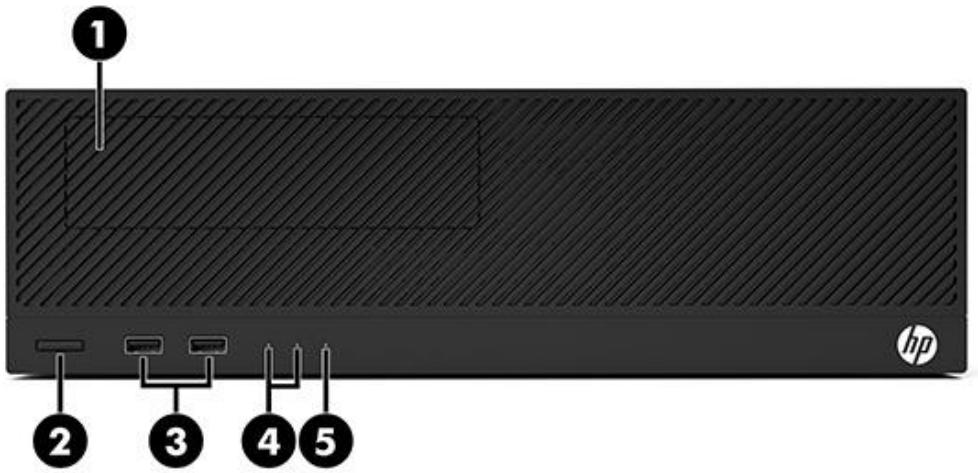
Overview

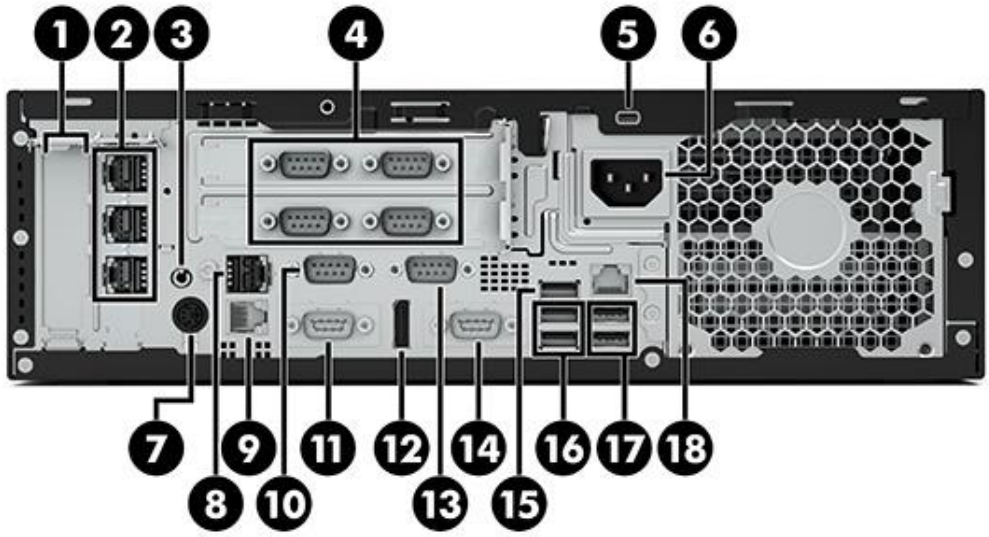
HP Engage Flex Pro Retail System



Front View

1. 5.25” external optical drive (optional)
2. Power button
3. 2 USB 3.1 Gen 1 Type-A ports
4. NIC Link indicator LED
5. Hard Drive LED

Overview

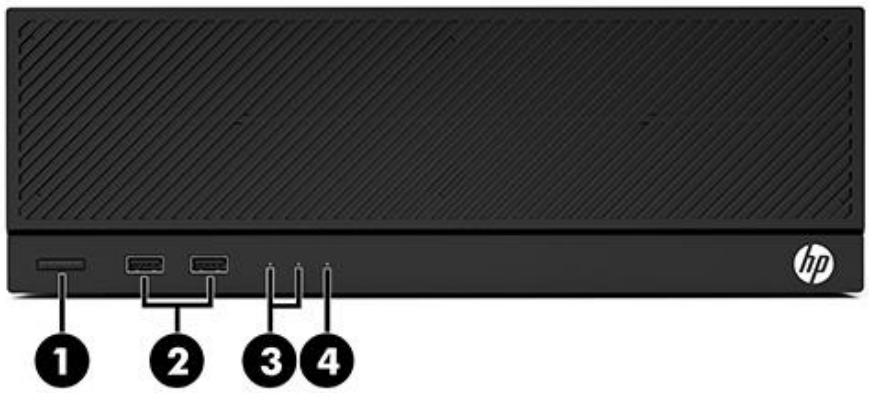


Rear View

1. PCIe x16 expansion slot (optional)**
2. PCIe x4 expansion slot (optional)**
3. Audio-out (headphone)/Audio-in (microphone) combo jack
4. PCIe x1 expansion slots (2) (optional)*
5. Security cable slot
6. Power connector
7. PS/2 keyboard/mouse combo port
8. USB port, 24 V (optional)
9. Cash drawer port (optional)
10. Serial port (optional)
11. Optional port
    - USB Type-C™ port
    - DisplayPort™ port
    - HDMI port
    - 2nd ethernet port
    - VGA port
12. DisplayPort™ monitor connector
13. Serial port (optional)
14. Optional
    - DisplayPort™ port
    - HDMI port
    - VGA port
15. USB 3.1 Gen 1 Type-A port with HP Sleep and Charge
16. USB 3.1 Gen 1 Type-A ports (2)
17. USB 2.0 ports (2)
18. RJ-45 (network) jack

* Can be configured either as two (2) PCI x1 or two (2) PCIe x1 Full-Height slots. Shown is optional 2 Port RS232 serial cards
**A variety of cards are available to populate slots, dependent on riser choice and connectors utilized. For full details, please contact your HP sales representative for configuration choices.

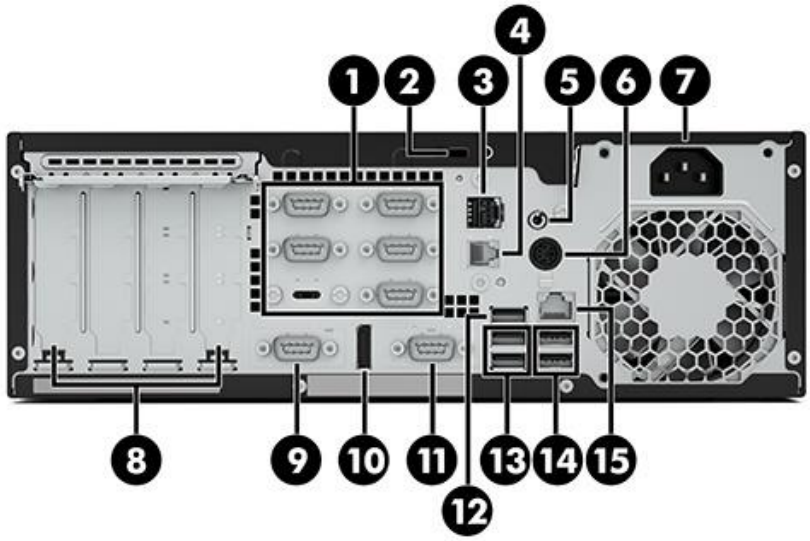
HP Engage Flex Pro-C Retail System



Front View

1. Power button
2. 2 USB 3.1 Gen 1 Type-A ports
3. NIC Link indicator LED
4. Hard Drive LED

Overview



Rear View

1. Serial port (optional)
2. Security cable slot
3. USB Port, 24V (optional)
4. Cash drawer port (optional)
5. Audio-out (headphone)/Audio-in (microphone) combo jack
6. PS/2 keyboard/mouse combo port
7. Power connector
8. PCIe expansion slots (4)**
9. Optional port
   - USB Type-C™ port
   - DisplayPort™ port
   - HDMI port
   - 2nd ethernet port
   - VGA Port
10. DisplayPort™ port
11. Optional
    - DisplayPort™ port
    - HDMI port
    - VGA port
12. USB 3.1 Gen 1 Type-A port with HP Sleep and Charge
13. USB 3.1 Gen 1 Type-A ports (2)
14. USB 2.0 ports (2)
15. RJ-45 (network) jack

**A variety of cards are available to populate slots, dependent on riser choice and connectors utilized. For full details, please contact your HP sales representative for configuration choices.

Overview

Introduction

Efficiently manage your retail business from the store floor to the back office with the HP Engage Flex Pro, our stable, secure, and highest-performing retail platform that delivers maximum flexibility for a range of deployments.

At A Glance

- Choice of two form factors: HP Engage Flex Pro, or the smaller HP Engage Flex Pro-C
- Intel® Q370 chipset supporting Intel® 8th generation Intel ® Core™ processors, featuring integrated Intel® UHD Graphics and Intel® vPro™ Technology (vPro™ is optional and requires factory configuration, available with Core i5 and Core i7 processors only)[4]
- HP developed and engineered UEFI BIOS supporting security, manageability and software image stability
- Choice of the following pre-installed operating systems:
  - Windows 10 Pro, 64-bit[1]
  - Windows 10 IoT Enterprise LTSC, 64-bit[1]
  - FreeDOS
- Support for 35W and 65W processors
- Integrated 10/100/1000 Ethernet Controller, with optional 802.11ac Wi-Fi and/or Bluetooth® 5.0
- Up to 64GB DDR4 Synchronous Dynamic Random Access Memory (SDRAM)
- Support for up to three video outputs via 1 standard video connector and two optional video port connectors which provide the following choices: DisplayPort™ 1.2, HDMI™ 2.0, VGA, or USB Type-C™ with Display Output
- Discrete graphics options available
- 90% high efficiency energy saving power supply
- ENERGY STAR 7.0 certified models available (dependent upon the desired configuration)
- Can be configured with multiple hard disk drives in a RAID array
- HP SureStart Gen4
- HP BIOSphere Gen4
- HP Client Security Manager Gen4
- HP Sure Click
- HP Manageability Integration Kit Gen2
- HP Image Assistant Gen3
- HP Support Assistant
- High efficiency energy saving power supply
- ENERGY STAR® certified. EPEAT® Gold registered where applicable/supported. Registration may vary by country. See http://www.epeat.net for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at http://www.hp.com/go/options
- Intel® Optane™ memory available as optional feature
- 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
- Tool-less serviceability features for easier upgrades and repairs
- 40°C ambient thermals standard.
- Tool-less serviceability for easy upgrades and repair
- Optional retail I/O ports including cash drawer port.
- Configurable Full-Height expansion slots; must choose either a PCI x1 Riser or PCIe x1 Riser. The choice of riser will affect which cards can be utilized.

NOTE: All models and features may not be available in all countries

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

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

Operating Systems

Preinstalled	Windows 10 Pro, 64-bit*
	Windows 10 IoT Enterprise 2016 LTSC, 64-bit*
	FreeDOS
Certified	SuSE Linux® 12 SP3**

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

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

**The following features are not supported by SUSE Linux® Enterprise Desktop:

- Power Management features
- Multi-touch capabilities
- Systems configured with Linux® do not qualify for ENERGY STAR®

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

Retail Solutions Services and Features

Intel® Stable Image Platform Program (SIPP)
Intel® vPro™ Technology*
HP Global Series Services
Factory Express Deployment and Lifecycle Services
Intel® Standard Manageability
Trusted Platform Module (TPM) v2.0**

*Intel® vPro™ Technology available on models with Intel® Core™ i7 and Intel® Core™ i5 processors.
**TPM module disabled where restricted by law, i.e. Russia.

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.

Chipset

Intel® Q370

Processor

Intel® Celeron® Processors

Intel® Celeron® G4900 Processor
54W
3.1 GHz base frequency
2 MB cache, 2 cores, 2 threads
Intel® UHD Graphics 610
Supports DDR4 memory up to 2400 MT/s data rate

Intel® Celeron® G4900T Processor
35W
2.9 GHz base frequency
2 MB cache, 2 cores, 2 threads
Intel® UHD Graphics 610
Supports DDR4 memory up to 2400 MT/s data rate

Intel® Pentium® Processors

Intel® Pentium® Gold G5400 Processor
54W
3.7 GHz base frequency
4 MB cache, 2 cores, 4 threads
Intel® UHD Graphics 610

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

Supports DDR4 memory up to 2400 MT/s data rate

Intel® 8th Generation Core™ i3 Processors

Intel® Core™ i3 8100 Processor[1]
65W
3.6 GHz base frequency
6 MB cache, 4 cores, 4 threads
Intel® UHD Graphics 630
Supports DDR4 memory up to 2400 MT/s data rate

Intel® Core™ i3 8100T Processor[1]
35W
3.1 GHz base frequency
6 MB cache, 4 cores, 4 threads
Intel® UHD Graphics 630
Supports DDR4 memory up to 2400 MT/s data rate

Intel® 8th Generation Core™ i5 Processors

Intel® Core™ i5 8500 Processor[1,3,4]
65W
3.0 GHz base frequency
Up to 4.1 GHz max. turbo frequency with Intel® Turbo Boost Technology3
9 MB cache, 6 cores, 6 threads
Intel® UHD Graphics 630
Supports DDR4 memory up to 2666 MT/s data rate
Supports Intel® vPro™ Technology and Intel® Stable Image Platform Program (SIPP) 4

Intel® Core™ i5+ 8500 Processor (Core i5 and Intel® Optane™)[1,2,3,4]
65W
3.0 GHz base frequency
Up to 4.1 GHz max. turbo frequency with Intel® Turbo Boost Technology3
9 MB cache, 6 cores, 6 threads
Intel® UHD Graphics 630
Supports DDR4 memory up to 2666 MT/s data rate
Supports Intel® vPro™ Technology and Intel® Stable Image Platform Program (SIPP) 4

Intel® Core™ i5 8500T Processor[1,3,4]
35W
2.1 GHz base frequency
Up to 3.5 GHz max. turbo frequency with Intel® Turbo Boost Technology3
9 MB cache, 6 cores, 6 threads
Intel® UHD Graphics 630
Supports DDR4 memory up to 2666 MT/s data rate
Supports Intel® vPro™ Technology and Intel® Stable Image Platform Program (SIPP) 4

Intel® Core™ i5+ 8500T Processor (Core i5 and Intel® Optane™)[1,2,3,4]
35W

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

2.1 GHz base frequency
Up to 3.5 GHz max. turbo frequency with Intel® Turbo Boost Technology3
9 MB cache, 6 cores, 6 threads
Intel® UHD Graphics 630
Supports DDR4 memory up to 2666 MT/s data rate
Supports Intel® vPro™ Technology and Intel® Stable Image Platform Program (SIPP) 4

Intel® 8th Generation Core™ i7 Processors

Intel® Core™ i7 8700 Processor[1,3,4]
65W
3.2 GHz base frequency
Up to 4.6 GHz max. turbo frequency with Intel® Turbo Boost Technology3
12 MB cache, 6 cores, 12 threads
Intel® UHD Graphics 630
Supports DDR4 memory up to 2666 MT/s data rate
Supports Intel® vPro™ Technology and Intel® Stable Image Platform Program (SIPP)4

Intel® Core™ i7+ 8700 Processor (Core i7 and Intel® Optane™)[1,2,3,4]
65W
3.2 GHz base frequency
Up to 4.6 GHz max. turbo frequency with Intel® Turbo Boost Technology3
12 MB cache, 6 cores, 12 threads
Intel® UHD Graphics 630
Supports DDR4 memory up to 2666 MT/s data rateSupports Intel® vPro™ Technology and Intel® Stable Image Platform Program (SIPP) 4

1. Multi-core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering, branding and/or naming is not a measurement of higher performance.
2. Intel® Optane™ memory system acceleration does not replace or increase the DRAM in your system and requires configuration with an optional Intel® Core™ i(5 or 7)+ processor.
3. Intel® Turbo Boost technology requires a PC with a processor with Intel® Turbo Boost capability. Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See www.intel.com/technology/turboboost for more information.
4. Some functionality of vPro technology, such as Intel® Active management technology and Intel Virtualization technology, requires additional 3rd party software in order to run. Availability of future "virtual appliances" applications for Intel® vPro technology is dependent on 3rd party software providers. Compatibility with future "virtual appliances" is yet to be determined
NOTE: S-Processor 6+2 DDR4 2666 MT/s 2 DPC UDIMM is supported when channel is populated with the same UDIMM part number

Intel® vPro™ Technology

All HP Engage Flex Pro Retail System models featuring this technology include processors that are part of the Intel® Stable Image Platform Program (SIPP) designed to ensure the stability promise inherent in the value proposition of the HP Engage Flex Pro, making this model a stable, secure, and manageable platforms available to retailers today.

Intel® Advanced Management Technology (AMT) v12 – An advanced set of remote management features and functionality which provides network administrators the latest and most effective tools to remotely discover, heal, and protect networked

client systems regardless of the system's health or power state. AMT 12 includes the following advanced management functions:

- Support for configuration of Intel® AMT 12.0 new capabilities
- No reset after provisioning
- Support changes to BIOS table 130
- Support for Microsoft Windows Server 2012 R2
- Support for New Microsoft SQL Server Versions including Standard and Enterprise editions
- Support for Intel® SSD Prop 2500 Series
- Support for Intel® Enterprise Digital Fence
- The Platform Discovery Utility can now discover these additional Intel® products:
- Intel® SSD Pro 2500 Series; Enterprise Digital Fence
- Intel® Identity Protection Technology with One Time Password; Public Key Infrastructure; Multi Factor Authentication
- Intel® Identity Protection Technology with Intel® WiGig
- New Profile Editor and Profile Editor Plugin Interface
- New Required Permissions for Solutions Framework

Redundant Array of Independent Drives (RAID)

Flexible implementation:

- DriveLock is supported while in RAID mode. Users can manage the DriveLock password from within F10 Setup. Locked drives will be displayed as such in the RAID option ROM interface.
- Hard drive information can be viewed within F10 Setup while in RAID mode. Previously, the hard drives will not appear in Drive Configuration when switching to RAID mode.
- The RAID Setup Utility (accessed through CTRL-I) can be protected by the F10 Setup password.

NOTE:
RAID 1 is the only RAID configuration offered via HP factory configurations. The pre-configured systems:

- are complete RAID systems and have both drives installed.
- have the necessary Option ROM configuration.
- are pre-loaded and pre-installed with all required Intel® software.
- include a preinstalled operating system that is mirrored mode out of the box.

Please refer to the HP White Paper titled “Advanced Host Controller Interface (AHCI) and Redundant Array of Independent Disks (RAID) on HP Compaq PCs” at: http://www.hp.com for more information and instructions.

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

Memory

Type
DDR4-2666 Memory DIMMs, transfer rates up to 2666 MT/s

Maximum
64GB

Number of Slots
4 SODIMM

Memory Upgrades
Both slots are customer upgradeable/accessible.

Key Benefits of DDR4 Memory
Dual channel configuration – HP Engage Flex Pro features motherboards designed with two memory channels instead of a single channel.
Reduce system latencies and significantly improve your system performance with dual channel memory configurations by utilizing the theoretical bandwidth of two memory modules instead of one.
Expect fast start-up times with reduced delays during routine operations and system maintenance functions.
Meet everyday workloads head on, and run more programs simultaneously. Easily toggle back and forth between several open applications with noticeable speed.

CAUTION: You must shut down the Retail System and disconnect the power cord before adding or removing memory modules. Regardless of the power-on state, voltage is always supplied to the memory modules as long as the Retail System is plugged in to an active AC outlet. Adding or removing memory modules while voltage is present may cause irreparable damage to the memory modules or system board.

Memory Configurations:

Maximum Memory Supports up to 64 GB of DDR4 SDRAM using DIMM modules. Slot 1 is black and must always be populated. Not all memory configurations possible are represented below.

Total Memory	Slot			
	Channel A		Channel B	
	1 (black)	2 (white)	3 (black)	4 (white)
4 GB (dual channel symmetric)	4 GB			
8 GB (dual channel symmetric)	4 GB	4 GB	4 GB	4 GB
16 GB (dual channel symmetric)	4 GB	4 GB	4 GB	4 GB
32GB (dual channel symmetric)	8 GB	8 GB	8 GB	8 GB
64GB (dual channel symmetric)	16GB	16GB	16GB	16GB

NOTE: For systems configured with more than 3 GB of memory and a 32-bit operating system, all memory may not be available due to system resource requirements. Addressing memory above 4 GB requires a 64-bit operating system.
Memory modules support data transfer rates up to 2666 MT/s; actual data rate is determined by the system's configured processor and memory configuration. See processor specifications for supported memory data rate.
NOTE: All memory slots are customer accessible / upgradeable.
NOTE: S-Processor 6+2 DDR4 2666 MT/s 2 DPC UDIMM is supported when channel is populated with the same UDIMM part number.

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

Storage

3.5 inch SATA Hard Disk Drives (HDD)

	HP Engage Flex Pro	HP Engage Flex Pro-C
500 GB 7200RPM 3.5in SATA HDD	X	
1 TB 7200RPM 3.5in SATA HDD	X	
2 TB 7200RPM 3.5in SATA HDD	X	

2.5 inch SATA Hard Disk Drives (HDD)

	HP Engage Flex Pro	HP Engage Flex Pro-C
500 GB 7200RPM 2.5in SATA HDD	X	X
1 TB 7200RPM 2.5in SATA HDD	X	X
500 GB 7200RPM 2.5in Self Encrypted OPAL2 SATA HDD	X	X

2.5 inch SATA Solid State Hybrid Drives (SSHD)

	HP Engage Flex Pro	HP Engage Flex Pro-C
1TB 5400RPM 2.5in SATA SSHD	X	X

2.5 inch Solid State Drives (SSD)

	HP Engage Flex Pro	HP Engage Flex Pro-C
128 GB 2.5in SATA Three Layer Cell SSD	X	X
256 GB 2.5in SATA Three Layer Cell SSD	X	X
512 GB 2.5in SATA Three Layer Cell SSD	X	X
256 GB 2.5in SATA Self Encrypted OPAL2 Three Layer Cell SSD	X	X

	HP Engage Flex Pro	HP Engage Flex Pro-C
128 GB M.2 2280 PCIe NVMe Three Layer Cell SSD	X	X
256 GB M.2 2280 PCIe NVMe Three Layer Cell SSD	X	X
512 GB M.2 2280 PCIe NVMe Three Layer Cell SSD	X	X
1 TB M.2 2280 PCIe NVMe Three Layer Cell SSD	X	X

	HP Engage Flex Pro	HP Engage Flex Pro-C
HP 9.5mm Slim DVD-ROM Drive[1]	X	
HP 9.5mm Slim DVD Writer Drive[2]	X	

1. HD-DVD disks cannot be played on this drive. No support for DVD-RAM. Actual speeds may vary. Don't copy copyright-protected materials. Double Layer discs can store more data than single layer discs. Discs burned with this drive may not be compatible with many existing single-layer DVD drives and players.
2. Don't copy copyright-protected materials.
3. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

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

Security

Trusted Platform Module (TPM) 2.0[1]
Stringent security (via BIOS)[2]
SATA port disablement (via BIOS)
Drive lock
RAID configurations
Serial, parallel, USB enable/disable (via BIOS)
Optional USB Port Disable at factory (user configurable via BIOS)
Power Configurable Serial Ports (COM 1, 2, 3 and 4) via the HP BIOS
Removable media write/boot control
Power-On password (via BIOS)
Setup password (via BIOS)
& Intrusion Sensor
Intel® Identity Protection Technology (IPT)[3]
Wall Mount (sold separately)
Support for chassis cable lock devices
Support for chassis padlock devices

[1] TPM module disabled where use is restricted by law; for example, Russia.
[2] This setting is defaulted to disable, but when enabled, the PW jumper will not clear the BIOS pre-boot authentication passwords.
NOTE: TPM module disabled where use is restricted by law.
[3] Models configured with Intel® Core™ processors have the ability to utilize advanced security protection for online transactions. IPT, used in conjunction with participating web sites, provides double identity authentication by adding a hardware component in addition to the usual user name and password. IPT is initialized through an HP Client Security module.

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

I/O Ports

USB	USB 2.0: Rear: Two (2) USB 3.1 Gen1 Type A: Front: Two (2) Rear: Three (2, 1 charging)
USB 24V	One (1) 24V powered USB (optional)
Serial	Up to six (6) RS-232 (power configurable) optional ports
Parallel	One port available as an option*
USB+PWR 12V	Two (2) USB+PWR 12V cards optional (three (3) 12 Volt USB+ PWR per card) for a total of 6*
PS/2	One (1) universal support for keyboard or mouse
RJ-12	One (1) RJ-12 Cash Drawer port (optional)
Video	One (1) DisplayPort™ v2.0 and up to two additional (2) DisplayPort™ v2.0 as options Up to two (2) optional HDMI or VGA ports.
DVI output	Available via optional DisplayPort™ to DVI Adapter
Audio	Rear: Line input (supports microphone or line input) and optional line out All ports are 3.5mm in diameter
NIC	One (1) Industry standard RJ-45 port accesses the integrated network interface controller

*These options occupy slot openings so less slots will be available when the options are installed

Technical Specifications

Slots

	HP Engage Flex Pro	HP Engage Flex Pro-C
Full-Height	Total of Two (2) Full-Height Slots, with a ***Choice of either***: 1.) PCI x1 - Two (2) each: 4.2" full height, 6.6" length, 25W max. power 2.) PCIe x1 - Two (2) each: 4.2" full height, 6.6" length, 10W max. power	N/A
Half-Height	Total of Two (2) Half-Height: PCIe x16 (wired as x16) - One (1) each: 2.5 low profile, 6.6" length, 25W max. power PCIe x16 (wired as x4) - One (1) each: 2.5" low profile, 6.6" length, 10W max. power	Total of Four (4) Half-Height: PCIe x16 (wired as x16) - One (1) each: 2.5 low profile, 6.6" length, 25W max. power PCIe x16 (wired as x4) - One (1) each: 2.5" low profile, 6.6" length, 10W max. power PCIe x4 (wired as x4) - One (1) each: 2.5" low profile, 6.6" length, 10W max. power PCIe x4 (wired as x4) - One (1) each: 2.5" low profile, 6.6" length, 10W max. power

NOTE: Use of full-height slots requires optional PCI or PCIe Riser Card

Bays

	HP Engage Flex Pro	HP Engage Flex Pro-C
Internal HDD (3.5")	2	N/A
Internal HDD (2.5")	N/A[1]	2
External	1 each 5.25"	N/A
Storage M.2	2	2

[1]2.5" drives can be supported with a caddy

Controllers

Hard drive
SATA
Supports up to SATA 6.0 Gb/s

SATA interfaces
One (1) SATA 2.0
Two (2) SATA 3.0

Host SATA
Advanced Host Controller Interface (AHCI) Revision 1.2. The specification includes a description of the hardware/software interface between system software and the host controller hardware

Network Interface Connections

Intel® I210-T1 PCIe x1 Gb NIC (optional)

Intel® I219-LM 10/100/1000 Integrated NIC

Intel® Dual Band Wireless-AC 9260 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 5.0 Combo Card vPro™

NOTE: The integrated network connection is required to support Intel® vPro Technology. 802.11 requires wireless access point and internet service. Availability of public wireless access points limited. Gigabit Ethernet speeds may vary.

Graphics

Integrated:

Technical Specifications

Intel® UHD Graphics 630
Intel® UHD Graphics 610

Discrete:
NVIDIA® Quadro P400 2GB Graphics Card
AMD® Radeon™ R7 430 2GB VGA+DP Graphics Card
AMD® Radeon™ R7 430 2GB 2DP Graphics Card

HP DisplayPort™ to DVI-D Adapter
HP DisplayPort™ to VGA Adapter
HP DisplayPort™ to HDMI True 4K Adapter
HP Type-C™ to DisplayPort™ Adapter

NOTE: HD content required to view HD images. Integrated Intel® HD graphics uses part of the total system memory for video performance. System memory dedicated to video performance is not available for other use by other programs.

Multimedia

High Definition Audio (integrated) with Realtek CX20632 codec (all ports are stereo)
Line-out and Line-In rear Port (3.5mm)
Line-out rear port (optional)
Internal Speaker (standard)

Input/Output Devices

HP USB 1000dpi Laser Mouse (optional)
HP USB Optical Mouse (optional)
HP USB Hardened Wired Mouse (optional)
HP Business Slim USB Keyboard (optional)
HP USB Wired Keyboard (optional)

Miscellaneous Devices and Configurations

HP Serial Port Adapter
HP Tower Stand
HP Engage Flex Pro PCI Riser Assembly[1]
HP Engage Flex Pro PCIe Riser Assembly[1]
24 Volt Powered USB + Cash Drawer Port Module
Three (3) port 12 Volt USB + Pwr Card
Two (2) port RS232 Serial (power configurable) COM 3 & 4 port card[1]
[1]Not available on HP Engage Flex Pro-C

Weights & Dimensions

(configured with 1 HDD)

	HP Engage Flex Pro	HP Engage Flex Pro-C

Technical Specifications

Chassis (H x W x D)	3.94” x 13.27” x 15.12” 100mm x 337mm x 384mm	3.94” x 11.81” x 11.89” 100mm x 300mm x 302mm
System Volume	790.5 cu in	553.3 cu in
Packaging (H x W x D)	18.75” x 9” x 19.5” 361mm x 229mm x 496mm	15.5” x 9” x 15.75” 394mm x 229mm x 400mm
System Weight*	14.2 lb	8.8 lb
Shipping Weight*	16 lb	11 lb
Max Supported Weight (desktop orientation)	77 lb 35 kg	77 lb 35 kg

* Exact weight depends on configuration

Technical Specifications

Unit Environment and Operating Conditions

General Unit Operating Guidelines

- Keep the POS System 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 front side and power supply side of the POS System to permit the required airflow.
- If within an enclosure, the front side should be 100% open. The clearance between the system and the cabinet must be at least 10 mm (0.4 inch) on the sides and top and at least 50-mm (2-inch) clearance in the rear with power supply venting area 100% open per the above bullet.
- Never restrict airflow into the POS System by blocking any vents or air intakes.
- Do not stack POS Systems on top of each other or place POS Systems 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 POS System. Lint, dust and other foreign matter can block the vents and limit the airflow.
- Clean the optional dust filter regularly

Temperature Range	Operating: 50° to 104° F (10° to 40° C)* Non-operating: -22° to 149° F (-30° to 65° C)
Relative Humidity	Operating: 20% to 85% (non-condensing at ambient) Non-operating: 0% to 95% (non-condensing at ambient)
Maximum Altitude (unpressurized)	Operating: 10,000 ft (3048 m) Non-operating: 30,000 ft (9144 m)

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

	HP Engage Flex Pro	**HP Engage Flex Pro-C**
Power Supply	250-watt – EPA92 power supply – Active PFC *This power supply meets ENERGY STAR compliance in conjunction with a select range of processors and modules.	250-watt – EPA92 power supply - Active PFC *This power supply meets ENERGY STAR compliance in conjunction with a Select range of processors and modules.
Operating Voltage Range	90 to 264 VAC	90 to VAC
Rated Voltage Range	100 to 240 VAC	100 to 240 VAC
Rated Line Frequency	50/60 Hz	57/63 Hz
Operating Line Frequency Range	47 – 63 Hz	47-63
Rated Input Current	3A Efficiency 87/90/87% at 20/50/100% load	3A Efficiency 90/92/89% at 20/50/100% load
Power Supply Fan	90 mm variable speed fan	90 mm variable speed fan
ENERGY STAR Compliant	ENERGY STAR 7.0 compliant	ENERGY STAR 7.0 compliant
Power Cord Length	6.0ft (1.83m)	6.0ft (1.83m)
Current Leakage (NFPA99)	Less than 500 microamps of leakage current at 264 Vac with the ground wire disconnected, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1. Less than 100 microamps of leakage	Less tha 500 microamps of leakage current at 264 Vac with the ground wire disconnected, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1. Less than 100 microamps of leakage current at

	current at 264 Vac with the ground wire intact with normal polarity, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.	264 Vac with the ground wire intact with normal polarity, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.

Serviceability Features

- Dual colored power LED on front of computer to indicate either normal or fault condition
- Diagnostic LED Explanation Table:
  - Power LED will blink red 2 to 5 times, then blink white 2 or more times, then repeat (with beep tones for each blink initially):
    - 2 red + 2 white User must provide file for BIOS recovery (USB storage typically)
    - 2 red + 3 white User must enter a key sequence to proceed with recovery by policy
    - 2 red + 4 white BIOS recovery is in progress
    - 3 red + 2 white Memory could not be initialized
    - 3 red + 3 white Graphics adaptor could not be found
    - 3 red + 4 white Power supply failure / not connected
    - 3 red + 5 white Processor not installed
    - 3 red + 6 white Current processor does not support an enabled feature
    - 4 red + 2 white Processor has exceeded its temperature threshold / system thermal shutdown
    - 4 red + 3 white System internal temperature has exceeded its threshold
    - 5 red + 2 white System controller firmware is not valid
    - 5 red + 3 white System controller detected BIOS is not executing
    - 5 red + 4 white BIOS could not complete initialization / PCA failure
    - 5 red + 5 white System controller rebooted the system after a health or recovery timer triggered
- HP PC Hardware Diagnostics UEFI:
  - This utility enables hardware level testing outside the operating system on many components. The diagnostics can be invoked by pressing F2 at POST, and is available as a download from HP Support
- System/Emergency ROM
- Flash ROM
- CMOS Battery Holder for easy replacement
- Flash Recovery with Video Configuration Record Software5 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 Removal
- Green Pull Tabs, and Quick Release Latches for easy Identification

SOFTWARE COMPONENTS AND APPLICATION WITH WINDOWS

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

Software
HP Native Miracast Support [15]
HP ePrint Driver + JetAdvantage [20]
HP Hotkey Support - CMIT
HP Recovery Manager
HP Jumpstart
HP Support Assistant [21]
HP Noise Cancellation Software
HP PhoneWise [29]
Buy Office (sold separately)
Intel® Unite (optional for AiOs)

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

Client Security Software
HP Client Security Suite Gen4 [25] including:
HP Security Manager [26] (including Credential Manager, HP Password Manager, HP Spare Key)
HP Fingerprint Sensor [31]
HP Device Access Manager
HP Power On Authentication
Microsoft Defender [27]

Security Management
HP Secure Erase[18]
TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified) [32]
SATA 0,1 port disablement (viaBIOS)
RAID configurations[33]
Serial, USB enable/disable (viaBIOS)
Power-on password (viaBIOS)
Setup password (viaBIOS)
Support for chassis padlocks and cable lock devices
Integrated hood sensor
HP Sure Click[37]
HP Sure Start Gen4[30]
HP Sure Run[35]

Technical Specifications

HP Sure Recover[36]

15. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming
17. HP BIOSphere Gen4 requires Intel® or AMD® 8th Gen processors. Features may vary depending on the platform and configurations.
18. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method.
19. Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: http://www.absolute.com/company/legal/agreements/computrace-agreement. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
20. HP ePrint Driver requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see http://www.hp.com/go/eprintcenter). Print times and connection speeds may vary.
21. HP Support Assistant requires Windows and Internet access.
22. HP Driver Packs not preinstalled, however available for download at http://www.hp.com/go/clientmanagement.
23. HP Manageability Integration Kit can be downloaded from http://www.hp.com/go/clientmanagement.
24. Ivanti Management Suite subscription required.
25. HP Client Security Suite Gen4 requires Windows and Intel® or AMD® 8th generation processors.
26. HP Password Manager requires Internet Explorer or Chrome or FireFox. Some websites and applications may not be supported. User may need to enable or allow the add-on / extension in the internet browser.
27. Microsoft Defender Opt in and internet connection required for updates.
29. HP PhoneWise Client is only available on select platforms. For supported platforms and HP PhoneWise system requirements see http://www.hp.com/go/HPPhoneWise.
30. HP Sure Start Gen4 is available on HP EliteBook products equipped with Intel® 8th generation processors
31. HP Fingerprint Sensor available on 800 G4 AiO touch models and optional on 800 G4 AiO non-touch models
32. Firmware TPM is version 2.0. Hardware TPM is v1.2, which is a subset of the TPM 2.0 specification version v0.89 as implemented by Intel® Platform Trust Technology (PTT).
33. RAID configuration is optional and does require a second hard drive.
35. HP Sure Run is available on HP Elite products equipped with 8th generation Intel® or AMD® processors.
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 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. Check http://h20195.www2.hp.com/v2/GetDocument.aspx?docname=4AA7-0922ENW for all compatible platforms as they become available.

Technical Specifications

Additional Features	Description
Tower Orientation	The chassis can be oriented as either a desktop or a tower.
Drive Lock	Implementation of the industry standard ATA Security feature set. When enabled, it prevents software access to user data on the drive until one or two user-defined passwords are provided.
Boot Sectors Protection	MBR and GPT sectors of the hard drive are critical to booting the operating system. By saving the MBR or GPT data (depending on the how the OS was installed), the BIOS will be able to monitor for changes and allow the user to override them with the backup copy at boot-up.
Drive Protection System	DPS Access through F10 Setup during Boot A diagnostic hard drive self- test. It scans critical physical components and every sector of the hard drive for physical faults and then reports any faults to the user Running independently of the operating system, it can be accessed through a Windows-based diagnostics utility or through the computer's setup procedure. It produces an evaluation on whether the hard drive is the source of the problem and needs to be replaced The system expands on the Self-Monitoring, Analysis, and Reporting Technology (SMART), a continuously running systems diagnostic that alerts the user to certain types of failures
SMART Technology (Self-Monitoring, Analysis and Reporting Technology)	Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted
SMART I – Drive Failure Prediction	Predicts failures before they occur. Tracks fault prediction and failure indication parameters such as re-allocated sector count, spin retry count, calibration retry count
SMART II – Off-Line Data Collection	By avoiding actual hard drive failures, SMART hard drives act as "insurance" against unplanned user downtime and potential data loss from hard drive failure
SMART III – Off-Line Read Scanning with Defect Reallocation	IOEDC: I/O Error Detection Circuitry Detects errors in Read/Write buffers on HDD cache RAM
SMART IV – End-to-End CRC for hard drives	Interface in F10 setup provides confirmation of SMART IV support.

Technical Specifications - Audio

High Definition Audio

Type	Integrated
HD Stereo Codec	Conexant CX20632
Audio I/O Ports	Rear Line-In/Microphone input (47-K ohm Input Impedance, function is configurable by audio driver) Line-in and Line-out, both on rear. All ports are 3.5mm in diameter
Internal Speaker Amplifier	2W class D mono amplifier for the internal speaker only. External speakers must be powered
Multi-streaming Capable	Playback multi-streaming can be enabled in the audio control panel to allow independent audio streams to be sent to/from the rear jack or integrated speaker.
Sampling	Independent sampling rates for DAC's and ADC's; supports resolutions from 16 to 24-bit; 44.1 kHz to 192 kHz for DAC and 44.1 kHz to 96 kHz for ADC
Wavetable Syntheses (software)	Yes – Uses OS soft wavetable
Analog Audio	Yes
# of Channels on Line-Out (mono/stereo)	Stereo (Left & Right channels)
Internal Speaker	Yes
External Speaker Jack (Line-Out)	Yes

Intel® I219LM 10/100/1000 Integrated NIC

Connector	RJ-45
System Interface	PCI (Intel proprietary) + SMBus
Memory	24 KB FIFO packet buffer memory
Data rates supported	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s
IEEE Compliance	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet)
Performance	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling Jumbo Frame 9K
Power consumption	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000bp Full Run: 1000mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
Power management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
Management interface	Auto MDI/MDIX Crossover cable detection
IT manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
Network transfer rate	10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T (full-duplex) 2000 Mbps
Security & Manageability	Intel® vPro™ support with appropriate Intel® chipset components

Intel® Ethernet I210-T1 GbE NIC Card

Connector	RJ-45
System Interface	PCI (Intel proprietary) + SMBus
Controller	Intel® I210 Gigabit Ethernet Controller
Memory	Integrated Dual 48K configurable transmit receive FIFO Buffers
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)

Technical Specifications - Communications

	Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s
IEEE Compliance	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet)
Performance	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling Jumbo Frame 9K
Power consumption	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000bp Full Run: 1000mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
Power management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
Management interface	Auto MDI/MDIX Crossover cable detection
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Security & Manageability	Intel® vPro™ support with appropriate Intel® chipset components

Intel® 9260 802.11ac PCIe x1 WLAN Card

Wireless LAN standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
Compatible Operating Systems	Windows 10, Linux
Frequency band	802.11b/g/n • 2.402 - 2.482 GHz 802.11 a/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
Antenna structure	High efficiency antenna with spatial diversity, mounted in the display enclosure

Technical Specifications - Communications

	Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Data rates	802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) 802.11ac: MCS 0 ~ MCS 9 (1SS, and 2SS) (20MHz, 40MHz, 80MHz, & 160MHz)
Modulation	Direct Sequence Spread Spectrum CCK, BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
Security[2]	• 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 band Access Points
Output power (approximately)	• 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 Watts
	Receive Mode	1.6Watts
	Idle mode (PSP)	180mW (WLAN Associated)
	Idle mode	50 mW (WLAN unassociated)
	Connected Standby	10 mW
	Radio off	8mW

Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity	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

Technical Specifications - Communications

	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	

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)

Technical Specifications - Communications

Basic Imaging Profile (BIP)2
Headset Profile (HSP)
Hands Free Profile (HFP)
Advanced Audio Distribution Profile (A2DP)

Note: Most features not available on Linux.

Technical Specifications - Graphics

Intel® UHD Graphics (integrated)

VGA Controller	Integrated
DisplayPort™ 1.2	Multimode capable; supports HDCP (on standard DisplayPort™ and up to 1 optional port), Display Port™ Audio (2 streams), HBR2 link rates and Multi- Stream Technology for a maximum of 3 displays connected to any output controlled by Intel® Graphics
HDMI (optional)	Supports HDMI 2.0a features Supports HDCP 2.2 (on up to 1 HDMI port option) Supports BT2020 and HDR playback (7th Gen processors only)
VGA (optional)	VGA ouput
USB-C™ DP Alt Mode (optional)	DisplayPort™ over the optional USB-C™ module
Memory	The actual amount of maximum graphics memory can be >4GB. System memory is allocated for graphics as needed using Intel's Dynamic Video Memory Technology (DVMT), to provide an optimal balance between graphics and system memory use.
Maximum Color Depth	up to 10 bits/color
Graphics/Video API Support	HEVC 10b Enc/Dec HW VP9 10b Dec HW HDR Rec. 2020 DX12
34" UHD Supported Resolutions and Refresh Rates. Other resolutions may also work.	640x480 60 Hz640x480 67Hz 640x480 72Hz 640x480 75Hz 720x400 70Hz 800x600 60Hz 800x600 75Hz 1024x768 60Hz 1024x768 75Hz 1280x960 60Hz 1280x720 60Hz 1280x1024 60Hz 1280x1024 75Hz 1440x900 60Hz 1440x900 75Hz 1680x1050 60Hz 1920x1080 60Hz 3440x1440 60Hz (Native Resolution) 3440x1440 30Hz

NVIDIA® Quadro P400 2GB Graphics Card

Engine Clock	1252 MHz
Memory Clock	2000 MHz
Memory Size (width)	2GB (64-bit)
Memory Type	256M x 32 GDDR5
Max. Resolution (DP)	5120x32880@60Hz
Multi Display Support	3 displays
HDCP Compliance	Yes
Rear I/O connectors (bracket)	mDPx3

Technical Specifications - Graphics

Cooling (active/passive)	Active fan-sink (Active cooling with dynamic speed)
Total power consumption	<30W
PCB form-factor with bracket	LP PCB with LP bracket

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

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

Storage

500 GB 7200RPM 3.5in SATA HDD

Capacity	500 GB
Rotational Speed	7,200 rpm
Interface	SATA 6.0 Gb/s
Buffer Size	16 MB
Logical Blocks	976,773,168
Seek Time	11 ms (average)
Height (nominal)	1 in/2.54 cm
Width (nominal)	Media diameter: 3.5 in/8.89 cm
	Physical size: 4 in/10.2 cm
Operating Temperature	41° to 131° F (5° to 55° C)

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 6.0 Gb/s
Buffer Size	32 MB
Logical Blocks	1,953,525,168
Seek Time	11 ms (average)
Height (nominal)	1 in/2.54 cm
Width (nominal)	Media diameter: 3.5 in/8.89 cm
	Physical size: 4 in/10.2 cm
Operating Temperature	41° to 131° F (5° to 55° C)

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 6.0 Gb/s
Buffer Size	64 MB
Logical Blocks	976,773,168
Seek Time	11 ms (average)
Height (nominal)	1 in/2.54 cm
Width (nominal)	Media diameter: 3.5 in/8.89 cm
	Physical size: 4 in/10.2 cm
Operating Temperature	41° to 131° F (5° to 55° C)

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 6.0 Gb/s
Buffer Size	16 MB
Logical Blocks	976,773,168
Seek Time	12 ms (average)
Height (nominal)	0.267 in/6.8 mm
Width (nominal)	Media diameter: 2.75 in/70 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.

1 TB 7200RPM 2.5in SATA HDD

Capacity	1 TB
Rotational Speed	7,200 rpm
Interface	SATA 6.0 Gb/s
Buffer Size	32 MB
Logical Blocks	1,953,525,168
Seek Time	12 ms (average)
Height (nominal)	0.374 in/9.5 mm
Width (nominal)	2.75 in/70 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.

500 GB 7200RPM 2.5in Self Encrypted OPAL2 SATA HDD

Capacity	500 GB
Architecture	Self-Encrypting (SED) Solid State Drive with SATA interface
Rotational Speed	7,200 rpm
Interface	SATA 6.0 Gb/s
Buffer Size	32 MB
Logical Blocks	976,773,168
Seek Time	12 ms (average)
Height (nominal)	0.267 in/6.8 mm
Width (nominal)	2.75 in/70 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.

1 TB 5400RPM 2.5in SATA SSHD

Capacity	1 TB
Rotational Speed	5,400 rpm

Technical Specifications - Data Storage Drives

Drive Type	Solid State Hybrid Drive (SSHD) technology with NAND Flash
Interface	SATA 6.0 Gb/s
Buffer Size	64 MB
NAND Flash	8 GB
Seek Time	12 ms (average)
Height (nominal)	0.374 in/9.5 mm
Width (nominal)	2.75 in/70 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.

128 GB 2.5in SATA Three Layer Cell SSD

Drive Weight	<50g
Capacity	128 GB
Height	7mm
Length	100.45 mm
Width	69.85 mm
Interface	SATA 3.0 (6Gb/s)
Performance	Up to Random Read/Write = 70K/40K IOPS
Maximum Sequential Read	Up to 530MB/s
Maximum Sequential Write	Up to 380MB/s
Logical Blocks	250,069,680
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	DIPM; TRIM

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 Three Layer Cell SSD

Drive Weight	<62g
Capacity	256 GB
Height	7mm
Length	100.45 mm
Width	69.85 mm
Interface	SATA 3.0 (6Gb/s)
Performance	Up to Random Read/Write = 55K/68K IOPS
Maximum Sequential Read	Up to 530MB/s
Maximum Sequential Write	Up to 450MB/s
Logical Blocks	500,118,192
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	DIPM; TRIM

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

Technical Specifications - Data Storage Drives

Drive Weight	<62g
Capacity	512 GB
Height	7mm
Length	100.45 mm
Width	69.85 mm
Interface	SATA 3.0 (6Gb/s)
Performance	Up to Random Read/Write = 92K/83K IOPS
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.

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

Drive Weight	<50g
Capacity	256 GB
Height	7mm
Length	100.45 mm
Width	69.85 mm
Interface	SATA 3.0 (6Gb/s)
Performance	Up to Random Read/Write = 55K/80K IOPS
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; 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.

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

Drive Weight	<10g
Capacity	128 GB
Height	2.38 mm
Length	80 mm
Width	22 mm
Interface	PCIE Gen3x4
Performance	Up to Random Read/Write = 140K/40K IOPS
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.

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

Drive Weight	<10g
Capacity	256 GB
Height	2.38 mm
Length	80 mm
Width	22 mm
Interface	PCIE Gen3x4
Performance	Up to Random Read/Write = 150K/180K IOPS
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.

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

Drive Weight	<10g
Capacity	512 GB
Height	2.38 mm
Length	80 mm
Width	22 mm
Interface	PCIE Gen3x4
Performance	Up to Random Read/Write = 270K/235K IOPS
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

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.

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

Drive Weight	<10g
Capacity	1 TB
Height	2.38 mm
Length	80 mm
Width	22 mm
Interface	PCIE Gen3x4
Performance	Up to Random Read/Write = 290K/240K IOPS
Maximum Sequential Read	Up to 2900MB/s
Maximum Sequential Write	Up to 2100MB/s
Logical Blocks	2,000,409,264
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]

Technical Specifications - Data Storage Drives

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.

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)
Envrionmental 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)	Up to 0.31 lb (140g) without bezel
Read Speeds	DVD-R DL - Up to 6X DVD+R - Up to 8X DVD+RW - Up to 8X DVD+R DL - Up to 6X DVD-R - Up to 8X DVD-RW - Up to 6X CD-R - Up to 24X CD-RW - Up to 10X DVD-RW, DVD+RW - Up to 8X DVD-R DL, DVD+R DL - Up to 8X DVD+R, DVD-R - Up to 8X DVD-ROM DL, DVD-ROM - Up to 8X CD-ROM, CD-R - Up to 24X CD-RW - Up to 24X
Access time (typical reads, including settling)	Random DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical) Full Stroke DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical) Stop Time 6 seconds (typical)
Power	Source Slimline SATA DC power receptacle DC Power Requirement 5 VDC ± 5%-100 mV ripple p-p

Technical Specifications - Data Storage Drives

	DC Current 5 VDC (< 1000 mA typical, 1600 mA maximum)
Envrionmental conditions (operating – non-condensing)	Temperature 41° to 122° F (5° to 50° C) Relative Humidity 10% to 80% Maximum Wet Bulb Temperature 84° F (29° C)

Technical Specifications - Input/Output Devices

HP USB Keyboard

Physical characteristics	**Keys**	104, 105, 106, 107, 109 layout (depending upon country)
	Dimensions (L x W x H)	171.97 x 68.35 x 8.27 in (436.8± 1.5 x 137.6± 1.0 x 21.0± 1.0 cm)
	Weight	1.32 lb. (0.6± 0.08 kg)
Electrical	**Operating voltage**	4.4-5.25VDC
	Power consumption	50-mA maximum (with 5 VDC power supplied and three LEDs ON)
	System interface	USB
	ESD	Contact Discharge: 2, 4,6,8KV Air Discharge: 2, 4, 8,10,12.5KV
	EMI - RFI	Conforms to FCC rules for a Class B computing device
Mechanical	**Languages**	38 available
	Keycaps	Low-profile design
	Switch actuation	60±10g nominal peak force with tactile feedback
	Switch life	10 million keystrokes (Life tester)
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft (1.8 m)
	Microsoft PC 99 - 2001	Mechanically compliant
	Acoustics	43-dBA maximum sound pressure level
Environmental	**Operating temperature**	50° to 122° F (10° to 50° C)
	Non-operating temperature	-22° to 140° F (-30° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non-condensing at ambient)
	Operating shock	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)	42 in (107 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	

Technical Specifications - Input/Output Devices

HP USB Optical 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

Technical Specifications - Environmental Data

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:

- US ENERGY STAR ®
- IT ECO declaration
- EPEAT Gold registered in the United States. See http://www.epeat.net for registration status in your country.

Energy Consumption	115 VAC	230 VAC	100 VAC
Normal Operation	38.55W	38.62W	38.42W
Sleep (Energy Star low power mode)	2.65W	2.90W	2.70W
Off	0.93W	1.12W	0.92W

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 model.

Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	132 BTU/hr	132 BTU/hr	131 BTU/hr
Sleep	9 BTU/hr	10 BTU/hr	9 BTU/hr
Off	3 BTU/hr	4 BTU/hr	3 BTU/hr

* 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)

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.7	28
Fixed Disk (random writes)	3.8	29

Batteries

This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight

Battery size: CR2032 (coin cell)
Battery type: Lithium

Technical Specifications - Environmental Data

Additional information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive – 2002/95/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold where HP registers commercial desktop products. See http://www.epeat.net for registration status in your country.
- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
- This product contains 7.5% post consumer recycled plastic (by wt.)
- This product is 91.3% recyclable when properly disposed of at end of life.

Packaging Materials

- External:
  - Paper/Corrugated
- Internal:
  - Plastic/EPE (Expanded Polyethylene)
  - Plastic/Polyethylene low density
- The corrugated packaging material varies in recycled content:
  - North America – at least 25% recycled content
  - Asia – at least 62% recycled content (Singapore at least 80%)
  - Europe – at least 50% recycled content
- The Polyethylene low density Foam packaging material varies in recycled content:
  - North America – 100% (Pre-consumer or Post-industrial)
  - Asia – 10%
  - Europe – 7%

RoHS Compliance

HP Inc. is committed to compliance with all applicable environmental laws and regulations, including the European Union Restriction of Hazardous Substances (RoHS) Directive. HP's goal is to exceed compliance obligations by meeting the requirements of the RoHS Directive on a worldwide basis. By July 1, 2006, RoHS substances will be virtually eliminated (virtually = to levels below legal limits) for all HP electronic products subject to the RoHS Directive, except where it is widely recognized that there is no technically feasible alternative (as indicated by an exemption under the EU RoHS Directive).

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/supplychain/gen_specifications.html):

- 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

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.

Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment:
Global Citizenship Report
http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html
Eco-label certifications
http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html
ISO 14001 certificates:
http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html

After-Market Options (availability may vary by region)

Communication Devices

	Part #
Intel® Ethernet I210-T1 GbE NIC	E0X95AA
Intel® 9260 802.11ac PCIe x1 WLAN Card	3TK90AA

NOTE:
The use of a discrete network interface connection card (wired or wireless) will disable the vPro Technology features.

Graphics Solutions

	Part #
AMD Radeon R7 430 2GB 2DP Card	3MQ82AA
HP DisplayPort™ Cable Kit	VN567AA
HP DisplayPort™ To DVI-D Adapter	FH973AA
HP DisplayPort™ to VGA Adapter	AS615AA
HP HDMI Standard Cable Kit	T6F94AA
HP UHD USB Graphics Adapter	N2U81AA
HP DisplayPort™ to HDMI True 4k Adapter	2JA63AA

Hard Disk Storage Drives

	Part #
HP 500GB SATA (6.0Gb/s) Hard Disk Drive	LQ036AA
HP 1TB SATA (6.0Gb/s) Hard Disk Drive	LQ037AA
HP 256GB SATA TLC Non-SED Solid State Drive	P1N68AA
HP Removable SATA Hard Drive Enclosure (frame & carrier)	RY102AA
HP Removable SATA Hard Drive Enclosure (carrier only)	RY103AA

Input / Output Devices

	Part #
HP PS/2 Business Slim Keyboard	N3R86AA
HP USB Business Slim Keyboard	J4A11AA
HP Wireless Business Slim Keyboard and Mouse	N3R88AA
HP PS/2 Optical Mouse	QY775AA
HP USB Optical Mouse	QY777AA
HP USB 1000dpi Laser Mouse	
HP USB Hardened Mouse	

System Memory

	Part #
HP 4GB DDR4-2666 MHz DIMM	3TK85AA
HP 8GB DDR4-2666 MHz DIMM	3TK87AA
HP 16GB DDR4-2666 MHz DIMM	3TK83AA

Multimedia Devices

	Part #

After-Market Options (availability may vary by region)

HP 9.5mm DVD-ROM Drive	N1M41AA
HP DVD-Writer Drive	QS208AA

Security Devices

	Part #
HP Chassis Security Kit	AR639AA
HP Business PC Security Lock	3XJ17AA

After-Market Options (availability may vary by region)

Retail Solutions Specific Accessories

	Part #
HP L5015tm LCD Touch Monitor	M1F94AA
HP L1506x 15-inch LED Monitor	LL543AA
HP L7014 14” Retail Non-touch Monitor	T6N31AA
HP L7014t 14” Retail Touch Monitor	T6N32AA
HP L7010t – 10.1” Retail Touch Monitor	T6N30AA
HP L6015tm Retail LED Monitor	A1X78AA
HP L6010 Retail LED Retail Non-touch Monitor	A1X76AA
HP L6017tm Retail LED Retail Non-touch Monitor	A1X77AA
HP Engage One 10.1in Touch Display	1XD81AA
HP Engage One 10.1in Non-Touch Display	1XD80AA
HP Imaging Barcode Scanner	BW868AA
HP Linear Barcode Scanner	QY405AA
HP Linear Barcode Scanner II	Z1Z36AA
HP Presentation Barcode Scanner	QY439AA
HP Wireless Barcode Scanner	E6P34AA
HP Engage One 2D Barcode Scanner	3GS20AA/1RL97AA
HP Engage One Serial USB Thermal Printer	1RL96AA/3GS19AA
HP PUSB Thermal Receipt Printer	FK224AA
HP Serial USB Thermal Receipt Printer	BM476AA
HP Hybrid POS Printer with MICR	FK184AA
HP Value PUSB Receipt Printer	F7M67AA
HP Ethernet Printer	M2D54AA
HP Heavy Duty Cash Drawer	FK182AA
HP Flip Top Cash Drawer	BW867AA
HP Standard Duty Cash Drawer	QT457AA
HP Standard Duty Till w/Lockable Lid	QT458AA
HP Flip Top Till with Locking Cover	BZ335AA
HP USB Standard Duty Cash Drawer	E8E45AA
HP Mini Magnetic Stripe Reader	FK186AA
HP POS Keyboard	FK221AA
HP POS Keyboard with Magnetic Stripe Reader	FK218AA
HP Standard Retail Keyboard	J4A11AA
HP Graphical Pole Display	QZ704AA
HP 7” LCD Pole Display	F7A93AA
HP Engage Flex Pro PCI Riser Assembly	4VW77AA
HP Engage Flex Pro PCIe Riser Assembly	4VW78AA
HP 12V PUSB Standard Card	5KM97AA
HP Powered Serial Port Card (Pin out)	4VW70AA
HP Powered Serial Port Card (Pin in)	4VW71AA
HP Engage Flex Pro 24V USB/Cash Drawer Module	4VW72AA
HP Engage Flex Pro 3 Pack Dust Filters	4VW73AA

After-Market Options (availability may vary by region)

HP Engage Flex Pro-C 3 Pack Dust Filters	4VW74AA
HP Engage Flex Pro Wall Mount/Security Sleeve	4VW75AA
HP Engage Flex Pro-C Wall Mount/Security Sleeve	4VW76AA

Summary of Changes

Date of change:	Version History:		Description of change:
August 20, 2018	From v1 to v2	Added	Support for 2.5” drives on Engage Flex Pro-C, specified rear USB port types

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