

### Overview

#### Models

HP 1905-24 Switch	JD990A
HP 1905-48 Switch	JD994A
HP 1905-24-PoE Switch	JD992A

#### Key features

- Customized operation using intuitive Web interface
- Fast Ethernet Layer 2 operation
- Access control lists for enhanced security
- Spanning Tree: STP and RSTP
- 3-year warranty

#### Product overview

HP 1905 Switch Series devices are smart managed fixed-configuration Fast Ethernet Layer 2 switches designed for small businesses looking for key features in an easy-to-administer, low-cost solution. Fast Ethernet models include: 24- and 48-port non-PoE switches, 8- and 24-port PoE Fast Ethernet switches. Also available is a 10-port PoE Gigabit Ethernet switch. These smart managed switches come preconfigured for fast and easy installation, yet allow network operation to be enhanced using an intuitive Web-based management interface. Advanced security and quality of service features create a voice-ready network. HP 1905 series switches are solidly built for business operation, and are designed for high reliability, long life, low power consumption, and low total cost of ownership. The HP 1905 switches come with a 3-year warranty, covering unit, fans, and power adapters or power supplies.

#### Features and benefits

##### Quality of Service (QoS)

- **Traffic prioritization** (IEEE 802.1p): allows real-time traffic classification mapped to four hardware queues per port

##### Management

- **Simple Web management:** Intuitive Web GUI allows for easy management of device by even nontechnical users
- **Secure Web GUI:** provides a secure, easy-to-use graphical interface for configuring the module via HTTPS
- **SNMPv1, v2c:** devices can be discovered and monitored from an SNMP management station
- **Port mirroring:** allows traffic to be mirrored on any port or a network analyzer to assist with diagnostics or detecting network attacks
- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP):** automated device discovery protocol for easy mapping by network management applications

##### Connectivity

- **Auto-MDIX:** automatically adjusts for straight-through or crossover cables on all ports
- **Front-panel LEDs:** provide an at-a-glance view of status, activity, speed, and full-duplex operation
- **Flow control:** helps ensure reliable communications during full-duplex operation
- **Small Form-Factor Pluggable (SFP) slots:** allow for fiber connectivity
- **Cable diagnostics:** remotely detect cable issues using a browser-based tool

## Overview

### Performance

- **Link aggregation** (trunking): groups together up to eight links per trunk to increase bandwidth and create redundant connections
- **IGMP snooping**: multicast filtering improves network performance, instead of flooding traffic to all ports

### Layer 2 switching

- **VLAN support and tagging**: support up to 64 port-based VLANs and dynamic configuration of IEEE 802.1Q VLAN tagging, providing security between workgroups
- **Spanning Tree** (STP/RSTP): prevents network loop

### Security

- **Access control lists** (ACLs): allow network managers to define classification actions and rules for specific ingress ports
- **Secure Sockets Layer** (SSL): encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch
- **IEEE 802.1X**: utilizes an industry-standard user authentication with an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server

### Convergence

- **Auto Voice VLAN**: recognizes IP phones and automatically assigns voice traffic to dedicated VLAN for IP phones
- **IEEE 802.3af Power over Ethernet** (1905-24-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 (see product specifications for total PoE power available)

### Additional information

- **Green initiative support**: provides support for RoHS and WEEE regulations

### Warranty and support

- **3-year warranty**: with advance replacement and next-business-day delivery (available in most countries)
- **Electronic and telephone support**: limited electronic and telephone support is available from HP; to reach our support centers, refer to [www.hp.com/networking/contact-support](http://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](http://www.hp.com/networking/warrantysummary)
- **Software releases**: to find software for your product, refer to [www.hp.com/networking/support](http://www.hp.com/networking/support); for details on the software releases available with your product purchase, refer to [www.hp.com/networking/warrantysummary](http://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 1905-24 Switch

- 24 RJ-45 autosensing 10/100 ports
- 2 RJ-45 dual-personality 10/100/1000 ports
- min=0 \ max=2 SFP Transceivers
- 1U - Height

JD990A

See Configuration  
Note:1, 9

## HP 1905-48 Switch

- 48 RJ-45 autosensing 10/100 ports
- 2 RJ-45 dual-personality 10/100/1000 ports
- min=0 \ max=2 SFP Transceivers
- 1U - Height

JD994A

See Configuration  
Note:1, 9

## HP 1905-24-PoE Switch

- 24 RJ-45 autosensing 10/100 ports
- 2 RJ-45 dual-personality 10/100/1000 ports
- min=0 \ max=2 SFP Transceivers
- 1U - Height

JD992A

See Configuration  
Note:1, 9

## Configuration Rules:

Note 1 The following Transceivers install into this switch:

HP X120 1G SFP LC LX Transceiver  
HP X121 1G SFP LC LX Transceiver  
HP X121 1G SFP LC SX Transceiver

JD119B

J4859C

J4858C

Note 9 Localization required. (See Localization Menu for list.)

**Transceivers****SFP Transceivers**

HP X121 1G SFP LC SX Transceiver

J4858C

HP X121 1G SFP LC LX Transceiver

J4859C

HP X120 1G SFP LC LX Transceiver

JD119B

**Internal Power Supplies**

No Power supplies

**Cables**

## Configuration

### 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

## Technical Specifications

## HP 1905-24 Switch (JD990A)

<b>Ports</b>	24 RJ-45 autosensing 10/100 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Media Type: Auto-MDIX; Duplex: half or full
	2 RJ-45 dual-personality 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T)
	1 RJ-45 serial console port
<b>Physical characteristics</b>	<b>Dimensions</b> 17.4(w) x 9.4(d) x 1.7(h) in (44.2 x 23.88 x 4.32 cm) (1U height)
	<b>Weight</b> 6.8 lb (3.08 kg)
<b>Memory and processor</b>	<b>Processor</b> ARM 88E6218 @ 150 MHz, 8 MB SDRAM, 4 MB flash; packet buffer size: 384 KB
<b>Mounting</b>	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)
<b>Performance</b>	<b>100 Mb Latency</b> < 5 $\mu$ s
	<b>1000 Mb Latency</b> < 5 $\mu$ s
	<b>Throughput</b> 6.6 million pps
	<b>Routing/Switching capacity</b> 8.8 Gbps
<b>Environment</b>	<b>Operating temperature</b> 32°F to 113°F (0°C to 45°C)
	<b>Operating relative humidity</b> 10% to 90%, non-condensing
	<b>Nonoperating/Storage temperature</b> -40°F to 158°F (-40°C to 70°C)
	<b>Nonoperating/Storage relative humidity</b> 10% to 95%, non-condensing
	<b>Acoustic</b> Fanless
<b>Electrical characteristics</b>	<b>Voltage</b> 100-240 VAC
	<b>Frequency</b> 50/60 Hz
<b>Safety</b>	UL 60950; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03
<b>Emissions</b>	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A
<b>Management</b>	limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB
<b>Notes</b>	The HP 1905-24 Switch (JD990A) was formerly sold as the 3Com Baseline Plus 2226 (3CBLSF26H) and may ship with this product labeling.
<b>Services</b>	3-year, 4-hour onsite, 13x5 coverage for hardware (UV792E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW015E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW021E) 3-year, 24x7 SW phone support, software updates (UV795E) 1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR682E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR683E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR684E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UV793E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW016E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW022E)

## Technical Specifications

4-year, 24x7 SW phone support, software updates (UV796E)  
 5-year, 4-hour onsite, 13x5 coverage for hardware (UV794E)  
 5-year, 4-hour onsite, 24x7 coverage for hardware (UW017E)  
 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW023E)  
 5-year, 24x7 SW phone support, software updates (UV797E)  
 3 Yr 6 hr Call-to-Repair Onsite (UW018E)  
 4 Yr 6 hr Call-to-Repair Onsite (UW019E)  
 5 Yr 6 hr Call-to-Repair Onsite (UW020E)  
 1-year, 6 hour Call-To-Repair Onsite for hardware (HR686E)  
 1-year, 24x7 software phone support, software updates (HR685E)

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

## HP 1905-48 Switch (JD994A)

<b>Ports</b>	48 RJ-45 autosensing 10/100 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Media Type: Auto-MDIX; Duplex: half or full	
	2 RJ-45 dual-personality 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T)	
	1 RJ-45 serial console port	
<b>Physical characteristics</b>	<b>Dimensions</b>	17.4(w) x 9.4(d) x 1.7(h) in (44.2 x 23.88 x 4.32 cm) (1U height)
	<b>Weight</b>	6.4 lb (2.9 kg)
<b>Memory and processor</b>	<b>Processor</b>	ARM 88E6218 @ 150 MHz, 8 MB SDRAM, 4 MB flash; packet buffer size: 384 MB
<b>Mounting</b>	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)	
<b>Performance</b>	<b>100 Mb Latency</b>	< 5 $\mu$ s
	<b>1000 Mb Latency</b>	< 5 $\mu$ s
	<b>Throughput</b>	10.1 million pps
	<b>Routing/Switching capacity</b>	13.6 Gbps
<b>Environment</b>	<b>Operating temperature</b>	32°F to 113°F (0°C to 45°C)
	<b>Operating relative humidity</b>	10% to 90%, non-condensing
	<b>Nonoperating/Storage temperature</b>	-40°F to 158°F (-40°C to 70°C)
	<b>Nonoperating/Storage relative humidity</b>	10% to 95%, non-condensing
	<b>Acoustic</b>	Fanless
<b>Electrical characteristics</b>	<b>Voltage</b>	100-240 VAC
	<b>Frequency</b>	50/60 Hz
<b>Safety</b>	UL 60950; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03	

## Technical Specifications

<b>Emissions</b>	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A
<b>Management</b>	limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB
<b>Notes</b>	The HP 1905-48 Switch (JD994A) was formerly sold as the 3Com Baseline Plus 2250 (3CBLSF50H) and may ship with this product labeling.
<b>Services</b>	<p>3-year, 4-hour onsite, 13x5 coverage for hardware (UV792E)</p> <p>3-year, 4-hour onsite, 24x7 coverage for hardware (UW015E)</p> <p>3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW021E)</p> <p>3-year, 24x7 SW phone support, software updates (UV795E)</p> <p>1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR682E)</p> <p>1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR683E)</p> <p>1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR684E)</p> <p>4-year, 4-hour onsite, 13x5 coverage for hardware (UV793E)</p> <p>4-year, 4-hour onsite, 24x7 coverage for hardware (UW016E)</p> <p>4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW022E)</p> <p>4-year, 24x7 SW phone support, software updates (UV796E)</p> <p>5-year, 4-hour onsite, 13x5 coverage for hardware (UV794E)</p> <p>5-year, 4-hour onsite, 24x7 coverage for hardware (UW017E)</p> <p>5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW023E)</p> <p>5-year, 24x7 SW phone support, software updates (UV797E)</p> <p>3 Yr 6 hr Call-to-Repair Onsite (UW018E)</p> <p>4 Yr 6 hr Call-to-Repair Onsite (UW019E)</p> <p>5 Yr 6 hr Call-to-Repair Onsite (UW020E)</p> <p>1-year, 6 hour Call-To-Repair Onsite for hardware (HR686E)</p> <p>1-year, 24x7 software phone support, software updates (HR685E)</p>

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

## HP 1905-24-PoE Switch (JD992A)

<b>Ports</b>	24 RJ-45 autosensing 10/100 PoE ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3af PoE); Media Type: Auto-MDIX; Duplex: half or full
	2 RJ-45 dual-personality 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T)
	1 RJ-45 serial console port
<b>Physical characteristics</b>	<b>Dimensions</b> 17.4(w) x 9.4(d) x 1.7(h) in (44.2 x 23.88 x 4.32 cm) (1U height)
	<b>Weight</b> 7.1 lb (3.22 kg)
<b>Memory and processor</b>	<b>Processor</b> ARM 88E6218 @ 150 MHz, 8 MB SDRAM, 4 MB flash; packet buffer size: 384 MB
<b>Mounting</b>	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included)
<b>Performance</b>	<b>100 Mb Latency</b> < 5 $\mu$ s
	<b>1000 Mb Latency</b> < 5 $\mu$ s
	<b>Throughput</b> 6.6 million pps

## Technical Specifications

	<b>Routing/Switching capacity</b>	8.8 Gbps
<b>Environment</b>	<b>Operating temperature</b>	32°F to 113°F (0°C to 45°C)
	<b>Operating relative humidity</b>	10% to 90%, non-condensing
	<b>Nonoperating/Storage temperature</b>	-40°F to 158°F (-40°C to 70°C)
	<b>Nonoperating/Storage relative humidity</b>	10% to 95%, non-condensing
<b>Electrical characteristics</b>	<b>Voltage</b>	100-240 VAC
	<b>Frequency</b>	50/60 Hz
<b>Safety</b>	UL 60950; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03	
<b>Emissions</b>	FCC part 15 Class A; VCCI Class A; EN 55022 Class A; CISPR 22 Class A; EN 55024; EN 61000-3-2 2000, 61000-3-3; ICES-003 Class A	
<b>Management</b>	limited command-line interface; Web browser; SNMP Manager; IEEE 802.3 Ethernet MIB	
<b>Notes</b>	The HP 1905-24-PoE Switch (JD992A) was formerly sold as the 3Com Baseline Plus 2426 PWR (3CBLSF26PWRH) and may ship with this product labeling.	
<b>Services</b>	3-year, 4-hour onsite, 13x5 coverage for hardware (UV792E)	
	3-year, 4-hour onsite, 24x7 coverage for hardware (UW015E)	
	3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW021E)	
	3-year, 24x7 SW phone support, software updates (UV795E)	
	1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR682E)	
	1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR683E)	
	1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR684E)	
	4-year, 4-hour onsite, 13x5 coverage for hardware (UV793E)	
	4-year, 4-hour onsite, 24x7 coverage for hardware (UW016E)	
	4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW022E)	
	4-year, 24x7 SW phone support, software updates (UV796E)	
	5-year, 4-hour onsite, 13x5 coverage for hardware (UV794E)	
	5-year, 4-hour onsite, 24x7 coverage for hardware (UW017E)	
	5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW023E)	
	5-year, 24x7 SW phone support, software updates (UV797E)	
	3 Yr 6 hr Call-to-Repair Onsite (UW018E)	
	4 Yr 6 hr Call-to-Repair Onsite (UW019E)	
5 Yr 6 hr Call-to-Repair Onsite (UW020E)		
1-year, 6 hour Call-To-Repair Onsite for hardware (HR686E)		
1-year, 24x7 software phone support, software updates (HR685E)		

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



## Accessories

**HP 1905 Switch Series  
accessories****Transceivers**

HP X120 1G SFP LC LX Transceiver

JD119B

HP X121 1G SFP LC SX Transceiver

J4858C

HP X121 1G SFP LC LX Transceiver

J4859C

**Cables**

HP .5m Multi-mode OM3 LC/LC Optical Cable

AJ833A

HP 1m Multi-mode OM3 LC/LC Optical Cable

AJ834A

HP 2m Multi-mode OM3 LC/LC Optical Cable

AJ835A

HP 5m Multi-mode OM3 LC/LC Optical Cable

AJ836A

HP 15m Multi-mode OM3 LC/LC Optical Cable

AJ837A

HP 30m Multi-mode OM3 LC/LC Optical Cable

AJ838A

HP 50m Multi-mode OM3 LC/LC Optical Cable

AJ839A

NEW HP Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable

QK732A

NEW HP Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable

QK733A

NEW HP Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable

QK734A

NEW HP Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable

QK735A

NEW HP Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable

QK736A

NEW HP Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable

QK737A

## Accessory Product Details

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

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

<b>HP X121 1G SFP LC SX Transceiver (J4858C)</b>  A small form-factor pluggable (SFP) Gigabit SX transceiver that provides a full-duplex Gigabit solution up to 550 m on multimode fiber.	<b>Ports</b>	1 LC 1000BASE-SX port; Duplex: full only
	<b>Physical characteristics</b>	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)
	<b>Environment</b>	Transceiver form factor: SFP
		Operating temperature: 32°F to 158°F (0°C to 70°C)
		Operating relative humidity: 5% to 85%, noncondensing
	<b>Electrical characteristics</b>	Nonoperating/Storage temperature: -40°F to 203°F (-40°C to 85°C)
Altitude: up to 10,000 ft. (3 km)		
<b>Cabling</b>	Power consumption typical: 0.4 W	
	Power consumption maximum: 0.7 W	
	Type:	<ul style="list-style-type: none"> <li>• 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;</li> </ul>
	Maximum distance:	<ul style="list-style-type: none"> <li>• 2-220 m (62.5 µm core diameter, 160 MHz*km bandwidth)</li> <li>• 2-275 m (62.5 µm core diameter, 200 MHz*km bandwidth)</li> <li>• 2-500 m (50 µm core diameter, 400 MHz*km bandwidth)</li> <li>• 2-550 m (50 µm core diameter, 500 MHz*km bandwidth)</li> </ul>

## Accessory Product Details

**Services**

Cable length: 2-550m

Fiber type: Multi Mode

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

**HP X121 1G SFP LC LX Transceiver (J4859C)****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)

**HP X121 1G SFP LC LX**

Transceiver: An SFP format gigabit transceiver with LC connectors using LX technology.

**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: &lt; 500mW Typical

**Services**

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

## Accessory Product Details

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

**Cable type:**

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

**Maximum distance:**

10Gbps Transfer Rate (Ethernet): 300m

**Notes**

Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125  $\mu\text{m}$  fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

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

**Services**

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

## Accessory Product Details

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

**Cabling**

**Cable type:**

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

**Maximum distance:**

10Gbps Transfer Rate (Ethernet): 300m

**Notes**

Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125  $\mu\text{m}$  fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

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

**Services**

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

## Accessory Product Details

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

**Cabling**

**Cable type:**

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

**Maximum distance:**

10Gbps Transfer Rate (Ethernet): 300m

**Notes**

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

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

**Services**

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

## Accessory Product Details

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

**Cabling**

**Cable type:**

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

**Maximum distance:**

10Gbps Transfer Rate (Ethernet): 300m

**Notes**

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

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

**Services**

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

## Accessory Product Details

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

**Cable type:**

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

**Maximum distance:**

10Gbps Transfer Rate (Ethernet): 300m

**Notes**

Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125  $\mu\text{m}$  fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

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

**Services**

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



## Accessory Product Details

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

**Cable type:**

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

**Maximum distance:**

10Gbps Transfer Rate (Ethernet): 300m

**Notes**

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

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

**Services**

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

## Accessory Product Details

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

**Cable type:**

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

**Maximum distance:**

10Gbps Transfer Rate (Ethernet): 300m

**Notes**

Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125  $\mu\text{m}$  fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end.

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

**Services**

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

## Accessory Product Details

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

**Services**

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

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

**Services**

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

## Accessory Product Details

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

**Services**

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

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

**Services**

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

## Accessory Product Details

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

**Services**

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

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

**Services**

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

To learn more, visit: [www.hp.com/networking](http://www.hp.com/networking)

© Copyright 2010-2013 Hewlett-Packard Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.