperature	41° to 131° F (5° to 55° C)

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

HP 2 TB 5.4K SATA 6.0Gb/s 2.5"? Hard Disk Drive

Capacity	2 TB
Rotational Speed	5,400 rpm
Interface	SATA 6 Gb/s
Buffer Size	128 MB
Logical Blocks	3,907,050,336
Seek Time	12 ms (Average)
Height	0.374 in/9.5 mm (nominal)
Width	2.75 in/70 mm (nominal)
Operating Temperature	41° to 131° F (5° to 55° C)

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

Standard Features and Configurable Components (availability may vary by country)

500 GB 2.5"? FIPS 140-2 SED Solid State Drive

Capacity	500 GB
Architecture	Self-Encrypting (SED) Solid State Drive with SATA interface
Interface	SATA 6 Gb/s
Buffer Size	32 MB
Logical Blocks	976,773,168
Seek Time	12 ms (Average)
Height	0.267 in/6.8 mm (nominal)
Width	2.75 in/70 mm (nominal)
Operating Temperature	41° to 131° F (5° to 55° C)

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

NETWORKING AND COMMUNICATIONS

Realtek RTL8111EPH 10/100/1000 Integrated NIC	
Connector	RJ-45
System Interface	PCIe + SMBus
Controller	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
Data rates supported	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)
IEEE Compliance	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling Jumbo Frame 9K
Performance	Cable Disconnetion: 25mW 100Mbps Full Run: 450mW 1000bp Full Run: 1000mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
Power	ACPI compliant - multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
MAC/PHY Interconnect	Auto MDI/MDIX Crossover cable detection
Management Interface	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

Standard Features and Configurable Components (availability may vary by country)

Intel® Ethernet I210-T1 Gigabit Network Adapter	
Connector	RJ-45
System Interface	PCIe Express x1
Data rates supported	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s
IEEE Compliance	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet)
Performance	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling Jumbo Frame 9K
Power consumption	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000bp Full Run: 1000mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
Power Management	ACPI compliant - multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
Management Interface	Auto MDI/MDIX Crossover cable detection
IT Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status

Intel Thunder Peak 9260 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 5.0 Combo[1] Non-vPro	
Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
Interoperability	Wi-Fi certified
Frequency Band	802.11b/g/n • 2.402 - 2.482 GHz 802.11a/n • 4.9 - 4.95 GHz (Japan) • 5.15 - 5.25 GHz • 5.25 - 5.35 GHz • 5.47 - 5.725 GHz • 5.825 - 5.850 GHz
Data Rates	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)

Standard Features and Configurable Components (availability may vary by country)

	• 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)
Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
Security[1]	• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power[2]	• 802.11b : +18.5dBm minimum • 802.11g : +17.5dBm minimum • 802.11a : +18.5dBm minimum • 802.11n HT20(2.4GHz) : +15.5dBm minimum • 802.11n HT40(2.4GHz) : +14.5dBm minimum • 802.11n HT20(5GHz) : +15.5dBm minimum • 802.11n HT40(5GHz) : +14.5dBm minimum • 802.11ac VHT80(5GHz) : +11.5dBm minimum • 802.11ac VHT160(5GHz) : +11.5dBm minimum
Power Consumption	• Transmit mode2.0 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	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[3]	802.11b, 1Mbps: -93.5dBm maximum 802.11b, 11Mbps: -84dBm maximum 802.11a/g, 6Mbps: -86dBm maximum 802.11a/g, 54Mbps: -72dBm maximum 802.11n, MCS07: -67dBm maximum 802.11n, MCS15: -64dBm maximum 802.11ac, MCS0: -84dBm maximum 802.11ac, MCS9: -59dBm maximum
Antenna type	High efficiency antenna 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 Factor	PCI-Express M.2 MiniCard
Dimensions	Type 2230: 2.3 x 22.0 x 30.0 mm
Weight	Type 2230: 2.8g
Operating Voltage	3.3v +/- 9%
Temperature	Operating — 14° to 158° F (-10° to 70° C) Non-operating — -40° to 176° F (-40° to 80° C)
Humidity	Operating — 10% to 90% (non-condensing) Non-operating — 5% to 95% (non-condensing)
Altitude	Operating — 0 to 10,000 ft (3,048 m) Non-operating — 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber - Radio OFF; LED White - Radio ON

Standard Features and Configurable Components (availability may vary by country)

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

HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0 Wireless Technology	
Bluetooth® Specification	4.0/4.1/4.2/5.0 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)
Data Rates and Throughput	Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps
	BLE: 1 Mbps data rate; throughput up to 0.2 Mbps
	Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
Transmit Power	The Bluetooth® component shall operate as a Class II Bluetooth® device with a maximum transmit power of +4 dBm for BR and EDR.
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
Electrical Interface	USB 2.0 compliant
Bluetooth® Software Supported Link Topology	Microsoft Windows Bluetooth® Software
Power Management	Microsoft Windows ACPI, and USB Bus Support
Certifications	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Power Management Certifications	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
Bluetooth Profiles Supported	BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan BT4.2 ESR08 Compliance LE Secure Connection- Basic/Full LE Privacy 1.2 -Link Layer Privacy LE Privacy 1.2 -Extended Scanner Filter Policies LE Data Packet Length Extension FAX Profile (FAX) Basic Imaging Profile (BIP)2 Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

Realtek 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo[1]	
Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
Interoperability	Wi-Fi certified

Standard Features and Configurable Components (availability may vary by country)

Frequency Band	802.11b/g/n • 2.402 - 2.482 GHz 802.11a/n • 4.9 - 4.95 GHz (Japan) • 5.15 - 5.25 GHz • 5.25 - 5.35 GHz • 5.47 - 5.725 GHz • 5.825 - 5.850 GHz
Data Rates	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)
Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
Security[3]	• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power[2]	• 802.11b: +14dBm minimum • 802.11g: +12dBm minimum • 802.11a: +12dBm minimum • 802.11n HT20(2.4GHz): +12dBm minimum • 802.11n HT40(2.4GHz): +12dBm minimum • 802.11n HT20(5GHz): +10dBm minimum • 802.11n HT40(5GHz): +10dBm minimum • 802.11ac VHT80(5GHz): +10dBm minimum
Power Consumption	• Transmit mode 2.0 W • Receive mode 1.6 W • Idle mode (PSP) 180 mW (WLAN Associated) • Idle mode 50 mW (WLAN unassociated) • Connected Standby 10mW • Radio disabled 8 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[3]	802.11b, 1Mbps: -93.5dBm maximum 802.11b, 11Mbps: -84dBm maximum 802.11a/g, 6Mbps: -86dBm maximum 802.11a/g, 54Mbps: -72dBm maximum 802.11n, MCS07: -67dBm maximum 802.11n, MCS15: -64dBm maximum 802.11ac, MCS0: -84dBm maximum 802.11ac, MCS9: -59dBm maximum
Antenna type	High efficiency antenna 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 Factor	PCI-Express M.2 MiniCard

## Standard Features and Configurable Components (availability may vary by country)

Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm	
Weight	Type 2230 : 2.8g	
Operating Voltage	3.3v +/- 9%	
Temperature	Operating	14° to 158° F (-10° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Amber - Radio OFF; LED White - Radio ON	

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

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: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
	Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
Transmit Power	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.
Power Consumption	Peak (Tx) 330 mW
	Peak (Rx) 230 mW
	Selective Suspend 17 mW
Electrical Interface	USB 2.0 compliant
Bluetooth® Software Supported Link Topology	Microsoft Windows Bluetooth® Software
Power Management	Microsoft Windows ACPI, and USB Bus Support
Power Management Certifications	ETS 300 328, ETS 300 826
	Low Voltage Directive IEC950
	UL, CSA, and CE Mark
Bluetooth Profiles Supported	BT4.1-ESR 5/6/7 Compliance
	LE Link Layer Ping
	LE Dual Mode
	LE Link Layer
	LE Low Duty Cycle Directed Advertising
	LE L2CAP Connection Oriented Channels
	Train Nudging & Interlaced Scan
	BT4.2 ESR08 Compliance
	LE Secure Connection- Basic/Full
	LE Privacy 1.2 -Link Layer Privacy
	LE Privacy 1.2 -Extended Scanner Filter Policies
	LE Data Packet Length Extension
	FAX Profile (FAX)
	Basic Imaging Profile (BIP)2
	Headset Profile (HSP)
	Hands Free Profile (HFP)
	Advanced Audio Distribution Profile (A2DP)

Standard Features and Configurable Components (availability may vary by country)

I/O DEVICES

HP EliteDesk 705 G4

HP Conferencing Keyboard
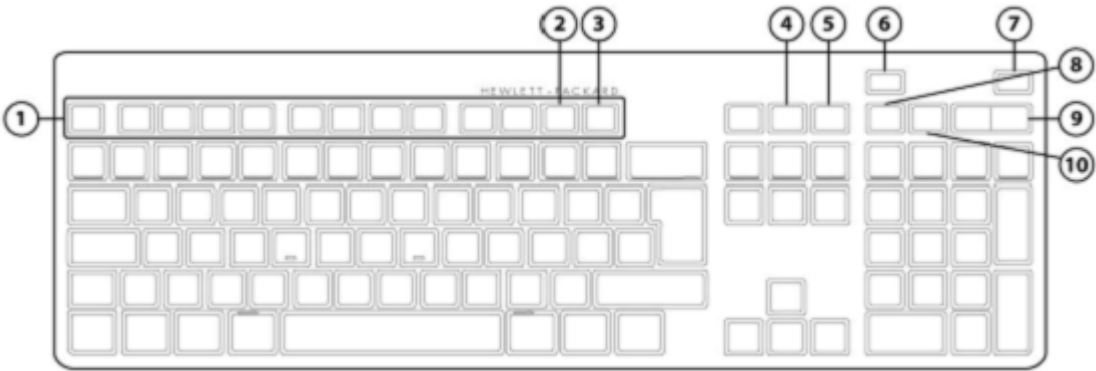
1. Function Keys	6. End/Decline a Call
2. F11 Lync or Skype for Business Contact list[1]	7. Answer a Call
3. F12 Lync or Skype for Business Calendar[2]	8. Microphone Mute
4. Share Screen	9. Volume Up/Down
5. Stop Webcam	10. Audio Mute

1. Microsoft Lync 2013, or Skype for Business, or Microsoft Outlook 2013 Contact list
2. Microsoft Lync 2013, or Skype for Business, or Microsoft Outlook 2013 Calendar

HP USB Premium Keyboard

Physical Characteristics	Keys	104, 105 layout (depending upon country)
	Dimensions (L x W x H)	17.04 x 5.55 x 0.52 in (433 x 141 x13.2 mm)
	Weight	1.54 lb (698g)
Electrical	Operating voltage	5 VDC, +/-5%
	Power consumption	35mA (All LED on)
	System interface	USB Type A plug connector
	ESD	Contact Discharge: 8 KV Air Discharge: 15 KV
	EMI - RFI	Conforms to FCC rules for a Class B computing device
Mechanical	Keycaps	Low-profile design
	Switch actuation	60±10g nominal peak force with tactile feedback
	Switch life	10 million keystrokes (Life tester)
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft (1.8 m)

Standard Features and Configurable Components (availability may vary by country)

Environmental	Acoustics	43-dBA maximum sound pressure level
	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	-22° to 140° F (-30° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	30 in (76.2 cm) on concrete, 16-drop sequence
Approvals	UL, FCC, CE Mark, TUV GS, VCCI, BSMI, C-Tick, KC	
Ergonomic Compliance	TUVGS	
Kit Contents	Keyboard, QSP	
Warranty Card	Product Notice	

Skylab USB Wired Keyboard

Physical Characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country)
	Dimensions (L x W x H)	171.97 x 68.35 x 8.27 in (436.8± 1.5 x 137.6± 1.0 x 21.0± 1.0 cm)
	Weight	1.32 lb (0.6± 0.08 kg)
Electrical	Operating voltage	4.4-5.25VDC
	Power consumption	50-mA maximum (with 5 VDC power supplied and three LEDs ON)
	System interface	USB
	ESD	Contact Discharge: 2, 4,6,8KV Air Discharge: 2, 4, 8,10,12.5KV
	EMI - RFI	Conforms to FCC rules for a Class B computing device
Mechanical	Keycaps	Low-profile design
	Switch actuation	60±10g nominal peak force with tactile feedback
	Switch life	10 million keystrokes (Life tester)
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft (1.8 m)
	Microsoft PC 99 - 2001	Mechanically compliant
	Acoustics	43-dBA maximum sound pressure level
	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	Minus 30 degress to 60 degress Celsius

Standard Features and Configurable Components (availability may vary by country)

Environmental	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	30 in (76.2 cm) on concrete, 16-drop sequence
Approvals	UL, FCC, CE Mark, TUV GS, VCCI, BSMI, C-Tick, KC	
Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	
Kit contents	Keyboard, Installation Guide, Warranty card, Safety and Comfort Guide	

HP USB Premium Mouse

Dimensions (H x L x W)	4.21 x 2.64 x 1.52 in (107 x 67 x 38.7 mmm)	
Weight	0.19lb (90g)	
Environmental	Operating temperature	50° to 122°F (10° to 50° C)
	Non-operating temperature	-22° to 140°F (-30° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non condensing at ambient)
	Operating shock	50 g, 6 surfaces
	Non-operating shock	80 g, 6 surfaces
	Operating vibration	2 g peak acceleration
	Non-operating vibration	4 g peak acceleration
Electrical	Operating voltage	5 VDC, +/-5%
	Power consumption	12mA
Mechanical	Connector	USB 2.0
	Type	3D mouse (3 keys and wheel)
	Resolution	800, 1200, 1600 DPI
	Sensor	Pixart PAN3606DL
Tracking speed	Tracking acceleration	8G(max), 1G=9.8m/s2
	Cable length	6 ft (1.8 m)
	Color	Jack Black
Regulatory approvals	Compliant	UL, FCC, CE Mark, TUV GS, VCCI, BSMI, C-Tick, KC

Standard Features and Configurable Components (availability may vary by country)

HP USB Mouse		
Dimensions (H x L x W)	37mm*115mm*62.9mm	
Weight	90 +10g/- 5 g	
Color	Black	
Connector	USB	
Mechanical	Resolution	800 DPI sensitivity
	Buttons	Two primary buttons and clickable scroll wheel

AUDIO/MULTIMEDIA

Type	Integrated
HD Stereo Codec	Synaptics CX20632
Audio I/O Ports	Front: 1 - Headset connector supports a CTIA style headset and is re-taskable as a Line-in, Line-out, Microphone-in or Headphone-out port 1 - Headphone port Rear: Line-out Line-in which is retaskable as a Microphone Input All ports are 3.5mm and support stereo
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

POWER

UNIT ENVIRONMENT AND OPERATING CONDITIONS

Temperature Range	Operating : 5°C ~45°C Non-Operating : -40°C ~66°C
Relative Humidity	Operating: 5% to 90% relative humidity at max inlet temperature Non Operating: 5% to 95% relative humidity at max inlet temperature
Maximum Altitude (unpressurized)	Operating: 5000m Non-operating: 50000ft (15240 m)

Standard Features and Configurable Components (availability may vary by country)

80 PLUS Platinum	250W active PFC / 80 PLUS Platinum 400W active PFC / 80 PLUS Platinum 90/92/89% efficient at 20/50/100% load (115V) 91/93/90% efficient at 20/50/100% load (230V)
Operating Voltage Range	90Vac~264Vac
Rated Voltage Range	100Vac~240Vac
Rated Line Frequency	50HZ~60HZ
Operating Line Frequency	47HZ~63HZ
Rated Input Current	250 W? 3A 400 W? 5.2A
Rated Input Current with Energy Efficient* Power Supply	250 W? 3A 400 W? 5.2A
DC Output	+12V
Current Leakage (NFPA 99: 2102)	Less than 500 microamps of leakage current at 264 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 264 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	70mm variable speed
Power cord length	6.0 ft. (1.83 m)
External Power Adapter	Internal power supply
Dimensions	165mm x 95mm x 73mm

WEIGHTS & DIMENSIONS

Chassis (W x D x H) Not including bezel	6.69 x10.79 x 13.3 in 170 x 274 x 338 mm
System Volume	960 cu in 15.74 L
Max System Weight	
Max Supported Weight (desktop orientation)	15.74 lb 7.14 kg
Stand Dimensions	
Packaging (W x D x H)	15.35 x 11.73 x 19.65 x in 390 x 298 x 499 mm
Shipping Weight	22.64 lb. 10.28kg
Multipack Packaging (10 units)	

Standard Features and Configurable Components (availability may vary by country)

Palletization Profile	6-units per layer 42 per pallet 47.24 x 39.37 x 86.85 in (including pallet) 7 layer max

MISCELLANEOUS FEATURES

Management Features

- Advanced Configuration and Power Management Interface (ACPI). Allows the system to wake from a low power mode. Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system.
- Dual State Power Button; acts as both an on/off button and a suspend-to-sleep button

Serviceability Features

- Dual colored power LED on front of computer to indicate either normal or fault condition
- System/Emergency ROM
- Flash ROM
- CMOS Battery Holder for easy replacement
- Flash Recovery with Video Configuration Record Software
- 5 Aux Power LED on System PCA
- Processor ZIF Socket for easy Upgrade
- Over-Temp Warning on Screen (Requires IM Agents)
- Clear Password Jumper
- DIMM Connectors for easy Upgrade
- Clear CMOS Button
- NIC LEDs (integrated) (Green & Amber)
- Dual Color Power and HD LED - To Indicate Normal Operations and Fault Conditions
- Color coordinated cables and connectors
- Tool-less Hood Removal
- Front power switch
- System memory can be upgraded without removing the system board or any internal components
- Tool-less Hard Drive, CD & Diskette Removal
- Green Pull Tabs, and Quick Release Latches for easy Identification

Additional Features

- Product can be oriented as either a desktop (horizontal) or a tower (vertical)

AFTER MARKET OPTIONS

Graphics Solutions	Part Number
AMD® Radeon™ RX550 4GB 2DP Card	3MQ82AA
HP DisplayPort™ To HDMI True 4k Adapter	2JA63AA
HP DVI Cable Kit	DC198A
HP HDMI Standard Cable Kit	T6F94AA
HP DisplayPort™ Cable Kit	VN567AA
HP DisplayPort™ To DVI-D Adapter	FH973AA
HP DisplayPort™ To VGA Adapter	AS615AA

Desktop Mini Accessories	Part Number
Intel® 9260 802.11ac non-vPro PCIe x1 Card	3TK89AA
Realtek 8822BE 802.11ac PCIe x1 Card	3TK90AA

Data Storage Drives	Part Number
HP 256GB SATA TLC Non-SED Solid State Drive	P1N68AA
HP PCIe NVME TLC 256GB SSD M.2 Drive	1CA51AA
HP PCIe NVME TLC 512GB SSD M.2 Drive	X8U75AA
HP PCIe NVME TLC 512GB SSD PCIe Drive	Z4L70AA
HP 500GB 7200PRM SATA 6.0Gb/s 3.5"? Hard Drive	QK554AA
HP 1TB 7200rpm SATA 6Gb/s 3.5"? Hard Drive	QK555AA
HP SATA SuperMulti JB Drive	QS208AA
HP 9.5mm Slim Removable SATA 500GB	T7G14AA

Input Devices	Part Number
HP USB (Grey) SmartCard CCID Keyboard	J7H70AA
HP USB Antimicrobial Business Slim Keyboard and Mouse (China Only)	Z9H50AA
HP USB Buisness Slim CCID SmartCard Keyboard	Z9H48AA
HP USB Business Slim (Grey) Keyboard (EMEA Only)	Z9H49AA
HP USB Business Slim Keyboard	N3R87AA
HP USB Business Slim Keyboard and Mouse and Mousepad	T4E63AA
HP USB Collaboration Keyboard	Z9N38AA
HP USB Conferencing Keyboard	K8P74AA
HP USB Keyboard	QY776AA
HP USB Premium Keyboard	Z9N40AA
HP USB PS/2 Washable Keyboard & Mouse	BU207AA
HP Wireless Business Slim Keyboard and Mouse	N3R88AA
HP Wireless Collaboration Keyboard	Z9N39AA
HP Wireless Premium Keyboard	Z9N41AA
HP PS/2 Business Slim Keyboard	N3R86AA
HP USB Grey v2 Mouse (EMEA only)	Z9H74AA
HP USB Premium Mouse	1JR32AA

Technical Specifications – After Market Options

HP PS/2 Mouse	QY775AA
HP USB 1000dpi Laser Mouse	QY778AA
HP USB Hardened Mouse	P1N77AA
HP USB Mouse	QY777AA

System Memory	**Part Number**
HP 4GB DDR4-2666 DIMM	3TK85AA
HP 8GB DDR4-2666 DIMM	3TK87AA
HP 16GB DDR4-2666 DIMM	3TK83AA

Multimedia Devices	**Part Number**
HP Business Headset v2	T4E61AA
HP USB Business Speakers v2	N3R89AA

Security Devices	**Part Number**
HP Solenoid Lock & Hood Sensor (MT)	J6L42AA
HP Business PC Security Lock v3 Kit	3XJ17AA
HP Dual Head Keyed Cable Lock	T1A64AA
HP Keyed Cable Lock 10mm	T1A62AA
HP Master Keyed Cable Lock 10mm	T1A63AA

I/O Devices	**Part Number**
HP DisplayPort™ Port Flex IO	3TK72AA
HP HDMI Port Flex IO (400/600/800)	3TK74AA
HP Type-C™ USB 3.1 Gen2 Port Flex IO	3TK78AA
HP VGA Port Flex IO	3TK80AA
HP Internal Serial Port (400)	3TK81AA
HP PCIe x1 Parallel Port Card	N1M40AA
HP 800/600/400 G3 Serial/ PS/2 Adapter	1VD82AA

title

Change Log

Date	Version History	Action	Description of Change
February 7, 2019	From v1 to v2	Removed	PhoneWise from Software section
February 15, 2019	From v2 to v3	Changed	Processors and Graphics sections