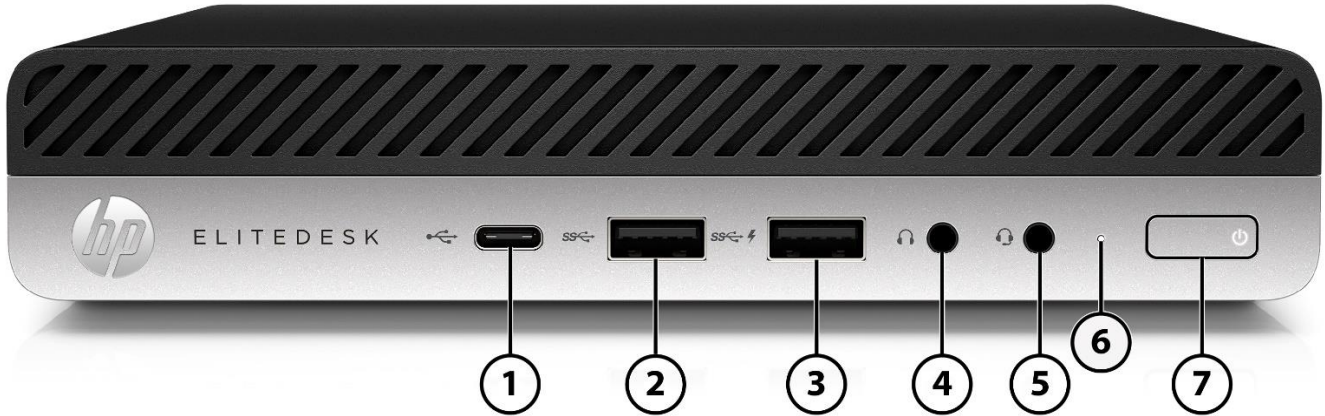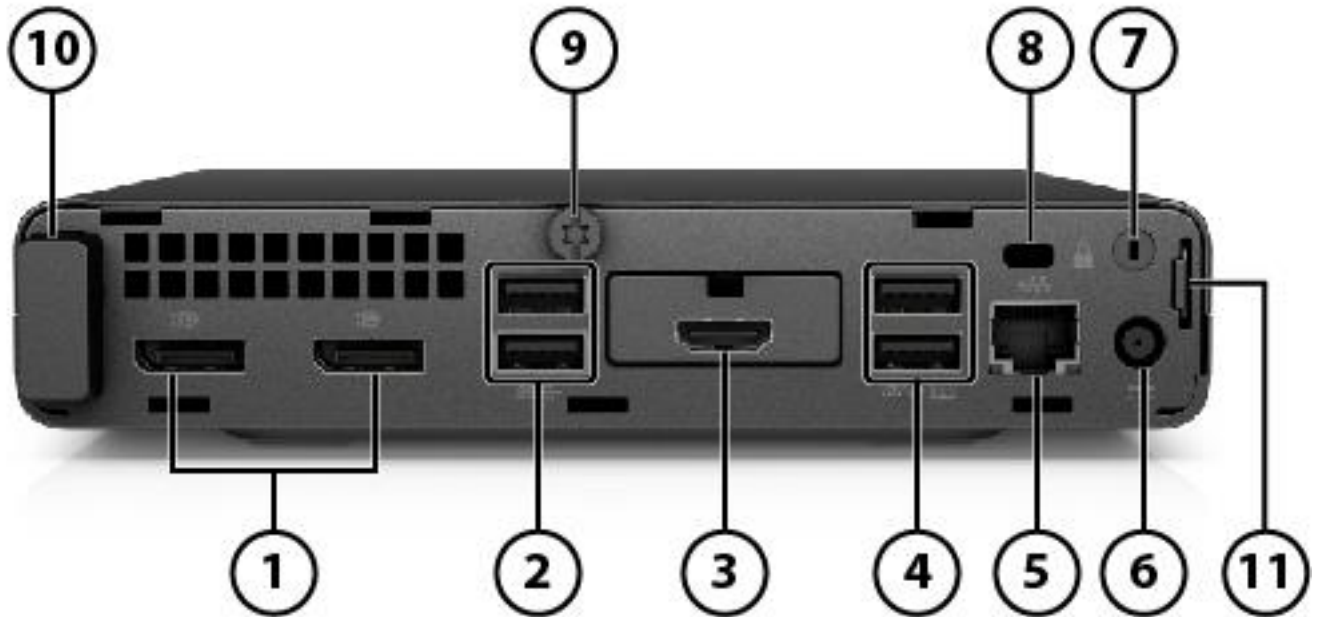## Overview

HP EliteDesk 705 G5 Desktop Mini Business PC

1. USB Type-C™ 3.1 Gen 2 port (charge support up to 5V/3A)
2. USB 3.1 Gen 1
3. USB 3.1 Gen 1 (fast charging)
4. Headset Connector

5. Universal Audio Jack with CTIA headset support
6. Hard Drive activity light
7. Dual-state power button

Not all configuration components are available in all regions/countries.

c06411995 — DA‑16478 — Worldwide — Version 3 — November 1, 2019

Page 1
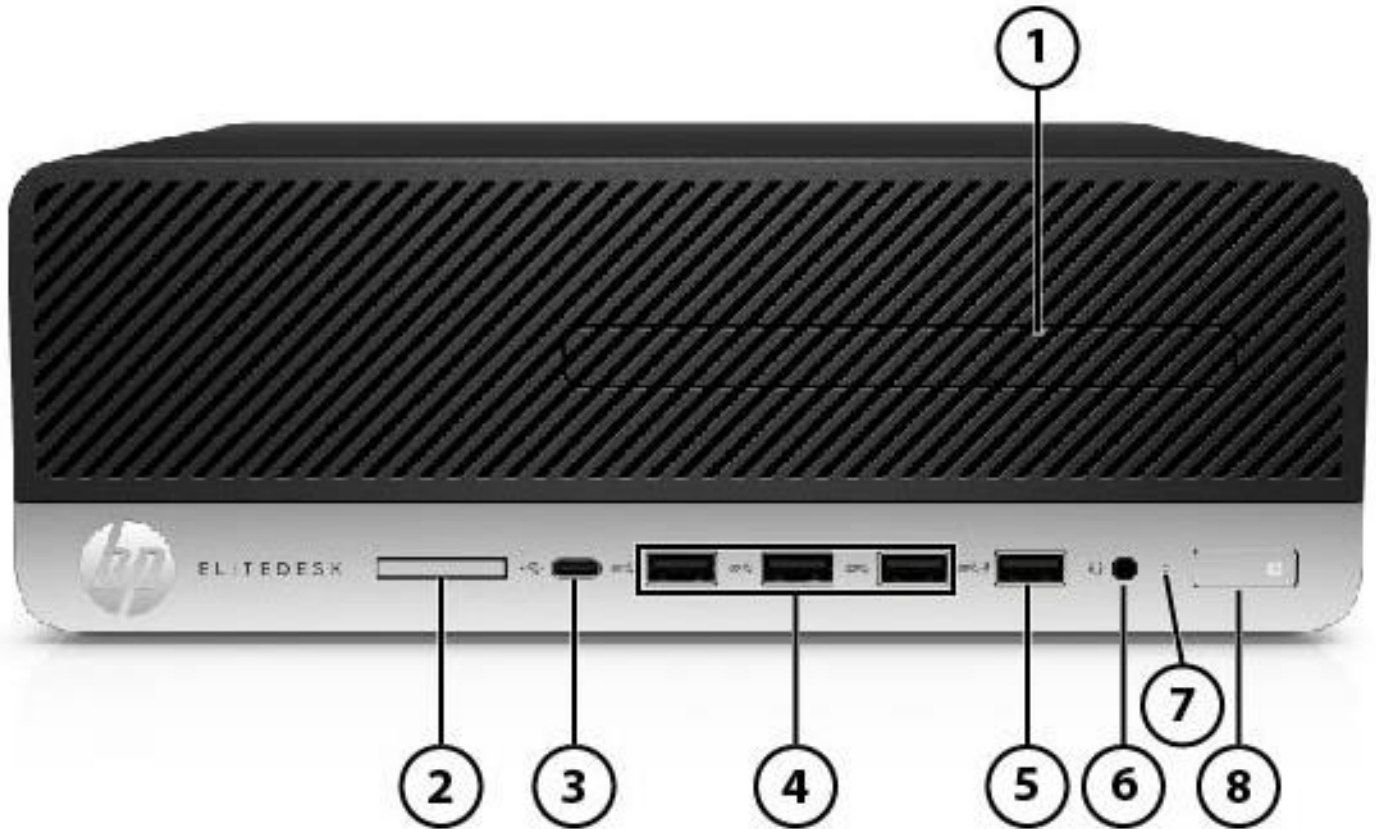
QuickSpecs

Overview

HP EliteDesk 705 G5 Desktop Mini Business PC

1. DisplayPort™ 1.2
2. 2 x USB 3.1 Gen 1
3. Optional port with choice of VGA or HDMI 2.0a or DisplayPort™ 1.2 or Serial or Discrete Graphics (w DisplayPort™ 1.4 or USB-C™ Alt mode DisplayPort™ 1.2 with 100W Power Delivery or Thunderbolt 3.0 or USB-C™ Alt mode DisplayPort™ 1.2 15W output) Shown here with HDMI installed, availability depends on model
4. 2 x USB 3.1 Gen 1 (bottom allows for wake from keyboard)

5. RJ-45 Network Adapter
6. Power connector
7. WLAN External Antenna Punchout
8. Standard lock slot (10mm)
9. Cover Release Thumbscrew
10. WLAN Internal Antenna
11. Padlock Loop

Not Shown

Slots	(1) Internal M.2 2230 connector for WLAN (2) Internal M.2 SSD storage (2230 or 2280 connector)
Bays	(1) 2.5- inch SATA drive Bay

Mounting Support for
 - VESA 100 mounting system on bottom of PC chassis
 - VESA Sleeve
 - Quick Release Bracket
 - B300/B500 Mounting bracket
 - 100mm VESA Plate Integrated

HP EliteDesk 705 G5 Small Form Factor Business PC

1. 9.5mm slim optical drive (optional)
2. SD 4 media card reader (optional)
3. USB Type-C™ 3.1 Gen 2 (charge support up to 5V/3A)
4. 3 x USB 3.1 Gen 1 ports

5. USB 3.1 Gen 1 port (fast charging)
6. Universal Audio Jack with CTIA headset support
7. Hard Drive activity light
8. Dual-state power button

Not all configuration components are available in all regions/countries.

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Page 3

Overview

HP EliteDesk 705 G5 Small Form Factor Business PC

1. Audio-in connector
2. Audio-out connector for powered audio devices
3. 2 x DisplayPort™ 1.2
4. Optional serial port - shown here not installed
5. Standard lock slot
6. Optional port with choice of VGA or HDMI 2.0a or DisplayPort™ 1.2 or USB-C™ Alt mode DisplayPort™ 1.2 15W output or for models with discrete graphics: No optional port (Availability depends on configured processor).-Shown here with HDMI port installed

7. RJ-45 Network Adapter
8. 2 x USB 2.0 (one with wake from keyboard)
9. 4 x USB 3.1 Gen1
10. Power connector

Slots
PCIex16 graphics (wired x8 for APU processors)
PCIex1
2 x internal M.2 SSD storage (1) x4 and (1) x2 2230 or 2280 slot
Internal M.2 WLAN (2230 connector)

Bays
3.5" internal storage drive bay (convertible to two 2.5", requiring adapter supplied from factory only)
9.5mm slim optical drive bay

Not all configuration components are available in all regions/countries.

Page 4

c06411995 — DA‑16478 — Worldwide — Version 3 — November 1, 2019

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

AT A GLANCE

- Choice of two form factors: Small Form Factor and Desktop Mini
- HP developed and engineered UEFI V2.6 BIOS supporting security, manageability and software image stability
- 3rd generation AMD® Ryzen™ PRO CPU and 2nd generation of AMD® Ryzen™ PRO with Radeon™ Vega Graphics[1] APU processor
- Optional discrete graphic cards to configure systems to up to 7 displays[2]
- Intel® Wi-Fi® 6 + BT5 (802.11AX 2x2) [3]
- DDR4 Synchronous Dynamic Random Access Memory (SDRAM) (Transfer rates up to 3200 MT/s)[7]
- Support for up to three monitors via two standard DisplayPort™ 1.2 connectors with multi-stream[4] and an optional third display port connector which provides the following choices: VGA or HDMI 2.0a or DisplayPort™ 1.2, or USB Type-C™ with DisplayPort™ 1.2 for all platforms; discrete graphics with Display Port™ 1.4 for 705 G5 DM 35W and USB Type-C™ with DisplayPort™ 1.2 with 100W Power Delivery for 705 G5 DM (see Ports section for port availability by platform)
- Compatibility with HP Mini-In-One 24 Display[5] (DM)
- Models can be configured with dual data drives in a RAID array
- Industry-standard AMD® DASH manageability with BIOS-level KVM
- Enhanced security with:
  HP Sure Click
  HP Sure Start for AMD®
  HP Sure Run Gen2
  HP Sure Recover Gen2
  HP MIK/SCCM Gen3
  HP BIOSphere Gen5
  HP Sure Sense
  HP Client Security Manager Gen5
- High efficiency energy saving power supply options
- ENERGY STAR® certified. EPEAT® 2019 registered where applicable. EPEAT ® registration varies by country. See http://www.epeat.net for registration status by country[8]. 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
- PC chassis and all internal components and modules are manufactured with low halogen content[6]
- Dust filter available (SFF and DM 35W)
- 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 Synaptics Audio Codec
- Compliance with CE (Class B) / FCC (Class B) / UL (UL609501) / CSA (CSA C22.2 No.60950-1-07) / ICES-003 / CCC / VCCI (Class B) / KCC (Class B)

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. Only available on Desktop Minis with 35W processor and Small Form Factor and with select Elite Displays with daisy chain support.
3. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi® 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi® 6 (802.11ax) are draft and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the PC to communicate with other 802.11ax devices.
4. DisplayPort™ multi-stream monitors 'daisy-chained' together.
5. HP Mini-in-One 24 Display sold separately. PC must be configured with optional USB Type-C™ with DisplayPort™ 1.2 with 100W Power Delivery
6. External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be low halogen.
7. Transfer rates determined by processor and memory configuration; up to 3200 MT/s with DDR4-3200 with single channel one rank memory on SFF with 3rd generation AMD® Ryzen™ PRO CPUs only.
8. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit www.epeat.net for more information

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

Not all configuration components are available in all regions/countries.

Page 5

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

QuickSpecs

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

PRODUCT NAME

HP EliteDesk 705 G5 Small Form Factor Business PC
HP EliteDesk 705 G5 Desktop Mini Business PC

OPERATING SYSTEM

Preinstalled	Windows® 10 Pro 64[1] – HP recommends Windows 10 Pro[1]
	Windows® 10 Pro 64 (National Academic License)[2]
	Windows® 10 Home 64[1]
	Windows® 10 Home Single Language 64[1]
	Windows® 10 Enterprise 64 (Web support)[1]
	FreeDos

1. Not all features are available in all editions or versions of Window. 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.

CHIPSET

	DM	SFF
AMD® PRO 560	X	X

QuickSpecs

2

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

GRAPHICS

System Integrated Graphics

System Integrated Graphics	DM	SFF
AMD® Radeon™ Vega 3 Graphics	X	X
AMD Radeon™ Vega 8 Graphics	X	X
AMD Radeon™ Vega 11 Graphics	X	X

Optional Discrete Graphics Solutions

Optional Discrete Graphics Solutions	DM	SFF
AMD® Radeon™ RX 550X 4GB 1DP 1 HDMI Graphics Card		X
AMD® Radeon™ RX 560X 4GB GDDR5	X	
AMD® Radeon™ R7 430 2GB GDDR5 64bit DP+VGA[1]		X
AMD® Radeon™ R7 430 2GB GDDR5 64bit 2DP		X
NVIDIA GeForce GT 730 2GB DP DVI PCIe x8 GFX		X

1.Not available in all regions.
NOTE: As of 2019, AMD Radeon™ RX560 is renamed to AMD Radeon™ RX 560X

Adapters and Cables

Adapters and Cables	DM	SFF
HP DisplayPort™ Cable	X	X
HP DisplayPort™ to DVI-D Adapter	X	X
HP DisplayPort™ to HDMI 4K Adapter	X	X
HP DisplayPort™ to VGA Adapter	X	X
HP USB-C™ to USB 3.0	X	X
HP USB to Serial Port Adapter	X	X
HP DVI Cable	X	X

STORAGE

3.5 inch SATA Hard Disk Drives (HDD)

3.5 inch SATA Hard Disk Drives (HDD)	DM	SFF
HDD 500GB 7200RPM 3.5in		X
HDD 1TB 7200RPM SATA-3 3.5in		X
HDD 2TB 7200RPM SATA-3 3.5in		X

2.5 inch SATA Hard Disk Drives (HDD)

2.5 inch SATA Hard Disk Drives (HDD)	DM	SFF
HDD 2 TB 5400RPM 2.5in		X
HDD 500GB 7200RPM 2.5in	X	X
HDD 1TB 7200RPM 2.5in	X	X
HDD 500GB 7200RPM 2.5in Self Encrypted Drive OPAL2	X	X
HDD 500GB 7200RPM 2.5in Federal Information Processing Standard	X	X

Not all configuration components are available in all regions/countries.

Page 8

c06411995 — DA‑16478 — Worldwide — Version 3 — November 1, 2019

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

2.5 inch Solid State Drives (SSD)

2.5 inch Solid State Drives (SSD)	DM	SFF
SSD 256GB 2.5in SATA Three Layer Cell	X	X
SSD 512GB 2.5in SATA Three Layer Cell	X	X
SSD 256GB 2.5in SATA Self Encrypted OPAL2 TLC	X	X
SSD 512GB 2.5in SATA Self Encrypted OPAL2 TLC	X	X
SSD 256GB 2.5in Federal Information Processing Standard	X	X
SSD 512GB 2.5in Federal Information Processing Standard	X	X

M.2 PCIe NMVe Solid State Drives (SSD)

M.2 PCIe NMVe Solid State Drives (SSD)	DM	SFF
SSD 256GB M.2 2280 PCIe NVMe	X	X
SSD 512GB M.2 2280 PCIe NVMe	X	X
SSD 128GB M.2 2280 PCIe-3x2 NVMe Three Layer Cell		X
SSD 256GB M.2 2280 PCIe NVMe Three Layer Cell	X	X
SSD 512GB M.2 2280 PCIe NVMe Three Layer Cell	X	X
SSD 1TB M.2 2280 PCIe NVMe Three Layer Cell	X	X
SSD 2TB M.2 2280 PCIe NVMe Three Layer Cell	X	X
SSD 256GB M.2 2280 PCIe NVMe Self Encrypted OPAL2 Three Layer Cell	X	X
SSD 512GB M.2 2280 PCIe NVMe Self Encrypted OPAL2 Three Layer Cell		X

Optical Disc Drives

Optical Disc Drives	DM	SFF
HP 9.5mm Slim DVD-ROM Drive		X
HP 9.5mm Slim DVD Writer Drive		X
HP 9.5mm Slim Blu-Ray Writer Drive		X

Media Card Reader

Media Card Reader	DM	SFF
SD 4.0 with 5-in-1 Interface (Supports SD, SDXC, SDHC, UHS-I, UHS-II)		X

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.

MEMORY[1,2]

Max Memory Configuration	DM	SFF
DDR4-2666 (Transfer rates up to 2666 MT/s), 64 GB, 2 SODIMM	X	
DDR4-2666 (Transfer rates up to 2666 MT/s), 128 GB, 4 DIMM		X
DDR4-3200 (Transfer rates up to 2933 MT/s), 64 GB, 4 DIMM[3]		X

1. All memory slots are customer accessible/upgradeable.
2. Actual transfer rate will vary and is determined by the system's configured processor. See processor specifications for supported memory data rate.
3. Available for systems with 3rd generation AMD Ryzen™ PRO CPUs only.

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

Memory Configuration	DM	SFF
4 GB (1 x 4 GB)	X	X
8 GB (2 x 4 GB)	X	X
8 GB (1 x 8 GB)	X	X
16 GB (2 x 8 GB)	X	X
16 GB (1 x 16 GB)	X	X
32 GB (2 x 16 GB)	X	X
32 GB (4 x 8 GB)		X
32 GB (1 x 32 GB)	X	X
64 GB (4 x 16 GB)		X
64 GB (2 x 32 GB)	X	X
128 GB (4 x 32 GB)		X

NETWORKING/COMMUNICATIONS

Ethernet (RJ-45)	DM	SFF
Realtek® RTL8111EPH (standard)	X	X
Intel® Ethernet I210-T1 PCIe x1 Gb Network Interface Card (optional)		X

Wireless[1]	DM	SFF
Intel® Wi-Fi® 6 AX200 (2x2) and Bluetooth® M.2 Combo Card non-vPro™[2]	X	X
Intel® Dual Band Wireless-AC Wi-Fi® 5 9260 (2x2) and Bluetooth® 5 M.2, non-vPro™[3]	X	X
Intel® Dual Band Wireless-AC Wi-Fi® 5 8265 (2x2) and Bluetooth® Combo, card non-vPro™[3]	X	X
Realtek RTL8822CE Wi-Fi® 5 (2x2) and Bluetooth® 5 Combo	X	X

1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited.
2. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi® 6 (802.11ax) are draft and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ax devices. Only available in countries where 802.11ax is supported..
3. Intel® Dual Band Wireless-AC Wi-Fi® 5 8265 (2x2) and Bluetooth® Combo, card non-vPro™: not available in all regions.

KEYBOARDS AND POINTING DEVICES

Keyboards	DM	SFF
HP USB Premium Keyboard	X	X
HP Conferencing USB Keyboard	X	X
HP Wireless Collaboration Keyboard	X	X
HP USB and PS/2 Washable Keyboard	X	X
HP USB Smart Card (CCID) Keyboard	X	X
HP USB Business Slim Keyboard	X	X
HP USB Keyboard	X	X
HP PS/2 Business Slim Keyboard		X
HP Wireless Business Slim Keyboard and Mouse	X	X

Not all configuration components are available in all regions/countries.

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Page 10

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

HP USB Business Slim Antimicrobial Keyboard[1]	X	X

1. Not available in all regions

Mouse	DM	SFF
HP PS/2 Mouse		X
HP USB Optical Mouse	X	X
HP USB Premium Mouse	X	X
HP 1000dpi Laser Mouse USB	X	X
HP USB and PS/2 Washable Mouse	X	X
Antimicrobial USB Mouse[1]	X	X
HP Hardened USB Mouse[1]	X	X
HP USB Fingerprint Reader Mouse	X	X

1. Not available in all regions

PORTS

I/O Ports – Standard	DM	SFF
USB 3.1 Gen 1	2 front; 4 rear	4 front; 4 rear
USB 3.1 Gen2 Type-C™ (15W)	1 front; 1 rear (option)	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, or USB Type-C™ with alt mode display or USB Type-C™ with power delivery) For models with discrete graphics: 1 DisplayPort™ 1.4 (rear)	2 DisplayPort™ 1.2 (rear), 1 Configurable video port (rear) (Choice of DisplayPort™ 1.2, HDMI™ 2.0, VGA, or USB Type-C™ with alt mode display port or 15W output) For models with discrete graphics: No optional port
Audio	1 Headset (front), 1 Universal Audio Jack with CTIA headset support (front)	1 Headset (front); 1 Audio-out (rear), 1 Audio-in (rear)
Network Interface	RJ45	RJ45

I/O Ports – Optional	DM	SFF
Serial (RS-232)	1 (rear)(option)	1 (rear) (option)
Serial (RS-232) and PS/2 combination	N/A	1 (rear) (option)

Not all configuration components are available in all regions/countries.

Page 11

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

QuickSpecs

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

I/O Ports – Internal Ports	DM	SFF
Internal SATA storage connector(s)	N/A	3
Internal SATA storage connector (Data and Power)	1	N/A

NOTE: For Desktop Mini with M.2 Storage config, there will be no SATA drive bracket. If you plan to use or upgrade the storage with any 2.5" SATA drive, please select a DM SATA Drive Bracket (available as both factory configured and after market option). (Not applicable to all regions.)

Slots	DM	SFF
M.2 PCIe	(1) M.2 PCIe x1 2230 (for WLAN) (1) M.2 PCIe x2 2280/2230 Combo (for storage) (1) M.2 PCIe x4 2280/2230 Combo (for storage)	(1) M.2 PCIe x1 2230 (for WLAN) (1) M.2 PCIe x2 2280/2230 Combo (for storage) (1) M.2 PCIe x4 2280/2230 Combo (for storage)
PCI Express x1 (v3.0)	N/A	1
PCI Express x8 (v3.0)[1]	N/A	1
PCI Express x16 (v3.0)[2]	N/A	1

Bays	DM	SFF
9.5mm Slim ODD	N/A	1
Secure Digital (SD) Reader	N/A	1
2.5" internal storage drive	1 (optional)	2[3]
3.5" internal storage drive	N/A	1

1. AMD® Ryzen™ PRO APU only
2. AMD® Ryzen™ PRO CPU only
3. SFF can be configured with either (1) 3.5" or (2) 2.5" internal storage drive (2.5" requiring adapter supplied from factory only)

Not all configuration components are available in all regions/countries.

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Page 12

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

SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

BIOS
HP BIOSphere Gen5[17]
HP DriveLock & Automatic DriveLock[16]
BIOS Update via Network
Master Boot Record Security
Power On Authentication
HP Secure Erase[18]
Absolute Persistence Module[19]
Pre-boot Authentication
HP Wake on WLAN

Software
HP Hotkey Support
HP JumpStart
HP Support Assistant[21]
HP Audio
Hp Privacy Settings
HP Setup Integrated OOBE
HP PC Hardware Diagnostics Windows
Buy Office

Manageability Features
HP Driver Packs[22]
HP System Software Manager (SSM) (download)
HP BIOS Config Utility (BCU) (download)
HP Client Catalog (download)
HP Manageability Integration Kit Gen3[23]
Ivanti Management Suite (download)[24]
Hp Image Assistant Gen4
Hp Cloud Recovery[38]

Client Security Software
HP Client Security Suite Gen5[25]
HP Power On Authentication
Windows Defender[27]

Security Management
HP Secure Erase[18]
TPM 2.0 (FW: 7.85) endpoint security controller (Infineon SLB9670) shipped with Windows 10. Common Criteria EAL4+ Certified. FIPS 140-2 Level 2 Certified.
SATA 0,1 port disablement (via BIOS)
USB enable/disable and boot control (via BIOS)
Power-on password (via BIOS)
Setup password (via BIOS)
Support for chassis padlocks and cable lock devices
Cover Removal Sensor
HP Sure Start for AMD[30]
HP Sure Click[34]
HP Sure Run Gen2[35]
HP Sure Recover Gen2[36]
HP Sure Sense[37]

Not all configuration components are available in all regions/countries.

Page 13

c06411995 — DA‑16478 — Worldwide — Version 3 — November 1, 2019

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

16. HP Automatic Drive Lock is not supported on NVMe drives

17. HP BIOSphere Gen5 is available on select HP Pro and Elite PCs. See product specifications for details. Features may vary depending on the platform and configurations.

18. HP Sure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method. HP Secure Erase does not support platforms with Intel® Optane™.

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.

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 Manager Gen5 requires Windows and is available on the select HP Pro and Elite PCs. See product specifications for details.

27. Windows Defender Opt in and internet connection required for updates.

30. HP Sure Start for AMD is available on select HP PCs with AMD processors. See product specifications for availability

34. HP Sure Click is available on select HP platforms and supports Microsoft Internet Explorer, Google Chrome™, and Chromium™. Supported attachments include Microsoft Office (Word, Excel, PowerPoint) and PDF files in read only mode, when Microsoft Office or Adobe Acrobat are installed.

35. HP Sure Run Gen2: See product specifications for availability.36. HP Sure Recover Gen2: See product specifications for availability. Requires an open, wired network connection. Not available on platforms with multiple internal storage drives. You must back up important files, data, photos, videos, etc. before using HP Sure Recover to avoid loss of data. HP Sure Recover (Gen1) does not support platforms with Intel® Optane™.

36. HP Sure Recover is available on HP Elite PCs 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.

37. HP Sure Sense requires Windows 10. See product specifications for availability.

38. HP Cloud Recovery is available for HP Elite and Pro desktops and laptops PCs with Intel® or AMD processors and requires an open, wired network connection. Note: You must back up important files, data, photos, videos, etc. before use to avoid loss of data. Detail please refer to: https://support.hp.com/us-en/document/c05115630.

Not all configuration components are available in all regions/countries.

Page 14

c06411995 — DA−16478 — Worldwide — Version 3 — November 1, 2019

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

ENVIRONMENTAL & INDUSTRY

ENERGY STAR® certified models available

EPEAT® 2019 registered where applicable. EPEAT ® registration varies by country. See http://www.epeat.net for registration status by country[1]. Search keyword generator on HP's 3rd party option store for solar generator accessories at http://www.hp.com/go/options.
Low halogen (chassis, all internal components and modules)[2]
TAA compliant models available

1. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit www.epeat.net for more information
2. External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.

UNIT ENVIRONMENT AND OPERATING CONDITIONS

General Unit Operating Guidelines

- Keep the computer away from excessive moisture, direct moisture and the extremes of heat and cold, to ensure that unit is operated within the specified operating range.
- Leave a 10.2 cm (4 in) clearance on all vented sides of the computer to permit the required airflow.
- Never restrict airflow into the computer by blocking any vents or air intakes.
- Do not stack computers on top of each other or place computers so near each other that they are subject to each other's re-circulated or preheated air.
- Occasionally clean the air vents on the front, back, and any other vented side of the computer. Lint, dust and other foreign matter can block the vents and limit the airflow.
- If the computer is to be operated within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the same operating guidelines listed above will still apply.

Temperature Range	Operating: 50° to 95° F (10° to 35° C)[1] Non-operating: -22° to 140° F (-30° to 60° C)
Relative Humidity	Operating: 10% to 90% (non-condensing at ambient) Non-operating: 5% to 95% (non-condensing at ambient)
Maximum Altitude (unpressurized)	Operating: 5000m Non-operating: 50000ft (15240 m)

1. Operating temperature is de-rated 1.0 deg C per 300 m (1000 ft) to 3000 m (10,000 ft) above sea level, no direct sustained sunlight. Maximum rate of change is 10 deg C/Hr. The upper limit may be limited by the type and number of options installed.

HP EliteDesk 705 Desktop Mini G5 Business PC
Environmental Data

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® 2019 registered where applicable. EPEAT ® registration varies by country. See http://www.epeat.net for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at http://www.hp.com/go/options. *Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit http://www.epeat.net for more information.
System Configuration	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Desktop model is based on a "Typically Configured Desktop".

Not all configuration components are available in all regions/countries.

Page 15

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

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

Energy Consumption (in accordance with US ENERGY STAR® test method)	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)	10.789	10.858	10.739
Normal Operation (Long idle)	10.488	10.538	10.458
Sleep	0.815	0.851	0.81
Off	0.756	0.809	0.74
	NOTE: Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.		
Heat Dissipation*	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 50Hz**
Normal Operation (Short idle)	36.7905	37.0258	36.62
Normal Operation (Long idle)	35.7641	35.9346	35.6618
Sleep	2.7792	2.9019	2.7621
Off	2.578	2.7587	2.5234
	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	3.1		20	
Fixed Disk – Random writes	4.4		33	
Longevity and Upgrading	This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include: Spare parts are available throughout the warranty period and or for up to "5" years after the end of production.			
Batteries	This battery(s) in this product comply with EU Directive 2006/66/EC Batteries used in the product do not contain: Mercury greater the1ppm by weight Cadmium greater than 20ppm by weight Battery size: CR2032 (coin cell) Battery type: Lithium			
Additional Information	• This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC. • This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC. • This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986). • 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.)			

Not all configuration components are available in all regions/countries.

Page 16

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

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

	• This product is 95.1% recycle-able when properly disposed of at end of life.		
Packaging Materials	**External:**	PAPER/Corrugated	
	Internal:	PLASTIC/EPE (Expanded Polyethylene)	
		PLASTIC/Polyethylene low density	
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. • 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		

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

	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

HP EliteDesk 705 Small Form Factor G5 Business PC

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® 2019 registered where applicable. EPEAT ® registration varies by country. See http://www.epeat.net for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at http://www.hp.com/go/options. *Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit http://www.epeat.net for more information.		
System Configuration	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Desktop model is based on a "Typically Configured Desktop".		
Energy Consumption (in accordance with US ENERGY STAR® test method)	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)	16.85 W	16.52 W	16.57 W
Normal Operation (Long idle)	14.89 W	14.77 W	14.96 W
Sleep	1.14 W	1.1 W	1.14 W
Off	1.06 W	1.06 W	1.06 W
	NOTE: Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.		
Heat Dissipation*	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)	57.6 BTU/hr	56.5 BTU/hr	56.7 BTU/hr
Normal Operation (Long idle)	50.9 BTU/hr	50.5 BTU/hr	51.2 BTU/hr
Sleep	3.9 BTU/hr	3.8 BTU/hr	3.9 BTU/hr
Off	3.6 BTU/hr	3.6 BTU/hr	3.6 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		23
Fixed Disk – Random writes	3.3		24

Not all configuration components are available in all regions/countries.

Page 18

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

QuickSpecs

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

Longevity and Upgrading	This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include: Spare parts are available throughout the warranty period and or for up to "5" years after the end of production.
Batteries	This battery(s) in this product comply with EU Directive 2006/66/EC Batteries used in the product do not contain: Mercury greater the1ppm by weight Cadmium greater than 20ppm by weight Battery size: CR2032 (coin cell) Battery type: Lithium
Additional Information	• This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC. • This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC. • This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986). • 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/Paperboard	1170 g
		PAPER/Paper	378 g
	Internal:	PLASTIC/Polyethylene low density	17 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)

QuickSpecs

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

Packaging Usage	HP follows these guidelines to decrease the environmental impact of product packaging: • Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials. • Eliminate the use of ozone-depleting substances (ODS) in packaging materials. • Design packaging materials for ease of disassembly. • Maximize the use of post-consumer recycled content materials in packaging materials. • Use readily recyclable packaging materials such as paper and corrugated materials. • Reduce size and weight of packages to improve transportation fuel efficiency. • Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.
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

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

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.

CERTIFICATION AND COMPLIANCE

Energy Efficiency Compliance

ENERGY STAR® certified; EPEAT® 2019 registered where applicable. EPEAT ® registration varies by country.See http://www.epeat.net for registration status by country [19]

19. *Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit www.epeat.net for more information.

Technical Specifications – Graphics

GRAPHICS

AMD Radeon™ Vega 3 Graphics (Integrated on AMD® Athlon PRO 300GE APUs)
AMD Radeon™ Vega 8 Graphics (Integrated on AMD® Ryzen™ PRO 3200G and 3200GE APUs)
AMD Radeon™ Vega 11 Graphics (Integrated on AMD® Ryzen™ PRO 3400G and 3400GE APUs)

Multi Display Support	Maximum of 3 displays supported by the integrated graphics
DisplayPort	Two DisplayPort outputs are standard. One DisplayPort output is optional. AMD® PRO APUs and AMD® Ryzen™ APUs support DP1.2 features including DP++, Audio, MST, HBR2, HDCP1.4 and a maximum resolution of 5128x3880@30Hz or 3840x2160@60Hz.
VGA Port (Optional)	Maximum Resolution of 2048x1536 at 60Hz
HDMI (Optional)	AMD® PRO APUs support HDMI 2.0 features and AMD® Ryzen™ APUs support HDMI 2.0a features. All support HDCP1.4, audio and a maximum resolution of 4096x2160@60Hz
USB-C (Optional)	Supports DisplayPort Alt Mode
Memory	512MB when less than 8GB of system memory is installed 1GB when 8GB or more of system memory is installed
Maximum Color Depth	up to 10 bits
Graphics/Video API Support	AMD® PRO APUs: DirectX 12 OpenCL 1.2 OpenGL 4.1 Dedicated decoding of the H.264 format at up to 4K and 60Hz. Encoding H.264 video supported at 1080p120, 1440p60, and 2160p60 AMD® Ryzen™ APUs: DirectX 12 Vulkan 1.0 OpenCL 2.0 OpenGL 4.5 Hardware-based decode of HEVC/H.265 main10 profile videos at resolutions up to 3840x2160 at 60Hz with 10-bit color for HDR content. Dedicated decoding of the H.264 format at up to 4K and 60Hz. Decoding the VP9 format at resolutions up to 3840x2160 using a hybrid approach where the video and shader engines collaborate to offload work from the CPU. Encode HEVC/H.265 at 1080p240, 1440p120, and 2160p60. Encoding H.264 video is also supported at 1080p120, 1440p60, and 2160p60

Technical Specifications – Graphics

AMD® Radeon™ RX 550X 4GB PCIe x16

Engine Clock	1183MHz
Memory Clock	6 Gbps
Memory Size(width)	4 GB(128-bit)
Memory Type	GDDR5
Max. Resolution(HDMI)	4096x2160 @ 60Hz
Max. Resolution(DP)	5120x2880 @ 60Hz
Multi Display Support	2 displays
HDCP Compliance	Yes
Rear I/O connectors(bracket)	HDMI, DP
Cooling(active/passive)	Active fan-sink (Active cooling with dynamic speed)
Total power consumption(W)	<50W
PCB form-factor with bracket	LP (low profile) PCB with FH/LP bracket

AMD® Radeon™ RX 560X

Architecture	Discrete GPU AMD® GPU drives the integrated panel and all of the graphics output ports
DisplayPort	Multimode capable; supports HDCP, HDR, Display Port Audio (6 streams max), DisplayPort HBR3 link rates and Multi-Stream Technology for a maximum of 5 displays (including the integrated panel and all attached displays)
HDMI	Supports HDMI 2.0b features Supports HDCP 2.2, HDR
Memory	4GByte, 128bit wide GDDR5
Maximum Color Depth	up to 12 bits/color
Graphics/Video API Support	DirectX 12 OpenCL 2.0 OpenGL 4.5 AMD® Unified Video Decoder (UVD)
Rear I/O connector	1 DP
Max. Resolution (VGA)	2048 x 1536@60Hz
Max. Resolution (HDMI)	4096 x 2160@60Hz
Max. Resolution (DP)	5120 x 2880@60Hz

AMD® Radeon™ R7 430 2GB GDDR5 DP+VGA Graphics Card

Engine Clock	780 MHz
Memory Clock	1100 MHz
Memory Size(width)	2 GB (64-bit)
Memory Type	256M x 32 GDDR5
Max. Resolution(VGA)	2048x1536
Max. Resolution(DP)	4096x2160@60Hz
Multi Display Support	2 displays
HDCP Compliance	Yes
Rear I/O connectors(bracket)	DP+VGA

Not all configuration components are available in all regions/countries.

Page 23

c06411995 — DA‑16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Graphics

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(64-bit)
Memory Type	256M x 32 GDDR5
Max. Resolution(DP)	4096x2160@60Hz
Multi Display Support	2 displays
HDCP Compliance	Yes
Rear I/O connectors(bracket)	DPx2
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
Engine Clock	780 MHz

NVIDIA® GeForce® GT 730 2GB DP DVI PCIe x8 GFX

Engine Clock	902 MHz
Memory Clock	1250 MHz
Memory Size(width)	2 GB (64-bit)
Memory Type	256Mx32 GDDR5
Max. Resolution(DVI)	2560 x 1600 x 30 bpp @ 60Hz (Dual Link)
Max. Resolution(DP)	Up to 2 displays
Multi Display Support	Yes
HDCP Compliance	DL DVI-I + DP
Rear I/O connectors(bracket)	Active fan-sink (Active cooling with dynamic speed)
Cooling(active/passive)	35 W
Total power consumption(W)	2-pin fan connector for fan sink power/speed control
PCB form-factor with bracket	902 MHz

Not all configuration components are available in all regions/countries.

Page 24

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Storage

STORAGE

3.5 inch SATA HARD DISC DRIVES (HDD)

500 GB 7200RPM 3.5in SATA HDD

Capacity	500 GB
Rotational Speed	7,200 rpm
Interface	SATA 6.0 Gb/s
Buffer Size	32 MB
Logical Blocks	976,773,168
Seek Time	11 ms (Average)
Height	1 in/2.54 cm
Width	Media diameter: 3.5 in/8.89 cm Physical size: 4 in/10.2 cm
Operating Temperature	41° to 131° F (5° to 55° C)

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

1 TB 7200RPM 3.5in SATA HDD

Capacity	1 TB
Rotational Speed	7,200 rpm
Interface	SATA 6 Gb/s
Buffer Size	64 MB
Logical Blocks	1,953,525,168
Seek Time	11 ms (Average)
Height	1 in/2.54 cm
Width	Media diameter: 3.5 in/8.89 cm Physical size: 4 in/10.2 cm
Operating Temperature	41° to 131° F (5° to 55° C)

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.

2 TB 7200RPM 3.5in SATA HDD

Capacity	2 TB
Rotational Speed	7,200 rpm
Interface	SATA 6 Gb/s
Buffer Size	64 MB
Logical Blocks	1,953,525,168
Seek Time	11 ms (Average)
Height	1.028 in/26.11 mm

Not all configuration components are available in all regions/countries.

Page 25

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Storage

Width (nominal)	4.0 in/101.6 mm
Operating Temperature	41° to 131° F (5° to 55° C)

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

2.5 inch SATA HARD DISC DRIVES (HDD)

2 TB 5400RPM 2.5in SATA HDD

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 (nominal)	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.

500 GB 7200RPM 2.5in SATA HDD

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/7.2 mm (Maximum)
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.

1 TB 7200RPM 2.5in SATA HDD

Capacity	1 TB
Rotational Speed	7,200 rpm
Interface	SATA 6 Gb/s
Buffer Size	32 MB
Logical Blocks	1,953,525,168

Not all configuration components are available in all regions/countries.

Page 26

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Storage

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.

500 GB 7200RPM 2.5in Self Encrypted OPAL2 SATA HDD

Capacity	500 GB
Architecture	Self-Encrypting (SED) Solid State Drive with SATA interface
Interface	SATA 6 Gb/s
Buffer Size	128 MB
Logical Blocks	976,773,168
Seek Time	12 ms (Average)
Height	0.267 in/7.2 mm (Maximum)
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.

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

Drive Weight	500 GB
Capacity	Self-Encrypting (SED) Solid State Drive with SATA interface
Height	SATA 6 Gb/s
Length	128 MB
Width	976,773,168
Interface	12 ms (Average)
Maximum Sequential Read	0.267 in/7.2 mm (max.)
Maximum Sequential Write	2.75 in/70 mm (nominal)
Logical Blocks	41° to 131° F (5° to 55° C)
Operating Temperature	500 GB
Features	Self-Encrypting (SED) Solid State Drive with SATA interface

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.

Not all configuration components are available in all regions/countries.

Page 27

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Storage

2.5 inch SOLID STATE DRIVES (SSD)

256 GB 2.5in SATA Three Layer Cell SSD

Drive Weight	<62g
Capacity	256 GB
Height	7mm
Length	100.45mm
Width	69.85mm
Interface	SATA 3.0 (6Gb/s)
Maximum Sequential Read	Up to 530MB/s
Maximum Sequential Write	Up to 450MB/s
Logical Blocks	500,118,192
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	DIPM; TRIM

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

512 GB 2.5in SATA Three Layer Cell SSD

Drive Weight	<50g
Capacity	512 GB
Height	7mm
Length	100.45mm
Width	69.85mm
Interface	SATA 3.0 (6Gb/s)
Maximum Sequential Read	Up to 530MB/s
Maximum Sequential Write	Up to 500MB/s
Logical Blocks	1,000,215,216
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	DIPM; TRIM

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

256 GB 2.5in SATA Self Encrypted OPAL2 Three Layer Cell SSD

Drive Weight	<50g
Capacity	256 GB
Height	7mm
Length	100.45mm
Width	69.85mm
Interface	SATA 3.0 (6Gb/s)
Maximum Sequential Read	Up to 530MB/s
Maximum Sequential Write	Up to 500MB/s
Logical Blocks	500,118,192

Not all configuration components are available in all regions/countries.

Page 28

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Storage

Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	DIPM; TRIM; TCG-OPAL2.0 security

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.

512 GB 2.5in SATA Self Encrypted OPAL2 Three Layer Cell SSD

Drive Weight	<50g
Capacity	512 GB
Height	7mm
Length	100.45mm
Width	69.85mm
Interface	SATA 3.0 (6Gb/s)
Maximum Sequential Read	Up to 530MB/s
Maximum Sequential Write	Up to 500MB/s
Logical Blocks	1,000,215,216
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	DIPM; TRIM; TCG-OPAL2.0 security

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.

256 GB 2.5in SATA Self Encrypted Federal Information Processing Standard SSD

Drive Weight	<40g
Capacity	256 GB
Height	7mm
Length	100.45mm
Width	69.85mm
Interface	SATA 3.0 (6Gb/s)
Maximum Sequential Read	Up to 530MB/s
Maximum Sequential Write	Up to 500MB/s
Logical Blocks	500,118,192
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	DIPM; TRIM; FIPS 140-2 security

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.

512 GB 2.5in SATA Self Encrypted Federal Information Processing Standard SSD

Drive Weight	<45g
Capacity	512 GB
Height	7mm
Length	100.45mm
Width	69.85mm

Not all configuration components are available in all regions/countries.

Page 29

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Storage

Interface	SATA 3.0 (6Gb/s)
Maximum Sequential Read	Up to 530MB/s
Maximum Sequential Write	Up to 500MB/s
Logical Blocks	1,000,215,216
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	DIPM; TRIM; FIPS 140-2 security

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.

M.2 PCIe NMVe SOLID STATE DRIVES (SSD)

256 GB M.2 2280 PCIe NVMe SSD

Drive Weight	< 10g
Capacity	256 GB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3
Maximum Sequential Read	Up to 1600MB/s
Maximum Sequential Write	Up to 780MB/s
Logical Blocks	500,118,192
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	APST; ASPM L1.2; NVME spec 1.2

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.

512 GB M.2 2280 PCIe NVMe SSD

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

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.

Not all configuration components are available in all regions/countries.

Page 30

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Storage

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

Drive Weight	< 10g
Capacity	128 GB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3x4
Maximum Sequential Read	Up to 2800MB/s
Maximum Sequential Write	Up to 600MB/s
Logical Blocks	250,069,680
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	APST; ASPM L1.2; NVME spec 1.2

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.

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

Drive Weight	< 10g
Capacity	256GB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3x4
Maximum Sequential Read	Up to 2700MB/s
Maximum Sequential Write	Up to 1000MB/s
Logical Blocks	500,118,192
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	APST; ASPM L1.2; NVME spec 1.2

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.

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

Drive Weight	< 10g
Capacity	512 GB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3x4
Maximum Sequential Read	Up to 2900MB/s
Maximum Sequential Write	Up to 1100MB/s
Logical Blocks	1,000,215,216
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]

Not all configuration components are available in all regions/countries.

Page 31

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Storage

Features	APST; ASPM L1.2; NVME spec 1.2

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.

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

Drive Weight	< 10g
Capacity	1 TB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3x4
Maximum Sequential Read	Up to 3480MB/s
Maximum Sequential Write	Up to 3037MB/s
Logical Blocks	2,000,409,264
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	TRIM; ASPM L1.2

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.

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

Drive Weight	< 10g
Capacity	2 TB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3x4
Maximum Sequential Read	Up to 3000MB/s
Maximum Sequential Write	Up to 2900MB/s
Logical Blocks	3,907,029,168
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	TRIM; ASPM L1.2

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.

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

Drive Weight	< 10g
Capacity	256 GB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3x4

Not all configuration components are available in all regions/countries.

Page 32

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Storage

Maximum Sequential Read	Up to 2700MB/s
Maximum Sequential Write	Up to 1000MB/s
Logical Blocks	500,118,192
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	APST; ASPM L1.2; NVME spec 1.2; TCG-OPAL2 security

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.

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

Drive Weight	< 10g
Capacity	512 GB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3x4
Maximum Sequential Read	Up to 2900MB/s
Maximum Sequential Write	Up to 1100MB/s
Logical Blocks	1,000,215,216
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	APST; ASPM L1.2; NVME spec 1.2; TCG-OPAL2 security

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.

OPTICAL DISC DRIVES

HP 9.5mm Slim DVD-ROM Drive

Height	9.5 mm height
Orientation	Either horizontal or vertical
Interface type	SATA/ATAPI
Dimensions (W x H x D)	5.04 x 0.37 x 5.0 in (128 x 9.5 x 127 mm) without bezel
Weight (max)	Up to 0.31 lb (140g) without bezel
Read Speeds	DVD+R/-R/+RW/ -RW/+R DL /-R DL Up to 8X DVD-ROM Up to 8X CD-ROM, CD-R Up to 24X CD-RW Up to 24X
Access time (typical reads, including settling)	Random: DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical) Full stroke: DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical)
Power	Source Slimline SATA DC power receptacle DC Power Requirement 5 VDC ± 5%-100 mV ripple p-p DC Current 5 VDC (< 1000 mA typical, 1600 mA maximum)

Not all configuration components are available in all regions/countries.

Page 33

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Storage

Environmental conditions (operating - non- condensing)	Temperature 41° to 122° F (5° to 50° C) Relative Humidity 10% to 80% Maximum Wet Bulb Temperature 84° F (29° C)

HP 9.5mm Slim DVD Writer Drive

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

HP 9.5mm Slim Blu-Ray Writer Drive

Height	9.5 mm height
Orientation	Either horizontal or vertical
Interface type	SATA/ATAPI
Disc recording capacity	Up to 128 GB QL, 100 GB TL, 50 GB DL or 25 GB standard SL
Dimensions (W x H x D)	5.04 x 0.37 x 5.0 in (128 x 9.5 x 127 mm) without bezel
Weight (max)	0.29 lb (132 g)
Write Speeds	BD-R SL/DL Up to 6X BD-R TL/QL Up to 4X BD-RE Up to 2X DVD-R Up to 8X DVD-RW Up to 6X DVD+R Up to 8X DVD+RW Up to 8X DVD-RAM Up to 5X CD-R Up to 24X

Not all configuration components are available in all regions/countries.

Page 34

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Storage

	CD-RW Up to 10X
Read Speeds	BD-ROM Up to 6X
	BD-R Up to 6X
	BD-RE SL/DL Up to 6X
	BD-RE TL Up to 4X
	DVD-ROM Up to 8X
	DVD-R Up to 8X
	DVD-RW Up to 8X
	DVD+R Up to 8X
	DVD+RW Up to 8X
	BDMV (AACS Compliant Disc)
	Up to 6x/2x (Read/Play)
	DVD-RAM Up to 5x
	DVD-Video (CSS Compliant Disc)
	Up to 8x/4x (Read/Play)
	CD-R/RW/ROM Up to 24x
	CD-DA (DAE) Up to 24X/10X (Read/Play)
Access time (typical reads, including settling)	Random BD-ROM: 205 ms (typical), DVD-ROM: 185 ms (typical), CD-ROM: 165 ms (typical)
	Full Stroke BD-ROM: 350 ms (typical), DVD-ROM: 345 ms (typical), CD-ROM: 340 ms (typical)
Power	Source Slimline SATA DC power receptacle
	DC Power Requirement 5 VDC ± 5%-100 mV ripple p-p
	DC Current 5 VDC -1200 mA typical, 2000 mA maximum
Environmental conditions (operating - non-condensing)	Temperature 41° to 122° F (5° to 50° C)
	Relative Humidity 10% to 80%
	Maximum Wet Bulb Temperature 84° F (29° C)

Not all configuration components are available in all regions/countries.

Page 35

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Networking and Communications

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 Disconnection: 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)

Intel® Ethernet I210-T1 Gigabit Network Adapter	
Connector	RJ-45
System Interface	PCI (Intel® proprietary) + SMBus
Data rates supported	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s
IEEE Compliance	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet)

Not all configuration components are available in all regions/countries.

Page 36

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Networking and Communications

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
Security & Manageability	Intel® vPro™ support with appropriate Intel® chipset components

Intel® 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) • 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

Not all configuration components are available in all regions/countries.

Page 37

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Networking and Communications

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 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
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).	

Not all configuration components are available in all regions/countries.

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Page 38

QuickSpecs

Technical Specifications – Networking and Communications

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)

Intel® 3168 802.11a/b/g/n/ac (1x1) 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
Frequency Band	802.11b/g/n • 2.402 – 2.482 GHz 802.11a/n • 4.9 – 4.95 GHz (Japan)

Technical Specifications – Networking and Communications

	• 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 : +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
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%

Not all configuration components are available in all regions/countries.

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Page 40

Technical Specifications – Networking and Communications

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).

Intel® 2 7265 802.11a/b/g/n/ac (2x2) WiFi® and Bluetooth® 4.2 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
	• 802.11n: 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 : +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

Not all configuration components are available in all regions/countries.

Page 41

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Networking and Communications

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

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).

Realtek RTL8822CE Wi-Fi® 5 (2x2) and Bluetooth® 5 Combo	
Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v
Interoperability	Wi-Fi® certified
Frequency Band	802.11b/g/n • 2.402 – 2.482 GHz 802.11a/n/ac • 4.9 – 4.95 GHz (Japan)

Not all configuration components are available in all regions/countries.

Page 42

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Networking and Communications

	• 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 & 80MHz)
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 • 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 mode :2.0 W • Receive mode :1.6 W • Idle mode (PSP) 180 mW (WLAN Associated) • Idle mode :50 mW (WLAN unassociated) • Connected Standby/Modern 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 with CNVi Interface
Dimensions	1. Type 2230 : 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm
Weight	1. Type 2230 : 2.8g 2. Type 126: 1.3g

Not all configuration components are available in all regions/countries.

Page 43

c06411995 — DA‑16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Networking and Communications

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 4.0/4.1/4.2/5.0 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
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)

Not all configuration components are available in all regions/countries.

Page 44

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Networking and Communications

Intel® 3168 802.11a/b/g/n/ac (1x1) 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
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 : +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
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

Not all configuration components are available in all regions/countries.

Page 45

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Networking and Communications

	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 Non-operating	14° to 158° F (–10° to 70° C) –40° to 176° F (–40° to 80° C)
Humidity	Operating Non-operating	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED White – Radio ON	

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).

Technical Specifications – Networking and Communications

Intel® 2 7265 802.11a/b/g/n/ac (2x2) WiFi® and Bluetooth® 4.2 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 • 802.11n: 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 WiF®i 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
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

Not all configuration components are available in all regions/countries.

Page 47

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Networking and Communications

	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	

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: 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

Not all configuration components are available in all regions/countries.

Page 48

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Networking and Communications

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)

Not all configuration components are available in all regions/countries.

Page 49

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Technical Specifications – Input/Output Devices

I/O DEVICES

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

	Keys	104, 105 layout (depending upon country)
Physical Characteristics	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)
	Operating voltage	5 VDC, +/-5%
	Power consumption	35mA (All LED on)
Electrical	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
	Keycaps	Low-profile design
	Switch actuation	60±10g nominal peak force with tactile feedback
	Switch life	10 million keystrokes (Life tester)
Mechanical	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft (1.8 m)
Environmental	Acoustics	43-dBA maximum sound pressure level

Not all configuration components are available in all regions/countries.

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Page 50

Technical Specifications – Input/Output Devices

	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)
	Operating voltage	4.4-5.25VDC
	Power consumption	50-mA maximum (with 5 VDC power supplied and three LEDs ON)
Electrical	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
	Keycaps	Low-profile design
	Switch actuation	60±10g nominal peak force with tactile feedback
	Switch life	10 million keystrokes (Life tester)
Mechanical	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
Environmental	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	Minus 30 degress to 60 degress Celsius

Not all configuration components are available in all regions/countries.

Page 51

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

QuickSpecs

QuickSpecs

Technical Specifications – Input/Output Devices

	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)	
	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)
Environmental	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
	Operating voltage	5 VDC, +/-5%
Electrical	Power consumption	12mA
	Connector	USB 2.0
Mechanical	Type	3D mouse (3 keys and wheel)
	Resolution	800, 1200, 1600 DPI
	Sensor	Pixart PAN3606DL
	Tracking acceleration	8G(max), 1G=9.8m/s2
Tracking speed	Cable length	6 ft (1.8 m)
	Color	Jack Black
Regulatory approvals	Compliant	UL, FCC, CE Mark, TUV GS, VCCI, BSMI, C-Tick, KC

Technical Specifications – Input/Output Devices

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

Not all configuration components are available in all regions/countries.

Page 53

c06411995 — DA‑16478 — Worldwide — Version 3 — November 1, 2019

AUDIO/MULTIMEDIA

HP EliteDesk 705 G5 Small Form Factor Business PC

Type	Integrated
HD Stereo Codec	Conexant Zuma 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 allows for 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 Synthesis	Yes - Uses OS soft wavetable
Analog Audio	Yes
# of Channels on Line-Out	Stereo (Left & Right channels)
Internal Speaker	Yes

HP EliteDesk 705 G5 Desktop Mini Business PC

Type	Integrated
HD Stereo Codec	Conexant Zuma 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 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
Multi-streaming Capable	Playback multi-streaming allows for 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 Synthesis	Yes - Uses OS soft wavetable
Analog Audio	Yes
# of Channels on Line-Out	Stereo (Left & Right channels)
Internal Speaker	Yes

Not all configuration components are available in all regions/countries.

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

Page 54

Technical Specifications – Power

POWER

HP EliteDesk 705 G5 Small Form Factor Business PC
UNIT ENVIRONMENT AND OPERATING CONDITIONS

Temperature Range	Operating : 5°C ~50°C Non-Operating : -40°C ~66°C
Relative Humidity	Operating 5% to 90% relative humidity at max inlet temperature Non-Operating 5% to 90% relative humidity at max inlet temperature
Maximum Altitude (unpressurized)	Operating: 5000m Non-operating: 50,000 ft (15240 m)

HP EliteDesk 705 G5 Desktop Mini Business PC
UNIT ENVIRONMENT AND OPERATING CONDITIONS

Temperature Range	Operating : 5°C ~35°C Non-Operating : -40°C ~66°C
Relative Humidity	Operating 5% to 90% relative humidity at max inlet temperature Non-Operating 5% to 90% relative humidity at max inlet temperature
Maximum Altitude (unpressurized)	Operating: 5000m Non-operating: 50,000 ft (15240 m)

	DM	SFF
80 PLUS Platinum		180W active PFC 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	90Vac~264Vac
Rated Voltage Range	100Vac~240Vac	100Vac~240Vac
Rated Line Frequency	50HZ~60HZ	50HZ~60HZ
Operating Line Frequency	47HZ~63HZ	47HZ~63HZ
Rated Input Current	65W$\leqq$1.6A 90W$\leqq$1.2A 150WW$\leqq$2.2A	180W$\leqq$2.3A
Rated Input Current with Energy Efficient* Power Supply	65W$\leqq$1.6A 90W$\leqq$1.2A 150WW$\leqq$2.2A	180W$\leqq$2.3A
DC Output	+19.5V	+12V
Current Leakage (NFPA 99: 2102)	Less than 500 microamps of leakage current at 120 Vac with the ground wire disconnected, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.	Less than 500 microamps of leakage current at 120 Vac with the ground wire disconnected, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.

QuickSpecs

Technical Specifications – Power

	Less than 100 microamps of leakage current at 120 Vac with the ground wire intact with normal polarity, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.	Less than 100 microamps of leakage current at 120 Vac with the ground wire intact with normal polarity, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.
Power Supply Fan	N/A	50mm variable speed
Power cord length	6.0 ft. (1.83 m)	6.0 ft. (1.83 m)
External Power Adapter	External power supply 65W EPS, 88% average efficiency at 115V & 89% at 230Vac 90W EPS, 88% average efficiency at 115V & 89% at 230Vac 150W EPS, 88% average efficiency at 115V & 89% at 230Vac	Internal power supply
Dimensions	65W : 113.5mm x 55mm x 30mm 90W : 132.5mm x 57mm x 30.3mm 150W : 167.5mm x 80mm x 40.5mm	200mm x 85mm x 53mm

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

Condition	Standard Efficiency	82/85/82%	85/88/85%	87/90/87%	90/92/89%	Input Voltage
10% of Rated Load	-	75%	81%	84%	84%	115Vac/60HZ
20% of Rated Load	-	82%	85%	87%	90%	115Vac/60HZ
50% of Rated Load	-	85%	88%	90%	92%	115Vac/60HZ
	PF>0.9	PF>0.9	PF>0.9	PF>0.9	PF>0.95	
100% of Rated Load	70%	82%	85%	87%	89%	115Vac/60HZ
	PF>0.9	PF>0.9	PF>0.9	PF>0.9	PF>0.9	230Vac/50HZ

QuickSpecs

Technical Specifications – Weights and Dimensions

WEIGHTS & DIMENSIONS

	DM	SFF
Chassis (W x D x H) Not including bezel	6.97 x 6.89 x 1.35 in 177 x 175 x 34.2mm	3.7 10.6 x 11.7 in 95 x 270 x 296 mm
System Volume	64 cu in 1.05 L	463 cu in 7.6 L
Max System Weight	1.265kg	5.88 KG
Max Supported Weight (desktop orientation)	0	77 lb 35kg
Stand Dimensions	160x117x18.5mm	
Packaging (W x D x H)	19.57 x 5.04 x 8.78 in 497 x 128 x 223 mm	15.71 x 9.06 x 19.65 in 399 x 230 x 499 mm
Shipping Weight	2.95 kg 6.49 lb	16.12 lb. 7.32 kg
Shipping Weight (Molded Pulp)		16.62 lb 7.54kg
Multipack Packaging (10 units)	20.28x16.54x25 in 515x420x636 mm	
Palletization Profile	18-units per layer 5 or 6 layers max depending on details of air freight 90 or 108 units per pallet depending on details of air freight 45.354 x 39.13 x 57.80 in, 1152 x 994 x 1468 mm (include pallet)	6-units per layer 60 per pallet 47.24 x 39.37 x 94.49 in (including pallet) 10 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)

Not all configuration components are available in all regions/countries.

Page 58

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

After Market Options

AFTER MARKET OPTIONS

Graphics Solutions	DM	SFF	Part Number
AMD® Radeon™ R7 430 2GB Display Port VGA 64bit Card[1]		X	5JW81AA
AMD® Radeon™ RX550X 4GB Display Port Card		X	5LH79AA
NVIDIA GeForce GT730 DP 2GB PCIe x8 GFX		X	Z9H51AA
HP DisplayPort™ To HDMI True 4k Adapter	X	X	2JA63AA
HP DVI Cable Kit		X	DC198A
HP HDMI Standard Cable Kit	X	X	T6F94AA
HP DisplayPort™ Cable Kit	X	X	VN567AA
HP DisplayPort™ To DVI-D Adapter	X	X	FH973AA
HP DisplayPort™ To VGA Adapter	X	X	AS615AA

1.Not available in all regions

Desktop Mini Accessories	DM	SFF	Part Number
HP Desktop Mini Port Cover Kit	X		1ZE52AA
HP Mini 2.5-inch SATA Drive Bay Kit	X		3TK91AA
HP Desktop Mini LockBox V2[1]	X		3EJ57AA
HP Desktop Mini DVD-Writer ODD Expansion Module	X (Either one)		K9Q83AA
HP Desktop Mini I/O Expansion Module			K9Q84AA
HP Desktop Mini Security/Dual VESA Sleeve v2[1]	X		2JA32AA
HP Desktop Mini Security/Dual VESA Sleeve v2 with Power Supply Holder[1]	X		7DB36AA
HP B300 PC Mounting Bracket	X		2DW53AA
HP B300 PC Mounting Bracket with Power Supply Holder	X		7DB37AA
HP B500 PC Mounting Bracket	X		2DW52AA
HP Desktop Mini Vertical Chassis Stand	X		G1K23AA
HP DM VESA Power Supply Holder Kit v2	X		7DB38AA
HP Quick Release Bracket 2	X		6KD15AA
HP Single Monitor Arm	X		BT861AA

1.Not available in all regions

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

QuickSpecs

After Market Options

Input Devices	DM	SFF	Part Number
HP USB (Grey) SmartCard CCID Keyboard		X	J7H70AA
HP USB Antimicrobial Business Slim Keyboard and Mouse (China Only)		X	Z9H50AA
HP USB Buisness Slim CCID SmartCard Keyboard		X	Z9H48AA
HP USB Business Slim (Grey) Keyboard (EMEA Only)		X	Z9H49AA
HP USB Business Slim Keyboard	X	X	N3R87AA
HP USB Business Slim Keyboard and Mouse and Mousepad	X	X	T4E63AA
HP USB Collaboration Keyboard	X	X	Z9N38AA
HP USB Conferencing Keyboard		X	K8P74AA
HP USB Keyboard	X	X	QY776AA
HP USB Keyboard and Mouse Healthcare Edition			1VD81AA
HP USB Premium Keyboard	X	X	Z9N40AA
HP USB PS/2 Washable Keyboard & Mouse	X	X	BU207AA
HP Wireless Business Slim Keyboard and Mouse	X	X	N3R88AA
HP Wireless Collaboration Keyboard	X	X	Z9N39AA
HP Wireless Premium Keyboard	X	X	Z9N41AA
HP PS/2 Business Slim Keyboard	X	X	N3R86AA
HP USB Grey v2 Mouse (EMEA only)		X	Z9H74AA
HP USB Premium Mouse		X	1JR32AA
HP PS/2 Mouse	X	X	QY775AA
HP USB 1000dpi Laser Mouse	X	X	QY778AA
HP USB Hardened Mouse		X	P1N77AA
HP USB Mouse	X	X	QY777AA

System Memory	DM	SFF	Part Number
HP 4GB DDR4-2666 DIMM		X	3TK85AA
HP 8GB DDR4-2666 DIMM		X	3TK87AA
HP 16GB DDR4-2666 DIMM		X	3TK83AA
HP 4GB DDR4-2666 SODIMM	X		3TK86AA
HP 8GB DDR4-2666 SODIMM	X		3TK88AA
HP 16GB DDR4-2666 SODIMM	X		3TK84AA

Multimedia Devices	DM	SFF	Part Number
HP Business Headset v2	X	X	T4E61AA
HP USB Business Speakers v2	X	X	N3R89AA

Security Devices	DM	SFF	Part Number
HP Solenoid Lock & Hood Sensor (MT)			J6L42AA
HP Business PC Security Lock v3 Kit		X	3XJ17AA
HP Dual Head Keyed Cable Lock		X	T1A64AA

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Page 60

c06411995 — DA-16478 — Worldwide — Version 3 — November 1, 2019

After Market Options

HP Keyed Cable Lock 10mm	X	X	T1A62AA
HP Master Keyed Cable Lock 10mm	X	X	T1A63AA

I/O Devices	DM	SFF	Part Number
HP DisplayPort™ Port Flex IO	X[1]	X	3TK72AA
HP HDMI Port Flex IO	X[1]	X	3TK74AA
HP Type-C™ USB 3.1 Gen2 Port Flex IO	X[1]	X	3TK78AA
HP VGA Port Flex IO	X[1]	X	3TK80AA
HP Serial Port Flex IO	X[1]	X	3TK76AA
HP Internal Serial Port (in rear wall)		X	3TK81AA
HP PCIe x1 Parallel Port PCIe Card		X	N1M40AA
HP Serial/ PS/2 Adapter (occupies PCIe slot)		X	1VD82AA
1.Not available in all regions **NOTE:** For more detail on HP I/O Devices please refer to the HP FLEX IO Option Cards QuickSpecs. URL is: http://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c06042607			

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Page 61

c06411995 — DA‑16478 — Worldwide — Version 3 — November 1, 2019

Change Log

Date	Version History	Action	Description of Change
October 8, 2019	From v1 to v2	Update	Second bullet added to At a glance section
November 1, 2019	From v2 to v3	Update	EPEAT references updated / Power Factor table added to Power Supply

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Page 62

c06411995 — DA‑16478 — Worldwide — Version 3 — November 1, 2019