

### 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.**

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### Features

## OPERATING SYSTEMS

**Preinstalled** HP ThinPro with Smart Zero Core  
Microsoft Windows 10 IoT Enterprise<sup>1</sup>

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## PROCESSOR

Intel® Celeron™ 3865U (1.8GHz dual-core) with Intel® HD graphics<sup>2,3</sup>

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## GRAPHICS

Intel® HD Graphics integrated as part of the Celeron processor<sup>3</sup>

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## DISPLAY SUPPORT

### eDP FHD Flat

35.56 cm (14") diagonal FHD UWVA anti-glare flat LED backlit non-touch, 220 cd/m<sup>2</sup>, 45% sRGB (1920 x 1080)<sup>3,4,5</sup>

### eDP HD Flat

35.56 cm (14") diagonal HD SVA anti-glare LED-backlit non-touch, 220 cd/m<sup>2</sup>, 45% sRGB (1366 x 768)<sup>3,5</sup>

### EXTERNAL DISPLAY SUPPORT

VGA video output port supports resolutions up to 2048 x 1536 external resolution @ 60 Hz<sup>5</sup>

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.)<sup>5</sup>

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## STORAGE AND DRIVES

128GB M.2 SATA TLC SSD<sup>6</sup>

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### 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 2133<sup>7</sup>

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™)<sup>8</sup>

### Wired LAN (Ethernet)

Realtek RTL8111HSH Gigabit Ethernet<sup>9</sup>

## AUDIO/MULTIMEDIA

### Audio

2 Integrated stereo speakers  
Integrated dual array microphone

### Webcam

720p HD webcam<sup>10</sup>

## 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

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## 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 800-88<sup>11</sup>
- Pre-boot Authentication

### Software<sup>12</sup>

- Noise Cancellation Software
- HP Hotkey Filter (via add-on)
- HP Easy Shell
- HP USB Port Manager
- HP Velocity
- HP True Graphics

## Features

### Manageability

HP BIOS Config Utility (BCU) (via add-on)  
HP Device Manager Agent  
HP ThinUpdate  
Microsoft SCCM Agent

### Client Security Software

Microsoft Windows Defender <sup>12,13</sup>

### Standard Security Features

TPM 2.0  
Security lock slot

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## POWER

### Adapters<sup>14</sup>

- 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-ion<sup>15</sup>

### Battery life

Up to 15 hours<sup>16</sup>

### Power Cord

2-wire plug - 1m (2-prong Japan only)  
3-wire plug - 1m  
3-wire plug - 1.8m

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## WEIGHTS & DIMENSIONS

**Weight:** starting at 1.63 kg (3.6 lbs)<sup>17</sup>

**Dimensions** (w x d x h):

33.6 x 23.8 x 1.99 cm

13.23 x 9.37 x 0.79 in

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## PORTS/SLOTS<sup>18</sup>

1 USB 3.1 Type-C™

2 USB 3.1 Gen 1 (1 powered port)

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### Features

- 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.
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### 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>.<sup>19</sup>

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### CERTIFICATION AND COMPLIANCE

- ENERGY STAR<sup>®</sup> certified
- EPEAT<sup>®</sup> Gold<sup>20</sup>
- Low halogen<sup>21</sup>



### Technical Specifications

#### SYSTEM UNIT

<b>Stand-Alone Power Requirements (AC Power)</b>	Nominal Operating Voltage	19 V
	Integrated graphics	5.71W
	Max Operating Power	UMA < 45W
<b>Temperature</b>	Operating	32° to 95° F (0° to 35° C)
	Non-operating	-4° to 140° F (-20° to 60° C)
<b>Relative Humidity</b>	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
<b>Shock</b>	Operating	40 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
<b>Random Vibration</b>	Operating	0.75 grms
	Non-operating	1.50 grms
<b>Altitude (unpressurized)</b>	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)
<b>Planned Industry Standard Certifications</b>	UL	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR 6.0®	Select models <sup>22</sup>
	EPEAT	Registered Gold in United States <sup>23</sup>
	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

<b>35.56 cm (14") diagonal FHD UWVA anti-glare flat LED backlit non-touch; 220 cd/m<sup>2</sup>; 45% sRGB (1920 x 1080)</b>	<b>Outline Dimensions (W x H)</b>	320.9x205.6 (max)
	<b>Active Area</b>	309.31 x 173.99
	<b>Weight</b>	290 max.
	<b>Diagonal Size</b>	14 (inch)
	<b>Thickness</b>	3.0mm max
	<b>Interface</b>	eDP 1.2
	<b>LCD Mode</b>	TN
	<b>PPI</b>	
	<b>Surface Treatment</b>	Anti-Glare (AG)
	<b>Touch Enabled</b>	None
	<b>Contrast Ratio</b>	600:1 (typ) - AG
	<b>Refresh Rate</b>	60Hz
	<b>Brightness</b>	220 nits
	<b>Pixel Resolution</b>	1920 x 1080 (FHD)
	<b>Format</b>	RGB
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	45%
<b>Color Depth</b>	6 bits + Hi FRC	
<b>Viewing Angle</b>	UWVA 85/85/85/85	

<b>35.56 cm (14") diagonal HD SVA anti-glare LED-backlit non-touch; 220 cd/m<sup>2</sup>; 45% sRGB (1366 x 768)</b>	<b>Outline Dimensions (W x H)</b>	320.9 x 205.6 (mm) max
	<b>Active Area</b>	309.40 x 173.95 (mm)
	<b>Weight</b>	290 g max
	<b>Diagonal Size</b>	14 (inch)
	<b>Thickness</b>	3.0 (mm) max
	<b>Interface</b>	eDP 1.2
	<b>LCD Mode</b>	TN
	<b>PPI</b>	
	<b>Surface Treatment</b>	Anti-Glare (AG)
	<b>Touch Enabled</b>	None
	<b>Contrast Ratio</b>	300:1 (typical)
	<b>Refresh Rate</b>	60 Hz
	<b>Brightness</b>	220 nits
	<b>Pixel Resolution</b>	1366 x 768 (HD)
	<b>Format</b>	RGB
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	45%
<b>Color Depth</b>	6 bits + Hi FRC	

## Technical Specifications

<b>Viewing Angle</b>	SVA 40/40/15/30
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**AUDIO/MULTIMEDIA**

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

**NETWORKING/COMMUNICATIONS****WLAN**

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

## Technical Specifications

	<ul style="list-style-type: none"> <li>• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</li> <li>• 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)</li> <li>• 802.11ac : MCS0 ~ MCS7, (1SS) (20MHz, 40MHz, and 80MHz)</li> </ul>
<b>Modulation</b>	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
<b>Security<sup>24</sup></b>	<ul style="list-style-type: none"> <li>• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only</li> <li>• AES-CCMP: 128 bit in hardware</li> <li>• 802.1x authentication</li> <li>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.</li> <li>• WPA2 certification</li> <li>• IEEE 802.11i</li> <li>• Cisco Certified Extensions, all versions through CCX4 and CCX Lite</li> <li>• WAPI</li> </ul>
<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
<b>Output Power<sup>25</sup></b>	<ul style="list-style-type: none"> <li>• 802.11b : +16dBm minimum</li> <li>• 802.11g : +14dBm minimum</li> <li>• 802.11a : +14dBm minimum</li> <li>• 802.11n HT20(2.4GHz) : +14dBm minimum</li> <li>• 802.11n HT40(2.4GHz) : +12dBm minimum</li> <li>• 802.11n HT20(5GHz) : +14dBm minimum</li> <li>• 802.11n HT40(5GHz) : +12dBm minimum</li> <li>• 802.11ac 80MHz(5GHz) : +11dBm minimum</li> </ul>
<b>Power Consumption</b>	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
<b>Power Management</b>	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
<b>Receiver Sensitivity<sup>26</sup></b>	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
<b>Antenna type</b>	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
<b>Form Factor</b>	PCI-Express M.2 MiniCard
<b>Dimensions</b>	Type 2230 : 2.3 x 22.0 x 30.0 mm

### Technical Specifications

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

<b>Bluetooth Specification</b>	4.0/4.1/4.2 Compliant
<b>Frequency Band</b>	2402 to 2480 MHz
<b>Number of Available Channels</b>	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)
<b>Data Rates and Throughput</b>	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)
<b>Transmit Power</b>	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.
<b>Power Consumption</b>	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
<b>Electrical Interface</b>	USB 2.0 compliant
<b>Bluetooth Software Supported</b>	Microsoft Windows Bluetooth Software
<b>Link Topology</b>	
<b>Power Management</b>	Microsoft Windows ACPI, and USB Bus Support
<b>Certifications</b>	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
<b>Power Management</b>	ETS 300 328, ETS 300 826
<b>Certifications</b>	Low Voltage Directive IEC950
	UL, CSA, and CE Mark
<b>Bluetooth Profiles Supported</b>	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

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

### POWER

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

<b>HP 65W AC Adapter</b>	<b>Dimensions</b>	4.25 x 1.85 x 1.47 in (10.8 x 4.7 x 3.74 cm)
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### Technical Specifications

<b>Weight</b>	1.81 lb (250g) max
<b>Input</b>	100 to 240 VAC
	<b>Input Efficiency</b> 88% min at 115 VAC and 89% min at 230 VAC
	<b>Input frequency range</b> 47 to 63 Hz
	<b>Input AC current</b> 1.7 A at 90 VAC
<b>Output</b>	<b>Output power</b> 65W
	<b>DC output</b> 19.5V
	<b>Hold-up time</b> 5 msec at 115 VAC input
	<b>Output current limit</b> <11A, Over voltage protection- 29V max automatic shutdown
<b>Connector</b>	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords
<b>Environmental Design</b>	<b>Operating temperature</b> 32° to 104° F (0° to 40° C)
	<b>Non-operating (storage) temperature</b> -4° to 149° F (-20° to 65° C)
	<b>Altitude</b> 0 to 10,000 ft (0 to 3,048 m)
	<b>Humidity</b> 20% to 80%
	<b>Storage Humidity</b> 10% to 90%
<b>EMI and Safety Certifications</b>	<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>

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



### Technical Specifications

**Optional Travel Battery Available**      No

### ENVIRONMENTAL DATA

<b>Packaging Materials</b>	<b>External:</b>	PAPER/Corrugated	340.5 g
	<b>Internal:</b>	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>

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#### Country of Origin

China

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### 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

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## 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](http://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
<b>Cases</b>	HP Essential Top Load Case	H2W17AA
	HP Essential Backpack	H1D24AA
	HP Essential Messenger Case	H1D25AA
<b>Docking*</b>	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
<b>Input/Output</b>	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	
<b>Power</b>	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
<b>Storage</b>	HP External USB Optical Drive	F2B56AA
<b>Security</b>	HP Essential Combination Lock	T0Y16AA
	HP Combination Lock	T0Y15AA
	HP Keyed Cable lock	T0Y14AA
	HP Keyed Cable Lock 10mm	T1A62AA
<b>UCC</b>	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

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<b>Date of change:</b>	<b>Version History:</b>		<b>Description of change:</b>
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"

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