Operating systems

Specification	Description
Preinstalled	Windows 10 Pro 64 (National Academic only) NOTE: Some devices for academic use automatically update to Windows 10 Pro Education with the Windows 10 Anniversary Update. Features vary. Windows 10 Pro 64 Windows 10 Home 64 Windows 10 Pro (Windows 10 Enterprise available with a Volume Licensing Agreer Windows 10 Home Single Language 64 NOTE: Not all features are available in all editions or versions of Windows. Syste might require upgraded and/or separately purchased hardware, drivers, software o BIOS update to take full advantage of Windows functionality. Windows 10 automatic updates are always enabled. ISP fees might apply and additional requirements might apply over time for updates. FreeDOS 1.2

NOTE: In accordance with Microsoft support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation or later processors, or provide any Windows 8 or Windows 7 drivers.

Processors

Specification	Description

Specification	Description
Intel Core i7-10510U processor	1.8 GHz base frequency, up to 4.9 GHz with Intel Turbo Boost Technology 8 MB L3 cache and 4 cores Intel UHD Graphics 620
Intel Core i5-10210U processor	1.6 GHz base frequency, up to 4.2 GHz with Intel Turbo Boost Technology 6 MB L3 cache and 4 cores Intel UHD Graphics 620
Intel Core i3-10110U processor	2.1 GHz base frequency, up to 4.1 GHz with Intel Turbo Boost Technology 4 MB L3 cache and 2 cores Intel UHD Graphics 620
Chipset	Integrated with processor

NOTE: Multicore is designed to improve performance of certain software products. Not all customers or software applications necessarily benefit from use of this technology. Performance and clock frequency vary depending on application workload and hardware and software configurations. Intel numbering is not a measurement of higher performance. Processor speed denotes maximum performance mode; processors run at lower speeds in battery optimization mode. Intel Turbo Boost performance varies depending on hardware, software, and overall system configuration.

Graphics

Specification	Description
Integrated	Intel UHD Graphics 620 NOTE: High-definition (HD) content is required to view high definition images.
Discrete	NVIDIA GeForce MX130 (2 GB DDR5 dedicated) NVIDIA GeForce MX250 (2 GB DDR5 dedicated)
Supported	Supports HD decode, DirectX12, and HDMI 1.4b up to 4K at 30Hz Supports CUDA, Optimus, PhysX, and GPU Boost 2.0

Display

Specification	Description

Specification	Description
Non-touch	39.62 cm (15.6 in) diagonal HD SVA eDP anti-glare slim, 220 nits, 45% NTSC for two WLAN antennas (1366 x 768)

39.62 cm (15.6 in) diagonal HD SVA eDP anti-glare slim, 220 nits, 45% NTSC for [camera and two WLAN antennas (1366 x 768)

39.62 cm (15.6 in) diagonal HD SVA eDP anti-glare slim, 220 nits, 45% NTSC for [and IR camera and two WLAN antennas (1366 x 768)

39.62 cm (15.6 in) diagonal HD SVA eDP anti-glare slim, 220 nits, 45% NTSC for [camera, WWAN, and two WLAN antennas (1366 x 768)

39.62 cm (15.6 in) diagonal FHD IPS eDP anti-glare slim, 250 nits, 45% NTSC for WLAN antennas (1920 x 1080)

39.62 cm (15.6 in) diagonal FHD IPS eDP anti-glare slim, 250 nits, 45% NTSC for camera and two WLAN antennas (1920 x 1080)

39.62 cm (15.6 in) diagonal FHD IPS eDP anti-glare slim, 250 nits, 45% NTSC for and IR camera and two WLAN antennas (1920 x 1080)

39.62 cm (15.6 in) diagonal FHD IPS eDP anti-glare slim, 250 nits, 45% NTSC for camera, WWAN, and two WLAN antennas (1920 x 1080)

39.62 cm (15.6 in) diagonal FHD IPS eDP and PSR anti-glare flat with HP Sure Vie Integrated Privacy Screen, 1000 nits, 72% NTSC for HD camera and two WLAN antennas (1920 x 1080)

39.62 cm (15.6 in) diagonal FHD IPS eDP and PSR anti-glare flat with HP Sure Vie Integrated Privacy Screen, 1000 nits, 72% NTSC for HD and IR camera and two WI antennas (1920 x 1080) |

Specification	Description
Touch	39.62 cm (15.6 in) diagonal FHD IPS eDP On-Cell slim touchscreen, 250 nits, 45% NTSC for camera and two WLAN antennas (1920 x 1080) 39.62 cm (15.6 in) diagonal FHD IPS eDP On-Cell slim touchscreen, 250 nits, 45% NTSC for HD camera, WWAN, and two WLAN antennas (1920 x 1080) NOTE: Sold separately or as an optional feature.
HDMI	Supports resolutions up to 4K at 30 Hz

NOTE: High-definition (HD) content is required to view high definition images. Resolutions are dependent upon monitor capability, and resolution and color depth settings. HP Sure View integrated privacy screen is an optional feature that must be configured at purchase and is designed to function in landscape orientation.

Storage/drives

Specification	Description

Specification	Description
Primary M.2 Solid State Drive storage	128 GB M.2 SATA TLC SSD 256 GB PCIe NVMe M.2 Value SSD 256 GB Intel PCIe NVMe QLC M.2 SSD with 16 GB Intel Optane memory H10 512 GB PCIe NVMe M.2 TLC SSD 512 GB PCIe NVMe M.2 Value SSD 512 GB Intel PCIe NVMe QLC M.2 SSD with 32 GB Intel Optane memory H10
Primary SATA hard drives	500 GB 7200 RPM 1 TB 5400 RPM

NOTE: For solid state drives or hard drives, GB = 1 billion bytes; TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) is reserved for system recovery software.

Memory

Specification	Description

Specification	Description
Standard	DDR4-PC4 SODIMMS

Supports dual-channel memory

(2) Dual-channel SODIMM slots (both slots are customer accessible/upgradable)

Runs at 2400 MT/s for Intel 8th generation processors |
| Configurations | 32 GB DDR4-2666 SDRAM (16 GB x 2)

16 GB DDR4-2666 SDRAM (16 GB x 1)

12 GB DDR4-2666 SDRAM (8 GB x 1 and 4 GB x 1)

8 GB DDR4-2666 SDRAM (8 GB x 1)

8 GB DDR4-2666 SDRAM (4 GB x 2)

4 GB DDR4-2666 SDRAM (4 GB x 1) |
| Maximum | 32 GB |

NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If memory speeds are mixed, the system performs at the lower memory speed.

Ports/slots

Specification	Description

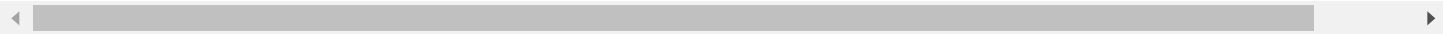| Specification	Description
Ports	(1) USB 3.1 Type-C Gen 1 connector (Power Delivery, DisplayPort) (2) USB 3.1 Gen 1 (1) USB 2.0 (Powered port) (1) RJ-45 (1) Headphone/microphone combo jack (1) AC power port (1) HDMI 1.4b NOTE: HDMI cable sold separately.
Slot	(1) Standard security lock (1) SD Card reader NOTE: Supports SD, SDHC, and SDXC.

Networking/communication

Specification	Description

Specification	Description
Wireless LAN (WLAN)	Intel Dual Band Wireless-AC 9560 802.11a/b/g/n/ac (2x2) WLAN and Bluetooth 5 Combo, no vPro Intel Dual Band Wi-Fi 6 AX201 802.11a/b/g/n/ac (2x2) WLAN and Bluetooth 5 Combo, non-vPro Realtek 802.11ac (2x2) WLAN and Bluetooth 5 Combo NOTE: Wireless access point and internet service is required and is not included. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specification differ from the draft specifications, it might affect the ability of the notebook to communicate with other 802.11ac WLAN devices.
WWAN	Intel XMM 7360 LTE-Advanced (Cat9) NOTE: WWAN module requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds var due to location, environment, network conditions, and other factors. 4G LTE not available on all products and all regions.
Ethernet	Realtek 10/100/1000 GbE NIC NOTE: The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operatin speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

Audio/multimedia

Specification	Description
Audio	Integrated microphone (mono or dual-array) (2) Integrated stereo speakers
Speaker power	2 W/4 ohm per speaker
Camera	720p HD camera 720p HD and IR camera (sold separately) NOTE: High-definition (HD) content is required to view high definition images.

Keyboards/pointing devices/function keys

Specification	Description
HP Premium keyboard	Spill-resistant with optional backlit function
Pointing device	Clickpad with multi-touch gesture support

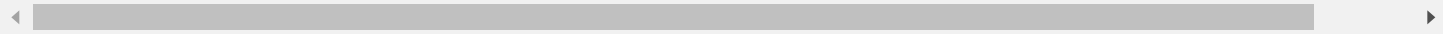| Specification	Description
Function keys	**Function keys** F1 – Display switching F2 – Blank or SureView On/Off F3 – Brightness down F4 – Brightness up F5 – Audio mute F6 – Volume down F7 – Volume up F8 – Microphone mute F9 – Blank or backlight toggle F10 – Num lock F11 – Wi-Fi toggle F12 – Sleep **Hidden functions** Fn+R - Break Fn+S - System Rq Fn+C - Scroll Lock

Software/security

Specification	Description

Specification	Description
BIOS	HP BIOSphere Gen5 (requires Intel 8th generation processors) HP Sure Start Gen5 (requires Intel 8th generation processors) HP DriveLock/HP Automatic DriveLock BIOS Update via Network Master Boot Record Security Secure Erase (methods outlined in the National Institute of Standards and Technology Special Publication 800-88) Pre-boot Authentication Absolute Persistence Module NOTE: Absolute agent is 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. 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.
Communication/connectivity	HP Connection Optimizer

Specification	Description
HP Value add software	HP Hotkey Support - CMIT HP Image Assistant HP Jumpstart HP Support Assistant (requires Windows and internet access) HP Noise Cancellation software
Microsoft products	Buy Office (sold separately)
Manageability	HP Driver packs (available for download) HP System Software Manager (SSM) (available for download) HP BIOS Configuration Utility (BCU) (available for download) HP Client Catalog (available for download) HP Management Integration Kit Gen3 for Microsoft SCCM (available download) NOTE: For more information about manageability software, go to th HP Client Management Solutions webpage.

Specification	Description
Client Security software	HP Security Manager (including Credential Manager and HP Password Manage HP Spare Key) NOTE: HP Password Manager requires Internet Explorer or Chrome Firefox. Some websites and applications might not be supported. Us might need to enable or allow the add-on/extension in the internet browser. HP Fingerprint Sensor (sold separately or as an optional feature) Power On Authentication Microsoft Defender (opt in and internet connection required for update
Security	For Windows 10, Trusted Platform Module (TPM) 2.0 (Infineon SLB9670) Common Criteria EAL4+ Certified HP Client Security Manager Gen5 HP Fingerprint Reader (sold separately or as an optional feature) NOTE: For more information about security software and features, g to the HP Client Security Software Suite webpage. Secure Erase

Specification	Description
Other standard security features	Serial, USB enable/disable (via BIOS)

Power-on password (via BIOS)

Setup password (via BIOS)

HP Sure Click

Support for chassis padlocks and cable lock devices |

Power

Specification	Description

Specification	Description
Power supply	**Adapters** HP Smart 65 W External AC power adapter HP Smart 65 W EM External AC power adapter HP Smart 65 W USB Type-C adapter HP Smart 45 W External AC power adapter HP Smart 45 W USB Type-C adapter **Power cords** 3-wire plug - 1 m (3.28 ft) 3-wire plug - 1.8 m (5.9 ft) 2-wire plug - 1 m (3.28 ft) Duckhead power cord - 1 m (3.28 ft) Duckhead power cord - 1.8 m (5.9 ft) NOTE: Availability might vary by country/region.
Primary battery	HP Long Life 3-cell, 45 Wh Li-ion NOTE: Battery is internal and not replaceable by customer.
Battery weight	0.22 kg (0.49 lb)

Physical specifications

Specification	Description
Weight	**Non-touch** Starting at 2 kg (4.41 lb) **Touch** Starting at 2.03 kg (4.48 lb) NOTE: Weight varies by configuration and components.
Dimensions (W x D x H)	36.50 x 25.68 x 1.91 cm (14.37 x 10.11 x 0.75 in)