

### Overview

## Models

HP 3610-48 Switch	JD335A
HP 3610-24 Switch	JD336A
HP 3610-24-TP Switch	JD337A
HP 3610-24-SFP Switch	JD338A

## Key features

- Full enterprise-class management features
- Lower network administration costs
- Unified network security strategy
- Easy migration from IPv4 to IPv6

## Product overview

These are fully managed 24- or 48-port 10/100 Layer 3 wire-speed Fast Ethernet switches with 4 Gigabit Ethernet uplinks and full management features. The series has Layer 2/Layer 3 switching with advanced Layer 3 routing using static routes, RIP, OSPF BGP, and multicast (PIM) routing. Fully IPv6 capable, with advanced IPv6/IPv4 routing, this series delivers a smooth transition from IPv4 to IPv6.

## Features and benefits

### Quality of Service (QoS)

- **Broadcast control:** allows limitation of broadcast traffic rate to cut down on unwanted broadcast traffic on the network
- **Powerful QoS feature:** supports the following congestion actions: strict priority queuing (SP), weighted round robin (WRR), SP+WRR, and WRED
- **Traffic policing:** supports Committed Access Rate (CAR) and line rate
- **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

### 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 RADIUS 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



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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
- **Device Link Detection Protocol (DLDP):** monitors cable between two switches and shuts down the ports on both ends if the cable is broken, preventing network problems such as loops
- **Troubleshooting:** ingress and egress port monitoring enable network problem solving; virtual cable tests provide visibility into cable problems
- **IPv6 management:** future-proofs networking, as 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, and ARPv6

### Connectivity

- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all 10/100 and 10/100/1000 ports
- **Flow control:** using standard IEEE 802.3x, it provides back pressure to reduce congestion in heavy traffic situations
- **Ethernet OAM:** provides a Layer 2 link performance and fault detection monitoring tool, which reduces failover and network convergence times
- **Jumbo packet support:** supports up to 9216-byte frame size to improve performance of large data transfers
- **Dual-personality functionality:** four 10/100/1000 ports or SFP slots for optional fiber connectivity such as Gigabit-SX, -LX, or -LH
- **High-density port connectivity:** provides up to 48 fixed 10/100Base-T or 24 SFP 100Base-X ports in a Layer 2/Layer 3/Layer 4 switch

### Performance

- **Nonblocking architecture:** up to 17.6 Gbps nonblocking switching fabric provides wire-speed switching with up to 13.1 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
- **Virtual Router Redundancy Protocol (VRRP):** allows a group of routers to dynamically back each other up to create highly available routed environments

### Layer 2 switching

- **16K MAC address table:** provides access to many Layer 2 devices
- **VLAN support and tagging:** support IEEE 802.1Q, with 4094 simultaneous VLAN IDs
- **GARP VLAN Registration Protocol (GVRP):** 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
- **Gigabit Ethernet port aggregation:** allows grouping of ports to increase overall data throughput to a remote device
- **IGMP and MLD snooping:** effectively control and manage the flooding of multicast packets in a Layer 2 network

### Layer 3 services



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- **Address Resolution Protocol (ARP):** determines the MAC address of another IP host in the same subnet
- **Dynamic Host Configuration Protocol (DHCP):** simplifies the management of large IP networks and supports client and server; DHCP Relay enables DHCP operation across subnets
- **Loopback interface address:** defines an address in Routing Information Protocol (RIP) and OSPF that can always be reachable, improving diagnostic capability
- **User Datagram Protocol (UDP) helper function:** allows 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

- **IPv4 routing protocols:** supports static routes, RIP, OSPF, IS-IS, and BGP
- **IPv6 routing protocols:** provides routing of IPv6 at wire speed; supports static routes, RIPng, OSPFv3, IS-ISv6, and BGP4+ for IPv6
- **Equal-Cost Multipath (ECMP):** enables multiple equal-cost links in a routing environment to increase link redundancy and scale bandwidth
- **Policy-based routing:** makes routing decisions based on policies set by the network administrator
- **IPv6 tunnels over IPv4:** allows IPv6 infrastructure to be connected over legacy IPv4 networks
- **Bidirectional Forwarding Detection (BFD):** enables link connectivity monitoring and reduces network convergence time for RIP, OSPF, BGP, static routing, and VRRP

### 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 File Transfer Protocol (FTP):** allows secure file transfer to and from the switch; protects against unwanted file downloads or unauthorized copying of 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 root bridge from malicious attack or configuration mistakes
- **DHCP protection:** blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks
- **Dynamic ARP protection:** blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data
- **IP Source Guard:** filters packets on a per-port basis, which prevents illegal packets from being forwarded
- **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 for easy mapping by network management applications



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- **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
- **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
- **Internet Group Management Protocol (IGMP)**: is used by IP hosts to establish and maintain multicast groups; supports v1, v2, and v3; utilizes Any-Source Multicast (ASM) or Source-Specific Multicast (SSM) to manage IPv4 multicast networks
- **Protocol Independent Multicast (PIM)**: is used for IPv4 and IPv6 multicast applications; supports PIM dense mode (DM), sparse mode (SM), and source-specific mode (SSM)
- **Multicast Source Discovery Protocol (MSDP)**: is used for inter-domain multicast applications, allowing multiple PIM-SM domains to interoperate
- **Multicast VLAN**: allows multiple VLANs to receive the same IPv4 or IPv6 multicast traffic, reducing network bandwidth demand by eliminating multiple streams to each VLAN

### Additional information

- **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](http://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](http://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](http://www.hp.com/networking/warranty).



### Technical Specifications

#### HP 3610-48 Switch (JD335A)

<b>Ports</b>	48 RJ-45 autosensing 10/100 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full 4 SFP 1000 Mbps ports 1 RJ-45 serial console port
<b>Physical characteristics</b>	<b>Dimensions</b> 10.2(d) x 17.3(w) x 1.7(h) in. (25.91 x 43.94 x 4.32 cm) (1U height) <b>Weight</b> 8.38 lb. (3.8 kg)
<b>Memory and processor</b>	128 MB SDRAM, 32 MB flash; packet buffer size: 32 MB
<b>Mounting</b>	Mounts in an EIA standard 19-in. telco rack or equipment cabinet (hardware included)
<b>Performance</b>	<b>Latency</b> < 10 $\mu$ s <b>Throughput</b> up to 13.1 million pps <b>Routing/Switching capacity</b> 17.6 Gbps <b>Routing table size</b> 11000 entries
<b>Environment</b>	<b>Operating temperature</b> 32°F to 113°F (0°C to 45°C) <b>Operating relative humidity</b> 10% to 90%, noncondensing <b>Nonoperating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C) <b>Nonoperating/Storage relative humidity</b> 5% to 95%, noncondensing
<b>Electrical characteristics</b>	<b>Maximum heat dissipation</b> 153 BTU/hr (161.42 kJ/hr) <b>Voltage</b> 100-240 VAC <b>DC Voltage</b> -48 to -60 VDC <b>Maximum power rating</b> 45 W <b>Frequency</b> 50/60 Hz <b>Notes</b> 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.
<b>Safety</b>	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; EN 60950-1/A11; FDA 21 CFR Subchapter J; ROHS Compliance
<b>Emissions</b>	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
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser
<b>Services</b>	3-year, 4-hour onsite, 13x5 coverage for hardware (UV822E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UV825E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UV828E) 3-year, 24x7 SW phone support, software updates (UV831E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UV823E)



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- 4-year, 4-hour onsite, 24x7 coverage for hardware (UV826E)
- 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV829E)
- 4-year, 24x7 SW phone support, software updates (UV832E)
- 5-year, 4-hour onsite, 13x5 coverage for hardware (UV824E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware (UV827E)
- 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV830E)
- 5-year, 24x7 SW phone support, software updates (UV833E)
- 3 Yr 6 hr Call-to-Repair Onsite (UW431E)
- 4 Yr 6 hr Call-to-Repair Onsite (UW432E)
- 5 Yr 6 hr Call-to-Repair Onsite (UW433E)

Refer to the HP website at: [www.hp.com/networking/services](http://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.

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#### HP 3610-24 Switch (JD336A)

<b>Ports</b>	24 RJ-45 autosensing 10/100 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full 4 SFP 1000 Mbps ports 1 RJ-45 serial console port
<b>Physical characteristics</b>	<b>Dimensions</b> 10.2(d) x 17.3(w) x 1.7(h) in. (25.91 x 43.94 x 4.32 cm) (1U height) <b>Weight</b> 7.94 lb. (3.6 kg)
<b>Memory and processor</b>	128 MB SDRAM, 32 MB flash; packet buffer size: 32 MB
<b>Mounting</b>	Mounts in an EIA standard 19-in. telco rack or equipment cabinet (hardware included)
<b>Performance</b>	<b>Latency</b> < 10 $\mu$ s <b>Throughput</b> up to 9.5 million pps <b>Routing/Switching capacity</b> 12.8 Gbps <b>Routing table size</b> 11000 entries
<b>Environment</b>	<b>Operating temperature</b> 32°F to 113°F (0°C to 45°C) <b>Operating relative humidity</b> 10% to 90%, noncondensing <b>Nonoperating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C) <b>Nonoperating/Storage relative humidity</b> 5% to 95%, noncondensing
<b>Electrical characteristics</b>	<b>Maximum heat dissipation</b> 119 BTU/hr (125.54 kJ/hr) <b>Voltage</b> 100-240 VAC <b>DC Voltage</b> -48 to -60 VDC <b>Maximum power rating</b> 35 W <b>Frequency</b> 50/60 Hz <b>Notes</b> 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.



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<b>Safety</b>	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; EN 60950-1/A11; FDA 21 CFR Subchapter J; ROHS Compliance
<b>Emissions</b>	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
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser
<b>Services</b>	3-year, 4-hour onsite, 13x5 coverage for hardware (UV822E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UV825E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UV828E) 3-year, 24x7 SW phone support, software updates (UV831E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UV823E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UV826E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV829E) 4-year, 24x7 SW phone support, software updates (UV832E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UV824E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UV827E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV830E) 5-year, 24x7 SW phone support, software updates (UV833E) 3 Yr 6 hr Call-to-Repair Onsite (UW431E) 4 Yr 6 hr Call-to-Repair Onsite (UW432E) 5 Yr 6 hr Call-to-Repair Onsite (UW433E)

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### HP 3610-24-TP Switch (JD337A)

<b>Ports</b>	24 RJ-45 autosensing 10/100 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Duplex: half or full 2 SFP 1000 Mbps ports 2 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 1 RJ-45 serial console port
<b>Physical characteristics</b>	<b>Dimensions</b> 10.2(d) x 17.3(w) x 1.7(h) in. (25.91 x 43.94 x 4.32 cm) (1U height) <b>Weight</b> 8.16 lb. (3.7 kg)
<b>Memory and processor</b>	128 MB SDRAM, 32 MB flash; packet buffer size: 32 MB
<b>Mounting</b>	Mounts in an EIA standard 19-in. telco rack or equipment cabinet (hardware included)
<b>Performance</b>	<b>Latency</b> < 10 $\mu$ s <b>Throughput</b> up to 9.5 million pps <b>Routing/Switching capacity</b> 12.8 Gbps <b>Routing table size</b> 11000 entries
<b>Environment</b>	<b>Operating temperature</b> 32°F to 113°F (0°C to 45°C)



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	<b>Operating relative humidity</b>	10% to 90%, noncondensing
	<b>Nonoperating/Storage temperature</b>	-40°F to 158°F (-40°C to 70°C)
	<b>Nonoperating/Storage relative humidity</b>	5% to 95%, noncondensing
<b>Electrical characteristics</b>	<b>Maximum heat dissipation</b>	137 BTU/hr (144.54 kJ/hr)
	<b>Voltage</b>	100-240 VAC
	<b>DC Voltage</b>	-48 to -60 VDC
	<b>Maximum power rating</b>	40 W
	<b>Frequency</b>	50/60 Hz
	<b>Notes</b>	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.
<b>Safety</b>		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; EN 60950-1/A11; FDA 21 CFR Subchapter J; ROHS Compliance
<b>Emissions</b>		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
<b>Management</b>		IMC - Intelligent Management Center; command-line interface; Web browser
<b>Services</b>		3-year, 4-hour onsite, 13x5 coverage for hardware (UV822E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UV825E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UV828E) 3-year, 24x7 SW phone support, software updates (UV831E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UV823E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UV826E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV829E) 4-year, 24x7 SW phone support, software updates (UV832E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UV824E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UV827E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV830E) 5-year, 24x7 SW phone support, software updates (UV833E) 3 Yr 6 hr Call-to-Repair Onsite (UW431E) 4 Yr 6 hr Call-to-Repair Onsite (UW432E) 5 Yr 6 hr Call-to-Repair Onsite (UW433E)

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HP 3610-24-SFP Switch (JD338A)





### Technical Specifications

<b>Ports</b>	24 SFP 100 Mbps ports 2 SFP 1000 Mbps ports 2 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 1 RJ-45 serial console port
<b>Physical characteristics</b>	<b>Dimensions</b> 10.2(d) x 17.3(w) x 1.7(h) in. (25.91 x 43.94 x 4.32 cm) (1U height) <b>Weight</b> 8.38 lb. (3.8 kg)
<b>Memory and processor</b>	128 MB SDRAM, 32 MB flash; packet buffer size: 32 MB
<b>Mounting</b>	Mounts in an EIA standard 19-in. telco rack or equipment cabinet (hardware included)
<b>Performance</b>	<b>Latency</b> < 10 $\mu$ s <b>Throughput</b> up to 9.5 million pps <b>Routing/Switching capacity</b> 12.8 Gbps <b>Routing table size</b> 11000 entries
<b>Environment</b>	<b>Operating temperature</b> 32°F to 113°F (0°C to 45°C) <b>Operating relative humidity</b> 10% to 90%, noncondensing <b>Nonoperating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C) <b>Nonoperating/Storage relative humidity</b> 5% to 95%, noncondensing
<b>Electrical characteristics</b>	<b>Maximum heat dissipation</b> 205 BTU/hr (216.27 kJ/hr) <b>Voltage</b> 100-240 VAC <b>DC Voltage</b> -48 to -60 VDC <b>Maximum power rating</b> 60 W <b>Frequency</b> 50/60 Hz <b>Notes</b> 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.
<b>Safety</b>	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; EN 60950-1/A11; FDA 21 CFR Subchapter J; ROHS Compliance
<b>Emissions</b>	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
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; Web browser
<b>Services</b>	3-year, 4-hour onsite, 13x5 coverage for hardware (UV822E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UV825E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UV828E) 3-year, 24x7 SW phone support, software updates (UV831E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UV823E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UV826E)



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4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV829E)  
4-year, 24x7 SW phone support, software updates (UV832E)  
5-year, 4-hour onsite, 13x5 coverage for hardware (UV824E)  
5-year, 4-hour onsite, 24x7 coverage for hardware (UV827E)  
5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UV830E)  
5-year, 24x7 SW phone support, software updates (UV833E)  
3 Yr 6 hr Call-to-Repair Onsite (UW431E)  
4 Yr 6 hr Call-to-Repair Onsite (UW432E)  
5 Yr 6 hr Call-to-Repair Onsite (UW433E)

Refer to the HP website at: [www.hp.com/networking/services](http://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)

#### BGP

RFC 1657 Definitions of Managed Objects for BGPv4  
RFC 1771 BGPv4  
RFC 2858 BGP-4 Multi-Protocol Extensions

#### Device management

RFC 1157 SNMPv1/v2c  
RFC 1901 (Community based SNMPv2)  
RFC 1902 (SNMPv2)  
RFC 2573 (SNMPv3 Applications)  
RFC 2576 (Coexistence between SNMP V1, V2, V3)  
RFC 2819 (RMON groups Alarm, Event, History and Statistics only)  
HTML and telnet management  
Multiple Configuration Files  
SNMP v3 and RMON RFC support  
SSHv1/SSHv2 Secure Shell  
TACACS/TACACS+

#### General protocols

IEEE 802.1ad Q-in-Q  
IEEE 802.1ag Service Layer OAM  
IEEE 802.1D MAC Bridges  
IEEE 802.1p Priority  
IEEE 802.1Q (GVRP)  
IEEE 802.1Q VLANs  
IEEE 802.1s (MSTP)  
IEEE 802.1v VLAN classification by Protocol and Port  
IEEE 802.1w Rapid Reconfiguration of Spanning Tree  
IEEE 802.3ab 1000BASE-T  
IEEE 802.3ad Link Aggregation (LAG)  
IEEE 802.3ah Ethernet in First Mile over Point to Point Fiber - EFMF  
IEEE 802.3i 10BASE-T

RFC 2461 IPv6 Neighbor Discovery

RFC 2462 IPv6 Stateless Address Auto-configuration

RFC 2463 ICMPv6

RFC 2464 Transmission of IPv6 over Ethernet Networks

RFC 2475 IPv6 DiffServ Architecture

RFC 2710 Multicast Listener Discovery (MLD) for IPv6

RFC 2740 OSPFv3 for IPv6

RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers

RFC 2925 Remote Operations MIB (Ping only)

RFC 3056 Connection of IPv6 Domains via IPv4 Clouds

RFC 3162 RADIUS and IPv6

RFC 3306 Unicast-Prefix-based IPv6 Multicast Addresses

RFC 3307 IPv6 Multicast Address Allocation

RFC 3484 Default Address Selection for IPv6

RFC 3493 Basic Socket Interface Extensions for IPv6

RFC 3513 IPv6 Addressing Architecture

RFC 3587 IPv6 Global Unicast Address Format

RFC 3810 MLDv2 (host joins only)

RFC 4443 ICMPv6

RFC 4541 IGMP & MLD Snooping Switch

RFC 4861 IPv6 Neighbor Discovery

#### MIBs

IEEE 8021-PAE-MIB

IEEE 8023-LAG-MIB

RFC 1213 MIB II

RFC 1493 Bridge MIB

RFC 1724 RIPv2 MIB

RFC 1850 OSPFv2 MIB

RFC 2011 SNMPv2 MIB for IP

RFC 2013 SNMPv2 MIB for UDP



### Technical Specifications

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 925 Multi-LAN Address Resolution  
RFC 951 BOOTP  
RFC 959 File Transfer Protocol (FTP)  
RFC 1058 RIPv1  
RFC 1122 Host Requirements  
RFC 1519 CIDR  
RFC 1542 BOOTP Extensions  
RFC 1723 RIP v2  
RFC 1812 IPv4 Routing  
RFC 1981 Path MTU Discovery for IP version 6  
RFC 2131 DHCP  
RFC 2236 IGMP Snooping  
RFC 2338 VRRP  
RFC 2453 RIPv2  
RFC 2616 Hypertext Transfer Protocol -- HTTP/1.1  
RFC 2644 Directed Broadcast Control  
RFC 3046 DHCP Relay Agent Information Option  
RFC 3416 Protocol Operations for SNMP  
RFC 3623 Graceful OSPF Restart  
RFC 4213 Basic IPv6 Transition Mechanisms  
RFC 4675 RADIUS VLAN & Priority

#### IP multicast

RFC 1112 IGMP  
RFC 2362 PIM Sparse Mode  
RFC 3376 IGMPv3  
RFC 3569 An Overview of Source-Specific Multicast (SSM)  
RFC 3618 Multicast Source Discovery Protocol (MSDP)  
RFC 3973 PIM Dense Mode

#### IPv6

RFC 1887 IPv6 Unicast Address Allocation Architecture  
RFC 1981 IPv6 Path MTU Discovery  
RFC 2080 RIPng for IPv6  
RFC 2373 IPv6 Addressing Architecture  
RFC 2375 IPv6 Multicast Address Assignments  
RFC 2460 IPv6 Specification

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 2618 RADIUS Authentication Client MIB  
RFC 2620 RADIUS Accounting Client MIB  
RFC 2665 Ethernet-Like-MIB  
RFC 2674 802.1p and IEEE 802.1Q Bridge MIB  
RFC 2688 MAU-MIB  
RFC 2787 VRRP MIB  
RFC 2819 RMON MIB  
RFC 2925 Ping MIB  
RFC 2932IP (Multicast Routing 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  
RFC 3826 AES for SNMP's USM MIB  
RFC 4133 Entity MIB (Version 3)  
LLDP-EXT-DOT1-MIB  
LLDP-EXT-DOT3-MIB  
LLDP-MIB

#### Network management

IEEE 802.1AB Link Layer Discovery Protocol (LLDP)  
RFC 3176 sFlow  
ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)  
SNMPv1/v2c/v3

#### OSPF

RFC 1587 OSPF NSSA  
RFC 1765 OSPF Database Overflow  
RFC 2328 OSPFv2  
RFC 2370 OSPF Opaque LSA Option

#### QoS/CoS

IEEE 802.1P (CoS)  
RFC 2474 DiffServ Precedence, including 8 queues/port  
RFC 2597 DiffServ Assured Forwarding (AF)- partial support

#### Security

IEEE 802.1X Port Based Network Access Control  
RFC 2865 RADIUS Authentication  
RFC 2866 RADIUS Accounting  
RFC 2869 RADIUS Extensions  
RFC 3162 RADIUS and IPv6



## Accessories

### HP 3610 Switch Series accessories

#### 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 X125 1G SFP RJ45 T Transceiver	JD089B
HP X110 100M SFP LC LH40 Transceiver	JD090A
HP X110 100M SFP LC LH80 Transceiver	JD091A
HP X110 100M SFP LC FX Transceiver	JD102B
HP X120 1G SFP LC SX Transceiver	JD118B
HP X120 1G SFP LC LX Transceiver	JD119B
HP X110 100M SFP LC LX Transceiver	JD120B

#### Cables

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

#### Power Supply

HP RPS800 Redundant Power System	JD183A
HP RPS1600 Redundant Power System	JG136A
HP RPS1600 1600W AC Power Supply	JG137A

#### Power cords

HP X290 H2.7 JD5-A 1m RPS800 Cable	JD186A
HP X290 JD5-A JD5-A 2m RPS1600 Cable	JD188A
HP X290 JD5 JD5-A 2m RPS1600 Cable	JD189A



### Accessory Product Details

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

<b>HP X124 1G SFP LC LH40 Ports 1310nm Transceiver (JD061A)</b>		1 LC 1000Base-LH port (no IEEE standard exists for 1550 nm optics)	
A small form-factor pluggable SFP Gigabit LH40 transceiver that provides a full duplex Gigabit solution up to 40km on a single-mode fiber.	<b>Connectivity</b>	Connector type	LC
	<b>Physical characteristics</b>	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)
		Full configuration weight	0.04 lb. (0.02 kg)
	<b>Electrical characteristics</b>	Power consumption typical	0.8 W
<b>Cabling</b>	Power consumption maximum	1.0 W	
	Cable type:	Single-mode fiber optic, complying with ITU-T G.652;	
<b>Services</b>	Maximum distance:		
		<ul style="list-style-type: none"><li>40km distance</li></ul>	
	Fiber type	Single Mode	
		Refer to the HP website at <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> 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.	

<b>HP X120 1G SFP LC LH40 Ports 1550nm Transceiver (JD062A)</b>		1 LC 1000BASE-LH port (no IEEE standard exists for 1550 nm optics)	
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.	<b>Connectivity</b>	Connector type	LC
	<b>Physical characteristics</b>	Wavelength	1550 nm
		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)
	<b>Electrical characteristics</b>	Power consumption typical	0.8 W
<b>Cabling</b>	Power consumption maximum	1.0 W	
	Cable type:	Single-mode fiber optic, complying with ITU-T G.652;	
<b>Services</b>	Maximum distance:		
		<ul style="list-style-type: none"><li>40km distance</li></ul>	
	Fiber type	Single Mode	
		Refer to the HP website at <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> 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

<b>HP X125 1G SFP LC LH70 Transceiver (JD063B)</b>	<b>Ports</b>	1 LC 1000BASE-LH port (no IEEE standard exists for 1550 nm optics)
	<b>Connectivity</b>	<b>Connector type</b> LC <b>Wavelength</b> 1550 nm
<p>A small form-factor pluggable (SFP) Gigabit LH70 transceiver that provides a full-duplex Gigabit solution up to 70km on a single-mode fiber.</p>	<b>Physical characteristics</b>	<b>Dimensions</b> 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm) <b>Full configuration weight</b> 0.04 lb. (0.02 kg)
	<b>Electrical characteristics</b>	<b>Power consumption typical</b> 0.8 W <b>Power consumption maximum</b> 1.0 W
	<b>Cabling</b>	Cable type: Single-mode fiber optic, complying with ITU-T G.652;  Maximum distance: • 70km  Fiber type Single Mode
	<b>Services</b>	Refer to the HP website at <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> 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.

<b>HP X125 1G SFP RJ45 T Transceiver (JD089B)</b>	<b>Ports</b>	1 RJ-45 1000BASE-T port (IEEE 802.3ab Type 1000BASE-T)
	<b>Connectivity</b>	<b>Connector type</b> RJ-45
<p>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.</p>	<b>Physical characteristics</b>	<b>Dimensions</b> 2.71(d) x 0.54(w) x 0.55(h) in. (6.88 x 1.37 x 1.4 cm) <b>Full configuration weight</b> 0.07 lb. (0.03 kg)
	<b>Electrical characteristics</b>	<b>Power consumption typical</b> 0.8 W <b>Power consumption maximum</b> 1.0 W
	<b>Cabling</b>	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
	<b>Services</b>	Refer to the HP website at <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> 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

<p><b>HP X120 1G SFP LC SX Transceiver (JD118B)</b></p> <p>A small form-factor pluggable (SFP) Gigabit SX transceiver that provides a full-duplex Gigabit solution up to 550m on a Multimode fiber.</p>	<p><b>Ports</b></p> <p>1 LC 1000BASE-SX port</p> <p><b>Connectivity</b></p> <p><b>Connector type</b> LC</p> <p><b>Wavelength</b> 850 nm</p> <p><b>Physical characteristics</b></p> <p><b>Dimensions</b> 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)</p> <p><b>Full configuration weight</b> 0.04 lb. (0.02 kg)</p> <p><b>Electrical characteristics</b></p> <p><b>Power consumption typical</b> 0.8 W</p> <p><b>Power consumption maximum</b> 1.0 W</p> <p><b>Cabling</b></p> <p>Maximum distance:</p> <ul style="list-style-type: none"> <li>• FDDI Grade distance = 220m</li> <li>• OM1 = 275m</li> <li>• OM2 = 500m</li> <li>• OM3 = Not Specified by standard</li> </ul> <p><b>Cable length</b> up to 550m</p> <p><b>Fiber type</b> Multi Mode</p> <p><b>Services</b></p> <p>Refer to the HP website at <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> 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.</p>
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<p><b>HP X120 1G SFP LC LX Transceiver (JD119B)</b></p> <p>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</p>	<p><b>Ports</b></p> <p>1 SFP 1000BASE-LX port (IEEE 802.3z Type 1000BASE-LX)</p> <p><b>Connectivity</b></p> <p><b>Connector type</b> LC</p> <p><b>Wavelength</b> 1300 nm</p> <p><b>Physical characteristics</b></p> <p><b>Dimensions</b> 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)</p> <p><b>Full configuration weight</b> 0.04 lb. (0.02 kg)</p> <p><b>Electrical characteristics</b></p> <p><b>Power consumption typical</b> 0.8 W</p> <p><b>Power consumption maximum</b> 1.0 W</p> <p><b>Cabling</b></p> <p><b>Cable type:</b> Either single mode or multimode;</p> <p>Maximum distance:</p> <ul style="list-style-type: none"> <li>• 550m for Multimode</li> <li>• 10km for Singlemode</li> </ul> <p><b>Fiber type</b> Both</p> <p><b>Services</b></p> <p>Refer to the HP website at <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> 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.</p>
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### Accessory Product Details

HP 0.5 m Multimode  
OM3 LC/LC Optical  
Cable (AJ833A)

Cabling

**Cable type:**

50/125  $\mu\text{m}$  (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  $\mu\text{m}$  fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

- Dimensions: Core diameter:  $50 \pm 3.0\mu\text{m}$  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: 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 50/125 $\mu\text{m}$  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.
- 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](http://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 1 m Multimode OM3 Cabling  
LC/LC Optical Cable  
(AJ834A)

**Cable type:**

50/125  $\mu\text{m}$  (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  $\mu\text{m}$  fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

- Dimensions: Core diameter:  $50 \pm 3.0\mu\text{m}$  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 $\mu\text{m}$  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](http://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  $\mu\text{m}$  (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  $\mu\text{m}$  fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

- Dimensions: Core diameter:  $50 \pm 3.0\mu\text{m}$  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 $\mu\text{m}$  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](http://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  $\mu\text{m}$  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: This specification defines the detail requirements for a tight buffered duplex fiber optic multimode OM3 50/125  $\mu\text{m}$  fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

- Dimensions: Core diameter:  $50 \pm 3.0\mu\text{m}$  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 $\mu\text{m}$  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](http://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  $\mu\text{m}$  (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  $\mu\text{m}$  fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

- Dimensions: Core diameter:  $50 \pm 3.0\mu\text{m}$  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 $\mu\text{m}$  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](http://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  $\mu\text{m}$  (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  $\mu\text{m}$  fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

- Dimensions: Core diameter:  $50 \pm 3.0\mu\text{m}$  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 $\mu\text{m}$  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](http://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  $\mu\text{m}$  (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  $\mu\text{m}$  fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

- Dimensions: Core diameter:  $50 \pm 3.0\mu\text{m}$  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 $\mu\text{m}$  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](http://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](http://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](http://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](http://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](http://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](http://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](http://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](http://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

<b>Notes</b>	<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>
<b>Safety</b>	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
<b>Services</b>	Refer to the HP website at: <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> 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	<b>Dimensions</b>	8.19(d) x 4.96(w) x 1.63(h) in. (20.8 x 12.6 x 4.15 cm)
		<b>Weight</b>	3.02 lb. (1.37 kg)
	Environment	<b>Operating temperature</b>	14°F to 122°F (-10°C to 50°C)
		<b>Operating relative humidity</b>	5% to 95%
		<b>Nonoperating/Storage temperature</b>	-40°F to 158°F (-40°C to 70°C)
		<b>Nonoperating/Storage relative humidity</b>	5% to 95%
	Electrical characteristics	<b>Voltage</b>	100-120/200-240 VAC
		<b>Current</b>	15/30 A
		<b>Maximum power rating</b>	1600 W
		<b>Frequency</b>	50/60 Hz
	<b>Notes</b>	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.	
<b>Services</b>	Refer to the HP website at: <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> 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](http://www.hp.com/networking)

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