

Overview

HP mt21 Mobile Thin Client



Left

- | | |
|---------------------------------------|---|
| 1. Microphones (2) | 7. SD card reader |
| 2. Webcam light (select models) | 8. Headphone/microphone combo jack |
| 3. Webcam (select models) | 9. USB 3.1 Gen 1 (power port) |
| 4. Fingerprint reader (select models) | 10. Power button |
| 5. Clickpad | 11. Security lock slot (Lock sold separately) |
| 6. Storage drive LED | |

Overview



Right

- | | |
|--------------------------|-----------------------------------|
| 1. Power connector | 4. HDMI port (Cable not included) |
| 2. Ethernet port (RJ-45) | 5. USB 3.1 Gen 1 |
| 3. VGA video output | 6. USB Type-C™ port |

Overview

At a Glance

1. Preinstalled with Windows 10 IoT Enterprise or HP ThinPro/Smart Zero Core
 2. Intel® Celeron 3865U Processor (1.8GHz dual-core) with Intel® HD graphics
 3. Choice of displays
 - 35.56 cm (14") diagonal FHD UWVA anti-glare flat LED backlit non-touch; 220 cd/m2; 45% sRGB (1920 x 1080)[1]
 - 35.56 cm (14") diagonal HD SVA anti-glare LED-backlit non-touch; 220 cd/m2; 45% sRGB (1366 x 768)
 4. Full size HP Premium Keyboard with a thin layer of Mylar film to prevent minor spills
 5. Large Click pad with support for gestures
 6. Optional HD webcam with dual-microphone array for video conferencing [1]
 7. Fingerprint Reader (select models)
 8. Intel® Dual Band Wireless-AC 8265 Wi-Fi + BT 4.2 adapter
 9. HDMI port for connecting to high-resolution displays
 10. Function keys provide control of features including standby mode, display brightness, external display, microphone mute, volume down, volume up, and backlight toggle for backlit keyboard (Select models only.)
 11. VGA analog video output
 12. HP 3-cell, 48 WHr Li-ion battery
 13. Battery life up to 15 hours
 14. Passed MIL-STD testing [2]
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1. Sold separately or as an optional feature.
 2. MIL-STD-810G testing is passed and is conducted on select HP products. Testing is not intended to demonstrate fitness of U.S. Department of Defense (DoD) contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Accidental damage requires an optional HP Accidental Damage Protection Care Pack.

NOTE: See important legal disclosures for all listed specs at the end of this document.

Features

OPERATING SYSTEMS

Preinstalled HP ThinPro with Smart Zero Core
Microsoft Windows 10 IoT Enterprise¹

PROCESSOR

Intel® Celeron™ 3865U (1.8GHz dual-core) with Intel® HD graphics^{2,3}

GRAPHICS

Intel® HD Graphics integrated as part of the Celeron processor³

DISPLAY SUPPORT

eDP FHD Flat

35.56 cm (14") diagonal FHD UWVA anti-glare flat LED backlit non-touch, 220 cd/m², 45% sRGB (1920 x 1080)^{3,4,5}

eDP HD Flat

35.56 cm (14") diagonal HD SVA anti-glare LED-backlit non-touch, 220 cd/m², 45% sRGB (1366 x 768)^{3,5}

EXTERNAL DISPLAY SUPPORT

VGA video output port supports resolutions up to 2048 x 1536 external resolution @ 60 Hz⁵

HDMI video output port supports direct connection to high-definition displays with up to 4096 x 2160 @ 24 Hz resolution and 7-channel audio with one cable (cable not included.)⁵

STORAGE AND DRIVES

128GB M.2 SATA TLC SSD⁶

Features

MEMORY

8 GB DDR4-2400 SDRAM (2 x 4 GB)

4 GB DDR4-2400 SDRAM (1 x 4 GB)

Maximum

8 GB DDR4-2400 SDRAM

Memory Slots

2 SODIMM

Both slots are customer accessible / upgradeable

DDR4 PC4 SODIMMS, system runs at 2133⁷

Supports Dual Channel Memory

NETWORKING/COMMUNICATIONS

Wireless LAN (WLAN)

Intel® Dual Band Wireless-AC 8265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo (non-vPro™)⁸

Wired LAN (Ethernet)

Realtek RTL8111HSH Gigabit Ethernet⁹

AUDIO/MULTIMEDIA

Audio

2 Integrated stereo speakers

Integrated dual array microphone

Webcam

720p HD webcam¹⁰

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

HP Premium Keyboard

HP Premium Keyboard

Backlit keyboard available as an option

Full-sized island-style, minor spill resistant

U.S.A. and International key layouts are available.

Pointing Device

Clickpad with multi-touch gesture support image sensor, taps enabled as default

Gestures enabled by default Win 10 IoT

Features

- 2 Finger Scrolling
- 2 Finger Zoom (Pinch)
- OSD (enable/disable)
- 3 finger flick = App switch
- 4 finger tap = Action Center

Function Keys

- ESC: System Information
- F1: Display Switching
- F2: Blank
- F3: Brightness Down
- F4: Brightness Up
- F5: Speaker Mute
- F6: Volume Down
- F7: Volume Up
- F8: Mic Mute
- F9: Backlight Toggle (for backlit keyboard) or Blank
- F10: NumLock
- F11: Wifi Toggle
- F12: Sleep

Hidden Functions

- Fn+R = Break
- Fn+S = Sys Rq
- Fn+C = Scroll Lock

SOFTWARE AND SECURITY

BIOS

- UEFI adheres to ISO/IEC 19678:2015 BIOS Protection Guidelines
- HP BIOSphere Gen4; features may vary depending on the configuration.
- BIOS update via network
- Master Boot Record Security
- Power On Authentication
- Secure Erase; for methods outlined in the National Institute of Standards and Technology Special Publication 800-88¹¹
- Pre-boot Authentication

Software¹²

- Supported protocols: Microsoft RDP; VMware® Horizon RDP/PCoIP, Blast Extreme; Citrix® ICA/HDX*
- Noise Cancellation Software
- HP Hotkey Filter (via add-on)
- HP Easy Shell
- HP USB Port Manager
- HP Velocity
- HP True Graphics

Features

HP Write Manager

*Protocols are dependent on operating system installed

Manageability

HP BIOS Config Utility (BCU) (via add-on)

HP Device Manager Agent

HP ThinUpdate

Microsoft SCCM Agent

Client Security Software

Microsoft Windows Defender ^{12,13}

Standard Security Features

TPM 2.0

Security lock slot

POWER

Adapters¹⁴

- 45 W Smart AC adapter
- 45 W Smart AC adapter 2-prong (Japan only)
- 65 W Smart AC adapter
- 65W EM Smart AC adapter

Primary Battery

HP 3-cell, Long Life 48 WHr Li-ion¹⁵

Battery life

Up to 15 hours¹⁶

Power Cord

2-wire plug - 1m (2-prong Japan only)

3-wire plug - 1m

3-wire plug - 1.8m

WEIGHTS & DIMENSIONS

Weight: starting at 1.63 kg (3.6 lbs)¹⁷

Dimensions (w x d x h):

33.6 x 23.8 x 1.99 cm

13.23 x 9.37 x 0.79 in

Features

PORTS/SLOTS¹⁸

- 1 USB 3.1 Type-C™
- 2 USB 3.1 Gen 1 (1 powered port)
- 1 VGA
- 1 HDMI 1.4b
- 1 headphone/microphone combo jack
- 1 AC power interface
- 1 RJ-45

Expansion Slots

- 1 multi-format digital media reader
- Supports SD, SDHC, SDXC.
-

SERVICE AND SUPPORT

HP Services offers a 1-year limited warranty. On-site service varies by country. HP Care Pack Services are optional extended service contracts that go beyond the standard limited warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at <http://www.hp.com/go/cpc>.¹⁹

CERTIFICATION AND COMPLIANCE

- ENERGY STAR® certified
- EPEAT® Gold²⁰
- Low halogen²¹

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	19 V
	Integrated graphics	5.71W
	Max Operating Power	UMA < 45W
Temperature	Operating	32° to 95° F (0° to 35° C)
	Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	Operating	40 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	Operating	0.75 grms
	Non-operating	1.50 grms
Altitude (unpressurized)	Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
Planned Industry Standard Certifications	UL	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR 6.0®	Select models ²²
	EPEAT	Registered Gold in United States ²³
	ICES	Yes
	Australia / NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	KC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCI or BELUS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
SABS	Yes	
UKRSERTCOMPUTER	Yes	

Technical Specifications

DISPLAYS

35.56 cm (14") diagonal FHD UWVA anti-glare flat LED backlit non-touch; 220 cd/m2; 45% sRGB (1920 x 1080)	Outline Dimensions (W x H)	320.9x205.6 (max)
	Active Area	309.31 x 173.99
	Weight	290 max.
	Diagonal Size	14 (inch)
	Thickness	3.0mm max
	Interface	eDP 1.2
	LCD Mode	TN
	PPI	
	Surface Treatment	Anti-Glare (AG)
	Touch Enabled	None
	Contrast Ratio	600:1 (typ) - AG
	Refresh Rate	60Hz
	Brightness	220 nits
	Pixel Resolution	1920 x 1080 (FHD)
	Format	RGB
	Backlight	LED
	Color Gamut Coverage	45%
Color Depth	6 bits + Hi FRC	
Viewing Angle	UWVA 85/85/85/85	

35.56 cm (14") diagonal HD SVA anti-glare LED-backlit non-touch; 220 cd/m2; 45% sRGB (1366 x 768)	Outline Dimensions (W x H)	320.9 x 205.6 (mm) max
	Active Area	309.40 x 173.95 (mm)
	Weight	290 g max
	Diagonal Size	14 (inch)
	Thickness	3.0 (mm) max
	Interface	eDP 1.2
	LCD Mode	TN
	PPI	
	Surface Treatment	Anti-Glare (AG)
	Touch Enabled	None
	Contrast Ratio	300:1 (typical)
	Refresh Rate	60 Hz
	Brightness	220 nits
	Pixel Resolution	1366 x 768 (HD)
	Format	RGB
	Backlight	LED
	Color Gamut Coverage	45%
Color Depth	6 bits + Hi FRC	

Technical Specifications

Viewing Angle	SVA 40/40/15/30
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AUDIO/MULTIMEDIA

Hardware	Implementation	Conexant CX7700
	Function Key Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes, dual digital microphone array
Audio Output Quality	Frequency Response	20Hz – 20kHz
	Signal to Noise Ratio	106 dB (DAC), 102dB (ADC)
	Total Harmonic Distortion	91dB THD+n on Line Out/HP (0.003%)
	Play Sampling Rate(s)	Up to 192kHz
	Record Sampling Rate(s)	Up to 96Khz
	DAC	16, 20 or 24-bit
	ADC	16, 20 or 24-bit
Integrated Stereo Speakers	Power Rating	2 Watts
	Impedance	4 Ohms

NETWORKING/COMMUNICATIONS**WLAN**

Intel 802.11 a/b/g/n/AC (2x2) WiFi and Bluetooth® Combo	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
	Interoperability	Wi-Fi certified
	Frequency Band	802.11b/g/n <ul style="list-style-type: none"> • 2.402 – 2.482 GHz 802.11a/n <ul style="list-style-type: none"> • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz
	Data Rates	<ul style="list-style-type: none"> • 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps

Technical Specifications

- 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
- 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)
- 802.11ac : MCS0 ~ MCS7, (1SS) (20MHz, 40MHz, and 80MHz)

Modulation

Direct Sequence Spread Spectrum
BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM

Security²⁴

- IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only
- AES-CCMP: 128 bit in hardware
- 802.1x authentication
- WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.
- WPA2 certification
- IEEE 802.11i
- Cisco Certified Extensions, all versions through CCX4 and CCX Lite
- WAPI

Network Architecture Models

Ad-hoc (Peer to Peer)
Infrastructure (Access Point Required)

Roaming

IEEE 802.11 compliant roaming between access points

Output Power²⁵

- 802.11b : +16dBm minimum
- 802.11g : +14dBm minimum
- 802.11a : +14dBm minimum
- 802.11n HT20(2.4GHz) : +14dBm minimum
- 802.11n HT40(2.4GHz) : +12dBm minimum
- 802.11n HT20(5GHz) : +14dBm minimum
- 802.11n HT40(5GHz) : +12dBm minimum
- 802.11ac 80MHz(5GHz) : +11dBm minimum

Power Consumption

Transmit: 2.0 W (max)
Receive: 1.6 W (max)
Idle mode (PSP): 180 mW (WLAN Associated)
Idle mode: 50 mW (WLAN unassociated)
Connect Standby: 10 mW (WLAN+BT)
Radio disabled: 5 mW

Power Management

ACPI and PCI Express compliant power management
802.11 compliant power saving mode

Receiver Sensitivity²⁶

802.11b, 1Mbps : -93.5dBm maximum
802.11b, 11Mbps : -84dBm maximum
802.11a/g, 6Mbps : -86dBm maximum
802.11a/g, 54Mbps : -72dBm maximum
802.11n, MCS07 : -67dBm maximum
802.11n, MCS15 : -64dBm maximum
802.11ac, MCS0 : -84dBm maximum
802.11ac, MCS9 : -59dBm maximum

Antenna type

High efficiency antenna with spatial diversity, mounted in the display enclosure
Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications

Form Factor

PCI-Express M.2 MiniCard

Dimensions

Type 2230 : 2.3 x 22.0 x 30.0 mm

Technical Specifications

Weight	Type 2230 : 2.8g
Operating Voltage	3.3v +/- 9%
Temperature	Operating 14° to 158° F (–10° to 70° C) Non-operating –40° to 176° F (–40° to 80° C)
Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
Altitude	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED White – Radio ON

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology

Bluetooth Specification	4.0/4.1/4.2 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)
Data Rates and Throughput	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
Transmit Power	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
Electrical Interface	USB 2.0 compliant
Bluetooth Software Supported	Microsoft Windows Bluetooth Software
Link Topology	
Power Management	Microsoft Windows ACPI, and USB Bus Support
Certifications	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Power Management	ETS 300 328, ETS 300 826
Certifications	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

Technical Specifications

LE Link Layer
 LE Low Duty Cycle Directed Advertising
 LE L2CAP Connection Oriented Channels
 Train Nudging & Interlaced Scan
 BT4.2 ESR08 Compliance
 LE Secure Connection- Basic/Full
 LE Privacy 1.2 –Link Layer Privacy
 LE Privacy 1.2 –Extended Scanner Filter Policies
 LE Data Packet Length Extension
 FAX Profile (FAX)
 Basic Imaging Profile (BIP)2
 Headset Profile (HSP)
 Hands Free Profile (HFP)
 Advanced Audio Distribution Profile (A2DP)

ETHERNET

Realtek Gigabit Ethernet Adapter

Features

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 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)
 Jumbo Frame 9K
 Auto MDI/MDIX Crossover cable detection

Power Management

ACPI compliant - multiple power modes
 Situation-sensitive features reduce power consumption
 Advanced link down power saving for reducing link down power consumption

Performance

TCP/IP/UDP Checksum Offload (configurable)
 Protocol Offload (ARP & NS)
 Large send offload and Giant send offload
 Receiving Side Scaling

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

Interface

PCI Express 1.1 to fully support ASPM L0s/L1 and CLKREQ

NIC Device Driver Name

Realtek PCIe GbE Ethernet Family Controller

STORAGE AND DRIVES

SSD 128GB 2280 M2 SATA-3 Value

Technical Specifications

Form-Factor (I/O)	M.2 2280
Capacity	128 GB
NAND Type	TLC
Weight	0.02 lb (10 g)
Height	0.09 in (2.3 mm)
Width	0.87 in (22 mm)
Interface	ATA-8, SATA 3.0
Sequential Read (Up to MB/s)	Up to 520 MB/s
Sequential Write (Up to MB/s)	Up to 450 MB/s
Logical Blocks	250,069,680
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
Other Features	DIPM; TRIM; DEVSLP

POWER

HP 45W Smart AC Adapter	Dimensions (H x W x D)	3.74 x 1.57 x 1.04 in (9.5 x 4.0 x 2.65 cm)
	Weight	0.386 lb (175g) max
	Input	90 to 265 VAC
	Input Efficiency	87.74% at 115Vac and 88.4% at 230Vac
	Input frequency range	47 to 63 Hz
	Input AC current	1.4 A at 90 VAC
	Output	Output power 45W
		DC output 19.5V
		Hold-up time 5 msec at 115 VAC input
		Output current limit <8.0A
	Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords
	Environmental Design	Operating temperature 32° to 95° F (0° to 35° C)
		Non-operating (storage) temperature -4° to 185° F (-20° to 85° C)
		Altitude 0 to 16,400 ft (0 to 5,000 m)
		Humidity 20% to 95%
		Storage Humidity 10% to 95%
	EMI and Safety Certifications	*CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950, EN60950, UL60950, Class 1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.

HP 65W AC Adapter	Dimensions	4.25 x 1.85 x 1.47 in (10.8 x 4.7 x 3.74 cm)
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Technical Specifications

Weight	1.81 lb (250g) max
Input	100 to 240 VAC
	Input Efficiency 88% min at 115 VAC and 89% min at 230 VAC
	Input frequency range 47 to 63 Hz
	Input AC current 1.7 A at 90 VAC
Output	Output power 65W
	DC output 19.5V
	Hold-up time 5 msec at 115 VAC input
	Output current limit <11A, Over voltage protection- 29V max automatic shutdown
Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords
Environmental Design	Operating temperature 32° to 104° F (0° to 40° C)
	Non-operating (storage) temperature -4° to 149° F (-20° to 65° C)
	Altitude 0 to 10,000 ft (0 to 3,048 m)
	Humidity 20% to 80%
	Storage Humidity 10% to 90%
EMI and Safety Certifications	<p>*CE Mark - full compliance with LVD and EMC directives</p> <p>* Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.</p> <p>* MTBF - over 200,000 hours at 25°C ambient condition.</p>

HP 3-cell, Long Life 48 WHr Li-ion	Dimensions (H x W x L)	7.0. x180.48x88.95 mm (0.273 x 7.09 x 3.49 inch)
	Weight	0.22 kg (0.48lb)
	Cells/Type	3cell Lithium-Ion
	Energy	Voltage 11.4V/ 10.95V
		Amp-hour capacity 4.212Ah /4.385Ah
		Watt-hour capacity 48Wh
	Temperature	Operating (Charging) 32° to 113° F (0° to 45° C)
		Operating (Discharging) 14° to 122° F (-10° to 60° C)
		Non-operating -4° to 122° F (-20° to 60° C)
	Battery Re-Charge Time	System in OFF or Standby Mode <3 hours
	Fuel Gauge LED	No
	Warranty	3-years

Technical Specifications

Optional Travel Battery Available No

ENVIRONMENTAL DATA

Packaging Materials	External:	PAPER/Corrugated	340.5 g
	Internal:	PLASTIC/EPE (Expanded Polyethylene)	40.4 g
		PLASTIC/Polyethylene low density	9.1 g

The plastic packaging material contains at least 0% recycled content.

The corrugated paper packaging materials contains at least 80% recycled content.

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at <http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf>):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Technical Specifications

Packaging Usage

HP follows these guidelines to decrease the environmental impact of product packaging:

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

End-of-life Management and Recycling

HP Inc. offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <http://www.hp.com/go/reuse-recycle> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the HP Inc. 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.

HP Inc. 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://www8.hp.com/us/en/hp-information/environment/ecolabels.html>

ISO 14001 certificates:

<http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842>

and

<http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf>

Country of Origin

China

DISCLAIMERS

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. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.microsoft.com>.
2. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode. Multiple cores improve performance of certain software products. Not all users 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 is not a measurement of higher performance.
3. HD content required to view HD images

Technical Specifications

4. Optional equipment.
5. Resolutions are dependent upon monitor capability, and resolution and color depth settings.
6. For flash memory drives, GB = 1 billion bytes. Actual formatted capacity is less.
7. 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 will perform at the lower memory speed.
8. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.
9. The term "Gigabit Ethernet" indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.
10. Webcam included on select models; HD content required to view HD images; Internet access required.
11. Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88. Supported on Elite platforms with BIOS version F.03 or higher.
12. Only available with Windows 10 IoT Enterprise OS
13. Microsoft Defender Opt in and internet connection required for updates
14. Availability may vary by country.
15. Battery is internal and not replaceable by customer. Serviceable by warranty.
16. Windows 10 MM14 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See www.bapco.com for additional details.
17. Weight will vary by configuration
18. All cables are not included and sold separately
19. 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. 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. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: <http://www.hp.com/go/cpc>.
20. EPEAT® registered where applicable. EPEAT registration varies by country. See <http://www.epeat.net> for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at <http://www.hp.com/go/options>.
21. External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.
22. ENERGY STAR® qualified configurations are identified on HP websites and on <http://www.energystar.gov>.
23. EPEAT® registration varies by country. See <http://www.epeat.net> for registration status by country. EPEAT status listed above applies to U.S. For accessibility information on HP products, please visit: <http://www.hp.com/accessibility>.
24. Check latest software/driver release for updates on supported security features.
25. Maximum output power may vary by country according to local regulations.
26. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

Options and Accessories (sold separately and availability may vary by country)

Type	Description	Part Number
Cases	HP Essential Top Load Case	H2W17AA
	HP Essential Backpack	H1D24AA
	HP Essential Messenger Case	H1D25AA
Docking*	HP 3005pr USB3 Port Replicator	Y4H06AA
	HP USB-C Travel Dock	T0K29AA
	HP Elite USB-C Docking Station	X7W54AA
	HP Elite USB-C Dock	Z9R42AA
	HP Elite USB-C Dock G3	2DW60AA
Input/Output	HP Slim USB Keyboard and Mouse	T6T83AA
	HP Slim Wireless Keyboard and Mouse	T6L04AA
	HP Ultra Mobile Wireless Mouse	H6F25AA
	HP Comfort Grip Wireless Mouse	H2L63AA
	HP 3-Button USB Laser Mouse	H4B81AA
	HP USB Travel Mouse	G1K28AA
	HP HDMI to DVI Adapter	F5A28AA
	HP USB-C to DP	N9K78AA
	HP USB-C to USB-A Hub	Z6A00AA
	HP Stereo 3.5mm Headset	T1A66AA
HP Stereo USB Headset	T1A67AA	
Power	HP 45W Smart AC Adapter 4.5mm	H6Y88AA
	HP 65W Smart AC Adapter	H6Y89AA
	HP 65W Slim AC Adapter	H6Y82AA
	HP 45W USB-C Power Adapter	1HE07AA
	HP 65W USB-C Power Adapter	1HE08AA
	HP Power Bank	N9F71AA
	HP USB-C Notebook Power Bank	1TZ86AA
	HP Notebook Power Bank	N9F71AA
Storage	HP External USB Optical Drive	F2B56AA
Security	HP Essential Combination Lock	T0Y16AA
	HP Combination Lock	T0Y15AA
	HP Keyed Cable lock	T0Y14AA
	HP Keyed Cable Lock 10mm	T1A62AA
UCC	HP Conferencing Keyboard	K8P74AA

Options and Accessories (sold separately and availability may vary by country)

HP UC Wireless Mono Headset	W3K08AA
HP UC Wireless Duo Headset	W3K09AA
HP UC Speaker Phone	K7V16AA
HP UC Wired Headset	K7V17AA

Displays

HP EliteDisplay S140u USB Portable Monitor	G8R65AA
HP ProDisplay P240VA 23.8-inch Monitor	N3H14AA
HP ProDisplay P232 23-inch Monitor	K7X31AA
HP ProDisplay P223 21.5-inch Monitor	X7R61AA
HP EliteDisplay E230t 23-inch Touch Monitor	W2Z50AA
HP EliteDisplay E240c 23.8-inch Collaboration Monitor	M1P00A8

* ThinPro is not supported

Date of change:	Version History:		Description of change:
September 18, 2017	From v1 to v2	Changed	BIOSphere fixed to G4 from G3 and Overview point number 14 and footnote #2 status switched from “pending” to “passed”
October 2, 2017	From v2 to v3	Added	HP Write Manager added to software section
August 20, 2018	From v3 to v4	Changed	Software support for VMware Horizon

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