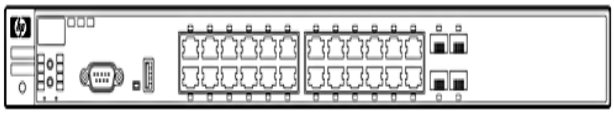
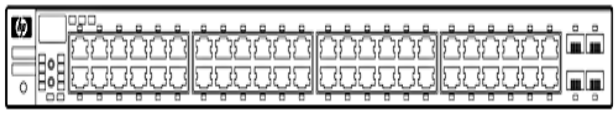
Overview

HP 3500 and 3500 yl Switch Series



HP 3500-24G-PoE yl Switch



HP 3500-48G-PoE yl Switch

Models

HP 3500-48G-PoE+ yl Switch	J9311A
HP 3500-24G-PoE+ yl Switch	J9310A
HP 3500-48G-PoE yl Switch*	J8693A
HP 3500-24G-PoE yl Switch*	J8692A
HP 3500-48-PoE Switch*	J9473A
HP 3500-24-PoE Switch*	J9471A
HP 3500-48 Switch*	J9472A
HP 3500-24 Switch*	J9470A

* These skus are End-of-Sale, and are no longer available.

Key features

- Advanced access layer and small distribution
- Enterprise-class performance and security
- Intelligent edge feature set with L2 to L4 support
- Scalable 10/100/1000 PoE+ and 10/100 PoE
- Unified core-to-edge HP ProVision software

Product overview

The HP 3500 Switch Series consists of advanced intelligent-edge switches, available in 24-port and 48-port fixed-port models. The foundation for these switches is a purpose-built, programmable HP ProVision ASIC that allows the most demanding networking features, such as quality of service (QoS) and security, to be implemented in a scalable yet granular fashion. With a variety of Gigabit Ethernet and 10/100 interfaces; integrated PoE+, PoE, and non-PoE options; and versatile 10GbE connectivity (CX4, X2, and SFP+) on Gigabit Ethernet switches, the 3500 Switch Series offers excellent investment protection, flexibility, and scalability, as well as ease of deployment, operation, and maintenance.

Features and Benefits

Software-defined networking

- **NEW OpenFlow**
  supports OpenFlow 1.0 and 1.3 specifications to enable SDN by allowing separation of the data (packet forwarding) and control (routing decision) paths

Quality of Service (QoS)

- **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 per-port or per-VLAN basis
- **Layer 4 prioritization**
  enables prioritization based on TCP/UDP port numbers

Overview

- **Traffic prioritization**
  allows real-time traffic classification into eight priority levels mapped to eight queues
- **Bandwidth shaping**
  - **Port-based rate limiting**
    provides per-port ingress-/egress-enforced increased bandwidth
  - **Classifier-based rate limiting**
    uses an access control list (ACL) to enforce increased bandwidth for ingress traffic on each port
  - **Reduced bandwidth**
    provides per-port, per-queue egress-based reduced bandwidth
- **Class of Service (CoS)**
  sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), Layer 3 protocol, TCP/UDP port number, source port, and DiffServ

Management

- **Remote intelligent mirroring**
  mirrors selected ingress/egress traffic based on ACL, port, MAC address, or VLAN to a local or remote HP 8200 zl, 6600, 6200 yl, 5400 zl, or 3500 Switch anywhere on the network
- **RMON, XRMON, and sFlow v5**
  provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events
- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP)**
  advertises and receives management information from adjacent devices on a network, facilitating easy mapping by network management applications
- **Uni-Directional Link Detection (UDLD)**
  monitors a cable between two switches and shuts down the ports on both ends if the cable is broken, turning the bidirectional link into a unidirectional one; this prevents network problems such as loops
- **Management simplicity**
  common software features and CLI implementation across all ProVision-based switches (including the zl and yl switches)
- **Command authorization**
  leverages RADIUS to link a custom list of CLI commands to an individual network administrator's login; an audit trail documents activity
- **Friendly port names**
  allow assignment of descriptive names to ports
- **Dual flash images**
  provide independent primary and secondary operating system files for backup while upgrading
- **Multiple configuration files**
  stores easily to the flash image
- **Comware CLI**
  - **Comware-compatible CLI**
    bridges the experience of HP Comware CLI users who are using the HP ProVision software CLI
  - **Display and fundamental Comware CLI commands**
    are embedded in the switch CLI as native commands; display output is formatted as on Comware-based switches, and fundamental commands provide a Comware-familiar initial switch setup
  - **Configuration Comware CLI commands**
    when Comware commands are entered, CLI help is elicited to formulate the correct ProVision software CLI command

Connectivity

- **IEEE 802.3af Power over Ethernet (PoE)**
  provides up to 15.4 W per port to IEEE 802.3af-compliant PoE-powered devices such as IP phones, wireless access points, and security cameras
- **IEEE 802.3at Power over Ethernet Plus (PoE+)**
  provides up to 30 W per port to IEEE 802.3 for devices that use PoE/PoE+, such as video IP phones, IEEE 802.11n wireless

Overview

access points, and advanced pan/zoom/tilt security cameras

- **Prestandard PoE support**
  detects and provides power to prestandard PoE devices; see list of supported devices in the product FAQs at **www.hp.com/networking**
- **Jumbo frames**
  on Gigabit Ethernet and 10-Gigabit Ethernet ports, jumbo frames allow high-performance remote backup and disaster-recovery services
- **Auto-MDIX**
  provides automatic adjustments for straight-through or crossover cables on all 10/100 and 10/100/1000 ports
- **IPv6**
  - **IPv6 host**
    enables switches to be managed in an IPv6 network
  - **Dual stack (IPv4 and IPv6)**
    transitions from IPv4 to IPv6, supporting connectivity for both protocols
  - **MLD snooping**
    forwards IPv6 multicast traffic to the appropriate interface
  - **IPv6 ACL/QoS**
    supports ACL and QoS for IPv6 network traffic
  - **IPv6 routing**
    supports static and OSPFv3 routing protocols
  - **6in4 tunneling**
    supports encapsulation of IPv6 traffic in IPv4 packets

Performance

- **High-speed/capacity architecture**
  up to 153.6 Gbps crossbar switching fabric provides intra- and inter-module switching with up to 111.5 million pps throughput on the purpose-built ProVision ASICs
- **Selectable queue configurations**
  allows for increased performance by selecting the number of queues and associated memory buffering that best meet the requirements of the network applications

Resiliency and high availability

- **NEW Virtual Router Redundancy Protocol (requires Premium License)**
  allows groups of two routers to dynamically back each other up to create highly available routed environments
- **IEEE 802.1s multiple Spanning Tree Protocols**
  provides high link availability in multiple VLAN environments by allowing multiple spanning trees; encompasses IEEE 802.1D Spanning Tree Protocol and IEEE 802.1w Rapid Spanning Tree Protocol
- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and HP port trunking**
  support up to 144 trunks, each with up to eight links (ports) per trunk
- **Distributed trunking**
  enables loop-free and redundant network topology without using Spanning Tree Protocol; allows a server or switch to connect to two switches using one logical trunk for redundancy and load sharing
- **Uplink Failure Detection**
  provides active-standby network path redundancy for servers that are configured for active-standby NIC teaming
- **NEW SmartLink**
  provides easy-to-configure link redundancy of active and standby link

Layer 2 switching

- **IEEE 802.1ad Q-in-Q (requires Premium License)**
  increases the scalability of an Ethernet network by providing a hierarchical structure; connects multiple LANs on a high-speed campus or metro network

Overview

- **HP switch meshing**
  dynamically load balances across multiple active redundant links to increase available aggregate bandwidth
- **VLAN support and tagging**
  supports the IEEE 802.1Q standard and 2,048 VLANs simultaneously
- **IEEE 802.1v protocol VLANs**
  isolate select non-IPv4 protocols automatically into their own VLANs
- **GARP VLAN Registration Protocol**
  allows automatic learning and dynamic assignment of VLANs
- **Rapid Per-VLAN Spanning Tree (RPVST+)**
  allows each VLAN to build a separate spanning tree to improve link bandwidth usage; is compatible with PVST+

Layer 3 services

- **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
- **Loopback interface address**
  defines an address in Routing Information Protocol (RIP) and Open Standard Path First (OSPF), improving diagnostic capability
- **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
- **Routing Information Protocol (RIP)**
  provides RIPv1 and RIPv2 routing
- **OSPF (requires Premium License)**
  provides OSPFv2 for IPv4 routing and OSPFv3 for IPv6 routing
- **Border Gateway Routing Protocol (requires Premium License)**
  provides IPv4 Border Gateway Routing Protocol that is scalable, robust, and flexible

Security

- **Access control lists** (ACLs)
  provide filtering based on the IP field, source/destination IP address/subnet, and source/destination TCP/UDP port number on a per-VLAN or per-port basis
- **Multiple user authentication methods**
  - **IEEE 802.1X users per port**
    provides authentication of multiple IEEE 802.1X users per port
  - **Web-based authentication**
    authenticates from Web browser for clients that do not support IEEE 802.1X supplicant
  - **MAC-based authentication**
    client is authenticated with the RADIUS server based on client's MAC authentication
  - **Concurrent IEEE 802.1X, Web, and MAC authentication schemes per port**
    switch port accepts up to 32 sessions of IEEE 802.1X, Web, and MAC authentications
- **Virus throttling**
  detects traffic patterns typical of worm-type viruses and either throttles or entirely prevents the virus from spreading across the routed VLANs or bridged interfaces without requiring external appliances
- **DHCP protection**
  blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks
- **Secure management access**
  delivers secure encryption of all access methods (CLI, GUI, or MIB) through SSHv2, SSL, and/or SNMPv3

Overview

- **Switch CPU protection**
  provides automatic protection against malicious network traffic trying to shut down the switch
- **ICMP throttling**
  defeats ICMP denial-of-service attacks by enabling any switch port to automatically throttle ICMP traffic
- **Identity-driven ACL**
  enables implementation of a highly granular and flexible access security policy and VLAN assignment specific to each authenticated network user
- **STP BPDU port protection**
  blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks
- **Dynamic IP lockdown**
  works with DHCP protection to block traffic from unauthorized hosts, preventing IP source address spoofing
- **Dynamic ARP protection**
  blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data
- **STP Root Guard**
  protects the root bridge from malicious attacks or configuration mistakes
- **Detection of malicious attacks**
  monitors 10 types of network traffic and sends a warning when an anomaly that potentially can be caused by malicious attacks is detected
- **Port security**
  allows access only to specified MAC addresses, which can be learned or specified by the administrator
- **MAC address lockout**
  prevents particular configured MAC addresses from connecting to the network
- **Source-port filtering**
  allows only specified ports to communicate with each other
- **RADIUS/TACACS+**
  eases switch management security administration by using a password authentication server
- **Secure Shell**
  encrypts all transmitted data for secure remote CLI access over IP networks
- **Secure Sockets Layer (SSL)**
  encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch
- **Secure FTP**
  allows secure file transfer to and from the switch; protects against unwanted file downloads or unauthorized copying of a switch configuration file
- **Management Interface Wizard**
  helps secure management interfaces such as SNMP, telnet, SSH, SSL, Web, and USB at the desired level
- **Switch management logon security**
  helps secure switch CLI logon by optionally requiring either RADIUS or TACACS+ authentication
- **Security banner**
  displays a customized security policy when users log in to the switch

Convergence

- **IP multicast routing (requires Premium License)**
  includes PIM Sparse and Dense modes to route IP multicast traffic
- **IP multicast snooping (data-driven IGMP)**
  prevents flooding of IP multicast traf
- **LLDP-MED (Media Endpoint Discovery)**
  defines a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones
- **PoE allocations**
  support multiple methods (automatic, IEEE 802.3af class, LLDP-MED, or user specified) to allocate PoE power for more efficient energy savings
- **Auto VLAN configuration for voice**
  - **RADIUS VLAN**

Overview

uses a standard RADIUS attribute and LLDP-MED to automatically configure a VLAN for IP phones

- **CDPv2**
  uses CDPv2 to configure legacy IP phones

- **NEW Local MAC Authentication**
  assigns attributes such as VLAN and QoS using locally configured profile that can be a list of MAC prefixes

Warranty and support

- **Limited Lifetime Warranty v2.0**
  Advance hardware replacement with next-business-day delivery (available in most countries). See www.hp.com/networking/warrantysummary for duration details.
- **Electronic and telephone support (for Limited Lifetime Warranty 2.0)**
  limited 24x7 telephone support is available from HP for the first 3 years; limited electronic and business hours telephone support is available from HP for the entire warranty period; to reach our support centers, refer to www.hp.com/networking/contact-support; for details on the duration of support provided with your product purchase, refer to www.hp.com/networking/warrantysummary
- **Software releases**
  to find software for your product, refer to www.hp.com/networking/support; for details on the software releases available with your product purchase, refer to www.hp.com/networking/warrantysummary

Configuration

Build To Order:

BTO is a standalone unit with no integration. BTO products ship standalone are not part of a CTO or Rack-Shippable solution.

HP 3500-24 Switch — J9470A
- 20 autosensing 10/100 port
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1U - Height

See Configuration Note:1, 2

PDU Cable NA/MEX/TW/JP — J9470A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9470A#B2C
- C15 PDU Jumper Cord (ROW)

HP 3500-24-PoE Switch — J9471A
- 20 autosensing 10/100 port
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1U - Height

See Configuration Note:1, 2

PDU Cable NA/MEX/TW/JP — J9471A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9471A#B2C
- C15 PDU Jumper Cord (ROW)

HP 3500-24G-PoE Yl Switch — J8692A
- 20 autosensing 10/100/1000 port
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1 open module slot
- 1U - Height

See Configuration Note:1, 2

PDU Cable NA/MEX/TW/JP — J8692A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J8692A#B2C
- C15 PDU Jumper Cord (ROW)

Configuration

HP 3500-24G-PoE+ yl Switch — J9310A
- 20 autosensing 10/100/1000 port
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1 open module slot
- 1U - Height

See Configuration Note:1, 2

PDU Cable NA/MEX/TW/JP — J9310A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9310A#B2C
- C15 PDU Jumper Cord (ROW)

HP 3500-48 Switch — J9472A
- 44 autosensing 10/100 port
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1U - Height

See Configuration Note:1, 2

PDU Cable NA/MEX/TW/JP — J9472A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9472A#B2C
- C15 PDU Jumper Cord (ROW)

HP 3500-48-PoE Switch — J9473A
- 44 autosensing 10/100 port
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1U - Height

See Configuration Note:1, 2

PDU Cable NA/MEX/TW/JP — J9473A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9473A#B2C
- C15 PDU Jumper Cord (ROW)

HP 3500-48G-PoE yl Switch — J8693A
- 44 autosensing 10/100/1000 port

See Configuration Note:1,

Configuration

- 4 dual-personality ports — 2
- min=0 \ max=4 SFP Transceivers
- 1 open module slot
- 1U - Height

PDU Cable NA/MEX/TW/JP — J8693A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J8693A#B2C
- C15 PDU Jumper Cord (ROW)

HP 3500-48G-PoE+ yl Switch — J9311A
- 44 autosensing 10/100/1000 port — See Configuration Note:1, 2
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1 open module slot
- 1U - Height

PDU Cable NA/MEX/TW/JP — J9311A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9311A#B2C
- C15 PDU Jumper Cord (ROW)

Configuration Rules:

Note 1 — The following Transceivers install into this Switch:

HP X111 100M SFP LC FX Transceiver	J9054C
HP X112 100M SFP LC BX-D Transceiver	J9099B
HP X112 100M SFP LC BX-U Transceiver	J9100B
HP X121 1G SFP LC LH Transceiver	J4860C
HP X121 1G SFP LC LX Transceiver	J4859C
HP X121 1G SFP LC SX Transceiver	J4858C
HP X122 1G SFP LC BX-D Transceiver	J9142B
HP X122 1G SFP LC BX-U Transceiver	J9143B

Note 2 — Localization required on orders without #B2B or #B2C options.

Remarks:

Drop down under power supply should offer the following options and results:
Switch/Router/Power Supply to PDU Power Cord - #B2B in North America, Mexico, Taiwan, and Japan or #B2C ROW. (Watson Default B2B or B2C for Rack Level CTO)
Switch/Router/Power Supply to Wall Power Cord - Localized Option (Watson Default for BTO and Box Level CTO)

Configuration

Factory Racked Models

HP 3500-48G-PoE+ yl Switch — J9311A
- 44 autosensing 10/100/1000 port
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1 open module slot
- 1U - Height

See Configuration Note:1, 2

PDU Cable NA/MEX/TW/JP — J9311A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9311A#B2C
- C15 PDU Jumper Cord (ROW)

HP 3500-24G-PoE+ yl Switch — J9310A
- 20 autosensing 10/100/1000 port
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1 open module slot
- 1U - Height

See Configuration Note:1, 2

PDU Cable NA/MEX/TW/JP — J9310A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9310A#B2C
- C15 PDU Jumper Cord (ROW)

HP 3500-48G-PoE yl Switch — J8693A
- 44 autosensing 10/100/1000 port
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1 open module slot
- 1U - Height

See Configuration Note:1, 2

PDU Cable NA/MEX/TW/JP — J8693A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J8693A#B2C

Configuration

- C15 PDU Jumper Cord (ROW)

HP 3500-24G-PoE Yl Switch — J8692A
- 20 autosensing 10/100/1000 port
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1 open module slot
- 1U - Height

See Configuration Note:1, 2

PDU Cable NA/MEX/TW/JP — J8692A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J8692A#B2C
- C15 PDU Jumper Cord (ROW)

HP 3500-48-PoE Switch — J9473A
- 44 autosensing 10/100 port
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1U - Height

See Configuration Note:1, 2

PDU Cable NA/MEX/TW/JP — J9473A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9473A#B2C
- C15 PDU Jumper Cord (ROW)

HP 3500-24-PoE Switch — J9471A
- 20 autosensing 10/100 port
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1U - Height

See Configuration Note:1, 2

PDU Cable NA/MEX/TW/JP — J9471A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9471A#B2C
- C15 PDU Jumper Cord (ROW)

Configuration

HP 3500-48 Switch — J9472A

- 44 autosensing 10/100 port
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1U - Height

See Configuration Note:1, 2

PDU Cable NA/MEX/TW/JP — J9472A#B2B

- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9472A#B2C

- C15 PDU Jumper Cord (ROW)

HP 3500-24 Switch — J9470A

- 20 autosensing 10/100 port
- 4 dual-personality ports
- min=0 \ max=4 SFP Transceivers
- 1U - Height

See Configuration Note:1, 2

PDU Cable NA/MEX/TW/JP — J9470A#B2B

- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9470A#B2C

- C15 PDU Jumper Cord (ROW)

Configuration Rules

Note 1 — The following Transceivers install into this Module (Max=4):

HP X111 100M SFP LC FX Transceiver	J9054C
HP X112 100M SFP LC BX-D Transceiver	J9099B
HP X112 100M SFP LC BX-U Transceiver	J9100B
HP X121 1G SFP LC LH Transceiver	J4860C
HP X121 1G SFP LC LX Transceiver	J4859C
HP X121 1G SFP LC SX Transceiver	J4858C
HP X122 1G SFP LC BX-D Transceiver	J9142B
HP X122 1G SFP LC BX-U Transceiver	J9143B

Note 2 — If this switch is factory installed in HP Universal Racks, Then the J9583A#0D1 is required.

EMEA then J9583A#0D1 is required.
APD, Japan and China then J9583A#0D1 is required.

CLIC Only - Allow the J9583AZ in all regions.

Enter the following menu selections as integrated to the CTO Model X server above if order is factory built.

Configuration

Modules

J9311A, J9310A, J8693A and J8692A only - System (std 0 // max=1) User Selection (min 0 / max=1) per Chassis

HP 10 GbE 2-port X2 / 2-port CX4 yl Module	J8694A
• min=0 \ max=2 X2 Transceivers	See Configuration Note:1
HP 10GbE 2-port SFP+/2-port CX4 yl Mod	J9312A
• min=0 \ max=2 SFP+ Transceivers	See Configuration Note:2

Configuration Rules:

Note 1	The following Transceivers install into this Module:	
	HP X131 10G X2 SC SR Transceiver	J8436A
	HP X131 10G X2 SC LR Transceiver	J8437A
	HP X131 10G X2 SC ER Transceiver	J8438A
	HP X131 10G X2 SC LRM Transceiver	J9144A
Note 2	The following Transceivers install into this Module:	
	HP X132 10G SFP+ LC ER Transceiver	J9153A
	HP X132 10G SFP+ LC LR Transceiver	J9151A
	HP X132 10G SFP+ LC LRM Transceiver	J9152A
	HP X132 10G SFP+ LC SR Transceiver	J9150A
	HP X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281B
	HP X242 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283B
	HP X242 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285B
	HP X244 10G XFP to SFP+ 1m Direct Attach Copper Cable	J9300A
	HP 10G X244 XFP to SFP+ 3m Direct Attach Copper Cable	J9301A
	HP 10G X244 XFP to SFP+ 5m Direct Attach Copper Cable	J9302A
	HP X242 10G SFP+ to SFP+ 10m Direct Attach Copper Cable	J9286B
	HP X242 10G SFP+ to SFP+ 15m Direct Attach Copper Cable	J9287B

Transceivers

SFP Transceivers

HP X111 100M SFP LC FX Transceiver	J9054C
HP X112 100M SFP LC BX-D Transceiver	J9099B
HP X112 100M SFP LC BX-U Transceiver	J9100B
HP X121 1G SFP LC LH Transceiver	J4860C
HP X121 1G SFP LC LX Transceiver	J4859C
HP X121 1G SFP LC SX Transceiver	J4858C
HP X122 1G SFP LC BX-D Transceiver	J9142B
HP X122 1G SFP LC BX-U Transceiver	J9143B

Configuration

SFP+ Transceivers

HP X132 10G SFP+ LC ER Transceiver	J9153A
HP X132 10G SFP+ LC LR Transceiver	J9151A
HP X132 10G SFP+ LC LRM Transceiver	J9152A
HP X132 10G SFP+ LC SR Transceiver	J9150A
HP X242 10G SFP+ SFP+ 1m DAC Cable	J9281B
HP X242 10G SFP+ SFP+ 3m DAC Cable	J9283B
HP X242 10G SFP+ SFP+ 7m DAC Cable	J9285B
HP X244 10G XFP SFP+ 1m DAC Cable	J9300A
HP X244 10G XFP SFP+ 3m DAC Cable	J9301A
HP X244 10G XFP SFP+ 5m DAC Cable	J9302A
HP X242 10G SFP+ 10m DAC Cable	J9286B
HP X242 10G SFP+ 15m DAC Cable	J9287B

X2 Transceivers

HP X131 10G X2 SC ER Transceiver	J8438A
HP X131 10G X2 SC LR Transceiver	J8437A
HP X131 10G X2 SC LRM Transceiver	J9144A
HP X131 10G X2 SC SR Transceiver	J8436A

Cables

Multi-Mode Cables

HP .5m Multi-mode OM3 LC/LC FC Cable	AJ833A
HP 1m Multi-mode OM3 LC/LC FC Cable	AJ834A
HP 2 m Multimode OM3 LC/LC FC Cable	AJ835A
HP 5 m Multimode OM3 LC/LC FC Cable	AJ836A
HP 15 m Multimode OM3 LC/LC FC Cable	AJ837A
HP 30 m Multimode OM3 LC/LC FC Cable	AJ838A
HP 50 m Multimode OM3 LC/LC FC Cable	AJ839A
HP Premier Flex LC/LC OM4 2f 1m Cbl	QK732A
HP Premier Flex LC/LC OM4 2f 2m Cbl	QK733A
HP Premier Flex LC/LC OM4 2f 5m Cbl	QK734A
HP Premier Flex LC/LC OM4 2f 15m Cbl	QK735A
HP Premier Flex LC/LC OM4 2f 30m Cbl	QK736A
HP Premier Flex LC/LC OM4 2f 50m Cbl	QK737A

Switch Enclosure Options

Rack Mount kits

HP X410 1U Univ 4-post Rack Mnt Kit	J9583A See Configuration Note:1
Rack Shelf	AB469A See Configuration Note:3

Configuration

Configuration Rules:

Note 1	Default with switch.
Note 3	This has existing rules that say 1 per 20 if 1U and 1 per 10 if its 3U or more. This rule is fine for ProCurve. **NOTE:** Both parts above are required to ship the 62xx Series Switches installed in a rack. Exceptions- The Shelf Kit (AB469A) may be removed if the Switch is supported underneath by a full depth Server of 3U height or greater mounted on fixed rails

Software

HP 3500 yl Premium License J8993A

External Power supplies

HP 620 Redundant/External Power Supply J8696A

- Height = 1U

HP 630 Red and/or External Power Supply J9443A

- Height = 1U

See Configuration Note:1

Configuration Rules:

Note 1	See HPN Rack Menu for integration details.

Technical Specifications

HP 3500-48G-PoE+ yl Switch (J9311A)	**I/O ports and slots**	1 open module slot 44 autosensing 10/100/1000 ports; Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T) 1 RJ-45 serial console port 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10BASE-T; IEEE 802.3u Type 100BASE-TX; IEEE 802.3ab 1000BASE-T Gigabit Ethernet) with PoE or an open mini-GBIC slot (for use with mini-GBIC transceivers) Supports a maximum of 4 10GbE ports, with optional module	
	Physical characteristics	**Dimensions**	17.44(w) x 16.93(d) x 1.73(h) in (44.3 x 43.0 x 4.4 cm) (1U height)
		Weight	15.54 lb (7.05 kg)
	Memory and processor	**10G module**	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
		Management Module	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
	Mounting and enclosure	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
	Performance	**1000 Mb Latency**	< 3.4 µs (FIFO 64-byte packets)
		10 Gbps Latency	< 2.1 µs (FIFO 64-byte packets)
		Throughput	up to 111.5 Mpps
		Routing/Switching capacity	149.8 Gb/s
		Switch fabric speed	153.6 Gb/s
		Routing table size	10000 entries (IPv4)
		MAC address table size	64000 entries
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C); 32°F to 104°F (40°C) when used with any SFP+ 10-GbE
		Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
		Altitude	up to 15,000 ft (4.6 km)
		Acoustic	Power: 58.0 dB, Pressure: 42.0 dB ISO 7779, ISO 9296
	Electrical characteristics	**Frequency**	50/60 Hz
		Description	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.
		Maximum heat dissipation	1144 BTU/hr (1206.9 kJ/hr)
		AC voltage	100-127/200-240 VAC
		Current	7.3/3.3 A

Technical Specifications

	Idle power	132 W
	Maximum power rating	638 W
	PoE power	398 W
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC
	Conducted	IEC 61000-4-6; 3 V
	Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
Notes	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later, for example, J9142B, J8177C).	
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 3500-24G-PoE+ yl	**I/O ports and slots**	20 autosensing 10/100/1000 ports; Media Type: Auto-MDIX; Duplex:

Technical Specifications

Switch (J9310A)			10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T)
			1 RJ-45 serial console port
			4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10BASE-T; IEEE 802.3u Type 100BASE-TX; IEEE 802.3ab 1000BASE-T Gigabit Ethernet) with PoE or an open mini-GBIC slot (for use with mini-GBIC transceivers)
			1 open module slot
			Supports a maximum of 4 10-GbE ports
	Physical characteristics	**Dimensions**	17.44(w) x 15.43(d) x 1.73(h) in (44.3 x 39.2 x 4.4 cm) (1U height)
		Weight	13.86 lb (6.29 kg)
	Memory and processor	**10G module**	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
		Management Module	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
	Mounting and enclosure		Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only
	Performance	**1000 Mb Latency**	< 3.4 µs (FIFO 64-byte packets)
		10 Gbps Latency	< 2.1 µs (FIFO 64-byte packets)
		Throughput	up to 75.7 Mpps
		Routing/Switching capacity	101.8 Gb/s
		Switch fabric speed	105.6 Gb/s
		Routing table size	10000 entries (IPv4)
		MAC address table size	64000 entries
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C); 32°F to 104°F (40°C) when used with any X2 10-GbE
		Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 90% @ 149°F (65°C), noncondensing
		Altitude	up to 15,000 ft. (4.6 km)
		Acoustic	Power: 57.0 dB, Pressure: 40.5 dB ISO 7779, ISO 9296
	Electrical characteristics	**Frequency**	50 / 60 Hz
		Description	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.
		Maximum heat dissipation	865 BTU/hr (912.9 kJ/hr)
		AC voltage	100-127/200-240 VAC
		Current	6.6 / 3.0 A
		Idle power	94 W
		Maximum power rating	616 W

Technical Specifications

		PoE power	398 W
	Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
	Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
	Immunity	**EN**	EN 55024, CISPR 24
		ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
		Radiated	IEC 61000-4-3; 3 V/m
		EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
		Surge	IEC 61000-4-5; 1 kV/2 kV AC
		Conducted	IEC 61000-4-6; 3 V
		Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
		Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
		Harmonics	EN 61000-3-2, IEC 61000-3-2
		Flicker	EN 61000-3-3, IEC 61000-3-3
	Management	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
	Notes	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later, for example, J9142B, J8177C).	
	Services	1Refer 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 3500-48G-PoE yl Switch (J8693A)	**I/O ports and slots**	44 autosensing 10/100/1000 ports; Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T) 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10BASE-T; IEEE 802.3u Type 100BASE-TX; IEEE 802.3ab 1000BASE-T Gigabit Ethernet) with PoE or an open mini-GBIC slot (for use with mini-GBIC transceivers) 1 open module slot Supports a maximum of 4 10GbE ports, with optional module	
	Physical characteristics	**Dimensions**	17.44(w) x 16.93(d) x 1.73(h) in (44.3 x 43.0 x 4.4 cm) (1U height)
		Weight	16.09 lb (7.3 kg)
	Memory and processor	**10G module**	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
		Management Module	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash Mb, 128 MB compact flash, 256 MB DDR SDRAM
	Mounting and enclosure	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
	Performance	**1000 Mb Latency**	< 3.4 µs (FIFO 64-byte packets)
		10 Gbps Latency	< 2.1 µs (FIFO 64-byte packets)
		Throughput	up to 111.5 million pps

Technical Specifications

	Routing/Switching capacity	149.8 Gb/s
	Switch fabric speed	153.6 Gb/s
	Routing table size	10000 entries (IPv4)
	MAC address table size	64000 entries
Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C); 32°F to 104°F (40°C) when used with any X2 10-GbE
	Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing
	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 15,000 ft (4.6 km)
	Acoustic	Power: 55.6 dB, Pressure: 45.3 dB ISO 7779, ISO 9296
Electrical characteristics	Achieved Miercom Certified Green Award	
	Frequency	50/60 Hz
	Description	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.
	Maximum heat dissipation	1144 BTU/hr (1206.9 kJ/hr)
	AC voltage	100-127/200-240 VAC
	Current	10.0/5.0 A
	Idle power	142 W
	Maximum power rating	705 W
	PoE power	398 W
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC
	Conducted	IEC 61000-4-6; 3 V
	Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
Notes	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches.	

Technical Specifications

		Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later, for example, J9142B, J8177C).	
	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 3500-24G-PoE yl Switch (J8692A)	**I/O ports and slots**	20 autosensing 10/100/1000 ports; Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T)	
		4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) with PoE or an open mini-GBIC slot (for use with mini-GBIC transceivers)	
		1 open module slot	
		Supports a maximum of 4 10-GbE ports, with optional module	
	Physical characteristics	**Dimensions**	17.44(w) x 15.43(d) x 1.73(h) in (44.3 x 39.2 x 4.4 cm) (1U height)
		Weight	14.11 lb (6.4 kg)
	Memory and processor	**10G module**	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
		Management Module	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
	Mounting and enclosure	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
	Performance	**1000 Mb Latency**	< 3.4 µs (FIFO 64-byte packets)
		10 Gbps Latency	< 2.1 µs (FIFO 64-byte packets)
		Throughput	up to 75.7 million pps
		Routing/Switching capacity	101.8 Gb/s
		Switch fabric speed	105.6 Gb/s
		Routing table size	10000 entries (IPv4)
		MAC address table size	64000 entries
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C); 32°F to 104°F (40°C) when used with any X2 10-GbE
		Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 90% @ 149°F (65°C), noncondensing
		Altitude	up to 15,000 ft (4.6 km)
		Acoustic	Power: 55.1 dB, Pressure: 44.8 dB ISO 7779, ISO 9296
	Electrical characteristics	**Frequency**	50/60 Hz
		Description	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.

Technical Specifications

		Maximum heat dissipation	865 BTU/hr (912.9 kJ/hr)
		AC voltage	100-127/200-240 VAC
		Current	10.0/5.0 A
		Idle power	98 W
		Maximum power rating	623 W
		PoE power	398 W
	Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
	Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
	Immunity	**EN**	EN 55024, CISPR 24
		ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
		Radiated	IEC 61000-4-3; 3 V/m
		EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
		Surge	IEC 61000-4-5; 1 kV/2 kV AC
		Conducted	IEC 61000-4-6; 3 V
		Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
		Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
		Harmonics	EN 61000-3-2, IEC 61000-3-2
		Flicker	EN 61000-3-3, IEC 61000-3-3
	Management	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
	Notes	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later, for example, J9142B, J8177C).	
	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 3500-48-PoE Switch (J9473A)	**I/O ports and slots**	44 RJ-45 autosensing 10/100 ports; Media Type: Auto-MDIX; Duplex: half or full (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX) 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) with PoE or an open mini-GBIC slot (for use with mini-GBIC transceivers) 1 RS-232C DB-9 console port	
	Physical characteristics	**Dimensions**	17.44(w) x 16.93(d) x 1.73(h) in (44.3 x 43.0 x 4.4 cm) (1U height)
		Weight	14.99 lb (6.8 kg)
	Memory and processor	**Management Module**	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
	Mounting and enclosure	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
	Performance	**100 Mb Latency**	< 3.4 µs (FIFO 64-byte packets)

Technical Specifications

	1000 Gbps Latency	< 2.9 µs (FIFO 64-byte packets)
	Throughput	up to 12.5 million pps (64-byte packets)
	Routing/Switching capacity	16.8 Gb/s
	Routing table size	10000 entries (IPv4)
	MAC address table size	64000 entries
Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
	Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing
	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 15,000 ft (4.6 km)
	Acoustic	Power: 55.6 dB, Pressure: 45.3 dB ISO 7779, ISO 9296
Electrical characteristics	**Frequency**	50/60 Hz
	Description	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.
	Maximum heat dissipation	611 BTU/hr (644.6 kJ/hr)
	AC voltage	100-127/200-240 VAC
	Current	7.3/3.3 A
	Idle power	133.2 W
	Maximum power rating	548.8 W
	PoE power	398 W
Safety	EN 60950/IEC 60950; CAN/CSA 22.2 No. 60950; UL 60950; IEC 60950	
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC
	Conducted	IEC 61000-4-6; 3 V
	Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
Notes	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. Supported 1G SFP transceivers are revision "B" or later (product number	

		ends with the letter "B" or later, for example, J9142B, J8177C).	
	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 3500-24-PoE Switch (J9471A)	**I/O ports and slots**	20 RJ-45 autosensing 10/100 ports; Media Type: Auto-MDIX; Duplex: half or full (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX)	
		4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10Base-T; IEEE 802.3u Type 100Base-TX; IEEE 802.3ab 1000Base-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers)	
		1 RS-232C DB-9 console port	
	Physical characteristics	**Dimensions**	17.44(w) x 15.43(d) x 1.73(h) in (44.3 x 39.2 x 4.4 cm) (1U height)
		Weight	13.23 lb (6 kg)
	Memory and processor	**Management Module**	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
	Mounting and enclosure	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
	Performance	**100 Mb Latency**	< 3.4 µs (FIFO 64-byte packets)
		1000 Gbps Latency	< 2.9 µs (FIFO 64-byte packets)
		Throughput	up to 8.9 million pps (64-byte packets)
		Routing/Switching capacity	12 Gb/s
		Routing table size	10000 entries (IPv4)
		MAC address table size	64000 entries
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 90% @ 149°F (65°C), noncondensing
		Altitude	up to 15,000 ft (4.6 km)
		Acoustic	Power: 55.1 dB, Pressure: 44.8 dB ISO 7779, ISO 9296
	Electrical characteristics	**Frequency**	50/60 Hz
		Description	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.
		Maximum heat dissipation	435 BTU/hr (458.92 kJ/hr)
		AC voltage	100-127/200-240 VAC
		Current	6.6/3.0 A
		Idle power	91 W
		Maximum power rating	497 W
		PoE power	398 W

Technical Specifications

	Safety	EN 60950/IEC 60950; CAN/CSA 22.2 No. 60950; EN 60825; UL 60950	
	Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
	Immunity	**EN**	EN 55024, CISPR 24
		ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
		Radiated	IEC 61000-4-3; 3 V/m
		EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
		Surge	IEC 61000-4-5; 1 kV/2 kV AC
		Conducted	IEC 61000-4-6; 3 V
		Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
		Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
		Harmonics	EN 61000-3-2, IEC 61000-3-2
		Flicker	EN 61000-3-3, IEC 61000-3-3
	Management	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
	Notes	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later, for example, J9142B, J8177C).	
	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 3500-48 Switch (J9472A)	**I/O ports and slots**	44 RJ-45 autosensing 10/100 ports; Media Type: Auto-MDIX; Duplex: half or full (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX) 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab 1000BASE-T Gigabit Ethernet) with PoE, or an open mini-GBIC slot (for use with mini-GBIC 1 RS-232C DB-9 console port	
	Physical characteristics	**Dimensions**	17.44(w) x 16.93(d) x 1.73(h) in (44.3 x 43.0 x 4.4 cm) (1U height)
		Weight	13.45 lb (6.1 kg)
	Memory and processor	**Management Module**	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
	Mounting and enclosure	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
	Performance	**100 Mb Latency**	< 3.4 µs (FIFO 64-byte packets)
		1000 Gbps Latency	< 2.9 µs (FIFO 64-byte packets)
		Throughput	up to 12.5 million pps (64-byte packets)
		Routing/Switching capacity	16.8 Gb/s
		Routing table size	10000 entries (IPv4)
		MAC address table size	64000 entries
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)

Technical Specifications

		Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
		Altitude	up to 15,000 ft (4.6 km)
		Acoustic	Power: 55.8 dB, Pressure: 43.5 dB ISO 7779, ISO 9296
	Electrical characteristics	**Frequency**	50/60 Hz
		Description	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.
		Maximum heat dissipation	465 BTU/hr (490.58 kJ/hr)
		AC voltage	100-127/200-240 VAC
		Current	1.6/0.8 A
		Idle power	96 W
		Maximum power rating	136.2 W
	Safety	EN 60950/IEC 60950; CAN/CSA 22.2 No. 60950; UL 60950; IEC 60950	
	Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
	Immunity	**EN**	EN 55024, CISPR 24
		ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
		Radiated	IEC 61000-4-3; 3 V/m
		EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
		Surge	IEC 61000-4-5; 1 kV/2 kV AC
		Conducted	IEC 61000-4-6; 3 V
		Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
		Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
		Harmonics	EN 61000-3-2, IEC 61000-3-2
		Flicker	EN 61000-3-3, IEC 61000-3-3
	Management	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	
	Notes	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later, for example, J9142B, J8177C).	
	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 3500-24 Switch (J9470A)	**I/O ports and slots**	20 RJ-45 autosensing 10/100 ports; Media Type: Auto-MDIX; Duplex: half or full (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX) 4 dual-personality ports; each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-	

Technical Specifications

	TX, IEEE 802.3ab 1000BASE-T Gigabit Ethernet), or an open mini-GBIC slot (for use with mini-GBIC transceivers)	
	1 RS-232C DB-9 console port	
Physical characteristics	**Dimensions**	17.44(w) x 15.43(d) x 1.73(h) in (44.3 x 39.2 x 4.4 cm) (1U height)
	Weight	11.9 lb (5.4 kg)
Memory and processor	**Management Module**	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
Mounting and enclosure	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance	**100 Mb Latency**	< 3.4 µs (FIFO 64-byte packets)
	1000 Gbps Latency	< 2.9 µs (FIFO 64-byte packets)
	Throughput	up to 8.9 million pps (64-byte packets)
	Routing/Switching capacity	12 Gb/s
	Routing table size	10000 entries (IPv4)
	MAC address table size	64000 entries
Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
	Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing
	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	15% to 90% @ 149°F (65°C), noncondensing
	Altitude	up to 15,000 ft (4.6 km)
	Acoustic	Power: 53.1 dB, Pressure: 42.6 dB ISO 7779, ISO 9296
Electrical characteristics	**Frequency**	50/60 Hz
	Description	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.
	Maximum heat dissipation	268 BTU/hr (282.8 kJ/hr)
	AC voltage	100-127/200-240 VAC
	Current	1.1/0.6 A
	Idle power	68.2 W
	Maximum power rating	78.7 W
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC
	Conducted	IEC 61000-4-6; 3 V

	Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management		HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)
Notes		J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later, for example, J9142B, J8177C).
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.

Standards and protocols (applies to all products in series)

BGP
RFC 1997 BGP Communities Attribute
RFC 2918 Route Refresh Capability
RFC 4271 A Border Gateway Protocol 4 (BGP-4)
RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)
RFC 5492 Capabilities Advertisement with BGP-4

Device management
RFC 1591 DNS (client)
HTML and telnet management

General protocols
IEEE 802.1ad Q-in-Q
IEEE 802.1AX-2008 Link Aggregation
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
IEEE 802.1v VLAN classification by Protocol and Port
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.3af Power over Ethernet
IEEE 802.3x Flow Control
RFC 768 UDP
RFC 783 TFTP Protocol (revision 2)
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 854 TELNET
RFC 868 Time Protocol
RFC 951 BOOTP
RFC 1058 RIPv1
RFC 1350 TFTP Protocol (revision 2)
RFC 1519 CIDR
RFC 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers
RFC 4251 SSHv6 Architecture
RFC 4252 SSHv6 Authentication
RFC 4253 SSHv6 Transport Layer
RFC 4254 SSHv6 Connection
RFC 4291 IP Version 6 Addressing Architecture
RFC 4293 MIB for IP
RFC 4294 IPv6 Node Requirements
RFC 4419 Key Exchange for SSH
RFC 4443 ICMPv6
RFC 4541 IGMP & MLD Snooping Switch
RFC 4861 IPv6 Neighbor Discovery
RFC 4862 IPv6 Stateless Address Auto-configuration
RFC 5095 Deprecation of Type 0 Routing Headers in IPv6
RFC 5340 OSPFv3 for IPv6
RFC 5453 Reserved IPv6 Interface Identifiers
RFC 5519 Multicast Group Membership Discovery MIB (MLDv2 only)
RFC 5722 Handling of Overlapping IPv6 Fragments

MIBs
IEEE 802.1ap (MSTP and STP MIB's only)
RFC 1213 MIB II
RFC 1493 Bridge MIB
RFC 1724 RIPv2 MIB
RFC 1850 OSPFv2 MIB
RFC 2021 RMONv2 MIB
RFC 2096 IP Forwarding Table MIB
RFC 2613 SMON MIB
RFC 2618 RADIUS Client MIB
RFC 2620 RADIUS Accounting 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)

Technical Specifications

RFC 1542 BOOTP Extensions
RFC 2030 Simple Network Time Protocol (SNTP) v4
RFC 2131 DHCP
RFC 2453 RIPv2
RFC 2548 (MS-RAS-Vendor only)
RFC 3046 DHCP Relay Agent Information Option
RFC 3576 Ext to RADIUS (CoA only)
RFC 3768 VRRP
RFC 4675 RADIUS VLAN & Priority
UDLD (Uni-directional Link Detection)

IP multicast
RFC 3376 IGMPv3 (host joins only)
RFC 3973 PIM Dense Mode
RFC 4601 PIM Sparse Mode

IPv6
RFC 1981 IPv6 Path MTU Discovery
RFC 2375 IPv6 Multicast Address Assignments
RFC 2460 IPv6 Specification
RFC 2464 Transmission of IPv6 over Ethernet Networks
RFC 2710 Multicast Listener Discovery (MLD) for IPv6
RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations (Ping only)
RFC 3019 MLDv1 MIB
RFC 3315 DHCPv6 (client and relay)
RFC 3484 Default Address Selection for IPv6
RFC 3587 IPv6 Global Unicast Address Format
RFC 3596 DNS Extension for IPv6
RFC 3810 MLDv2 for IPv6
RFC 4022 MIB for TCP
RFC 4087 IP Tunnel MIB
RFC 4113 MIB for UDP
RFC 2787 VRRP MIB
RFC 2863 The Interfaces Group MIB
RFC 2925 Ping MIB
RFC 2933 IGMP 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)
RFC 3176 sFlow
ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
SNMPv1/v2c/v3
XRMON

OSPF
RFC 2328 OSPFv2
RFC 3101 OSPF NSSA
RFC 5340 OSPFv3 for IPv6

QoS/CoS
RFC 2474 DiffServ Precedence, including 8 queues/port
RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2598 DiffServ Expedited Forwarding (EF)

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
RFC 2865 RADIUS (client only)
RFC 2866 RADIUS Accounting
RFC 3579 RADIUS Support For Extensible Authentication Protocol (EAP)
Secure Sockets Layer (SSL)
SSHv2 Secure Shell

HP 3500 and 3500 yl Switch Series accessories

Modules	HP 10GbE 2-port X2 / 2-port CX4 yl Module	J8694A
	HP 10GbE 2-port SFP+ / 2-port CX4 yl Module	J9312A
Transceivers	HP X111 100M SFP LC FX Transceiver	J9054C
	HP X112 100M SFP LC BX-D Transceiver	J9099B
	HP X112 100M SFP LC BX-U Transceiver	J9100B
	HP X121 1G SFP LC LH Transceiver	J4860C
	HP X121 1G SFP LC LX Transceiver	J4859C
	HP X121 1G SFP LC SX Transceiver	J4858C
	HP X122 1G SFP LC BX-D Transceiver	J9142B
	HP X122 1G SFP LC BX-U Transceiver	J9143B
	HP X131 10G X2 CX4 Transceiver	J8440C
	HP X131 10G X2 SC ER Transceiver	J8438A
	HP X131 10G X2 SC LR Transceiver	J8437A
	HP X131 10G X2 SC LRM Transceiver	J9144A
	HP X131 10G X2 SC SR Transceiver	J8436A
	HP X132 10G SFP+ LC ER Transceiver	J9153A
	HP X132 10G SFP+ LC LR Transceiver	J9151A
	HP X132 10G SFP+ LC LRM Transceiver	J9152A
	HP X132 10G SFP+ LC SR Transceiver	J9150A
Cables	HP X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281B
	HP X242 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283B
	HP X242 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285B
	HP X244 10G XFP to SFP+ 1m Direct Attach Copper Cable	J9300A
	HP 10G X244 XFP to SFP+ 3m Direct Attach Copper Cable	J9301A
	HP 10G X244 XFP to SFP+ 5m Direct Attach Copper Cable	J9302A
	HP LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable	AJ833A
	HP LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable	AJ834A
	HP LC to LC Multi-mode OM3 2-Fiber 2.0m 1-Pack Fiber Optic Cable	AJ835A
	HP LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable	AJ836A
	HP LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable	AJ837A
	HP LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable	AJ838A
	HP LC to LC Multi-mode OM3 2-Fiber 50.0m 1-Pack Fiber Optic Cable	AJ839A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable	QK732A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable	QK733A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable	QK734A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable	QK735A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable	QK736A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable	QK737A
	HP X242 10G SFP+ to SFP+ 10m Direct Attach Copper Cable	J9286B
	HP X242 10G SFP+ to SFP+ 15m Direct Attach Copper Cable	J9287B
EPS/RPS	HP 620 Redundant/External Power Supply	J8696A
	HP 630 Redundant and/or External Power Supply	J9443A

Accessories

Mounting Kit	HP X410 1U Universal 4-post Rack Mounting Kit	J9583A
License	HP 3500 yl Premium License	J8993A

Accessory Product Details

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

HP 10GbE 2-port X2/2-port CX4 yl Module (J8694A)	**Ports**	2 open 10-GbE X2 transceiver slots 2 10-GbE ports (IEEE 802.3ak Type 10GBASE-CX4); Duplex: full only	
	Physical characteristics	**Dimensions**	7.76(d) x 7.52(w) x 14.29(h) in. (19.7 x 19.1 x 36.3 cm)
		Weight	1.54 lb. (0.7 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95%, noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 90%, noncondensing
	Cabling	Maximum distance: • CX4: 15 m using CX4 cable or 300 m using media converter with ribbon MMF	
	Notes	Operating temperature is 32°F to 104°F (0°C to 40°C) if any X2 10-GbE optic or transceiver is inserted in any X2 slot. One 0.5 m CX4 cable is included.	
	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 10GbE 2-port SFP+/2-port CX4 yl Module (J9312A)	**Ports**	2 SFP+ 10-GbE ports (IEEE 802.3ae Type 10GBASE-LR); Duplex: full only 2 CX4 10-GbE ports (IEEE 802.3ak Type 10GBASE-CX4); Duplex: full only	
	Physical characteristics	**Dimensions**	7.76(d) x 7.52(w) x 14.29(h) in. (19.7 x 19.1 x 36.3 cm)
		Weight	1.45 lb. (0.66 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95%, noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 90%, noncondensing
	Cabling	Maximum distance: • CX4: 15 m using CX4 cable or 300 m using media converter with ribbon MMF	
	Notes	Operating temperature is 32°F to 104°F (0°C to 40°C) if any SFP+ 10-GbE optic or transceiver is inserted in any SFP+ slot. One 0.5 m CX4 cable is included.	
	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 X111 100M SFP LC FX	**Ports**	1 LC 100BASE-FX port (IEEE 802.3u Type 100BASE-FX); Duplex: half or full	

Accessory Product Details

Transceiver (J9054C)	**Physical characteristics**	**Dimensions**	2.7(d) x 0.54(w) x 0.48(h) in. (6.86 x 1.38 x 1.22 cm)
		Weight	0.06 lb. (0.03 kg)
	Environment	**Operating temperature**	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	5% to 95%
		Nonoperating/Storage temperature	-40°F to 185°F (-40°C to 85°C)
		Nonoperating/Storage relative humidity	5% to 85%
		Altitude	up to 10,000 ft. (3 km)
	Cabling	Cable type: 62.5/125 ìm or 50/125 ìm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively; Maximum distance: • 2 km (full duplex) or 412 m (half duplex)	
	Notes	Transmitter wavelength: 1310nm Power consumption is 1.1 watt maximum. For supported platforms and minimum software requirements to support this product, see the document titled "Support for the J9054C 100-FX SFP-LC Transceiver" on the "ProCurve Mini-GBICs and SFPs" Manuals Web page.	
	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 X112 100M SFP LC BX-D Transceiver (J9099B) A small form-factor pluggable (SFP) 100-Megabit BX (bi-directional) "downstream" transceiver that provides 100 Mbps full-duplex connectivity up to 10 km on one strand of singlemode fiber. The J9099B connects to the J9100B "upstream" transceiver, or to any IEEE-standard 100BASE-BX10-U ("upstream") device.	**Ports**	1 LC 100BASE-BX10 port (IEEE 802.3ah Type 100BASE-BX10-D); Duplex: full only	
	Physical characteristics	**Dimensions**	2.7(d) x 0.55(w) x 0.48(h) in. (6.86 x 1.39 x 1.22 cm)
		Weight	0.04 lb. (0.03 kg)
	Environment	**Operating temperature**	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	0% to 95%, noncondensing
		Nonoperating/Storage temperature	-40ºF to 185ºF (-40ºC to 85ºC)
	Cabling	Type: Single-mode fiber optic, complying with ITU-T G.652; Maximum distance: • 0.5-10,000 m (single-mode fiber)	
	Notes	Transmit wavelength: 1550 nm. Receive wavelength: 1310 nm. Power consumption is 1.1 watt maximum. For supported platforms and minimum software requirements to support this product, see the document titled "Support for the HP BX Transceivers" on the "HP Mini-GBICs and SFPs" Manuals Web page.	

Accessory Product Details

		The J9099B connects to the J9100B "upstream" transceiver, or to any IEEE-standard 100BASE-BX10-U ("upstream") device. (A 100-BX-D transceiver can only connect to a 100-BX-U product. You cannot connect two 100-BX-D transceivers together.)	
	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 X112 100M SFP LC BX-U Transceiver (J9100B) A small form-factor pluggable (SFP) 100-Megabit BX (bi-directional) "upstream" transceiver that provides 100 Mbps full-duplex connectivity up to 10 km on one strand of singlemode fiber. The J9100B connects to the J9099B "downstream" transceiver, or to any IEEE-standard 100BASE-BX10-D ("downstream") device.	**Ports**	1 LC 100BASE-BX10 port (IEEE 802.3ah Type 100BASE-BX10-U); Duplex: full only	
	Physical characteristics	**Dimensions**	2.7(d) x 0.55(w) x 0.48(h) in. (6.86 x 1.39 x 1.22 cm)
		Weight	0.07 lb. (.03 kg)
	Environment	**Operating temperature**	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	0% to 95%, noncondensing
		Nonoperating/Storage temperature	-40ºF to 185ºF (-40ºC to 85ºC)
	Cabling	Type: Single-mode fiber optic, complying with ITU-T G.652; Maximum distance: • 0.5-10,000 m (single-mode fiber)	
	Notes	For supported platforms and minimum software requirements to support this product, see the document titled "Support for the HP BX Transceivers" on the "HP Mini-GBICs and SFPs" Manuals Web page. The J9100B connects to the J9099B "downstream" transceiver, or to any IEEE-standard 100BASE-BX10- D ("downstream") device. (A 100-BX-U transceiver can only connect to a 100-BX-D product. You cannot connect two 100-BX-U transceivers together.) Transmit wavelength: 1310 nm. Receive wavelength: 1550 nm. Power consumption is 1.1 watts maximum.	
	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 X121 1G SFP LC LH Transceiver (J4860C) A small form-factor pluggable (SFP) Gigabit LH transceiver that provides a full-duplex Gigabit solution up to 70 km on single-mode fiber.	**Ports**	1 LC 1000BASE-LH port (no IEEE standard exists for 1550 nm optics); Duplex: full only	
	Physical characteristics	Dimensions: 2.17(d) x 0.60(w) x 0.46(h) in. (5.5 x 1.53 x 1.18 cm) Weight: 0.04 lb. (0.02 kg)	
	Environment	Operating temperature: -40°F to 185°F (-40°C to 85°C) Operating relative humidity: 0% to 95% @ 77°F (25°C), noncondensing Nonoperating/Storage temperature: -40°F to 185°F (-40°C to 85°C) Altitude: up to 10,000 ft. (3 km)	
	Cabling	Cable type:	

		• Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1; Maximum distance: • 10-70,000 m (single-mode fiber)
	Notes	Power consumption is 0.8 watts typical with 1 watt maximum at 100% utilization. For distances less than 20 km, a 10 dB attenuator must be used. For distances between 20 km and 40 km, a 5 dB attenuator must be used. Attenuators can be purchased from most cable vendors.
	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 X121 1G SFP LC LX Transceiver (J4859C) HP X121 1G SFP LC LX Transceiver: An SFP format gigabit transceiver with LC connectors using LX technology.	**Ports**	1 LC 1000BASE-LX port (IEEE 802.3z Type 1000BASE-LX); Duplex: full only
	Physical characteristics	Dimensions: 2.24(d) x 0.54(w) x 0.486(h) in. (5.69 x 1.37 x 1.23 cm) Weight:0.04 lb. (0.02 kg)
	Environment	Operating temperature: 32°F to 158°F (0°C to 70°C) Operating relative humidity: 0% to 85%, noncondensing Nonoperating/Storage temperature: -40°F to 212°F (-40°C to 100°C) Altitude: up to 10,000 ft. (3 km)
	Cabling	Type: • Either single mode or multimode; 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively; Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1; Maximum distance: • 2-550 m (multimode 62.5 µm core diameter, 500 MHz*km bandwidth) • 2-550 m (multimode 50 µm core diameter, 400 MHz*km bandwidth) • 2-550 m (multimode 50 µm core diameter, 500 MHz*km bandwidth) • 2-10,000 m (single-mode fiber)
	Notes	A mode conditioning patch cord may be needed in some multimode fiber installations. Wavelength: 1310nm Power Consumption: < 500mW Typical
	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 X121 1G SFP LC SX	**Ports**	1 LC 1000BASE-SX port; Duplex: full only

Accessory Product Details

Transceiver (J4858C) A small form-factor pluggable (SFP) Gigabit SX transceiver that provides a full-duplex Gigabit solution up to 550 m on multimode fiber.	**Physical characteristics**	Dimensions: 2.24(d) x 0.54(w) x 0.48(h) in. (5.69 x 1.37 x 1.22 cm) Weight: 0.04 lb. (0.02 kg) Transceiver form factor: SFP
	Environment	Operating temperature: 32°F to 158°F (0°C to 70°C) Operating relative humidity: 5% to 85%, noncondensing Nonoperating/Storage temperature: -40°F to 203°F (-40°C to 85°C) Altitude: up to 10,000 ft. (3 km)
	Electrical characteristics	Power consumption typical: 0.4 W Power consumption maximum: 0.7 W
	Cabling	Type: • 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively; Maximum distance: • 2-220 m (62.5 µm core diameter, 160 MHz*km bandwidth • 2-275 m (62.5 µm core diameter, 200 MHz*km bandwidth • 2-500 m (50 µm core diameter, 400 MHz*km bandwidth) • 2-550 m (50 µm core diameter, 500 MHz*km bandwidth) Cable length: 2-550m 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 X122 1G SFP LC BX-D Transceiver (J9142B) A small form-factor pluggable (SFP) Gigabit-BX (bi-directional) "downstream" transceiver that provides a full-duplex Gigabit solution up to 10 km on one strand of single-mode fiber. The J9142B connects to the J9143B "upstream" transceiver, or to any IEEE-standard 1000BASE-BX10-U ("upstream") device.	**Ports**	1 LC 1000BASE-BX10 port (IEEE 802.3ah Type 1000BASE-BX10-D); Duplex: full only	
	Physical characteristics	**Dimensions**	2.19(d) x 0.54(w) x 0.46(h) in. (5.57 x 1.37 x 1.18 cm)
		Weight	0.04 lb. (0.02 kg)
	Environment	**Operating temperature**	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	0% to 95%, non-condensing
		Non-operating/ Storage temperature	–40ºF to 185ºF –40ºC to 85ºC)
	Cabling	Type: Single-mode fiber optic, complying with ITU-T G.652; Maximum distance: • 0.5-10,000 m (single-mode fiber)	
	Notes	Transmit wavelength: 1490 nm. Receive wavelength: 1310 nm. Power consumption is 1 watt maximum. For supported platforms and minimum software requirements to support this product, see the document titled "Support for the HP BX Transceivers" on the "HP Mini-GBICs and SFPs" Manuals Web page.	

Accessory Product Details

		The J9142B connects to the J9143B "upstream" transceiver, or to any IEEE-standard 1000BASE-BX10-U ("upstream") device. (A 1000-BX-D transceiver can only connect to a 1000-BX-U product. You cannot connect two 1000-BX-D transceivers together.)	
	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 X122 1G SFP LC BX-U Transceiver (J9143B) A small form-factor pluggable (SFP) Gigabit-BX (bi-directional) "upstream" transceiver that provides a full-duplex Gigabit solution up to 10 km on one strand of single-mode fiber. The J9143B connects to the J9142B "downstream" transceiver, or to any IEEE-standard 1000BASE-BX10-D ("downstream") device.	**Ports**	1 LC 1000BASE-BX10 port (IEEE 802.3ah Type 1000BASE-BX10-U); Duplex: full only	
	Physical characteristics	**Dimensions**	2.19(d) x 0.54(w) x 0.46(h) in. (5.57 x 1.37 x 1.18 cm)
		Weight	0.04 lb. (0.02 kg)
	Environment	**Operating temperature**	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	0% to 95%, non-condensing
		Non-operating/ Storage temperature	–40ºF to 185ºF –40ºC to 85ºC)
	Cabling	Type: Single-mode fiber optic, complying with ITU-T G.652; Maximum distance: • 0.5-10,000 m (single-mode fiber)	
	Notes	Transmit wavelength: 1310 nm. Receive wavelength: 1490 nm. For supported platforms and minimum software requirements to support this product, see the document titled "Support for the HP BX Transceivers" on the "HP Mini-GBICs and SFPs" Manuals Web page. The J9143B connects to the J9142B "downstream" transceiver, or to any IEEE-standard 1000BASE-BX10-D ("downstream") device. (A 1000-BX-U transceiver can only connect to a 1000-BX-D product. You cannot connect two 1000-BX-U transceivers together.) Power consumption is 1 watt maximum.	
	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 X131 10G X2 CX4 Transceiver (J8440C) HP X131 10G X2 CX4 Transceiver: An X2 format 10-gigabit CX4 transceiver.	**Ports**	1 CX4 10-GbE port (IEEE 802.3ak Type 10GBASE-CX4); Duplex: full only	
	Connectivity	**Connector type**	CX4
	Physical characteristics	**Dimensions**	3.54(d) x 1.42(w) x 0.53(h) in. (8.99 x 3.61 x 1.35 cm)
		Weight	0.18 lb. (0.08 kg)
		Transceiver form factor	X2
	Environment	**Operating temperature**	32ºF to 131ºF (0ºC to 55ºC)
		Operating relative humidity	15% to 95%, noncondensing
		Nonoperating/Storage	-40ºF to 185ºF (-40ºC to 85ºC)

Accessory Product Details

		temperature	
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	1.0 W
		Power consumption maximum	3.3 W
	Cabling	Maximum distance: • 15m with CX4 cables • 300m with optical media converter and multimode fiber cable	
	Notes	Connector: CX4; Duplex: full Use CX4 10-GbE cable (0.5-15 m) For suggested vendors of CX4 cables, please see the "Cabling" answers on the "HP 10-GbE Transceivers" FAQs Web page.	
	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 X131 10G X2 SC ER Transceiver (J8438A) HP X131 10G X2 SC ER Transceiver: An X2 format 10-gigabit transceiver with SC connectors using ER technology.	**Ports**	1 SC 10-GbE port (IEEE 802.3ae Type 10GBASE-ER); Duplex: full only	
	Connectivity	**Connector type**	SC
		Wavelength	1550 nm
	Physical characteristics	**Dimensions**	3.48(d) x 1.42(w) x 0.43(h) in. (8.84 x 3.61 x 1.09 cm)
		Weight	0.35 lb. (0.16 kg)
		Transceiver form factor	X2
	Environment	**Operating temperature**	32ºF to 104ºF (0ºC to 40ºC)
		Operating relative humidity	15% to 95%, noncondensing
	Electrical characteristics	**Power consumption typical**	3 W
		Power consumption maximum	4.5 W
	Cabling	Cable type:: Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1;	
		Cable length	2m to 30km (max 40km on engineered links)
		Fiber type	Single Mode
	Notes	Conditioning patch cord cables are not supported For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.	
	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 X131 10G X2 SC LR Transceiver (J8437A) An X2 form-factor	**Ports**	1 SC 10-GbE port (IEEE 802.3ae Type 10GBASE-LR); Duplex: full only	
	Connectivity	**Connector type**	SC
		Wavelength	1310 nm
	Physical characteristics	**Dimensions**	3.48(d) x 1.42(w) x 0.43(h) in. (8.84 x 3.61 x

Accessory Product Details

transceiver that supports the 10-Gigabit LR standard, providing 10-Gigabit connectivity up to 10 km on single-mode fiber.			1.09 cm)
		Weight	0.35 lb. (0.16 kg)
		Transceiver form factor	X2
	Environment	**Operating temperature**	32ºF to 104ºF (0ºC to 40ºC)
		Operating relative humidity	15% to 95%, noncondensing
		Nonoperating/Storage temperature	-40ºF to 185ºF (-40ºC to 85ºC)
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	2 W
		Power consumption maximum	3 W
	Cabling	Cable type:: Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1; Maximum distance: • 10 km	
		Cable length	2m to 10km with 9/125 ìm single-mode cable
		Fiber type	Single Mode
	Notes	Conditioning patch cord cables are not supported For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended	
	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 X131 10G X2 SC LRM Transceiver (J9144A) An X2 form-factor transceiver that supports the 10-Gigabit LRM standard, providing 10-Gigabit connectivity up to 220 m on legacy multimode fiber.	**Ports**	1 SC 10-GbE port (IEEE 802.3aq Type 10GBASE-LRM); Duplex: full only	
	Physical characteristics	**Dimensions**	3.54(d) x 1.59(w) x 0.7(h) in. (9.0 x 4.05 x 1.78 cm)
		Weight	0.35 lb. (0.16 kg)
		Transceiver form factor	X2
	Environment	**Operating temperature**	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	0% to 95%, noncondensing
		Nonoperating/Storage temperature	-40ºF to 185ºF (-40ºC to 85ºC)
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	3.2 W
		Power consumption maximum	4.2 W
	Cabling	Cable type: 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and	

		ISO/IEC 793-2 Type A1b or A1a, respectively (a mode conditioning patch cord may be needed in some multimode fiber installations); Maximum distance: • 0.5-220m with 62.5 µm multimode cable @ 160/500 MHz*km • 0.5-220m with 62.5 µm multimode cable @ 200/500 MHz*km • 0.5-100m with 50 µm multimode cable @ 400/400 MHz*km • 0.5-220m with 50 µm multimode cable @ 500/500 MHz*km • 0.5-220m with 50 µm multimode cable @ 1500/500 MHz*km	
		Cable length	.5m to 220m
		Fiber type	Multi Mode
	Notes	Wavelength: 1310nm For OM3 cable (50 ìm multimode @ 1500/500 MHz*km), a mode-conditioning patch cord is not required. Other multimode cables may require mode-conditioning patch cords to achieve the maximum distances listed above. For supported platforms and minimum software requirements to support this product, see the document titled "Support for the J9144A 10-GbE X2-SC LRM Optic" on the "HP 10-GbE Transceivers" Manuals Web page. Power Consumption: 4W Max	
	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 X131 10G X2 SC SR Transceiver (J8436A) HP X131 10G X2 SC SR Transceiver: An X2 format 10-gigabit transceiver with SC connectors using SR technology.	**Ports**	1 SC 10-GbE port (IEEE 802.3ae Type 10GBASE-SR); Duplex: full only	
	Connectivity	**Connector type**	SC
		Wavelength	850 nm
	Physical characteristics	**Dimensions**	3.48(d) x 1.42(w) x 0.43(h) in. (8.84 x 3.61 x 1.09 cm)
		Weight	0.35 lb. (0.16 kg)
		Transceiver form factor	X2
	Environment	**Operating temperature**	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	0% to 95%, noncondensing
		Nonoperating/Storage temperature	-40ºF to 185ºF (-40ºC to 85ºC)
		Nonoperating/Storage relative humidity	0% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	1.7 W
		Power consumption maximum	2.4 W
	Cabling	Cable type:: 62.5/125 µm or 50/125 µm (core/cladding) graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively;	

Accessory Product Details

			Maximum distance: • 2-26m with 62.5 µm multimode cable @ 160 MHz*km • 2-33m with 62.5 µm multimode cable @ 200 MHz*km • 2-66m with 50 µm multimode cable @ 400 MHz*km • 2-82m with 50 µm multimode cable @ 500 MHz*km • 2-300m with 50 µm multimode cable @ 2000 MHz*km
		Cable length	2-300m
		Fiber type	Multi Mode
	Notes		For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.
	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 X132 10G SFP+ LC ER Transceiver (J9153A) The SFP+ ER Transceiver will transmit 10Gbps over up to 40km using standard OM3 fiber cable. This product expands the HP Networking transceiver portfolio for connections from 0m to 40km. Use only genuine HP transceivers with your HP Networking equipment to ensure reliability and support.	**Ports**		1 LC 10-GbE port (IEEE 802.3ae Type 10Gbase-ER); Duplex: full only
	Connectivity	**Connector type**	LC
		Wavelength	1550 nm
	Physical characteristics	**Dimensions**	2.22(d) x 0.55(w) x 0.47(h) in. (5.65 x 1.39 x 1.19 cm)
		Weight	.04 lb., Fully loaded
		Transceiver form factor	SFP+
	Environment	**Operating temperature**	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	-40°F to 185°F (-40°C to 85°C)
		Nonoperating/Storage relative humidity	5% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	1.3 W
		Power consumption maximum	1.5 W
	Cabling		Cable type: Single-mode fiber optic, complying with ITU-T G.652; Maximum distance: • 40km
		Fiber type	Single Mode
	Notes		Check switch release notes for minimum version of software required to support this transceiver. Some switches have limits as to how many of this particular transceiver can be installed. See the release notes of the switch software/firmware being used for more details.
	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 X132 10G SFP+ LC LR Transceiver (J9151A) A 10-Gigabit transceiver in SFP+ form-factor that supports the 10-Gigabit LR standard, providing 10-Gigabit connectivity up to 10 km on single-mode fiber.	**Ports**	1 LC 10-GbE port (IEEE 802.3ae Type 10Gbase-LR); Duplex: full only	
	Connectivity	**Connector type**	LC
		Wavelength	1310 nm
	Physical characteristics	**Dimensions**	2.19(d) x 0.54(w) x 0.47(h) in. (5.57 x 1.38 x 1.19 cm)
		Weight	0.04 lb. (.02 kg)
		Transceiver form factor	SFP+
	Environment	**Operating temperature**	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	0% to 85%, noncondensing
		Nonoperating/Storage temperature	-40°F to 185°F (-40°C to 85°C)
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	0.9 W
		Power consumption maximum	1 W
	Cabling	Cable type: Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1; Maximum distance: • 2m-10km with 9/125 µm single-mode cable	
		Cable length	2m to 10km
		Fiber type	Single Mode
	Notes	Conditioning patch cord cables are not supported. For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.	
	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 X132 10G SFP+ LC LRM Transceiver (J9152A) A 10-Gigabit transceiver in SFP+ form-factor that supports the 10-Gigabit LRM standard, for 10-Gigabit connectivity up to 220 m on legacy multimode fiber.	**Ports**	1 LC 10-GbE port (IEEE 802.3aq Type 10Gbase-LRM); Duplex: full only	
	Connectivity	**Connector type**	LC
		Wavelength	1310 nm
	Physical characteristics	**Dimensions**	2.19(d) x 0.54(w) x 0.47(h) in. (5.57 x 1.38 x 1.19 cm)
		Weight	0.04 lb. (.02 kg)
		Transceiver form factor	SFP+
	Environment	**Operating temperature**	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	0% to 85%, noncondensing
		Nonoperating/Storage	-40°F to 185°F (-40°C to 85°C)

Accessory Product Details

		temperature	
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	0.7 W
		Power consumption maximum	1 W
	Cabling	Cable type: 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively (a mode conditioning patch cord may be needed in some multimode fiber installations); Maximum distance: • 0.5-220m with 62.5 µm multimode cable @ 160/500 MHz*km • 0.5-220m with 62.5 µm multimode cable @ 200/500 MHz*km • 0.5-100m with 50 µm multimode cable @ 400/400 MHz*km • 0.5-220m with 50 µm multimode cable @ 500/500 MHz*km • 0.5-220m with 50 µm multimode cable @ 1500/500 MHz*km	
		Cable length	0.5m to 220m
		Fiber type	Multi Mode
	Notes	For OM3 cable (50 µm multimode @ 1500/500 MHz*km), a mode-conditioning patch cord is not required. Other multimode cables may require mode-conditioning patch cords to achieve the maximum distances listed above. For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.	
	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 X132 10G SFP+ LC SR Transceiver (J9150A) A 10-Gigabit transceiver in SFP+ form-factor that supports the 10-Gigabit SR standard, providing 10-Gigabit connectivity up to 300 m on multimode fiber.	**Ports**		1 LC 10-GbE port (IEEE 802.3ae Type 10Gbase-SR); Duplex: full only
	Connectivity	**Connector type**	LC
		Wavelength	850 nm
	Physical characteristics	**Dimensions**	2.19(d) x 0.54(w) x 0.47(h) in. (5.57 x 1.38 x 1.19 cm)
		Weight	0.04 lb. (0.02 kg)
		Transceiver form factor	SFP+
	Environment	**Operating temperature**	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	0% to 85%, noncondensing
		Nonoperating/Storage temperature	-40°F to 185°F (-40°C to 85°C)
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	0.6 W
		Power consumption maximum	0.8 W

Accessory Product Details

	Cabling	Cable type: 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively; Maximum distance: • 2-26m with 62.5 µm multimode cable @ 160 MHz*km • 2-33m with 62.5 µm multimode cable @ 200 MHz*km • 2-66m with 50 µm multimode cable @ 400 MHz*km • 2-82m with 50 µm multimode cable @ 500 MHz*km • 2-300m with 50 µm multimode cable @ 2000 MHz*km	
		Cable length	2-300m
		Fiber type	Multi Mode
	Notes	For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.	
	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 X242 SFP+ SFP+ 1 m Direct Attach Cable (J9281B)	**Connectivity**	Length	3.28 ft. (1 m)
	Physical characteristics	Weight	0.24 lb. (0.11 kg) the cable with an SFP+ transceiver at each end of the cable
	Environment	Operating temperature	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	14ºF to 185ºF (-10ºC to 85ºC)
		Nonoperating/Storage relative humidity	5% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	Notes	0.04 watts maximum per transceiver end
	Notes	Electrical Properties • Cable Characteristic Impedance: 100 ohms • Crosstalk between pairs: 2% max • Time delay: 1.31 nsec/ft Physical Properties • Cable Diameter: 0.180" • Minimum Cable Bend Radius: 1.0"	
	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 X242 SFP+ SFP+ 3 m Direct Attach Cable (J9283B)	**Connectivity**	Length	10 ft. (3 m)
	Physical characteristics	Weight	.49 lb. (0.22 kg), Fully loaded the cable with an SFP+ transceiver at each end of the cable
	Environment	Operating temperature	32ºF to 158ºF (0ºC to 70ºC)

Accessory Product Details

		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	14ºF to 185ºF (-10ºC to 85ºC)
		Nonoperating/Storage relative humidity	5% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	Notes	0.04 watts maximum per transceiver end
	Notes	Electrical Properties • Cable Characteristic Impedance: 100 ohms • Crosstalk between pairs: 2% max • Time delay: 1.31 nsec/ft Physical Properties • Cable Diameter: 0.180" • Minimum Cable Bend Radius: 1.0"	
	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 X242 SFP+ SFP+ 7 m Direct Attach Cable (J9285B)	**Connectivity**	Length	22.97 ft. (7 m)
	Physical characteristics	Weight	1.02 lb., Fully loaded the cable with an SFP+ transceiver at each end of the cable
	Environment	Operating temperature	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	14ºF to 185ºF (-10ºC to 85ºC)
		Nonoperating/Storage relative humidity	5% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	Notes	0.04 watts maximum per transceiver end
	Notes	Electrical Properties • Cable Characteristic Impedance: 100 ohms • Crosstalk between pairs: 2% max • Time delay: 1.31 nsec/ft Physical Properties • Cable Diameter: 0.180" • Minimum Cable Bend Radius: 1.0"	
	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 X242 SFP+ to SFP+ 10m Direct Attach Copper Cable (J9286B)	**Connectivity**	Length	32.82 ft. (10 m)
	Physical characteristics	Dimensions	12(d) x 15(w) x 3(h) in. (30.48 x 38.1 x 7.62 cm)
		Weight	0.99 lb. (0.45 kg), Fully loaded the cable with an SFP+ transceiver at each end of the cable

Accessory Product Details

	Environment	Operating temperature	23°F to 185°F (-5°C to 85°C)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	14°F to 185°F (-10°C to 85°C)
		Nonoperating/Storage relative humidity	5% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	Maximum power rating	1.2 W
		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. 0.6 watts maximum per transceiver end
	Notes	Electrical Properties: • Cable Characteristic Impedance: 100 ohms Physical Properties: • Cable Diameter: 0.185" • Minimum Cable Bend Radius: .555"	
	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 X242 SFP+ to SFP+ 15m Direct Attach Copper Cable (J9287B)	**Connectivity**	Length	49.20 ft. (15 m)
	Physical characteristics	Dimensions	12(d) x 15(w) x 3(h) in. (30.48 x 38.1 x 7.62 cm)
		Weight	1.74 lb. (0.79 kg), Fully loaded the cable with an SFP+ transceiver at each end of the cable
	Environment	Operating temperature	23°F to 185°F (-5°C to 85°C)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	14°F to 185°F (-10°C to 85°C)
		Nonoperating/Storage relative humidity	5% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	Maximum power rating	1.2 W
		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. 0.6 watts maximum per transceiver end
	Notes	Electrical Properties: • Cable Characteristic Impedance: 100 ohms Physical Properties:	

Accessory Product Details

		• Cable Diameter: 0.255" • Minimum Cable Bend Radius: 0.765"	
	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 X244 XFP SFP+ 1 m Direct Attach Cable (J9300A) A 1m direct attach copper cable with an XFP connector attached on one end and an SFP+ connector attached on the other end. This cable provides a low price connectivity option between switches/servers/ storage to interconnect XFP and SFP+ form factors.	**Connectivity**	Length	3.28 ft. (1 m)
	Physical characteristics	Weight	.27 lb. (0.12 kg), Fully loaded cable with XFP transceiver on one end and SFP+ on the other end
	Environment	Operating temperature	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	32ºF to 158ºF (0ºC to 70ºC)
		Nonoperating/Storage relative humidity	5% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Notes	XFP end consumes 2 watts SFP+ end consumes 0.036 watts	
	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 X244 XFP SFP+ 3 m Direct Attach Cable (J9301A) A 3m direct attach copper cable with an XFP connector attached on one end and an SFP+ connector attached on the other end. This cable provides a low price connectivity option between switches/servers/ storage to interconnect XFP and SFP+ form factors.	**Connectivity**	Length	9.84 ft. (3 m)
	Physical characteristics	Weight	.51 lb. (0.23 kg), Fully loaded cable with XFP transcevier on one end and SFP+ on the other end
	Environment	Operating temperature	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	32ºF to 158ºF (0ºC to 70ºC)
		Nonoperating/Storage relative humidity	5% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Cabling	Maximum distance: • 3m Direct Attach Cable	
	Notes	XFP end consumes 2 watts SFP+ end consumes 0.036 watts	
	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 X244 XFP SFP+ 5 m Direct Attach Cable (J9302A) A 5m direct attach copper	**Connectivity**	Length	16.4 ft. (5 m)
	Physical characteristics	Weight	.74 lb. (0.34 kg), Fully loaded cable with XFP transcevier on one end and SFP+ on the other end
	Environment	Operating temperature	32ºF to 158ºF (0ºC to 70ºC)

Accessory Product Details

cable with an XFP connector attached on one end and an SFP+ connector attached on the other end. This cable provides a low price connectivity option between switches/servers/ storage to interconnect XFP and SFP+ form factors.		Operating relative humidity: 5% to 95%, noncondensing Nonoperating/Storage temperature: 32ºF to 158ºF (0ºC to 70ºC) Nonoperating/Storage relative humidity: 5% to 95%, noncondensing Altitude: up to 10,000 ft. (3 km)
	Notes	XFP end consumes 2 watts SFP+ end conumes 0.036 watts
	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, mulitimode 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 um fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end. • Dimensions: Core diameter: 50 ± 3.0um Cladding diameter: 125 ± 2.0um Coating diameter: 245 ± 10um • 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 50/125um 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 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**	**Cable type**:

Accessory Product Details

LC/LC Optical Cable (AJ834A)		50/125 µm (core/cladding) diameter, mulitimode 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 um fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end. • Dimensions: Core diameter: 50 ± 3.0um Cladding diameter: 125 ± 2.0um Coating diameter: 245 ± 10um • 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 50/125um 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.
HP 2 m Multimode OM3 LC/LC Optical Cable (AJ835A)	**Cabling**	**Cable type**: 50/125 µm (core/cladding) diameter, mulitimode 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 um fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end. • Dimensions: Core diameter: 50 ± 3.0um Cladding diameter: 125 ± 2.0um Coating diameter: 245 ± 10um • 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 50/125um 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.
HP 5 m Multimode OM3 LC/LC Optical Cable (AJ836A)	**Cabling**	**Cable type**: 50/125 µm core/cladding) diameter, mulitimode 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 um fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end. • Dimensions: Core diameter: 50 ± 3.0um Cladding diameter: 125 ± 2.0um Coating diameter: 245 ± 10um • 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 50/125um 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

Accessory Product Details

	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 15 m Multimode OM3 LC/LC Optical Cable (AJ837A)	**Cabling**	**Cable type**: 50/125 µm (core/cladding) diameter, mulitimode 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 um fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end. • Dimensions: Core diameter: 50 ± 3.0um Cladding diameter: 125 ± 2.0um Coating diameter: 245 ± 10um • 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 50/125um 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.
HP 30 m Multimode OM3 LC/LC Optical Cable (AJ838A)	**Cabling**	**Cable type**: 50/125 µm (core/cladding) diameter, mulitimode 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 um fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

		• Dimensions: Core diameter: 50 ± 3.0um Cladding diameter: 125 ± 2.0um Coating diameter: 245 ± 10um • 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 50/125um 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.
HP 50 m Multimode OM3 LC/LC Optical Cable (AJ839A)	**Cabling**	**Cable type**: 50/125 µm (core/cladding) diameter, mulitimode 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 um fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end. • Dimensions: Core diameter: 50 ± 3.0um Cladding diameter: 125 ± 2.0um Coating diameter: 245 ± 10um • 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 50/125um 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.
HP Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable (QK732A)	**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 Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable (QK733A)	**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 Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable (QK734A)	**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 Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable (QK735A)	**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 Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable (QK736A)	**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

Accessory Product Details

		• 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 Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable (QK737A)	**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 620 Redundant/External Power Supply (J8696A)	**Ports**	2 redundant power supply ports Restrictions: 195 W available per port 2 external power supply ports Restrictions: 398 W available per port
	Physical characteristics	**Dimensions** 15.4(d) x 17.4(w) x 1.73(h) in. (39.12 x 44.2 x 4.39 cm) (1U height) **Weight** 15.2 lb. (6.89 kg)
	Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only
	Environment	**Operating temperature** 32°F to 131°F (0°C to 55°C) **Operating relative humidity** 15% to 95% @ 104°F (40°C), noncondensing

Accessory Product Details

	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	15% to 90% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft. (3 km)
	Acoustic	LwA per ISO 7779: 54.2 dB
Electrical characteristics	**Maximum heat dissipation**	400 BTU/hr (422 kJ/hr), for the actual 620 itself. PoE-powered device heat dissipation assumed to be outside the 620.
	Voltage	100-127/200-240 VAC
	Current	16/8 A
	Maximum power rating	1440 W
	RPS power	390 W
	PoE power	796 W
	RPS	12 V
	PoE	-50 V
	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. Above figures are for maximum RPS and PoE power being supplied to two switches simultaneously. 200 - 240 V power cords shipped with the 620 have a wall plug rated as close to 13 A as specific country standards allow.
Safety	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 60950	
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2
	Radiated	IEC 61000-4-3
	EFT/Burst	IEC 61000-4-4
	Surge	IEC 61000-4-5
	Conducted	IEC 61000-4-6
	Power frequency magnetic field	IEC 61000-4-8
	Voltage dips and interruptions	IEC 61000-4-11
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	Unmanaged power supply; provides information via LEDs (LEDs repeated on front and back panel) or through port interfaces of attached devices	
Notes	The 620 supports the HP Switch 2900 Series (RPS) and 3500yl Series (RPS/PoE), as well as 6200yl (RPS) switches. The HP Switch 5400zl Series is not supported. The 620 includes four 2 m RPS/EPS cables. These cables can be used to	

			carry either RPS or PoE power to the switch being powered.
	Services		3-year, 4-hour onsite, 13x5 coverage for hardware (U9270E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U9271E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UR854E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UR855E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UR857E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UR858E) 3 Yr 6 hr Call-to-Repair Onsite (UW371E) 4 Yr 6 hr Call-to-Repair Onsite (UW372E) 5 Yr 6 hr Call-to-Repair Onsite (UW373E) 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 630 Redundant and/or External Power Supply (J9443A)	**Physical characteristics**	**Dimensions**	15(d) x 8.5(w) x 1.73(h) in. (38.1 x 21.59 x 4.39 cm) (1U height)
		Weight	7.9 lb. (3.58 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 90% @ 149°F (65°C), noncondensing
		Altitude	up to 10,000 ft. (3 km)
		Acoustic	Power: 54.2 dB; ISO 7779, ISO 9296
	Electrical characteristics	**Maximum heat dissipation**	535 BTU/hr (564.42 kJ/hr), for the actual 630 power supply. PoE-powered device heat dissipation assumed to be outside the 630 power supply.
		Voltage	100-127/200-240 VAC
		Current	8/4 A
		Maximum power rating	740 W
		PoE power	398 W
		RPS power	185 W
		PoE power	398 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. 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). 200-240 V power cords shipped with the 630

Accessory Product Details

		power supply have a wall plug rated as close to 13 A as specific country standards allow.
	Notes	The HP 630 RPS/EPS supports the HP 2910al and 3500yl-PoE+ Switches. The HP Switch 5400zl Series is not supported. The 630 RPS/EPS includes two 2-m RPS/EPS cables, which can be used to carry either RPS or PoE+ power to the switch. Minimum software versions required: 2910al PoE+ switches require W.14.35 or later and 3500yl-PoE+ switches require K.14.52 or later
	Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U9270E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U9271E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UR854E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UR855E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UR857E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UR858E) 3 Yr 6 hr Call-to-Repair Onsite (UW371E) 4 Yr 6 hr Call-to-Repair Onsite (UW372E) 5 Yr 6 hr Call-to-Repair Onsite (UW373E) 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 X410 1U Universal 4-post Rack Mounting Kit (J9583A)	**Notes**	The rack mounting kit supports the 1U, full width switches in the following switch series and the power supply: 1810 Series, 2510 Series, 2520 Series, 2610 Series, 2810 Series, 2910 Series, 3500 Series, and the 620 Power Supply This universal rack mounting kit is design to fit the following racks: HP 10K 10642, HP 10K 10842, Panduit CN, Panduit CS, Wrightline Vantage S2, APC Netshelter 600mm, and APC Netshelter 800mm. It may well fit many other brands and models too.
	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 3500 yl Premium License (J8993A)	**Services**	3-Year, 9x5 SW phone support, software updates (UT479E) 3-year, 24x7 SW phone support, software updates (UT480E) 4-year, 24x7 SW phone support, software updates (UT456E) 5-year, 24x7 SW phone support, software updates (UT457E) 1-year, 24x7 software phone support, software updates (HS531E) 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.

Summary of Changes

Date	Version History	Action	Description of Change:
01-Dec-2014	From Version 22 to 23	Changed	Updated Warranty and support and Technical specifications
09-Oct-2014	From Version 21 to 22	Changed	Overview, Accessories and SKU descriptions were revised
20-Feb-2014	From Version 20 to 21	Changed	Build to Order and Factory Racked Models were revised.
17-Jan-2014	From Version 19 to 20	Changed	Factory Racked Models and Switch Enclosure Options were revised.
09-Dec-2013	From Version 18 to 19	Changed	Updated Features and Benefits, Introduction, and the specifications.
22-Nov-2013	From Version 17 to 18	Added	Configuration was added.
10-Jun-2013	From Version 16 to 17	Added	OM4 cables were added.
24-Sep-2012	From Version 15 to 16	Changed	Updated Features and Benefits, Introduction, and edited the notes and Standards and protocols in specifications.
25-Jun-2012	From Version 14 to 15	Changed	Updated Features and Benefits, Introduction, the specifications, and Accessories.
30-Mar-2012	From Version 13 to 14	Changed	The product name was updated throughout the document.
27-Mar-2012	From Version 12 to 13	Added	HP X242 SFP+ to SFP+ 10m Direct Attach Copper Cable and HP X242 SFP+ to SFP+ 15m Direct Attach Copper Cable were added.
29-Nov-2011	From Version 11 to 12	Changed	The Features and Benefits section was updated.
07-Nov-2011	From Version 10 to 11	Changed	The product name was updated throughout the document.
29-Sep-2011	From Version 9 to 10	Added	Accessory Product Details was added.
05-Jul-2011	From Version 8 to 9	Removed	Removed two cables from the Accessories section.
20-Jun-2011	From Version 7 to 8	Changed	Accessories were revised.
17-Nov-2010	From Version 6 to 7	Changed	Minor edits were made within the QuickSpec.
22-Oct-2010	From Version 5 to 6	Changed	The QuickSpec was rewritten, including changing the title.
02-Jun-2010	From Version 4 to 5	Changed	Updated the Notes section of Technical Specifications. Updated Standards and Protocols Added new cables to the Accessories section.
01-Feb-2010	From Version 3 to 4	Added	Added J9310A and J9311A
12-Aug-2009	From Version 2 to 3	Changed	Updated the Notes section of Technical Specifications.
28-Jun-2009	From Version 1 to 2	Changed	The QuickSpec was completely revised, including adding 4 new models and changing the title of the document.

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