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HP 250 G3 Notebook PC Product Specifications

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HP 250 G3 Notebook PC

Product features

| Feature | Description |
|------------------------|---|
| Processor ¹ | <ul style="list-style-type: none"> • 4th Generation Intel Core i5-4210U (1.7 GHz, 3MB L3 cache, 2 cores) • 4th Generation Intel® Core i3-4005U (1.7 GHz, 3MB L3 cache, 2 cores) • 3rd Generation Intel Core i3-3217U (1.8 GHz, 3MB L3 cache, 2 cores) |



| Feature | Description |
|--|--|
| | <ul style="list-style-type: none"> • Intel Celeron N2830 (2.42 GHz, 1MB L2 cache, 2 cores) • Intel Celeron N2815 (2.13 GHz, 1MB L2 cache, 2 cores) |
| Chipset | Intel chipset integrated with processor |
| Graphics (Integrated) | <ul style="list-style-type: none"> • Intel HD Graphics (Intel Celeron processors) • Intel HD Graphics 4000 (3rd Generation Intel Core i3 processors) • Intel HD Graphics 4400 (4th Generation Intel Core i3 and i5 processors) |
| Display | <ul style="list-style-type: none"> • Internal <ul style="list-style-type: none"> • 15.6-inch diagonal HD WLED Anti-Glare (1366 x 768) LED-backlit SVA (Flat, 3.6 mm) • 15.6-inch diagonal HD WLED BrightView (1366 x 768) slim (3.2 mm) SVA (touch-enabled) • External <ul style="list-style-type: none"> • Up to 32-bit per pixel color depth • VGA: Port supports resolutions up to 2048 x 1536 external resolution @ 75Hz • HDMI: 1.4 port supports up to 1080p, 1920 x 1080 at 60Hz and 1920 x 1200 @ 60Hz DVI Mode |
| Storage and drives (Primary storage bay hard drives) | <ul style="list-style-type: none"> • 320GB 5400 rpm SMART SATA II • 500GB 5400 rpm SMART SATA II • 1TB 5400 rpm SMART SATA II |
| Optical drives (Fixed Optical Drive) | <ul style="list-style-type: none"> • DVD+/-RW superMulti DL drive • Weight saver |
| Memory | <ul style="list-style-type: none"> • Standard <ul style="list-style-type: none"> • DDR3L SDRAM (1600 MHz/1333 MHz) • One SODIMM slot supporting single channel SODIMMs • Standard memory up to 8192MB • Maximum <ul style="list-style-type: none"> • Upgradeable to 8192MB with optional 8192MB SODIMM in slot 1 |
| Networking/communications | <ul style="list-style-type: none"> • Wireless^{1,2} <ul style="list-style-type: none"> • Optional Qualcomm 802.11b/g/n (1x1) wireless LAN module • Optional Qualcomm 802.11 b/g/n (1x1) + Bluetooth 4.0 combo |

| Feature | Description |
|--|--|
| | <ul style="list-style-type: none"> • Optional Ralink 802.11 b/g/n (1x1) + Bluetooth 4.0 combo • Optional Realtek 802.11 b/g/n (1x1) wireless LAN module • Communications <ul style="list-style-type: none"> • Realtek Ethernet (10/100 NIC) |
| Audio/multimedia | <ul style="list-style-type: none"> • Audio <ul style="list-style-type: none"> • High definition audio support • Integrated stereo speaker • Integrated microphone • Webcam <ul style="list-style-type: none"> • Integrated webcam³ |
| Keyboards/pointing devices/buttons & function keys | <ul style="list-style-type: none"> • Keyboard <ul style="list-style-type: none"> • The 101/102-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as editing keys, both left and right control and alt keys, and function keys. US and International key layouts are available. Includes a separate numeric keypad • Pointing devices <ul style="list-style-type: none"> • Touchpad with 2-piece pick button with left and right click functions • Buttons and function Keys <ul style="list-style-type: none"> • Multi-touch gestures supported |
| Security | Security Lock slot (lock must be purchased separately) |
| Power | <ul style="list-style-type: none"> • Power supply <ul style="list-style-type: none"> • External 45 W Smart ac adapter (UMA) • Primary battery <ul style="list-style-type: none"> • HP 3-cell (31 WHr) polymer battery • HP 4-cell (41 WHr) polymer battery • Power conservation⁴ <ul style="list-style-type: none"> • Hibernation • Standby • ACPI compliance |

NOTE: 1: Sold separately or as an optional feature. **2:** Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. **3:** Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited **4:** Only Linux will feature power conservation.

Audio/multimedia

| Specifications | Description |
|-----------------------------------|---|
| Hardware | <ul style="list-style-type: none"> • Implementation: Realtek ALC3201-GR High Definition audio • Volume controls: <ul style="list-style-type: none"> • Up • Down • Mute function keys • Full Duplex: Yes • Microphone In: Stereo • Headphone/Line Out: Stereo • Integrated microphone: Yes |
| Audio output quality | <ul style="list-style-type: none"> • Frequency response: 10 Hz ~ 22 KHz • Signal to noise ratio: Typical 95 dB FSA (DAC) • Total harmonic distortion: Typical -88 dB FS (DAC) • Noise floor: -110 dB • Play/Record sampling rate(s): Up to 192 KHz • DAC: 24 bits • ADC: 24 bits |
| Internal stereo speakers | <ul style="list-style-type: none"> • Power rating: 1.5 W • Impedance: 4 ohms |
| Integrated HD webcam (Multimedia) | <ul style="list-style-type: none"> • Supports videoconferencing and still image capture • Improved quality for video streaming and still image capture • Up to 30 frames/sec • Fixed focus lens |

Physical specifications

| Specifications | Description |
|--|--|
| Dimensions (W x D x H) | <ul style="list-style-type: none"> • Non-Touch : 245.25 x 244 x 25.3 mm (14.88 x 10.2 x 1.0 in) • Touch: 378.0 x 259.0 x 25.6 mm (14.88 x 10.2 x 1.0 in) |
| Weight (weight will vary by configuration) | <ul style="list-style-type: none"> • Non-Touch: Starting at 2190 g (< 4.83 lb) |

| Specifications | Description |
|----------------|--|
| | Weight: Starting at 2380 g (< 5.25 lb) |

System specifications

| Specifications | Description |
|---|---|
| Stand-Alone power requirements (ac Power) | <ul style="list-style-type: none"> Nominal operating voltage: 18.5/19.5 V Average operating power: Integrated graphics TBD W Max operating power: < 65 W |
| Temperature | <ul style="list-style-type: none"> Operating: <ul style="list-style-type: none"> 0°C to 35°C (32°F to 95°F) (not writing optical) 5°C to 35°C (41°F to 95°F) (writing optical) Non-operating: -20°C to 60°C (-4°F to 140°F) |
| Relative humidity | <ul style="list-style-type: none"> Operating: 10% to 90%, non-condensing Non-operating: 5% to 95%, 38.7°C (101.6°F) maximum wet bulb temperature |
| Shock | <ul style="list-style-type: none"> Operating: 40 G, 2 ms, half-sine Non-operating: 200 G, 2 ms, half-sine |
| Random vibration | <ul style="list-style-type: none"> Operating: 0.75 grms Non-operating: 1.50 grms |
| Altitude (unpressurized) | <ul style="list-style-type: none"> Operating: -15.24 to 3,048 m (-50 to 10,000 ft) Non-operating: -15.24 to 12,192 m (-50 to 40,000 ft) |
| Planned industry standard certifications | <ul style="list-style-type: none"> UL: Yes CSA: Yes FCC Compliance: Yes ENERGY STAR: Select models¹ EPEAT: Registered Silver in United States² ICES: Yes Australia / NZ A-Tick Compliance: Yes |



| Specifications | Description |
|---|--|
| | <ul style="list-style-type: none"> • 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 |
| <p>NOTE: 1: Configurations of the HP 250 G3 Notebook PCs that are ENERGY STAR qualified are identified as HP 250 G3 ENERGY STAR on HP websites and on energystar.gov. 2: EPEAT registration varies by country. See epeat.net for registration status by country. EPEAT status listed above applies to U.S.</p> | |

Displays specifications

| Specifications | Description |
|--|----------------------------------|
| 15.6-inch LED HD (1366 x 768) Anti-glare | |
| Active area (w x h) | 34.4 x 19.4 cm (13.54 x 7.59 in) |
| Diagonal size | 39.6cm (15.6 in) |
| Surface treatment | Anti-glare |
| Contrast ratio | 300:1 (min) |
| Refresh rate | 60 Hz |

| Specifications | Description |
|------------------|--|
| Brightness | 200 nit (typical) |
| Pixel resolution | <ul style="list-style-type: none"> • Pitch: 0.252 mm • Format: 1366 x 768 • Configuration: RGB Stripe |
| Backlight | LED |
| PPI | 101 ppi |
| Viewing angle | <ul style="list-style-type: none"> • $\pm 40^\circ$ Horizontal • $\pm 10^\circ/-30^\circ$ Vertical (minimum) • 40/40/30/10 (Left/Right/Down/Up) (minimum) |

Power specifications

| Specifications | Description |
|--------------------------|---|
| HP 45 W Smart ac adapter | |
| Dimensions | 9.6 x 4.95 x 2.24 cm (3.78 x 1.95 x 0.88 in) |
| Input | <ul style="list-style-type: none"> • 90 to 265 V ac • Efficiency: 87% min at 115 V ac • Frequency range: 47 to 63 Hz • Ac current: 1.4 A at 90 V ac maximum load |
| Output | <ul style="list-style-type: none"> • Power: 45 W • DC output: 19.5 V • Hold-up time: 5 msec at 115 V ac input • Output current limit: <8 A, Over voltage protection -29 V max automatic shutdown |

| Specifications | Description |
|---|---|
| Connector | 3 pin/grounded, mates with interchangeable cords |
| Environmental design | <ul style="list-style-type: none"> • Operating temperature: 0°C to 35°C (32°F to 95°F) • Non-operating (storage) temperature: -20°C to 85°C (-4°F to 185°F) • Altitude: 0 to 5,000 ft (0 to 16,405 ft) • Humidity: 0% to 95% • Storage Humidity: 0% to 95% |
| 4-Cell (41 WHr) Lithium-Ion battery | |
| Cells/type | 4-cell Lithium-Ion |
| Energy temperature | <ul style="list-style-type: none"> • Watt-hour capacity: 41 WHr • Operating (Charging): 0°C to 45°C (32°F to 113°F) • Operating (Discharging): -10°C to 60°C (14°F to 140°F) • Non-operating: -20°C to 60°C (-4°F to 140°F) |
| Battery re-charge time | <ul style="list-style-type: none"> • System in Off or standby mode: 2.5 hours • System On: 3 to 5 hours (depending on system power consumption) |
| HP 3-cell (31 WHr) Lithium-Ion primary battery | |
| Dimensions (H x W x L) | 2 x 3 x 20.5 cm (0.8 x 1.2 x 8.1 in) |
| Weight | 0.166 kg (0.37 lb) |
| Cells/type | 3-cell Lithium-Ion |
| Energy | <ul style="list-style-type: none"> • Voltage: 11.1 V • Amp-hour capacity: 2.8 Ah |



| Specifications | Description |
|------------------------|---|
| | <ul style="list-style-type: none"> Watt-hour capacity: 31 Wh |
| Temperature | <ul style="list-style-type: none"> Operating (Charging): 0°C to 45°C (32°F to 113°F) Operating (Discharging): -10°C to 50°C (14°F to 122°F) Non-operating: -20°C to 50°C (-4°F to 122°F) |
| Battery re-charge time | <ul style="list-style-type: none"> System in Off or standby mode: 2.5 hours System On: 3 to 5 hours |
| Fuel gauge LED | No |

Storage specifications

| Specifications | Description |
|------------------------------|--|
| 1TB 5400 rpm SATA hard drive | |
| Drive weight | 115 g (0.254 lb) |
| Capacity | 1TB |
| Height | 9.5 mm (0.37 in) |
| Width | 70 mm (2.75 in) |
| Interface | <ul style="list-style-type: none"> ATA-8 SATA 2.6 3.0 Gb/s NCQ |

| Specifications | Description |
|---|--|
| Transfer rate synchronous (maximum) | 300MB/s (Drive capability) |
| Seek time (typical reads, including settling) | <ul style="list-style-type: none"> • Single track: 3 ms • Average: 13 ms • Maximum: 24 ms |
| Rotational speed | 5400 rpm |
| Logical blocks | 1,953,525,168 |
| Operating temperature (case temp) | 0°C to 60°C (32°F to 140°F) |
| Features | ATA security |
| 750GB 5400 rpm SATA hard drive | |
| Drive weight | 101 g (0.22 lb) |
| Capacity | 750GB |
| Height | 9.5 mm (0.37 in) |
| Width | 70 mm (2.75 in) |
| Interface | <ul style="list-style-type: none"> • ATA-8 • SATA 2.6 • 3.0 Gb/s |



| Specifications | Description |
|---|--|
| | <ul style="list-style-type: none"> • NCQ |
| Transfer rate synchronous (maximum) | 300MB/s (Drive capability) |
| Seek time (typical reads, including settling) | <ul style="list-style-type: none"> • Single track: 3 ms • Average: 13 ms • Maximum: 24 ms |
| Rotational speed | 5400 rpm |
| Logical blocks | 1,465,149,168 |
| Operating temperature (case temp) | 0°C to 60°C (32°F to 140°F) |
| Features | ATA security |
| 500GB 5400 rpm SATA hard drive | |
| Drive weight | 101 g (0.22 lb) |
| Capacity | 500GB |
| Height | 9.5 mm (0.37 in) |
| Width | 70 mm (2.75 in) |
| Interface | <ul style="list-style-type: none"> • ATA-8 • SATA 2.6 |



| Specifications | Description |
|---|--|
| | <ul style="list-style-type: none"> • 3.0 Gb/s • NCQ |
| Transfer rate synchronous (maximum) | 150MB/s (Drive capability) |
| Seek time (typical reads, including settling) | <ul style="list-style-type: none"> • Single track: 3 ms • Average: 13 ms • Maximum: 24 ms |
| Rotational speed | 5400 rpm |
| Logical blocks | 976,773,168 |
| Operating temperature (case temp) | 0°C to 60°C (32°F to 140°F) |
| Features | ATA security |
| 320GB 5400 rpm SATA hard drive | |
| Drive weight | 101 g (0.22 lb) |
| Capacity | 320GB |
| Height | 9.5 mm (0.37 in) |
| Width | 70 mm (2.75 in) |
| Interface | <ul style="list-style-type: none"> • ATA-8 |



| Specifications | Description |
|---|--|
| | <ul style="list-style-type: none"> • 3.0 Gb/s • NCQ |
| Transfer rate synchronous (maximum) | 150MB/s (Drive capability) |
| Seek time (typical reads, including settling) | <ul style="list-style-type: none"> • Single track: 3 ms • Average: 13 ms • Maximum: 24 ms |
| Rotational speed | 5400 rpm |
| Logical blocks | 625,142,448 |
| Operating temperature (case temp) | 0°C to 60°C (32°F to 140°F) |
| Features | ATA security |

Optical drives specifications

| Specifications | Description |
|------------------------------|---|
| DVD+/-RW SuperMulti DL drive | |
| Access times (Random) | <ul style="list-style-type: none"> • < 140ms CD (typical) • < 160 ms DVD (typical) |
| Max data transfer rate | <ul style="list-style-type: none"> • 24X CD-ROM • 8X DVD • 24X CD-R • 24X CD-RW • 8X DVD+R |



| Specifications | Description |
|-------------------------|---|
| | <ul style="list-style-type: none"> • 8X DVD+RW • 8X DVD-R • 6X DVD-RW • 5X DVD-RAM |
| Transfer mode | UDMA Mode 5 |
| Interface | Gen 1 SATA |
| Supported media (read) | <ul style="list-style-type: none"> • CD-DA • CD-TEXT • CD-ROM • CD-ROM XA • MIXED MODE CD • CD-I • CD-I Bridge <ul style="list-style-type: none"> • Photo-CD • Video CD • Multisession CD <ul style="list-style-type: none"> • Photo-CD • CD-EXTRA • Portfolio • CD-R • CD-RW • CD-R • CD-RW • DVD-ROM <ul style="list-style-type: none"> • DVD-5 • DVD-9 • DVD-10 • DVD-18 • DVD-R • DVD-RW • DVD+R • DVD+RW • DVD-RAM |
| Supported media (write) | <ul style="list-style-type: none"> • CD-R • CD-RW • DVD+R • DVD+RW |



| Specifications | Description |
|---------------------------------|--|
| | <ul style="list-style-type: none"> • DVD-R • DVD-RW • DVD-RAM • DVD+R DL • DVD-R DL |
| Max media capacity (read/write) | 8.5GB |
| Transport | Tray loading |

Networking specifications

| Specifications | Description |
|-------------------------------|---|
| Integrated Realtek 10/100 NIC | |
| Ethernet features | <ul style="list-style-type: none"> • 10 Mbit/s operation <ul style="list-style-type: none"> • 10BASE-T • IEEE 802.3i • IEEE 802.3 clauses 13-14 • 100 Mbit/s operation <ul style="list-style-type: none"> • 100BASE-TX • IEEE 802.3u • IEEE 802.3 clauses 21-30 • Auto-Negotiation (Automatic Speed Selection) • Full Duplex Operation at all Speeds • Half Duplex operation at 10 and 100 Mbit/s • IEEE 802.1p QoS (Quality of Service) Support • IEEE 802.1q VLAN support • IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) |
| Power management | <ul style="list-style-type: none"> • ACPI compliant - multiple power modes • Situation-sensitive features reduce power consumption • Advanced link down power saving for reducing link down power consumption |
| Performance features | <ul style="list-style-type: none"> • TCP/IP/UDP Checksum Offload (configurable) |

| Specifications | Description |
|------------------------|--|
| | <ul style="list-style-type: none"> • Receiving side scaling |
| Manageability | <ul style="list-style-type: none"> • Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame) • Wake-on-LAN from off (Magic Packet only) • PXE 2.1 Remote Boot • Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) • Comprehensive diagnostic and configuration software suite • Virtual Cable Doctor for Ethernet cable status |
| Interface | <ul style="list-style-type: none"> • PCI Express 1.1 x1 to fully support ASPM L0s/L1 • CLKREQ |
| NIC device driver name | Realtek PCIe FE Ethernet family controller |

Communications specifications

| Specifications | Description |
|------------------------|---|
| | Qualcomm 802.11b/g/n WiFi adapter |
| Wireless LAN standards | <ul style="list-style-type: none"> • IEEE 802.11b • IEEE 802.11g • IEEE 802.11n |
| Interoperability | <ul style="list-style-type: none"> • Wi-Fi certified • Cisco Compatible Extensions Program compliant with Microsoft Win7 |
| Frequency band | 2.402 - 2.482 GHz |
| Data rates | <ul style="list-style-type: none"> • 802.11b: <ul style="list-style-type: none"> • 1Mbps • 2Mbps • 5.5Mbps |



| Specifications | Description |
|-----------------------------|--|
| | <ul style="list-style-type: none"> • 11Mbps • 802.11g <ul style="list-style-type: none"> • 6Mbps • 9Mbps • 12Mbps • 18Mbps • 24Mbps • 36Mbps • 48Mbps • 54 Mbps • 802.11n <ul style="list-style-type: none"> • 150Mbps for MCS7 |
| Frequency support | <ul style="list-style-type: none"> • 20 MHz • 2.4 GHz bands |
| Modulation | <ul style="list-style-type: none"> • Direct Sequence Spread Spectrum • DBPSK • DQPSK • CCK • OFDM • BPSK • QPSK • 16-QAM • 64-QAM |
| Security | <ul style="list-style-type: none"> • Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. • Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 5) with Microsoft Windows 7 only. |
| Sub-channels | Multinational support with frequency bands and channels compliant to local regulations. |
| Media access protocol | CSMA/CA (Collision Avoidance) with ACK |
| Network architecture models | <ul style="list-style-type: none"> • Ad-hoc (Peer to Peer) |

| Specifications | Description |
|----------------------|---|
| | <ul style="list-style-type: none"> Infrastructure (Access Point Required) |
| Roaming | IEEE 802.11 compliant roaming between access points |
| Output power | 13.5 dBm, minimum |
| Power consumption | <ul style="list-style-type: none"> Idle associated: 250 mW avg (CLKREQ enabled) Idle unassociated: 100 mW avg Transmit/Receive channel: 2.0 /1.6 W |
| Power management | <ul style="list-style-type: none"> ACPI compliant power management 802.11 compliant power saving mode |
| Receiver sensitivity | <ul style="list-style-type: none"> 11b:-88dBm@11Mbps 11g:-74 dBm@54Mbps 11n:-70dBm@72.Mbps |
| Antenna type | High efficiency dual antenna with spatial diversity, usually mounted in the display enclosure |
| Form factor | PCI-Express Half-MiniCard |
| Weight | 4 g (0.008 lb) |
| Dimensions | 3.3 x 26.65 x 29.85 mm (0.13 x 1.05 x 1.17 in) |
| Operating voltage | 3.3 v +/- 9% |
| Temperature | <ul style="list-style-type: none"> Operating: -10°C to 70°C (14°F to 158°F) |

| Specifications | Description |
|--|---|
| | <ul style="list-style-type: none"> • Non-operating : -40°C to 80°C (-40°F to 176°F) |
| Humidity (non-condensing) | <ul style="list-style-type: none"> • Operating: 10% to 90% • Non-operating: 5% to 95% |
| Altitude | <ul style="list-style-type: none"> • Operating: 3,048 m (0 to 10,000 ft) • Non-operating: 15,240 m (0 to 50,000 ft) |
| LED activity | <ul style="list-style-type: none"> • Amber LED On-Radio Off • White LED On-Radio On |
| Qualcomm 802.11b/g/n Bluetooth 4.0 combo card | |
| Wireless LAN standards | <ul style="list-style-type: none"> • IEEE 802.11b • IEEE 802.11g • IEEE 802.11n |
| Interoperability | <ul style="list-style-type: none"> • Wi-Fi certified • Cisco Compatible Extensions Program compliant with Microsoft Win7 |
| Frequency band | 2.402 - 2.482 GHz |
| Data rates | <ul style="list-style-type: none"> • 802.11b <ul style="list-style-type: none"> • 1Mbps • 2Mbps • 5.5Mbps • 11Mbps • 802.11g <ul style="list-style-type: none"> • 6Mbps • 9Mbps • 12Mbps • 18Mbps • 24Mbps • 36Mbps • 48Mbps • 54Mbps |



| Specifications | Description |
|-----------------------------|--|
| | <ul style="list-style-type: none"> • 802.11n <ul style="list-style-type: none"> • 150Mbps for MCS7 |
| Modulation | <ul style="list-style-type: none"> • Direct Sequence Spread Spectrum • DBPSK • DQPSK • CCK • OFDM • BPSK • QPSK • 16-QAM • 64-QAM |
| Security | <ul style="list-style-type: none"> • Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. WAPI • Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 5) with Microsoft Windows Vista and XP only. |
| Sub-channels | Multinational support with frequency bands and channels compliant to local regulations. |
| Media access protocol | CSMA/CA (Collision Avoidance) with ACK |
| Network architecture models | <ul style="list-style-type: none"> • Ad-hoc (Peer to Peer) • Infrastructure (Access Point Required) |
| Roaming | IEEE 802.11 compliant roaming between access points |
| Output power | 13.5 dBm, minimum |
| Power consumption | <ul style="list-style-type: none"> • Idle associated: 250 mW • Idle unassociated: 150 mW |



| Specifications | Description |
|---------------------------|--|
| | <ul style="list-style-type: none"> • Transmit/Receive channel: 2.0 W (max) |
| Power management | <ul style="list-style-type: none"> • ACPI compliant power management • 802.11 compliant power saving mode |
| Receiver sensitivity | <ul style="list-style-type: none"> • 11b:-88dBm@11Mbps • 11g:-74 dBm@54Mbps • 11n:-70dBm@72.Mbps |
| Antenna type | High efficiency dual antenna with spatial diversity, mounted in the display enclosure |
| Form factor | PCI-Express Half-MiniCard v1.2 |
| Weight | 6 g (0.013 lb) |
| Dimensions | 3.3 x 26.65 x 29.85 mm (0.13 x 1.05 x 1.17 in) |
| Operating voltage | 3.3 v +/- 10% |
| Temperature | <ul style="list-style-type: none"> • Operating: -10°C to 65°C (14°F to 149°F) • Non-operating :-40°C to 80° C (-40°F to 176°F) |
| Humidity (non-condensing) | <ul style="list-style-type: none"> • Operating: 10% to 90% • Non-operating: 5% to 95% |
| Altitude | <ul style="list-style-type: none"> • Operating: 3,048 m (0 to 10,000 ft) • Non-operating: 15,240 m (0 to 50,000 ft) |
| LED activity | <ul style="list-style-type: none"> • Amber LED On-Radio Off |

| Specifications | Description |
|------------------------------|---|
| | Bluetooth On-Radio On Bluetooth specification (V4.0 High speed, V2.1+EDR, backwards compatible with V1.1, 1.2 and 2.0) |
| Number of available channels | 79 (1 MHz) available channels |
| Data rates and throughput | <ul style="list-style-type: none"> • 3Mbps data rate; throughput up to 2.17Mbps • Synchronous connection oriented links up to 3, 64kbps, voice channels • Asynchronous connection less links 2178.1kbps/177.1kbps asymmetric or 1306.9kbps symmetric |
| Transmit power | -6 dBm to 4 dBm (Bluetooth Class II) |
| Receiver sensitivity | Better than -80 dBm at 0.1 % raw bit error rate |
| Power consumption | <ul style="list-style-type: none"> • Peak (Tx) 330 mW • Peak (Rx) 230 mW • Sleep <17 mW |
| Antenna | Internally integrated within module |
| Range | 10 m (Up to 33 ft) |
| Electrical interface | <ul style="list-style-type: none"> • USB 2.0 compliant • Microsoft Windows Plug and Play compliant |
| Bluetooth software supported | <ul style="list-style-type: none"> • Broadcom Bluetooth for Windows • Microsoft Windows Bluetooth Software |
| Link topology | <ul style="list-style-type: none"> • Point to Point • Multipoint Pico Nets up to 7 slaves |

| Specifications | Description |
|--|--|
| Security | Full support of Bluetooth security provisions |
| Power management | <ul style="list-style-type: none"> • Microsoft Windows ACPI, and USB Bus support • Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff |
| Certifications | <p>All necessary regulatory approvals for supported countries, including</p> <ul style="list-style-type: none"> • FCC (47 CFR) Part 15C • Section 15.247 & 15.249 ETS 300 328 ETS 300 826 • Low Voltage Directive IEC950 • UL • CSA • CE Mark |
| Bluetooth profiles supported | <ul style="list-style-type: none"> • Generic Access Profile (GAP) • Service Discovery Application Profile (SDAP) • Serial Port Profile (SPP) • Dial_Up Networking Profile (DUN) • Generic Object Exchange Profile (GOEP) • Object Push Profile (OPP) • File Transfer Profile (FTP) • Synchronization Profile (SYNC) • Hard Copy Cable Replacement (HCRP) • Personal Area Networking Profile (PAN) • Human Interface Device Profile (HID) • Generic Audio/Video Distribution Profile (GAVDP) • Advanced Audio/Video Distribution Profile (A2DP) • FAX Profile (FAX) • Basic Imaging Profile (BIP) • Headset Profile (HSP) • Hands Free Profile (HFP) • Basic Printing Profile (BPP) • Video Distribution Profile (VDP) • Audio Video Remote Control Profile (AVRCP) |
| <p>Ralink 802.11b/g/n Bluetooth 4.0 combo card</p> | |

| Specifications | Description |
|------------------------|---|
| Wireless LAN standards | <ul style="list-style-type: none"> • IEEE 802.11b • IEEE 802.11g • IEEE 802.11n |
| Interoperability | <ul style="list-style-type: none"> • Wi-Fi certified • Cisco Compatible Extensions Program compliant with Microsoft Windows7 |
| Frequency band | 2.402 – 2.482 GHz |
| Data rates | <ul style="list-style-type: none"> • 802.11b <ul style="list-style-type: none"> • 1Mbps • 2Mbps • 5.5Mbps • 11 Mbps • 802.11g <ul style="list-style-type: none"> • 6Mbps • 9Mbps • 12Mbps • 18Mbps • 24Mbps • 36Mbps • 48Mbps • 54Mbps • 802.11n: card will support rates for NSS=1 for RX and TX for 20 MHz channels. Short and long guard intervals shall be supported |
| Modulation | <ul style="list-style-type: none"> • Direct Sequence Spread Spectrum • DBPSK • DQPSK • CCK • OFDM • BPSK • QPSK • 16-QAM • 64-QAM |
| Security | <ul style="list-style-type: none"> • Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. WAPI |

| Specifications | Description |
|-----------------------------|---|
| | <ul style="list-style-type: none"> Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 5) with Microsoft Windows Vista and XP only. |
| Sub-channels | Multinational support with frequency bands channels compliant to local regulations. |
| Media access protocol | CSMA/CA (Collision Avoidance) with ACK |
| Network architecture models | <ul style="list-style-type: none"> Ad-hoc (Peer to Peer) Infrastructure (Access Point Required) |
| Roaming | IEEE 802.11 compliant roaming between access points |
| Output power (for CCK) | 13.5dBm , minimum |
| Power consumption | <ul style="list-style-type: none"> Idle associated: 250 mW Idle unassociated: 150 mW Transmit/Receive: 2.0 W (max) |
| Power management | <ul style="list-style-type: none"> ACPI compliant power management 802.11 compliant power saving mode |
| Receiver sensitivity | <ul style="list-style-type: none"> 72.2Mbps: -70 dBm 54Mbps: -74 dBm 11Mbps: -88 dBm 1Mbps: -95 dBm |
| Antenna type | High efficiency dual antenna with spatial diversity, mounted in the display enclosure |
| Form factor | PCI-Express Half-MiniCard |

| Specifications | Description |
|---|---|
| Weight | 6 g (0.013 lb) |
| Dimensions | 3.3 x 26.65 x 29.85 mm (0.13 x 1.05 x 1.17 in) |
| Operating voltage | 3.3v +/- 10% |
| Temperature | <ul style="list-style-type: none"> Operating: -10°C to 65°C (14°F to 149°F) Non-operating: -40°C to 80°C (-40°F to 176°F) |
| Humidity (non-condensing) | <ul style="list-style-type: none"> Operating: 10% to 90% Non-operating: 5% to 95% |
| Altitude | <ul style="list-style-type: none"> Operating: 3,048 m (0 to 10,000 ft) Non-operating: 15,240 m (0 to 50,000 ft) |
| LED activity | <ul style="list-style-type: none"> LED Off: Radio Off Solid LED On: Radio On |
| Bluetooth specification (V4.0 High Speed, V2.1+EDR, backwards compatible with V1.1, 1.2 and 2.0) | |
| Number of available channels | 79 (1 MHz) available channels |
| Data rates and throughput | <ul style="list-style-type: none"> 3 Mbps data rate; throughput up to 2.17 Mbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric |
| Transmit power | -6 dBm to 4 dBm (Bluetooth Class II) |

| Specifications | Description |
|------------------------------|--|
| Receiver sensitivity | Better than -80 dBm at 0.1 % raw bit error rate |
| Power consumption | <ul style="list-style-type: none"> • Peak (Tx) 330 mW • Peak (Rx) 230 mW • Sleep <17 mW |
| Antenna | Internally integrated within module |
| Range | Up to 10 m (33 ft) |
| Electrical interface | <ul style="list-style-type: none"> • USB 2.0 compliant • Microsoft Windows Plug and Play compliant |
| Bluetooth software supported | <ul style="list-style-type: none"> • Broadcom bluetooth for Windows • Microsoft Windows Bluetooth Software |
| Link topology | <ul style="list-style-type: none"> • Point to Point • Multipoint Pico Nets up to 7 slaves |
| Security | Full support of Bluetooth security provisions |
| Power management | <ul style="list-style-type: none"> • Microsoft Windows ACPI, and USB Bus Support • Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff |
| Certifications | <p>All necessary regulatory approvals for supported countries, including</p> <ul style="list-style-type: none"> • FCC (47 CFR) Part 15C • Section 15.247 & 15.249 ETS 300 328 • ETS 300 826 Low Voltage Directive IEC950 UL • CSA • CE Mark |

| Specifications | Description |
|-----------------------------------|--|
| Bluetooth profiles supported | <ul style="list-style-type: none"> • Generic Access Profile (GAP) • Service Discovery Application Profile (SDAP) • Serial Port Profile (SPP) • Dial-Up Networking Profile (DUN) • Generic Object Exchange Profile (GOEP) • Object Push Profile (OPP) • File Transfer Profile (FTP) • Synchronization Profile (SYNC) • Hard Copy Cable Replacement (HCRP) • Personal Area Networking Profile (PAN) • Human Interface Device Profile (HID) • Generic Audio/Video Distribution Profile (GAVDP) • Advanced Audio/Video Distribution Profile (A2DP) • FAX Profile (FAX) • Basic Imaging Profile (BIP) • Headset Profile (HSP) • Hands Free Profile (HFP) • Basic Printing Profile (BPP) • Video Distribution Profile (VDP) • Audio Video Remote Control Profile (AVRCP) |
| Realtek 802.11 b/g/n (1x1) | |
| Wireless LAN standards | <ul style="list-style-type: none"> • IEEE 802.11b • IEEE 802.11g • IEEE 802.11n |
| Interoperability | Wi-Fi certified |
| Frequency band | 2.402 - 2.482 GHz |
| Data rates | <ul style="list-style-type: none"> • 802.11b <ul style="list-style-type: none"> • 1Mbps • 2Mbps • 5.5Mbps • 11Mbps • 802.11g <ul style="list-style-type: none"> • 6Mbps |

| Specifications | Description |
|-----------------------------|--|
| | <ul style="list-style-type: none"> • 9Mbps • 12Mbps • 18Mbps • 24Mbps • 36Mbps • 48Mbps • 54Mbps <p>• 802.11n: card will support rates for NSS=1 for RX and TX for 20 MHz channels. Short and long guard interval will be supported.</p> |
| Modulation | <ul style="list-style-type: none"> • Direct Sequence Spread Spectrum • BPSK • QPSK • CCK • 16-QAM • 64-QAM |
| Security | <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 types <ul style="list-style-type: none"> • WPA • WPA2 <ul style="list-style-type: none"> • 802.1x. WPA-PSK • WPA2-PSK • TKIP • AES • WPA2 certification • IEEE 802.11i • Cisco certified extensions, all versions through V5 • WAPI |
| Network architecture models | <ul style="list-style-type: none"> • Ad-hoc (Peer to Peer) • Infrastructure (Access Point Required) |
| Roaming | IEEE 802.11 compliant roaming between access points |
| Output | 13.5 dBm, nominal |
| Power consumption | <ul style="list-style-type: none"> • Transmit: 2.0 W (max) • Receive: 1.6 W (max) • Associated to Access Point, Idle: 250 mW nominal • Wireless Button Off: 100 mW nominal |

| Specifications | Description |
|---------------------------|--|
| | <ul style="list-style-type: none"> Radio disabled: 75 mW nominal |
| Power management | <ul style="list-style-type: none"> ACPI compliant power management 802.11 compliant power saving mode |
| Receiver sensitivity | <ul style="list-style-type: none"> 802.11b <ul style="list-style-type: none"> -95 dBm (1 Mbps) -93 dBm (2 Mbps) -91 dBm (5.5 Mbps) -88 dBm (11 Mbps) 802.11g <ul style="list-style-type: none"> -90 dBm (6 Mbps) -89 dBm (9 Mbps) -87 dBm (12 Mbps) -85 dBm (18 Mbps) -82 dBm (24 Mbps) -79 dBm (36 Mbps) -76 dBm (48 Mbps) -74 dBm (54 Mbps) 802.11n <ul style="list-style-type: none"> -70dBm (72.2 Mbps) |
| Antenna connections | High efficiency antenna with spatial diversity, mounted in the display enclosure |
| Form factor | PCI-Express Half-MiniCard |
| Dimensions | 4.75 x 26.8 x 30 mm (0.19 x 1.06 x 1.18 in) |
| Operating voltage | 3.3v +/- 9% |
| Temperature | <ul style="list-style-type: none"> Operating: -10°C to 70°C (14°F to 158°F) Non-operating: -40°C to 80°C (-40°F to 176°F) |
| Humidity (non-condensing) | <ul style="list-style-type: none"> Operating: 10% to 90% Non-operating: 5% to 95% |

| Specifications | Description |
|----------------|---|
| Altitude | <ul style="list-style-type: none"> • Operating: 3,048 m (0 to 10,000 ft) • Non-operating: 15,240 m (0 to 50,000 ft) |
| LED activity | <ul style="list-style-type: none"> • LED Off: Radio Off • Solid LED On: Radio On |

Software overview

| Feature | Description |
|---|---|
| Operating system preinstalled | <ul style="list-style-type: none"> • Windows 8.1 64¹ • Windows 8.1 Pro 64¹ • Windows 7 Professional 64 (available through downgrade rights from Windows 8 Pro 64)² • Ubuntu • FreeDOS 2.0 |
| Preinstalled software with Windows Operating System | <ul style="list-style-type: none"> • UI Enhancements: HP Utility center • Productivity: Buy Office • E-readers and document viewers: Kindle (not in EMEA) • ODD Playback and TV tuners: CyberLink PowerDVD • Windows essentials <ul style="list-style-type: none"> • MovieMaker • SkyDrive • Photo Gallery • Photos and Videos <ul style="list-style-type: none"> • CyberLink • CyberLink media suite • CyberLink Power2Go • CyberLink LabelPrint • SnapFish URL • Adobe shockwave player • HP connected photo • Music – HP: RaRa Music (not in EMEA) • Movies: Netflix (NA and LA only) • Home AV Integration/Home Networking: Intel WiDi • Games – Microsoft <ul style="list-style-type: none"> • Solitaire Collection (not in EMEA) • Mahjong (not in EMEA) • Games – HP³ <ul style="list-style-type: none"> • HP Games |



| Feature | Description |
|---|--|
| | <ul style="list-style-type: none"> • WildTangent Games for HP • Communication: Skype |
| <p>NOTE: 1: Not all features are available in all editions of Windows 8.1. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 8.1 functionality. See http://www.microsoft.com for details. 2: This system is preinstalled with Windows 7 Pro software and also comes with a license and media for Windows 8.1 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data. 3: Internet access required, games sold separately</p> | |

Safety certifications

| Specifications | Description |
|-------------------------------|--|
| EMI and safety certifications | <ul style="list-style-type: none"> • CE Mark - full compliance with LVD and EMC directives • Worldwide safety standards <ul style="list-style-type: none"> • IEC60950 • EN60950 • UL60950 • Class1 • SELV • Agency approvals <ul style="list-style-type: none"> • 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. |

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