

Overview

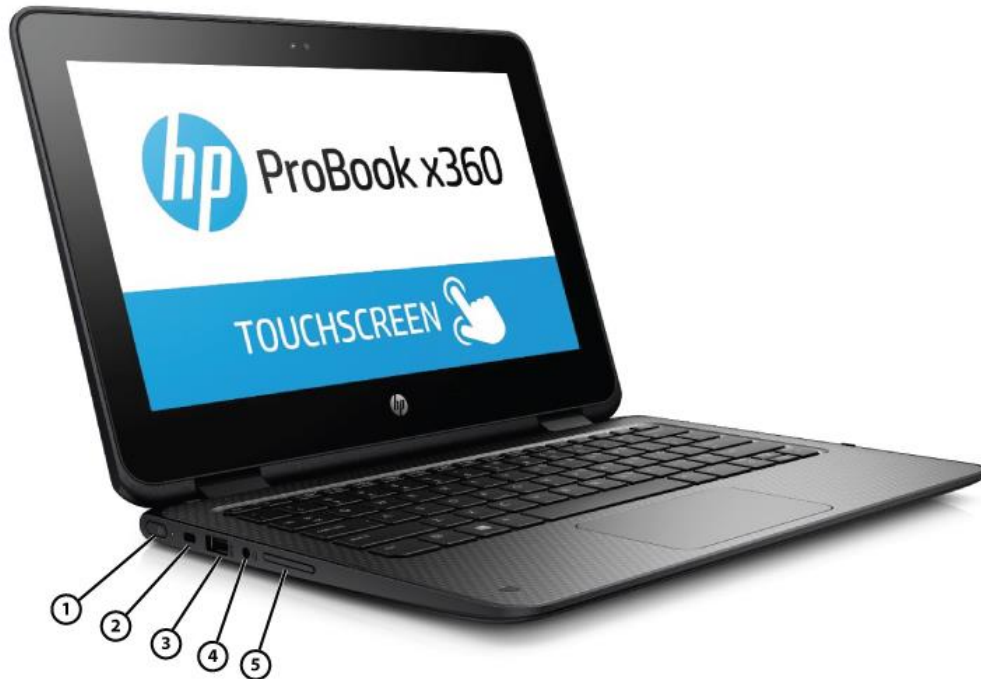
HP ProBook x360 11 G1 EE Notebook PC



Front Right

- | | | | |
|----|--------------------------|-----|--|
| 1. | WLAN antennas (2) | 8. | USB 3.1 Gen 1 port |
| 2. | Internal microphones (2) | 9. | USB Type-C™ (Data only) |
| 3. | User-facing webcam LED | 10. | Micro SD card reader |
| 4. | User-facing 720p webcam | 11. | ClickPad |
| 5. | Power connector | 12. | World-facing 1080p webcam (select models only) |
| 6. | Ethernet (RJ-45) port | 13. | World-facing webcam LED (select models only) |
| 7. | HDMI v1.4b | | |

Overview

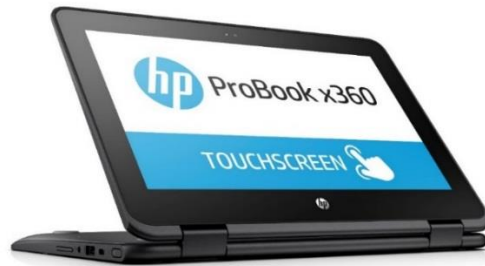


Front Left

- | | | | |
|----|--------------------|----|-----------------------------------|
| 1. | Power button | 4. | Headphone / Microphone Combo Jack |
| 2. | Security lock slot | 5. | Volume button |
| 3. | USB 3.1 Gen 1 Port | | |

Overview

Stand Mode



Tablet Mode



Tent Mode



Overview

AT A GLANCE

- Starting at 2.98 lbs (1.35 kg) non-touch and 3.19 lbs (1.45 kg) touch
- Less than 20 mm (0.79"), this flexible 360° hinge converts to laptop, tablet, tent, or stand mode easily
- Passed MIL-STD 810G testing¹ with rugged features such as co-molded rubber trim, spill- and pick-resistant keyboard, and Corning® Gorilla® Glass 4 touch screen
- Optional dual camera system for project-based learning
- Optional HP Active Pen provides an authentic digital inking experience
- Pre-installed with Windows 10 Pro 64, Windows 10 Pro 64 (National Academic), Windows 10 Home 64, or Windows 10 S
- Powered by Intel® Celeron® N3350, Intel® Celeron® N3450 and Intel® Pentium® N4200 processors
- Choice of 29.4 cm (11.6") diagonal HD SVA anti-glare slim LED non-touch (1366 x 768) or 29.4 cm (11.6") diagonal HD SVA slim LED touch screen (1366 x 768) displays
- 64 GB eMMC or up to 256GB SATA-3 Solid State Drive storage options
- Up to 4 GB system memory for enhanced memory management
- Reliable connectivity with Intel® Dual Band Wireless-AC 7265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo WLAN for learning and collaboration beyond the classroom
- Built-in ports include: Ethernet (RJ-45), USB 3.1 Gen 1, USB Type-C™, and HDMI 1.4b port for connecting to high-resolution displays
- Enhanced security TPM 2.0 discrete chip
- Battery life up to 11 hours

1. MIL STD 810G testing is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Damage under the MIL STD test conditions or any accidental damage requires an optional HP Accidental Damage Protection Care Pack.

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



Features

PRODUCT NAME

HP ProBook x360 11 G1 EE Notebook PC

OPERATING SYSTEM

Preinstalled	Windows 10 Pro 64 ¹ Windows 10 Home 64 ¹ Windows 10 Pro (National Academic License) ² Windows 10 Pro in S mode 64 ³
Web supported	Windows 10 Enterprise 64 ¹

Note: In accordance with Microsoft's support policy, HP does not support the Windows® 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on <http://www.support.hp.com>.

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. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.
2. Some devices for academic use will automatically be updated to Windows 10 Pro Education with the Windows 10 Anniversary Update. Features vary; see <https://aka.ms/ProEducation> for Windows 10 Pro Education feature information
3. Windows 10 Pro in S mode 64 works exclusively with apps from the Windows store. Some accessories and apps compatible with Windows 10 may not work, and performance may vary. Certain default settings, features, and apps cannot be changed. Easily switch to Windows 10 Pro configuration (fee applies) Learn more at [Microsoft.com/Windows 10S](https://Microsoft.com/Windows10S).

PROCESSORS

Intel® Celeron® N3350 with Intel® HD Graphics 500 (1.1 GHz, up to 2.4 GHz, 2 MB cache, 2 cores)^{1, 2}
Intel® Pentium® N4200 with Intel® HD Graphics 505 (1.1 GHz, up to 2.5 GHz, 2 MB cache, 4 cores)^{1, 2}
Intel® Celeron® N3450 with Intel® HD Graphics 500 (1.1 GHz, up to 2.2 GHz, 2 MB cache, 4 cores)¹

Processors Family

7th Generation Intel® Celeron® processor (N3350 model)
7th Generation Intel® Pentium® processor (N4200 model)

Note: In accordance with Microsoft's support policy, HP does not support the Windows® 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on <http://www.support.hp.com>.

Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

1. Multicore is designed to improve performance of certain software products. Not all customers 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.



Features

2. In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel® and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>

CHIPSET

Chipset is integrated with processor

GRAPHICS

Integrated

Intel® HD¹ Graphics 500

Intel® HD¹ Graphics 505

1. HD content required to view HD images.

NOTE: View processor section for details.

DISPLAY

Internal

29.4 cm (11.6") diagonal HD SVA anti-glare slim LED non-touch with user-facing camera (1366 x 768)¹

29.4 cm (11.6") diagonal HD SVA slim LED touch screen with user-facing camera (1366 x 768)¹

External

Up to 32-bit per pixel color depth

HDMI²

HDMI v1.4b supporting: up to 3840 x 2160 @ 30 Hz

1. HD content required to view HD images.
2. HDMI cable sold separately.

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

STORAGE AND DRIVES

Primary Storage¹

M.2 (NGFF) 2280 Solid State Drive

128 GB SATA-3 Value Solid State Drive²

128 GB SATA-3 SS TLC Solid State Drive²

256 GB SATA-3 Value Solid State Drive²



Features

256 GB SATA-3 SS TLC Solid State Drive²

eMMC Configurations

64 GB³

257 For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) is reserved for system recovery software.

258 Not available with eMMC storage.

259 No HPRM.

MEMORY

Standard

DDR3L-1600 (Transfer rates up to 1600 MT/s)

Supports up to 4 GB max on-board (Not Customer Accessible)

Configurations

2 GB (256 MB x 16 x 4 pcs)

4 GB (256 MB x 16 x 8 pcs)

Maximum Memory

4 GB

NETWORKING/COMMUNICATIONS

Wireless¹

Intel® Dual Band Wireless-AC 7265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo

Communications

Realtek RTL8111HSH Controller 10/100/1000 Ethernet

1. Wireless access point and Internet service is required and is not included. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.
-

AUDIO/MULTIMEDIA

Audio

HP Audio

Two integrated stereo speaker

Headphone / microphone in combo jack



Features

Webcam¹

User Facing Camera
1 MP HD Webcam @ 1280 x 720p²
Located on display
Dual digital mic

NOTE: Both webcams are fix focus.

World Facing Camera
2 MP FHD Webcam @ 1920 x1080p²
Located on keyboard deck (option only available with touch display configurations)

1. Internet access required.
 2. HD content required to view HD images.
-

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS/PEN

Keyboard

Full-sized keyboard
Pick-resistant
Spill-resistant

Function Keys

F1 - Blank
F2 - ClickPad Enable/Disable
F3 - Sleep
F4 - Display Switching
F5 - Audio Mute/Unmute
F6 - Volume Down
F7 - Volume Up
F8 - Mic Mute/Unmute
F9 - Brightness Down
F10 - Brightness Up
F11 - Blank
F12 - Wireless On/Off

ClickPad

Multitouch gestures enabled
Default on: 2-finger scroll, pinch
Support Windows 10 modern Trackpad gestures
Taps enabled as default

Pen

Optional HP Active Pen¹

1.Sold separately or as an optional feature.

SOFTWARE AND SECURITY

BIOS

Secure Erase¹



Features

HP System Diagnostic (UEFI)

Communication / Connectivity

Native Miracast Support³

HP LAN-WLAN Protection

HP Wireless Wakeup

HP Value Add Software

HP ePrint Driver + JetAdvantage^{4,8}

HP Hotkey Support – CMIT⁸

HP Jumpstart⁸

HP Support Assistant⁸

HP Noise Cancellation Software

Microsoft Products

Buy Office⁸

Bing Search

Skype⁵

Manageability

HP SoftPaq Download Manager (SDM)⁸

HP System Software Manager (SSM)⁶

LANDESK Management⁷

For more information on HP Client Management Solutions refer to: <http://www.hp.com/go/clientmanagement>.

HP School Pack

- HP Adaptive Learning created by Fishtree⁸
- HP Simple Sign-on created by Classlink⁸
- HP Classroom Manager Student Edition^{2,8}
- SparkVue⁸
- Codecademy⁸
- Corinth Classroom⁸
- HP Prime Graphing Calculator⁸
- Curriculum Matrix/CMX⁸
- Oxford University Press Advanced Learners English Dictionary⁸

Security

Lock slot (Lock sold separately)

Trusted Platform Module (TPM) 2.0

1. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.

2. HP Classroom Manager for Teachers is required and sold separately for control and device locking from the teacher's Windows desktop console; no locking and control functionality originates from HP Classroom Manager for Student. Control and device locking originate from the teacher's Windows desktop console.



Features

3. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. For more information: <http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast>
4. Requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see <http://www.hp.com/go/eprintcenter>).
5. Skype is not offered in China.
6. Not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>
7. Subscription required.
8. This application will not be initially available with Windows 10 S. All applications through the Windows Store will be compatible.

POWER

Power Supply¹

HP 45W Smart AC adapter
HP 65W EM Smart AC adapter

Primary Battery

HP Long Life 3-cell, 41 Wh Prismatic battery

Power Cord

Power cord is 3.2 feet (1 meter)

Battery life²

Hardware details	UMA Graphics	Discrete Graphics
eMMC	Up to 11 hours	N/A
SSD	Up to 10 hours 30 mins	N/A

NOTE: Battery is internal and not replaceable by customer.

System Standby Time³

TBD

1. Availability may vary by country.
2. 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.
3. Talk, standby, and usage times are approximate and depend on the network configuration, the usage pattern of an individual user, and the configuration of the handheld. Use of some internal wireless capabilities, backlight will significantly decrease battery run time



Features

WEIGHTS & DIMENSIONS

Weight**Non-Touch**

Starting at 2.98 lbs (1.35 kg)

Touch

Starting at 3.19 lbs (1.45 kg)

Dimensions (w x d x h)

20.795 x 30.24 x 1.99 cm

8.14 x 11.88 x .78 in

NOTE: Weight varies by configuration and components.

PORTS/SLOTS

Ports

2 USB 3.1 Gen 1 Port

1 USB Type-C™ (Data transfer only)

1 HDMI 1.4b

1 AC power connector

1 RJ-45

1 headphone/microphone combo jack

HP Multi-Format Digital Media Reader

Support micro SD/SDHC/SDXC up to UHS-104

NOTE: All cables are sold separately.

SERVICE AND SUPPORT

HP Services offers a 1-year limited warranties and 90 day software support options depending on country. Batteries have a default one year limited warranty. On-site service and extended coverage is also available. HP Care Pack Services ^{1,2} 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>.

1. Sold separately or as an optional feature.
2. 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>.



Features

SYSTEM UNIT

Temperature	Operating	41° to 95° F (5° 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%, non-condensing



Technical Specifications

DISPLAYS

Note: All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.

29.4 cm (11.6") diagonal Outline Dimensions	278.5 x 168.5 (mm) max	
HD SVA anti-glare slim		
LED non-touch (1366 x Active Area 768)	256.13 x 144.0 (mm)	
Weight	210 g max	
Diagonal Size	11.6 (inch)	
Contrast Ratio	300:1 (typical)	
Refresh Rate	60 Hz	
Brightness	220 nits	
Pixel Resolution	Format	1366 x 768 (HD)
	Configuration	RGB
Interface	eDP 1.2	
PPI	135 ppi	
Backlight	LED	
Color Gamut Coverage	45%	
Color depth	6 bit	
Viewing Angle	SVA 45/45/25/35	
29.4 cm (11.6") diagonal Outline Dimensions	278.5 x 168.5 (mm) max	
HD SVA slim LED touch screen (1366 x 768)	Active Area	256.13 x 144.0 (mm)
	Weight	360 g max
	Diagonal Size	11.6 (inch)
	Contrast Ratio	300:1 (typical)



Technical Specifications

Refresh Rate	60 Hz
Brightness	220 nits
Pixel Resolution	Format 1366 x 768 (HD)
	Configuration RGB
Interface	eDP 1.2
PPI	135 ppi
Backlight	LED
Color Gamut Coverage	45%
Color depth	6 bit
Viewing Angle	SVA 45/45/25/35
Pen Enabled	Yes

STORAGE AND DRIVES

128 GB SATA-3 Solid State Drive

Drive Weight	10 grams
Capacity	128 GB
Height	0.091 in (2.3 mm)
Width	0.87 in (22 mm)
Interface	ATA-8, SATA 3.0
Performance	Sequential Read Sequential Write
	Between 520 MB/s and 535 MB/s Between 185 MB/s and 515 MB/s
Logical Blocks	250,069,680
Operating Temperature	32° to 158°F (0° to 70°C) [case temp]
Features	ATA Security; ATA-8; SATA 3.0; DIPM; TRIM; DVESLP
Drive Weight	10 grams



Technical Specifications

	Capacity	128 GB	
	Height	0.09 in (2.3 mm)	
	Width	0.87 in (22 mm)	
	Interface	ATA-8, SATA 3.0	
128 GB SATA-3 Solid State Drive TLC	Performance	Sequential Read	Sequential Write
		Between 520 MB/s and 530 MB/s	Between 380 MB/s and 500 MB/s
	Logical Blocks	250,069,680	
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]	
	Features	ATA Security; ATA-8; SATA 3.0; DIPM; TRIM; DVESLP	
256 GB SATA-3 Solid State Drive	Drive Weight	10 grams	
	Capacity	256 GB	
	Height	0.091 in (2.3 mm)	
	Width	0.87 in (22 mm)	
	Interface	500118192	
	Performance	Sequential Read	Sequential Write
		Between 520 MB/s and 535 MB/s	Between 330 MB/s and 515 MB/s
	Logical Blocks	250,069,680	
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]	
		Features	ATA Security; ATA-8; SATA 3.0; DIPM; TRIM; DVESLP
256 GB SATA-3 Solid State Drive Weight Drive TLC		10 grams	
	Capacity	256 GB	
	Height	0.09 in (2.3 mm)	
	Width	0.87 in (22 mm)	
	Interface	ATA-8, SATA 3.0	



Technical Specifications

Performance	Sequential Read	Sequential Write
	Up to 515 MB/s	Up to 490 MB/s
Logical Blocks	500,118,192	
Operating Temperature	32° to 158°F (0° to 70°C) [case temp]	
Features	ATA Security; ATA-8; SATA 3.0; DIPM; TRIM; DVESLP	

64 GB embedded Multi Media Card

Drive Weight	Up to 2g
Capacity	64 GB
Height	1.4mm
Package Size	12x16 mm
Interface	MMC protocol v4.51
Performance	Sequential Read : 100MB/s (min.) Sequential Write: 40MB/s (min.)
Features	Embedded Multi Media Card v4.51 compliant, TRIM, Secure Erase, CMD5 support, Partition management, Enhanced Write Protection, HS200 support

NETWORKING/COMMUNICATIONS

Intel® Dual Band Wireless-AC 7265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo

Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n
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Technical Specifications

	IEEE 802.11ac
Interoperability	Wi-Fi certified
Frequency Band	802.11b/g/n <ul style="list-style-type: none"> • 2.402 – 2.482 GHz <p>Note:</p> <p>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.</p>
	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 <p>Note: Indonesia no support this band)</p>
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 • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)
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



Technical Specifications

- 802.11n HT40(2.4GHz) : +12dBm minimum
- 802.11n HT20(5GHz) : +14dBm minimum
- 802.11n HT40(5GHz) : +12dBm minimum

Power Consumption	<p>Transmit: 2.0 W (max)</p> <p>Receive: 1.6 W (max)</p> <p>Idle mode (PSP): 180 mW (WLAN Associated)</p> <p>Idle mode: 50 mW (WLAN unassociated)</p> <p>Connect Standby: 10 mW (WLAN+BT)</p> <p>Radio disabled: 5 mW</p>
Power Management	<p>ACPI and PCI Express compliant power management</p> <p>802.11 compliant power saving mode</p>
Receiver Sensitivity³	<p>802.11b, 1Mbps : -94dBm maximum</p> <p>802.11b, 11Mbps : -86dBm maximum</p> <p>802.11g, 6Mbps : -88dBm maximum</p> <p>802.11g, 54Mbps : -74dBm maximum</p> <p>802.11a, 6Mbps : -88dBm maximum</p> <p>802.11a, 54Mbps : -74dBm maximum</p> <p>802.11n, MCS07 : -69dBm maximum</p> <p>802.11n, MCS15 : -66dBm maximum</p> <p>802.11ac, 1SS, MCS-0 : -86dBm maximum</p> <p>802.11ac, 1SS, MCS-9 : -61dBm maximum</p> <p>802.11ac, 2SS, MCS-0 : -83dBm maximum</p> <p>802.11ac, 2SS, MCS-9 : -58dBm maximum</p>
Antenna type	<p>High efficiency antenna with spatial diversity, mounted in the display enclosure</p> <p>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications</p>
Form Factor	<p>PCI-Express M.2 MiniCard</p>
Dimensions	<p>Type 2230 : 2.3 x 22.0 x 30.0 mm</p>



Technical Specifications

	Or	
	Type 1630 :	2.3 x 16.0 x 30.0 mm
Weight	Type 2230 :	2.8g
	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

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.



Technical Specifications

Receiver Sensitivity

Legacy

Modulation	0.01% BER	0.001% BER
GFSK	-80 dBm	-70 dBm
$\pi/4$ -DQPSK	-80 dBm	-70 dBm
8DPSK	-80 dBm	-70 dBm

Power Consumption

Peak (Tx) 330 mW
 Peak (Rx) 230 mW
 Selective Suspend 17 mW

Range

Legacy Up to 33 ft (10 m)
 BLE Up to 99 ft (30 m)

Electrical Interface

USB 2.0 compliant

Bluetooth Software Supported

Microsoft Windows Bluetooth Software

Link Topology

Electrical Interface

Point to Point, Multipoint Pico Nets up to 7 slaves

Bluetooth Software Supported

Full support of Bluetooth Security Provisions

Security

Power Management

Microsoft Windows ACPI, and USB Bus Support

Certifications

Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff

Security

All necessary regulatory approvals for supported countries, including:

Certifications

FCC (47 CFR) Part 15C, Section 15.247 & 15.249

Bluetooth Profiles Supported

Power Management

ETS 300 328, ETS 300 826

Certifications

Low Voltage Directive IEC950

UL, CSA, and CE Mark

Certifications

Serial Port Profile (SPP)^{1,2}
 Service Discovery Application Profile (SDAP)

Bluetooth Profiles Supported

Dial-Up Networking (DUN)^{1,1}
 Generic Object Exchange Profile (GOEP)^{1,2}
 Object Push Profile (OPP)^{1,2}
 Hard Copy Cable Replacement (HCRP)^{1,2}



Technical Specifications

Personal Area Networking Profile (PAN)^{1.0}
Human Interface Device Profile (HID)^{1.0}
Hands Free Profile (HFP) ^{1.5/1.6}
Advanced Audio Distribution Profile (A2DP) ^{1.3}

Audio Video Remote Control Profile (AVRCP) ^{1.3/1.4}

Bluetooth V4.1/V4.2 support feature

V4.1: ESR5/6/7 compliant

V4.2: ESR8 compliant, LE Secure Connection – Basic.

AUDIO/MULTIMEDIA

Hardware	Implementation
	Function Key Volume Controls
	Full Duplex
	Microphone In
	Headphone/Line Out
	Integrated Microphone
Audio Output Quality	Frequency Response
	Signal to Noise Ratio
	Total Harmonic Distortion
	Noise Floor
	Play/Record Sampling Rate(s)
	DAC
	ADC
Integrated Stereo Speakers	Power Rating
	Impedance



Technical Specifications

POWER

HP 45 Watt Smart AC adapter	Dimensions (H x W x D)	95x40x26.5mm	
	Weight	200g +/- 10g	
	Input	Input Efficiency	87.74 % at 115 Vac and 88.4 % at 230Vac
		Input frequency range	47 ~ 63 Hz
		Input AC current	Max. 1.4 A at 90 Vac
	Output	Output power	45W
		DC output	19.5V
		Hold-up time	5ms at 115 Vac input
		Output current protection	<8.0A
	Connector	C6 (3pin/with grounded, with Smart ID DC connector)	
	Environmental Design	Operating temperature	32oF to 95oF (0oto 35oC)
		Non-operating (storage) temperature	-4oF to 185oF (-20oto 85oC)
		Altitude	0 to 16,400 ft (0 to 5000m)
		Humidity	20% to 95%
		Storage Humidity	10% to 95%
	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>	



Technical Specifications

HP 65W EM Smart AC Adapter	Dimensions (H x W x D)	127.0x51.0x30.0mm		
	Weight	350g +/- 10g		
	Input			
		Input Efficiency	88.0 % at 115 Vac and 89.0 % at 230Vac	
		Input frequency range	47 ~ 63 Hz	
		Input AC current	Max. 1.7 A at 90 Vac	
	Output	Output power	65W	
		DC output	19.5V	
		Hold-up time	5ms at 115 Vac input	
		Output current protection	<11.0A	
Connector	C6 (3pin/with grounded, with Smart ID DC connector)			
Environmental Design	Operating temperature	32oF to 95oF (0oto 35oC)		
	Non-operating (storage) temperature	-4oF to 185oF (-20oto 85oC)		
	Altitude	0 to 16,400 ft (0 to 5000m)		
	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, 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 Li-ion Prismatic Battery (41 WHr)	Cells/Type	3-cell Prismatic		
	Watt-hour capacity	41WHr		



Technical Specifications

Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
	Operating (Discharging)	14° to 140° F (-10° to 60° C)
	Non-operating	-4° to 140° F (-20° to 60° C)
Warranty	Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform	

ENVIRONMENTAL

Eco-Label Certifications & declarations	<p>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:</p> <ul style="list-style-type: none"> • IT ECO declaration • US ENERGY STAR® • EPEAT® 2019 Silver in U.S. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit http://www.epeat.net for more information. 		
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, 50Hz
Normal Operation (Short idle)	3.79 W	4.77 W	3.73 W
Normal Operation (Long idle)	2.29 W	2.76 W	2.24 W



Technical Specifications

Sleep	0.29 W	0.38 W	0.29 W
Off	0.24 W	0.32 W	0.24 W
	<p>Note:</p> <p>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.</p>		
Heat Dissipation*	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)	13 BTU/hr	16 BTU/hr	13 BTU/hr
Normal Operation (Long idle)	8 BTU/hr	9 BTU/hr	8 BTU/hr
Sleep	1 BTU/hr	1 BTU/hr	1 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 BTU/hr
	<p>*NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.</p>		
Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	Sound Power (L _{WAd} , bels)	Sound Pressure (L _{pAm} , decibels)	
Typically Configured – Idle	2.6	15	
Fixed Disk – Random writes	2.6	15	
Longevity and Upgrading	<p>This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:</p> <ul style="list-style-type: none"> • 3 USB ports • 1 PC card slot (type I/II) • 1 ExpressCard/54 slot • 1 IEEE 1394 Port • 2 SODIMM memory slots • Optional expansion base docking station • 1 multi-bay II storage port • Interchangeable HDD?? 		



Technical Specifications

	Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.		
Batteries	<p>This battery(s) in this product comply with EU Directive 2006/66/EC</p> <p>Batteries used in the product do not contain: Mercury greater the 1ppm by weight Cadmium greater than 20ppm by weight</p> <p>Battery size: CR2032 (coin cell) Battery type: Lithium</p>		
Additional Information	<ul style="list-style-type: none"> • 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 1680.1 (EPEAT) standard at the Silver 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 98.5% recycle-able when properly disposed of at end of life. 		
Packaging Materials	External:	PAPER/Corrugated	318 g
	Internal:	PLASTIC/Polyethylene Expanded - EPE	25 g
		PLASTIC/Polyethylene low density – LDPE	18 g
		PLASTIC/Polypropylene - PP	3 g
	The plastic packaging material contains at least 50% recycled content.		
	The corrugated paper packaging materials contains at least 75% recycled content.		
Material Usage	<p>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):</p> <ul style="list-style-type: none"> • 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. 		



Technical Specifications

	<ul style="list-style-type: none"> • 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, has been voluntarily removed from most applications. • Radioactive Substances • Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)
<p>Packaging Usage</p>	<p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none"> • 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.
<p>End-of-life Management and Recycling</p>	<p>Hewlett-Packard 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.</p> <p>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 Hewlett Packard 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.</p>



Technical Specifications

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



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

Type	Description	Part Number
Carrying Cases	HP Essential Top Load Case (up to 15.6")	H2W17AA#xxx
	HP Essential Backpack (up to 15.6")	H1D24AA
	HP Slim Top Load	F3W15AA
	HP Slim Backpack	F3W16AA
	HP ProBook x360 Protective Case	1JS00AA
Docking	HP USBC Travel Dock	T0K29AA
	HP Elite USBC Dock	X7W54AA#xxx
	HP 3005pr USB3 Port Replicator	Y4H06AA
Input/Output	HP Slim USB Keyboard & Mouse Bundle	T6T83AA#xxx
	HP 3-Button Laser Mouse	H4B81AA#xxx
	HP 2.4GHz Wireless Mouse	L0Z84AA#xxx
	HP Slim Wireless keyboard and mouse	T6L04AA#xxx
	HP HDMI to VGA Adapter	H4F02AA
	HP Stereo USB Headset	T1A67AA
	HP Stereo 3.5mm Headset	T1A66AA
	HP Active Pen	1FH00AA#xxx
Power	HP 45W Smart AC Adapter 4.5mm	H6Y88AA#xxx
	65W Smart AC Adapter	H6Y89AA#xxx
	HP Notebook Powerbank	N9F71AA#xxx
Storage	HP External USB Optical Drive	F2B56AA
Security	HP Keyed Cable Lock 10mm	T1A62AA



Summary of Changes

Date of change:	Version History:		Description of change:
November 30, 2016	V1 to V2	Launched	Quickspecs launched
December 19, 2016	V2 to V3	Update	Environmental section updated
December 21, 2016	V3 to V4	Update	Environmental section updated
January 20, 2017	V4 to V5	Update	Disclaimer added to Processors Section
January 26, 2017	V5 to V6	Update	Options and Accessories Section updated HP Active Pen, 1FH00AA#xxx
February 2, 2017	V6 to V7	Update	At a Glance Section updated (MIL STD 810G references)
March 9, 2017	V7 to V8	Update	Updated Note in Operating System and Processor sections
March 21, 2017	V8 to V9	Update	Displays Section updated (Weight updated)
April 4, 2017	V9 to V10	Update	Battery Warranty updated
April 4, 2017	V10 to V11	Added	Processors Family added
April 6, 2017	V11 to V12	Added	Storage and Drives updated (added 128/256GB TLC SSD)
April 12, 2017	V12 to v13	Update	Battery section updated
April 19, 2017	V13 to V14	Update	Dimensions updated
July 10, 2017	V14 to v15	Update	At a Glance section updated (Windows 10 S); Operating System section updated (Windows 10 S); Software and Security section updated (Windows 10 S); Options and Accessories section updated (Windows 10 S); System Unit section added.
October 2, 2017	V15 to V16	Update	Touchpoint removed
November 8, 2017	V16 to V17	Update	Options and Accessories Section updated
November 15, 2017	V17 to V18	Update	Options and Accessories Section updated
November 28, 2017	V18 to V19	Update	Environmental data added
March 26, 2018	V19 to V20	Update	Memory specs updated
July 18, 2018	V20 to V21	Update	Memory standard
September 12, 2018	V21 to V22	Update	Windows 10 S Operating system section
June 4, 2019	V22 to V23	Update	EPEAT

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