Operating systems

Feature	Description
Preinstalled (Windows)	Windows 10 Pro 64 (National Academic License) **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 (recommended by HP) Windows 10 Home 64 Windows 10 Home Single Language 64 Windows 10 Enterprise 64 (Volume Licensing Agreement) Windows 10 Enterprise 64 (web support) **NOTE:** Not all features are available in all editions or versions of Windows. Systems might require upgraded and/or separately purchased hardware, drivers, software or 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.
Preinstalled (other)	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

Feature	Description
Intel Core i7-1165G7 Processor	2.8 GHz Base frequency, up to 4.7 GHz with Intel Turbo Boost Technology 12 MB cache, 4 cores
Intel Core i5-1135G7 Processor	2.4 GHz Base frequency, up to 4.2 GHz with Intel Turbo Boost Technology 8 MB cache, 4 cores
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.

Memory

Feature	Description
Standard	DDR4-PC4 SODIMMS Supports dual-channel memory System runs at 3200 MT/s

Feature	Description
Configurations	64 GB DDR4-3200 SDRAM (2 x 32 GB) 32 GB DDR4-3200 SDRAM (2 x 16 GB) 16 GB DDR4-3200 SDRAM (1 x 16 GB) 16 GB DDR4-3200 SDRAM (2 x 8 GB) 8 GB DDR4-3200 SDRAM (1 x 8 GB) 8 GB DDR4-3200 SDRAM (2 x 4 GB) 4 GB DDR4-3200 SDRAM (1 x 4 GB)
Maximum	64 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.

Graphics

Feature	Description
Integrated	Intel Iris Xe Graphics **NOTE:** Intel Iris Xe Graphics capabilities require system to be configured with Intel Core i5 or i7 processors and dual channel memory.
Discrete	NVIDIA GeForce MX450 N18S-G5

Feature	Description
Supported	HD decode, DX12, HDMI 2.0b, and HDCP 2.3

Networking/communication

Feature	Description
Wireless LAN (WLAN)	Intel Wi-Fi 6 AX201 (2x2) and Bluetooth 5 combo, vPro Intel Wi-Fi 6 AX201 (2x2) and Bluetooth 5 combo, non-vPro NOTE: Wi-Fi 6 is backwards compatible with prior 802.11 specs. Wireless access point and Internet service is required and is not included. Availability of public wireless access points limited. The specifications for the 802.11 WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it might affect the ability of the notebook to communicate with other 802.11 WLAN devices.
WWAN	Intel XMM 7360 LTE-Advanced Cat 9 NOTE: WWAN module is an optional feature, requires factory configuration and requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds might vary due to location, environment, network conditions, and other factors. LTE not available on all products, in all countries/regions. Qualcomm Snapdragon X55 5G Cat 20 NOTE: 5G module is an optional feature that must be configured at purchase. Requires activation and separately purchased service contract. Check with service provider for coverage and availability in your area. Connection, upload and download speeds varies due to network, location, environment, network conditions, and other factors. 5G not available on all products, in all countries/regions. Backwards compatible

Feature	Description
	to 4G LTE and 3G HSPA technologies. 5G module is planned to be available in select countries/regions.
NFC	HP Module with NXP NFC Controller NPC300 12C NCI (sold separately or as an optional feature)
Miracast	Yes

Display

Feature	Description
Non-touch display	39.62 cm (15.6 in) diagonal FHD bent, anti-glare UWVA eDP, 250 nits, 45% NTSC (1920 x 1080) 39.62 cm (15.6 in) diagonal FHD bent, anti-glare UWVA eDP, 250 nits, 45% NTSC for HD camera (1920 x 1080) 39.62 cm (15.6 in) diagonal FHD bent, anti-glare UWVA eDP, 250 nits, 45% NTSC for HD and IR camera (1920 x 1080) 39.62 cm (15.6 in) diagonal FHD bent, anti-glare UWVA eDP, 250 nits, 45% NTSC for WWAN (1920 x 1080) 39.62 cm (15.6 in) diagonal FHD bent, anti-glare UWVA eDP, 250 nits, 45% NTSC for HD camera for WWAN (1920 x 1080) 39.62 cm (15.6 in) diagonal FHD bent, anti-glare UWVA eDP, 250 nits, 45% NTSC for HD and IR camera for WWAN (1920 x 1080) 39.62 cm (15.6 in) diagonal FHD bent, anti-glare UWVA eDP and PSR, 400 nits, 100% sRGB, Low Power Ambient Light Sensor for HD and IR Camera (1920 x 1080) 39.62 cm (15.6 in) diagonal FHD bent, anti-glare UWVA eDP and PSR, 400 nits, 100% sRGB, Low Power Ambient Light Sensor for HD and IR Camera for

Feature	Description
	WWAN (1920 x 1080) 39.62 cm (15.6 in) diagonal UHD bent, anti-glare UWVA eDP and PSR, 400 nits, 100% sRGB, Low Power Ambient Light Sensor for HD and IR Camera (1920 x 1080) 39.62 cm (15.6 in) diagonal UHD bent, anti-glare UWVA eDP and PSR, 400 nits, 100% sRGB, Low Power Ambient Light Sensor for HD and IR Camera for WWAN (1920 x 1080) 39.62 cm (15.6 in) diagonal FHD bent, anti-glare UWVA eDP and PSR, 1000 nits, 100% sRGB with HP Sure View Reflect integrated privacy screen, Ambient Light Sensor for HD camera (1920 x 1080) 39.62 cm (15.6 in) diagonal FHD bent, anti-glare UWVA eDP and PSR, 1000 nits, 100% sRGB with HP Sure View Reflect integrated privacy screen, Ambient Light Sensor for HD and IR camera (1920 x 1080) 39.62 cm (15.6 in) diagonal FHD bent, anti-glare UWVA eDP and PSR, 1000 nits, 100% sRGB with HP Sure View Reflect integrated privacy screen, Ambient Light Sensor for HD camera for WWAN (1920 x 1080) 39.62 cm (15.6 in) diagonal FHD bent, anti-glare UWVA eDP and PSR, 1000 nits, 100% sRGB with HP Sure View Reflect integrated privacy screen, Ambient Light Sensor for HD and IR camera for WWAN (1920 x 1080) NOTE: HP Sure View integrated privacy screen is an optional feature that must be configured at purchase and is designed to function in landscape orientation.
Touch display	39.62 cm (15.6 in) diagonal FHD bent, anti-glare UWVA eDP, 250 nits, 45% NTSC for HD and IR camera Touch on Panel (1920 x 1080) 39.62 cm (15.6 in) diagonal FHD bent, anti-glare UWVA eDP, 250 nits, 45% NTSC for HD and IR camera for WWAN Touch on Panel (1920 x 1080)
HDMI 2.0	Supports resolutions up to 4K at 60 Hz (cable sold separately)

NOTE: High-definition (HD) content is required to view high definition images. Resolutions are dependent upon monitor capability and resolution and color depth settings.

Storage/drives

Feature	Description
Primary M.2 Solid State Drive storage	128 GB PCIe Gen 3 x2 NVMe M.2 TLC SSD 256 GB PCIe Gen 3 x4 NVMe M.2 TLC SSD 512 GB PCIe Gen 3 x4 NVMe M.2 TLC SSD 1 TB PCIe Gen 3 x4 NVMe M.2 TLC SSD 2 TB PCIe Gen 3 x4 NVMe M.2 TLC SSD 256 GB PCIe NVMe Value M.2 SSD 512 GB PCIe NVMe Value M.2 SSD 512 GB PCIe Gen 3 x4 NVMe M.2 OPAL2 SED TLC SSD 256 GB PCIe Gen 3 x4 NVMe M.2 OPAL2 SED TLC SSD 512 GB PCIe Gen 3 x4 NVMe M.2 2280 QLC SSD with 32 GB Intel Optane Memory

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.

Ports/slots

Feature	Description
Ports	(2) USB Thunderbolt 4 Type-C ports with USB4 support (SuperSpeed USB 20 Gbps is not available)

Feature	Description
	(2) USB 3.2 Gen 1 Type-A ports (1 Charging) (1) Headphone/microphone combo jack (1) AC power port (1) HDMI 2.0 (cable sold separately) (1) AC Power input port
Slots	(1) Nano SIM card slot (not accessible without WWAN) NOTE: All units have a SIM card stray but units that do not support WWAN are shipped with a non-removable SIM slot plug. (1) Smartcard reader (optional) (1) Nano security lock slot (lock sold separately)

Audio/multimedia

Feature	Description
Audio	Audio by Bang & Olufsen (2) Integrated stereo speakers Integrated dual-array microphone
Camera (sold separately)	720p HD camera 720p HD and IR camera (sold separately and internet access required)

Feature	Description
	NOTE: High-definition (HD) content is required to view high definition images.
Sensors	Ambient light sensor (select models only) Hall Sensor

Keyboards/pointing devices/function keys

Feature	Description
HP Premium keyboard	Spill-resistant and backlight function
Pointing device	Clickpad with multi-touch gesture support Taps enabled as default Microsoft Precision Touchpad default gestures support
Function keys	**Function keys** F1 – Display switching F2 – Blank or Privacy (with LED) F3 – Brightness down F4 – Brightness up F5 – Audio mute F6 – Volume down

Feature	Description
	F7 – Volume up
	F8 – Microphone mute
	F9 – Blank or backlight toggle
	F10 – Insert
	F11 – Airplane Mode
	F12 – HP Programmable Key
	Print Screen
	Power Button (with LED)
	Hidden functions
	Fn + R - Break
	Fn + S - System Rq
	Fn + C - Scroll Lock

Software/security

Feature	Description
BIOS	HP BIOSphere Gen6 (available on select platforms with 8th generation processors)
	HP Sure Start Gen5 (available on select platforms with 8th generation processors)
	HP DriveLock/HP Automatic DriveLock
	BIOS Update via Network
	Power On Authentication

Feature	Description
	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
HP Value add software	HP Hotkey Support HP Sure Recover Gen4 (requires internet connection and not for systems with multiple drives) HP Pro Security Edition (select models) HP Sure Click HP Sure Sense HP Sure Start Gen6 HP Sure Run Gen4

Feature	Description
	HP Sure Admin
	HP Recovery Manager
	HP Sure Sense (requires Windows)
	HP Image Assistant
	HP Device Access Manager
	HP Support Assistant (requires Windows and internet access)
	HP Noise Cancellation software
	HP QuickDrop
	HP Touchpoint Customizer
	HP Power Manager
	HP WorkWell
	myHP
	Tile App (for Windows 10)
Microsoft products	Buy Office (sold separately)
Manageability	HP Driver packs (available for download) HP BIOS Configuration Utility (BCU) (available for download) HP Client Catalog (available for download) HP Client Management Script Library (available for download) HP Management Integration Kit Gen4 (available for download)

Feature	Description
	NOTE: For more information about manageability software, go to the HP Client Management Solutions webpage.
Security	HP Client Security Manager Gen6 (requires Windows and available on select platforms) HP Fingerprint Sensor (sold separately or as an optional feature) Microsoft Defender (opt in and internet connection required for updates) For Windows 10, Trusted Platform Module (TPM) 2.0 (Infineon SLB9670) Common Criteria EAL4+ Certified
Other standard security features	Setup password (via BIOS) Support for chassis padlocks and cable lock devices

Power

Feature	Description
Power supply	**Adapters** HP Smart 45 W External AC power adapter HP Smart 45 W External AC power adapter; 2-prong (Japan only) HP Smart 65 W External AC power adapter

Feature	Description
	HP Smart 65 W EM External AC power adapter HP Smart 65 W USB Type-C adapter **Power cords** 3-wire plug - 1 m (3.28 ft) 2-wire plug - 1 m (3.28 ft) NOTE: Availability might vary by country/region.
Primary battery	HP Long Life 3-cell, 56 Wh Li-ion Support HP Fast Charge (up to 50% in 30 minutes with 65 W AC adapter) NOTE: Actual battery Watt-hours (Wh) varies from design capacity. Battery capacity naturally decreases with shelf life, time, usage, environment, temperature, system configuration, loaded apps, features, power management settings and other factors. Battery is internal and not replaceable by customer. Serviceable by warranty. Recharges the battery up to 50% within 30 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 Watts is required. After charging has reached 50% capacity, charging returns to normal. Charging time might vary +/-10% due to system tolerance.

Physical specifications

Feature	Description
Weight	**Non-touch** Starting at 1.69 kg (3.72 lb) **Touch**

Feature	Description
	Starting at 1.74 kg (3.84 lb) NOTE: Weight varies by configuration and components.
Dimensions (W x D x H)	35.94 x 23.67 x 1.90 cm (14.15 x 9.2 x 0.75 in)