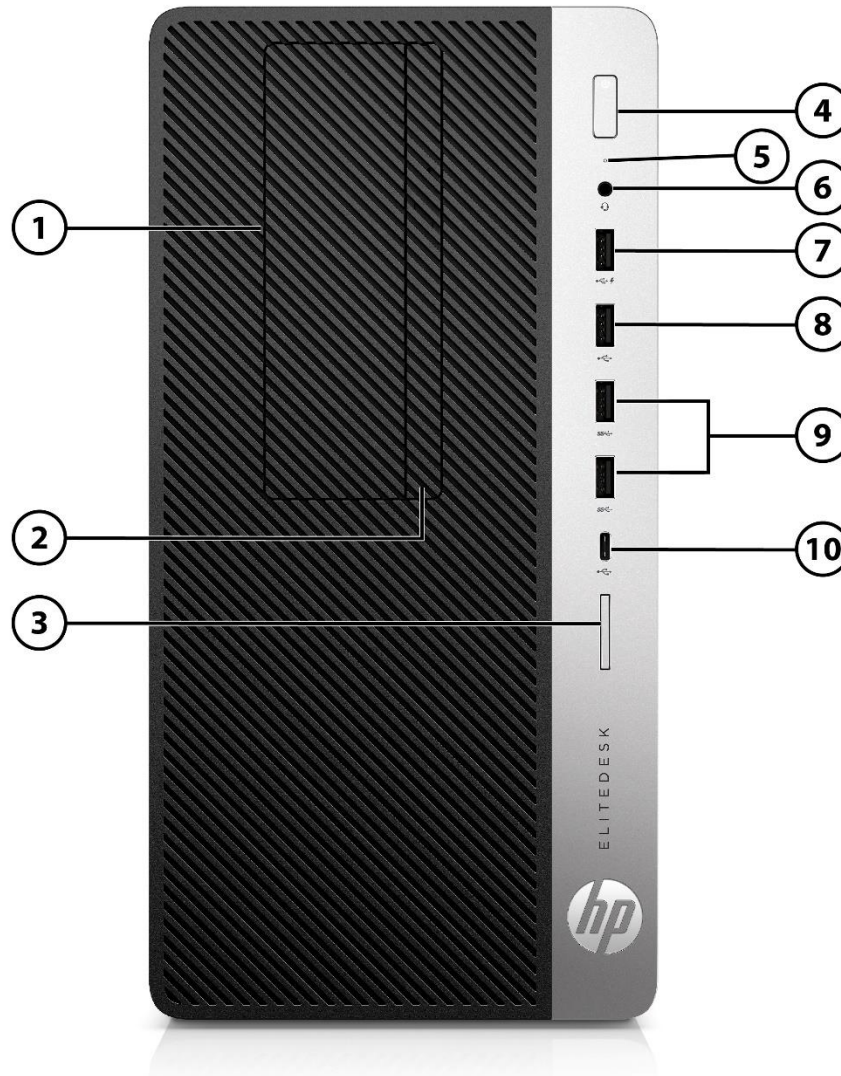


### Overview

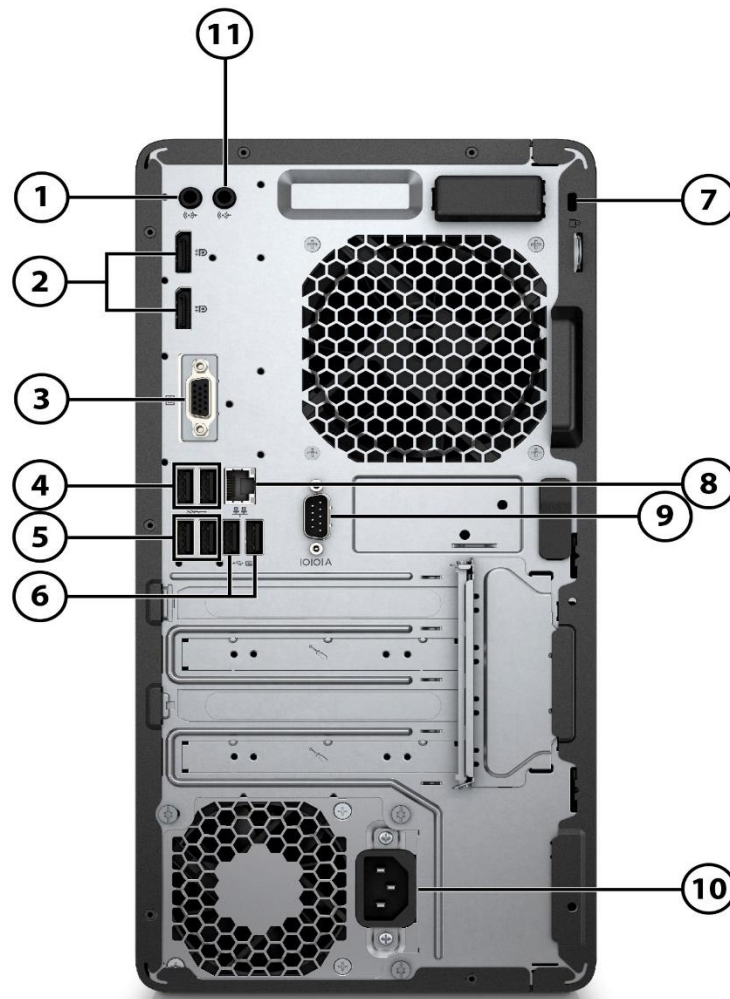
#### HP EliteDesk 705 G4 Workstation Edition



- |    |  |     |   |
|----|--|-----|---|
| 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™ port (10 Gb/s signaling data rate*)       |

\*Actual throughput may vary

## HP EliteDesk 705 G4 Workstation Edition



- |  |  |
|--|--|
| 1. Audio-out jack for powered audio devices  | 6. USB 2.0 ports with wake from S4 (2)         |
| 2. Dual-Mode DisplayPort™ 1.2 (2)  | 7. Cable lock slot                             |
| 3. Optional port (DisplayPort™ 1.2, HDMI, VGA or USB Type-C™) (USB-C™ option has alt mode DisplayPort™ 1.2 or 15W output) - shown here with VGA port installed | 8. RJ-45 Network Adapter                       |
| 4. USB 3.1 Gen1 ports (2) (5 Gb/s signaling data rate*)  | 9. Optional serial port - shown here installed |
| 5. USB 2.0 ports (2)   | 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<sup>1</sup>
- 7th generation of AMD® Pro A-Series APU<sup>4</sup>
- DDR4 Synchronous Dynamic Random Access Memory (SDRAM) (Transfer rates up to 2667 MT/s)<sup>1</sup>
- 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<sup>2</sup> 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<sup>3</sup>
- 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.**

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

## OPERATING SYSTEM

### Preinstalled

Windows® 10 Pro 64<sup>1</sup>  
Windows® 10 Pro 64 (National Academic License)<sup>2</sup>  
Windows® 10 Home Single Language 64<sup>1</sup>  
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

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

## PROCESSORS

### 7th Generation of AMD® Pro A-Series APU<sup>1</sup>

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

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

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

### AMD® Ryzen™ with AMD® Radeon™ Vega Graphics APU and CPU<sup>2</sup>

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

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

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.

## GRAPHICS

### 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® P1000 4GB Graphics Card

NVIDIA® GTX1060 3GB Graphics Card

\*planned to be available December 2018

## 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

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

## 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

## 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 NVMe 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

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

## MEMORY

### Max Memory Configuration

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

### 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™.

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

## NETWORKING/COMMUNICATIONS

### Ethernet (RJ-45)

Realtek® RTL8111EPH (standard)

### Wireless<sup>1</sup>

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

### 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<sup>1</sup>
- HP Hardened USB Mouse<sup>1</sup>

1. Not available in all regions



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

## 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);<br>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),<br>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);<br>1 Audio-out (rear),<br>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 |

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

### Slots

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

### 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.

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

## SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

### BIOS

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

### Software

- HP Native Miracast Support<sup>15</sup>
- HP LAN-Wireless Protection
- HP Velocity
- HP ePrint Driver + JetAdvantage<sup>20</sup>
- HP Hotkey Support – CMIT
- HP Recovery Manager
- HP Jumpstart
- HP Support Assistant<sup>21</sup>
- HP Noise Cancellation Software
- HP PhoneWise<sup>29</sup>
- Buy Office

### Manageability Features

- HP Driver Packs<sup>22</sup>
- HP System Software Manager (SSM)
- HP BIOS Config Utility (BCU)
- HP Client Catalog
- HP Manageability Integration Kit Gen2<sup>23</sup>
- Ivanti Management Suite<sup>24</sup>

### Client Security Software

- HP Client Security Suite Gen4<sup>25</sup> including:
  - HP Security Manager<sup>26</sup> (including Credential Manager, HP Password Manager, HP Spare Key)
  - HP Device Access Manager
  - HP Power On Authentication
  - Microsoft Defender<sup>27</sup>

### Security Management

- HP Secure Erase<sup>18</sup>
- TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified) (FIPS 140-2 Level 2 Certified)<sup>32</sup>
- SATA 0,1 port disablement (viaBIOS)
- RAID configurations<sup>33</sup>
- 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<sup>30</sup>
- HP Sure Run<sup>35</sup>
- HP Sure Recover<sup>36</sup>

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

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](http://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.
29. HP PhoneWise Client is only available on select platforms. For supported platforms and HP PhoneWise system requirements see <http://www.hp.com/go/HPPhoneWise>.
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.

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

## ENVIRONMENTAL & INDUSTRY

|  |   |                     |  |
|--|---|---------------------|--|
| <b>Eco-Label Certifications &amp; declarations</b>                         | 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"> <li>• IT ECO declaration</li> <li>• US ENERGY STAR®</li> <li>• EPEAT® Gold registered in the United States. See <a href="http://www.epeat.net">http://www.epeat.net</a> for registration status in your country. Search keyword generator on HP's 3rd party option store for solar generator accessories at <a href="http://www.hp.com/go/options">http://www.hp.com/go/options</a>.</li> </ul> |                     |  |
| <b>System Configuration</b>  | The configuration used for the Energy Consumption and Declared Noise Emissions data for the Workstation model is based on a Typically Configured Workstation.   |                     |  |
| <b>Energy Consumption (in accordance with US ENERGY STAR® test method)</b> | <b>115VAC, 60Hz</b>   | <b>230VAC, 50Hz</b> | <b>100VAC, 60Hz</b>                          |
| 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                                       |
|  | <b>NOTE:</b> 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.                                  |                     |  |
| <b>Heat Dissipation*</b>   | <b>115VAC, 60Hz</b>   | <b>230VAC, 50Hz</b> | <b>100VAC, 60Hz</b>                          |
| 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                                     |
|  | <b>NOTE:</b> Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.   |                     |  |
| <b>Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)</b> | Sound Power (L <sub>WAd</sub> , bels)   |                     | Sound Pressure (L <sub>pAm</sub> , decibels) |
| Typically Configured – Idle  | 3.3   |                     | 25   |
| Fixed Disk – Random writes   | 3.3   |                     | 25   |
| <b>Longevity and Upgrading</b>   | 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"> <li>• 3 USB ports</li> <li>• 1 PC card slot (type I/II)</li> <li>• 1 ExpressCard/54 slot</li> <li>• 1 IEEE 1394 Port</li> <li>• 2 SODIMM memory slots</li> <li>• Optional expansion base docking station</li> <li>• 1 multi-bay II storage port</li> <li>• Interchangeable HDD</li> </ul>  |                     |  |

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

|                               |  |   |        |
|-------------------------------|--|---|--------|
|                               | Spare parts are available throughout the warranty period and or for up to 5 years after the end of production.   |   |        |
| 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:<br/>                 Mercury greater the 1ppm by weight<br/>                 Cadmium greater than 20ppm by weight</p> <p>Battery size: CR2032 (coin cell)<br/>                 Battery type: Lithium</p>   |   |        |
| <b>Additional Information</b> | <ul style="list-style-type: none"> <li>• This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.</li> <li>• This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.</li> <li>• This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).</li> <li>• This product is in compliance with the IEEE 1680 (EPEAT) standard at the &lt;gold&gt; level in the U.S. See <a href="http://www.epeat.net">http://www.epeat.net</a> for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at <a href="http://www.hp.com/go/options">http://www.hp.com/go/options</a></li> <li>• Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.</li> <li>• This product contains 0% post-consumer recycled plastic (by wt.)</li> <li>• This product is 95.1% recycle-able when properly disposed of at end of life.</li> </ul>  |   |        |
| <b>Packaging Materials</b>    | <b>External:</b>   | PAPER/Corrugated                        | 1272 g |
|                               | <b>Internal:</b>   | PLASTIC/Polyethylene Expanded - EPE     | 280 g  |
|                               |  | PLASTIC/Polyethylene low density – LDPE | 28 g   |
| <b>Material Usage</b>         | <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 <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf</a>):</p> <ul style="list-style-type: none"> <li>• Asbestos</li> <li>• Certain Azo Colorants</li> <li>• Certain Brominated Flame Retardants – may not be used as flame retardants in plastics</li> <li>• Cadmium</li> <li>• Chlorinated Hydrocarbons</li> <li>• Chlorinated Paraffins</li> <li>• Formaldehyde</li> <li>• Halogenated Diphenyl Methanes</li> <li>• Lead carbonates and sulfates</li> <li>• Lead and Lead compounds</li> <li>• Mercuric Oxide Batteries</li> <li>• Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.</li> <li>• Ozone Depleting Substances</li> <li>• Polybrominated Biphenyls (PBBs)</li> <li>• Polybrominated Biphenyl Ethers (PBBEs)</li> <li>• Polybrominated Biphenyl Oxides (PBBOs)</li> <li>• Polychlorinated Biphenyl (PCB)</li> <li>• Polychlorinated Terphenyls (PCT)</li> <li>• Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.</li> <li>• Radioactive Substances</li> <li>• Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)</li> </ul> |   |        |

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

|  |   |
|--|---|
| <p><b>Packaging Usage</b></p>                      | <p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none"> <li>• Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.</li> <li>• Eliminate the use of ozone-depleting substances (ODS) in packaging materials.</li> <li>• Design packaging materials for ease of disassembly.</li> <li>• Maximize the use of post-consumer recycled content materials in packaging materials.</li> <li>• Use readily recyclable packaging materials such as paper and corrugated materials.</li> <li>• Reduce size and weight of packages to improve transportation fuel efficiency.</li> <li>• Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.</li> </ul>   |
| <p><b>End-of-life Management and Recycling</b></p> | <p>HP Inc. offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <a href="http://www.hp.com/go/reuse-recycle">http://www.hp.com/go/reuse-recycle</a> 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: <a href="http://www.hp.com/go/recyclers">http://www.hp.com/go/recyclers</a>. 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> <p>Global Citizenship Report<br/> <a href="http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html">http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html</a><br/> Eco-label certifications<br/> <a href="http://www8.hp.com/us/en/hp-information/environment/ecolabels.html">http://www8.hp.com/us/en/hp-information/environment/ecolabels.html</a><br/> ISO 14001 certificates:<br/> <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf</a><br/> and<br/> <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf</a></p> |

## SERVICE AND SUPPORT

On-site Warranty<sup>15</sup>: Three-year (3-3-3) limited warranty delivers three years of on-site, next business day<sup>16</sup> service for parts and labor and includes free support 24 x 7<sup>17</sup>. 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>.<sup>18</sup>

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](http://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.

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

## GRAPHICS

### AMD® Radeon™ RX550 4GB FH PCIe x16

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

### AMD® Radeon™ RX580 4GB FH PCIe x16

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

### AMD® Radeon™ RX460 2GB Graphics Card

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

|                                     |  |
|-------------------------------------|--|
| <b>Engine Clock</b>                 | 780 MHz  |
| <b>Memory Clock</b>                 | 1100 MHz   |
| <b>Memory Size(width)</b>           | 2 GB(128-bit)                                      |
| <b>Memory Type</b>                  | 128M x 32 GDDR5                                    |
| <b>Max. Resolution(VGA)</b>         | 2048x1536  |
| <b>Max. Resolution(DP)</b>          | 4096x2160@60Hz                                     |
| <b>Multi Display Support</b>        | 2 displays   |
| <b>HDCP Compliance</b>              | yes  |
| <b>Rear I/O connectors(bracket)</b> | VGA+DP   |
| <b>Cooling(active/passive)</b>      | Active fan-sink(Active cooling with dynamic speed) |
| <b>Total power consumption(W)</b>   | <50W   |
| <b>PCB form-factor with bracket</b> | LP PCB with FH/LP bracket                          |

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

|                                     |  |
|-------------------------------------|--|
| <b>Engine Clock</b>                 | 780 MHz  |
| <b>Memory Clock</b>                 | 1100 MHz   |
| <b>Memory Size(width)</b>           | 2GB(128-bit)                                       |
| <b>Memory Type</b>                  | 128M x 32 GDDR5                                    |
| <b>Max. Resolution(VGA)</b>         | 2048x1536  |
| <b>Max. Resolution(DP)</b>          | 4096x2160@60Hz                                     |
| <b>Multi Display Support</b>        | 2 displays   |
| <b>HDCP Compliance</b>              | yes  |
| <b>Rear I/O connectors(bracket)</b> | VGA+DP   |
| <b>Cooling(active/passive)</b>      | Active fan-sink(Active cooling with dynamic speed) |
| <b>Total power consumption(W)</b>   | <50W   |
| <b>PCB form-factor with bracket</b> | LP PCB with FH/LP bracket                          |

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

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

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

|                       |          |
|-----------------------|----------|
| <b>Base GPU Clock</b> | 1219 MHz |
|-----------------------|----------|

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

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

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

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

### **NVIDIA® GTX1060 3GB Graphics Card**

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

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

## STORAGE

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

|                              |                             |
|------------------------------|-----------------------------|
| <b>Capacity</b>              | 500 GB                      |
| <b>Rotational Speed</b>      | 7,200 rpm                   |
| <b>Interface</b>             | SATA 6 Gb/s                 |
| <b>Buffer Size</b>           | 16 MB                       |
| <b>Logical Blocks</b>        | 976,773,168                 |
| <b>Seek Time</b>             | 12 ms (Average)             |
| <b>Height</b>                | 0.267 in/6.8 mm (nominal)   |
| <b>Width</b>                 | 2.75 in/70 mm (nominal)     |
| <b>Operating Temperature</b> | 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 1 TB 7.2K SATA 6.0Gb/s 2.5" Hard Disk Drive

|                              |                             |
|------------------------------|-----------------------------|
| <b>Capacity</b>              | 1 TB                        |
| <b>Rotational Speed</b>      | 7,200 rpm                   |
| <b>Interface</b>             | SATA 6 Gb/s                 |
| <b>Buffer Size</b>           | 32 MB                       |
| <b>Logical Blocks</b>        | 1,953,525,168               |
| <b>Seek Time</b>             | 12 ms (Average)             |
| <b>Height</b>                | 0.374 in/9.5 mm (nominal)   |
| <b>Width</b>                 | 2.75 in/70 mm (nominal)     |
| <b>Operating Temperature</b> | 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 500 GB SATA 6G 2.5" 8GB Solid State Hybrid Drive (SSHD)

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

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

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

|                              |  |
|------------------------------|--|
| <b>Capacity</b>              | 2 TB   |
| <b>Rotational Speed</b>      | 5,400 rpm  |
| <b>Drive Type</b>            | Solid State Hybrid Drive (SSHD) technology with NAND Flash |
| <b>Interface</b>             | SATA 6 Gb/s  |
| <b>Buffer Size</b>           | 128 MB   |
| <b>NAND Flash</b>            | 8 GB   |
| <b>Seek Time</b>             | 12 ms (Average)  |
| <b>Height</b>                | 0.374 in/9.5 mm (nominal)                                  |
| <b>Width</b>                 | 2.75 in/70 mm (nominal)                                    |
| <b>Operating Temperature</b> | 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 2 TB 5.4K SATA 6.0Gb/s 2.5" Hard Disk Drive

|                              |                             |
|------------------------------|-----------------------------|
| <b>Capacity</b>              | 2 TB                        |
| <b>Rotational Speed</b>      | 5,400 rpm                   |
| <b>Interface</b>             | SATA 6 Gb/s                 |
| <b>Buffer Size</b>           | 128 MB                      |
| <b>Logical Blocks</b>        | 3,907,050,336               |
| <b>Seek Time</b>             | 12 ms (Average)             |
| <b>Height</b>                | 0.374 in/9.5 mm (nominal)   |
| <b>Width</b>                 | 2.75 in/70 mm (nominal)     |
| <b>Operating Temperature</b> | 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.

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

|                              |   |
|------------------------------|---|
| <b>Capacity</b>              | 500 GB  |
| <b>Architecture</b>          | Self-Encrypting (SED) Solid State Drive with SATA interface |
| <b>Interface</b>             | SATA 6 Gb/s   |
| <b>Buffer Size</b>           | 32 MB   |
| <b>Logical Blocks</b>        | 976,773,168   |
| <b>Seek Time</b>             | 12 ms (Average)   |
| <b>Height</b>                | 0.267 in/6.8 mm (nominal)                                   |
| <b>Width</b>                 | 2.75 in/70 mm (nominal)                                     |
| <b>Operating Temperature</b> | 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)

## NETWORKING AND COMMUNICATIONS

| <b>Realtek RTL8111EPH 10/100/1000 Integrated NIC</b> |   |
|--|---|
| <b>Connector</b>                                     | RJ-45   |
| <b>System Interface</b>                              | PCIe + SMBus  |
| <b>Controller</b>                                    | 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)<br>100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)<br>1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40)<br>Auto-Negotiation (Automatic Speed Selection)<br>Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s    |
| <b>Data rates supported</b>                          | IEEE 802.1p QoS (Quality of Service) Support<br>IEEE 802.1q VLAN support<br>IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)<br>IEEE 802.3az EEE (Energy Efficient Ethernet)   |
| <b>IEEE Compliance</b>                               | TCP/IP/UDP Checksum Offload (configurable)<br>Protocol Offload (ARP & NS)<br>Large send offload and Giant send offload<br>Receiving Side Scaling<br>Jumbo Frame 9K  |
| <b>Performance</b>                                   | Cable Disconnection: 25mW<br>100Mbps Full Run: 450mW<br>1000bp Full Run: 1000mW<br>WoL Enable(S3/S4/S5): 50mW<br>WoL Disable(S3/S4/S5): 25mW  |
| <b>Power</b>   | ACPI compliant – multiple power modes<br>Situation-sensitive features reduce power consumption<br>Advanced link down power saving for reducing link down power consumption  |
| <b>MAC/PHY Interconnect</b>                          | Auto MDI/MDIX Crossover cable detection   |
| <b>Management Interface</b>                          | Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame);<br>Wake-on-LAN from off (Magic Packet only)<br>PXE 2.1 Remote Boot<br>Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30))<br>Comprehensive diagnostic and configuration software suite<br>Virtual Cable Doctor for Ethernet cable status |

| <b>Intel® Ethernet I210-T1 Gigabit Network Adapter</b> |  |
|--|--|
| <b>Connector</b>                                       | RJ-45  |
| <b>System Interface</b>                                | PCIe Express x1  |
| <b>Data rates supported</b>                            | 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)<br>100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)<br>1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40)<br>Auto-Negotiation (Automatic Speed Selection)<br>Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s |
| <b>IEEE Compliance</b>                                 | IEEE 802.1p QoS (Quality of Service) Support<br>IEEE 802.1q VLAN support<br>IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)<br>IEEE 802.3az EEE (Energy Efficient Ethernet)  |
| <b>Performance</b>                                     | TCP/IP/UDP Checksum Offload (configurable)<br>Protocol Offload (ARP & NS)<br>Large send offload and Giant send offload<br>Receiving Side Scaling<br>Jumbo Frame 9K   |

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

|                             |   |
|-----------------------------|---|
| <b>Power consumption</b>    | Cable Disconnection: 25mW<br>100Mbps Full Run: 450mW<br>1000bp Full Run: 1000mW<br>WoL Enable(S3/S4/S5): 50mW<br>WoL Disable(S3/S4/S5): 25mW  |
| <b>Power Management</b>     | ACPI compliant – multiple power modes<br>Situation-sensitive features reduce power consumption<br>Advanced link down power saving for reducing link down power consumption  |
| <b>Management Interface</b> | Auto MDI/MDIX Crossover cable detection   |
| <b>IT Manageability</b>     | Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame);<br>Wake-on-LAN from off (Magic Packet only)<br>PXE 2.1 Remote Boot<br>Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30))<br>Comprehensive diagnostic and configuration software suite<br>Virtual Cable Doctor for Ethernet cable status |

| <b>Intel Thunder Peak 9260 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 5.0 Combo<sup>1</sup> Non-vPro</b> |   |
|--|---|
| <b>Wireless LAN Standards</b>  | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n<br>IEEE 802.11ac   |
| <b>Interoperability</b>  | Wi-Fi certified   |
| <b>Frequency Band</b>  | 802.11b/g/n<br>• 2.402 – 2.482 GHz<br>802.11a/n<br>• 4.9 – 4.95 GHz (Japan)<br>• 5.15 – 5.25 GHz<br>• 5.25 – 5.35 GHz<br>• 5.47 – 5.725 GHz<br>• 5.825 – 5.850 GHz  |
| <b>Data Rates</b>  | • 802.11b: 1, 2, 5.5, 11 Mbps<br>• 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)<br>• 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)                     |
| <b>Modulation</b>  | Direct Sequence Spread Spectrum<br>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM   |
| <b>Security<sup>1</sup></b>  | • IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only<br>• AES-CCMP: 128 bit in hardware<br>• 802.1x authentication<br>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>• WPA2 certification<br>• IEEE 802.11i<br>• Cisco Certified Extensions, all versions through CCX4 and CCX Lite<br>• WAPI |
| <b>Network Architecture Models</b>   | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required)   |
| <b>Roaming</b>   | IEEE 802.11 compliant roaming between access points   |
| <b>Output Power<sup>2</sup></b>  | • 802.11b : +18.5dBm minimum<br>• 802.11g : +17.5dBm minimum<br>• 802.11a : +18.5dBm minimum<br>• 802.11n HT20(2.4GHz) : +15.5dBm minimum   |

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

|  |   |                                |
|--|---|--------------------------------|
|  | <ul style="list-style-type: none"> <li>• 802.11n HT40(2.4GHz) : +14.5dBm minimum</li> <li>• 802.11n HT20(5GHz) : +15.5dBm minimum</li> <li>• 802.11n HT40(5GHz) : +14.5dBm minimum</li> <li>• 802.11ac VHT80(5GHz) : +11.5dBm minimum</li> <li>• 802.11ac VHT160(5GHz) : +11.5dBm minimum</li> </ul>  |                                |
| <b>Power Consumption</b>   | <ul style="list-style-type: none"> <li>• Transmit mode 2.0 W</li> <li>• Receive mode 1.6 W</li> <li>• Idle mode (PSP) 180 mW (WLAN Associated)</li> <li>• Idle mode 50 mW (WLAN unassociated)</li> <li>• Connected Standby 10mW</li> <li>• Radio disabled 8 mW</li> </ul>   |                                |
| <b>Power Management</b>  | ACPI and PCI Express compliant power management<br>802.11 compliant power saving mode   |                                |
| <b>Receiver Sensitivity<sup>3</sup></b>  | 802.11b, 1Mbps: -93.5dBm maximum<br>802.11b, 11Mbps: -84dBm maximum<br>802.11a/g, 6Mbps: -86dBm maximum<br>802.11a/g, 54Mbps: -72dBm maximum<br>802.11n, MCS07: -67dBm maximum<br>802.11n, MCS15: -64dBm maximum<br>802.11ac, MCS0: -84dBm maximum<br>802.11ac, MCS9: -59dBm maximum  |                                |
| <b>Antenna type</b>  | High efficiency antenna with spatial diversity, mounted in the display enclosure<br><br>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications   |                                |
| <b>Form Factor</b>   | PCI-Express M.2 MiniCard  |                                |
| <b>Dimensions</b>  | Type 2230: 2.3 x 22.0 x 30.0 mm   |                                |
| <b>Weight</b>  | Type 2230: 2.8g   |                                |
| <b>Operating Voltage</b>   | 3.3v +/- 9%   |                                |
| <b>Temperature</b>   | Operating   | 14° to 158° F (-10° to 70° C)  |
|  | Non-operating   | -40° to 176° F (-40° to 80° C) |
| <b>Humidity</b>  | Operating   | 10% to 90% (non-condensing)    |
|  | Non-operating   | 5% to 95% (non-condensing)     |
| <b>Altitude</b>  | Operating   | 0 to 10,000 ft (3,048 m)       |
|  | Non-operating   | 0 to 50,000 ft (15,240 m)      |
| <b>LED Activity</b>  | LED Amber – Radio OFF; LED White – Radio ON   |                                |
|  | <ol style="list-style-type: none"> <li>1. Check latest software/driver release for updates on supported security features.</li> <li>2. Maximum output power may vary by country according to local regulations.</li> <li>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).</li> </ol> |                                |
| <b>HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0 Wireless Technology</b> |   |                                |
| <b>Bluetooth® Specification</b>  | 4.0/4.1/4.2/5.0 Compliant   |                                |
| <b>Frequency Band</b>  | 2402 to 2480 MHz  |                                |
| <b>Number of Available Channels</b>  | Legacy: 0~79 (1 MHz/CH)<br>BLE: 0~39 (2 MHz/CH)   |                                |
| <b>Data Rates and Throughput</b>   | Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps<br>BLE: 1 Mbps data rate; throughput up to 0.2 Mbps<br>Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels<br>Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)  |                                |
| <b>Transmit Power</b>  | The Bluetooth® component shall operate as a Class II Bluetooth® device with a maximum transmit power of +4 dBm for BR and EDR.  |                                |



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

|  |  |
|--|--|
| <b>Power Consumption</b>                           | Peak (Tx) 330 mW<br>Peak (Rx) 230 mW<br>Selective Suspend 17 mW  |
| <b>Electrical Interface</b>                        | USB 2.0 compliant  |
| <b>Bluetooth® Software Supported Link Topology</b> | Microsoft Windows Bluetooth® Software  |
| <b>Power Management</b>                            | Microsoft Windows ACPI, and USB Bus Support  |
| <b>Certifications</b>                              | FCC (47 CFR) Part 15C, Section 15.247 & 15.249   |
| <b>Power Management Certifications</b>             | ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark   |
| <b>Bluetooth Profiles Supported</b>                | BT4.1-ESR 5/6/7 Compliance<br>LE Link Layer Ping<br>LE Dual Mode<br>LE Link Layer<br>LE Low Duty Cycle Directed Advertising<br>LE L2CAP Connection Oriented Channels<br>Train Nudging & Interlaced Scan<br>BT4.2 ESR08 Compliance<br>LE Secure Connection- Basic/Full<br>LE Privacy 1.2 –Link Layer Privacy<br>LE Privacy 1.2 –Extended Scanner Filter Policies<br>LE Data Packet Length Extension<br>FAX Profile (FAX)<br>Basic Imaging Profile (BIP)2<br>Headset Profile (HSP)<br>Hands Free Profile (HFP)<br>Advanced Audio Distribution Profile (A2DP) |

|   |   |
|---|---|
| <b>Realtek 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo<sup>1</sup></b> |   |
| <b>Wireless LAN Standards</b>   | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n<br>IEEE 802.11ac   |
| <b>Interoperability</b>   | Wi-Fi certified   |
| <b>Frequency Band</b>   | 802.11b/g/n<br>• 2.402 – 2.482 GHz<br>802.11a/n<br>• 4.9 – 4.95 GHz (Japan)<br>• 5.15 – 5.25 GHz<br>• 5.25 – 5.35 GHz<br>• 5.47 – 5.725 GHz<br>• 5.825 – 5.850 GHz  |
| <b>Data Rates</b>   | • 802.11b: 1, 2, 5.5, 11 Mbps<br>• 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)<br>• 802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz) |
| <b>Modulation</b>   | Direct Sequence Spread Spectrum<br>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM   |
| <b>Security<sup>3</sup></b>   | • IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only<br>• AES-CCMP: 128 bit in hardware<br>• 802.1x authentication<br>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.   |

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

|  |   |           |                               |               |                                |
|--|---|-----------|-------------------------------|---------------|--------------------------------|
|  | <ul style="list-style-type: none"> <li>• WPA2 certification</li> <li>• IEEE 802.11i</li> <li>• Cisco Certified Extensions, all versions through CCX4 and CCX Lite</li> <li>• WAPI</li> </ul>  |           |                               |               |                                |
| <b>Network Architecture Models</b>   | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required)   |           |                               |               |                                |
| <b>Roaming</b>   | IEEE 802.11 compliant roaming between access points   |           |                               |               |                                |
| <b>Output Power<sup>2</sup></b>  | <ul style="list-style-type: none"> <li>• 802.11b: +14dBm minimum</li> <li>• 802.11g: +12dBm minimum</li> <li>• 802.11a: +12dBm minimum</li> <li>• 802.11n HT20(2.4GHz): +12dBm minimum</li> <li>• 802.11n HT40(2.4GHz): +12dBm minimum</li> <li>• 802.11n HT20(5GHz): +10dBm minimum</li> <li>• 802.11n HT40(5GHz): +10dBm minimum</li> <li>• 802.11ac VHT80(5GHz): +10dBm minimum</li> </ul>     |           |                               |               |                                |
| <b>Power Consumption</b>   | <ul style="list-style-type: none"> <li>• Transmit mode 2.0 W</li> <li>• Receive mode 1.6 W</li> <li>• Idle mode (PSP) 180 mW (WLAN Associated)</li> <li>• Idle mode 50 mW (WLAN unassociated)</li> <li>• Connected Standby 10mW</li> <li>• Radio disabled 8 mW</li> </ul>   |           |                               |               |                                |
| <b>Power Management</b>  | ACPI and PCI Express compliant power management<br>802.11 compliant power saving mode   |           |                               |               |                                |
| <b>Receiver Sensitivity<sup>3</sup></b>                                    | 802.11b, 1Mbps: -93.5dBm maximum<br>802.11b, 11Mbps: -84dBm maximum<br>802.11a/g, 6Mbps: -86dBm maximum<br>802.11a/g, 54Mbps: -72dBm maximum<br>802.11n, MCS07: -67dBm maximum<br>802.11n, MCS15: -64dBm maximum<br>802.11ac, MCS0: -84dBm maximum<br>802.11ac, MCS9: -59dBm maximum  |           |                               |               |                                |
| <b>Antenna type</b>  | High efficiency antenna with spatial diversity, mounted in the display enclosure<br><br>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications   |           |                               |               |                                |
| <b>Form Factor</b>   | PCI-Express M.2 MiniCard  |           |                               |               |                                |
| <b>Dimensions</b>  | Type 2230 : 2.3 x 22.0 x 30.0 mm  |           |                               |               |                                |
| <b>Weight</b>  | Type 2230 : 2.8g  |           |                               |               |                                |
| <b>Operating Voltage</b>   | 3.3v +/- 9%   |           |                               |               |                                |
| <b>Temperature</b>   | <table border="1"> <tr> <td>Operating</td> <td>14° to 158° F (-10° to 70° C)</td> </tr> <tr> <td>Non-operating</td> <td>-40° to 176° F (-40° to 80° C)</td> </tr> </table>  | Operating | 14° to 158° F (-10° to 70° C) | Non-operating | -40° to 176° F (-40° to 80° C) |
| Operating  | 14° to 158° F (-10° to 70° C)   |           |                               |               |                                |
| Non-operating  | -40° to 176° F (-40° to 80° C)  |           |                               |               |                                |
| <b>Humidity</b>  | <table border="1"> <tr> <td>Operating</td> <td>10% to 90% (non-condensing)</td> </tr> <tr> <td>Non-operating</td> <td>5% to 95% (non-condensing)</td> </tr> </table>  | Operating | 10% to 90% (non-condensing)   | Non-operating | 5% to 95% (non-condensing)     |
| Operating  | 10% to 90% (non-condensing)   |           |                               |               |                                |
| Non-operating  | 5% to 95% (non-condensing)  |           |                               |               |                                |
| <b>Altitude</b>  | <table border="1"> <tr> <td>Operating</td> <td>0 to 10,000 ft (3,048 m)</td> </tr> <tr> <td>Non-operating</td> <td>0 to 50,000 ft (15,240 m)</td> </tr> </table>  | Operating | 0 to 10,000 ft (3,048 m)      | Non-operating | 0 to 50,000 ft (15,240 m)      |
| Operating  | 0 to 10,000 ft (3,048 m)  |           |                               |               |                                |
| Non-operating  | 0 to 50,000 ft (15,240 m)   |           |                               |               |                                |
| <b>LED Activity</b>  | LED Amber – Radio OFF; LED White – Radio ON   |           |                               |               |                                |
|  | <ol style="list-style-type: none"> <li>1. Check latest software/driver release for updates on supported security features.</li> <li>2. Maximum output power may vary by country according to local regulations.</li> <li>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).</li> </ol> |           |                               |               |                                |
| <b>HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology</b> |   |           |                               |               |                                |
| <b>Bluetooth® Specification</b>  | 4.0/4.1/4.2 Compliant   |           |                               |               |                                |
| <b>Frequency Band</b>  | 2402 to 2480 MHz  |           |                               |               |                                |
| <b>Number of Available Channels</b>  | Legacy: 0~79 (1 MHz/CH)   |           |                               |               |                                |

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

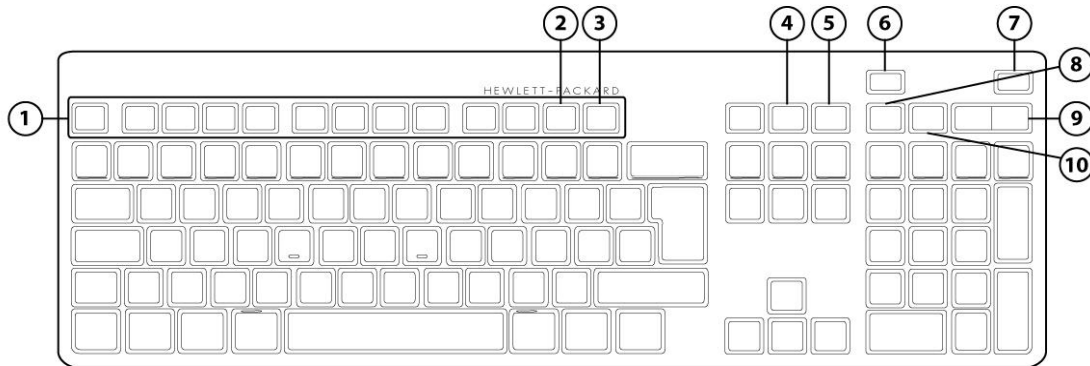
|  |   |
|--|---|
|  | BLE: 0~39 (2 MHz/CH)  |
| <b>Data Rates and Throughput</b>                   | Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps  |
|  | BLE: 1 Mbps data rate; throughput up to 0.2 Mbps  |
|  | Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)<br>Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)   |
| <b>Transmit Power</b>                              | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.   |
| <b>Power Consumption</b>                           | Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW   |
| <b>Electrical Interface</b>                        | USB 2.0 compliant   |
| <b>Bluetooth® Software Supported Link Topology</b> | Microsoft Windows Bluetooth® Software   |
| <b>Power Management</b>                            | Microsoft Windows ACPI, and USB Bus Support   |
| <b>Power Management Certifications</b>             | ETS 300 328, ETS 300 826  |
|  | Low Voltage Directive IEC950  |
|  | UL, CSA, and CE Mark  |
| <b>Bluetooth Profiles Supported</b>                | BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping<br>LE Dual Mode<br>LE Link Layer<br>LE Low Duty Cycle Directed Advertising<br>LE L2CAP Connection Oriented Channels<br>Train Nudging & Interlaced Scan<br>BT4.2 ESR08 Compliance<br>LE Secure Connection- Basic/Full<br>LE Privacy 1.2 –Link Layer Privacy<br>LE Privacy 1.2 –Extended Scanner Filter Policies<br>LE Data Packet Length Extension<br>FAX Profile (FAX)<br>Basic Imaging Profile (BIP)2<br>Headset Profile (HSP)<br>Hands Free Profile (HFP)<br>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 <sup>1</sup> | 7.  | Answer a Call      |
| 3. | F12 Lync or Skype for Business Calendar <sup>2</sup>     | 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         |                         |  |
|---------------------------------|-------------------------|--|
| <b>Physical Characteristics</b> | 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 x 13.2 mm)         |
|                                 | Weight                  | 1.54 lb (698g)                                       |
| <b>Electrical</b>               | 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 |
| <b>Mechanical</b>               | 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)   |
| <b>Environmental</b>            | Acoustics               | 43-dBA maximum sound pressure level                  |
|                                 | Operating temperature   | 50° to 122° F (10° to 50° C)                         |

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

|                             |  |   |
|-----------------------------|--|---|
|                             | 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 |
| <b>Approvals</b>            | UL, FCC, CE Mark, TUV GS, VCCI, BSMI, C-Tick, KC |   |
| <b>Ergonomic Compliance</b> | TUVGS  |   |
| <b>Kit Contents</b>         | Keyboard, QSP                                    |   |
| <b>Warranty Card</b>        | Product Notice                                   |   |

| <b>Skylab USB Wired Keyboard</b> |                           |   |
|----------------------------------|---------------------------|---|
| <b>Physical Characteristics</b>  | 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)  |
| <b>Electrical</b>                | 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<br>Air Discharge: 2, 4, 8, 10, 12.5KV |
|                                  | EMI - RFI                 | Conforms to FCC rules for a Class B computing device                  |
| <b>Mechanical</b>                | 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  |
| <b>Environmental</b>             | Acoustics                 | 43-dBA maximum sound pressure level                                   |
|                                  | Operating temperature     | 50° to 122° F (10° to 50° C)  |
|                                  | Non-operating temperature | Minus 30 degrees to 60 degrees Celsius                                |
|                                  | Operating humidity        | 10% to 90% (non-condensing at ambient)                                |

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

|                             |   |   |
|-----------------------------|---|---|
|                             | 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 |
| <b>Approvals</b>            | UL, FCC, CE Mark, TUV GS, VCCI, BSMI, C-Tick, KC                      |   |
| <b>Ergonomic compliance</b> | ANSI HFS 100, ISO 9241-4, and TUVGS                                   |   |
| <b>Kit contents</b>         | Keyboard, Installation Guide, Warranty card, Safety and Comfort Guide |   |

| <b>HP USB Premium Mouse</b>   |  |  |
|-------------------------------|--|--|
| <b>Dimensions (H x L x W)</b> | 4.21 x 2.64 x 1.52 in (107 x 67 x 38.7 mm) |  |
| <b>Weight</b>                 | 0.19lb (90g)                               |  |
| <b>Environmental</b>          | 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                            |
| <b>Electrical</b>             | Operating voltage                          | 5 VDC, +/-5%                                     |
|                               | Power consumption                          | 12mA   |
| <b>Mechanical</b>             | Connector                                  | USB 2.0  |
|                               | Type                                       | 3D mouse (3 keys and wheel)                      |
|                               | Resolution                                 | 800, 1200, 1600 DPI                              |
|                               | Sensor                                     | Pixart PAN3606DL                                 |
| <b>Tracking speed</b>         | Tracking acceleration                      | 8G(max), 1G=9.8m/s <sup>2</sup>                  |
|                               | Cable length                               | 6 ft (1.8 m)                                     |
|                               | Color                                      | Jack Black                                       |
| <b>Regulatory approvals</b>   | Compliant                                  | UL, FCC, CE Mark, TUV GS, VCCI, BSMI, C-Tick, KC |

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

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

## AUDIO/MULTIMEDIA

|                                   |  |
|-----------------------------------|--|
| <b>Type</b>                       | Integrated   |
| <b>HD Stereo Codec</b>            | Synaptics CX20632  |
| <b>Audio I/O Ports</b>            | 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<br>1 - Headphone port<br>Rear: Line-out<br>Line-in which is retaskable as a Microphone Input<br>All ports are 3.5mm and support stereo |
| <b>Internal Speaker Amplifier</b> | 2W class D mono amplifier for the internal speaker only. External speakers must be powered externally  |
| <b>Multi-streaming Capable</b>    | 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.   |
| <b>Sampling</b>                   | 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   |
| <b>Wavetable Syntheses</b>        | Yes - Uses OS soft wavetable   |
| <b>Analog Audio</b>               | Yes  |
| <b># of Channels on Line-Out</b>  | Stereo (Left & Right channels)   |
| <b>Internal Speaker</b>           | Yes  |

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

## POWER

### UNIT ENVIRONMENT AND OPERATING CONDITIONS

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

|                         |  |
|-------------------------|--|
| <b>80 PLUS Platinum</b> | 250W active PFC / 80 PLUS Platinum<br>400W active PFC / 80 PLUS Platinum<br>90/92/89% efficient at 20/50/100% load (115V)<br>91/93/90% efficient at 20/50/100% load (230V) |
|-------------------------|--|

|  |   |
|--|---|
| <b>Operating Voltage Range</b>                                 | 90Vac~264Vac  |
| <b>Rated Voltage Range</b>                                     | 100Vac~240Vac   |
| <b>Rated Line Frequency</b>                                    | 50HZ~60HZ   |
| <b>Operating Line Frequency</b>                                | 47HZ~63HZ   |
| <b>Rated Input Current</b>                                     | 250 W≤3A<br>400 W≤5.2A  |
| <b>Rated Input Current with Energy Efficient* Power Supply</b> | 250 W≤3A<br>400 W≤5.2A  |
| <b>DC Output</b>   | +12V<br>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.        |
| <b>Current Leakage (NFPA 99: 2102)</b>                         | 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. |
| <b>Power Supply Fan</b>  | 70mm variable speed   |
| <b>Power cord length</b>                                       | 6.0 ft. (1.83 m)  |
| <b>External Power Adapter</b>                                  | Internal power supply   |
| <b>Dimensions</b>  | 165mm x 95mm x 73mm   |

## WEIGHTS & DIMENSIONS

|   |   |
|---|---|
| <b>Chassis (W x D x H) Not including bezel</b>    | 6.69 x10.79 x 13.3 in<br>170 x 274 x 338 mm |
| <b>System Volume</b>                              | 960 cu in<br>15.74 L                        |
| <b>Max System Weight</b>                          |   |
| <b>Max Supported Weight (desktop orientation)</b> | 15.74 lb<br>7.14 kg                         |
| <b>Stand Dimensions</b>                           |   |



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

|   |  |
|---|--|
| <b>Packaging (W x D x H)</b>              | 15.35 x 11.73 x 19.65 x<br>in<br>390 x 298 x 499 mm  |
| <b>Shipping Weight</b>                    | 22.64 lb.<br>10.28kg   |
| <b>Multipack<br/>Packaging (10 units)</b> |  |
| <b>Palletization Profile</b>              | 6-units per layer 42 per pallet<br>47.24 x 39.37 x 86.85 in<br>(including pallet)<br>7 layer max |

## Technical Specifications – Miscellaneous Features

### 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

|   | <u>Part Number</u> |
|---|--------------------|
| 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

|  | <u>Part Number</u> |
|--|--------------------|
| Intel® 9260 802.11ac non-vPro PCIe x1 Card | 3TK89AA            |
| Realtek 8822BE 802.11ac PCIe x1 Card       | 3TK90AA            |

### Data Storage Drives

|   | <u>Part Number</u> |
|---|--------------------|
| 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            |

## Technical Specifications – After Market Options

### Input Devices

|  | <b><u>Part Number</u></b> |
|--|---------------------------|
| HP USB (Grey) SmartCard CCID Keyboard                              | J7H70AA                   |
| HP USB Antimicrobial Business Slim Keyboard and Mouse (China Only) | Z9H50AA                   |
| HP USB Business 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                   |
| HP PS/2 Mouse  | QY775AA                   |
| HP USB 1000dpi Laser Mouse   | QY778AA                   |
| HP USB Hardened Mouse  | P1N77AA                   |
| HP USB Mouse   | QY777AA                   |

### System Memory

|                        | <b><u>Part Number</u></b> |
|------------------------|---------------------------|
| HP 4GB DDR4-2666 DIMM  | 3TK85AA                   |
| HP 8GB DDR4-2666 DIMM  | 3TK87AA                   |
| HP 16GB DDR4-2666 DIMM | 3TK83AA                   |

### Multimedia Devices

|                             | <b><u>Part Number</u></b> |
|-----------------------------|---------------------------|
| HP Business Headset v2      | T4E61AA                   |
| HP USB Business Speakers v2 | N3R89AA                   |

### Security Devices

|                                     | <b><u>Part Number</u></b> |
|-------------------------------------|---------------------------|
| 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

|                                      | <b><u>Part Number</u></b> |
|--------------------------------------|---------------------------|
| 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                   |

## Technical Specifications – After Market Options

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

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## Change Log

| Date | Version History | Action | Description of Change |
|------|-----------------|--------|-----------------------|
|      | From v1 to v2   |        |                       |