

Overview

HP ProOne 240 23.8 inch G10 All-in-One Desktop PC

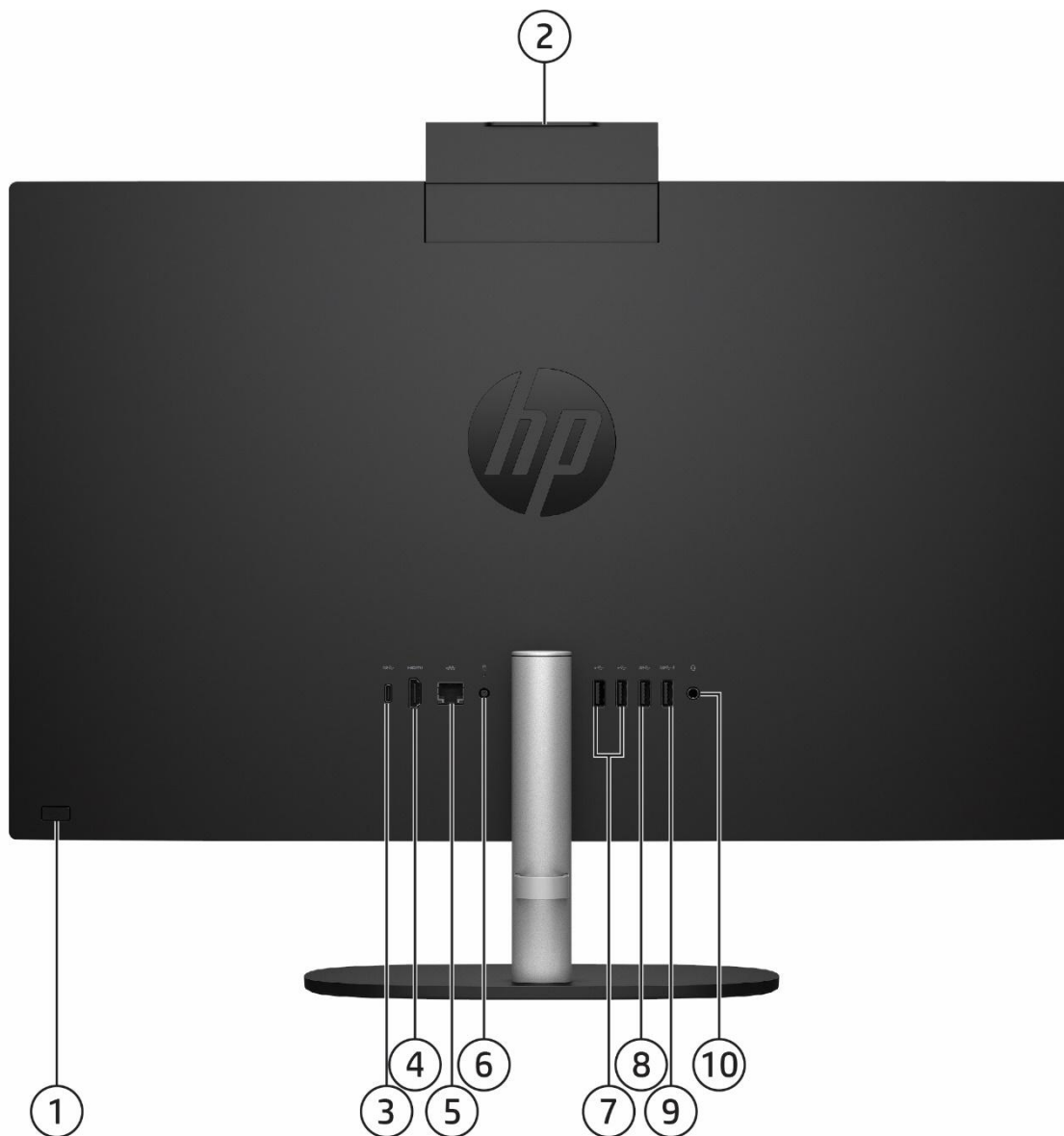


Front

1. Pull-up tiltable 5MP webcam and microphone
2. Speakers (downfiring)

Overview

HP ProOne 240 23.8 inch G10 All-in-One Desktop PC



Rear

- | | |
|-------------------------------------------------|-------------------------------------------------------------------------------------|
| 1. Power button | 7. Two (2) Type-A Hi-Speed USB 480Mbps signaling rate ports |
| 2. Pull-up webcam | 8. One (1) Type-A SuperSpeed USB 5Gbps signaling rate port |
| 3. One (1) Type-C USB 5Gbps signaling rate port | 9. One (1) Type-A SuperSpeed USB 5Gbps signaling rate port with HP Sleep and Charge |
| 4. HDMI 1.4 out connector | 10. Microphone/Headphone Combo Jack |
| 5. RJ-45 (network) jack | |
| 6. Power connector | |

Overview

AT A GLANCE

- Choice of Windows 11 Pro, Windows 11 Home, and FreeDOS.
- Integrated All-in-One form factor.
- 23.8-inch diagonal widescreen Full HD anti-glare display.
- Latest Intel® Core™ Ultra Processors with Intel® Graphics.
- Up to 32GB of DDR5 5600 SODIMM.
- Integrated 10/100/1000 Gigabit LAN Ethernet Controller.
- Wi-Fi 6 wireless connectivity.
- Integrated HD audio card and stereo speakers.
- Integrated 5MP (Pixel size: 1.12µm x 1.12µm) pull-up tiltable camera to ensure no accidental recording to safeguard user's privacy.
- Storage options with up to 1TB SSD and 1TB HDD, including optional 2nd HDD.
- Optional HP external USB DVD/RM Drive.
- TPM 2.0 support.
- Low halogen materials, ENERGY STAR® certified and EPEAT® gold registered where applicable.
- Optional HP Care Pack available. Terms and conditions vary by country. Certain restrictions and exclusions apply.

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

Features

OPERATING SYSTEMS

| | |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Preinstalled | Windows 11 Pro ¹ Windows 11 Home - HP recommends Windows 11 Pro for Business ¹ Windows 11 Home Single Language - HP recommends Windows 11 Pro for Business ¹ FreeDOS |
| Pre-installed (other) | FreeDOS |

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 is automatically updated and enabled. High speed internet and Microsoft account required. ISP fees may apply and additional requirements may apply over time for updates.

See <http://www.windows.com>.

PROCESSORS*

Intel® Core™ Ultra 7 processor 155U^{1,2}

Up to 3.8 GHz E-core 4.8 P-core Max Turbo frequency
12 MB Intel® Smart Cache, 12 cores, 14 threads
Integrated Intel® Graphics
Supports DDR5 memory up to 5600MT/s data rate³

Intel® Core™ Ultra 5 processor 125U^{1,2}

Up to 3.6 GHz E-core 4.3 P-core Max Turbo frequency
12 MB Intel® Smart Cache, 12 cores, 14 threads
Integrated Intel® Graphics
Supports DDR5 memory up to 5600MT/s data rate³

Intel® Core™ i7-1355U¹

Up to 3.7 GHz E-core 5.0 P-core Max Turbo frequency
15 MB L3 cache, 10 cores, 12 threads
Integrated Intel® Iris® Xe Graphics
Supports DDR4 memory up to 3200MT/s data rate³

Intel® Core™ i5-1335U¹

Up to 3.4 GHz E-core 4.6 P-core Max Turbo frequency
12 MB L3 cache, 10 cores, 12 threads
Integrated Intel® Iris® Xe Graphics
Supports DDR4 memory up to 3200MT/s data rate³

Intel® Core™ i5-1334U¹

Up to 3.4 GHz E-core 4.6 P-core Max Turbo frequency
12 MB L3 cache, 10 cores, 12 threads
Integrated Intel® Iris® Xe Graphics
Supports DDR4 memory up to 3200MT/s data rate³

Intel® Core™ i3-N300¹

Up to 3.8 GHz Max Turbo frequency
6 MB L3 cache, 8 cores, 8 threads
Integrated Intel® UHD Graphics
Supports DDR4 memory up to 3200MT/s data rate³

Features

Intel® Processor N200

Up to 3.7 GHz burst frequency

6 MB cache, 4 cores, 4 threads

Integrated Intel® UHD Graphics

Supports DDR4 memory up to 3200 MT/s data rate³

1. Multi-Core 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.

2. Features and software that require a NPU may require software purchase, subscription or enablement by a software or platform provider, and third party software may have specific configuration or compatibility requirements. Performance varies by use, configuration, and other factors.

3. Actual data rate is determined by both the system's configured processor and memory module installed.

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

GRAPHICS

Integrated

Intel® Iris® Xe Graphics¹

Intel® Graphics

Intel® UHD Graphics

1: Intel® Iris® Xe Graphics capabilities require system to be configured with Intel® Core™ i5 or i7 processors and dual channel memory. Intel® Iris® Xe Graphics with Intel® Core™ i5 or 7 processors and single channel memory will only function as UHD graphics.

DISPLAY

Non-Touch

23.8" diagonal FHD IPS anti-glare WLED-backlit (1920 x 1080)

STORAGE AND DRIVES*

NOTE: Starting from November 1st, 2023, all shipments will require Windows to be installed when selecting a SSD. HDD can only be configured as additional data drives and not as the boot drive.

M.2 PCIe NVMe Solid State Drives (SSD)

256GB 2280 PCIe NVMe Solid State Drive

512GB 2280 PCIe NVMe Solid State Drive

1TB 2280 PCIe NVMe Solid State Drive

512GB 2280 PCIe NVMe TLC Solid State Drive

1TB 2280 PCIe NVMe TLC Solid State Drive

2.5-inch SATA Hard Disk Drives (HDD)

1TB 7200RPM 2.5 in HDD

NOTE: For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB is reserved (for Windows) for system recovery software.

Features

MEMORY

Maximum

DDR5 SODIMM up to 5600MT/s

Memory Slots

2 SODIMM¹

Available Configurations

4GB (4GB x1)

8GB (4GB x2)^{1,2}

8GB (8GB x1)

16GB (8GB x2)^{1,2}

16GB (16GB x1)

32GB (16GB x2)^{1,2}

1. Dual Channel memory not supported with Intel N200 or Intel® Core™ i3-N300 processors.

2. 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.

NOTE: Actual data rate is determined by both the system's configured processor and memory module installed.

NETWORKING/COMMUNICATIONS

Wireless LAN

Realtek® 8852BE Wi-Fi 6¹ (802.11ax) 2x2 Wi-Fi® M.2 Card²

Realtek® 8852BE-VS Wi-Fi 6¹ (802.11ax) 1x1 Wi-Fi® M.2 Card²

Realtek® 8852BE-VT Wi-Fi 6¹ +Bluetooth® 5.4 WW WLAN²

Ethernet (RJ-45) Integrated

Realtek® RTL8111HSH-CG Gigabit Ethernet Controller

1. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 (802.11 ax) is backwards compatible with prior 802.11 specs.

2. Must be configured at time of purchase.

AUDIO/MULTIMEDIA

High Definition Audio

Integrated Realtek ALC3274 Audio Codec

High performance integrated stereo speakers

3.5mm combo (microphone/headphone) jack

Webcams & Mic

Integrated tiltable 5MP webcam (Pixel size: 1.12µm x 1.12µm), Up to 30 frames/sec, dual array microphone included

Features

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboards

HP Universal USB Wired Keyboard

Mice

HP USB Hardened Optical Mouse

HP USB Universal Mouse

Keyboard and Mouse Combo

HP Universal wireless Keyboard & Mouse combo

NOTE: Availability may vary by country

SOFTWARE AND SECURITY

HP Support

HP PC Hardware Diagnostics

HP Cloud Recovery

HP Support Assistant

Internet Security and Antivirus

McAfee LiveSafe (30-day subscription)¹

Product Setup

myHP

Security Features

Trusted Platform Module (TPM) 2.0 (firmware)^{2,3}

Productivity

Xerox® DocuShare® (90 days free trial offer)⁴

Microsoft 365 (sold separately and requires Internet access for activation)

1. 30 days trial period. Internet access required to receive updates. First update included. Subscription required for updates thereafter

2. TPM feature will not be supported on machines pre-configured with FreeDOS and Linux

3. In selected countries, machines pre-configured with Windows OS will be shipped with TPM disabled.

4. Simply sign up and start using Xerox® DocuShare® Go. No credit card. No obligation. Data will become unavailable unless a subscription is entered before the end of the 90 days free trial period. See visit <https://xerox.com/docusharego> for details.

POWER

Power Supply

HP Smart 65W External AC power adapter

HP Smart 90W External AC power adapter

Features

PORTS/SLOTS

Rear I/O Ports

- One (1) Type-C SuperSpeed USB 5Gbps signaling rate ports
- One (1) Type-A SuperSpeed USB 5Gbps signaling rate ports
- One (1) Type-A SuperSpeed USB 5 Gbps port with HP Sleep and Charge
- Two (2) Type-A Hi-Speed USB 480Mbps signaling rate ports
- One (1) RJ-45 (network) jack
- One (1) HDMI 1.4 out connector
- One (1) Microphone/Headphone Combo Jack
- One (1) DC in power

Internal I/O Ports

- One (1) M.2 PCIe x1 2230 (for WLAN)
- One (1) M.2 PCIe x4 2280 (for storage)
- One (1) SATA storage connector

Bays

- One (1) 2.5" internal storage drive

WEIGHTS & DIMENSIONS

Weight

23.8 Non-Touch Product Weight (Unboxed)

Basic Stand 5.37 kg, 11.84 lbs

23.8 Shipping Weight (Boxed) 8.80 kg, 19.40 lbs

23.8 Shipping Weight (Pallet) 225.2 kg, 496.5 lbs

Dimension

23.8 System Dimensions

Without Stand 540.62 x 183.7 x 351.43 mm
21.28 x 7.23 x 13.84 in

Basic Stand 540.62 x 183.7 x 419.01 mm
21.28 x 7.23 x 16.50 in

23.8 Shipping Dimensions (Boxed) 641 x 277 x 525 mm
25.2 x 10.7 x 20.6 in

23.8 Shipping Dimensions (Pallet) 1200 x 1000 x 2235 mm
47.24 x 39.37 x 88 in

23.8 Pallet Quantity (Sea/ Rail) 24

23.8 Pallet Quantity (Air) 12

Features

UNIT ENVIRONMENT AND OPERATING CONDITIONS⁹

- Keep the computer away from excessive moisture, direct moisture and the extremes of heat and cold, to ensure that unit is operated within the specified operating range.
- Leave a 10.2 cm (4 in) clearance on all vented sides of the computer to permit the required airflow.
- Never restrict airflow into the computer by blocking any vents or air intakes.
- Do not stack computers on top of each other or place computers so near each other that they are subject to each other's re-circulated or preheated air.
- Occasionally clean the air vents on the front, back, and any other vented side of the computer. Lint, dust and other foreign matter can block the vents and limit the airflow.
- If the computer is to be operated within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the same operating guidelines listed above will still apply.
- Low halogen (chassis, all internal components and modules)¹

| | |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Temperature Range | Operating: 50° to 95° F (10° to 35° C)* Non-operating: -22° to 140° F (-30° to 60° C) |
| Relative Humidity | Operating: 10% to 90% (non-condensing at ambient) Non-operating: 5% to 95% (non-condensing at ambient) |
| Maximum Altitude (unpressurized) | Operating: 5000m Non-operating: 50000ft (15240 m) |

1. External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.
NOTE: Operating temperature is de-rated 1.0 deg C per 300 m (1000 ft) to 3000 m (10,000 ft) above sea level, no direct sustained sunlight. Maximum rate of change is 10 deg C/Hr. The upper limit may be limited by the type and number of options installed.

ENVIRONMENTAL & INDUSTRY

Eco-Label Certifications & declarations

- This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:
- IT ECO declaration
 - US ENERGY STAR®
 - US Federal Energy Management Program (FEMP)
 - EPEAT® Gold registered in the United States. See <http://www.epeat.net> for registration status in your country.
 - China Energy Conservation Program (CECP)
 - China State Environmental Protection Administration (SEPA)
 - Taiwan Green Mark
 - Korea Eco-label
 - Japan PC Green label*

Sustainable Impact Specifications

- [Product Carbon Footprint \(hp.com\)](#)
- Ocean-bound plastic in CPU fan, stand
- 25% post-consumer recycled plastic
- 10% recycled metal
- Low halogen¹
- Outside Box and corrugated cushions are 100% sustainably sourced and recyclable
- Molded Paper Pulp Cushion inside box is 100% sustainably sourced and recyclable

System Configuration

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

Features

Energy Consumption

(in accordance with US ENERGY STAR® test method)

| | 115VAC, 60Hz | 230VAC, 50Hz | 100VAC, 50Hz |
|-------------------------------|--------------|--------------|--------------|
| Normal Operation (Short idle) | 17.78 W | 17.86 W | 17.62 W |
| Normal Operation (Long idle) | 5.75 W | 5.83 W | 5.60 W |
| Sleep | 1.58 W | 1.61 W | 1.54 W |
| Off | 0.34 W | 0.35 W | 0.32 W |

NOTE: Energy efficiency data listed is for an ENERGY STAR® certified product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are certified with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® certified 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. Search keyword generator on HP's 3rd party option store for solar generator accessories at <http://www.hp.com/go/options>.

Heat Dissipation*

| | 115VAC, 60Hz | 230VAC, 50Hz | 100VAC, 50Hz |
|-------------------------------|--------------|--------------|--------------|
| Normal Operation (Short idle) | 61 BTU/hr | 61 BTU/hr | 60 BTU/hr |
| Normal Operation (Long idle) | 20 BTU/hr | 20 BTU/hr | 19 BTU/hr |
| Sleep | 5 BTU/hr | 6 BTU/hr | 5 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)

Typically Configured – Idle
Fixed Disk – Random writes

| Sound Power (L _{WAd} , bels) | Sound Pressure (L _{pAm} , decibels) |
|------------------------------------------|-------------------------------------------------|
| 1.9 | 18.7 |
| 2.3 | 21.9 |

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:

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 than 1ppm by weight
- Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)

Battery type: Lithium

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see <http://www.epeat.net>
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product is 97.6% recycle-able when properly disposed of at end of life.

Features

| | | | |
|---------------------|-----------|-------------------|--------|
| Packaging Materials | External: | PAPER/Corrugated | 1218 g |
| | | PAPER/ Paperboard | 335 g |
| | | PAPER/Molded Pulp | 1218 g |
| | Internal: | PLASTIC/Other | 982 g |
| | | OTHER/Other | 36 g |
| | | | |

The plastic packaging material contains at least 90% recycled content.

RoHS Compliance

The corrugated paper packaging materials contains at least 90% recycled content. HP Inc. complies fully with materials regulations. We were among the first companies to extend the restrictions in the European Union (EU) Restriction of Hazardous Substances (RoHS) Directive to our products worldwide through the HP GSE. HP has contributed to the development of related legislation in Europe, as well as China, India, and Vietnam.

We believe the RoHS directive and similar laws play an important role in promoting industry-wide elimination of substances of concern. We have supported the inclusion of additional substances—including PVC, BFRs, and certain phthalates—in future RoHS legislation that pertains to electrical and electronics products.

We met our voluntary objective to achieve worldwide compliance with the new EU RoHS requirements for virtually all relevant products by July 2013, and we will continue to extend the scope of the commitment to include further restricted substances as regulations continue to evolve.

To obtain a copy of the HP RoHS Compliance Statement, see [HP RoHS position statement](#).

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

Features

- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Packaging Usage

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

End-of-life Management and Recycling

HP Inc. offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <http://www.hp.com/go/reuse-recycle> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the 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

<https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c06040843>

Eco-label certifications

[HP Sustainable Impact & Documents & Reports | HP® Official Site](#)

ISO 14001 certifications:

<https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c04777932>

Footnotes

1. External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.

ALL-IN-ONE DISPLAY PANEL SPECIFICATIONS

23.8" diagonal FHD IPS anti-glare WLED-backlit (1920 x 1080)

Non-touch

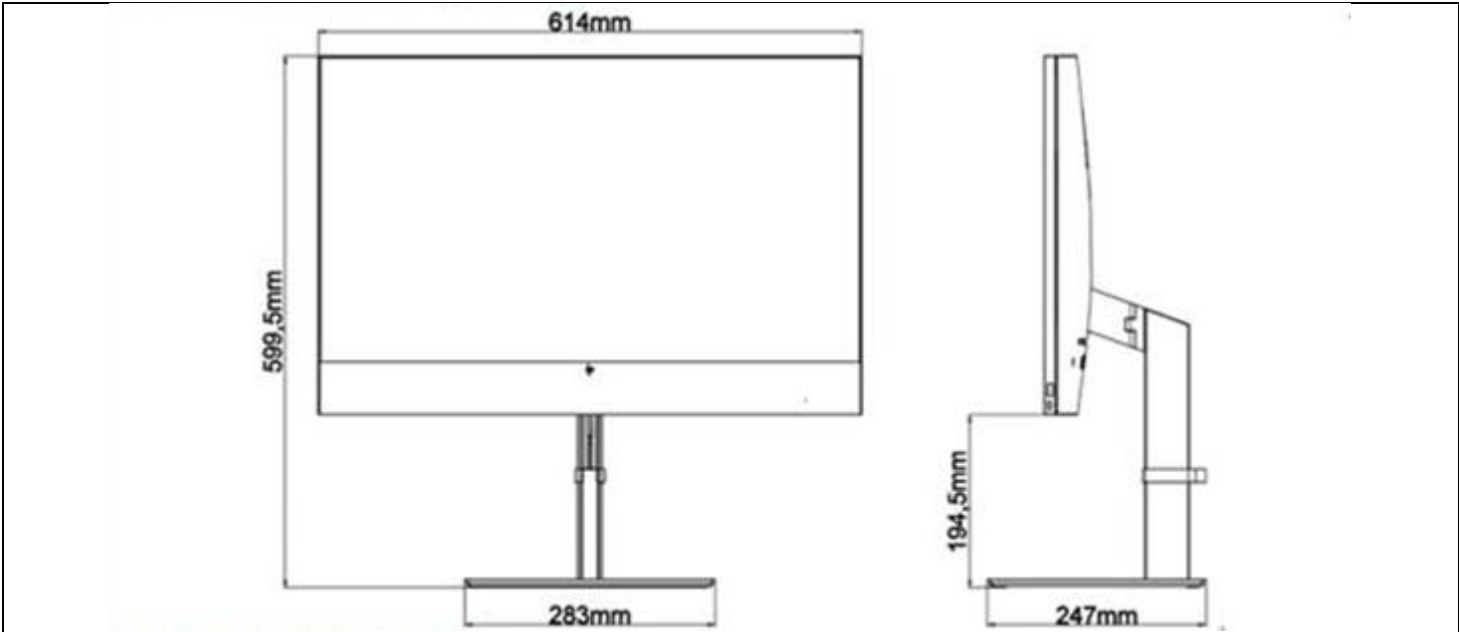
| | |
|------------------------------------------|----------------------------------------------------------|
| Type | IPS WLED Backlit LCD |
| Active area (mm) | 527.04 x 296.46 |
| Native resolution (HxV) | 1920 x 1080 |
| Refresh rate | 60 Hz @ 1920 x 1080 |
| Aspect ratio | 16:9 |
| Pixel pitch (HxV)(mm) | 0.2745 x 0.2745 |
| Contrast ratio (typical) | 1000:1 |
| Brightness (typical) | 250nits |
| Viewing angle (typical) (HxV) | 178 ° x 178 ° |
| Backlight lamp life (to half brightness) | 30,000 hours minimum |
| Color support | Up to 16.7 million colors with the use of FRC technology |
| Color gamut (typical) | NTSC 72% |
| Anti-glare | Yes |
| Response time (typical) | 14ms |
| Default color temperature | Warm (6500K) |

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

ALL-IN-ONE STAND SPECIFICATIONS

| | | |
|-----------------|-------------------|-------------|
| Standard stand: | Tilt angle | -5° to +20° |
| | Rotation (Swivel) | None |

| | | |
|--------------------------|----------------------------------------|---------------------------------------------|
| Adjustable Height Stand: | Height - Vertical/Landscape Adjustment | 130mm (±2 mm) |
| | Portrait Adjustment | No portrait |
| | Tilt Angle | -5° to +18° (±2°) in landscape and portrait |
| | Rotation (Swivel) | 86° (±4°) (45 left, 45 right) |
| | Pivot | No pivot |



STORAGE AND DRIVES

NOTE: Starting from November 1st, 2023, all shipments will require Windows to be installed when selecting a SSD. HDD can only be configured as additional data drives and not as the boot drive.

1TB 7200RPM 2.5in SATA HDD

| | |
|------------------------------|---------------------------------------------------------------|
| Capacity | 1TB |
| Rotational Speed | 7,200 rpm |
| Interface | SATA 6 Gb/s |
| Buffer Size | 64 MB |
| Logical Blocks | 1,953,525,168 |
| Seek Time | 11 ms (Average) |
| Height | 1 in/2.54 cm |
| Width (nominal) | Media diameter: 3.5 in/8.89 cm Physical size: 4 in/10.2 cm |
| Operating Temperature | 41° to 131°F (5° to 55°C) |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36GB (for Windows) of system disk is reserved for the system recovery software.

128GB M.2 2230 PCIe NVMe SSD

| | |
|---------------------------------|------------------------------------------|
| Drive Weight | < 10g |
| Capacity | 128GB |
| Height | 2.3mm |
| Length | 30mm |
| Width | 22mm |
| Interface | PCIe NVMe |
| Maximum Sequential Read | Up to 1600MB/s |
| Maximum Sequential Write | Up to 780MB/s |
| Logical Blocks | 290,069,680 |
| Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| Features | Pyrite |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36GB (for Windows) of system disk is reserved for the system recovery software.

256GB M.2 2280 PCIe NVMe SSD

| | |
|---------------------------------|----------------|
| Drive Weight | < 10g |
| Capacity | 256GB |
| Height | 2.38mm |
| Length | 80mm |
| Width | 22mm |
| Interface | PCIe Gen4 |
| Maximum Sequential Read | Up to 1600MB/s |
| Maximum Sequential Write | Up to 780MB/s |
| Logical Blocks | 500,118,192 |

Technical Specifications – Storage

| | |
|------------------------------|------------------------------------------|
| Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| Features | APST; ASPM L1.2; NVME spec 1.2 |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36GB (for Windows) of system disk is reserved for the system recovery software.

512GB M.2 2280 PCIe NVMe SSD

| | |
|---------------------------------|------------------------------------------|
| Drive Weight | < 10g |
| Capacity | 512GB |
| Height | 2.38mm |
| Length | 80mm |
| Width | 22mm |
| Interface | PCIe Gen4 |
| Maximum Sequential Read | Up to 1600MB/s |
| Maximum Sequential Write | Up to 860MB/s |
| Logical Blocks | 1,000,215,216 |
| Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| Features | APST; ASPM L1.2; NVME spec 1.2 |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36GB (for Windows) of system disk is reserved for the system recovery software.

1TB M.2 2280 PCIe NVMe SSD

| | |
|---------------------------------|------------------------------------------|
| Drive Weight | < 10g |
| Capacity | 1TB |
| Height | 2.38mm |
| Length | 80mm |
| Width | 22mm |
| Interface | PCIe Gen4 |
| Maximum Sequential Read | Up to 1600MB/s |
| Maximum Sequential Write | Up to 860MB/s |
| Logical Blocks | 1,000,215,216 |
| Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| Features | APST; ASPM L1.2; NVME spec 1.2 |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36GB (for Windows) of system disk is reserved for the system recovery software.

512GB M.2 2280 PCIe NVMe Three Layer Cell SSD

| | |
|--------------------------------|----------------|
| Drive Weight | < 10g |
| Capacity | 512GB |
| Height | 2.38mm |
| Length | 80mm |
| Width | 22mm |
| Interface | PCIe Gen4 |
| Maximum Sequential Read | Up to 2900MB/s |

Technical Specifications – Storage

| | |
|---------------------------------|------------------------------------------|
| Maximum Sequential Write | Up to 1100MB/s |
| Logical Blocks | 1,000,215,216 |
| Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| Features | APST; ASPM L1.2; NVME spec 1.2 |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36GB (for Windows) of system disk is reserved for the system recovery software.

1TB M.2 2280 PCIe NVMe Three Layer Cell SSD

| | |
|---------------------------------|------------------------------------------|
| Drive Weight | < 10g |
| Capacity | 1 TB |
| Height | 2.38mm |
| Length | 80mm |
| Width | 22mm |
| Interface | PCIe Gen4 |
| Maximum Sequential Read | Up to 2900MB/s |
| Maximum Sequential Write | Up to 1100MB/s |
| Logical Blocks | 1,000,215,216 |
| Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| Features | APST; ASPM L1.2; NVME spec 1.2 |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36GB (for Windows) of system disk is reserved for the system recovery software.

HP EXTERNAL USB DVD/RW

| | |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Drive | Manual tray load |
| Interface | USB 2.0 |
| Dimensions (H x W x D) | 0.55 X 5.41 X 5.94 in (1.40 X 14.40 X 13.75 cm) |
| Form factor | External |
| Access Times CD 1/3 STROKE | 140 ms |
| DVD 1/3 Stroke | 160 ms |
| Supported media (read) | DVD-ROM, DVD-R DVD-R, DVD-R DL, DVD-RW, DVD+R, DVD+R DL, AND +RW CD-ROM, CD-ROM XA, CD-DA SUPER AUDIO CD CD-R DISCS CD-RW DISCS CPRM (DVD-R/RW/RAM) SUPPORTED |
| Supported media (write) | DVD-R DVD-R DL DVD-RW DVD+R DVD+R DL DVD+RW CD-R/RW |
| System requirements | Pentium IV 2.4GHz or higher, Compatible (recommended: Pentium IV 3.2GHz or higher) |

Technical Specifications – Storage

| | |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RAM | 256MB or higher (recommended: 128MB) |
| HDD | 20GB or more of available space |
| Video memory | 64MB or higher (recommend: 128MB) |
| Maximum speed normal | |
| Write Speeds | DVD-RW 6X MAXIMUM BY ZCLV DVD+RW 8X MAXIMUM BY ZCLV CD-RW 24 X MAXIMUM BY ZCLV |
| Read Speeds | DVD-R/RW/ROM 8 X MAXIMUM DVD-R DL 8 X MAXIMUM DVD-VIDEO 4 X MAXIMUM M-DISC (DVD+R SL) 8 X MAXIMUM DVD+R/+RW 8 X MAXIMUM DVD+R DL 8 X MAXIMUM CD-R/RW/ROM 24 X MAXIMUM CD-DA 24 X MAXIMUM |
| Access time (typical reads, including settling) | Random DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical) Full Stroke DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical) Stop Time 6 seconds (typical) |
| Power | Source Slimline SATA DC power receptacle DC Power Requirement 5 VDC ± 5%-100 mV ripple p-p DC Current 5 VDC (< 1000 mA typical, 1600 mA maximum) |
| Environmental conditions (All conditions, non-condensing) | Temperature (operating, read and write): 41°F to 104°F (5°C to 40°C) Relative Humidity (operating): 10% to 80% Relative Humidity (non-condensing, read): 15% to 85% Relative Humidity (depending on temperature, write): 15% to 85% Temperature (non-operating): -22°F to 104°F (-30°C to 40°C) Relative Humidity (non-operating, non-condensing): 10% to 90% |
| Option kit contents | HP Mobile USB DVD/RW Drive, software, documentation |

NOTE: Actual speeds may vary. Intended only for creation and storage of original material and other lawful uses. Double layer discs may not be compatible with many existing single layer DVD drives and players.

HIGH DEFINITION AUDIO

| | |
|----------------------------|---------------------------------------------------------------------------------------------------------------------|
| Type | Integrated |
| HD Audio Codec | Realtek ALC3274 Audio Codec |
| Audio I/O Ports | Rear 3.5mm combo (microphone/headphone) jack (32 Ohm) supporting CTIA and OMTP style headset Microphone (2K Ohm) |
| Analog Audio | Yes |
| Internal Speaker Amplifier | 2W per channel stereo amplifier for the internal speakers only |
| Internal Speaker | Yes - Stereo Speaker |
| DAC Sampling Rates | 44.1 kHz/48 kHz/96 kHz/192 kHz |
| ADC Sampling Rates | 44.1 kHz/48 kHz/96 kHz/192 kHz |

Technical Specifications – Input/Output

INPUT/OUTPUT DEVICES

HP Wireless Keyboard

| | | |
|--------------------------|---------------------------|------------------------------------------------------|
| | Keys | 104, 105 lay out (depending upon country) |
| Physical Characteristics | Dimensions (L x W x H) | 18.15 x 6.02 x 1.08 in (461 x 153 x 27.4 mm) |
| | Weight | 1.32 lb (600g) min |
| | Operating voltage | 5 VDC, +/-5% |
| Electrical | Power consumption | 50mA Max (All LED on) |
| | System interface | USB Type A plug connector |
| | ESD | Contact Discharge: 8 KV Air Discharge: 15 KV |
| | EMI - RFI | Conforms to FCC rules for a Class B computing device |
| Mechanical | Keycaps | Mid-profile design |
| | Switch actuation | 60±10g nominal peak force with tactile feedback |
| | Switch life | 10 million keystrokes (Life tester) |
| | Switch type | Contamination-resistant switch membrane |
| | Key-leveling mechanisms | For all double-wide and greater-length keys |
| | Cable length | 6 ft (1.8 m) |
| | Acoustics | 43-dBA maximum sound pressure level |
| Environmental | Operating temperature | 50° to 122° F (10° to 50° C) |
| | Non-operating temperature | -22° to 140° F (-30° to 60° C) |
| | Operating humidity | 10% to 90% (non-condensing at ambient) |
| | Non-operating humidity | 20% to 80% (non-condensing at ambient) |
| | Operating shock | 40 g, six surfaces |
| | Non-operating shock | 80 g, six surfaces |
| | Operating vibration | 2-g peak acceleration |
| | Non-operating vibration | 4-g peak acceleration |
| | Drop (out of box) | 26 in (66 cm) on carpet, six-drop sequence |
| | Drop (in box) | 30 in (76.2 cm) on concrete, 16-drop sequence |

Technical Specifications – Input/Output

HP USB Wireless Mouse

| | | |
|-------------------------------|--------------------------------------------|----------------------------------------|
| Dimensions (H x L x W) | 4.21 x 2.64 x 1.52 in (107 x 67 x 38.7 mm) | |
| Weight | 0.19lb (90g) | |
| Environmental | Operating temperature | 50° to 122° F (10° to 50° C) |
| | Non-operating temperature | -22° to 140° F (-30° to 60° C) |
| | Operating humidity | 10% to 90% (non-condensing at ambient) |
| | Non-operating humidity | 20% to 80% (non-condensing at ambient) |
| | Operating shock | 50 g, 6 surfaces |
| | Non-operating shock | 80 g, 6 surfaces |
| | Operating vibration | 2-g peak acceleration |
| | Non-operating vibration | 4-g peak acceleration |
| Electrical | Operating voltage | 5 VDC, +/-5% |
| | Power consumption | 50mA Max |
| | Resolution | 800, 1200, 1600 DPI |
| | Tracking speed | 31 inch/sec (max) |
| Mechanical | Tracking acceleration | 8G(max), 1G=9.8m/s3 |
| | Connector | USB 2.0 |
| | Cable length | 6 ft (1.8 m) |

Technical Specifications – Input/Output

HP Universal USB Wired Keyboard

| | | |
|---------------------------------|---------------------------|------------------------------------------------------|
| Physical Characteristics | Keys | 104, 105 layout (depending upon country) |
| | Dimensions (L x W x H) | 18.15 x 6.02 x 1.08 in (461 x 153 x 27.4 mm) |
| | Weight | 1.32 lb (600g) min |
| | Operating voltage | 5 VDC, +/-5% |
| Electrical | Power consumption | 50mA Max (All LED on) |
| | System interface | USB Type A plug connector |
| | ESD | Contact Discharge: 8 KV Air Discharge: 15 KV |
| | EMI - RFI | Conforms to FCC rules for a Class B computing device |
| Mechanical | Keycaps | Mid-profile design |
| | Switch actuation | 60±10g nominal peak force with tactile feedback |
| | Switch life | 10 million keystrokes (Life tester) |
| | Switch type | Contamination-resistant switch membrane |
| Environmental | Key-leveling mechanisms | For all double-wide and greater-length keys |
| | Cable length | 6 ft (1.8 m) |
| | Acoustics | 43-dBA maximum sound pressure level |
| | Operating temperature | 50° to 122° F (10° to 50° C) |
| | Non-operating temperature | -22° to 140° F (-30° to 60° C) |
| | Operating humidity | 10% to 90% (non-condensing at ambient) |
| | Non-operating humidity | 20% to 80% (non-condensing at ambient) |
| | Operating shock | 40 g, six surfaces |
| | Non-operating shock | 80 g, six surfaces |
| | Operating vibration | 2-g peak acceleration |
| | Non-operating vibration | 4-g peak acceleration |
| | Drop (out of box) | 26 in (66 cm) on carpet, six-drop sequence |
| | Drop (in box) | 30 in (76.2 cm) on concrete, 16-drop sequence |

Technical Specifications – Input/Output

HP USB Universal Wired Mouse

| | | |
|------------------------|--------------------------------------------|----------------------------------------|
| Dimensions (H x L x W) | 4.21 x 2.64 x 1.52 in (107 x 67 x 38.7 mm) | |
| Weight | 0.19lb (90g) | |
| Environmental | Operating temperature | 50° to 122° F (10° to 50° C) |
| | Non-operating temperature | -22° to 140° F (-30° to 60° C) |
| | Operating humidity | 10% to 90% (non-condensing at ambient) |
| | Non-operating humidity | 20% to 80% (non-condensing at ambient) |
| | Operating shock | 50 g, 6 surfaces |
| | Non-operating shock | 80 g, 6 surfaces |
| | Operating vibration | 2-g peak acceleration |
| | Non-operating vibration | 4-g peak acceleration |
| Electrical | Operating voltage | 5 VDC, +/-5% |
| | Power consumption | 50mA Max |
| | Resolution | 800, 1200, 1600 DPI |
| | Tracking speed | 31 inch/sec (max) |
| Mechanical | Tracking acceleration | 8G(max), 1G=9.8m/s3 |
| | Connector | USB 2.0 |
| | Cable length | 6 ft (1.8 m) |

Technical Specifications – Input/Output

HP USB Optical Mouse

Dimensions (H x L x W) 4.53 x 2.50 x 1.40 in (115 x 63.46 x 35.48 mmm)

Weight 0.18lb (80g)

Environmental

| | |
|---------------------------|----------------------------------------|
| Operating temperature | 50° to 122° F (10° to 50° C) |
| Non-operating temperature | -22° to 140° F (-30° to 60° C) |
| Operating humidity | 10% to 90% (non-condensing at ambient) |
| Non-operating humidity | 20% to 80% (non-condensing at ambient) |

| | |
|-------------------------|-----------------------|
| Operating shock | 40 g, six surfaces |
| Non-operating shock | 80 g, six surfaces |
| Operating vibration | 2-g peak acceleration |
| Non-operating vibration | 4-g peak acceleration |

| | |
|-------------------|--------------|
| Operating voltage | 5 VDC, +/-5% |
| Power consumption | 50mA Max |

Electrical

| | |
|-----------------------|---------------------|
| Resolution | 1,000 DPI |
| Sensor | Pixart PAN3606DL |
| Tracking speed | 30 inch/sec (max) |
| Tracking acceleration | 9G(max), 1G=9.8m/s2 |

Mechanical

| | |
|--------------|--------------|
| Connector | USB 2.0 |
| Cable length | 6 ft (1.8 m) |

NETWORKING/COMMUNICATIONS

| | | |
|---------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Realtek® RTL8111HSH-CG Gigabit Ethernet Controller | Ethernet Features | 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet) Jumbo Frame 9K Auto MDI/MDIX Crossover cable detection |
| | Power Management | ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption |
| | Performance Features | TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling |
| | Manageability | 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 | PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ |
| | NIC Device Driver Name | PCIe GBE Ethernet Family Controller |

WLAN*

| Realtek® 8852BE Wi-Fi 6¹ (802.11ax) 2x2 with Bluetooth® Wireless Card M.2 | |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 |
| Interoperability | Wi-Fi® certified |
| Frequency Band | 802.11b/g/n/ax • 2.402 – 2.482 GHz 802.11a/n/ac/ax • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz |

Technical Specifications - Networking

| | |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <ul style="list-style-type: none"> • 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 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: max 300Mbps • 802.11ac : max 866.7Mbps • 802.11ax : max 1201Mbps |
| Modulation | Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM |
| Security² | <ul style="list-style-type: none"> • IEEE and WiFi certified 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 • WPA3 certification • IEEE 802.11i • WAPI |
| Network Architecture Models | Ad-hoc (Peer to Peer) Infrastructure (Access Point Required) |
| Roaming | IEEE 802.11 compliant roaming between access points |
| Output Power³ | <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 • 802.11ax HE40(2.4GHz): +10dBm minimum • 802.11ax HE80(5GHz): +10dBm minimum |
| Power Consumption | <ul style="list-style-type: none"> • Transmit mode:2.5 W • Receive mode:2 W • Idle mode: (PSP) 180 mW (WLAN Associated) • Idle mode:50 mW (WLAN unassociated) • Connected Standby/Modern Standby: 10mW • Radio disabled: 8 mW |
| Power Management | ACPI and PCI Express compliant power management 802.11 compliant power saving mode |
| Receiver Sensitivity⁴ | 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 •802.11ax, MCS11(HE40): -57dBm maximum •802.11ax, MCS11(HE80): -54dBm 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 |

Technical Specifications - Networking

| | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Dimensions | Type 2230: 2.3 x 22.0 x 30.0 mm | |
| Weight | Type 2230: 2.8g | |
| Operating Voltage | 3.3v +/- 9% | |
| Temperature | Operating Non-operating | 14° to 158° F (–10° to 70° C) –40° to 176° F (–40° to 80° C) |
| Humidity | Operating Non-operating | 10% to 90% (non-condensing) 5% to 95% (non-condensing) |
| Altitude | Operating Non-operating | 0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m) |
| LED Activity | LED Amber – Radio OFF; LED White – Radio ON | |
| <div>1. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 (802.11ax) is backwards compatible with prior 802.11 specs.</div> <div>2. Check latest software/driver release for updates on supported security features.</div> <div>3. Maximum output power may vary by country according to local regulations.</div> <div>4. 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> | | |
| HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1/5.2 Wireless Card Technology | | |
| Bluetooth® Specification | 4.0/4.1/4.2/5.0/5.1/5.2 Wireless Card Compliant | |
| Frequency Band | 2402 to 2480 MHz | |
| Number of Available Channels | Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH) | |
| Data Rates and Throughput | <div>Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps</div> <div>BLE: 1 Mbps data rate; throughput up to 0.2 Mbps</div> <div>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)</div> | |
| 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 | |
| Bluetooth® Software Supported Link Topology | Microsoft Windows Bluetooth® Software | |
| Power Management | Microsoft Windows ACPI, and USB Bus Support | |
| Certifications | FCC (47 CFR) Part 15C, Section 15.247 & 15.249 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 | |

Technical Specifications - Networking

| | |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <div>LE Data Packet Length Extension</div> <div>FAX Profile (FAX)</div> <div>Basic Imaging Profile (BIP)2</div> <div>Headset Profile (HSP)</div> <div>Hands Free Profile (HFP)</div> <div>Advanced Audio Distribution Profile (A2DP)</div> <div>BT5.1</div> <div>ESR9/10 Compliance</div> <div>LE Advertisement Extensions</div> <div>Channel Selection Algo</div> <div>Limited High Duty Cycle Non-Connectable Advertising</div> <div>2Mbps LE</div> <div>LE Long Range</div> |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Technical Specifications - Networking

| Realtek RT 8852BE-VS Wi-Fi 6 ¹ (802.11ax) 1x1 with Bluetooth® Wireless Card M.2 | |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wireless LAN Standards | IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac |
| Interoperability | Wi-Fi® certified |
| Frequency Band | 802.11b/g/n • 2.402 – 2.482 GHz 802.11a/n • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz |
| Data Rates | • 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz) |
| Modulation | Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM |
| Security² | • IEEE 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI |
| Network Architecture Models | Ad-hoc (Peer to Peer) Infrastructure (Access Point Required) |
| Roaming | IEEE 802.11 compliant roaming between access points |
| Output Power³ | • 802.11b: +14dBm minimum • 802.11g: +12dBm minimum • 802.11a: +12dBm minimum • 802.11n HT20(2.4GHz): +12dBm minimum • 802.11n HT40(2.4GHz): +12dBm minimum • 802.11n HT20(5GHz): +10dBm minimum • 802.11n HT40(5GHz): +10dBm minimum • 802.11ac VHT80(5GHz): +10dBm minimum |
| Power Consumption | • 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 802.11 compliant power saving mode |
| Receiver Sensitivity⁴ | 802.11b, 1Mbps: -93.5dBm maximum 802.11b, 11Mbps: -84dBm maximum 802.11a/g, 6Mbps: -86dBm maximum 802.11a/g, 54Mbps: -72dBm maximum |

Technical Specifications - Networking

| | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| | 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. One embedded dual band 2.4/5 GHz antenna is provided to the card to support WLAN communications and Bluetooth communications | |
| Form Factor | PCI-Express M.2 MiniCard | |
| Dimensions | Type 2230: 2.3 x 22.0 x 30.0 mm | |
| Weight | Type 2230: 2.8g | |
| Operating Voltage | 3.3v +/- 9% | |
| Temperature | Operating Non-operating | 14° to 158° F (–10° to 70° C) –40° to 176° F (–40° to 80° C) |
| Humidity | Operating Non-operating | 10% to 90% (non-condensing) 5% to 95% (non-condensing) |
| Altitude | Operating Non-operating | 0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m) |
| LED Activity | LED Amber – Radio OFF; LED White – Radio ON | |
| <div>1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 5 (802.11 ac) is backwards compatible with prior 802.11 specs.</div> <div>2. Check latest software/driver release for updates on supported security features.</div> <div>3. Maximum output power may vary by country according to local regulations.</div> <div>4. 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> | | |
| HP Integrated Module with Bluetooth® 4.0/4.1/4.2 Wireless Technology | | |
| Bluetooth® Specification | 4.0/4.1/4.2 Compliant | |
| Frequency Band | 2402 to 2480 MHz | |
| Number of Available Channels | Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH) | |
| Data Rates and Throughput | Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps BLE: 1 Mbps data rate; throughput up to 0.2 Mbps Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) | |
| Transmit Power | The Bluetooth® component shall operate as a Class II Bluetooth® device with a maximum transmit power of +4 dBm for BR and EDR. | |
| Power Consumption | Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW | |
| Bluetooth® Software Supported Link Topology | Microsoft Windows Bluetooth® Software | |
| Power Management | Microsoft Windows ACPI, and USB Bus Support | |
| 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 | |



Technical Specifications - Networking

| | |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 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) |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Realtek RTL8852BE-VT 802.11ax 2x2 Wi-Fi™ + Bluetooth® 5.4 Wireless Card (802.11ax 2x2, supporting gigabit data rate) ¹ | |
|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 |
| Interoperability | Wi-Fi certified modules |
| Frequency Band | 802.11b/g/n/ax •2.402 – 2.482 GHz 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 | •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: max 300Mbps •802.11ac: max 866.7Mbps • 802.11ax: max 1201Mbps |
| Modulation | Direct Sequence Spread Spectrum, OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM |
| Security² | •IEEE and WiFi certified 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 •WPA3 certification |

Technical Specifications - Networking

| | |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <ul style="list-style-type: none"> •IEEE 802.11i •WAPI |
| Network Architecture Models | Ad-hoc (Peer to Peer) Infrastructure (Access Point Required) |
| Roaming | IEEE 802.11 compliant roaming between access points |
| Output Power³ | <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 • 802.11ax HE40(2.4GHz): +10dBm minimum • 802.11ax HE80(5GHz): +10dBm minimum |
| Power Consumption | <ul style="list-style-type: none"> •Transmit mode: 2.5 W •Receive mode: 2 W •Idle mode (PSP): 180 mW (WLAN Associated) •Idle mode: 50 mW (WLAN unassociated) •Connected Standby/Modern Standby: 10mW •Radio disabled: 8 mW |
| Power Management | ACPI and PCI Express compliant power management 802.11 compliant power saving mode |
| Receiver Sensitivity⁴ | 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 •802.11ax, MCS11(HE40): -57dBm maximum •802.11ax, MCS11(HE80): -54dBm maximum |
| Antenna type | High efficiency antenna with spatial diversity. 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: 2.4 x 22.0 x 30.0 mm |
| Weight | 1. Type 2230: 2.8g |
| 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) |

Technical Specifications - Networking

| | |
|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LED Activity | LED Amber – Radio OFF; LED OFF – Radio ON |
| HP Integrated Module with Bluetooth® 4.0/4.1/4.2/5.0/5.1/5.2/5.3/5.4 Wireless Card Technology | |
| Bluetooth® Specification | 4.0/4.1/4.2/5.0/5.1/5.2/5.3/5.4 wireless card compliant |
| Frequency Band | 2402 to 2480 MHz |
| Number of Available Channels | Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH) |
| Data Rates and Throughput | Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps BLE: 1 Mbps data rate; throughput up to 0.2 Mbps Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) |
| Transmit Power | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR. |
| Power Consumption | Peak (Tx): 330 mW Peak (Rx): 230 mW Selective Suspend: 17 mW |
| Bluetooth® Software Supported Link Topology | Microsoft Windows Bluetooth Software |
| Power Management | Microsoft Windows ACPI, and USB Bus Support |
| Certifications | FCC (47 CFR) Part 15C/E, Section 15.247, 15.249 ETSI 300 328, ETSI 301 893 |
| Bluetooth® Profiles Supported | Bluetooth 4.1-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 Bluetooth 4.2 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) Bluetooth 5.1 ESR9/10 Compliance LE Advertisement Extensions Channel Selection Algo Limited High Duty Cycle Non-Connectable Advertising 2Mbps LE LE Long Range |

Technical Specifications - Networking

1. Wi-Fi 6 is designed to support gigabit data rate when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 80MHz and higher channels.
Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 (802.11ax) is backwards compatible with prior 802.11 specs.
2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
3. 1. Check latest software/driver release for updates on supported security features.
4. 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).

Technical Specifications - Power

POWER

| | |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Efficiency | 65W EPS, 88% average efficiency at 115V & 89% at 230Vac |
| Operating Voltage Range | 90Vac~264Vac |
| Rated Voltage Range | 100Vac~240Vac |
| Rated Line Frequency | 50Hz~60Hz |
| Operating Line Frequency | 47Hz~63Hz |
| Rated Input Current | ≤1.6A |
| Rated Input Current with Energy Efficient* Power Supply | ≤1.6A |
| DC Output | +19.5V |
| Current Leakage (NFPA 99: 2102) | Less than 500 microamps of leakage current at 120 Vac with the ground wire disconnected, as required for Non-Patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1. Less than 100 microamps of leakage current at 120 Vac with the ground wire intact with normal polarity, as required for Non-Patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1. |
| Dimensions | 102 x 55 x 30 mm |
| Efficiency | 90W EPS, 88% average efficiency at 115V & 89% at 230Vac |
| Operating Voltage Range | 90Vac~264Vac |
| Rated Voltage Range | 100Vac~240Vac |
| Rated Line Frequency | 50Hz~60Hz |
| Operating Line Frequency | 47Hz~63Hz |
| Rated Input Current | ≤1.6A |
| Rated Input Current with Energy Efficient* Power Supply | ≤1.6A |
| DC Output | +19.5V |
| Current Leakage (NFPA 99: 2102) | Less than 500 microamps of leakage current at 120 Vac with the ground wire disconnected, as required for Non-Patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1. Less than 100 microamps of leakage current at 120 Vac with the ground wire intact with normal polarity, as required for Non-Patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1. |
| Dimensions | 102 x 55 x 30 mm |

ADDITIONAL FEATURES

SMART Technology (Self-Monitoring, Analysis and Reporting Technology)

Description
Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted

Summary of Changes

SUMMARY OF CHANGES

| Date of change: | Version History: | | Description of change: |
|-------------------|------------------|----------|-----------------------------------------------------------------|
| July 27, 2023 | V1 to V2 | Update | Back call outs page corrected |
| August 1, 2023 | V2 to V3 | Update | Environmental table updated |
| June 7, 2024 | V3 to V4 | Update | Refresh new version |
| July 2, 2024 | V4 to V5 | Update | Environmental data table specs updated |
| August 22,2024 | V5 to V6 | Update | Disclaimer 1Added to Memory section |
| December 19, 2024 | V6 to V7 | Addition | Processor i5-1334U / WLAN Cass: Realtek 8852BE-VT Wi-Fi 6 added |
| February 20, 2025 | V7 to V8 | Addition | Realtek RTL8852BE-VT 802.11ax specs table added to N/C section |
| May 22, 2025 | V8 to V9 | Removal | Stand specs in ALL-IN-ONE STAND SPECIFICATIONS section removed |

Copyright © 2025 HP Development Company, L.P. The only warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Bluetooth is a trademark of its proprietor and used by HP Inc. under license. Microsoft and Windows are registered trademarks or trademarks of Microsoft Corporation in the U.S. and/or other countries. AMD, Radeon™, Ryzen™ and Athlon™ are trademarks of Advanced Micro Devices, Inc. ENERGY STAR is a registered trademark of the U.S. Environmental Protection Agency.

