Datasheet | **S7500-48XE4TF2QF-L3M**

2.5G High-Speed Switch with 10G SFP+ and 40G QSFP+ Uplink

Unlock Next-Gen Connectivity: The 2.5G Switch – Your High-Speed Network Access Link for the Future.

To address these needs, the S7500-48XE4TF2QF-L3M 48-Port 2.5G Ethernet Switch with 4-10Gb SFP+ Ports and 2-40G QSFP+ Ports joins the BENCHU GROUP Smart Switch family. Delivering uncompromised 2.5G, 10G and 40G speeds, it is ideal for connecting high-performance workstations, servers, and storage arrays. It serves as a perfect aggregation point for WiFi 6/6E access points, ensuring maximum bandwidth efficiency for data-centric environments.

Engineered with powerful L2+/L3 features, these switches deliver exceptional forwarding performance tailored for high-speed applications. They support bandwidth-hungry BYOD(Bring Your Own Device) ro netcafe environments, ensuring smooth operations without congestion. Notably, the S7500-48XE4TF2QF-L3M achieves 2.5G speeds without costly cabling upgrades beyond Cat5e, making it the most cost-effective solution for organizations seeking pure speed and optimized infrastructure investment.

Highlights

The Benchu Group S7500-48XE4TF2QF-L3M 2.5G Smart Switch supports 24 x 2.5G Ethernet ports, 4 x 10Gb SFP+ and 2 x 40Gb QSFP+ uplinks, supporting IPv4/IPv6 and Remote Management to provide exceptional value. It supports configurable L3 network features like VLANs and Traffic Policy, allowing customers to deploy netcafe, high-performance workstations, NAS storage, servers, and WiFi 6/WiFi 6E Access Points simply and securely. Advanced features such as IPv4/IPv6 Layer 3 static routing, RIP, OSPF, LACP link aggregation, DiffServ QoS, Private VLANs, Multicast VLAN and Spanning Tree will satisfy even the most advanced business networks.

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Key features include:

- Layer 3 static routing (IPv4 and IPv6) for interVLAN local routing
- Layer 3 routing,RIP v1/V2 ,OSPF V1/V2 ,VRRP
- IPv4 / IPv6 Dual stack and switch virtual interfaces (SVIs)
- Advanced VLAN and Private VLAN support for better network segmentation
- L2/L3/L4 access control lists (ACLs) for granular network access control including 802.1x port authentication
- Advanced QoS (Quality of Service) for traffic prioritization including port-based, 802.1p and L2/L3/L4 DSCP-based
- Auto “denial-of-service” (DoS) prevention
- IGMP Snooping and Querier for multicast optimization
- Dynamic ARP for increased security targeting a class of Man in the Middle attack
- Rate limiting and priority queuing for better bandwidth allocation
- Port mirroring for network monitoring
- Energy Efficient Ethernet (IEEE 802.3az) for maximum power savings
- SNMP v1, v2c and RMON remote monitoring

Build a future-proof network with BENCHU:

- Solid performance with non-blocking architecture, 32K MAC addresses, 1000 shared (ingress) ACLs and 1024 Multicast groups
- Comprehensive IPv6 supporting management, QoS, ACL and routing, ensuring investment protection and a smooth migration to IPv6-based network
- All RJ45 ports with 100M/1G/2.5Gbps self-adaption
- 4 Dedicated 10G SFP+s and 2 Dedicated 40G QSFPs, not only providing fiber uplinks, but also uplink redundancy and failover, improving reliability and availability for the network

2.5G Ultra-Fast Access

- The remote units provide the full line-speed forwarding capability. All ports support non-blocking data packet forwarding, with 2.5G Ultra-Fast access, 10G and 40G hight speed uplink providing users with high-speed access experience and meeting the requirements of high-bandwidth services such as esports, online game, HD video conferencing, online video, and large file download.

BENCHU Quality and Reliability

- Built with top-tier switching ASICs and long-life solid capacitors for stable performance under continuous high loads.
- Every unit undergoes rigorous high-temperature aging tests to eliminate early failures and ensure zero-defect delivery.
- Intelligent temperature-controlled cooling system ensures low-temperature operation even in dense 48-port deployments.
- CE, FCC, RoHS,CB Certification.

Easy operation and maintenance management

- Web management, CLI command line (Console, Telnet), SNMP (V1/V2).
- HTTPS, and SSHV1/V2.
- RMON, system log, LLDP, and port traffic statistics.
- CPU monitoring, memory monitoring, Ping test, and cable diagnose.

Hardware at a Glance

FRONT				**REAR**	**SIDE**
Model Name	10/100/1000/2500Base-T RJ45 ports	10GBASE-X Fiber SFP+ Ports	40GBASE-X Fiber QSFP+ Ports	Power Supply	Fans
S7500-48XE4TF2QF-L3M	48	4	2	1 internal PSU, fixed	2 internal fans, fixed

Software at a Glance

LAYER 2+ / LAYER 3 LITE FEATURES							
Management	IPv4/IPv6 ACL and QoS	IPv4/IPv6 Multicast Filtering	G.8032 ERPS STP/RSTP/MSTP	IEEE (802.3az) Energy Efficient Ethernet	VLANs	Convergence	IPv4 & IPv6 Static Routing RIP/OSPF/VRRP
Web Browser-based GUI (HTTP/HTTPS), PC-Based Smart Control Center Utility (SCC) , RMON, SNMP	L2, L3, L4, ingress	IGMP and MLD Snooping	Yes	Yes	Static Dynamic, Voice, MAC, Protocol-based	LLDP-MED, RADIUS, 802.1X	Yes

Performance at a Glance

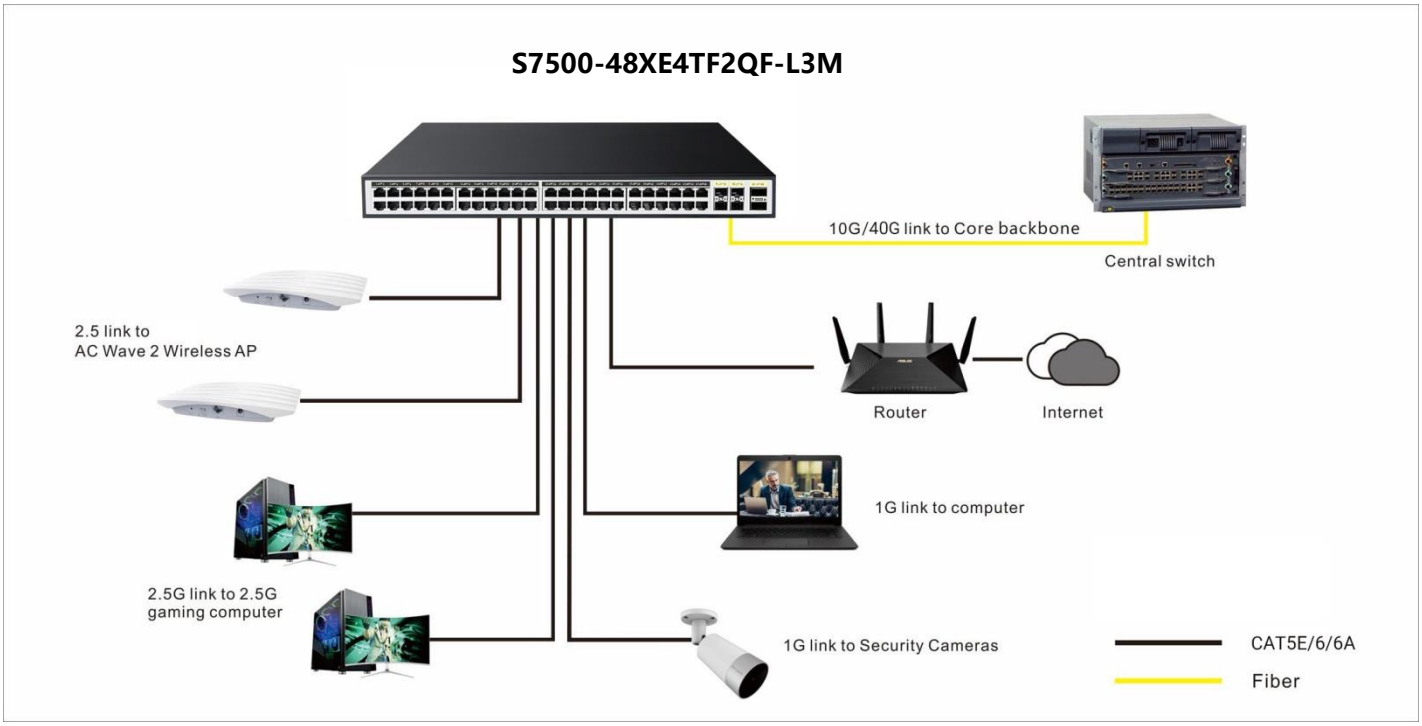
Model Name	Packet buffer	CPU	ACLs	MAC Address Table ARP Table VLANs	Fabric	Latency (Max Connection Speed)	Multicast IGMP Group
S7500-48XE4TF2QF-L3M	32MB	Dual-Core 2.8GHz MIPS InterAptive CPU subsystem 8GB DDR RAM	1000 shared	32K MAC 2048 ARP 4K VLANs QinQ	1.35Tbps 720Mpps line-rate	1G Copper: <3.35µs 2.5G Copper: <2.92µs 10G Fiber: <2.7µs 40G Fiber: <2.11µs	1024

Features and Benefits

Hardware Features	
2500BASE-T Copper Ethernet connections	Support 2.5G PC, HD Surveillance, VOIP and Wi-Fi6/ Wi-Fi6e AP deployments, scal-able for future growth.
1G/2.5G/10GBASE-X Fiber SFP+ ports 40GBASE-X Fiber QSFP+ ports	4 dedicated 10G SFP+ and 2 dedicated 40G QSFP+ ports for aggregation to the network core. Support for Fiber and Copper modules. Can also build dual redundancy by a trunked uplink with link aggregation.
Energy Efficient Ethernet (IEEE 802.3az)	Maximum power reduction for onging operational cost savings.
Desktop and rack mount (kit available)	Flexible deployment on desktop and also supports rack mounting.
Software Features	
Comprehensive IPv6 Support for Management, ACL and QoS	Build current network with future in mind. Ensure investment protection and a smooth migration to an IPv6-based network without switch replacement.
IPv4 & IPv6 Static Routing	A simple way to provide segmentation of the network with internal routing through the switch – reserving the router for external traffic routing only, making the entire network more efficient.
Robust security features: • 802.1x authentication (EAP) • Port-based security by locked MAC • ACL filtering to permit or deny traffic based on MAC and IP addresses	Build a secured, converged network with all types of traffic by preventing external attacks and blocking malware while allowing secure access for authorized users.
Comprehensive QoS features: • Port-based or 802.1p-based prioritization • Layer 3-based (DSCP) prioritization • Port-based ingress and egress rate limiting	Advanced controls for optimized network performance and better delivery of mission-critical traffic such as voice and video.
IGMP (IPv4) and MLD (IPv6) Snooping and Querier modes with Fast Leave	Facilitate fast receiver joins and leaves for multicast streams. Save cost and improve network efficiency by ensuring multicast traffic only reaches desig-nated receivers without the need of an extra multicast router.
Protected Ports	Ensure no exchange of unicast, broadcast, or multicast traffic between the protected ports on the switch, thereby improving the security of your converged network. This allows your sensitive phone conversations to stay private and your surveillance video clips can be forwarded to their designated storage device without leakage or alteration.
DHCP Snooping and Dynamic ARP Inspection	Ensure IP address allocation integrity by only allowing DHCP messages from trusted DHCP servers and dropping malformed DHCP messages with a port or MAC address mismatch. Use the DHCP snooping bindings database per port and per VLAN to drop incoming packets that do not match any binding and to enforce source IP/MAC addresses for malicious users traffic elimination.
Dynamic VLAN Assignment (RADIUS)	IP phones and PCs can authenticate on the same port but under different VLAN assignment policies. Users are free to move around and enjoy the same level of network access regardless of their physical location on the network.

Target Application

Network Convergence

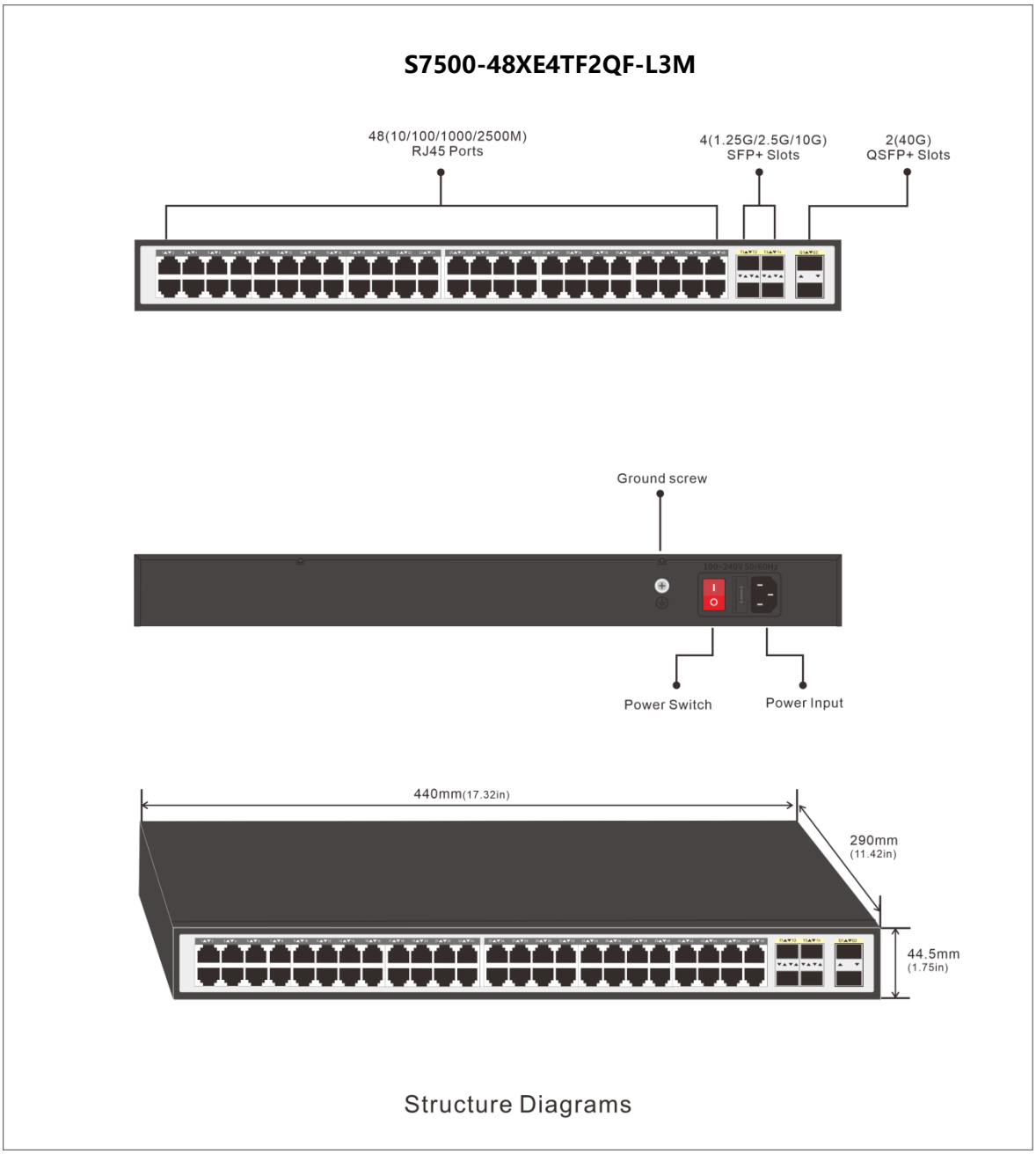


In rapidly expanding organizations, particularly in sectors like design, technology, internet services, and education, there is an increasing adoption of devices such as high-performance workstations, cybercafe, NAS storage servers, 4K/8K video editing suites, virtualization hosts, and WiFi 6/WiFi 6E access points. The close proximity of these data-heavy devices necessitates network switches that support multi-gigabit speeds, allowing network managers to eliminate bandwidth bottlenecks through existing cabling. The need for pure data throughput is especially critical for advanced workflows like large file transfers and cloud synchronization, which significantly increases the traffic load on access switches. With the surge in demand for high-speed networks, traditional 1G networks are no longer sufficient, prompting an urgent need to upgrade to faster options like 2.5G to meet users' growing needs. To ensure the sustained competitiveness of the enterprise.

BENCHU GROUP's 48-port 2.5G Smart Switches support dense deployments of these modern high-speed data devices. They offer powerful Layer 2 and Layer 3 features for IPv4 and IPv6 with enhanced performance and a focus on usability within fast growing corporate environments:

- 24 x 2.5G Base-T ports for maximum device throughput
- 4 dedicated 10G SFP+ and 2 dedicated 40G QSFP+ fiber ports for aggregation to the network core
- 1.35Tbps backplane bandwidth for non-blocking wire-speed performance
- Layer 3 static routing (IPv4 and IPv6) for inter VLAN local routing
- Layer 3 RIPv1、v2, OSPFv1、v2, VRRP for multiple routing
- IGMP Snooping, IGMP Querier and IGMP Fast Leave for multicast optimization
- ERPS(G.8032) STP/FSTP/MSTP for Ring network and Link protection
- Include VLANs, ACLs, DiffServ, LACP, MVR and DHCP
- Easy-to-use Web browser-based management GUI — No need for an IT expert

Structure Diagrams



Structure Diagrams

Technical Specifications	**S7500-48XE4TF2QF-L3M**
10M/100M/1G/2.5G RJ-45 copper ports	48
1G/2.5G/10G SFP+ (fiber) ports	4 (dedicated)
40G QSFP+ (fiber) ports	2 (dedicated)
Console Port (For config)	Yes
Performance Specification	
CPU	Dual-Core 2.8GHz MIPS InterAptive CPU subsystem
Packet buffer memory (Dynamically shared across only used ports)	32 MB
Forwarding modes	Store-and-forward
Bandwidth	1.35T Gbps
Packet forwarding rate (Mpps)	720Mpps
MAC address database size	32K
Multicast groups	1K
Number of IPv4 static routes	1024
Number of IPv6 static routes	1024
Number of VLANs	4094
Number of VLANs(Open QinQ)	16,760,836(4094*4094)
Number of ARP cache entries	2048 ARP
Number of DHCP snooping bindings	2048
Access Control Lists (ACLs)	500 shared for MAC, IP and IPv6 ACLs (ingress)
Priority queues	8
Jumbo frame support (bytes)	Up to 12K packet size
Mean Time Between Failures (MTBF) @ 25°C	1063,135 hours
100M Copper Latency (64-byte; 1518-byte; 9216-byte frames)	8.314μs; 8.412μs; 8.451μs
1G Copper Latency (64-byte; 1518-byte; 9216-byte frames)	3.432μs; 3.521μs; 3.625μs
2.5G Copper Latency (64-byte; 1518-byte; 9216-byte frames)	3.121μs; 3.413μs; 3.562μs
2.5G Fiber Latency (64-byte; 1518-byte; 9216-byte frames)	2.635μs; 2.862μs; 2.996μs
10G Fiber Latency (64-byte; 1518-byte; 9216-byte frames)	2.330μs; 2.561μs; 2.712μs
40G Fiber Latency (64-byte; 1518-byte; 9216-byte frames)	1.921μs; 2.036μs; 2.115μs

L2 Services - VLANs	**S7500-48XE4TF2QF-L3M**
IEEE 802.1Q VLAN tagging	Yes
QinQ VLAN tagging	Yes
IP-based VLANs	Yes
MAC-based VLANs	Yes
Protocol-based VLAN	Yes
Voice VLAN	Yes
VLAN mapping	Yes
L2 Services - Availability	
Broadcast, multicast, unknown unicast storm control	Yes
IEEE 802.3ad - LAGs (LACP)	Yes
IEEE 802.3x (full duplex and flow control)	Yes
IEEE 802.1D Spanning Tree Protocol	Yes
IEEE 802.1w Rapid Spanning Tree Protocol	Yes
IEEE 802.1s Multiple Spanning Tree Protocol	Yes
ITU-TG.8032 (ERPS)	Yes, Recovery time < 50ms
L2 Services - Multicast Filtering	
IGMP snooping (v1, v2 and v3)	Yes
MLD snooping support (v1 and v2)	Yes
IGMP snooping querier (v2)	Yes
MLD snooping querier (v1)	Yes
Multicast VLAN Registration (MVR)	Yes
L3 Services - DHCP	
DHCP client	Yes
DHCP snooping	Yes
DHCP Server	Yes
L3 Services - Routing	
IPv4 static routing	Yes
IPv6 static routing	Yes
VLAN routing	Yes
RIP V1/V2	Yes
OSPF V2	Yes
Number of IP VLAN interfaces(routed VLANs)	Yes
Policy routing	Yes
VRRP	Yes

Link Aggregation	**S7500-48XE4TF2QF-L3M**
IEEE 802.3ad - LAGs (LACP)	Yes
Manual LAG	Yes
# of LAGs / # of members in each LAG	8 LAGs with max 8 members in each LAG
Network Monitoring and Discovery Services	
802.1ab LLDP	Yes
SNMP	v1, v2,v3
RMON group 1,2,3,9	Yes
Network Security	
IEEE 802.1x	Yes
RADIUS accounting	Yes
Access Control Lists (ACLs)	Yes
IP-based ACLs (IPv4 and IPv6)	L2 / L3 / L4
MAC-based ACLs	Yes
TCP/UDP-based ACLs	Yes
Control MAC # static entries	500
Port-based security by locked MAC addresses	Yes
Dynamic ARP inspection	Yes
Broadcast, unicast, multicast DoS protection	Yes
DoS attacks prevention	Yes
Network storm protection, DoS	Yes
Quality of Service (QoS)	
Port-based rate limiting	Yes ingress and egress
Port-based QoS	Yes
Support for IPv6 fields	Yes
DiffServ QoS	Yes ingress
IEEE 802.1p COS	Yes
Destination MAC and IP	Yes
IPv4 and v6 DSCP	Yes
TCP/UDP-based	Yes
Weighted Round Robin (WRR)	Yes
Strict priority queue technology	Yes

IEEE Network Protocols	**S7500-48XE4TF2QF-L3M**
• IEEE 802.3 Ethernet	• IEEE 802.3x Full-Duplex Flow Control
• IEEE 802.3u 100BASE-T	• IEEE 802.1Q VLAN Tagging
• IEEE 802.3ab 1000BASE-T	• IEEE 802.1AB LLDP with ANSI/TIA-1057 (LLDP-MED)
• IEEE 802.3z 1000BASE-SX/LX	• IEEE 802.1p Class of Service
• IEEE 802.3bz 2.5G BASE-X	• IEEE 802.1D Spanning Tree (STP)
• IEEE 802.3ae 10G BASE-X	• IEEE 802.1s Multiple Spanning Tree (MSTP)
• IEEE 802.3ba 40G BASE-X	• IEEE 802.1w Rapid Spanning Tree (RSTP)
• IEEE 802.3az Energy Efficient Ethernet (EEE)	• ITU-TG.8032 Ethernet Ring Protection Switching (ERPS)
• IEEE 802.3ad Trunking (LACP)	• IEEE 802.1x RADIUS Network Access Control
Management, Monitoring & Troubleshooting	
Password management	Yes
Admin access control via RADIUS and TACACS+	Yes
IPv6 management	Yes
SNMP v1/v2c/v3	Yes
RMON group 1,2,3,9	Yes
Port mirroring	Yes ingress and egress
Many-to-one port mirroring	Yes
Cable test utility	Yes
TLS/HTTPS Web-based access (version)	Yes (v1.2)
File transfers (uploads, downloads)	TFTP / HTTP
HTTP upload/download (firmware)	Yes
Syslog (RFC 3164)	Yes
Per port LEDs	Speed, Link, Activity;
Per device LEDs	Power, system
Physical Specifications	
Dimensions(Width * Depth * Height)	440 x 290 x 44.5 mm (17.32 x 11.42 x 1.75 in)
Weight	4.6 kg (10.14 lb)
Power Requirements	AC 100~240V 50/60Hz
Max power (worst case, all ports used, line-rate traffic) (Watts)	36W
Iddle power consumption (all ports link-down standby) (Watts)	32W
Energy Efficient Ethernet (EEE) IEEE 802.3az	Yes (deactivated by default)

Environmental Specifications	**S7500-48XE4TF2QF-L3M**
Operating	
Operating Temperature	-20° to 50°C (-4° to 122°F)
Humidity	90% maximum relative humidity (RH), non-condensing
Altitude	10,000 ft (3,000 m) maximum
Storage	
Storage Temperature	–30° to 70°C (– 22° to 158°F)
Humidity (relative)	95% maximum relative humidity, non-condensing
Altitude	10,000 ft (3,000 m) maximum
Electromagnetic Emissions and Immunity	
Certifications	CE mark, commercial FCC Part 15 Class A, VCCI Class A Class A EN 55022 (CISPR 22) Class A Class A C-Tick EN 55024 CCC 47 CFR FCC Part 15, SubpartB, Class A ICES-003: 2016 Issue 6, Class A ANSI C63.4:2014 IEC 60950-1:2005 (ed.2)+A1:2009+A2:2013 AN/NZS CISPR 22:2009+A1:2010 CLASS A
Safety	
Certifications	CB mark, commercial CSA certified (CSA 22.2 #950) EN 60950-1: 2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 IEC 60950-1:2005 (ed.2)+A1:2009+A2:2013 AN/NZS 60950.1:2015 CCC (China Compulsory Certificate)
Warranty and Support	
Hardware Limited Warranty	Limited Lifetime*
Technical Support via Phone and Email*	Limited Lifetime*
Limited Lifetime* 24x7 Online Chat Technical Support	Limited Lifetime*
Package Contents	
All models	Smart 2.5G Ethernet Switch AC Power cord with C13 connector (localized to region of sale) Brackets and screws for rack mounting Rubber protection caps, which are already installed in the SFP sockets Installation guide User's manual

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