

### Overview

#### HP Chromebook 11 G7 EE



1. Webcam LED
2. Webcam
3. Internal Microphone
4. Touchpad

#### Left

5. USB-A 3.1 Gen 1
6. USB-C™ 3.1 Gen 1 (Supporting Power Delivery and Display Port)
7. Nano Security Lock Slot (Lock sold separately)

### Overview



#### Right

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|--|---|
| 1. Power Button  | 4. USB-A 3.1 Gen 1                          |
| 2. USB-C™ 3.1 Gen 1 (Supporting Power Delivery and Display Port) | 5. Micro SD Card Reader                     |
| 3. Power LED   | 6. Stereo Headphone / Microphone Combo Jack |

### Overview

### AT A GLANCE

- Latest Intel® Celeron® N4000 and N4100 processors
- Designed to pass MIL STD 810G<sup>1</sup> test and increased drop height to 76cm drop on concrete<sup>3</sup>, and enhanced USB-C™ connectors to stand against daily uses of plug and unplug
- Long battery life with HP Fast Charge technology to support 90% charge in 90 minutes
- Pick proof keyboard to make it harder to pick the keys up
- Intel® 2x2 AC WLAN with MIMO for easy connection in dense classroom environment
- Choice of up to 8 GB memory and 64 GB eMMC storage
- 2 USB-C™ ports for charging, power and data transfer, and 2 USB 3.1 Gen 1 ports for sleep and charge support
- Enjoy Android™ Apps on Chrome OS™<sup>2</sup>
- Your Chromebook boots up within 10 seconds and you can be browsing online and working in Google Apps just moments later

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. The availability of Chrome OS System supporting Android Apps is dependent on Google's Chrome OS support, readiness timeline will be announced by Google <https://sites.google.com/a/chromium.org/dev/chromium-os/chrome-os-systems-supporting-android-apps>.

3. HP 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.**

### Technical Specifications

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#### PRODUCT NAME

HP Chromebook 11 G7 Education Edition

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#### OPERATING SYSTEM

**Preinstalled** Chrome OS™

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#### PROCESSOR

##### Intel® Celeron® processors

Intel® Celeron® N4000 with Intel® UHD Graphics 600 (1.1 GHz base frequency, up to 2.6 GHz boost frequency<sup>3</sup>, 4 MB cache, 2 cores)<sup>1,2</sup>

Intel® Celeron® N4100 with Intel® UHD Graphics 600 (1.1 GHz base frequency, up to 2.4 GHz boost frequency<sup>3</sup>, 4 MB cache, 4 cores)<sup>1,2</sup>

##### Processor Family

Intel® Celeron® processor (N4000, N4100)

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.
  2. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
  3. Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See <http://www.intel.com/technology/turboboost> for more information.
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#### CHIPSET

Chipset is integrated with processor

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#### GRAPHICS

##### Integrated

Intel® UHD Graphics 600<sup>4</sup>

**NOTE:** See processor section for details.

##### Supports

Support HD Decode, DX12, and HDMI 1.4 b

4. HD content required to view HD images.
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### Technical Specifications

#### DISPLAY

##### Touch

29.46 cm (11.6") diagonal HD IPS BrightView WLED-backlit touch screen, 220 cd/m<sup>2</sup>, 50% sRGB (1366 x 768)<sup>4,5,6</sup>

##### Non-Touch

29.46 cm (11.6") diagonal HD SVA anti-glare WLED-backlit, 220 cd/m<sup>2</sup>, 50% sRGB (1366 x 768)<sup>4,5,6</sup>

29.46 cm (11.6") diagonal HD IPS anti-glare WLED-backlit, 220 cd/m<sup>2</sup>, 50% sRGB (1366 x 768)<sup>4,5,6</sup>

4. HD content required to view HD images.

5. Sold separately or as an optional feature.

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

#### STORAGE AND DRIVES

##### Primary Storage

16 GB eMMC 5.0<sup>7</sup>

32 GB eMMC 5.0<sup>7</sup>

64 GB eMMC 5.0<sup>7</sup>

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

#### MEMORY

##### Maximum Memory

8 GB LPDDR4-2400 SDRAM

##### Memory

4 GB LPDDR4-2400 SDRAM

8 GB LPDDR4-2400 SDRAM

#### NETWORKING/COMMUNICATIONS

##### WLAN

Intel® Dual Band Wireless-AC 9560 802.11 ac (2x2) WLAN and Bluetooth® 5.0 Combo, non-vPro™, MU-MIMO<sup>8</sup>

Integrated with dual antennas

##### Chromecast

Chromecast Support<sup>9</sup>

8. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited.

9. Chromecast must be purchased separately.

### Technical Specifications

#### AUDIO/MULTIMEDIA

##### Audio

HD Audio  
Dual Speakers  
Integrated Microphone

##### Camera

720p HD Camera<sup>3</sup>

4. HD content required to view HD images.

#### KEYBOARD / TOUCHPAD

##### Keyboard

Full Size Textured island-style Keyboard, Chalkboard Gray, spill-resistant, pick proof anchored

##### Pointing Device

Touchpad with multi-touch gestures support

#### SOFTWARE AND SECURITY

##### Preinstalled Software

Store up to 100 GB with Google Drive (2-year subscription included)<sup>10</sup>  
HP Classroom Manager<sup>11</sup>

##### Manageability Features

H1 Security IC  
Nano Security lock slot<sup>12</sup>

10. Google Drive offer is tied to this device and is non-transferable. If this device is returned, the extra storage will be revoked. In order to redeem this offer, you will need to be on Chrome OS™ 23 or later. Internet access is required and not included. Additional information about storage plan refunds, renewals, cancellations and expiration is available at the Google website: <https://support.google.com/chromebook/answer/2703646?hl=en>.

11. HP Classroom Manager is sold separately. Control and device locking from the teacher's desktop requires purchase of HP Classroom Manager.

12. Lock must be purchased separately.

#### POWER

##### Power Supply

HP Smart 45 W Type-C™ AC Power Adapter<sup>13</sup>

##### Primary Battery

HP Long Life 2-cell, 47.36 Wh Li-ion Polymer<sup>14</sup>  
HP Fast Charge Technology (90% in 90 minutes)<sup>16</sup>

##### Power Cord

1.0 M Length Sticker Conventional Power Cord<sup>13</sup>

### Technical Specifications

#### Battery life

Up to 13 hours (Non-touch)<sup>15</sup>

Up to 11 hours 30 minutes (Touch)<sup>15</sup>

#### Battery Weight

0.18 kg

0.39 lb

13. Availability may vary by country.

14. Battery is internal and not replaceable by customer. Serviceable by warranty.

15. Testing conducted by HP using Google Chrome OS power LoadTest. Battery life will vary and the maximum capacity of the battery will naturally decrease with time and usage. See <http://www.chromium.org/chromium-os/testing/power-testing> for test details.

16. Recharges up to 90% within 90 minutes when the system is off or in standby mode when used with the power adapter provided with the notebook. After charging has reached 90% capacity, charging speed will return to normal. Charging time may vary +/-10% due to System tolerance.

### WEIGHTS & DIMENSIONS

#### Product Weight

Starting at 2.93 lbs<sup>17</sup>

Starting at 1.33 kgs<sup>17</sup>

#### Product Dimensions (w x d x h)

12.04 x 8.18 x 0.74 in

30.6 x 20.8 x 1.89 cm

17. Weight will vary by configuration.

### PORTS/SLOTS

#### Ports

2 USB 3.1 Type-C™ (Charge and video support, data transfer, power delivery)

2 USB 3.1 Gen 1 (Charging)

1 Stereo Headphone / Microphone Combo Jack

#### Expansion Slots

1 Micro SD Multi-Format Digital Media Reader

Supports SD, SDHC, SDXC

### Technical Specifications

#### 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 except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform. 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>.<sup>18</sup>

18. HP Care Packs are sold separately. 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. For details, visit <http://www.hp.com/go/cpc>. 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.

#### ENVIRONMENTAL & INDUSTRY

<b>Eco-Label Certifications &amp; declarations</b>	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"> <li>• IT ECO declaration</li> <li>• US ENERGY STAR®</li> <li>• EPEAT® Silver registered in the United States. See <a href="http://www.epeat.net">http://www.epeat.net</a> for registration status in your country.</li> <li>• TCO Certified 8.0</li> </ul>		
<b>System Configuration</b>	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a Typically Configured Notebook.		
<b>Energy Consumption (in accordance with US ENERGY STAR® test method)</b>	<b>115VAC, 60Hz</b>	<b>230VAC, 50Hz</b>	<b>100VAC, 50Hz</b>
Normal Operation (Short idle)	2.22 W	2.316 W	2.244 W
Normal Operation (Long idle)	0.924 W	0.96 W	0.9 W
Sleep	0.312 W	0.324 W	0.312 W
Off	0.312 W	0.324 W	0.324 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.			

### Technical Specifications

	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.		
<b>Heat Dissipation*</b>	<b>115VAC, 60Hz</b>	<b>230VAC, 50Hz</b>	<b>100VAC, 50Hz</b>
Normal Operation (Short idle)	8 BTU/hr	8 BTU/hr	8 BTU/hr
Normal Operation (Long idle)	3 BTU/hr	3 BTU/hr	3 BTU/hr
Sleep	1 BTU/hr	1 BTU/hr	1 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 BTU/hr
	Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.		
<b>Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)</b>	Sound Power (L <sub>WAd</sub> , bels)	Sound Pressure (L <sub>pAm</sub> , decibels)	
Typically Configured – Idle	2.7	24	
Fixed Disk – Random writes	2.7	24	
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"> <li>• 3 USB ports</li> <li>• 1 PC card slot (type I/II)</li> <li>• 1 ExpressCard/54 slot</li> <li>• 1 IEEE 1394 Port</li> <li>• 2 SODIMM memory slots</li> <li>• Optional expansion base docking station</li> <li>• 1 multi-bay II storage port</li> <li>• Interchangeable HDD</li> </ul> <p>Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.</p>		
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>		

### Technical Specifications

	<p>Battery size: CR2032 (coin cell)                      Battery type: lithium/manganese dioxide</p>		
Additional Information	<ul style="list-style-type: none"> <li>• This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.</li> <li>• This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.</li> <li>• This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).</li> <li>• This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see <a href="http://www.epeat.net">http://www.epeat.net</a></li> <li>• Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.</li> <li>• This product contains 3% post-consumer recycled plastic (by wt.)</li> <li>• This product is 94.5% recycle-able when properly disposed of at end of life.</li> </ul>		
Packaging Materials	<b>External:</b>	PAPER/Corrugated	225 g
		PAPER/Paper	40 g
		PAPER/Molded Pulp	116 g
	<b>Internal:</b>	PLASTIC/Polyethylene low density - LDPE	7 g
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 <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf</a>):</p> <ul style="list-style-type: none"> <li>• Asbestos</li> <li>• Certain Azo Colorants</li> <li>• Certain Brominated Flame Retardants – may not be used as flame retardants in plastics</li> <li>• Cadmium</li> <li>• Chlorinated Hydrocarbons</li> <li>• Chlorinated Paraffins</li> <li>• Formaldehyde</li> <li>• Halogenated Diphenyl Methanes</li> <li>• Lead carbonates and sulfates</li> <li>• Lead and Lead compounds</li> <li>• Mercuric Oxide Batteries</li> <li>• Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.</li> <li>• Ozone Depleting Substances</li> <li>• Polybrominated Biphenyls (PBBs)</li> <li>• Polybrominated Biphenyl Ethers (PBBEs)</li> <li>• Polybrominated Biphenyl Oxides (PBBOs)</li> <li>• Polychlorinated Biphenyl (PCB)</li> <li>• Polychlorinated Terphenyls (PCT)</li> <li>• Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.</li> <li>• Radioactive Substances</li> <li>• Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)</li> </ul>		

### Technical Specifications

<b>Packaging Usage</b>	<p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none"> <li>• Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.</li> <li>• Eliminate the use of ozone-depleting substances (ODS) in packaging materials.</li> <li>• Design packaging materials for ease of disassembly.</li> <li>• Maximize the use of post-consumer recycled content materials in packaging materials.</li> <li>• Use readily recyclable packaging materials such as paper and corrugated materials.</li> <li>• Reduce size and weight of packages to improve transportation fuel efficiency.</li> <li>• Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.</li> </ul>
<b>End-of-life Management and Recycling</b>	<p>HP Inc. offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <a href="http://www.hp.com/go/reuse-recycle">http://www.hp.com/go/reuse-recycle</a> 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: <a href="http://www.hp.com/go/recyclers">http://www.hp.com/go/recyclers</a>. 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>
<b>HP Inc. Corporate Environmental Information</b>	<p>For more information about HP's commitment to the environment:</p> <p>Global Citizenship Report  <a href="http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html">http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html</a></p> <p>Eco-label certifications  <a href="http://www8.hp.com/us/en/hp-information/environment/ecolabels.html">http://www8.hp.com/us/en/hp-information/environment/ecolabels.html</a></p> <p>ISO 14001 certificates:  <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf</a></p> <p>and  <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf</a></p>

### Technical Specifications

#### SYSTEM UNIT

<b>Stand-Alone Power Requirements (AC Power)</b>	<b>Nominal Operating Voltage</b>	15V
	<b>Average Operating Power</b>	Chrome OS™
<b>Temperature</b>	<b>Integrated Graphics</b>	<4.0 W with PLT test
	<b>Max Operating Power</b>	UMA < 45 W
<b>Relative Humidity</b>	<b>Operating</b>	0° to 35° C
	<b>Non-operating</b>	5° to 35° C
<b>Shock</b>	<b>Operating</b>	10% to 90%, Non-condensing
	<b>Non-operating</b>	5% to 95%, 101.6° F (38.7° C) Dry bulb value
<b>Random Vibration</b>	<b>Operating</b>	40 G, 2 ms, half-sine
	<b>Non-operating</b>	240 G, 2 ms, half-sine
<b>Altitude (unpressurized)</b>	<b>Operating</b>	0.015 g <sup>2</sup> /Hz, 10-40 Hz, nominal 1.043 grms
	<b>Non-operating</b>	0.025 g <sup>2</sup> /Hz, 10-500 Hz, nominal 3.5 grms
<b>Planned Industry Standard Certifications</b>	<b>Operating</b>	-50 to 10,000 ft (-15.24 to 3,048 m)
	<b>Non-operating</b>	-50 to 40,000 ft (-15.24 to 12,192 m)
<b>Planned Industry Standard Certifications</b>	<b>UL</b>	Yes
	<b>CSA</b>	No, Leverage cUL
	<b>FCC Compliance</b>	Yes
	<b>ENERGY STAR®</b>	Yes <sup>19</sup>
	<b>EPEAT®</b>	Yes, EPEAT® 2.0 Silver <sup>20</sup>
	<b>ICES</b>	Yes
	<b>Australia</b>	Yes
	<b>NZ A-Tick Compliance</b>	Yes
	<b>CCC</b>	Yes
	<b>Japan VCCI Compliance</b>	No, no support this country
	<b>KC</b>	Yes
	<b>BSMI</b>	Yes
	<b>CE Marking Compliance</b>	Yes
	<b>BNCI or BELUS</b>	Yes, EAC, Belarus required.
	<b>CIT</b>	No, no support this country
	<b>GOST</b>	Yes, EAC, Russia required.
	<b>Saudi Arabian Compliance (ICCP)</b>	Yes
	<b>SABS</b>	Yes
	<b>UKRSERTCOMPUTER</b>	No, no support this country

19. Configurations of the HP Chromebook 11 G7 EE that are ENERGY STAR® certified are identified as HP Chromebook 11 G7 EE ENERGY STAR® on HP websites and on <http://www.energystar.gov>.

20. EPEAT® registered where applicable. EPEAT® registration varies by country. See <http://www.epeat.net> for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at <http://www.hp.com/go/options>.

### Technical Specifications

#### DISPLAYS

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

<b>11.6 inch diagonal HD (1366 x 768) Anti-Glare WLED SVA 45 percent cg 220 nits</b>	<b>Outline Dimensions (W x H x D)</b>	268.5 x 173.48 x 3.0mm
	<b>Active Area</b>	256.125 x 144mm
	<b>Weight</b>	210 g max
	<b>Diagonal Size</b>	11.6 inch
	<b>Thickness</b>	3.0 mm
	<b>Interface</b>	eDP1.2
	<b>Surface Treatment</b>	AG
	<b>Touch Enabled</b>	None
	<b>Contrast Ratio</b>	400:1
	<b>Refresh Rate</b>	60 Hz
	<b>Brightness</b>	220 nits typical
	<b>Pixel Resolution</b>	1366 x 768 (HD)
	<b>Format</b>	RGB
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	45%
<b>Color Depth</b>	6bit + FRC	
<b>Viewing Angle</b>	SVA 45/45/15/35	

<b>11.6 inch diagonal HD (1366 x 768) Anti-Glare WLED UWVA 50 percent cg 220 nits eDP slim</b>	<b>Outline Dimensions (W x H x D)</b>	278.5 x 168.5 x 3.0 mm
	<b>Active Area</b>	256.125 x 144 mm
	<b>Weight</b>	200 g max
	<b>Diagonal Size</b>	11.6 inch
	<b>Thickness</b>	3.0 mm max
	<b>Interface</b>	eDP1.2
	<b>Surface Treatment</b>	AG
	<b>Touch Enabled</b>	None
	<b>Contrast Ratio</b>	800:1
	<b>Refresh Rate</b>	60 Hz
	<b>Brightness</b>	220 nits typical
	<b>Pixel Resolution</b>	1366 x 768 (HD)
	<b>Format</b>	RGB
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	50%
<b>Color Depth</b>	6bits + FRC	
<b>Viewing Angle</b>	UWVA 85/85/85/85	

### Technical Specifications

<b>11.6 inch diagonal HD (1366 x 768) BrightView WLED UWVA 50 percent c/g 220 nits eDP 1.2 w/o PSR slim TOP</b>	<b>Outline Dimensions (W x H x D)</b>	278.5 x 168.52 x 3.2 mm
	<b>Active Area</b>	256.125 x 144 mm
	<b>Weight</b>	200g max
	<b>Diagonal Size</b>	11.6 inch
	<b>Thickness</b>	3.2 mm
	<b>Interface</b>	eDP1.2
	<b>Surface Treatment</b>	BV
	<b>Touch Enabled</b>	Yes
	<b>Contrast Ratio</b>	800:1
	<b>Refresh Rate</b>	60 Hz
	<b>Brightness</b>	220 nit typical
	<b>Pixel Resolution</b>	1366 x 768 (HD)
	<b>Format</b>	RGB
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	50%
	<b>Color Depth</b>	6bits + FRC
<b>Viewing Angle</b>	UWVA 85/85/85/85	

### STORAGE AND DRIVES

<b>eMMC 5.0</b>	<b>Weight</b>	0.2 g
	<b>Height</b>	1.4 mm
	<b>Width</b>	11.5 x 13 mm
	<b>Interface</b>	MMC protocol
	<b>Transfer Rate</b>	HS400
	<b>Logical Blocks</b>	16 GB (15,758,000,128 Bytes) / 32 GB (31,268,536,320 Bytes) / 64 GB (62,537,072,640 Bytes)
	<b>Operating Temperature</b>	0 to 70 degree

### Technical Specifications

#### NETWORKING/COMMUNICATIONS

<p><b>Intel® 9560</b>  <b>802.11a/b/g/n/ac (2x2)</b>  <b>WLAN and Bluetooth® 5.0</b>  <b>Combo<sup>1</sup> non-vPro</b></p>	<p><b>Wireless LAN Standards</b></p>	<p>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</p>
	<p><b>Interoperability</b></p>	<p>Wi-Fi® certified</p>
	<p><b>Frequency Band</b></p>	<p>802.11b/g/n          • 2.402 – 2.482 GHz          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</p>
	<p><b>Data Rates</b></p>	<p>• 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 &amp; 80MHz)</p>
	<p><b>Modulation</b></p>	<p>Direct Sequence Spread Spectrum          BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM</p>
	<p><b>Security<sup>3</sup></b></p>	<p>• 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</p>
	<p><b>Network Architecture Models</b></p>	<p>Ad-hoc (Peer to Peer)          Infrastructure (Access Point Required)</p>
	<p><b>Roaming</b></p>	<p>IEEE 802.11 compliant roaming between access points</p>
	<p><b>Output Power<sup>2</sup></b></p>	<p>• 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</p>

### Technical Specifications

	<ul style="list-style-type: none"> <li>• 802.11n HT40(5GHz): +14.5dBm minimum</li> <li>• 802.11ac VHT80(5GHz): +11.5dBm minimum</li> <li>• 802.11ac VHT160(5GHz): +11.5dBm minimum</li> </ul>
<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>• Transmit mode: 2.0 W</li> <li>• Receive mode: 1.6 W</li> <li>• Idle mode (PSP) 180 mW (WLAN Associated)</li> <li>• Idle mode: 50 mW (WLAN unassociated)</li> <li>• Connected Standby/Modern Standby: 10mW</li> <li>• Radio disabled: 8 mW</li> </ul>
<b>Power Management</b>	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
<b>Receiver Sensitivity</b> <sup>3</sup>	802.11b, 1Mbps: -93.5dBm maximum 802.11b, 11Mbps: -84dBm maximum 802.11a/g, 6Mbps: -86dBm maximum 802.11a/g, 54Mbps: -72dBm maximum 802.11n, MCS07: -67dBm maximum 802.11n, MCS15: -64dBm maximum 802.11ac, MCS0: -84dBm maximum 802.11ac, MCS9: -59dBm maximum
<b>Antenna type</b>	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
<b>Form Factor</b>	PCI-Express M.2 MiniCard with CNVi Interface
<b>Dimensions</b>	1. Type 2230: 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm
<b>Weight</b>	1. Type 2230: 2.8g 2. Type 1216: 1.3g
<b>Operating Voltage</b>	3.3v +/- 9%
<b>Temperature</b>	Operating: 14° to 158° F (-10° to 70° C) Non-operating: -40° to 176° F (-40° to 80° C)
<b>Humidity</b>	Operating: 10% to 90% (non-condensing) Non-operating: 5% to 95% (non-condensing)
<b>Altitude</b>	Operating: 0 to 10,000 ft (3,048 m) Non-operating: 0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	LED Amber – Radio OFF; LED White – Radio ON

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

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

### Technical Specifications

	Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels
	Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
<b>Transmit Power</b>	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.
<b>Power Consumption</b>	Peak (Tx): 330 mW Peak (Rx): 230 mW Selective Suspend: 17 mW
<b>Bluetooth Software Supported</b>	Linux kernel version
<b>Link Topology</b>	
<b>Power Management</b>	Intel CNVi/BRI HW power management
<b>Certifications</b>	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
<b>Power Management Certifications</b>	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
<b>Bluetooth Profiles Supported</b>	BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode 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)

### POWER

<b>45 W PD AC adapter</b>	<b>Dimensions (H x W x D)</b>	94 x 43 x 27.8 mm
	<b>Weight</b>	200 g
	<b>Input</b>	100 to 240 VAC
	<b>Input Efficiency</b>	5V/81.5%; 9V/86.7%; 12V/87.4%; 15V/87.8% (measured at 115Vac/60Hz and 230Vac/50Hz)
	<b>Input frequency range</b>	47 ~ 63 Hz
	<b>Input AC current</b>	1.4 Amperes RMS at 90 VAC
	<b>Output</b>	<b>Output power</b> 45 W

### Technical Specifications

	<b>DC output</b>	5V; 9V; 12V; 15V
	<b>Hold-up time</b>	5ms at 115 Vac input
	<b>Output current limit</b>	The power supply shall limit the maximum steady state output current to an average current of 5 Amperes. (OCP Interval: 30mS Minimum)
<b>Connector</b>	USB Type-C™	
<b>Environmental Design</b>	<b>Operating temperature</b>	32°F to 95°F (0°C to 35°C)
	<b>Non-operating (storage) temperature</b>	-4°F to 185°F (-20°C to 85°C)
	<b>Altitude</b>	1 to 16,400 ft (0 to 5000m)
	<b>Humidity</b>	20% to 95%
	<b>Storage Humidity</b>	10% to 95%
<b>EMI and Safety Certifications</b>	*CE Mark - full compliance with LVD and EMC directives	
	* Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.	
	* MTBF - over 200,000 hours at 25°C ambient condition.	
<b>HP 2-cell Long Life Li-Ion (47 Whr)</b>	<b>Dimensions</b>	5.2 x 240.8 x 76.4 mm (0.247 x 9.48 x 3 inch)
	<b>Weight</b>	0.19 kg (0.42 lb)
	<b>Cells/Type</b>	2cell Lithium-Ion Polymer cell / 4473A9
	<b>Voltage</b>	7.7 V
	<b>Amp-hour capacity</b>	6.15 Ah
	<b>Watt-hour capacity</b>	47.3 Wh
	<b>Operating (Charging)</b>	32° to 113° F (0° to 45° C)
	<b>Operating (Discharging)</b>	14° to 122° F (-10° to 60° C)
	<b>Optional Travel Battery Available</b>	No

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

Category	Description	Part Number
<b>Cases</b>	HP Essential Top Load Case (up to 15.6")	H2W17AA
	HP Essential Backpack (up to 15.6")	H1D24AA
	HP Business Slim Top Load	2SC65AA
	HP Black 11.6 Always on Case	2MY57AA
<b>Docking</b>	HP USB-C Mini dock	1PM64AA
<b>Input/output</b>	HP USB-C to HDMI 2.0 Adapter	1WC36AA
	HP USB-C to DisplayPort Adapter	N9K78AA
	HP USB-C to USB 3.0 Adapter	N2Z63AAA
	HP USB-C to RJ45 Adapter	V7W66AA
	HP USB Collaboration Keyboard	Z9N38AA
	HP Wireless Collaboration Keyboard	Z9N398AA
	HP Comfort Grip Wireless Mouse	H2L63AA
	HP 3-Button USB Laser Mouse	H4B81AA
	HP USB Optical Travel mouse	G1K28AA
	HP 3-Button Laser Mouse	H4B81AA
	HP Ultra Mobile Wireless Mouse	H6F25AA
	HP Essential USB Mouse	2TK37AA
	HP Slim Bluetooth Mouse	F3J92AA
HP Slim USB KB & Mouse	T6T83AA	
<b>Misc</b>	Stereo 3.5mm Headset	T1A66AA
<b>Power</b>	HP USB-C Notebook Power Bank	1TZ76AA
	HP 45W Type -C Straight Type	1MZ01AA#ABA
<b>Storage</b>	HP External USB Optical Drive	F2B56AA
<b>Security</b>	HP Nano Keyed Cable Lock	1AJ39AA
<b>Displays</b>	HP ProDisplay P240va 23.8 inch Monitor	N3H14AA
	HP ProDisplay P232 23 inch Monitor	K7X31AA
	HP EliteDisplay E223 21.5 inch Monitor	1FH45AA
	HP EliteDisplay E243 23.8-inch Monitor	1FH47AA

### Summary of Changes

<b>Date of change:</b>	<b>Version History:</b>		<b>Description of change:</b>
April 21, 2019	From v1 to v2	Added	Environmental Section
April 23, 2019	From v2 to v3	Added	Networking Section Chromecast

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