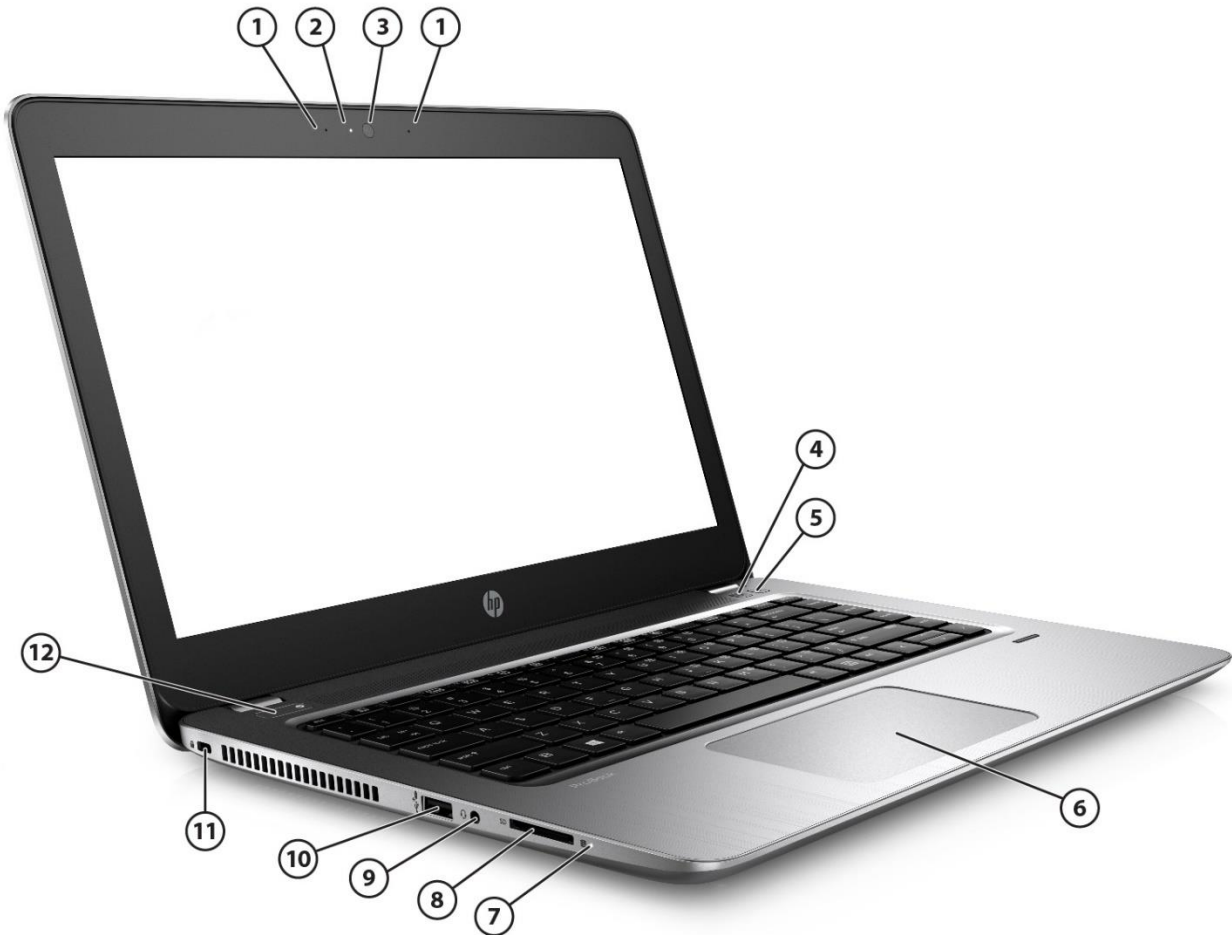


Overview

HP mt20 Mobile Thin Client



Front

- | | |
|---------------------------------|-------------------------------------|
| 1. Microphones (2) | 7. Storage drive LED |
| 2. Webcam light (select models) | 8. SD Card reader |
| 3. Webcam (select models) | 9. Headphone/Microphone combo jack |
| 4. Wireless on/off button | 10. USB 2.0; Type-A port (charging) |
| 5. Speaker mute button | 11. Security lock slot |
| 6. Touchpad | 12. Power button |

Overview



Rear

- | | |
|-------------------------------|--|
| 1. USB 3.1 gen1; Type-C™ port | 4. VGA video output |
| 2. USB 3.0; Type-A port | 5. RJ45 Gigabit Ethernet network interface |
| 3. HDMI video output | 6. Power adapter interface |

Overview

At a Glance

1. Operating systems available:
 - HP ThinPro / Smart Zero Core
 - Microsoft Windows 10 IoT Enterprise
2. Intel® Celeron 3865U Processor (1.8GHz dual-core) with Intel® HD graphics
3. 14" diagonal HD anti-glare Slim LED-backlit display supporting up to 1366 x 768 resolution
4. HD webcam with dual-microphone array for video conferencing (select models)
5. Intel® Dual Band Wireless-AC 3168 Wi-Fi + BT 4.2 adapter
6. Full size HP Premium Keyboard; minor spill-resistant with a thin layer of Mylar film to prevent minor spills
7. Separate launch buttons provide easy access to wireless on/off and speaker mute
8. Function keys provide control of features including standby mode, display brightness, external display, microphone mute, volume up and down
9. Large Click pad with support for gestures
10. Enhanced security features with preinstalled software and hardware options
11. HDMI digital video output for connecting to high-resolution displays
12. VGA analog video output
13. Battery:
 - HP 3-cell, 48 WHr Li-ion battery
 - Up to 15h 30m battery life

NOTE: See important legal disclosures for all listed specs in their respective features sections.

Features

OPERATING SYSTEMS

HP ThinPro with Smart Zero Core

Microsoft Windows 10 IoT Enterprise¹

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>.

PROCESSOR

Intel® Celeron™ 3865U (1.8GHz dual-core) with Intel® HD graphics

NOTE: 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.

NOTE: HD content required to view HD images

GRAPHICS

Intel® HD Graphics integrated as part of the Celeron processor

NOTE: HD content required to view HD images.

DISPLAY SUPPORT

14" (35.5 cm) diagonal HD¹ anti-glare LED-backlit (1366 x 768)

NOTE: HD content required to view HD images

EXTERNAL DISPLAY SUPPORT

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

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.)

NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

STORAGE AND DRIVES

128GB M.2 2280 flash memory storage drive

NOTE: For flash memory drives, GB = 1 billion bytes. Actual formatted capacity is less.

Features

MEMORY

- Two SODIMM slots supports dual-channel memory configurations
 - Both slots are customer accessible / upgradeable
- DDR4 SODIMMS; system runs at 2,133 MT/s
- Supports up to 8GB (2 x 4GB dual-channel configuration)
- Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

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 will perform at the lower memory speed.

NETWORKING/COMMUNICATIONS

Wi-Fi (WLAN)

Intel® Dual Band Wireless-AC 3168 Wi-Fi + Bluetooth 4.2 Combo (802.11ac; 1x1)

NOTE: 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.

Wired LAN

Realtek RTL8111HSH Gigabit Ethernet

NOTE: 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.

AUDIO/MULTIMEDIA

Audio

- Two stereo speakers
- Integrated microphone (dual-microphone array when equipped with optional webcam)
- Headphone/microphone combo jack

Webcam

720p HD² webcam³

NOTE: Webcam included on select models; HD content required to view HD images; Internet access required.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

HP Premium Keyboard

The HP minor spill-resistant keyboard uses a thin layer of Mylar film under the keyboard. The 101/102-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as editing keys, both left and right control and alt keys, and function keys. U.S.A. and International key layouts are available.

Buttons and Function Keys

Features

Separate launch buttons provide easy access to wireless on/off and speaker mute. Function keys provide control of features including standby mode, display brightness, external display, microphone mute, volume down and volume up.

Function Keys

ESC:	system information
F1:	Sleep
F2:	Blank
F3:	Backlight keyboard dimming
F4:	Display Switching
F5:	Brightness Down
F6:	Brightness Up
F7:	Blank
F8:	Volume Down
F9:	Volume Up
F10:	Mic Mute
F11:	Blank
F12:	NumLock

Pointing Device

Click pad with gestures support, two-way scroll; taps enabled as default

Gestures enabled by default in Windows 10 IoT

- 2 finger scrolling
- 2 finger zoom (Pinch)
- OSD (enable/disable)
- 3 finger flick = App switch
- 4 finger tap = Action Center

Gestures disabled by default in Windows 10 IoT

- 3 finger flick
 - 2 finger rotate
 - Momentum motion
 - 1 finger vertical scroll
-

Features

SOFTWARE AND SECURITY

UEFI

- UEFI adheres to NIST SP800-147
- HP BIOSphere; features may vary depending on the configuration.
- HP DriveLock | HP Automatic DriveLock
- HP BIOS Protection; may require a manual recovery step if all copies of the UEFI are compromised or deleted.
- UEFI update via network
- Master Boot Record Security
- Power On Authentication
- Pre-Boot Security
- Secure Erase; for methods outlined in the National Institute of Standards and Technology Special Publication 800-88
- Hybrid Boot
- Measure Boot
- Secure Boot

HP Value Add Software

Windows OS:

- HP Hotkey Filter
- HP Easy Shell¹
- HP USB Port Manager
- HP Velocity

1. [HP Easy Shell is only available on HP Thin Clients with a Windows OS.](#)

Manageability

- HP Device Manager Agent
- HP ThinUpdate
- Microsoft SCCM Agent

Client Security Software

- Microsoft Defender (Windows OS only)

Standard Security Features

- TPM 2.0
- Security lock slot
- Pre-boot Authentication

Features

POWER

Adapters

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

Battery

HP 3-cell, Long Life 48 WHr Li-ion; up to 15h 30 min life

NOTE: Battery is not replaceable by the user

NOTE: 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 <http://www.bapco.com> for additional details

WEIGHTS & DIMENSIONS

Weight: starting at 1.64 kg (3.61 lbs)

Dimensions (w x d x h):

34.32 x 23.90 x 2.03 cm; 13.51 x 9.41 x 0.80 in

NOTE: Height varies depending upon where on the notebook the measurement is taken. Weight varies by configuration and components.

PORTS/SLOTS

- 1 x USB 3.0; Type A port
- 1 x USB 2.0; Type A port (charging)
- 1 x USB 3.1 gen1; Type-C™ port
- 1 x VGA video output
- 1 x HDMI video output
- 1 x headphone/microphone combo jack
- 1 x AC power interface
- 1 x RJ-45 Gigabit Ethernet interface
- 1 x Multi-format Reader Slot; supports SD, SDHC, SDXC

NOTE: All cables are not included and sold separately

Features

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>.

NOTE: 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>.

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	19 V
	Integrated graphics	6.78W
	Max Operating Power	UMA < 45W
Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	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 ¹
	EPEAT	Registered Gold in United States ²
	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	

¹ENERGY STAR[®] qualified configurations are identified on HP websites and on <http://www.energystar.gov>.

²EPEAT[®] 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>.

Technical Specifications

DISPLAYS

Panel LCD 14.0 HD AG WLED SVA 45%cg 220nits eDP Slim

Active Area (W x H)	309.40 x 173.95 (mm)
Dimensions (W x H)	320.9 x 205.6 (mm) max
Diagonal Size	14 (inch)
Thickness	3.0 (mm) max
Weight	290 g max
Interface	eDP 1.2
Surface Treatment	Anti-Glare (AG)
Contrast Ratio	300:1 (typical)
Refresh Rate	60 Hz
Brightness	220 nits
Pixel Resolution - Format	1366 x 768 (HD)
Pixel Resolution - Configuration	RGB
Backlight	LED
Color Gamut Coverage	45%
Color Depth	6 bits + Hi FRC
Viewing Angle	SVA 40/40/15/30
Touch Point Supported	10-point multi-touch
Other Features	AS
Pen Enabled	No

Technical Specifications

STORAGE

SSD 128GB 2280 M2 SATA-3 Value

Form-Factor (I/O)	M.2 2280
Capacity	128 GB
NAND Type	TLC
Weight	0.01 lb (6 g) ~ 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)	530 ~ 535
Sequential Write (Up to MB/s)	185 ~ 515
Logical Blocks	250,069,680
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
Security Features	ATA Security
Other Features	DIPM; TRIM; DEVSLP

NETWORKING/COMMUNICATIONS

WI-FI

Intel® Dual Band Wireless-AC 3168 + Bluetooth® Combo

Wireless LAN Standards	<ul style="list-style-type: none"> • 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

- 2.402 – 2.482 GHz

NOTE: the FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.

802.11a/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

NOTE: Indonesia only supports 5.725 - 5.825 GHz (CH149 - CH161)

Data Rates

- 802.11b: 1, 2, 5.5, 11 Mbps
- 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
- 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)

Technical Specifications

Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
Security¹	<ul style="list-style-type: none"> • 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 Power²	<ul style="list-style-type: none"> • 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) : +11 dBm 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 Sensitivity³	802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -88dBm maximum 802.11a, 54Mbps : -74dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum 802.11ac, 1SS, MCS-0 : -86dBm maximum 802.11ac, 1SS, MCS-9 : -61dBm maximum 802.11ac, 2SS, MCS-0 : -83dBm maximum 802.11ac, 2SS, MCS-9 : -58dBm 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 Or Type 1630 : 2.3 x 16.0 x 30.0 mm
Weight	Type 2230 : 2.8g

Technical Specifications

	Or Type 1630 : 2g	
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	
	<ol style="list-style-type: none"> 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.

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)

Technical Specifications

Manageability	<p>Large send offload and Giant send offload Receiving Side Scaling</p> <p>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</p>
Interface	PCI Express 1.1 to fully support ASPM L0s/L1 and CLKREQ
NIC Device Driver Name	Realtek PCIe GbE Ethernet Family Controller

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	
Integrated Stereo Speakers	DAC	16, 20 or 24-bit	
	ADC	16, 20 or 24-bit	
	Power Rating	2 Watts	
	Impedance	4 Ohms	

Technical Specifications

POWER

HP 45W Smart AC Power Adapter

Dimensions (H x W x D)	9.5 x 4.0 x 2.65 cm	
	3.74 x 1.57 x 1.04 in	
Weight	175g; 0.386 lb	
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 temperature (storage)	-4° to 185° F (-20° to 85° C)
	Altitude	0 to 16,400 ft (0 to 5,000 m)
	Humidity	20% to 95%
EMI and Safety Certifications	Storage humidity	10% to 95%
	*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.		

HP 65W AC Adapter, nPFC 3Pin RC 4.5mm

Dimensions	10.8 x 4.7 x 3.74 cm	
	4.25 x 1.85 x 1.47 in	
Weight	250g; 1.81 lb 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	

Technical Specifications

Environmental Design	Operating temperature	32° to 104° F (0° to 40° C)
	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	*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.	

HP 3-cell, Long Life 48 WHr Li-ion

Dimensions (H x W x L)	0.7 x 18.0 x 8.9 cm	
	0.273 x 7.09 x 3.49 in	
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	System in OFF or Standby Mode	<3 hours
Fuel Gauge LED	No	
Optional Travel Battery Available	No	

COUNTRY OF ORIGIN

China

Technical Specifications

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:

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

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”.

Energy Consumption (in accordance with US ENERGY STAR® test method)

	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation (Short idle)	7.28 W	7.56 W	7.38 W
Normal Operation (Long idle)	3.93 W	4.05 W	3.91 W
Sleep	0.49 W	0.55 W	0.49 W
Off	0.31 W	0.36 W	0.31 W

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 PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

Heat Dissipation*

	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation (Short idle)	25 BTU/hr	26 BTU/hr	25 BTU/hr
Normal Operation (Long idle)	13 BTU/hr	14 BTU/hr	13 BTU/hr
Sleep	2 BTU/hr	2 BTU/hr	2 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 BTU/hr

*NOTE: 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)

	Sound Power (L _{WAd} , bels)	Sound Pressure (L _{pAm} , decibels)
Typically Configured – Idle	2.8	18
Fixed Disk – Random writes	2.8	18

Longevity and Upgrading

This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:

- 3 USB ports
- 1 PC card slot (type I/II)
- 1 ExpressCard/54 slot
- 1 IEEE 1394 Port
- 2 SODIMM memory slots

Technical Specifications

- Optional expansion base docking station
- 1 multi-bay II storage port
- Interchangeable HDD??

Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.

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 1ppm by weight

Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)

Battery type: Lithium

Battery size: 3-cell high capacity Lithium-Ion battery (optional 8 cell available)

Battery type:

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/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> level, see www.epeat.net
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 0% post-consumer recycled plastic (by wt.)
- This product is 95.1% recycle-able when properly disposed of at end of life.

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

Technical Specifications

- 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 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>

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

Type	Description	Part Number
Docking	HP 3005pr USB 3.0 Port Replicator	Y4H06AA
Power	HP 65W Smart AC Adapter	H6Y89AA#xxx
	HP 65W Slim AC Adapter	H6Y82AA#xxx
Security	HP Combination Lock	T0Y15AA
	HP Keyed Cable Lock 10mm	T1A62AA
UCC	HP Wired Headset	K7V17AA

Summary of Changes

Date of change:	Version History:		Description of change:
January 16, 2017	From v1 to v2	Added	HP Easy Shell footnote
		Changed	Callouts rearrangement, Windows footnote, spill-resistant to minor spill-resistant, Warranty statement
		Removed	3 finger tap – Cortana gesture.
February 27, 2017	From v2 to v3	Added	HP Velocity in Software and Security, Enviromental Data.
		Changed	Memory support, Software and Security, CIK to MS SCCM Agent, MS Defender, Battery Life, Multi-media to Multiformat in Ports and Slots
		Removed	BIOS (BCU)

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