

23" Mounting Kits for 30"W Elite Cabinets



EC23MK32



- Enable you to convert standard 19" rails to 23" rails.
- Include four (4) brackets and eight (8) screws.
- **WARRANTY** — Lifetime

Item	Code
23" Mounting Kits for 30"W Cabinets for 30"W x 32"D Cabinets	EC23MK32
for 30"W x 36"D Cabinets	EC23MK36
for 30"W x 42"D Cabinets	EC23MK42

Dual PDU Mounting Brackets



ECPDUMK24



- Provide an additional pair of brackets to mount more than two PDUs or to mount PDUs in more than one corner of the cabinet.
- **WARRANTY** — Lifetime

Item	Code
Dual PDU Mounting Brackets, 1 Pair* for 24"W Cabinets	ECPDUMK24
for 30"W Cabinets	ECPDUMK30
* A pair of Dual PDU Mounting Brackets is included with the Elite Cabinet base frame.	

Vertical PDU 19" Mounting Kit, 0U



- Mounts a PDU or other 19" 1U rackmount equipment behind the rails without using any rack space.
- Includes (2) 1U brackets.
- **WARRANTY** — Lifetime

Item	Code
Vertical PDU 19" Mounting Kit, 0U	ECPDUMK

Networking Hardware/Baying Kit



- Kit for baying or networking two Elite Cabinets together.
- Includes (4) 5/16 wing nuts, (4) 5/16 thumbscrews with shoulder, (4) 5/16 split lock washers, and (8) 5/16 flat washers.
- **WARRANTY** — Lifetime

Item	Code
Networking Hardware/Baying Kit	ECNH

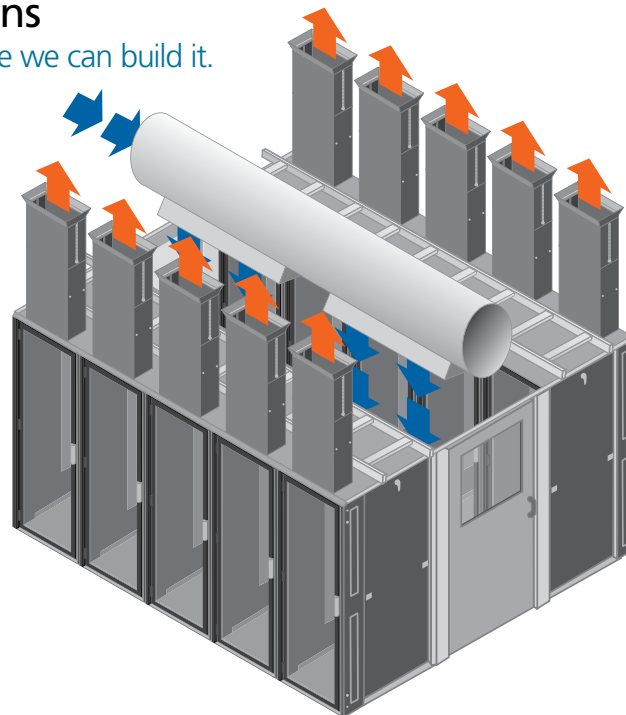
Black Box Custom Solutions

Don't see what you need? Chances are we can build it.

Whether you manage a small-office network or a large data center, you know it can be difficult to pin down an enclosure that:

- Fits your space.
- Holds components compactly and securely.
- Leaves room for expansion.
- Provides adequate cooling.
- Has room for power distribution.
- Manages cable neatly.
- Makes components easy to access.
- Locks when you need it to.

You can count on Black Box to engineer a cabinet solution to match your space and application. Black Box engineers have been designing data centers for more than 25 years—let us use our experience to help you build yours.



Typical hot aisle/cold aisle configuration with hot air vent to the plenum via a Chimney Top (ECTOPCHIM), p. 11. Also shown is the Cold Aisle Containment System (EC45U48WCD), p. 11.

Elite Wallmount Cabinet

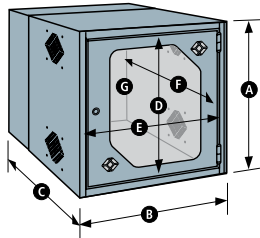
The wallmount cabinet that makes adding equipment easy!

- Large openings in back panel enable you to easily install patch panels or other prewired equipment.
- Accessories that fit the 3U opening in other Elite cabinets also fit into these cabinets' 3U opening.
- Doors can be reversed to open left or right.
- Double hinged for easy access to rear of equipment.
- Have keylocks on front and side.
- Ship with one conduit panel.
- Include one pair of 10-32 rails. Order additional rails for 4-point mounting.
- **◆◆ WARRANTY** — Lifetime

Elite Wallmount Cabinets from Black Box have all the quality you've come to expect plus features that set them apart from other wallmount cabinets. They feature large openings on the back panel that enable you to simply slide in a loaded patch panel.

If you want to add fans, a Brush Grommet Kit, a Waterfall Radius Bracket, or other accessory, it couldn't be easier. That's because just about any Elite accessory that fits into the 3U opening on the top of an Elite cabinet will work with the wallmount cabinet.

For even more versatility, optional brackets attach to the back panel of the cabinet and enable you to rackmount patch panels behind the equipment in the cabinet at 45° or 90° angles.



Optional Waterfall Bracket (ECW3U) installs in 3U top opening. For information, see page 12



3U opening for accessories or cable access on the top and bottom of cabinet.

Cabinet backs have openings that enable you to insert loaded patch panels without having to rewire.

Smoked PLEXIGLAS® front door.

Keylocks on front and side.

Openings on back enable you to insert loaded patch panels without rewiring.

Cutouts for ventilation.

The cabinet is reversible top to bottom, so the back section opens left or right.

EWM26U482430



90° Brackets (EWM90DAB)



45° Brackets (EWM45DAB)

Buyer's Guide | Elite Wallmount Cabinets

A	B	C	D	E	F	G	Code
Exterior Height	Exterior Width	Exterior Depth	Rack Units	Interior Width	Main Body Depth	Rear Section Depth	
24"	24"	18"	12U	23.75"	9.125"	7"	EWM12U242418
24"	24"	24"	12U	23.75"	15.125"	7"	EWM12U242424
24"	24"	30"	12U	23.75"	21.125"	7"	EWM12U242430
36"	24"	18"	20U	23.75"	9.125"	7"	EWM20U362418
36"	24"	24"	20U	23.75"	15.125"	7"	EWM20U362424
36"	24"	30"	20U	23.75"	21.125"	7"	EWM20U362430
48"	24"	18"	26U	23.75"	9.125"	7"	EWM26U482418
48"	24"	24"	26U	23.75"	15.125"	7"	EWM26U482424
48"	24"	30"	26U	23.75"	21.125"	7"	EWM26U482430

Item

Code

Elite Wallmount Cabinets	
24"H x 24"W (12U)	
18"D	EWM12U242418
24"D	EWM12U242424
30"D	EWM12U242430
36"H x 24"W (20U)	
18"D	EWM20U362418
24"D	EWM20U362424
30"D	EWM20U362430
48"H x 24"W (26U)	
18"D	EWM26U482418
24"D	EWM26U482424
30"D	EWM26U482430

You may also need...

90° Angle Bracket, 2U, Pair	EWM90DAB
45° Angle Bracket, 4U, Pair	EWM45DAB
Spare Rails	
12U	EWM12URK
20U	EWM20URK
26U	EWM26URK
Fans	RMT373

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EC45U2436SMMSMNK_(27033)_4-11v2

Overview

Models

HP 5120-48G-PoE EI Switch with 2 slots	JE071A
HP 5120-48G EI Switch with 2 Interface Slots	JE069A
HP 5120-48G EI Switch	JE067A
HP 5120-24G-PoE EI Switch with 2 slots	JE070A
HP 5120-24G EI Switch with 2 Interface Slots	JE068A
HP 5120-24G EI Switch	JE066A
HP 5120-48G-PoE+ EI Switch with 2 Interface Slots	JG237A
HP 5120-24G-PoE+ EI Switch with 2 Interface Slots	JG236A

Key features

- High scalability for investment protection
- Support for multiple services
- Comprehensive security control policies
- Diversified Quality of Service (QoS) policies
- Excellent manageability

Product overview

The HP 5120 EI Switch Series are Gigabit Ethernet switches that support static Layer 3 routing, diversified services, and IPv6 forwarding, as well as provide up to four 10-Gigabit Ethernet (10 GbE) extended interfaces. Unique Intelligent Resilient Framework (IRF) technology creates a virtual fabric by managing several switches as one logical device, which increases network resilience, performance, and availability while reducing operational complexity. These switches provide Gigabit Ethernet access and can be used at the edge of a network or to connect server clusters in data centers. High scalability provides investment protection with two expansion slots, each of which can support two-port 10 GbE expansion modules. High availability, simplified management, and comprehensive security control policies are among the key features that distinguish this series.

Features and benefits

Quality of Service (QoS)

- **Broadcast control:** allows limitation of broadcast traffic rate to cut down on unwanted network broadcast traffic
- **Advanced classifier-based QoS:** classifies traffic using multiple match criteria based on Layer 2, 3, and 4 information; applies QoS policies such as setting priority level and rate limit to selected traffic on a port, VLAN, or whole switch
- **Powerful QoS feature:** supports the following congestion actions: strict priority (SP) queuing, weighted round robin (WRR), and SP+WRR
- **Traffic policing:** supports Committed Access Rate (CAR) and line rate

Management

- **Friendly port names:** allow assignment of descriptive names to ports
- **Remote configuration and management:** is available through a secure Web browser or a command-line interface (CLI)
- **Manager and operator privilege levels:** enable read-only (operator) and read-write (manager) access on CLI and Web browser management interfaces
- **Command authorization:** leverages HWTACACS to link a custom list of CLI commands to an individual network administrator's login; also provides an audit trail
- **Secure Web GUI:** provides a secure, easy-to-use graphical interface for configuring the module via HTTPS



Overview

- **Multiple configuration files:** can be stored to the flash image
- **Complete session logging:** provides detailed information for problem identification and resolution
- **SNMPv1, v2c, and v3:** facilitate centralized discovery, monitoring, and secure management of networking devices
- **Remote monitoring (RMON):** uses standard SNMP to monitor essential network functions; supports events, alarm, history, and statistics group plus a private alarm extension group
- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol provides easy mapping by network management applications
- **sFlow (RFC 3176):** provides scalable ASIC-based wire-speed network monitoring and accounting with no impact on network performance; this allows network operators to gather a variety of sophisticated network statistics and information for capacity planning and real-time network monitoring purposes
- **Management VLAN:** segments traffic to and from management interfaces, including CLI/telnet, a Web browser interface, and SNMP
- **Remote Intelligent Mirroring:** mirrors ingress/egress ACL-selected traffic from a switch port or VLAN to a local or remote switch port anywhere on the network
- **Device Link Detection Protocol (DLDP):** monitors cable between two switches and shuts down the ports on both ends if the cable is broken, this prevents network problems such as loops
- **IPv6 management:** provides future-proof networking because the switch is capable of being managed whether the attached network is running IPv4 or IPv6; supports pingv6, tracertv6, Telnetv6, TFTPv6, DNSv6, syslogv6, FTPv6, SNMPv6, DHCPv6, and RADIUS for IPv6
- **Troubleshooting:** ingress and egress port monitoring enable network problem solving; virtual cable tests provide visibility into cable problems

Connectivity

- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports
- **Flow control:** using standard IEEE 802.3x, it provides back pressure to reduce congestion in heavy traffic situations
- **Jumbo packet support:** supports up to 9216-byte frame size to improve performance of large data transfers
- **High-density connectivity:** provides up to 48 fixed 10/100/1000BASE-T ports in a Layer 2/Layer 3 switch
- **Optional 10 Gigabit Ethernet ports:** allow the addition of 10 Gigabit Ethernet connections for uplinks or high-bandwidth server connections; flexibly supports XFP, SFP+, or CX4 local connections
- **IEEE 802.3at Power over Ethernet (PoE+) support:** simplifies deployment and dramatically reduces installation costs by helping to eliminate the time and cost involved in supplying local power at each access point location
- **Ethernet OAM:** provides a Layer 2 link performance and fault detection monitoring tool, which reduces failover and network convergence times
- **High-bandwidth CX4 local stacking:** when locally stacked using CX4 local stacking, achieves 12 Gbps per connection, allowing for up to 96 Gbps total stacking bandwidth (full duplex) in a resilient stacking configuration

Performance

- **Nonblocking architecture:** up to 192 Gbps nonblocking switching fabric provides wire-speed switching with up to 143 million pps throughput
- **Hardware-based wire-speed access control lists (ACLs):** feature-rich ACL implementation (TCAM based) helps ensure high levels of security and ease of administration without impacting network performance

Resiliency and high availability

- **Separate data and control paths:** keeps control separated from services and keeps service processing isolated; increases security and performance
- **External redundant power supply:** provides high reliability
- **Smart link:** allows 50 ms failover between links
- **Spanning Tree/MSTP, RSTP:** provides redundant links while preventing network loops
- **Rapid Ring Protection Protocol (RRPP):** connects multiple switches in a high-performance ring using standard Ethernet



Overview

technology; traffic can be rerouted around the ring in less than 50 ms, reducing the impact on traffic and applications

- **Intelligent Resilient Framework (IRF):** creates virtual resilient switching fabrics, where two or more switches perform as a single Layer 2 switch and Layer 3 router; switches do not have to be co-located and can be part of a disaster-recovery system; servers or switches can be attached using standard LACP for automatic load balancing and high availability; simplifies network operation by eliminating the complexity of Spanning Tree Protocol, Equal-Cost Multipath (ECMP), or VRRP

Layer 2 switching

- **16K MAC address table:** provides access to many Layer 2 devices
- **VLAN support and tagging:** support IEEE 802.1Q with 4,094 simultaneous VLAN IDs
- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs
- **IEEE 802.1ad QinQ and Selective QinQ:** increase the scalability of an Ethernet network by providing a hierarchical structure; connect multiple LANs on a high-speed campus or metro network
- **10 GbE port aggregation:** allows grouping of ports to increase overall data throughput to a remote device
- **Internet Group Management Protocol (IGMP) and Multicast Listener Discovery (MLD) protocol snooping:** effectively control and manage the flooding of multicast packets in a Layer 2 network

Layer 3 services

- **Address Resolution Protocol (ARP):** determines the MAC address of another IP host in the same subnet; supports static ARPs; gratuitous ARP allows detection of duplicate IP addresses; proxy ARP allows normal ARP operation between subnets or when subnets are separated by a Layer 2 network
- **Dynamic Host Configuration Protocol (DHCP):** simplifies the management of large IP networks; supports client; DHCP Relay enables DHCP operation across subnets
- **Loopback interface address:** defines an address that can always be reachable, improving diagnostic capability
- **User Datagram Protocol helper function:** allows User Datagram Protocol (UDP) broadcasts to be directed across router interfaces to specific IP unicast or subnet broadcast addresses and prevents server spoofing for UDP services such as DHCP
- **Route maps:** provide more control during route redistribution; allow filtering and altering of route metrics

Layer 3 routing

- **Static IP routing:** provides manually configured routing for both IPv4 and IPv6 networks

Security

- **Access control lists (ACLs):** provides IP Layer 2 to Layer 4 traffic filtering; supports global ACL, VLAN ACL, port ACL, and IPv6 ACL
- **IEEE 802.1X:** industry-standard method of user authentication using an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server
- **MAC-based authentication:** client is authenticated with the RADIUS server based on the client's MAC address
- **Identity-driven security and access control:**
 - Per-user ACLs: permits or denies user access to specific network resources based on user identity and time of day, allowing multiple types of users on the same network to access specific network services without risk to network security or unauthorized access to sensitive data
 - Automatic VLAN assignment: automatically assigns users to the appropriate VLAN based on their identities
- **Secure management access:** securely encrypts all access methods (CLI, GUI, or MIB) through SSHv2, SSL, and/or SNMPv3
- **Secure FTP:** allows secure file transfer to and from the switch; protects against unwanted file downloads or unauthorized copying of a switch configuration file
- **Guest VLAN:** similar to IEEE 802.1X, it provides a browser-based environment to authenticated clients
- **Endpoint Admission Defense (EAD):** provides security policies to users accessing a network
- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator
- **Port isolation:** secures and adds privacy, and prevents malicious attackers from obtaining user information
- **STP BPDU port protection:** blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged



Overview

BPDUs attacks

- **STP Root Guard:** protects the root bridge from malicious attack or configuration mistakes
- **DHCP protection:** blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks
- **IP source guard:** helps prevent IP spoofing attacks
- **Dynamic ARP protection:** blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data
- **RADIUS/HWTACACS:** eases switch management security administration by using a password authentication server

Convergence

- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** is an automated device discovery protocol that provides easy mapping of network management applications
- **LLDP-MED:** is a standard extension that automatically configures network devices, including LLDP-capable IP phones
- **LLDP-CDP compatibility:** receives and recognizes CDP packets from Cisco's IP phones for seamless interoperation
- **IEEE 802.3af Power over Ethernet:** provides up to 15.4 W per port to PoE-powered devices such as IP phones, wireless access points, and video cameras
- **PoE allocations:** support multiple methods (automatic, IEEE 802.3af class, LLDP-MED, or user specified) to allocate PoE power for more efficient energy savings
- **Voice VLAN:** automatically assigns VLAN and priority for IP phones, simplifying network configuration and maintenance
- **IP multicast snooping (data-driven IGMP):** automatically prevents flooding of IP multicast traffic

Device support

- **Cisco prestandard PoE support:** detects and provides power to Cisco's prestandard PoE devices such as wireless LAN access points and IP phones

Additional information

- **Green IT and power:** use the latest advances in silicon development, shut off unused ports, and use variable-speed fans to improve energy efficiency
- **Green initiative support:** provides support for RoHS and WEEE regulations

Warranty and support

- **Lifetime warranty:** for as long as you own the product with advance replacement and next-business-day delivery (available in most countries)*
- **Electronic and telephone support:** limited electronic and telephone support is available from HP; refer to: www.hp.com/networking/warranty for details on the support provided and the period during which support is available
- **Software releases:** refer to: www.hp.com/networking/warranty for details on the software releases provided and the period during which software releases are available for your product(s)

* Hardware warranty replacement for as long as you own the product, with next business day advance replacement (available in most countries) with a five-year hardware warranty replacement for the disk drive included with HP AllianceONE Services zl Module, HP Threat Management Services zl Module, HP PCM+ Agent with AllianceONE Services zl Module, and HP E-MSM765 zl Mobility Controller. For details, refer to the HP Software License, Warranty, and Support booklet at: www.hp.com/networking/warranty.



Technical Specifications

HP 5120-48G-PoE EI Switch with 2 slots (JE071A)

Ports	48 RJ-45 autosensing 10/100/1000 PoE ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3af PoE); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only
	4 dual-personality ports; PoE autosensing 10/100/1000BASE-T or SFP
	2 port expansion module slots
	1 RJ-45 serial console port
	Supports a maximum of 48 autosensing 10/100/1000 ports
Physical characteristics	Dimensions 16.54(d) x 17.32(w) x 17.17(h) in. (42 x 44 x 43.6 cm) (1U height)
	Weight 16.53 lb. (7.5 kg)
Memory and processor	128 MB SDRAM, 16 MB flash; packet buffer size: 4 MB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)
Performance	1000 Mb Latency < 3.2 μ s
	10 Gbps Latency < 2.6 μ s
	Throughput 142.9 million pps
	Routing/Switching capacity 192 Gbps
	Routing table size 32 entries
Environment	Operating temperature 32°F to 113°F (0°C to 45°C)
	Operating relative humidity 10% to 90%, noncondensing
	Nonoperating/Storage temperature -40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity 10% to 90%, noncondensing
Electrical characteristics	Maximum heat dissipation 614 BTU/hr (647.77 kJ/hr)
	Voltage 100-240 VAC
	DC Voltage -52 to -55 VDC
	Idle power 78 W
	Maximum power rating 920 W
	PoE power 740 W
	Frequency 50/60 Hz
	Notes Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies and may be supplemented with the use of an external power supply (EPS). With AC input, the maximum power consumption is 550 W (370 W for PoE).



Technical Specifications

Safety	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance
Emissions	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A
Management	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E) 3-year, 24x7 SW phone support, software updates (UV867E) 1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR584E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR585E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR586E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E) 4-year, 24x7 SW phone support, software updates (UV868E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UV863E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV866E) 5-year, 24x7 SW phone support, software updates (UV869E) 3 Yr 6 hr Call-to-Repair Onsite (UW963E) 4 Yr 6 hr Call-to-Repair Onsite (UW964E) 5 Yr 6 hr Call-to-Repair Onsite (UW965E) 1-year, 6 hour Call-To-Repair Onsite for hardware (HR588E) 1-year, 24x7 software phone support, software updates (HR587E) 1-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS682E) 1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS683E) 4-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS686E) 4-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS687E) 5-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS688E)

Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 5120-48G EI Switch with 2 Interface Slots (JE069A)

Ports	48 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 dual-personality ports; auto-sensing 10/100/1000Base-T or SFP 2 port expansion module slots
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Technical Specifications

	1 RJ-45 serial console port
	Supports a maximum of 48 autosensing 10/100/1000 ports
Physical characteristics	Dimensions 11.81(d) x 17.32(w) x 1.72(h) in. (30 x 44 x 4.36 cm) (1U height)
	Weight 11.02 lb. (5 kg)
Memory and processor	128 MB SDRAM, 16 MB flash; packet buffer size: 4 MB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)
Performance	1000 Mb Latency < 3.2 μ s
	10 Gbps Latency < 2.6 μ s
	Throughput 142.9 million pps
	Routing/Switching capacity 192 Gbps
	Routing table size 32 entries
Environment	Operating temperature 32°F to 113°F (0°C to 45°C)
	Operating relative humidity 10% to 90%, noncondensing
	Nonoperating/Storage temperature -40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity 5% to 95%, noncondensing
Electrical characteristics	Maximum heat dissipation 495 BTU/hr (522.23 kJ/hr)
	Voltage 100-240 VAC
	Idle power 55 W
	Maximum power rating 145 W
	Frequency 50/60 Hz
	Notes Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance
Emissions	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001 +A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A
Management	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E) 3-year, 24x7 SW phone support, software updates (UV867E) 1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR584E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR585E)



Technical Specifications

- 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR586E)
- 4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E)
- 4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E)
- 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E)
- 4-year, 24x7 SW phone support, software updates (UV868E)
- 5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware (UV863E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV866E)
- 5-year, 24x7 SW phone support, software updates (UV869E)
- 3 Yr 6 hr Call-to-Repair Onsite (UW963E)
- 4 Yr 6 hr Call-to-Repair Onsite (UW964E)
- 5 Yr 6 hr Call-to-Repair Onsite (UW965E)
- 1-year, 6 hour Call-To-Repair Onsite for hardware (HR588E)
- 1-year, 24x7 software phone support, software updates (HR587E)
- 1-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS682E)
- 1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS683E)
- 4-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS686E)
- 4-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS687E)
- 5-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS688E)

Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 5120-48G EI Switch (JE067A)

Ports	48 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only
	4 dual-personality ports; auto-sensing 10/100/1000Base-T or SFP
	1 RJ-45 serial console port
	Supports a maximum of 48 autosensing 10/100/1000 ports
Physical characteristics	Dimensions 11.81(d) x 17.32(w) x 17.17(h) in. (30 x 44 x 43.6 cm) (1U height)
	Weight 11.02 lb. (5 kg)
Memory and processor	128 MB SRAM, 16 MB flash; packet buffer size: 4 MB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)
Performance	1000 Mb Latency < 3.2 μ s
	Throughput 71.4 million pps
	Routing/Switching capacity 96 Gbps
	Routing table size 32 entries
Environment	Operating temperature 32°F to 113°F (0°C to 45°C)
	Operating relative humidity 10% to 90%, noncondensing



Technical Specifications

	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	5% to 95%, noncondensing
Electrical characteristics	Maximum heat dissipation	375 BTU/hr (395.63 kJ/hr)
	Voltage	100-240 VAC
	Idle power	54 W
	Maximum power rating	110 W
	Frequency	50/60 Hz
	Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance	
Emissions	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001 +A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A	
Management Services	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager	
	3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E)	
	3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E)	
	3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E)	
	3-year, 24x7 SW phone support, software updates (UV867E)	
	1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR584E)	
	1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR585E)	
	1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR586E)	
	4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E)	
	4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E)	
	4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E)	
	4-year, 24x7 SW phone support, software updates (UV868E)	
	5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E)	
	5-year, 4-hour onsite, 24x7 coverage for hardware (UV863E)	
	5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV866E)	
	5-year, 24x7 SW phone support, software updates (UV869E)	
	3 Yr 6 hr Call-to-Repair Onsite (UW963E)	
	4 Yr 6 hr Call-to-Repair Onsite (UW964E)	
	5 Yr 6 hr Call-to-Repair Onsite (UW965E)	
	1-year, 6 hour Call-To-Repair Onsite for hardware (HR588E)	
	1-year, 24x7 software phone support, software updates (HR587E)	
	1-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS682E)	
	1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS683E)	
	4-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange	



Technical Specifications

(HS686E)

4-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS687E)

5-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS688E)

Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 5120-24G-PoE EI Switch with 2 slots (JE070A)

Ports	24 RJ-45 autosensing 10/100/1000 PoE ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3af PoE); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only
	4 dual-personality ports; PoE auto-sensing 10/100/1000Base-T or SPF
	2 port expansion module slots
	1 RJ-45 serial console port
Physical characteristics	Dimensions 16.54(d) x 17.32(w) x 17.17(h) in. (42 x 44 x 43.6 cm) (1U height)
	Weight 15.43 lb. (7 kg)
Memory and processor	128 MB SDRAM, 16 MB flash; packet buffer size: 2 MB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)
Performance	1000 Mb Latency < 3.2 μ s
	10 Gbps Latency < 2.6 μ s
	Throughput 107.2 million pps
	Routing/Switching capacity 144 Gbps
	Routing table size 32 entries
Environment	Operating temperature 32°F to 113°F (0°C to 45°C)
	Operating relative humidity 10% to 90%, noncondensing
	Nonoperating/Storage temperature -40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity 5% to 95%, noncondensing
Electrical characteristics	Maximum heat dissipation 425 BTU/hr (448.38 kJ/hr)
	Voltage 100-240 VAC
	DC Voltage -52 to -55 VDC
	Idle power 55 W
	Maximum power rating 495 W
	PoE power 370 W
	Frequency 50/60 Hz
	Notes Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with



Technical Specifications

fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.

PoE Power is the power supplied by the internal power supply; it is dependent on the type and quantity of power supplies and may be supplemented with the use of an External Power Supply (EPS).

Safety	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance
Emissions	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001 +A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A
Management	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E) 3-year, 24x7 SW phone support, software updates (UV867E) 1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR584E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR585E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR586E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E) 4-year, 24x7 SW phone support, software updates (UV868E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UV863E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV866E) 5-year, 24x7 SW phone support, software updates (UV869E) 3 Yr 6 hr Call-to-Repair Onsite (UW963E) 4 Yr 6 hr Call-to-Repair Onsite (UW964E) 5 Yr 6 hr Call-to-Repair Onsite (UW965E) 1-year, 6 hour Call-To-Repair Onsite for hardware (HR588E) 1-year, 24x7 software phone support, software updates (HR587E) 1-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS682E) 1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS683E) 4-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS686E) 4-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS687E) 5-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS688E)

Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.



Technical Specifications

Ports	24 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 dual-personality ports; auto-sensing 10/100/1000Base-T or SFP 2 port expansion module slots 1 RJ-45 serial console port
Physical characteristics	Dimensions 11.81(d) x 17.32(w) x 17.17(h) in. (30 x 44 x 43.6 cm) (1U height) Weight 9.92 lb. (4.5 kg)
Memory and processor	128 MB SDRAM, 16 MB flash; packet buffer size: 2 MB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)
Performance	1000 Mb Latency < 3.2 μ s 10 Gbps Latency < 2.6 μ s Throughput 107.2 million pps Routing/Switching capacity 144 Gbps Routing table size 32 entries
Environment	Operating temperature 32°F to 113°F (0°C to 45°C) Operating relative humidity 10% to 90%, noncondensing Nonoperating/Storage temperature -40°F to 158°F (-40°C to 70°C) Nonoperating/Storage relative humidity 5% to 95%, noncondensing
Electrical characteristics	Maximum heat dissipation 362 BTU/hr (381.91 kJ/hr) Voltage 100-240 VAC Idle power 36 W Maximum power rating 106 W Frequency 50/60 Hz Notes Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance
Emissions	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001 +A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A
Management Services	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager 3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E)



Technical Specifications

- 3-year, 24x7 SW phone support, software updates (UV867E)
- 1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR584E)
- 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR585E)
- 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR586E)
- 4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E)
- 4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E)
- 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E)
- 4-year, 24x7 SW phone support, software updates (UV868E)
- 5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware (UV863E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV866E)
- 5-year, 24x7 SW phone support, software updates (UV869E)
- 3 Yr 6 hr Call-to-Repair Onsite (UW963E)
- 4 Yr 6 hr Call-to-Repair Onsite (UW964E)
- 5 Yr 6 hr Call-to-Repair Onsite (UW965E)
- 1-year, 6 hour Call-To-Repair Onsite for hardware (HR588E)
- 1-year, 24x7 software phone support, software updates (HR587E)
- 1-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS682E)
- 1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS683E)
- 4-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS686E)
- 4-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS687E)
- 5-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS688E)

Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 5120-24G EI Switch (JE066A)

Ports	24 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only	
	4 dual-personality ports; auto-sensing 10/100/1000Base-T or SFP	
	1 RJ-45 serial console port	
Physical characteristics	Dimensions	11.81(d) x 17.32(w) x 1.72(h) in. (30 x 44 x 4.36 cm) (1U height)
	Weight	9.92 lb. (4.5 kg)
Memory and processor	128 MB SDRAM, 16 MB flash; packet buffer size: 2 MB	
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)	
Performance	1000 Mb Latency	< 3.2 μ s
	Throughput	35.7 million pps
	Routing/Switching capacity	48 Gbps
	Routing table size	32 entries
Environment	Operating temperature	32°F to 113°F (0°C to 45°C)



Technical Specifications

	Operating relative humidity	10% to 90%, noncondensing
	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	5% to 95%, noncondensing
Electrical characteristics	Maximum heat dissipation	212 BTU/hr (223.66 kJ/hr)
	Voltage	100-240 VAC
	Idle power	35 W
	Maximum power rating	62 W
	Frequency	50/60 Hz
	Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety		UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance
Emissions		FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A
Management Services		IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager
		3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E)
		3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E)
		3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E)
		3-year, 24x7 SW phone support, software updates (UV867E)
		1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR584E)
		1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR585E)
		1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR586E)
		1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR670E)
		4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E)
		4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E)
		4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E)
		4-year, 24x7 SW phone support, software updates (UV868E)
		5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E)
		5-year, 4-hour onsite, 24x7 coverage for hardware (UV863E)
		5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV866E)
		5-year, 24x7 SW phone support, software updates (UV869E)
		3 Yr 6 hr Call-to-Repair Onsite (UW963E)
		4 Yr 6 hr Call-to-Repair Onsite (UW964E)
		5 Yr 6 hr Call-to-Repair Onsite (UW965E)
		1-year, 6 hour Call-To-Repair Onsite for hardware (HR588E)



Technical Specifications

- 1-year, 24x7 software phone support, software updates (HR587E)
- 1-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS682E)
- 1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS683E)
- 4-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS686E)
- 4-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS687E)
- 5-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS688E)

Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 5120-48G-PoE+ EI Switch with 2 Interface Slots (JG237A)

Ports	48 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only	
	4 dual-personality ports; PoE auto-sensing 10/100/1000Base-T or SFP	
	2 port expansion module slots	
	1 RJ-45 serial console port	
	Supports a maximum of 48 autosensing 10/100/1000 ports	
Physical characteristics	Dimensions	16.54(d) x 17.32(w) x 17.17(h) in. (42 x 44 x 43.6 cm) (1U height)
	Weight	16.53 lb. (7.5 kg)
Memory and processor	128 MB SDRAM, 16 MB flash; packet buffer size: 4 MB	
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)	
Performance	1000 Mb Latency	< 3.2 μ s
	10 Gbps Latency	< 2.6 μ s
	Throughput	142.9 million pps
	Routing/Switching capacity	192 Gbps
	Routing table size	32 entries
Environment	Operating temperature	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	10% to 90%, noncondensing
	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	10% to 90%, noncondensing
Electrical characteristics	Maximum heat dissipation	614 BTU/hr (647.77 kJ/hr)
	Voltage	100-240 VAC
	DC voltage	-52 to -55 VDC
	Idle power	78 W
	Maximum power rating	920 W
	PoE power	740 W



Technical Specifications

Frequency	50/60 Hz
Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. PoE Power is the power supplied by the internal power supply; it is dependent on the type and quantity of power supplies and may be supplemented with the use of an External Power Supply (EPS). With AC input, the Max power consumption is 550 W (370 W for PoE).

Safety UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance

Emissions FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001 +A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A

Management IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager

Services
3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E)
3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E)
3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E)
3-year, 24x7 SW phone support, software updates (UV867E)
4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E)
4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E)
4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E)
4-year, 24x7 SW phone support, software updates (UV868E)
5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E)
5-year, 4-hour onsite, 24x7 coverage for hardware (UV863E)
5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV866E)
5-year, 24x7 SW phone support, software updates (UV869E)
3 Yr 6 hr Call-to-Repair Onsite (UW963E)
4 Yr 6 hr Call-to-Repair Onsite (UW964E)
5 Yr 6 hr Call-to-Repair Onsite (UW965E)

Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 5120-24G-PoE+ EI Switch with 2 Interface Slots (JG236A)

Ports 24 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only
4 dual-personality ports; PoE auto-sensing 10/100/1000Base-T or SPF
2 port expansion module slots
1 RJ-45 serial console port



Technical Specifications

Physical characteristics	Dimensions	16.54(d) x 17.32(w) x 17.17(h) in. (42 x 44 x 43.6 cm) (1U height)
	Weight	15.43 lb. (7 kg)
Memory and processor	128 MB SDRAM, 16 MB flash; packet buffer size: 2 MB	
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)	
Performance	1000 Mb Latency	< 3.2 μ s
	10 Gbps Latency	< 2.6 μ s
	Throughput	107.2 million pps
	Routing/Switching capacity	144 Gbps
	Routing table size	32 entries
Environment	Operating temperature	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	10% to 90%, noncondensing
	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	5% to 95%, noncondensing
Electrical characteristics	Maximum heat dissipation	425 BTU/hr (448.38 kJ/hr)
	Voltage	100-240 VAC
	DC voltage	-52 to -55 VDC
	Idle power	55 W
	Maximum power rating	495 W
	PoE power	370 W
	Frequency	50/60 Hz
	Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. PoE Power is the power supplied by the internal power supply; it is dependent on the type and quantity of power supplies and may be supplemented with the use of an External Power Supply (EPS).
Safety	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance	
Emissions	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001 +A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A	
Management	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E)	
	3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E)	
	3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E)	



Technical Specifications

3-year, 24x7 SW phone support, software updates (UV867E)
4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E)
4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E)
4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E)
4-year, 24x7 SW phone support, software updates (UV868E)
5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E)
5-year, 4-hour onsite, 24x7 coverage for hardware (UV863E)
5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV866E)
5-year, 24x7 SW phone support, software updates (UV869E)
3 Yr 6 hr Call-to-Repair Onsite (UW963E)
4 Yr 6 hr Call-to-Repair Onsite (UW964E)
5 Yr 6 hr Call-to-Repair Onsite (UW965E)

Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

Standards and protocols (applies to all products in series)

Device management

RFC 1157 SNMPv1/v2c
RFC 1305 NTPv3
RFC 2573 (SNMPv3 Applications)
RFC 2819 (RMON groups Alarm, Event, History and Statistics only)
RFC 3416 (SNMP Protocol Operations v2)
HTML and telnet management
Multiple Configuration Files
SNMP v3 and RMON RFC support
SSHv1/SSHv2 Secure Shell
TACACS/TACACS+
Web UI

General protocols

IEEE 802.1ad Q-in-Q
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.1X PAE
IEEE 802.3 Type 10BASE-T
IEEE 802.3ab 100BASE-T
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3ae 10-Gigabit Ethernet
IEEE 802.3af Power over Ethernet
IEEE 802.3i 10BASE-T
IEEE 802.3u 100BASE-X
IEEE 802.3x Flow Control
IEEE 802.3z 100BASE-X
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)

RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)
RFC 3576 Ext to RADIUS (CoA only)
RFC 4213 Basic IPv6 Transition Mechanisms
RFC 4675 RADIUS VLAN & Priority
802.1r - GARP Proprietary Attribute Registration Protocol (GPRP)

IPv6

RFC 2461 IPv6 Neighbor Discovery
RFC 2463 ICMPv6
RFC 3162 RADIUS and IPv6
RFC 3306 Unicast-Prefix-based IPv6 Multicast Addresses
RFC 3315 DHCPv6 (client and relay)

MIBs

RFC 1212 Concise MIB Definitions
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 1757 Remote Network Monitoring MIB
RFC 2096 IP Forwarding Table MIB
RFC 2233 Interface MIB
RFC 2571 SNMP Framework MIB
RFC 2572 SNMP-MPD MIB
RFC 2573 SNMP-Notification MIB
RFC 2573 SNMP-Target MIB
RFC 2574 SNMP USM MIB
RFC 2618 RADIUS Authentication Client MIB
RFC 2620 RADIUS Accounting Client MIB
RFC 2665 Ethernet-Like-MIB
RFC 2668 802.3 MAU MIB
RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2819 RMON MIB



Technical Specifications

RFC 791 IP
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 951 BOOTP
RFC 1213 Management Information Base for Network Management of TCP/IP-based internets
RFC 1305 NTPv3
RFC 1350 TFTP Protocol (revision 2)
RFC 1519 CIDR
RFC 1812 IPv4 Routing
RFC 1866 Hypertext Markup Language - 2.0
RFC 2131 DHCP
RFC 2236 IGMP Snooping
RFC 2616 HTTP Compatibility v1.1
RFC 2665 Definitions of Managed Objects for the Ethernet-like Interface Types
RFC 2668 Definitions of Managed Objects for IEEE 802.3 Medium Attachment Units (MAUs)
RFC 2865 Remote Authentication Dial In User Service (RADIUS)
RFC 2866 RADIUS Accounting
RFC 3414 User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)
RFC 3415 View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)

RFC 2863 The Interfaces Group MIB
RFC 2925 Ping MIB
RFC 3414 SNMP-User based-SM MIB
RFC 3415 SNMP-View based-ACM MIB
RFC 3418 MIB for SNMPv3
RFC 3621 Power Ethernet MIB

Network management

IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events)
ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
SNMPv1/v2c/v3

Security

IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2865 RADIUS (client only)
RFC 2866 RADIUS Accounting
Secure Sockets Layer (SSL)
SSHv2 Secure Shell



Accessories

HP 5120 EI Switch Series Modules

accessories

HP 5500/A5120-EI 2-port 10-GbE XFP Module	JD359B
HP 5500/A5120-EI 2-port 10-GbE CX4 Module	JD360B
HP 5500/A5120-EI 1-port 10-GbE XFP Module	JD361B
HP 5500/A5120-EI 2-port 10-GbE SFP+ Module	JD368B
HP 5500/A5120-EI 2-Port GbE SFP Module	JD367A

Transceivers

HP X124 1G SFP LC LH40 1310nm Transceiver	JD061A
HP X120 1G SFP LC LH40 1550nm Transceiver	JD062A
HP X125 1G SFP LC LH70 Transceiver	JD063B
HP X130 SFP+ LC SR Transceiver	JD092B
HP X130 SFP+ LC LRM Transceiver	JD093B
HP X130 SFP+ LC LR Transceiver	JD094B
HP X240 SFP+ SFP+ 0.65 m Direct Attach Cable	JD095B
HP X240 SFP+ SFP+ 1.2 m Direct Attach Cable	JD096B
HP X240 SFP+ SFP+ 3 m Direct Attach Cable	JD097B
HP X130 10G XFP LC LR Transceiver	JD108B
HP X130 10G XFP LC SR Transceiver	JD117B
HP X120 1G SFP LC SX Transceiver	JD118B
HP X120 1G SFP LC LX Transceiver	JD119B
HP X135 10G XFP LC ER Transceiver	JD121A
HP X110 100M SFP LC FX Dual Mode Transceiver	JD497A
HP X110 100M SFP LC LX Dual Mode Transceiver	JD498A
HP X120 1G SFP LC BX 10-U Transceiver	JD098B
HP X120 1G SFP LC BX 10-D Transceiver	JD099B
HP X125 1G SFP RJ45 T Transceiver	JD089B

Cables

HP X230 Local Connect 100 cm CX4 Cable	JD364B
HP X230 Local Connect CX4 300 cm Cable	JD365A
HP 0.5 m Multimode OM3 LC/LC Optical Cable	AJ833A
HP 1 m Multimode OM3 LC/LC Optical Cable	AJ834A
HP 2 m Multimode OM3 LC/LC Optical Cable	AJ835A
HP 5 m Multimode OM3 LC/LC Optical Cable	AJ836A
HP 15 m Multimode OM3 LC/LC Optical Cable	AJ837A
HP 30 m Multimode OM3 LC/LC Optical Cable	AJ838A
HP 50 m Multimode OM3 LC/LC Optical Cable	AJ839A
NEW HP 0.5 m PremierFlex OM3+ LC/LC Optical Cable	BK837A
NEW HP 1 m PremierFlex OM3+ LC/LC Optical Cable	BK838A
NEW HP 2 m PremierFlex OM3+ LC/LC Optical Cable	BK839A
NEW HP 5 m PremierFlex OM3+ LC/LC Optical Cable	BK840A
NEW HP 15 m PremierFlex OM3+ LC/LC Optical Cable	BK841A
NEW HP 30 m PremierFlex OM3+ LC/LC Optical Cable	BK842A
NEW HP 50 m PremierFlex OM3+ LC/LC Optical Cable	BK843A
HP X230 Local Connect 50cm CX4 Cable	JD363B

Power Supply



Accessories

HP RPS800 Redundant Power System	JD183A
HP RPS1600 Redundant Power System	JG136A
HP RPS1600 1600W AC Power Supply	JG137A
Power cords	
HP X290 JD5 JD5 2m RPS1600 Cable	JD187A
HP X290 H2.7 H2.7 1m RPS800 Cable with ferrite core	JD190A



Accessory Product Details

NOTE: Details are not available for all accessories. The following specifications were available at the time of publication.

HP 5500 2-port 10GbE XFP Module (JD359B)	Ports	2 XFP 10-GbE ports; Duplex: full only
	Services	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 5500 1-port 10GbE XFP Module (JD361B)	Ports	1 XFP 10-GbE port; Duplex: full only
	Services	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 5500/4800 2-port GbE SFP Module (JD367A)	Ports	2 SFP 1000 Mbps ports
	Services	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP X125 1G SFP LC LH40 1310nm Transceiver (JD061A)	Ports	1 LC 1000Base-LH port (no IEEE standard exists for 1550 nm optics)	
	Connectivity	Connector type	LC
A small form-factor pluggable SFP Gigabit LH40 transceiver that provides a full duplex Gigabit solution up to 40km on a single-mode fiber.	Physical characteristics	Wavelength	1310 nm
		Dimensions	2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)
	Electrical characteristics	Full configuration weight	0.04 lb. (0.02 kg)
		Power consumption typical	0.8 W
	Cabling	Power consumption maximum	1.0 W
		Cable type:	Single-mode fiber optic, complying with ITU-T G.652;
	Services	Maximum distance:	
			<ul style="list-style-type: none"> 40km distance
		Fiber type	Single Mode
		Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	



Accessory Product Details

HP X120 1G SFP LC LH40 Ports 1550nm Transceiver (JD062A)

A small form-factor pluggable (SFP) Gigabit LH40 transceiver that provides a full-duplex Gigabit solution up to 40 km on a single mode fiber.

Connectivity	1 LC 1000BASE-LH port (no IEEE standard exists for 1550 nm optics)
	Connector type LC
	Wavelength 1550 nm
Physical characteristics	Dimensions 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)
	Full configuration weight 0.04 lb. (0.02 kg)
Electrical characteristics	Power consumption typical 0.8 W
	Power consumption maximum 1.0 W
Cabling	Cable type: Single-mode fiber optic, complying with ITU-T G.652;
	Maximum distance: <ul style="list-style-type: none">• 40km distance
Services	Fiber type Single Mode Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP X125 1G SFP LC LH70 Transceiver (JD063B)

A small form-factor pluggable (SFP) Gigabit LH70 transceiver that provides a full-duplex Gigabit solution up to 70km on a single-mode fiber.

Ports	1 LC 1000BASE-LH port (no IEEE standard exists for 1550 nm optics)
Connectivity	Connector type LC
	Wavelength 1550 nm
Physical characteristics	Dimensions 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)
	Full configuration weight 0.04 lb. (0.02 kg)
Electrical characteristics	Power consumption typical 0.8 W
	Power consumption maximum 1.0 W
Cabling	Cable type: Single-mode fiber optic, complying with ITU-T G.652;
	Maximum distance: <ul style="list-style-type: none">• 70km
Services	Fiber type Single Mode Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.



Accessory Product Details

HP X120 1G SFP LC SX Transceiver (JD118B)	Ports	1 LC 1000BASE-SX port
	Connectivity	Connector type LC
		Wavelength 850 nm
A small form-factor pluggable (SFP) Gigabit SX transceiver that provides a full-duplex Gigabit solution up to 550m on a Multimode fiber.	Physical characteristics	Dimensions 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)
	Electrical characteristics	Full configuration weight 0.04 lb. (0.02 kg)
		Power consumption typical 0.8 W
		Power consumption maximum 1.0 W
	Cabling	Maximum distance: <ul style="list-style-type: none">• FDDI Grade distance = 220m• OM1 = 275m• OM2 = 500m• OM3 = Not Specified by standard Cable length up to 550m Fiber type Multi Mode
	Services	Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP X120 1G SFP LC LX Transceiver (JD119B)	Ports	1 SFP 1000BASE-LX port (IEEE 802.3z Type 1000BASE-LX)
	Connectivity	Connector type LC
		Wavelength 1300 nm
A small form-factor pluggable (SFP) Gigabit LX transceiver that provides a full duplex Gigabit solution up to 550m on MMF or 10Km on SMF	Physical characteristics	Dimensions 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)
	Electrical characteristics	Full configuration weight 0.04 lb. (0.02 kg)
		Power consumption typical 0.8 W
		Power consumption maximum 1.0 W
	Cabling	Cable type: Either single mode or multimode; Maximum distance: <ul style="list-style-type: none">• 550m for Multimode• 10km for Singlemode Fiber type Both
	Services	Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.



Accessory Product Details

HP X110 100M SFP LC FX Dual Mode Transceiver (JD497A)	Ports	1 LC 100 Mbps port
	Connectivity	Connector type LC
		Wavelength 1310 nm
A small form-factor pluggable (SFP) 100 MB/s Dual mode transceiver that provides a full duplex 100Mb/s solution up to 2km on a multi mode fiber.	Physical characteristics	Dimensions 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)
		Full configuration weight 0.04 lb. (0.02 kg)
	Electrical characteristics	Power consumption typical 0.8 W
		Power consumption maximum 1.0 W
	Cabling	Cable length 2km
		Fiber type Multi Mode
	Services	Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP X110 100M SFP LC LX10 Transceiver (JD498A)	Ports	1 LC 100 Mbps port
	Connectivity	Connector type LC
		Wavelength 1310 nm
A small form-factor pluggable (SFP) 100Mb/s transceiver that provides a full duplex 100Mb/s solution for up to 10km on a single mode cable.	Physical characteristics	Dimensions 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)
		Full configuration weight 0.04 lb. (0.02 kg)
	Electrical characteristics	Power consumption typical 0.8 W
		Power consumption maximum 1.0 W
	Cabling	Cable length 10km
		Fiber type Single Mode
	Services	Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.



Accessory Product Details

HP X120 1G SFP LC BX 10-U Transceiver (JD098B)	Ports	1 LC 1000BASE-BX10 port (IEEE 802.3ah Type 1000BASE-BX10-U); Duplex: full only
A small form-factor pluggable (SFP) Gigabit LX-BX10-U transceiver that provides a full duplex Gigabit solution up to 10km on a single mode cable.	Connectivity	Connector type LC
	Physical characteristics	Dimensions 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)
	Electrical characteristics	Full configuration weight 0.04 lb. (0.02 kg)
	Cabling	Power consumption typical 0.8 W
		Power consumption maximum 1.0 W
	Notes	Maximum distance: • 10km
		Fiber type Single Mode
	Services	TX 1310nm RX 1490nm
		Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP X120 1G SFP LC BX 10-D Transceiver (JD099B)	Ports	1 LC 1000BASE-BX10 port (IEEE 802.3ah Type 1000BASE-BX10-D); Duplex: full only
A small form-factor pluggable (SFP) Gigabit LX-BX10-D transceiver that provides a full duplex Gigabit solution up to 10km on a single mode cable.	Connectivity	Connector type LC
	Physical characteristics	Dimensions 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)
	Electrical characteristics	Full configuration weight 0.04 lb. (0.02 kg)
	Cabling	Power consumption typical 0.8 W
		Power consumption maximum 1.0 W
	Notes	Maximum distance: • Up to 10km
		Fiber type Single Mode
	Services	TX 1490nm RX 1310nm
		Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.



Accessory Product Details

HP X125 1G SFP RJ45 T Transceiver (JD089B)	Ports	1 RJ-45 1000BASE-T port (IEEE 802.3ab Type 1000BASE-T)
	Connectivity	Connector type RJ-45
A small form factor pluggable (SFP) Gigabit 1000Base-T transceiver that provides a full duplex Gigabit solution up to 100m on a Cat-5+ cable.	Physical characteristics	Dimensions 2.71(d) x 0.54(w) x 0.55(h) in. (6.88 x 1.37 x 1.4 cm)
	Electrical characteristics	Full configuration weight 0.07 lb. (0.03 kg) Power consumption typical 0.8 W Power consumption maximum 1.0 W
	Cabling	Cable type: 1000BASE-T: Category 5 (5E or better recommended), 100 Ω differential 4-pair unshielded twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000BASE-T; Maximum distance: • 100m
	Services	Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 0.5 m Multimode OM3 LC/LC Optical Cable (AJ833A)	Cabling	Cable type: 50/125 μm (core/cladding) diameter, multimode fiber optic, with effective modal bandwidth of 2000 MHz/km as detailed in TIA-492AAAC for distances of up to 300 m Maximum distance: 10Gbps Transfer Rate (Ethernet): 300m
	Notes	Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125 μm fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end. <ul style="list-style-type: none">• Dimensions: Core diameter: 50 ± 3.0μm Cladding diameter: 125 ± 2.0μm Coating diameter: 245 ± 10μm• Optical glass: Bandwidth: For LED sources: 1500/500 MHz-km @850/1300nm.• Optical glass: Bandwidth: For Laser sources: 2000/500 MHz-km @850/1300nm. VCSEL Laser sources: 600 / 600 meters @850/1300nm for Gigabit Ethernet compliant links.• CABLE: The cable is duplex zipcord graded index 50/125μm multimode optical fiber and designed to work in both the 850 and 1300 nm wavelength windows.• BULK CABLE & CABLE ASSEMBLY CONFIGURATION:• Jacket Material: Riser Grade - Low Smoke Zero Halogen thermoplastic.• Jacket Color: Aqua for OM3 multimode per TIA 598• Boot Color: White• Insertion Loss: less than 0.5 dB @ 850 with LED source, 0.003 dB/M added for lengths > 30 meters.



Accessory Product Details

Services

- Maximum Cable attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/Km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46.
- Weight: Air Packed Weight: 1 LB Net Weight: 0.454Kg

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 1 m Multimode OM3 Cabling LC/LC Optical Cable (AJ834A)

Cable type:

50/125 μ m (core/cladding) diameter, multimode fiber optic, with effective modal bandwidth of 2000 MHz/km as detailed in TIA-492AAAC for distances of up to 300 m

Maximum distance:

10Gbps Transfer Rate (Ethernet): 300m

Notes

Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125 μ m fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

- Dimensions: Core diameter: 50 \pm 3.0 μ m Cladding diameter: 125 \pm 2.0 μ m Coating diameter: 245 \pm 10 μ m
- Optical Glass Bandwidth: For LED sources: 1500/500 MHz-km @850/1300nm.
- Optical Glass: For Laser sources: 2000/500 MHz-km @850/1300nm. VCSEL Laser sources: Shall achieve 600 / 600 meters @850/1300nm for Gigabit Ethernet compliant links.
- CABLE: The cable is duplex zipcord graded index 50/125 μ m multimode optical fiber. The cable is designed to work in both the 850 and 1300 nm wavelength windows.
- BULK CABLE & CABLE ASSEMBLY CONFIGURATION:
- Jacket Material: Riser Grade - Low Smoke Zero Halogen thermoplastic.
- Jacket Color: Aqua for OM3 multimode per TIA 598
- Boot Color: White
- Insertion Loss: less than 0.5 dB @ 850 with LED source, 0.003 dB/M added for lengths > 30 meters.
- Maximum Cable attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/Km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46.
- Weight: Air Packed Weight: 1 LB Net Weight: 0.454Kg

Services

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.



Accessory Product Details

HP 2 m Multimode OM3 Cabling
LC/LC Optical Cable
(AJ835A)

Cable type:

50/125 μm (core/cladding) diameter, multimode fiber optic, with effective modal bandwidth of 2000 MHz/km as detailed in TIA-492AAAC for distances of up to 300 m;

Maximum distance:

10Gbps Transfer Rate (Ethernet): 300m

Notes

Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125 μm fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

- Dimensions: Core diameter: $50 \pm 3.0\mu\text{m}$ Cladding diameter: $125 \pm 2.0\mu\text{m}$ Coating diameter: $245 \pm 10\mu\text{m}$
- Optical Glass Bandwidth: For LED sources: 1500/500 MHz-km @850/1300nm.
- Optical Glass: For Laser sources: 2000/500 MHz-km @850/1300nm. VCSEL Laser sources: Shall achieve 600 / 600 meters @850/1300nm for Gigabit Ethernet compliant links.
- CABLE: The cable is duplex zipcord graded index 50/125 μm multimode optical fiber. The cable is designed to work in both the 850 and 1300 nm wavelength windows.
- BULK CABLE & CABLE ASSEMBLY CONFIGURATION:
- Jacket Material: Riser Grade - Low Smoke Zero Halogen thermoplastic.
- Jacket Color: Aqua for OM3 multimode per TIA 598
- Boot Color: White
- Insertion Loss: less than 0.5 dB @ 850 with LED source, 0.003 dB/M added for lengths > 30 meters.
- Maximum Cable attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/Km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46.
- Weight: Air Packed Weight: 1 LB Net Weight: 0.454Kg

Services

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.



Accessory Product Details

HP 5 m Multimode OM3 Cabling
LC/LC Optical Cable
(AJ836A)

Cable type:

50/125 μm core/cladding) diameter, multimode fiber optic, with effective modal bandwidth of 2000 MHz/km as detailed in TIA-492AAAC for distances of up to 300 m;

Maximum distance:

10Gbps Transfer Rate (Ethernet): 300m

Notes

Cable Specs: This specification defines the detail requirements for a tight buffered duplex fiber optic multimode OM3 50/125 μm fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

- Dimensions: Core diameter: $50 \pm 3.0\mu\text{m}$ Cladding diameter: $125 \pm 2.0\mu\text{m}$ Coating diameter: $245 \pm 10\mu\text{m}$
- Optical Glass Bandwidth: For LED sources: 1500/500 MHz-km @850/1300nm.
- Optical Glass: For Laser sources: 2000/500 MHz-km @850/1300nm. VCSEL Laser sources: Shall achieve 600 / 600 meters @850/1300nm for Gigabit Ethernet compliant links.
- CABLE: The cable is duplex zipcord graded index 50/125 μm multimode optical fiber. The cable is designed to work in both the 850 and 1300 nm wavelength windows.
- BULK CABLE & CABLE ASSEMBLY CONFIGURATION:
- Jacket Material: Riser Grade - Low Smoke Zero Halogen thermoplastic.
- Jacket Color: Aqua for OM3 multimode per TIA 598
- Boot Color: White
- Insertion Loss: less than 0.5 dB @ 850 with LED source, 0.003 dB/M added for lengths > 30 meters.
- Maximum Cable attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/Km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46.
- Weight: Air Packed Weight: 1 LB Net Weight: 0.454Kg

Services

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.



Accessory Product Details

HP 15 m Multimode
OM3 LC/LC Optical
Cable (AJ837A)

Cabling

Cable type:

50/125 μm (core/cladding) diameter, multimode fiber optic, with effective modal bandwidth of 2000 MHz/km as detailed in TIA-492AAAC for distances of up to 300 m;

Maximum distance:

10Gbps Transfer Rate (Ethernet): 300m

Notes

Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125 μm fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

- Dimensions: Core diameter: $50 \pm 3.0\mu\text{m}$ Cladding diameter: $125 \pm 2.0\mu\text{m}$ Coating diameter: $245 \pm 10\mu\text{m}$
- Optical Glass Bandwidth: For LED sources: 1500/500 MHz-km @850/1300nm.
- Optical Glass: For Laser sources: 2000/500 MHz-km @850/1300nm. VCSEL Laser sources: Shall achieve 600 / 600 meters @850/1300nm for Gigabit Ethernet compliant links.
- CABLE: The cable is duplex zipcord graded index 50/125 μm multimode optical fiber. The cable is designed to work in both the 850 and 1300 nm wavelength windows.
- BULK CABLE & CABLE ASSEMBLY CONFIGURATION:
- Jacket Material: Riser Grade - Low Smoke Zero Halogen thermoplastic.
- Jacket Color: Aqua for OM3 multimode per TIA 598
- Boot Color: White
- Insertion Loss: less than 0.5 dB @ 850 with LED source, 0.003 dB/M added for lengths > 30 meters.
- Maximum Cable attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/Km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46.
- Weight: Air Packed Weight: 1 LB Net Weight: 0.454Kg

Services

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.



Accessory Product Details

HP 30 m Multimode
OM3 LC/LC Optical
Cable (AJ838A)

Cabling

Cable type:

50/125 μm (core/cladding) diameter, multimode fiber optic, with effective modal bandwidth of 2000 MHz/km as detailed in TIA-492AAAC for distances of up to 300 m;

Maximum distance:

10Gbps Transfer Rate (Ethernet): 300m

Notes

Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125 μm fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

- Dimensions: Core diameter: $50 \pm 3.0\mu\text{m}$ Cladding diameter: $125 \pm 2.0\mu\text{m}$ Coating diameter: $245 \pm 10\mu\text{m}$
- Optical Glass Bandwidth: For LED sources: 1500/500 MHz-km @850/1300nm.
- Optical Glass: For Laser sources: 2000/500 MHz-km @850/1300nm. VCSEL Laser sources: Shall achieve 600 / 600 meters @850/1300nm for Gigabit Ethernet compliant links.
- CABLE: The cable is duplex zipcord graded index 50/125 μm multimode optical fiber. The cable is designed to work in both the 850 and 1300 nm wavelength windows.
- BULK CABLE & CABLE ASSEMBLY CONFIGURATION:
- Jacket Material: Riser Grade - Low Smoke Zero Halogen thermoplastic.
- Jacket Color: Aqua for OM3 multimode per TIA 598
- Boot Color: White
- Insertion Loss: less than 0.5 dB @ 850 with LED source, 0.003 dB/M added for lengths > 30 meters.
- Maximum Cable attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/Km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46.
- Weight: Air Packed Weight: 1 LB Net Weight: 0.454Kg

Services

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.



Accessory Product Details

HP 50 m Multimode
OM3 LC/LC Optical
Cable (AJ839A)

Cabling

Cable type:

50/125 μm (core/cladding) diameter, multimode fiber optic, with effective modal bandwidth of 2000 MHz/km as detailed in TIA-492AAAC for distances of up to 300 m;

Maximum distance:

10Gbps Transfer Rate (Ethernet): 300m

Notes

Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125 μm fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

- Dimensions: Core diameter: $50 \pm 3.0\mu\text{m}$ Cladding diameter: $125 \pm 2.0\mu\text{m}$ Coating diameter: $245 \pm 10\mu\text{m}$
- Optical Glass Bandwidth: For LED sources: 1500/500 MHz-km @850/1300nm.
- Optical Glass: For Laser sources: 2000/500 MHz-km @850/1300nm. VCSEL Laser sources: Shall achieve 600 / 600 meters @850/1300nm for Gigabit Ethernet compliant links.
- CABLE: The cable is duplex zipcord graded index 50/125 μm multimode optical fiber. The cable is designed to work in both the 850 and 1300 nm wavelength windows.
- BULK CABLE & CABLE ASSEMBLY CONFIGURATION:
- Jacket Material: Riser Grade - Low Smoke Zero Halogen thermoplastic.
- Jacket Color: Aqua for OM3 multimode per TIA 598
- Boot Color: White
- Insertion Loss: less than 0.5 dB @ 850 with LED source, 0.003 dB/M added for lengths > 30 meters.
- Maximum Cable attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/Km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46.
- Weight: Air Packed Weight: 1 LB Net Weight: 0.454Kg

Services

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.



Accessory Product Details

HP 0.5 m PremierFlex
OM3+ LC/LC Optical
Cable (BK837A)

Notes

Cable Specs: Graded-index, "bendable" fiber optic multimode OM3+ 50/125um duplex cable and Ethernet assembly with LC duplex connectors on each end.

- Core diameter: 50um \pm 3um; Cladding diameter: 125um \pm 2um; Coating diameter: 245 \pm 10um
- Bandwidth: 3000 MHz-km @ 850nm (Laser)
- Jacket Color: Blue
- Jacket Material: Riser Grade - Low Smoke Zero Halogen (LSZH) thermoplastic.
- Boot Color: White
- Outer Jacket Print: HP PremierFlex OM3+ Fiber Optic Cable, 50/125um, Type OFNR (UL), LSZH, cUL OFN FT4, ROHS. Cable also has a longitudinal white stripe that runs the entire length of the cable.
- Insertion Loss: less than 0.5dB @ 850nm with LED source, 0.003dB/m added for lengths >30m
- Maximum Cable Attenuation: 3.0 dB/km @ 850nm, 1.0 dB/km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46

Services

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 1 m PremierFlex
OM3+ LC/LC Optical
Cable (BK838A)

Notes

Cable Specs: Graded-index, "bendable" fiber optic multimode OM3+ 50/125um duplex cable and Ethernet assembly with LC duplex connectors on each end.

- Core Diameter: 50um \pm 3um, Cladding diameter: 125um \pm 2um; Coating diameter: 245 \pm 10um
- Bandwidth: 3000 MHz-km @ 850nm (Laser)
- Jacket Color: Blue
- Jacket Material: Riser Grade – Low Smoke Zero Halogen (LSZH) thermoplastic
- Boot Color: White
- Outer Jacket Print: HP PremierFlex OM3+ Fiber Optic Cable, 50/125um, Type OFNR (UL), LSZH, cUL, OFN FT4, ROHS. Cable also has a longitudinal white stripe that runs the entire length of the cable.
- Insertion Loss: Less than 0.5dB @ 850nm with LED source, 0.003dB/m added for lengths >30m
- Maximum Cable Attenuation: 3.0 dB/km @ 850nm, 1.0 dB/km @ 1310nm @ 23°C as tested in accordance with EIA 455-45

Services

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.



Accessory Product Details

HP 2 m PremierFlex
OM3+ LC/LC Optical
Cable (BK839A)

Notes

Cable Specs: Graded-index, "bendable" fiber optic multimode OM3+ 50/125um duplex cable and Ethernet assembly with LC duplex connectors on each end.

- Core diameter: 50um \pm 3um, Cladding diameter: 125um \pm 2um; Coating diameter: 245 \pm 10um
- Bandwidth: 3000 MHz-km @ 850nm (Laser)
- Jacket Color: Blue
- Jacket Material: Riser Grade – Low Smoke Zero Halogen (LSZH) thermoplastic
- Boot Color: White
- Outer Jacket Print: HP PremierFlex OM3+ Fiber Optic Cable, 50/125um, Type OFNR (UL), LSZH, cUL, OFN FT4, ROHS. Cable also has a longitudinal white stripe that runs the entire length of the cable.
- Insertion Loss: Less than 0.5dB @ 850nm with LED source, 0.003dB/m added for lengths >30m
- Maximum Cable Attenuation: 3.0 dB/km @ 850nm, 1.0 dB/km @ 1310nm @ 23°C as tested in accordance with EIA 455-45

Services

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 5 m PremierFlex
OM3+ LC/LC Optical
Cable (BK840A)

Notes

Cable Specs: Graded-index, "bendable" fiber optic multimode OM3+ 50/125um duplex cable and Ethernet assembly with LC duplex connectors on each end.

- Core diameter: 50um \pm 3um, Cladding diameter: 125um \pm 2um; Coating diameter: 245 \pm 10um
- Bandwidth: 3000 MHz-km @ 850nm (Laser)
- Jacket Color: Blue
- Jacket Material: Riser Grade – Low Smoke Zero Halogen (LSZH) thermoplastic
- Boot Color: White
- Outer Jacket Print: HP PremierFlex OM3+ Fiber Optic Cable, 50/125um, Type OFNR (UL), LSZH, cUL, OFN FT4, ROHS. Cable also has a longitudinal white stripe that runs the entire length of the cable.
- Insertion Loss: Less than 0.5dB @ 850nm with LED source, 0.003dB/m added for lengths >30m
- Maximum Cable Attenuation: 3.0 dB/km @ 850nm, 1.0 dB/km @ 1310nm @ 23°C as tested in accordance with EIA 455-45

Services

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.



Accessory Product Details

HP 15 m PremierFlex OM3+ LC/LC Optical Cable (BK841A) **Notes**

Cable Specs: Graded-index, "bendable" fiber optic multimode OM3+ 50/125um duplex cable and Ethernet assembly with LC duplex connectors on each end.

- Core diameter: 50um \pm 3um, Cladding diameter: 125um \pm 2um; Coating diameter: 245 \pm 10um
- Bandwidth: 3000 MHz-km @ 850nm (Laser)
- Jacket Color: Blue
- Jacket Material: Riser Grade – Low Smoke Zero Halogen (LSZH) thermoplastic
- Boot Color: White
- Outer Jacket Print: HP PremierFlex OM3+ Fiber Optic Cable, 50/125um, Type OFNR (UL), LSZH, cUL, OFN FT4, ROHS. Cable also has a longitudinal white stripe that runs the entire length of the cable.
- Insertion Loss: Less than 0.5dB @ 850nm with LED source, 0.003dB/m added for lengths >30m
- Maximum Cable Attenuation: 3.0 dB/km @ 850nm, 1.0 dB/km @ 1310nm @ 23°C as tested in accordance with EIA 455-45

Services

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 30 m PremierFlex OM3+ LC/LC Optical Cable (BK842A) **Notes**

Cable Specs: Graded-index, "bendable" fiber optic multimode OM3+ 50/125um duplex cable and Ethernet assembly with LC duplex connectors on each end.

- Core diameter: 50um \pm 3um, Cladding diameter: 125um \pm 2um; Coating diameter: 245 \pm 10um
- Bandwidth: 3000 MHz-km @ 850nm (Laser)
- Jacket Color: Blue
- Jacket Material: Riser Grade – Low Smoke Zero Halogen (LSZH) thermoplastic
- Boot Color: White
- Outer Jacket Print: HP PremierFlex OM3+ Fiber Optic Cable, 50/125um, Type OFNR (UL), LSZH, cUL, OFN FT4, ROHS. Cable also has a longitudinal white stripe that runs the entire length of the cable.
- Insertion Loss: Less than 0.5dB @ 850nm with LED source, 0.003dB/m added for lengths >30m
- Maximum Cable Attenuation: 3.0 dB/km @ 850nm, 1.0 dB/km @ 1310nm @ 23°C as tested in accordance with EIA 455-45

Services

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.



Accessory Product Details

HP 50 m PremierFlex OM3+ LC/LC Optical Cable (BK843A) **Notes**

Cable Specs: Graded-index, "bendable" fiber optic multimode OM3+ 50/125um duplex cable and Ethernet assembly with LC duplex connectors on each end.

- Core diameter: 50um ±3um, Cladding diameter: 125um ±2um; Coating diameter: 245 ± 10um
- Bandwidth: 3000 MHz-km @ 850nm (Laser)
- Jacket Color: Blue
- Jacket Material: Riser Grade – Low Smoke Zero Halogen (LSZH) thermoplastic
- Boot Color: White
- Outer Jacket Print: HP PremierFlex OM3+ Fiber Optic Cable, 50/125um, Type OFNR (UL), LSZH, cUL, OFN FT4, ROHS. Cable also has a longitudinal white stripe that runs the entire length of the cable.
- Insertion Loss: Less than 0.5dB @ 850nm with LED source, 0.003dB/m added for lengths >30m
- Maximum Cable Attenuation: 3.0 dB/km @ 850nm, 1.0 dB/km @ 1310nm @ 23°C as tested in accordance with EIA 455-45

Services

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP RPS1600 Redundant Power System (JG136A)

Ports

8 redundant power supply ports
Restrictions: two -56V/25A DC(PoE); six -56V/8A DC(non-PoE)

Physical characteristics

Dimensions 15.63(d) x 17.32(w) x 1.74(h) in. (39.7 x 44 x 4.42 cm)

Weight 14.11 lb. (6.4 kg)

Full configuration weight 16.75 lb. (7.6 kg)

Environment

Operating temperature 14°F to 122°F (-10°C to 50°C)

Operating relative humidity 5% to 95%

Nonoperating/Storage temperature -40°F to 158°F (-40°C to 70°C)

Nonoperating/Storage relative humidity 5% to 95%

Altitude up to 13,123 ft. (4 km)

Acoustic Pressure: 53 dB; ISO 7779, ISO 9296

Electrical characteristics

Voltage 100-120/200-240 VAC

Current 30/60 A

Idle power 38 W

Maximum power rating 3550 W

RPS power 3200 W

PoE power 2800 W

RPS -55 V

PoE -55 V

Frequency 50/60 Hz



Accessory Product Details

	Notes	<p>Idle power is the actual power consumption of the device with no ports connected.</p> <p>Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.</p> <p>With one RPS1600 Power Supply, the PRS1600 Redundant Power System can provide 1600W power output; With two PRS1600 Power Supplies, the output power is 3200W.</p>
Safety	CE Labeled; UL 60950-1; IEC 60950-1; ICES-003; FCC Part 15, Subpart B; EU RoHS Compliant; EN 60950-1/A11; C-Tick; VCCI Class A; ROHS Compliance; EN 300386	
Services	Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	

HP RPS1600 1600W AC Power Supply (JG137A)	Physical characteristics	Dimensions	8.19(d) x 4.96(w) x 1.63(h) in. (20.8 x 12.6 x 4.15 cm)
		Weight	3.02 lb. (1.37 kg)
	Environment	Operating temperature	14°F to 122°F (-10°C to 50°C)
		Operating relative humidity	5% to 95%
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	5% to 95%
	Electrical characteristics	Voltage	100-120/200-240 VAC
		Current	15/30 A
		Maximum power rating	1600 W
		Frequency	50/60 Hz
Notes		Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	
Services	Refer to the HP website at: www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.		



Accessory Product Details

To learn more, visit: www.hp.com/networking

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HP 5120 EI Switch Series

Data sheet

Product overview

The HP 5120 EI Switch Series are Gigabit Ethernet switches that support static Layer 3 routing, diversified services, and IPv6 forwarding, as well as provide up to four 10-Gigabit Ethernet (10 GbE) extended interfaces. Unique Intelligent Resilient Framework (IRF) technology creates a virtual fabric by managing several switches as one logical device, which increases network resilience, performance, and availability while reducing operational complexity. These switches provide Gigabit Ethernet access and can be used at the edge of a network or to connect server clusters in data centers. High scalability provides investment protection with two expansion slots, each of which can support two-port 10 GbE expansion modules. High availability, simplified management, and comprehensive security control policies are among the key features that distinguish this series.

Key features

- High scalability for investment protection
- Support for multiple services
- Comprehensive security control policies
- Diversified Quality of Service (QoS) policies
- Excellent manageability



Features and benefits

Quality of Service (QoS)

- **Broadcast control:** allows limitation of broadcast traffic rate to cut down on unwanted network broadcast traffic
- **Advanced classifier-based QoS:** classifies traffic using multiple match criteria based on Layer 2, 3, and 4 information; applies QoS policies such as setting priority level and rate limit to selected traffic on a port, VLAN, or whole switch
- **Powerful QoS feature:** supports the following congestion actions: strict priority (SP) queuing, weighted round robin (WRR), and SP+WRR
- **Traffic policing:** supports Committed Access Rate (CAR) and line rate

Management

- **Friendly port names:** allow assignment of descriptive names to ports
- **Remote configuration and management:** is available through a secure Web browser or a command-line interface (CLI)
- **Manager and operator privilege levels:** enable read-only (operator) and read-write (manager) access on CLI and Web browser management interfaces
- **Command authorization:** leverages HWTACACS to link a custom list of CLI commands to an individual network administrator's login; also provides an audit trail
- **Secure Web GUI:** provides a secure, easy-to-use graphical interface for configuring the module via HTTPS
- **Multiple configuration files:** can be stored to the flash image
- **Complete session logging:** provides detailed information for problem identification and resolution
- **SNMPv1, v2c, and v3:** facilitate centralized discovery, monitoring, and secure management of networking devices
- **Remote monitoring (RMON):** uses standard SNMP to monitor essential network functions; supports events, alarm, history, and statistics group plus a private alarm extension group
- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol provides easy mapping by network management applications

- **sFlow (RFC 3176):** provides scalable ASIC-based wire-speed network monitoring and accounting with no impact on network performance; this allows network operators to gather a variety of sophisticated network statistics and information for capacity planning and real-time network monitoring purposes
- **Management VLAN:** segments traffic to and from management interfaces, including CLI/telnet, a Web browser interface, and SNMP
- **Remote Intelligent Mirroring:** mirrors ingress/egress ACL-selected traffic from a switch port or VLAN to a local or remote switch port anywhere on the network
- **Device Link Detection Protocol (DLDP):** monitors cable between two switches and shuts down the ports on both ends if the cable is broken, this prevents network problems such as loops
- **IPv6 management:** provides future-proof networking because the switch is capable of being managed whether the attached network is running IPv4 or IPv6; supports pingv6, tracertv6, Telnetv6, TFTPv6, DNSv6, syslogv6, FTPv6, SNMPv6, DHCPv6, and RADIUS for IPv6
- **Troubleshooting:** ingress and egress port monitoring enable network problem solving; virtual cable tests provide visibility into cable problems

Connectivity

- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100/1000 ports
- **Flow control:** using standard IEEE 802.3x, it provides back pressure to reduce congestion in heavy traffic situations
- **Jumbo packet support:** supports up to 9216-byte frame size to improve performance of large data transfers
- **High-density connectivity:** provides up to 48 fixed 10/100/1000BASE-T ports in a Layer 2/Layer 3 switch
- **Optional 10 Gigabit Ethernet ports:** allow the addition of 10 Gigabit Ethernet connections for uplinks or high-bandwidth server connections; flexibly supports XFP, SFP+, or CX4 local connections
- **IEEE 802.3at Power over Ethernet (PoE+) support:** simplifies deployment and dramatically reduces installation costs by helping to eliminate the time and cost involved in supplying local power at each access point location

- **Ethernet OAM:** provides a Layer 2 link performance and fault detection monitoring tool, which reduces failover and network convergence times
- **High-bandwidth CX4 local stacking:** when locally stacked using CX4 local stacking, achieves 12 Gbps per connection, allowing for up to 96 Gbps total stacking bandwidth (full duplex) in a resilient stacking configuration

Performance

- **Nonblocking architecture:** up to 192 Gbps nonblocking switching fabric provides wire-speed switching with up to 143 million pps throughput
- **Hardware-based wire-speed access control lists (ACLs):** feature-rich ACL implementation (TCAM based) helps ensure high levels of security and ease of administration without impacting network performance

Resiliency and high availability

- **Separate data and control paths:** keeps control separated from services and keeps service processing isolated; increases security and performance
- **External redundant power supply:** provides high reliability
- **Smart link:** allows 50 ms failover between links
- **Spanning Tree/MSTP, RSTP:** provides redundant links while preventing network loops
- **Rapid Ring Protection Protocol (RRPP):** connects multiple switches in a high-performance ring using standard Ethernet technology; traffic can be rerouted around the ring in less than 50 ms, reducing the impact on traffic and applications
- **Intelligent Resilient Framework (IRF):** creates virtual resilient switching fabrics, where two or more switches perform as a single Layer 2 switch and Layer 3 router; switches do not have to be co-located and can be part of a disaster-recovery system; servers or switches can be attached using standard LACP for automatic load balancing and high availability; simplifies network operation by eliminating the complexity of Spanning Tree Protocol, Equal-Cost Multipath (ECMP), or VRRP

Layer 2 switching

- **16K MAC address table:** provides access to many Layer 2 devices
- **VLAN support and tagging:** support IEEE 802.1Q with 4,094 simultaneous VLAN IDs

- **GARP VLAN Registration Protocol:** allows automatic learning and dynamic assignment of VLANs
- **IEEE 802.1ad QinQ and Selective QinQ:** increase the scalability of an Ethernet network by providing a hierarchical structure; connect multiple LANs on a high-speed campus or metro network
- **10 GbE port aggregation:** allows grouping of ports to increase overall data throughput to a remote device
- **Internet Group Management Protocol (IGMP) and Multicast Listener Discovery (MLD) protocol snooping:** effectively control and manage the flooding of multicast packets in a Layer 2 network

Layer 3 services

- **Address Resolution Protocol (ARP):** determines the MAC address of another IP host in the same subnet; supports static ARPs; gratuitous ARP allows detection of duplicate IP addresses; proxy ARP allows normal ARP operation between subnets or when subnets are separated by a Layer 2 network
- **Dynamic Host Configuration Protocol (DHCP):** simplifies the management of large IP networks; supports client; DHCP Relay enables DHCP operation across subnets
- **Loopback interface address:** defines an address that can always be reachable, improving diagnostic capability
- **User Datagram Protocol helper function:** allows User Datagram Protocol (UDP) broadcasts to be directed across router interfaces to specific IP unicast or subnet broadcast addresses and prevents server spoofing for UDP services such as DHCP
- **Route maps:** provide more control during route redistribution; allow filtering and altering of route metrics

Layer 3 routing

- **Static IP routing:** provides manually configured routing for both IPv4 and IPv6 networks

Security

- **Access control lists (ACLs):** provides IP Layer 2 to Layer 4 traffic filtering; supports global ACL, VLAN ACL, port ACL, and IPv6 ACL
- **IEEE 802.1X:** industry-standard method of user authentication using an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server

- **MAC-based authentication:** client is authenticated with the RADIUS server based on the client's MAC address
- **Identity-driven security and access control:**
 - **Per-user ACLs:** permits or denies user access to specific network resources based on user identity and time of day, allowing multiple types of users on the same network to access specific network services without risk to network security or unauthorized access to sensitive data
 - **Automatic VLAN assignment:** automatically assigns users to the appropriate VLAN based on their identities
- **Secure management access:** securely encrypts all access methods (CLI, GUI, or MIB) through SSHv2, SSL, and/or SNMPv3
- **Secure FTP:** allows secure file transfer to and from the switch; protects against unwanted file downloads or unauthorized copying of a switch configuration file
- **Guest VLAN:** similar to IEEE 802.1X, it provides a browser-based environment to authenticated clients
- **Endpoint Admission Defense (EAD):** provides security policies to users accessing a network
- **Port security:** allows access only to specified MAC addresses, which can be learned or specified by the administrator
- **Port isolation:** secures and adds privacy, and prevents malicious attackers from obtaining user information
- **STP BPDU port protection:** blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks
- **STP Root Guard:** protects the root bridge from malicious attack or configuration mistakes
- **DHCP protection:** blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks
- **IP source guard:** helps prevent IP spoofing attacks
- **Dynamic ARP protection:** blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data
- **RADIUS/HWTACACS:** eases switch management security administration by using a password authentication server

Convergence

- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** is an automated device discovery protocol that provides easy mapping of network management applications
- **LLDP-MED:** is a standard extension that automatically configures network devices, including LLDP-capable IP phones
- **LLDP-CDP compatibility:** receives and recognizes CDP packets from Cisco's IP phones for seamless interoperation
- **IEEE 802.3af Power over Ethernet:** provides up to 15.4 W per port to PoE-powered devices such as IP phones, wireless access points, and video cameras
- **PoE allocations:** support multiple methods (automatic, IEEE 802.3af class, LLDP-MED, or user specified) to allocate PoE power for more efficient energy savings
- **Voice VLAN:** automatically assigns VLAN and priority for IP phones, simplifying network configuration and maintenance
- **IP multicast snooping (data-driven IGMP):** automatically prevents flooding of IP multicast traffic

Device support

- **Cisco prestandard PoE support:** detects and provides power to Cisco's prestandard PoE devices such as wireless LAN access points and IP phones

Additional information

- **Green IT and power:** use the latest advances in silicon development, shut off unused ports, and use variable-speed fans to improve energy efficiency
- **Green initiative support:** provides support for RoHS and WEEE regulations

Warranty and support

- **Lifetime warranty:** for as long as you own the product with advance replacement and next-business-day delivery (available in most countries)*
- **Electronic and telephone support:** limited electronic and telephone support is available from HP; refer to www.hp.com/networking/warranty for details on the support provided and the period during which support is available

*Hardware warranty replacement for as long as you own the product, with next business day advance replacement (available in most countries) with a five-year hardware warranty replacement for the disk drive included with HP AllianceONE Services z1 Module, HP Threat Management Services z1 Module, HP PCM+ Agent with AllianceONE Services z1 Module, and HP MSM765 z1 Mobility Controller. For details, refer to the HP Software License, Warranty, and Support booklet at www.hp.com/networking/warranty.

- **Software releases:** refer to www.hp.com/networking/warranty for details on the software releases provided and the period during which software releases are available for your product(s)

HP 5120 EI Switch Series

Specifications



HP 5120-48G-PoE EI Switch with 2 slots (JE071A)



HP 5120-48G EI Switch with 2 Interface Slots (JE069A)



HP 5120-48G EI Switch (JE067A)

Ports	48 RJ-45 autosensing 10/100/1000 PoE ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3af PoE); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 dual-personality ports; PoE autosensing 10/100/1000BASE-T or SFP 2 port expansion module slots 1 RJ-45 serial console port Supports a maximum of 48 autosensing 10/100/1000 ports	48 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 dual-personality ports; autosensing 10/100/1000BASE-T or SFP 2 port expansion module slots 1 RJ-45 serial console port Supports a maximum of 48 autosensing 10/100/1000 ports	48 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 dual-personality ports; autosensing 10/100/1000BASE-T or SFP 1 RJ-45 serial console port Supports a maximum of 48 autosensing 10/100/1000 ports
Physical characteristics			
Dimensions	16.54(d) x 17.32(w) x 17.17(h) in. (42 x 44 x 43.6 cm) (1U height)	11.81(d) x 17.32(w) x 1.72(h) in. (30 x 44 x 4.36 cm) (1U height)	11.81(d) x 17.32(w) x 17.17(h) in. (30 x 44 x 43.6 cm) (1U height)
Weight	16.53 lb. (7.5 kg)	11.02 lb. (5 kg)	11.02 lb. (5 kg)
Memory and processor	128 MB SDRAM, 16 MB flash; packet buffer size: 4 MB	128 MB SDRAM, 16 MB flash; packet buffer size: 4 MB	128 MB SRAM, 16 MB flash; packet buffer size: 4 MB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)
Performance			
1000 Mb Latency	< 3.2 μ s	< 3.2 μ s	< 3.2 μ s
10 Gbps Latency	< 2.6 μ s	< 2.6 μ s	
Throughput	142.9 million pps	142.9 million pps	71.4 million pps
Routing/Switching capacity	192 Gbps	192 Gbps	96 Gbps
Routing table size	32 entries	32 entries	32 entries
Environment			
Operating temperature	32°F to 113°F (0°C to 45°C)	32°F to 113°F (0°C to 45°C)	32°F to 113°F (0°C to 45°C)
Operating relative humidity	10% to 90%, noncondensing	10% to 90%, noncondensing	10% to 90%, noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	10% to 90%, noncondensing	5% to 95%, noncondensing	5% to 95%, noncondensing
Electrical characteristics			
Maximum heat dissipation	614 BTU/hr (647.77 kJ/hr)	495 BTU/hr (522.23 kJ/hr)	375 BTU/hr (395.63 kJ/hr)
Voltage	100-240 VAC	100-240 VAC	100-240 VAC
DC voltage	-52 to -55 VDC		
Idle power	78 W	55 W	54 W
Maximum power rating	920 W	145 W	110 W
PoE power	740 W		
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies and may be supplemented with the use of an external power supply (EPS). With AC input, the maximum power consumption is 550 W (370 W for PoE).	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance

Specifications (continued)

	HP 5120-48G-PoE EI Switch with 2 slots (JE071A)	HP 5120-48G EI Switch with 2 Interface Slots (JE069A)	HP 5120-48G EI Switch (JE067A)
Emissions	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A
Management	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager
Services	<p>3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E)</p> <p>3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E)</p> <p>3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E)</p> <p>3-year, 24x7 SW phone support, software updates (UV867E)</p> <p>1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR584E)</p> <p>1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR585E)</p> <p>1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR586E)</p> <p>4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E)</p> <p>4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E)</p> <p>4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E)</p> <p>4-year, 24x7 SW phone support, software updates (UV868E)</p> <p>5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E)</p> <p>5-year, 4-hour onsite, 24x7 coverage for hardware (UV863E)</p> <p>5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV866E)</p> <p>5-year, 24x7 SW phone support, software updates (UV869E)</p> <p>3 Yr 6 hr Call-to-Repair Onsite (UW963E)</p> <p>4 Yr 6 hr Call-to-Repair Onsite (UW964E)</p> <p>5 Yr 6 hr Call-to-Repair Onsite (UW965E)</p> <p>1-year, 6 hour Call-To-Repair Onsite for hardware (HR588E)</p> <p>1-year, 24x7 software phone support, software updates (HR587E)</p> <p>1-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS682E)</p> <p>1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS683E)</p> <p>4-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS686E)</p> <p>4-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS687E)</p> <p>5-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS688E)</p>	<p>3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E)</p> <p>3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E)</p> <p>3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E)</p> <p>3-year, 24x7 SW phone support, software updates (UV867E)</p> <p>1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR584E)</p> <p>1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR585E)</p> <p>1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR586E)</p> <p>4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E)</p> <p>4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E)</p> <p>4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E)</p> <p>4-year, 24x7 SW phone support, software updates (UV868E)</p> <p>5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E)</p> <p>5-year, 4-hour onsite, 24x7 coverage for hardware (UV863E)</p> <p>5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV866E)</p> <p>5-year, 24x7 SW phone support, software updates (UV869E)</p> <p>3 Yr 6 hr Call-to-Repair Onsite (UW963E)</p> <p>4 Yr 6 hr Call-to-Repair Onsite (UW964E)</p> <p>5 Yr 6 hr Call-to-Repair Onsite (UW965E)</p> <p>1-year, 6 hour Call-To-Repair Onsite for hardware (HR588E)</p> <p>1-year, 24x7 software phone support, software updates (HR587E)</p> <p>1-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS682E)</p> <p>1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS683E)</p> <p>4-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS686E)</p> <p>4-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS687E)</p> <p>5-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS688E)</p>	<p>3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E)</p> <p>3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E)</p> <p>3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E)</p> <p>3-year, 24x7 SW phone support, software updates (UV867E)</p> <p>1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR584E)</p> <p>1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR585E)</p> <p>1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR586E)</p> <p>4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E)</p> <p>4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E)</p> <p>4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E)</p> <p>4-year, 24x7 SW phone support, software updates (UV868E)</p> <p>5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E)</p> <p>5-year, 4-hour onsite, 24x7 coverage for hardware (UV863E)</p> <p>5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV866E)</p> <p>5-year, 24x7 SW phone support, software updates (UV869E)</p> <p>3 Yr 6 hr Call-to-Repair Onsite (UW963E)</p> <p>4 Yr 6 hr Call-to-Repair Onsite (UW964E)</p> <p>5 Yr 6 hr Call-to-Repair Onsite (UW965E)</p> <p>1-year, 6 hour Call-To-Repair Onsite for hardware (HR588E)</p> <p>1-year, 24x7 software phone support, software updates (HR587E)</p> <p>1-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS682E)</p> <p>1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS683E)</p> <p>4-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS686E)</p> <p>4-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS687E)</p> <p>5-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS688E)</p>

Specifications (continued)

	HP 5120-48G-PoE EI Switch with 2 slots (JE071A)	HP 5120-48G EI Switch with 2 Interface Slots (JE069A)	HP 5120-48G EI Switch (JE067A)
	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.
Standards and protocols (applies to all products in series)	<p>Device management</p> <ul style="list-style-type: none"> RFC 1157 SNMPv1/v2c RFC 1305 NTPv3 RFC 2573 (SNMPv3 Applications) RFC 2819 (RMON groups Alarm, Event, History and Statistics only) RFC 3416 (SNMP Protocol Operations v2) HTML and telnet management Multiple Configuration Files SNMP v3 and RMON RFC support SSHv1/SSHv2 Secure Shell TACACS/TACACS+ Web UI <p>General protocols</p> <ul style="list-style-type: none"> IEEE 802.1ad Qin-Q IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1s Multiple Spanning Trees IEEE 802.1w Rapid Reconfiguration of Spanning Tree IEEE 802.1X PAE IEEE 802.3 Type 10BASE-T IEEE 802.3ab 1000BASE-T IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3ae 10-Gigabit Ethernet IEEE 802.3af Power over Ethernet IEEE 802.3i 10BASE-T IEEE 802.3u 100BASE-X IEEE 802.3x Flow Control IEEE 802.3z 1000BASE-X RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 791 IP RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 951 BOOTP RFC 1213 Management Information Base for Network Management of TCP/IP-based internets RFC 1305 NTPv3 RFC 1350 TFTP Protocol (revision 2) RFC 1519 CIDR 	<ul style="list-style-type: none"> RFC 1812 IPv4 Routing RFC 1866 Hypertext Markup Language - 2.0 RFC 2131 DHCP RFC 2236 IGMP Snooping RFC 2616 HTTP Compatibility v1.1 RFC 2665 Definitions of Managed Objects for the Ethernet-like Interface Types RFC 2668 Definitions of Managed Objects for IEEE 802.3 Medium Attachment Units (MAUs) RFC 2865 Remote Authentication Dial In User Service (RADIUS) RFC 2866 RADIUS Accounting RFC 3414 User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3) RFC 3415 View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP) RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP) RFC 3576 Ext to RADIUS (CoA only) RFC 4213 Basic IPv6 Transition Mechanisms RFC 4675 RADIUS VLAN & Priority 802.1r - GARP Proprietary Attribute Registration Protocol (GPRP) <p>IPv6</p> <ul style="list-style-type: none"> RFC 2461 IPv6 Neighbor Discovery RFC 2463 ICMPv6 RFC 3162 RADIUS and IPv6 RFC 3306 Unicast-Prefix-based IPv6 Multicast Addresses RFC 3315 DHCPv6 (client and relay) <p>MIBs</p> <ul style="list-style-type: none"> RFC 1212 Concise MIB Definitions RFC 1213 MIB II RFC 1493 Bridge MIB RFC 1757 Remote Network Monitoring MIB RFC 2096 IP Forwarding Table MIB RFC 2233 Interface MIB RFC 2571 SNMP Framework MIB RFC 2572 SNMP-MPD MIB RFC 2573 SNMP-Notification MIB RFC 2573 SNMP-Target MIB 	<ul style="list-style-type: none"> RFC 2574 SNMP USM MIB RFC 2618 RADIUS Authentication Client MIB RFC 2620 RADIUS Accounting Client MIB RFC 2665 Ethernet-Like-MIB RFC 2668 802.3 MAU MIB RFC 2674 802.1p and IEEE 802.1Q Bridge MIB RFC 2737 Entity MIB (Version 2) RFC 2819 RMON MIB RFC 2863 The Interfaces Group MIB RFC 2925 Ping MIB RFC 3414 SNMP-User based-SM MIB RFC 3415 SNMP-View based-ACM MIB RFC 3418 MIB for SNMPv3 RFC 3621 Power Ethernet MIB <p>Network management</p> <ul style="list-style-type: none"> IEEE 802.1AB Link Layer Discovery Protocol (LLDP) RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events) ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED) SNMPv1/v2c/v3 <p>Security</p> <ul style="list-style-type: none"> IEEE 802.1X Port Based Network Access Control RFC 1492 TACACS+ RFC 2865 RADIUS (client only) RFC 2866 RADIUS Accounting Secure Sockets Layer (SSL) SSHv2 Secure Shell

HP 5120 EI Switch Series

Specifications (continued)



HP 5120-24G-PoE EI Switch with 2 slots (JE070A)



HP 5120-24G EI Switch with 2 Interface Slots (JE068A)



HP 5120-24G EI Switch (JE066A)

Ports	24 RJ-45 autosensing 10/100/1000 PoE ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3af PoE); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only	24 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only	24 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only
	4 dual-personality ports; PoE autosensing 10/100/1000BASE-T or SPF	4 dual-personality ports; autosensing 10/100/1000BASE-T or SPF	4 dual-personality ports; autosensing 10/100/1000BASE-T or SPF
	2 port expansion module slots	2 port expansion module slots	1 RJ-45 serial console port
	1 RJ-45 serial console port	1 RJ-45 serial console port	
Physical characteristics			
Dimensions	16.54(d) x 17.32(w) x 17.17(h) in. (42 x 44 x 43.6 cm) (1U height)	11.81(d) x 17.32(w) x 17.17(h) in. (30 x 44 x 43.6 cm) (1U height)	11.81(d) x 17.32(w) x 1.72(h) in. (30 x 44 x 4.36 cm) (1U height)
Weight	15.43 lb. (7 kg)	9.92 lb. (4.5 kg)	9.92 lb. (4.5 kg)
Memory and processor	128 MB SDRAM, 16 MB flash; packet buffer size: 2 MB	128 MB SDRAM, 16 MB flash; packet buffer size: 2 MB	128 MB SDRAM, 16 MB flash; packet buffer size: 2 MB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)
Performance			
1000 Mb latency	< 3.2 μ s	< 3.2 μ s	< 3.2 μ s
10 Gbps latency	< 2.6 μ s	< 2.6 μ s	
Throughput	107.2 million pps	107.2 million pps	35.7 million pps
Routing/Switching capacity	144 Gbps	144 Gbps	48 Gbps
Routing table size	32 entries	32 entries	32 entries
Environment			
Operating temperature	32°F to 113°F (0°C to 45°C)	32°F to 113°F (0°C to 45°C)	32°F to 113°F (0°C to 45°C)
Operating relative humidity	10% to 90%, noncondensing	10% to 90%, noncondensing	10% to 90%, noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	5% to 95%, noncondensing	5% to 95%, noncondensing	5% to 95%, noncondensing
Electrical characteristics			
Maximum heat dissipation	425 BTU/hr (448.38 kJ/hr)	362 BTU/hr (381.91 kJ/hr)	212 BTU/hr (223.66 kJ/hr)
Voltage	100-240 VAC	100-240 VAC	100-240 VAC
DC voltage	-52 to -55 VDC		
Idle power	55 W	36 W	35 W
Maximum power rating	495 W	106 W	62 W
PoE power	370 W		
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies and may be supplemented with the use of an external power supply (EPS).	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance

Specifications (continued)

	HP 5120-24G-PoE EI Switch with 2 slots (JE070A)	HP 5120-24G EI Switch with 2 Interface Slots (JE068A)	HP 5120-24G EI Switch (JE066A)
Emissions	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A
Management	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager
Services	<p>3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E)</p> <p>3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E)</p> <p>3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E)</p> <p>3-year, 24x7 SW phone support, software updates (UV867E)</p> <p>1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR584E)</p> <p>1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR585E)</p> <p>1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR586E)</p> <p>4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E)</p> <p>4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E)</p> <p>4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E)</p> <p>4-year, 24x7 SW phone support, software updates (UV868E)</p> <p>5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E)</p> <p>5-year, 4-hour onsite, 24x7 coverage for hardware (UV863E)</p> <p>5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV866E)</p> <p>5-year, 24x7 SW phone support, software updates (UV869E)</p> <p>3 Yr 6 hr CallTo-Repair Onsite (UW963E)</p> <p>4 Yr 6 hr CallTo-Repair Onsite (UW964E)</p> <p>5 Yr 6 hr CallTo-Repair Onsite (UW965E)</p> <p>1-year, 6 hour Call-To-Repair Onsite for hardware (HR588E)</p> <p>1-year, 24x7 software phone support, software updates (HR587E)</p> <p>1-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS682E)</p> <p>1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS683E)</p> <p>4-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS686E)</p> <p>4-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS687E)</p> <p>5-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS688E)</p>	<p>3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E)</p> <p>3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E)</p> <p>3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E)</p> <p>3-year, 24x7 SW phone support, software updates (UV867E)</p> <p>1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR584E)</p> <p>1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR585E)</p> <p>1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR586E)</p> <p>4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E)</p> <p>4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E)</p> <p>4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E)</p> <p>4-year, 24x7 SW phone support, software updates (UV868E)</p> <p>5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E)</p> <p>5-year, 4-hour onsite, 24x7 coverage for hardware (UV863E)</p> <p>5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 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Specifications (continued)

HP 5120-24G-PoE EI Switch with 2 slots (JE070A)

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 5120-24G EI Switch with 2 Interface Slots (JE068A)

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP 5120-24G EI Switch (JE066A)

5-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS688E)

Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

Standards and protocols (applies to all products in series)

Device management

RFC 1157 SNMPv1/v2c
RFC 1305 NTPv3
RFC 2573 (SNMPv3 Applications)
RFC 2819 (RMON groups Alarm, Event, History and Statistics only)
RFC 3416 (SNMP Protocol Operations v2)
HTML and telnet management
Multiple Configuration Files
SNMP v3 and RMON RFC support
SSHv1/SSHv2 Secure Shell
TACACS/TACACS+
Web UI

General protocols

IEEE 802.1ad QinQ
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.1X PAE
IEEE 802.3 Type 10BASE-T
IEEE 802.3ab 1000BASE-T
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3ae 10-Gigabit Ethernet
IEEE 802.3af Power over Ethernet
IEEE 802.3i 10BASE-T
IEEE 802.3u 100BASE-X
IEEE 802.3x Flow Control
IEEE 802.3z 1000BASE-X
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 791 IP
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 951 BOOTP
RFC 1213 Management Information Base for Network Management of TCP/IP-based internets
RFC 1305 NTPv3
RFC 1350 TFTP Protocol (revision 2)
RFC 1519 CIDR

RFC 1812 IPv4 Routing
RFC 1866 Hypertext Markup Language - 2.0
RFC 2131 DHCP
RFC 2236 IGMP Snooping
RFC 2616 HTTP Compatibility v1.1
RFC 2665 Definitions of Managed Objects for the Ethernet-like Interface Types
RFC 2668 Definitions of Managed Objects for IEEE 802.3 Medium Attachment Units (MAUs)
RFC 2865 Remote Authentication Dial In User Service (RADIUS)
RFC 2866 RADIUS Accounting
RFC 3414 User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)
RFC 3415 View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)
RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)
RFC 3576 Ext to RADIUS (CoA only)
RFC 4213 Basic IPv6 Transition Mechanisms
RFC 4675 RADIUS VLAN & Priority
802.1r - GARP Proprietary Attribute Registration Protocol (GPRP)

IPv6

RFC 2461 IPv6 Neighbor Discovery
RFC 2463 ICMPv6
RFC 3162 RADIUS and IPv6
RFC 3306 Unicast-Prefix-based IPv6 Multicast Addresses
RFC 3315 DHCPv6 (client and relay)

MIBs

RFC 1212 Concise MIB Definitions
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 1757 Remote Network Monitoring MIB
RFC 2096 IP Forwarding Table MIB
RFC 2233 Interface MIB
RFC 2571 SNMP Framework MIB
RFC 2572 SNMP-MPD MIB
RFC 2573 SNMP-Notification MIB
RFC 2573 SNMP-Target MIB

RFC 2574 SNMP USM MIB
RFC 2618 RADIUS Authentication Client MIB
RFC 2620 RADIUS Accounting Client MIB
RFC 2665 Ethernet-like-MIB
RFC 2668 802.3 MAU MIB
RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
RFC 2737 Entity MIB (Version 2)
RFC 2819 RMON MIB
RFC 2863 The Interfaces Group MIB
RFC 2925 Ping MIB
RFC 3414 SNMP-User based-SM MIB
RFC 3415 SNMP-View based-ACM MIB
RFC 3418 MIB for SNMPv3
RFC 3621 Power Ethernet MIB

Network management

IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events)
ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
SNMPv1/v2c/v3

Security

IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2865 RADIUS (client only)
RFC 2866 RADIUS Accounting
Secure Sockets Layer (SSL)
SSHv2 Secure Shell

HP 5120 EI Switch Series

Specifications (continued)



HP 5120-48G-PoE+ EI Switch with 2 Interface Slots (JG237A)



HP 5120-24G-PoE+ EI Switch with 2 Interface Slots (JG236A)

Ports	48 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 dual-personality ports; PoE autosensing 10/100/1000BASE-T or SFP 2 port expansion module slots 1 RJ-45 serial console port Supports a maximum of 48 autosensing 10/100/1000 ports	24 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 dual-personality ports; PoE autosensing 10/100/1000BASE-T or SFP 2 port expansion module slots 1 RJ-45 serial console port
Physical characteristics		
Dimensions	16.54(d) x 17.32(w) x 17.17(h) in. (42 x 44 x 43.6 cm) (1U height)	16.54(d) x 17.32(w) x 17.17(h) in. (42 x 44 x 43.6 cm) (1U height)
Weight	16.53 lb. (7.5 kg)	15.43 lb. (7 kg)
Memory and processor	128 MB SDRAM, 16 MB flash; packet buffer size: 4 MB	128 MB SDRAM, 16 MB flash; packet buffer size: 2 MB
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)
Performance		
1000 Mb Latency	< 3.2 μs	< 3.2 μs
10 Gbps Latency	< 2.6 μs	< 2.6 μs
Throughput	142.9 million pps	107.2 million pps
Routing/Switching capacity	192 Gbps	144 Gbps
Routing table size	32 entries	32 entries
Environment		
Operating temperature	32°F to 113°F (0°C to 45°C)	32°F to 113°F (0°C to 45°C)
Operating relative humidity	10% to 90%, noncondensing	10% to 90%, noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	10% to 90%, noncondensing	5% to 95%, noncondensing
Electrical characteristics		
Maximum heat dissipation	614 BTU/hr (647.77 kJ/hr)	425 BTU/hr (448.38 kJ/hr)
Voltage	100-240 VAC	100-240 VAC
DC voltage	-52 to -55 VDC	-52 to -55 VDC
Idle power	78 W	55 W
Maximum power rating	920 W	495 W
PoE power	740 W	370 W
Frequency	50/60 Hz	50/60 Hz
Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies and may be supplemented with the use of an external power supply (EPS). With AC input, the maximum power consumption is 550 W (370 W for PoE).	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. PoE power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies and may be supplemented with the use of an external power supply (EPS).
Safety	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance
Emissions	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; ICES-003 Class A; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; AS/NZS CISPR22 Class A; EN 61000-3-2; EN 61000-3-3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-11; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A
Management	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E)	3-year, 4-hour onsite, 13x5 coverage for hardware (UV858E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UV861E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UV864E)

Specifications (continued)

HP 5120-48G-PoE+ EI Switch with 2 Interface Slots (JG237A)

3-year, 24x7 SW phone support, software updates (UV867E)
 4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E)
 4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E)
 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E)
 4-year, 24x7 SW phone support, software updates (UV868E)
 5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E)
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 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV866E)
 5-year, 24x7 SW phone support, software updates (UV869E)
 3 Yr 6 hr Call-to-Repair Onsite (UW963E)
 4 Yr 6 hr Call-to-Repair Onsite (UW964E)
 5 Yr 6 hr Call-to-Repair Onsite (UW965E)

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HP 5120-24G-PoE+ EI Switch with 2 Interface Slots (JG236A)

3-year, 24x7 SW phone support, software updates (UV867E)
 4-year, 4-hour onsite, 13x5 coverage for hardware (UV859E)
 4-year, 4-hour onsite, 24x7 coverage for hardware (UV862E)
 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV865E)
 4-year, 24x7 SW phone support, software updates (UV868E)
 5-year, 4-hour onsite, 13x5 coverage for hardware (UV860E)
 5-year, 4-hour onsite, 24x7 coverage for hardware (UV863E)
 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV866E)
 5-year, 24x7 SW phone support, software updates (UV869E)
 3 Yr 6 hr Call-to-Repair Onsite (UW963E)
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 RFC 2819 (RMON groups Alarm, Event, History and Statistics only)
 RFC 3416 (SNMP Protocol Operations v2)
 HTML and telnet management
 Multiple Configuration Files
 SNMP v3 and RMON RFC support
 SSHv1/SSHv2 Secure Shell
 TACACS/TACACS+
 Web UI

General protocols

IEEE 802.1ad Q-in-Q
 IEEE 802.1D MAC Bridges
 IEEE 802.1p Priority
 IEEE 802.1Q VLANs
 IEEE 802.1s Multiple Spanning Trees
 IEEE 802.1w Rapid Reconfiguration of Spanning Tree
 IEEE 802.1X PAE
 IEEE 802.3 Type 10BASE-T
 IEEE 802.3ab 1000BASE-T
 IEEE 802.3ad Link Aggregation Control Protocol (LACP)
 IEEE 802.3ae 10-Gigabit Ethernet
 IEEE 802.3af Power over Ethernet
 IEEE 802.3i 10BASE-T
 IEEE 802.3u 100BASE-X
 IEEE 802.3x Flow Control
 IEEE 802.3z 1000BASE-X
 RFC 768 UDP
 RFC 783 TFTP Protocol (revision 2)
 RFC 791 IP
 RFC 792 ICMP
 RFC 793 TCP
 RFC 826 ARP
 RFC 854 TELNET
 RFC 951 BOOTP
 RFC 1213 Management Information Base for Network Management of TCP/IP-based internets
 RFC 1305 NTPv3
 RFC 1350 TFTP Protocol (revision 2)
 RFC 1519 CIDR

RFC 1812 IPv4 Routing
 RFC 1866 Hypertext Markup Language - 2.0
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 RFC 2236 IGMP Snooping
 RFC 2616 HTTP Compatibility v1.1
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 RFC 3415 View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)
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 RFC 4675 RADIUS VLAN & Priority
 802.1r - GARP Proprietary Attribute Registration Protocol (GPRP)

IPv6

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 RFC 2463 ICMPv6
 RFC 3162 RADIUS and IPv6
 RFC 3306 Unicast-Prefix-based IPv6 Multicast Addresses
 RFC 3315 DHCPv6 (client and relay)

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 RFC 2571 SNMP Framework MIB
 RFC 2572 SNMP-MPD MIB
 RFC 2573 SNMP-Notification MIB
 RFC 2573 SNMP-Target MIB

RFC 2574 SNMP USM MIB
 RFC 2618 RADIUS Authentication Client MIB
 RFC 2620 RADIUS Accounting Client MIB
 RFC 2665 Ethernet-Like-MIB
 RFC 2668 802.3 MAU MIB
 RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
 RFC 2737 Entity MIB (Version 2)
 RFC 2819 RMON MIB
 RFC 2863 The Interfaces Group MIB
 RFC 2925 Ping MIB
 RFC 3414 SNMP-User based-SM MIB
 RFC 3415 SNMP-View based-ACM MIB
 RFC 3418 MIB for SNMPv3
 RFC 3621 Power Ethernet MIB

Network management

IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
 RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events)
 ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
 SNMPv1/v2c/v3

Security

IEEE 802.1X Port Based Network Access Control
 RFC 1492 TACACS+
 RFC 2865 RADIUS (client only)
 RFC 2866 RADIUS Accounting
 Secure Sockets Layer (SSL)
 SSHv2 Secure Shell

HP 5120 EI Switch Series accessories

Modules

HP 5500 2-port 10GbE XFP Module (JD359B)
HP 5500 2-port 10GbE Local Connect Module (JD360B)
HP 5500 1-port 10GbE XFP Module (JD361B)
HP 5500/5120 2-port 10GbE SFP+ Module (JD368B)
HP 5500/4800 2-port GbE SFP Module (JD367A)

Transceivers

HP X125 1G SFP LC LH40 1310nm Transceiver (JD061A)
HP X120 1G SFP LC LH40 1550nm Transceiver (JD062A)
HP X125 1G SFP LC LH70 Transceiver (JD063B)
HP X130 10G SFP+ LC SR Transceiver (JD092B)
HP X130 10G SFP+ LC LRM Transceiver (JD093B)
HP X130 10G SFP+ LC LR Transceiver (JD094B)
HP X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable (JD095B)
HP X240 10G SFP+ to SFP+ 1.2m Direct Attach Copper Cable (JD096B)
HP X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable (JD097B)
HP X130 10G XFP LC LR Transceiver (JD108B)
HP X130 10G XFP LC SR Transceiver (JD117B)
HP X120 1G SFP LC SX Transceiver (JD118B)
HP X120 1G SFP LC LX Transceiver (JD119B)
HP X135 10G XFP LC ER Transceiver (JD121A)
HP X110 100M SFP LC FX Dual Mode Transceiver (JD497A)
HP X110 100M SFP LC LX10 Transceiver (JD498A)
HP X120 1G SFP LC BX 10-U Transceiver (JD098B)
HP X120 1G SFP LC BX 10-D Transceiver (JD099B)
HP X120 1G SFP RJ45 T Transceiver (JD089B)

Cables

HP X230 Local Connect 100cm CX4 Cable (JD364B)
HP X230 CX4 to CX4 3m Cable (JD365A)
HP 0.5 m Multimode OM3 LC/LC Optical Cable (AJ833A)
HP 1 m Multimode OM3 LC/LC Optical Cable (AJ834A)

HP 2 m Multimode OM3 LC/LC Optical Cable (AJ835A)
HP 5 m Multimode OM3 LC/LC Optical Cable (AJ836A)
HP 15 m Multimode OM3 LC/LC Optical Cable (AJ837A)
HP 30 m Multimode OM3 LC/LC Optical Cable (AJ838A)
HP 50 m Multimode OM3 LC/LC Optical Cable (AJ839A)
NEW HP 0.5 m PremierFlex OM3+ LC/LC Optical Cable (BK837A)
NEW HP 1 m PremierFlex OM3+ LC/LC Optical Cable (BK838A)
NEW HP 2 m PremierFlex OM3+ LC/LC Optical Cable (BK839A)
NEW HP 5 m PremierFlex OM3+ LC/LC Optical Cable (BK840A)
NEW HP 15 m PremierFlex OM3+ LC/LC Optical Cable (BK841A)
NEW HP 30 m PremierFlex OM3+ LC/LC Optical Cable (BK842A)
NEW HP 50 m PremierFlex OM3+ LC/LC Optical Cable (BK843A)
HP X230 Local Connect 50cm CX4 Cable (JD363B)

Power Supply

HP RPS 800 Redundant Power Supply (JD183A)
HP RPS1600 Redundant Power System (JG136A)
HP RPS1600 1600W AC Power Supply (JG137A)

Power cords

HP X290 1000 A JD5 2m RPS Cable (JD187A)
HP X290 500/800 1m RPS Cable (JD190A)

To learn more, visit www.hp.com/networking

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Power quality solutions



Eaton 5P UPS

Integrated Power Management. Discover what you've been missing.

The Eaton 5P provides advanced power conditioning and unparalleled battery backup for network closets and small data centers.

Eaton 5P features and benefits:

Efficiency: The Eaton 5P provides industry leading efficiency of up to 99 percent.

Manageability:

- **Energy metering:** The 5P meters energy consumption at the UPS level.
- **UPS management:** By integrating Eaton's free Intelligent Power® Software Suite, you can monitor and manage the power devices on your network.

LCD display: Eaton's next generation LCD offers a graphical interface which provides all critical UPS information in a single screen view. The user friendly menu allows you to view information and control settings at the push of a button.

More power: The 5P protects more devices by providing 28 percent more wattage compared to traditional UPSs.

Battery life: Eaton's exclusive ABM® technology increases battery service life by 50 percent. ABM uses an advanced, three-stage charging technique and closely monitors battery health to provide advanced notice when batteries need replacement.

Intelligent Power Software Suite

By integrating the suite with the Eaton 5P, you gain:

- Compatibility with VMware® and Microsoft® virtualization platforms
- Seamless integration with VMware's vCenter™ dashboard
- The ability to trigger vMotion™ and Live Migration™ and move virtual machines during a power failure
- Graceful shutdown of computers and virtual machines/servers during an extended power outage

To learn more, please visit:

www.eaton.com/intelligentpower

Services and support

Eaton provides product support 24 hours a day, 7 days a week. From battery replacement to full UPS service plans, Eaton has one of the top service models in the industry.

Three-year warranty

The 5P warranty covers both the UPS and the batteries for three years. No other manufacturer in the industry offers as comprehensive a warranty.



5P MODEL SELECTION GUIDE*

Catalog Number	Rating (VA/Watts)	Input connection	Output receptacles	Dimensions (H x W x D), in	Net weight, lb
120V, 50/60 Hz					
5P1500RT	1440/1440	5-15P	(8) 5-15R	3.4 x 17.4 x 20.6	65
5P2200RT	1950/1920	5-20P	(8) 5-20R	3.4 x 17.4 x 20.6	65
5P3000RT	3000/2700	L5-30P	(1) L5-30R (6) 5-20R	3.4 x 17.4 x 25.4	87
120V, 50/60 Hz Virtualization-ready bundles with Network Card-MS					
5P1500RTN	1440/1440	5-15P	(8) 5-15R	3.4 x 17.4 x 20.6	65
5P2200RTN	1950/1920	5-20P	(8) 5-20R	3.4 x 17.4 x 20.6	65
5P3000RTN	3000/2700	L5-30P	(1) L5-30R (6) 5-20R	3.4 x 17.4 x 25.4	87

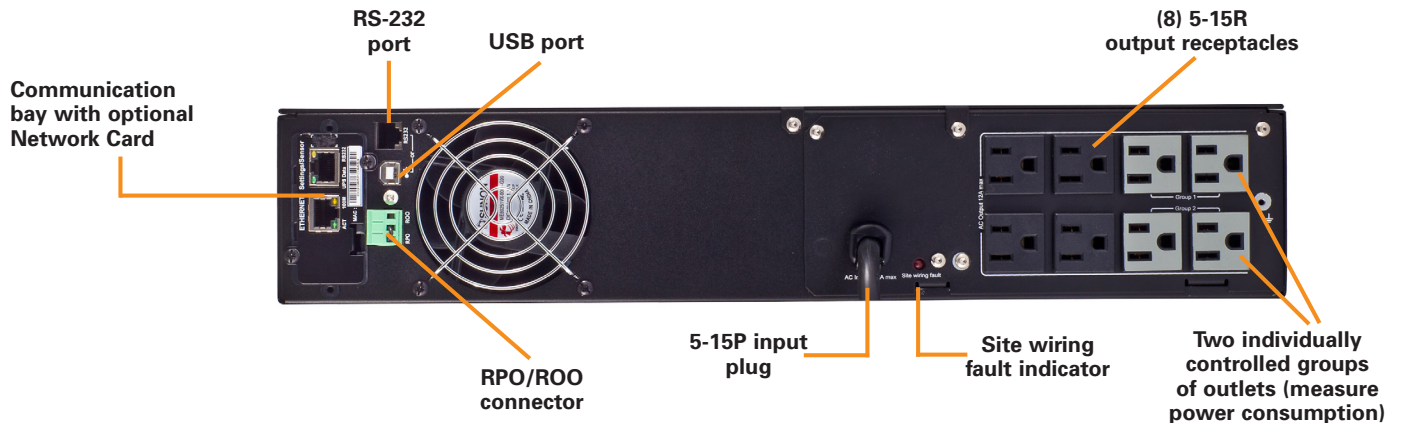
*Due to continuous product improvement programs, all specifications are subject to change without notice.

Additional Options	Catalog Number	For use with
Connectivity		
Network Card-MS	NETWORK-MS	All models
Power Distribution & Bypass		
HotSwap Maintenance Bypass (MBP) The HotSwap Maintenance Bypass allows you to exchange or service the UPS without shutting down the connected load	EHBPL1500R-PDU1U	5P1500RT
	EHBPL2000R-PDU1U	5P2200RT
	EHBPL3000R-PDU1U	5P3000RT
Mounting Hardware		
2-post rail kit	103007018-5591	5P1500RT 5P2200RT 5P3000RT

What's in the box

- Tower pedestals
- Four-post rail kit
- User manual CD
- Intelligent Power Software Suite CD
- Quick start guide
- RS-232 serial cable
- USB cable
- Phillips Head screw driver

5P UPS rear panel



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UPSgrade™

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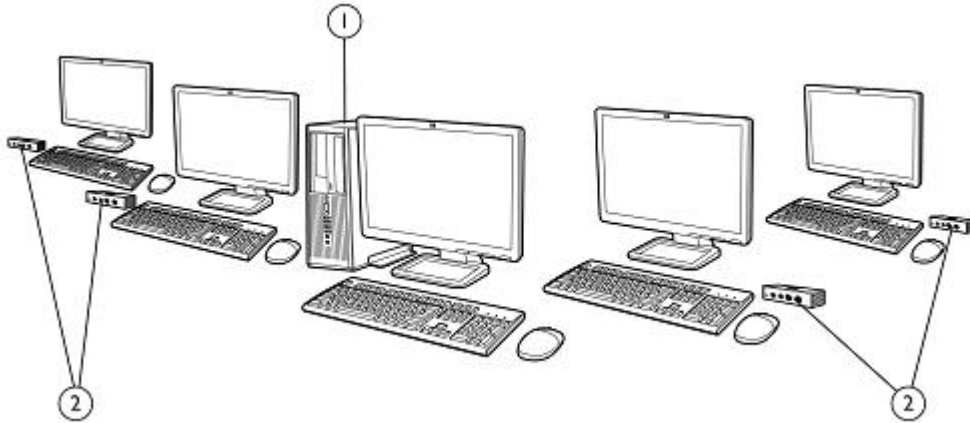
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HP MultiSeat ms6200/ms6005 Series Desktop – Standard Features

This innovative shared resource computing solution from trusted industry leaders HP and Microsoft stretches your corporate computing budget by delivering the familiar, reliable computing experience to multiple users from a single, dedicated PC for maximum cost savings and power.

HP MultiSeat Computing Solution Components



1. HP MultiSeat ms6200/ms6005 Series Desktop; monitor (sold separately), keyboard and mouse
2. HP MultiSeat t100 or t150 Thin Client; monitor, keyboard and mouse (sold separately)

Part Numbers

	Windows® MultiPoint™ Server 2011 Standard	Windows® MultiPoint™ Server 2011 Premium	Windows® MultiPoint™ Server 2011 Academic OEM ¹	Windows® MultiPoint™ Server 2011 Academic Volume License ^{1,2}
ms6200				
Intel Core i5 2400; 4GB DDR3 memory; 500GB HDD; PS/2 Keyboard & Mouse; DVD/RW	QS134AW QS135AW*	QS136AW QS137AW*	QS138AW	QS140AW
Intel Core i7 2600; 8GB DDR3 memory; 500GB HDD; PS/2 Keyboard & Mouse; DVD/RW	QS141AW QS142AW*	QS143AW QS144AW*	QS145AW	QS161AW
ms6005				
AMD Athlon II X2 B26; 4GB DDR3 memory; 500GB HDD; PS/2 Keyboard & Mouse; DVD/RW	QS147AW QS148AW*	QS149AW QS150AW*	QS151AW	QS153AW



HP MultiSeat ms6200/ms6005 Series Desktop – Standard Features

AMD Phenom II X4 B97; 8GB DDR3 memory; 500GB HDD; PS/2 Keyboard & Mouse; DVD/RW	QS154AW QS155AW*	QS156AW QS157AW*	QS158AW	QS160AW
t100	BM490AA WB215AA*	BM490AA WB215AA*	QS971AA	QS826AA
t150	QM176AA QM178AA	QM176AA QM178AA	WB261AA	QM177AA

*Emerging Countries have alternate PN's

¹ Available for Qualified Education Users only

² Ships with FreeDOS and does not include Microsoft license. Customer obtains Academic Volume License and CALs from Microsoft Reseller.

ms6005 configuration

Form factor	Small form factor
Operating system	FreeDOS
Chipset	AMD® 785G
Processor²	AMD® Athlon II X2 B26 Processor
Memory	4GB DDR3 (1333 MHz)
Hard drive	500 GB SATA 3.0Gb/s
Removable media	SATA DVD Writer Drive
Graphics	Integrated ATI® Radeon HD 4200 Graphics
Audio	Realtek ALC261 HD Audio (Microsoft Multipoint Server 2010 does not currently support audio on the PC)
Communications	Broadcom NetXtreme Gigabit Ethernet BCM 5761
Input devices	HP PS/2 Standard Keyboard and PS/2 optical scroll mouse

ms6005 configuration

Form factor	Small form factor
Operating system	FreeDOS
Chipset	AMD® 785G
Processor²	AMD® Phenom II X4 B97 Processor
Memory	8GB DDR3 (1333 MHz)
Hard drive	500 GB SATA 3.0Gb/s
Removable media	SATA DVD Writer Drive
Graphics	Integrated ATI® Radeon HD 4200 Graphics
Audio	Realtek ALC261 HD Audio (Microsoft Multipoint Server 2010 does not currently support audio on the PC)
Communications	Broadcom NetXtreme Gigabit Ethernet BCM 5761
Input devices	HP PS/2 Standard Keyboard and PS/2 optical scroll mouse

ms6200 configuration

Form factor	Small form factor
Operating system	Microsoft® Windows® MultiPoint™ Server 2011
Chipset	Intel Q65 Express



HP MultiSeat ms6200/ms6005 Series Desktop – Standard Features

ms6200 configuration	Processor ²	Intel® Core™ i5-2400
	Memory	4GB DDR3 (1333 MHz)
	Hard drive	500 GB SATA 6.0Gb/s
	Removable media	SATA DVD Writer Drive
	Graphics	Integrated Intel® HD
	Audio	Realtek ALC261 HD Audio
	Communications	Integrated Intel 82579LM Gigabit
	Input devices	HP PS/2 Standard Keyboard and PS/2 optical scroll mouse
	Form factor	Small form factor
	Operating system	Microsoft® Windows® MultiPoint™ Server 2011
	Chipset	Intel Q65 Express
	Processor ²	Intel® Core™ i7-2600
	Memory	8GB DDR3 (1333 MHz)
	Hard drive	500 GB SATA 6.0Gb/s
	Removable media	SATA DVD Writer Drive
	Graphics	Integrated Intel® HD
	Audio	Realtek ALC261 HD Audio
	Communications	Integrated Intel 82579LM Gigabit
	Input devices	HP PS/2 Standard Keyboard and PS/2 optical scroll mouse

Operating System Microsoft® Windows® MultiPoint™ Server 2011
NOTE: FreeDOS available with Academic edition only

Value-added Software PDF complete
(not included with Academic edition) Microsoft Internet Explorer

Chipset	ms6005	AMD 785G
	ms6200	Intel Q65 Express

Processors One of these:	ms6005	AMD Athlon II X2 B26 (3.2 GHz, 2 MB L2I cache, HT bus 3.0)
	ms6005	AMD Phenom II X4 B97 (3.2 GHz, 8 MB total cache, HT bus 3.0)
	ms6200	Intel® Core™ i5-2400 (3.10 GHz, 6 MB cache, 4 cores)
	ms6200	Intel® Core™ i7-2600 (3.40 GHz, 8 MB cache, 4 cores)



HP MultiSeat ms6200/ms6005 Series Desktop – Standard Features

Memory

Supports unbuffered non-ECC DDR3 SDRAM

The Intel Q65 Express chipset supports unbuffered non-ECC DDR3 SDRAM (synchronous dynamic random access memory) at a frequency of up to 1333MHz.

AMD processors support unbuffered non-ECC DDR3 SDRAM (synchronous dynamic random access memory) at a frequency of up to 1333 MHz.

NOTE: 1066MHz system memory frequency of operation requires at least PC3-8500 (DDR3-1066) memory type for all populated memory modules, and an Intel processor with FSB (front side bus) of at least 1066MHz.

System Memory upgrades are accomplished by adding DDR3 SDRAM module(s) to empty DIMM slots on the System Board.

CAUTION: Voltage is supplied to the memory modules whenever the computer is connected to an active AC outlet. Adding or removing memory modules while voltage is present may cause irreparable damage to the memory modules or system board. The computer must be shut down with the AC power removed (disconnect AC power cord at rear chassis or at AC outlet) prior to adding or removing SDRAM modules.

HP recommends dual-channel symmetric configurations for the best memory performance. For dual-channel symmetric performance, the total amount of memory in each channel must be equal. Do not inter-mix memory module speeds or memory operating frequency will default to lowest speed.

Maximum Memory*

Supports up to 16GB of un-buffered non-ECC DDR3 SDRAM.

Slot 1 is black and must always be populated. Not all possible memory configurations are represented in the table below.

*For systems configured with more than 3GB of memory and a 32-bit operating system, all memory may not be available to the OS due to system resource requirements. Addressing memory above 4GB requires a 64-bit operating system.

Total Memory	DIMM Slot Population*			
	Channel A		Channel B	
	1 (black)	2 (white)	3 (white)	4 (white)
4 GB (Dual Channel Symmetric)	2GB		2GB	
8 GB (Dual Channel Symmetric)	4GB		4GB	

* The HP Compaq 6200 Elite Series supports the 2nd generation Intel® Core™ processor family. Based on a new PC micro-architecture, the processor is designed for a two-chip platform consisting of a processor and Platform Controller Hub (PCH). Unlike previous generations, the processor includes an integrated memory controller (IMC). The IMC supports DDR3 protocols with two independent, 64-bit wide channels each accessing one or two DIMMs.



HP MultiSeat ms6200/ms6005 Series Desktop – Standard Features

Expandability	ms6005	ms6200
PCI slots	1 low profile	1 low-profile
Max power per slot	35W	25W
PCIe x1 slot	2	2 low-profile
Max power per slot	10W	10W
PCI x16 slot	1 low-profile	1 low-profile
Max power per slot	35W	25W
External Bays:		
3.5"	1	1
5.25"	1	1
Internal Bays:		
3.5"	1	1
Hard Drive Controller supported	SATA	SATA
Hard Drive Interfaces supported:	SATA 3.0 Gb/s	SATA 3.0 & 6.0 Gb/s

Storage - Drive Support

	Media Card Reader	5.25" Serial ATA Devices	3.5" Serial ATA Devices
Qty Supported	1	1	2
Position Supported	2	2	2,3
Controller	USB/Diskette	SATA	SATA

Hard Drive 500 GB SATA 6.0 Gb/s, 16 MB cache, 10,000 rpm, NCQ, SMART IV

Graphics	ms6005	ms6200
	Integrated ATI Radeon HD 4200	Integrated Intel HD

Network	ms6005	ms6200
	Integrated Broadcom NetXtreme Gigabit Ethernet BCM 5761	Integrated Intel 82579LM Gigabit

Audio* Integrated high definition audio with Realtek ALC261 codec (all ports are stereo)
 Microphone and Headphone front ports
 Line-out and Line-in rear ports
 Internal speaker

Power Supply 240W 89% efficient power supply - active PFC (ms6005)
 240W 90% efficient power supply - active PFC (ms6200)



HP MultiSeat ms6200/ms6005 Series Desktop – Standard Features

Ports

- USB 2.0 10 (4 front, 6 rear)
Two (2) internal headers on system board
- Serial 1 standard; 1 optional
- PS/2 2 standard

- Input Devices**
- PS/2 Standard keyboard
 - PS/2 2-Button Optical Scroll mouse

MultiSeat Configurations	Number of Users								
	2	3	4	5	6	7	8	9	10
Host PC version	Ess	Ess	Ess	Ext	Ext	Ext	Ext	Ext	Ext
Qty of t100's or t150's	1	2	3	4	5	6	7	8	9
Qty of Monitors	2	3	4	5	6	7	8	9	10
Qty of PS/2 Keyboards/Mice	1	2	3	4	5	6	7	8	9
<p>NOTE: Microsoft MultiPoint Server 2011 supports audio on the host PC.</p>									

Recommended Seats Per Host

Application Scenario	Recommended Seats Per Host			Notes
	ms6200 w/Core i5	ms6200 w/Core i7	ms6005	
Productivity -Office, line-of-business applications	Up to 10	Up to 10	Up to 5	--No Professional AutoCAD --No video/Flash/audio editing - consider desktops
Web-based browsing - Low -News sites -Wikipedia -Encyclopedia; general research	Up to 8	Up to 10	Up to 4	--Site w/numerous links can cause higher CPU numbers --These sites don't include video (example: if "news" has video link - changes to "High" category)
Web-based browsing - High -pbskids.org, sparky.org -Disney.com -YouTube	Up to 5	Up to 5	Up to 3	--If extensive use of Flash - consider independent desktops --Maximum rated 480p Flash video
Multimedia	Up to 5	Up to 5	Up to 2	--If extensive use



HP MultiSeat ms6200/ms6005 Series Desktop – Standard Features

-Maximum rated 720p HD video

of multimedia -
consider
independent
desktops
--Maximum rated
720p HD video
--DVD playback
not recommended

Dimensions & Weight	ms6005	ms6200
Chassis Dimensions (H x W x D)	3.95 x 13.30 x 14.90 in 10.03 x 33.78 x 37.85 cm	4.0 x 13.3 x 14.9 in 10.0 x 33.80 x 37.9 cm
System weight*	16.0 lb (7.26 kg)	16.7 lb (7.6 kg)
System volume	941.63 cu in	790.3 cu in (13.0 L)
Shipping weight*	26.70 lb (12.11 kg)	17.9 lb (8.1 kg)
Maximum supported weight (desktop orientation)	77.1 lb (35 kg)	77.0 lb (35.0 kg)

Eco-Label Certifications & declarations The HP MultiSeat ms6005 Desktop and HP MultiSeat ms6200 Desktop are ENERGY STAR® qualified.

Service and Support

On-site Warranty and Service [Note 1](#): This three-year (3-3-3), limited warranty and service offering delivers three years of parts, labor and on-site repair. Response time is next business-day [Note 2](#) and includes free telephone support [Note 3](#) 24 x 7. Global coverage [Note 2](#) ensures that any product purchased in one country and transferred to another non-restricted country will remain fully covered under the original warranty and service offering. Some countries/regions do not offer one year onsite and labor. For HP Care Pack services see: <http://www.hp.com/go/lookuptool>.

NOTE 1: Terms and conditions may vary by country. Certain restrictions and exclusions apply.

NOTE 2: On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.

NOTE 3: Technical telephone support applies only to HP-configured, HP and HP-qualified, third-party hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.



HP MultiSeat ms6200/ms6005 Series Desktop – Technical Specifications

Unit Environment and Operating Conditions

General Unit Operating Guidelines

- 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.

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: 10,000 ft (3048 m)
Non-operating: 30,000 ft (9144 m)

*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.

Power Supply

240-watt 89% efficient BTX power supply - Active PFC (ms6005)
240-watt 90% efficient BTX power supply - Active PFC (ms6200)

Operating Voltage Range 100-240VAC

Rated Voltage Range 115V/230V

Rated Line Frequency 50/60 Hz

Operating Line Frequency 47-63 Hz
Range

Rated Input Current 4A

Heat Dissipation Typical: 270 btu/hr
(68 kg-cal/hr)
Maximum 1025 btu/hr
(258 kg-cal/hr)

Power Supply Fan Variable speed fan



HP MultiSeat ms6200/ms6005 Series Desktop – Technical Specifications

ROM BIOS Information

Key features of the HP BIOS include

- Deployment and manageability: HP BIOS provides several technologies that help integrate the HP Business desktop computer into the enterprise, such as PXE, remote configuration, remote control, and F10 Setup support for 12 languages.
- Security: HP BIOS offers a robust and flexible set of security features to help the system administrator secure their systems from removal of sensitive data, and help prevent access by unauthorized users. Ability to disable USB ports
- Tracking and tracing capabilities in case of theft available in select countries (subscription sold separately).
- Thermal and power management - The HP BIOS provides and enables thermal and power management technologies to assist in operating the HP Business Desktop computer in any enterprise environment.
- Serviceability - HP BIOS provides diagnostic and detailed service information.
- Administrator password - Also known as the setup password, this helps prevent unauthorized changes to the system configuration. If the administrator password is not known, the BIOS version cannot be changed and changes cannot be made to BIOS settings using F10 setup or under the OS.
- Advanced Configuration and Power Interface (ACPI) - Represents a significant innovation in power and configuration management, allowing operating systems and applications to manage power based on activity and usage.
- Mute internal speaker
- Disable USB ports

Additional HP BIOS Features

Serviceability Features

System

- System/Emergency ROM
- Flash ROM
- CMOS Battery Holder for easy Replacement
- Flash Recovery with Video
- 5 Aux Power LED on System PCA
- Processor ZIF Socket for easy Upgrade
- Over-Temp Warning on Screen (Requires IM Agents)
- Clear Password Jumper
- DIMM Connectors for easy Upgrade
- Restore CD
- Clear CMOS Switch
- NIC LEDs (integrated) (Green & Amber)
- Dual Color Power LED on Front of Computer (Indicates Normal Operations and Fault Conditions)

Diagnostic LED Explanation Table

Number of 1--second red LED blinks followed by 2-second pause, then repeats:

- 2-processor thermal protection activated
- 3-processor not installed
- 4-power supply failure
- 5-memory error
- 6-video error
- 7-PCA failure (ROM detected failure prior to video)
- 8-invalid ROM, bootblock recover mode



HP MultiSeat ms6200/ms6005 Series Desktop – Technical Specifications

Chassis	<ul style="list-style-type: none">• Dual Color Power and HD LED - To Indicate Normal Operations and Fault Conditions• Color coordinated cables and connectors• Tool-less Hood Removal - spring-loaded latch• Front power switch• Tool-less Hard Drive, CD & Diskette Removal
Other Features	
Towerable	Small Form Factor can be oriented as a tower (in addition to desktop orientation)
Drive Self Tests (DPS)	<u>DPS Access through F10 Setup during Boot</u> <ul style="list-style-type: none">• Drive Protection System• A diagnostic hard drive self test. It scans critical physical components and every sector of the hard drive for physical faults and then reports any faults to the user.• Running independently of the operating system, it may be accessed through the computer's setup procedure. It produces an evaluation on whether the hard drive is the source of the problem and needs to be replaced.• The system expands on the Self-Monitoring, Analysis, and Reporting Technology (SMART), a continuously running systems diagnostic that alerts the user to certain types of failures.• Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted• Predicts failures before they occur. Tracks fault prediction and failure indication parameters such as re-allocated sector count, spin retry count, calibration retry count• By avoiding actual hard drive failures, SMART hard drives act as "insurance" against unplanned user downtime and potential data loss from hard drive failure• A standards initiative for representing out-of-band management capability for computer systems. It is a secure, web-services based successor to ASF.
SMART IV Technology (Self-Monitoring, Analysis and Reporting Technology)	<ul style="list-style-type: none">• Industry-standard specification for network alerting in operating system-absent environments
DASH 1.1 support (Desktop and Mobile Architecture for System Hardware)	<ul style="list-style-type: none">• Allows the system to wake from a low power mode.• Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system.
ASF 2.0 support (Alert Standard Format)	<ul style="list-style-type: none">• System Management BIOS, previously known as DMI BIOS, for system management information
ACPI-Ready Hardware (Advanced Configuration and Power Management Interface)	<ul style="list-style-type: none">• Intel-driven, industry-wide initiative to make Intel architecture-based PCs, servers and mobile computers more inherently manageable right out of the box and over the network
SMBIOS Ver. 2.6	<ul style="list-style-type: none">• Power button acts as both an on/off button and suspend-to-sleep button
Wired for Management Support	
Dual-State Power Button	



HP MultiSeat ms6200/ms6005 Series Desktop – Technical Specifications

High Definition Audio

Type	Integrated high definition 4-channel Realtek ALC261 stereo codec
Audio Jacks	<ul style="list-style-type: none">• Front microphone-In (150-K ohm Input Impedance)• Rear Line-In/Microphone input (150-K ohm Input Impedance, function is configurable by audio driver)• Rear Line-Out* (190 ohms Output Impedance, expects at least a 10-K ohm load)• Front Headphone-Out (0.5 Ohm Output Impedance, expects at least a 32 ohm load)
	<p>*Internal Speaker Amplifier is for Internal Speaker only. External Speakers need to be powered externally. Microsoft MultuiPoint Server 2010 does not currently support Audio in and out on the host PC.</p>
Sampling	8 kHz - 192 kHz
Wavetable Syntheses (software)	Yes - Uses OS soft wavetable
Analog Audio	Yes
Number of Changes on Line Out (mono/stereo)	Stereo (Left & Right channels)
Internal Audio Speaker Power Rating	1.5W
Internal Speaker	Yes; ability to mute internal speaker through F10 Setup
External Speaker Jack (Line-Out)	Yes

Integrated Intel 82567LM Gigabit Network Connection

Connector	RJ-45
Controller	Intel 82567LM Gigabit platform LAN Connect Networking Controller
Memory	Integrated 96KbB on chip buffer memory
Data rates supported	10/100/1000 Mbps
Compliance	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3ab and 802.3u compliant
Bus architecture	GLCI, LCI interface. Intel specific MAC to PHY interface
Data transfer mode	At gigabit GLCI (802.3 serdes) is for Data, LCI (parallel bus)for MDIO, at 10/100 LCI for both data and MDIO, GLCI is idle.
Power requirement	Require 3.3Vaux, 1.8V and 1.0V or just 3.3V with integrated regulators Power consumption 1.16 Watts for 82566, whole LOM 2.53 Watts
Boot ROM support	Yes
Network transfer mode	Full-duplex Half-duplex (not available for the 1000BASE-T transceiver)
Network transfer rate	10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T (full-duplex) 2000 Mbps



HP MultiSeat ms6200/ms6005 Series Desktop – Technical Specifications

Environmental	<u>Operating Temperature:</u> 32° to 131°F (0° to 55°C) To 70°C for external regulator
	<u>Operating Humidity:</u> 85% at 131°F (55°C)
Management capabilities	WOL, auto MDI crossover, PXE, Multi-port teaming, RSS, Advanced cable diagnostic.
Alerting	ASF 2.0 support, AMT 3.0 support

Integrated Broadcom NetXtreme Gigabit Ethernet BCM 5761

Connector	RJ-45
Controller	Broadcom 5761 PCI-Express LAN Controller
Memory	8 MB NVRAM serial Flash
Data rates supported	10/100/1000 Mbps
Compliance	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3ab, 802.3u, 802.3i, and 802.3x compliant
Bus architecture	PCI-E
Data path width	Single channel, PCI-E
Data transfer mode	Bus-master DMA
Power requirement	1.8W @ 3.3V
Boot ROM support	Yes
Network transfer mode	Full-duplex Half-duplex (not available for the 1000BASE-T transceiver)
Network transfer rate	10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T (full-duplex) 2000 Mbps (actual rate limited by PCI Bus)
Environmental	<u>Operating Temperature:</u> 32° to 131°F (0° to 55°C)
	<u>Operating Humidity:</u> 131° F (55° C) with 5% to 95% non-condensing humidity
Management capabilities	ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, Broadcom mgmt utility, ASF 2.0, DASH 1.0 and DASH 1.1 profiles



HP MultiSeat ms6200/ms6005 Series Desktop – Technical Specifications

Integrated ATI HD 4200 Graphics

Memory	Variable and User selectable in BIOS settings
Controller Clock Speed	500MHz
Maximum Color Depth	32 bpp
Multi-display Support	Yes
Graphics/Video API Support	Microsoft DirectX® 10, OpenGL® 2.0
Output connectors	1 VGA, 1 DisplayPort (Multi-Mode (DP++)) 1.1a compliant
VGA DAC Frequency	400 MHz
Resolutions Supported	NOTE: Other resolutions may be available but are not recommended as they may not have been tested and qualified by HP.

Resolution	Maximum Refresh Rate (Hz)	
	Analog Connection	Digital Connection
800x600	85	60
1024x768	85	60
1280x720	85	60
1280x1024	85	60
1440x900	75	60
1600x1200	85	60
1680x1050	75	60
1920x1080	85	60

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 (pending R&D testing)

System Configuration The configuration used for the Energy Consumption and Declared Noise Emissions data is based on a typically configured product.

Energy Consumption	115 VAC	230 VAC	100 VAC
Normal operation	29.5659 W	28.7916 W	29.1392 W
Sleep (Energy Star low-power mode)	2.4243 W	2.6419 W	2.4196 W
Off	0.7496 W	0.9092 W	0.7371 W

FEMP Standby Power Compliant (<1W in S5 - Power Off)**
 Power Consumption in ENERGY STAR Mode - Suspend to RAM (S3) (Instantly Available PC) <3W*
 *Energy efficient power supply is a requirement for ENERGY STAR qualification in conjunction with a select range of processors and modules .
 **Power consumption in the Off/Apparent Off mode is measured and reported with the network interface controller "Wake on LAN" feature disabled in F10 Setup (default is "enabled").

Heat Dissipation*	115 VAC	230 VAC	100 VAC
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HP MultiSeat ms6200/ms6005 Series Desktop – Technical Specifications

Normal Operation	101 BTU/hr	98 BTU/hr	100 BTU/hr
Sleep	8 BTU/hr	9 BTU/hr	8 BTU/hr
Off	3 BTU/hr	3 BTU/hr	3 BTU/hr

*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)

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.8	27
Fixed Disk (random writes)	3.9	28

Batteries

The battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:

- Mercury greater than 5ppm by weight
- Cadmium greater than 10ppm by weight

Battery size: CR2032 (coin cell)

Battery type: Li Ion

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/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 Silver level, see www.epeat.net
- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
- This product contains 0% post consumer recycled plastic (by wt.)
- This product is 95.1% recyclable when properly disposed of at end of life.

Packaging Materials

- External:
 - Corrugated Carton: 1705 g
- Internal:
 - EPE-Expanded Polyethylene: 198 g
 - Polyethylene low density foam: 39 g
- The EPE-Expanded Polyethylene packaging material is made from 100% recycled content.
- The Polyethylene low density foam packaging material is made from 100% recycled content.
- The Corrugated Carton packaging materials contains at least 75% recycled content.



HP MultiSeat ms6200/ms6005 Series Desktop – Technical Specifications

RoHS Compliance

Hewlett-Packard is committed to compliance with all applicable environmental laws and regulations, including the European Union Restriction of Hazardous Substances (RoHS) Directive. HP's goal is to exceed compliance obligations by meeting the requirements of the RoHS Directive on a worldwide basis. As of July 1, 2006, RoHS substances are virtually eliminated (virtually = to levels below legal limits) for all HP electronic products subject to the RoHS Directive, except where it is widely recognized that there is no technically feasible alternative (as indicated by an exemption under the EU RoHS Directive).

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/supplychain/gen_specifications.html):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants - may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel - finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Packaging

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

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



HP MultiSeat ms6200/ms6005 Series Desktop – Technical Specifications

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.

Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment:
Global Citizenship Report

<http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html>

Eco-label certifications

<http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html>

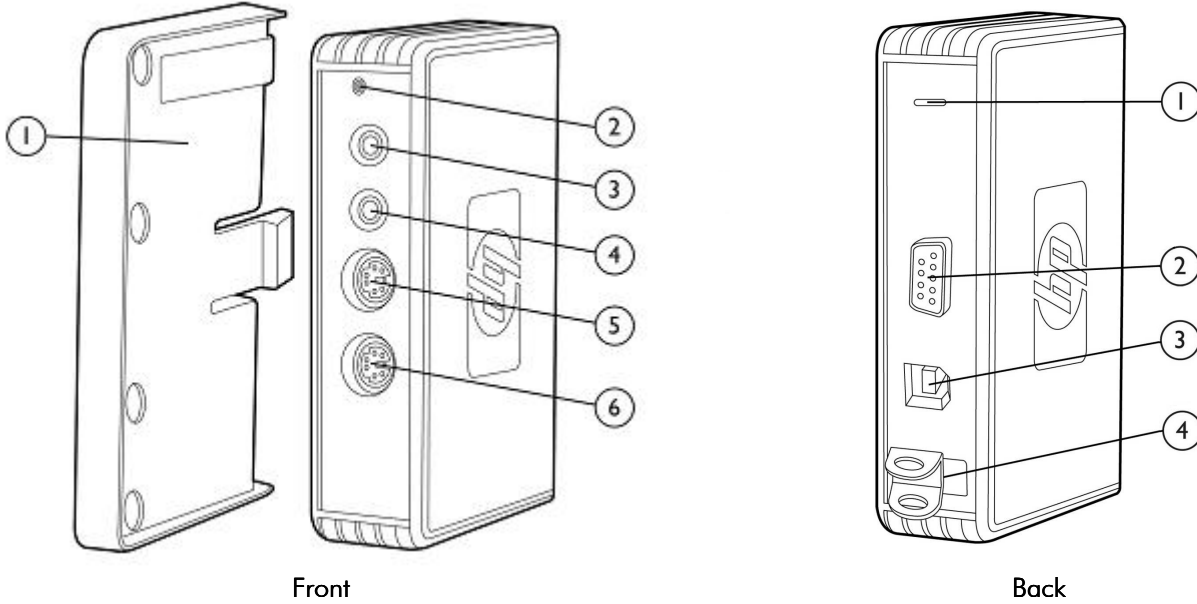
ISO 14001 certificates:

<http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html>



HP t100 and t150 Zero Clients for MultiSeat – Standard Features

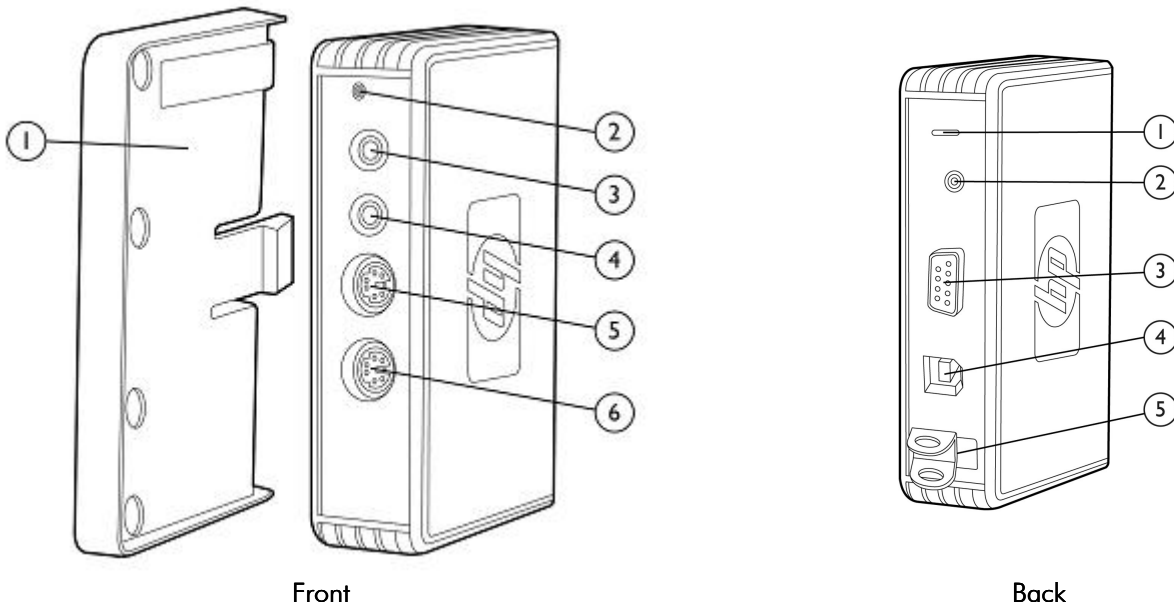
HP t100 Zero Client for MultiSeat



1. Mounting bracket
2. LED indicator
3. Audio connector (headphone out)
4. Audio connector (mic in)
5. PS/2 keyboard connector
6. PS/2 mouse connector

1. Cable lock slot
2. VGA display connector
3. USB Type A connector
4. Locking security loop clip (can be manually installed)

HP t150 Zero Client for MultiSeat



1. Mounting bracket

1. Cable lock slot

HP t100 and t150 Zero Clients for MultiSeat – Standard Features

- | | |
|------------------------------------|--|
| 2. Power LED | 2. DC power connector |
| 3. Audio connector (headphone out) | 3. VGA display connector |
| 4. Audio connector (mic in) | 4. USB PC power connector to host PC (USB Type A/B cable included) |
| 5. PS/2 connectors | 5. Security clip slot |
| 6. USB 2.0 connectors | |

Software Licensing	Microsoft Client Access License (CAL)
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Power	t100	t150
Power supply	No external power supply	Optional external power supply*
Power output (max)	2.5W max	2.5W max with no external power supply 7.5W max with external power supply
LED	One blue LED to indicate power is on	One blue LED to indicate power is on

*External power supply required when using high-powered USB devices

Input/output connectors	t100	t150
USB input	1 USB in (Type B) to connect to host PC	1 USB in (Type B) to connect to host PC 2 USB 2.0*
Keyboard	PS/2	PS/2
Mouse	PS/2	PS/2
Video	VGA-type video output (DB-15)	VGA-type video output (DB-15)
Audio output	1/8-inch mini-jack, stereo	1/8-inch mini-jack, stereo
Audio input	1/8-inch microphone mini-jack, stereo	1/8-inch mini-jack, stereo 1/8-inch microphone mini-jack, stereo

* Data is private (visible only to the t150 user) when using Windows MultiPoint Server 2011. Can connect up to 3 HP t150 devices together (must have a power supply for the first two t150's in the chain).

For a list of supported USB devices, see <http://technet.microsoft.com/en-us/library/wms-2010-usb-devices.aspx>

Maximum recommended video resolution	1280x1024 (standard screen) 1440x900 (widescreen) 32 bit
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HP t100 and t150 Zero Clients for MultiSeat – Standard Features

Maximum video resolution VGA is physically limited up to 1680x1050@60Hz (widescreen), 32bits or 1600x1200 (standard screen), 32bits

Hardware Security Security lock slot (Cable lock sold separately)

Mounting 4 VESA holes; 2 spaced at 100 mm centers and 2 spaced at 75 mm centers

Dimensions Without mounting bracket: 1.11 x 4.4 x 2.56 in. (28.2 x 111.7 x 65 mm)
H x W x D With mounting bracket: 1.38 x 4.4 x 2.56 in. (34.8 x 111.7 x 65 mm)

Weight (approximate) Without mounting bracket: 4.78 oz. (135.7 g)
With mounting bracket: 5.71 oz. (162.0 g)

Environmental

Operating temperature range 50° to 104° F/10° to 40° C
Max rate of change is 18°F/10°C per hour

Non-operating temperature range Operating: 10-90% (max wet bulb temperature 84.2°F/28°C)
Non operating: 5-95% (max wet bulb temperature 101.6°F/38.7°C)
NOTE: Specifications are at sea level with altitude de-rating of 1.8°F/1000ft (1°C/300m) to a maximum of 10,000 ft (3Km), with no direct, sustained sunlight. Upper range may be limited by the type and number of options installed.

Humidity (non-condensing) Operating: 10,000 ft/3,048 m
Max rate of change is 1500 ft/457m per minute
Non-operating: 30,000 ft/9,144 m
Max rate of change is 1500 ft/457m per minute

Maximum unpressurized altitude Operating: 10,000 ft/3,048 m
Max rate of change is 1500 ft/457m per minute
Non-operating: 30,000 ft/9,144 m
Max rate of change is 1500 ft/457m per minute

Regulatory Compliances

Product Safety Certified to IEC EN 60950 and all applicable equivalent safety standards

Ergonomics The product has been tested and found to comply with all applicable GS ergonomic requirements

EMC FCC Class B; CISPR 22 (EN 55022) Class B; CISPR 24 (EN 55024)

Warranty Three-year limited hardware warranty.
NOTE: Certain restrictions apply. Consult the HP Customer Support Center for details.



HP MultiSeat Computing Solution – Options

OPTIONS (sold separately)		t100	t150	ms6005 ms6200	Part Number
Hard Drives	HP 160-GB SATA 3.0-Gb/s 7200 rpm			X	PY277AA
	HP 250-GB SATA 3.0-Gb/s 7200 rpm			X	PY278AA
	HP 320-GB SATA 3.0-Gb/s 7200 rpm			X	FH963AA
	HP 500-GB SATA 3.0-Gb/s 7200 rpm			X	KW347AA
	HP 1 TB SATA 3.0 Gb/s 7200 rpm			X	VU353AA
Input/Output Devices	HP USB Standard Keyboard			X	DT528A
	HP PS/2 Standard Keyboard	X	X	X ¹	DT527A
	HP PS/2 2-Button Optical Scroll Mouse	X	X	X ¹	EY703AA
	HP USB 2-Button Optical Scroll Mouse			X	DC172B
	HP USB and PS/2 Washable Keyboard and Mouse Kit	X	X	X	BU207AA
	HP PS/2 Mouse/Keyboard/Mouse Pad Kit	X	X		KF886AT
Memory PC3-10600 DIMMs Non-ECC	HP 4-GB PC3-10600 (DDR3 1333MHz) DIMM			X	VH638AA
	HP 2-GB PC3-10600 (DDR3 1333MHz) DIMM			X	AT024AA
	HP 1-GB PC3-10600 (DDR3 133 MHz) DIMM			X	AT023AA
Monitors	HP Compaq LE1851wt 18-inch Widescreen LCD Monitor <i>(The HP Compaq LE1851wt 18-inch Widescreen LCD Monitor is the only HP monitor that can supply power to the HP MultiSeat t150 Thin Client)</i>	X	X	X	LG142AA
Brackets/Stands	HP Small Form Factor Tower Stand			X	GJ118AA
Security	Kensington lock	X	X	X	PC766A
	HP Business PC Security Lock			X	PV606AA
	HP Chassis Security Kit			X	AR639AA
Audio/Visual	HP Business Headset	X	X	X	QK550AA
	HP LCD Speaker Bar <i>(Speaker Bar requires optional HP MultiSeat t150 Power Adapter or HP Compaq LE1851wt 18-inch Widescreen Monitor)</i>		X	X	NQ576AT



HP MultiSeat Computing Solution – Options

Power Supply	HP MultiSeat t150 Power Adapter NA	X	QM345AA
	HP MultiSeat t150 Power Adapter EMEA	X	QM346AA
	HP MultiSeat t150 Power Adapter APJ	X	QM347AA

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