

# HP E5400 zl Switch Series

## Specifications (continued)



**HP E5412-92G-PoE+/2XG-SFP+ v2 zl Switch with Premium Software (J9532A)**



**HP E5406-44G-PoE+/4G-SFP v2 zl Switch with Premium Software (J9539A)**



**HP E5412-92G-PoE+/4G-SFP v2 zl Switch with Premium Software (J9540A)**

	HP E5412-92G-PoE+/2XG-SFP+ v2 zl Switch with Premium Software (J9532A)	HP E5406-44G-PoE+/4G-SFP v2 zl Switch with Premium Software (J9539A)	HP E5412-92G-PoE+/4G-SFP v2 zl Switch with Premium Software (J9540A)
<b>Included accessories</b>	3 HP 24-port Gig-T PoE+ v2 zl Module (J9534A) 1 HP 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module (J9536A) 2 HP 1500 W PoE+ zl Power Supply (J9306A) 1 HP E5400 zl Switch Premium License (J8994A)	1 HP 24-port Gig-T PoE+ v2 zl Module (J9534A) 1 HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module (J9535A) 1 HP 1500 W PoE+ zl Power Supply (J9306A) 1 HP E5400 zl Switch Premium License (J8994A)	3 HP 24-port Gig-T PoE+ v2 zl Module (J9534A) 1 HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module (J9535A) 2 HP 1500 W PoE+ zl Power Supply (J9306A) 1 HP E5400 zl Switch Premium License (J8994A)
<b>Ports</b>	92 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T, IEEE 802.3at PoE+); Media Type: Auto-MDIX; Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only  2 open 10-GbE SFP+ transceiver slots  8 open module slots  Supports a maximum of 32 10-GbE ports or 284 autosensing 10/100/1000 ports or 196 mini-GBICs, or a combination	44 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T); Media Type: Auto-MDIX; Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only  4 open mini-GBIC slots  4 open module slots  Supports a maximum of 16 10-GbE ports or 140 autosensing 10/100/1000 ports or 100 mini-GBICs, or a combination	92 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX, IEEE 802.3ab Type 1000Base-T, IEEE 802.3at PoE+); Media Type: Auto-MDIX; Duplex: 10Base-T/100Base-TX: half or full; 1000Base-T: full only  4 open mini-GBIC slots  8 open module slots  Supports a maximum of 32 10-GbE ports or 284 autosensing 10/100/1000 ports or 196 mini-GBICs, or a combination
<b>Power supplies</b>	2 power-supply slots includes: 2 x J9306AHP 1500 W PoE+ zl Power Supply	1 power-supply slots includes: 1 x J9306AHP 1500 W PoE+ zl Power Supply	2 power-supply slots includes: 2 x J9306AHP 1500 W PoE+ zl Power Supply
<b>Physical characteristics</b>			
Dimensions	17.75(d) x 17.5(w) x 12.1(h) in. (45.09 x 44.45 x 30.73 cm) (7U height)	17.75(d) x 17.5(w) x 6.9(h) in. (45.09 x 44.45 x 17.53 cm) (4U height)	17.75(d) x 17.5(w) x 12.1(h) in. (45.09 x 44.45 x 30.73 cm) (7U height)
Weight	75.36 lb. (34.18 kg)	45.58 lb. (20.68 kg)	74.86 lb. (33.96 kg)
<b>Memory and processor</b>			
Gigabit Module	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM
10G Module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
Management Module	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash Mb, 128 MB compact flash, 256 MB DDR SDRAM	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash Mb, 128 MB compact flash, 256 MB DDR SDRAM
<b>Mounting</b>	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only
<b>Performance</b>			
1000 Mb latency	< 3.7 $\mu$ s (FIFO 64-byte packets)	< 3.7 $\mu$ s (FIFO 64-byte packets)	< 3.7 $\mu$ s (FIFO 64-byte packets)
10 Gbps Latency	< 2.1 $\mu$ s (FIFO 64-byte packets)	< 2.1 $\mu$ s (FIFO 64-byte packets)	< 2.1 $\mu$ s (FIFO 64-byte packets)
Throughput	up to 564.2 million pps	up to 282.1 million pps	up to 564.2 million pps
Routing/Switching capacity	758.4 Gbps	379.2 Gbps	758.4 Gbps
Switch fabric speed	758.4 Gbps	379.2 Gbps	758.4 Gbps
Routing table size	10,000 entries	10,000 entries	10,000 entries
MAC address table size	64,000 entries	64,000 entries	64,000 entries
<b>Environment</b>			
Operating temperature	32°F to 131°F (0°C to 55°C); 0°C to 40°C with J8706A or J8707A modules installed	32°F to 131°F (0°C to 55°C); 0°C to 40°C with J8706A or J8707A modules installed	32°F to 131°F (0°C to 55°C); 0°C to 40°C with J8706A or J8707A modules installed
Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing	15% to 95% @ 131°F (55°C), noncondensing	15% to 95% @ 131°F (55°C), noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing	15% to 95% @ 149°F (65°C), noncondensing	15% to 95% @ 149°F (65°C), noncondensing
Altitude	up to 10,000 ft. (3 km)	up to 10,000 ft. (3 km)	up to 10,000 ft. (3 km)
Acoustic	Power: 64 dB, Pressure: 57.5 dB ISO 7779, ISO 9296	Power: 57 dB, Pressure: 40.2 dB ISO 7779, ISO 9296	Power: 64 dB, Pressure: 57.5 dB ISO 7779, ISO 9296
<b>Electrical characteristics</b>			
Description	Two J9306A installed. Two open power supply slots are available; three different power supplies are available. See power supply products for additional specifications.	One J9306A installed. One open power supply slot is available; three different power supplies are available. See power supply products for additional specifications.	Two J9306A installed. Two open power supply slots are available; three different power supplies are available. See power supply products for additional specifications.
Maximum heat dissipation	4900 BTU/hr (5169.5 kJ/hr), (max. non-PoE); 7400 BTU/hr (7807 kJ/hr) (max. using PoE)	2450 BTU/hr (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)	4900 BTU/hr (5169.5 kJ/hr), (max. non-PoE); 7400 BTU/hr (7807 kJ/hr) (max. using PoE)
Voltage	110-127 / 200-240 VAC	110-127 / 200-240 VAC	110-127 / 200-240 VAC
Idle power	312 W	215 W	312 W
Frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz

# HP E5400 zl Switch Series

## Specifications (continued)

	HP E5412-92G-PoE+/2XG-SFP+ v2 zl Switch with Premium Software (J9532A)	HP E5406-44G-PoE+/4G-SFP v2 zl Switch with Premium Software (J9539A)	HP E5412-92G-PoE+/4G-SFP v2 zl Switch with Premium Software (J9540A)
<b>Notes</b>	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.
<b>Safety</b>	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
<b>Emissions</b>	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
<b>Immunity</b>			
EN	EN 55024, CISPR 24	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	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	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3
<b>Management</b>	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)
<b>Notes</b>	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g. J4858B, J4859C) are required. J8177B Gigabit 1000Base-T mini-GBIC is not supported on the 3500yl series switches. When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g. J4858B, J4859C) are required. J8177B Gigabit 1000Base-T mini-GBIC is not supported on the 3500yl series switches. When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g. J4858B, J4859C) are required. J8177B Gigabit 1000Base-T mini-GBIC is not supported on the 3500yl series switches. When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required.

# HP E5400 zl Switch Series

## Specifications (continued)

	HP E5412-92G-PoE+/2XG-SFP+ v2 zl Switch with Premium Software (J9532A)	HP E5406-44G-PoE+/4G-SFP v2 zl Switch with Premium Software (J9539A)	HP E5412-92G-PoE+/4G-SFP v2 zl Switch with Premium Software (J9540A)
<b>Services</b>	<p>3-year, 4-hour onsite, 13x5 coverage for hardware (UE253E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UE254E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UE255E) 3-year, 24x7 SW phone support, software updates (UF788E) Installation with minimum configuration, system-based pricing (U4828E) Installation with HP-provided configuration, system-based pricing (U4832E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UR916E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UR917E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR918E) 4-year, 24x7 SW phone support, software updates (UR919E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UR920E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UR921E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR922E) 5-year, 24x7 SW phone support, software updates (UR923E) 3 Yr 6 hr Call-to-Repair Onsite (UW380E) 4 Yr 6 hr Call-to-Repair Onsite (UW381E) 5 Yr 6 hr Call-to-Repair Onsite (UW382E)</p> <p>Refer to the HP website at <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.</p>	<p>3-year, 4-hour onsite, 13x5 coverage for hardware (UE250E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UE251E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UE252E) 3-year, 24x7 SW phone support, software updates (UF786E) Installation with minimum configuration, system-based pricing (U4828E) Installation with HP-provided configuration, system-based pricing (U4832E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UR900E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UR901E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR902E) 4-year, 24x7 SW phone support, software updates (UR903E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UR904E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UR905E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR906E) 5-year, 24x7 SW phone support, software updates (UR907E) 3 Yr 6 hr Call-to-Repair Onsite (UW377E) 4 Yr 6 hr Call-to-Repair Onsite (UW378E) 5 Yr 6 hr Call-to-Repair Onsite (UW379E)</p> <p>Refer to the HP website at <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.</p>	<p>3-year, 4-hour onsite, 13x5 coverage for hardware (UE253E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UE254E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UE255E) 3-year, 24x7 SW phone support, software updates (UF788E) Installation with minimum configuration, system-based pricing (U4828E) Installation with HP-provided configuration, system-based pricing (U4832E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UR916E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UR917E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR918E) 4-year, 24x7 SW phone support, software updates (UR919E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UR920E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UR921E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR922E) 5-year, 24x7 SW phone support, software updates (UR923E) 3 Yr 6 hr Call-to-Repair Onsite (UW380E) 4 Yr 6 hr Call-to-Repair Onsite (UW381E) 5 Yr 6 hr Call-to-Repair Onsite (UW382E)</p> <p>Refer to the HP website at <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.</p>

# HP E5400 zl Switch Series

## Specifications (continued)

	HP E5412-92G-PoE+/2XG-SFP+ v2 zl Switch with Premium Software (J9532A)	HP E5406-44G-PoE+/4G-SFP v2 zl Switch with Premium Software (J9539A)	HP E5412-92G-PoE+/4G-SFP v2 zl Switch with Premium Software (J9540A)
<b>Standards and protocols</b> (applies to all products in series)	<b>Device management</b> RFC 1591 DNS (client) HTML and telnet management  <b>General protocols</b> IEEE 802.1ad Qin-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 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)  <b>IP multicast</b> RFC 3376 IGMPv3 (host joins only) RFC 3973 Draft 2 PIM Dense Mode RFC 4601 Draft 10 PIM Sparse Mode	<b>IPv6</b> 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 (host joins only) RFC 4022 MIB for TCP RFC 4113 MIB for UDP 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 5722 Handling of Overlapping IPv6 Fragments  <b>MIBs</b> RFC 1213 MIB II RFC 1493 Bridge MIB RFC 1724 RIPv2 MIB	<b>Network management</b> 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) RFC 2787 VRRP MIB RFC 2863 The Interfaces Group MIB RFC 2925 Ping MIB  <b>OSPF</b> RFC 2328 OSPFv2 RFC 3101 OSPF NSSA RFC 5340 OSPFv3 for IPv6  <b>QoS/CoS</b> RFC 2474 DiffServ Precedence, including 8 queues/port RFC 2597 DiffServ Assured Forwarding (AF) RFC 2598 DiffServ Expedited Forwarding (EF)  <b>Security</b> IEEE 802.1X Port Based Network Access Control RFC 1492 TACACS+ RFC 2865 RADIUS (client only) RFC 2866 RADIUS Accounting Secure Sockets Layer (SSL) SSHv1/SSHv2 Secure Shell