

Overview

HP ProBook x360 11 G6 EE



Left

- | | | | |
|----|---|-----|--|
| 1. | Webcam LED | 6. | World-facing Webcam LED (Optional) |
| 2. | 720p Webcam or optional HP Privacy Camera | 7. | Power Button |
| 3. | Microphone | 8. | Headphone / Microphone Combo Jack |
| 4. | ClickPad | 9. | USB 3.1 Gen 1 Port |
| 5. | World-facing 5 Megapixels Webcam (Optional) | 10. | Security Lock Slot (Nano lock sold separately) |

Overview



Right

- | | | | |
|----|--------------------------------|----|-------------------------------------|
| 1. | Power Connector | 4. | USB 3.1 Gen 1 Port |
| 2. | Ethernet (RJ-45) Port | 5. | USB Type-C™ (Data and Power in-out) |
| 3. | HDMI Port (Cable not included) | | |

At A Glance

- Starting at 3.17 lbs (1.44 kg) touch (weight will vary by configuration)
- At 21 mm (0.83"?), this flexible 360° hinge converts to laptop, tablet, tent, stand or book mode easily
- Designed to pass MIL-STD 810 G testing¹ with rugged features such as co-molded rubber trim, spill- and pick-resistant keyboard, and Corning® Gorilla® Glass 3 touch screen
- Optional dual camera system for project-based learning
- New optional active HP Pro Pen is engineered for the classroom - durable tips require less replacing
- Pre-installed with Windows 10 Pro 64, Windows 10 Pro 64 (National Academic), Windows 10 Home 64, or Windows 10 Pro in S mode 64
- Powered by 10th Generation Intel® Core™ i3-10110Y and i5-10210Y processors
- Choice of 29.4cm (11.6") diagonal HD UWVA slim LED touch screen (1366 x 768) or 29.4 cm (11.6") diagonal HD SVA slim LED touch screen (1366 x 768) displays
- 128GB SATA-3 TLC Solid State Drive or up to 256 GB SATA-3 Solid State Drive storage options
- Up to 8 GB system memory for enhanced memory management
- Reliable connectivity with choice of Intel® Dual Band Wireless-AC 9560 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 5.0 Combo WLAN or Intel® Dual Band Wireless-AX200 802.11a/b/g/n/ax (2x2) Wi-Fi 6 and Bluetooth® 5.0 Combo WLAN for learning and collaboration beyond the classroom
- Built-in ports include: Ethernet (RJ-45), 2 USB 3.1 Gen 1, USB Type-C™, and HDMI 2.0a port for connecting to high-resolution displays
- Enhanced security TPM 2.0 discrete chip
- Battery life TBD²

Overview

- 1. MIL STD 810G testing is pending and 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.
- 2. Recharges the battery up to 90% within 90 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/-10% due to System tolerance.

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

Technical Specifications

PRODUCT NAME

HP ProBook x360 11 G6 EE

OPERATING SYSTEM

Preinstalled	Windows 10 Pro 64 (Windows 10 Enterprise available with a Volume Licensing Agreement) ¹ Windows 10 Pro 64 (National Academic only) ² Windows® 10 Home 64 ¹ Windows 10 Home Single Language 64 ¹ Windows 10 Pro in S mode 64 ³ Windows 10 Pro in S mode 64 (National Academic only) ^{2,3}
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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 configuration (fee applies) Learn more at [Microsoft.com/Windows 10S](https://Microsoft.com/Windows10S).

PROCESSORS

Intel® Core™ i5-10210Y processor with Intel® UHD Graphics 615 (1 GHz base frequency, up to 2.7 GHz with Intel® Turbo Boost Technology, 6 MB cache, 4 cores) ^{4,5,6,7} Intel® Core™ i3-10110Y processor with Intel® UHD Graphics 615 (1 GHz base frequency, up to 3.7 GHz with Intel® Turbo Boost Technology, 4 MB cache, 2 cores) ^{4,5,6,7}
Processors Family 10th Generation Intel® Core™ i5 processor (i5-10210Y) ⁶ 10th Generation Intel® Core™ i3 processor (i3-10110Y) ⁶

4. 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, branding and/or naming is not a measurement of higher performance.
5. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
6. 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>.
7. Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See <http://www.intel.com/technology/turboboost> for more information.

CHIPSET

Technical Specifications

Chipset is integrated with processor

GRAPHICS

Integrated
Intel® UHD Graphics 617⁸

8. HD content required to view HD images

DISPLAY

Internal Touch
29.46 cm (11.6") diagonal HD SVA eDP WLED-backlit touch screen with HD camera, 220 nits, 45% NTSC (1366 x 768)^{8,9,10}
29.46 cm (11.6") diagonal HD IPS eDP WLED-backlit touch screen with HD camera, 220 nits, 50% NTSC (1366 x 768)^{8,9,10}

HDMI
Port supports resolutions up to 3840 x 2160 external resolution @30 Hz

8. HD content required to view HD images.
9. Resolutions are dependent upon monitor capability, and resolution and color depth settings.
10. Sold separately or as an optional feature.

STORAGE AND DRIVES

Primary Storage M.2
128 GB SATA-3 TLC Solid State Drive¹¹
256 GB PCIe® Value SSD¹¹

11. 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.

MEMORY

Technical Specifications

Standard
Maximum Memory
8 GB DDR4-2133 SDRAM¹²

Memory
4 GB DDR4-2133 SDRAM (on-board)¹²
8 GB DDR4-2133 SDRAM (on-board)¹²

Memory Slots
on board LPDDR3; system runs at 2133MHz
12. Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed.

NETWORKING/COMMUNICATIONS

WLAN
Intel® Dual Band Wireless-AC 9560 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5 Combo, non-vPro^{TM13}
Intel® Dual Band Wireless-AX200 802.11a/b/g/n/ax (2x2) Wi-Fi 6 and Bluetooth® 5 Combo, non-vPro^{TM *}

Miracast
Native Miracast Support¹⁴

Ethernet
Realtek RTL8111HSH-CG 10/100/1000 GbE NIC¹⁵

13. 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.
14. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.
15. The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.
*Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft 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 802.11ax devices.

AUDIO/MULTIMEDIA

Technical Specifications

Audio

HP HD Audio
2 Integrated stereo speakers

Camera

User-facing 720p HD camera^{8,16}
Located on display

Webcam

World-facing 5 MP secondary camera (Optional)^{8,10,16}

8. HD content required to view HD images.
10. Sold separately or as an optional feature.
16. Internet access required.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS/PEN

Keyboard

Full-sized chiclet keyboard, pick proof

Pointing Device

Clickpad with multi-touch gesture support, taps enabled as default
Default on: 2-finger scroll, pinch
Support Windows 10 modern Trackpad gestures

Function Keys

F1 - Blank
F2 - Blank
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

Pen

Optional Passive Targus Slim Stylus*
Optional Active HP Pro Pen

Sensors

Combo Chip
Accelerometer
Magnetometer
Gyroscope
Hall Sensor

*Optional Passive Targus Slim Stylus

Technical Specifications

SOFTWARE AND SECURITY

BIOS

HP BIOSphere Gen5¹⁷
 HP Drive Lock & Automatic Drive Lock¹⁸
 BIOS Update via Network
 Master Boot Record Security
 Power On Authentication
 Secure Erase¹⁹
 Absolute Persistence Module²⁰
 Pre-boot Authentication

Software

HP Connection Optimizer
 HP School Pack
 HP Interactive Light
 HP Image Assistant
 HP Hotkey Support
 HP JumpStart
 HP Support Assistant²¹
 HP Noise Cancellation Software
 Buy Office (sold separately)

Manageability Features

HP Driver Packs²²
 HP System Software Manager (SSM)
 HP BIOS Config Utility (BCU)
 HP Client Catalog
 HP Manageability Integration Kit Gen3²³

Client Security Software

HP Client Security Manager Gen5²⁴
 Windows Defender²⁵

Security Management

Pre-boot Authentication
 TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified)²⁶
 USB enable/disable (via BIOS)
 Power-on password (via BIOS)
 Setup password (via BIOS)
 Support for chassis padlocks and cable lock devices
 HP Sure Click²⁷

17. HP BIOSphere Gen5 is available on select HP Pro and Elite PCs. See product specifications for details. Features may vary depending on the platform and configurations.

18. HP Drive Lock & Automatic Drive Lock is not supported on NVMe drives

19. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method. HP Secure Erase does not support platforms with Intel® Optane™.

20. Absolute firmware module is shipped turned off and can only be activated with the purchase a license subscription and full activation of the software agent. License subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. Certain conditions apply. For full details visit: <https://www.absolute.com/about/legal/agreements/absolute/>.

21. HP Support Assistant requires Windows and Internet access.

22. HP Driver Packs not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.

23. HP Manageability Integration Kit can be downloaded from <http://www.hp.com/go/clientmanagement>.

24. HP Client Security Manager Gen5 requires Windows and is available on the select HP Pro and Elite PCs. See product specifications for details.

25. Windows Defender Opt in and internet connection required for updates.

26. Firmware TPM is version 2.0. Hardware TPM is v1.2, which is a subset of the TPM 2.0 specification version v0.89 as

Technical Specifications

implemented by Intel Platform Trust Technology (PTT).
27. HP Sure Click is available on most HP PCs and supports Microsoft® Internet Explorer, Google Chrome, and Chromium™. Supported attachments include Microsoft Office (Word, Excel, PowerPoint) and PDF files in read only mode, when Microsoft Office or Adobe Acrobat are installed.

POWER

Power Supply

HP Smart 45 W External AC power adapter²⁸
HP Smart 65 W EM External AC power adapter²⁸
HP Smart 45 W USB Type-C™ adapter²⁸

Primary Battery

HP Long Life 3-cell, 48 Wh Li-ion (90% in 90 minutes)^{29,30}

Power Cord

3-wire plug - 1 m

Battery life

TBD³¹

28. Availability may vary by country.
29. Battery is internal and not replaceable by customer. Serviceable by warranty.
30. 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 over time and usage. See <http://www.bapco.com> for additional details.
31. Recharges the battery up to 90% within 90 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/- 10% due to System tolerance.

WEIGHTS & DIMENSIONS

Product Weight

Starting at 3.17 lb³²
Starting at 1.44 kg³²

Product Dimensions (w x d x h)

11.8 x 8.8 x 0.83 in
30 x 20.53 x 2.12 cm

32. Weight will vary by configuration.

PORTS/SLOTS

Technical Specifications

Ports

- 2 USB 3.1 Gen 1
- 1 USB Type-C™ (Data transfer, power delivery)
- 1 HDMI 2.0a³³
- 1 AC power
- 1 RJ-45
- 1 headphone/microphone combo jack

33. HDMI cable sold separately.

SERVICE AND SUPPORT

HP Services offers 1-year limited warranties and 90 day software limited warranty options depending on country. Batteries have a default one year limited warranty refer to <http://www.hp.com/support/batterywarranty/> for additional battery information. On-site service and extended coverage is also available. 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>.³⁴

34. HP Services offers 1-year limited warranties and 90 day software limited warranty options depending on country. Batteries have a default one year limited warranty refer to <http://www.hp.com/support/batterywarranty/> for additional battery information. On-site service and extended coverage is also available. 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>.

ENVIRONMENTAL

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: <ul style="list-style-type: none">• IT ECO declaration• US ENERGY STAR®• EPEAT® Silver registered in the United States.Based on US EPEAT registration according to IEEE 1680.1-2018 EPEAT. Status varies by country. See http://www.epeat.net for more information.
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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	2.72 W	2.83 W	2.77 W
(Sort idle)			
Normal Operation	1.36 W	1.31 W	1.26 W
(Long idle)			

Technical Specifications

Sleep	0.42 W	0.45 W	0.41 W
Off	0.34 W	0.36 W	0.32 W

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)	9 BTU/hr	10 BTU/hr	9 BTU/hr
Normal Operation (Long idle)	5 BTU/hr	4 BTU/hr	4 BTU/hr
Sleep	1 BTU/hr	1 BTU/hr	1 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	2.5	15
Fixed Disk - Random writes	2.5	15

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
- 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 the1ppm by weight

Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)

Additional Information

- Battery type: Lithium
- 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

Technical Specifications

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 2.48% post-consumer recycled plastic (by wt.)
- This product is 96.9% recycle-able when properly disposed of at end of life.

Packaging Materials	External:	PAPER/Corrugated	235 g
	Internal:	PLASTIC/Polyethylene Expanded - EPE	27 g
		PLASTIC/Polyethylene low density - LDPE	13 g
		PLASTIC/Polypropylene - PP	3 g

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)

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.

Technical Specifications

- 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 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.

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://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf

and

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

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)

Nominal Operating Voltage	19V
Average Operating Power	Win 10
Integrated graphics	Yes
Max Operating Power	UMA<45W

Temperature

Operating	32° to 95° F (0° to 35° C)
Non-operating	-4° to 140° F (-20° to 60° C)

Relative Humidity

Operating	10% to 90%, non-condensing
Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature

Shock

Operating	40 G, 2 ms, half-sine
Non-operating	240 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)

Technical Specifications

Planned Industry Standard
Certifications

UL	Yes
CSA	Yes
FCC Compliance	Yes
ENERGY STAR®	Yes ³⁵
EPEAT® 2019	Yes, Gold in U.S. ³⁶
ICES	Yes
Australia	Yes
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

35. Configurations of the HP ProBook x360 11 G6 EE is ENERGY STAR® qualified are identified as HP ProBook x360 11 G6 EE ENERGY STAR on HP websites and on <http://www.energystar.gov>.

36. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit <http://www.epeat.net> for more information.

DISPLAYS

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

Panel LCD 11.6 HD AG WLED SVA 45% NTSC 220 nits eDP Slim	Outline Dimensions (W x H x D)	278.5 x 168.5 mm (max)
	Active Area	256.125 x 144 mm
	Weight	210 g max
	Diagonal Size	11.6 (inches)
	Thickness	3.0 mm (max)
	Interface	eDP1.2
	Surface Treatment	BrightView Glass
	Touch Enabled	Yes
	Contrast Ratio	400:1 (typical)
	Refresh Rate	60 Hz
	Brightness	220 nit typical (panel only)
	Pixel Resolution	1366 x 768 (HD)
	Format of LCD Pixel Arrangement	RGB
	Backlight	LED
	Color Gamut Coverage	45% of NTSC
	Color Depth	6 bits
	Viewing Angle	SVA 45/45/15/35

Technical Specifications

Panel LCD 11.6 inch HD AG WLED UWVA 50% NTSC 220 nits eDP slim	Outline Dimensions (W x H x D)	278.5 x 168.5 mm (max)	
	Active Area	256.125 x 144 mm	
	Weight	200 g max	
	Diagonal Size	11.6 (inches)	
	Thickness	3.2 mm max	
	Interface	eDP1.2	
	Surface Treatment	BrightView Glass	
	Touch Enabled	Yes	
	Contrast Ratio	800:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	220 nit typical (panel only)	
	Pixel Resolution	1366 x 768 (HD)	
	Format of LCD Pixel Arrangement	RGB	
	Backlight	LED	
	Color Gamut Coverage	50% of NTSC	
	Color Depth	6 bits	
	Viewing Angle	UWVA 85/85/85/85	

STORAGE AND DRIVES*

128 GB 2280 M2 SATA-3 TLC Solid State Drive	Form Factor	M.2 2280	
	Capacity	128 GB	
	NAND Type	TLC	
	Height	0.09 in (2.3 mm)	
	Width	0.87 in (22 mm)	
	Weight	0.02 lb (10 g)	
	Interface	ATA-8, SATA 3.0	
	Seek Time	Sequential Read	Sequential Write
		Up To 520 MB/s	Up To 450 MB/s
	Logical Blocks	250,069,680	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
	Features	DIPM; TRIM; DEVSLP	

256 GB 2280 PCIe NVMe Value Solid State Drive	Form Factor	M.2 2280	
	Capacity	256 GB	
	NAND Type	TLC	
	Height	0.09 in (2.3 mm)	
	Width	0.87 in (22 mm)	
	Interface	PCIe NVMe Gen3X4	
	Seek Time	Sequential Read	Sequential Write
		Up To 1700 MB/s	Up To 600 MB/s
	Logical Blocks	500,118,192	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
	Features	TRIM; L1.2	

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For storage drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 5.1 GB is not user available

NETWORKING/COMMUNICATIONS

Intel® Wi-Fi 6* AX200 + Bluetooth 5 (802.11ax 2x2, non-vPro, supporting gigabit file transfer speeds) non-vPro	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v Wi-Fi® certified <ul style="list-style-type: none">802.11b/g/n/ax
	Interoperability Frequency Band	2.402 - 2.482 GHz <ul style="list-style-type: none">802.11a/n/ac/ax 4.9 - 4.95 GHz (Japan) 5.15 - 5.25 GHz 5.25 - 5.35 GHz 5.47 - 5.725 GHz 5.825 - 5.850 GHz
	Data Rates	<ul style="list-style-type: none">802.11b: 1, 2, 5.5, 11 Mbps802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)802.11ax : MCS0 ~ MCS11, (1SS and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)
	Modulation	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM
	Security ¹	<ul style="list-style-type: none">IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode onlyAES-CCMP: 128 bit in hardware802.1x authenticationWPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.WPA2 certificationIEEE 802.11iWAPI
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power ²	<ul style="list-style-type: none">802.11b : +18.5dBm minimum802.11g : +17.5dBm minimum802.11a : +18.5dBm minimum802.11n HT20(2.4GHz) : +15.5dBm minimum802.11n HT40(2.4GHz) : +14.5dBm minimum802.11n HT20(5GHz) : +15.5dBm minimum802.11n HT40(5GHz) : +14.5dBm minimum

Technical Specifications

	<ul style="list-style-type: none">802.11ac VHT80(5GHz) : +11.5dBm minimum802.11ac VHT160(5GHz) : +11.5dBm minimum802.11ax HT40(2.4GHz) : +10dBm minimum802.11ax VHT160(5GHz) : +10dBm minimumTransmit mode: 2.0 WReceive mode: 1.6 WIdle mode (PSP) 180 mW (WLAN Associated)Idle mode: 50 mW (WLAN unassociated)Connected Standby/Modern Standby: 10mWRadio disabled: 8 mW
Power Consumption	
Power Management	ACPI and PCI Express compliant power management
Receiver Sensitivity ³	802.11 compliant power saving mode <ul style="list-style-type: none">802.11b, 1Mbps : -93.5dBm maximum802.11b, 11Mbps : -84dBm maximum802.11a/g, 6Mbps : -86dBm maximum802.11a/g, 54Mbps : -72dBm maximum802.11n, MCS07 : -67dBm maximum802.11n, MCS15 : -64dBm maximum802.11ac, MCS0 : -84dBm maximum802.11ac, MCS9 : -59dBm maximum802.11ax, MCS11(HT40): -59dBm maximum802.11ax, MCS11(VHT160): -58.5dBm 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	1. Type 2230 : 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm
Weight	1. Type 2230: 2.8 g 2. Type 126: 1.3 g
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 OFF - 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).
- *Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft 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 802.11ax devices. Only available in countries where 802.11ax is supported.

HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1 Wireless Technology

Bluetooth Specification	4.0/4.1/4.2/5.0/5.1 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)
Signaling Data Rate	Legacy: 3 Mbps signaling data rate ¹ 2.17 Mbps BLE: 1 Mbps signaling data rate ¹ 0.2 Mbps

Technical Specifications

		1. Actual throughput may vary.
		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 + 9.5 dBm for BR and EDR.	
Power Consumption	Peak (Tx) 330 mW	
	Peak (Rx) 230 mW	
	Selective Suspend 17 mW	
Bluetooth Software Supported	Microsoft Windows Bluetooth Software	
Link Topology		
Power Management	Microsoft Windows ACPI, and USB Bus Support	
Certifications	FCC (47 CFR) Part 15C, Section 15.247 & 15.249	
Power Management Certifications	ETS 300 328, ETS 300 826	
	Low Voltage Directive IEC950	
	UL, CSA, and CE Mark	
Bluetooth Profiles Supported	BT4.1-ESR 5/6/7 Compliance	
	LE Link Layer Ping	
	LE Dual Mode	
	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)	
Intel® 9260 802.11a/b/g/n/ac (2x2) Wi-Fi* and Bluetooth® 5.0 Combo ¹ Non-vPro	Wireless LAN Standards	IEEE 802.11a
		IEEE 802.11b
		IEEE 802.11g
		IEEE 802.11n
		IEEE 802.11ac
		IEEE 802.11d
		IEEE 802.11e
		IEEE 802.11h
		IEEE 802.11i
		IEEE 802.11k
		IEEE 802.11r
		IEEE 802.11v
		Wi-Fi® certified
		• 802.11b/g/n
		2.402 - 2.482 GHz
Interoperability Frequency Band		• 802.11a/n/ac
		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
		• 802.11b: 1, 2, 5.5, 11 Mbps
Data Rates		

Technical Specifications

	<ul style="list-style-type: none">• 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, 80MHz & 160MHz)
Modulation	Direct Sequence Spread Spectrum
Security ¹	BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM <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• WAPI
Network Architecture	Ad-hoc (Peer to Peer)
Models	Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power ²	<ul style="list-style-type: none">• 802.11b : +18.5dBm minimum• 802.11g : +17.5dBm minimum• 802.11a : +18.5dBm minimum• 802.11n HT20(2.4GHz) : +15.5dBm minimum• 802.11n HT40(2.4GHz) : +14.5dBm minimum• 802.11n HT20(5GHz) : +15.5dBm minimum• 802.11n HT40(5GHz) : +14.5dBm minimum• 802.11ac VHT80(5GHz) : +11.5dBm minimum• 802.11ac VHT160(5GHz) : +11.5dBm minimum
Power Consumption	<ul style="list-style-type: none">• Transmit mode 2.0 W• Receive mode 1.6 W• Idle mode (PSP) 180 mW (WLAN Associated)• Idle mode 50 mW (WLAN unassociated)• Connected Standby 10mW• Radio disabled 8 mW
Power Management	ACPI and PCI Express compliant power management
Receiver Sensitivity ³	802.11 compliant power saving mode 802.11b, 1Mbps: -93.5dBm maximum 802.11b, 11Mbps: -84dBm maximum 802.11a/g, 6Mbps: -86dBm maximum 802.11a/g, 54Mbps: -72dBm maximum 802.11n, MCS07: -67dBm maximum 802.11n, MCS15: -64dBm maximum 802.11ac, MCS0: -84dBm maximum 802.11ac, MCS9: -59dBm maximum
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure
Form Factor	Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Dimensions	PCI-Express M.2 MiniCard
Weight	1. Type 2230 : 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm
Operating Voltage	1. Type 2230 : 2.8 g 2. Type 126: 1.3 g
Temperature	3.3v +/- 9%
Humidity	Operating 14° to 158° F (-10° to 70° C) Non-operating -40° to 176° F (-40° to 80° C) Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)

Technical Specifications

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 OFF - Radio ON	
<div>1. Check latest software/driver release for updates on supported security features.</div> <div>2. Maximum output power may vary by country according to local regulations.</div> <div>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).</div> <div>* 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.</div>		
HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0 Wireless Technology		
Bluetooth Specification	4.0/4.1/4.2/5.0 Compliant	
Frequency Band	2402 to 2480 MHz	
Number of Available Channels	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)	
Signaling Data Rate	Legacy: 3 Mbps signaling data rate ¹ 2.17 Mbps BLE: 1 Mbps signaling data rate ¹ 0.2 Mbps 1. Actual throughput may vary.	
	Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)	
Transmit Power	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.	
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW	
Electrical Interface	USB 2.0 compliant	
Bluetooth Software Supported	Microsoft Windows Bluetooth Software	
Link Topology		
Power Management	Microsoft Windows ACPI, and USB Bus Support	
Certifications	FCC (47 CFR) Part 15C, Section 15.247 & 15.249	
Power Management	ETS 300 328, ETS 300 826	
Certifications	Low Voltage Directive IEC950 UL, CSA, and CE Mark	
Bluetooth Profiles Supported	BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode 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)	

Technical Specifications

POWER

HP 45 W Smart AC adapter	Dimensions (H x W x D)	3.74 x 1.57 x 1.04 in (9.5 x 4.0 x 2.65 cm)
	Weight	0.386 lb (175 g) max
	Not including power cord. Power cord varies by country	
	Input	90 to 265 VAC
		Input Efficiency 87.74% at 115Vac and 88.4% at 230Vac
		Input frequency range 47 to 63 Hz
	Output	Input AC current 1.4 A at 90 VAC
		Output power 45 W
		DC output 19.5 V
		Hold-up time 5ms at 115 VAC input
		Output current protection <8.0A
	Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords
	Environmental Design	Operating temperature 32° to 95° F (0° to 35° C)
		Non-operating (storage) temperature -4° to 185° F (-20° to 85° C)
		Altitude 0 to 16,400 ft (0 to 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 65 W EM Smart AC adapter	Dimensions	102 x 55 x 30 mm
	Weight	270 g +/- 10 g
	Not including power cord. Power cord varies by country	
	Input	Input Efficiency 87% min at 115V/230V
		Input frequency range 47 to 63 Hz
		Input AC current 1.7 A at 90 VAC and maximum load
	Output	DC output 65W(19.5V/3.33A)
		Hold-up time 5 msec at 115 VAC input
		Output current limit <11A, Over voltage protection- 29V max automatic shutdown
	Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords
	Environmental Design	Operating temperature 0° to 35° C
		Non-operating (storage) temperature -20° to 85° C
		Altitude 0 to 5,000 m
		Humidity 0% to 95%
		Storage Humidity 0% to 95%
	EMI and Safety Certifications	CE Mark - 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; Reliability - failure rate of less than 0.1% annually within the first three years of operation.
HP 45 W USB type C	Dimensions	94.0mm x 40.0mm x 26.5 mm

Technical Specifications

Straight 1.8 m AC Adapter	Weight	192.5 g +/-10%	
		Not including power cord. Power cord varies by country	
	Input	Input Efficiency	Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec: 5V: 81.5% 9V: 86.7% 12V: 87.41% 15V: 87.8%
		Input frequency range	47 ~ 63Hz
		Input AC current	Max. 1.4 A at 90 Vac
		Output power	5V/15W
			9V/27W
			12V/36W
			15V/45W
		DC output	5V/9V/12V/15V
		Hold-up time	5ms at 115 Vac input
		Output current limit	<5.0A
	Connector	USB Type-C	
	Environmental Design	Operating temperature	32°F to 95° F (0° to 35° C)
		Non-operating (storage) temperature	4°F to 185° F (-20° to 85° C)
		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 Long Life Li-Ion (48 WHr)	Dimensions (H x W x L)	7.3 x 94 x 184.47 mm (0.287 x 3.7 x 7.263 inch)
	Weight	0.215 kg
	Cells/Type	3cell Lithium-Ion Prismatic cell / 596080 3cell Lithium-Ion Polymer cell / 606072
	Voltage	11.4 V
	Amp-hour capacity	4.212Ah
	Watt-hour capacity	48Wh
	Operating (Charging)	32° to 113° F (0° to 45° C)
	Operating (Discharging)	14° to 122° F (-10° to 60° C)
	Optional Travel Battery Available	No

COUNTRY OF ORIGIN

China

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

Type	Description	Part Number
Cases	HP Essential Top Load Case (up to 15.6")	H2W17AA
	HP Essential Backpack (up to 15.6")	H1D24AA
	HP Slim Ultrabook Top Load (up to 15.6" x .88"/22/5mm)	F3W15AA
	HP Slim Ultrabook Backpack (up to 15.6" x .88"/22/5mm)	F3W16AA
	HP Black 11.6 Always On Case	2MY57AA
	HP Slim Ultrabook Messenger	F3W14AA
Docking*	HP USB-C Universal Dock	1MK33AA
	HP USB Travel Dock	T0K30AA
	HP 3005pr USB3 Port Replicator	Y4H06AA
	HP USB-C/A Universal Dock G2	5TW13AA
	HP USBC Travel Dock	T0K29AA
	HP USB-C Universal Dock w/4.5mm Adapter	2UF95AA
	HP USB-C Universal Dock NF	3DV65AA
Input/Output	HP Slim USB Keyboard & Mouse Bundle	T6T83AA
	HP 3-Button Laser Mouse	H4B81AA
	HP USB Premium Mouse	1JR32AA
	HP Wireless Premium Mouse	1JR31AA
	HP Essential USB Mouse	2TX37AA
	HP USB Travel Mouse	G1K28AA
	HP Slim Bluetooth Mouse	F3J92AA
	HP Slim Wireless keyboard and mouse	T6L04AA
	HP USB-C to USB 3.0 Adapter	N2Z63AA
	HP USB-C to 3 and 4.5mm Adapter	N2Z65AA
	HP USB-C to VGA Adapter	N9K76AA
	HP USB-C to HDMI 2.0	1WC36AA
	HP HDMI to VGA Adapter	H4F02AA
	HP Stereo USB Headset	T1A67AA
	HP Stereo 3.5mm Headset	T1A66AA
	HP Pro Pen with Spare Tips	TBD
	HP Pro Pen Nib Set	TBD
	HP Comfort Grip Wireless Mouse	H2L63AA
Power	HP 45W Smart AC Adapter (4.5mm)	H6Y88AA
	HP 65W Smart AC Adapter (4.5mm)	H6Y89AA
	HP 45W LC USB-C Power Adapter	1MZ01AA
	HP Notebook Powerbank	N9F71AA
	HP USB-C ESSENTIAL POWER BANK	3TB55AA
	HP USB-C Notebook Power Bank	2NA10AA
Storage	HP External USB Optical Drive	F2B56AA
Security	HP Nano Keyed Cable Lock	1AJ39AA

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

**Supported using the USB connection for video and data. Power is not supported and must be provided directly to the Notebook with the power adapter that comes with the unit*

Summary of Changes

Date of change:	Version History:		Description of change:
March 16, 2020	V1 to V2	Added	Environmental Section

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