

Omada Pro L3 Managed Switch Datasheet

S6500-48GP6XF

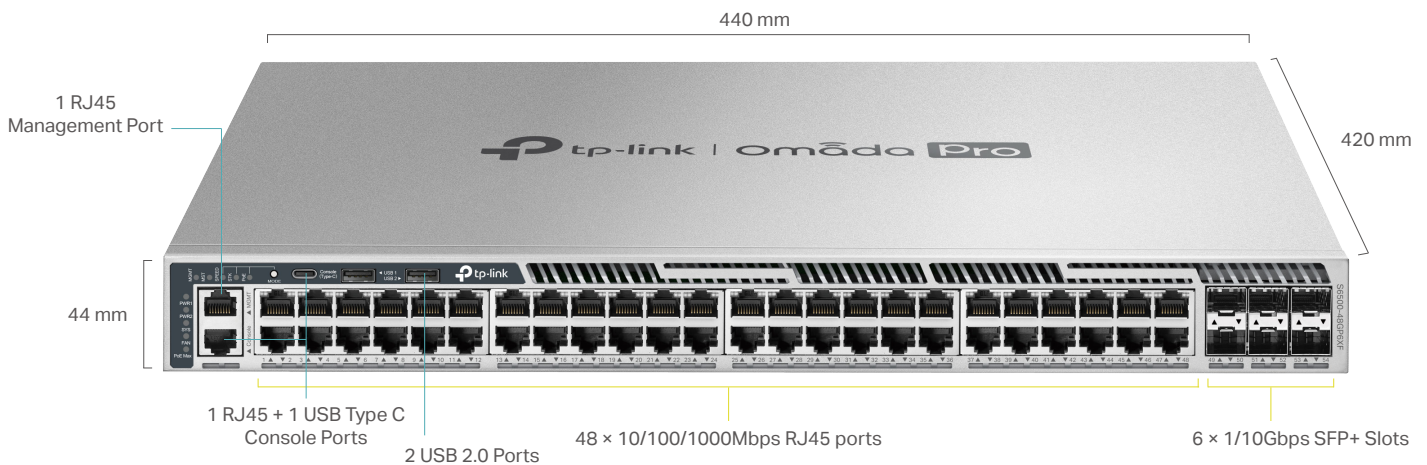
Omada Pro 48-Port Gigabit Stackable L3 Managed PoE+ Switch with 6 10G Slots



Highlights

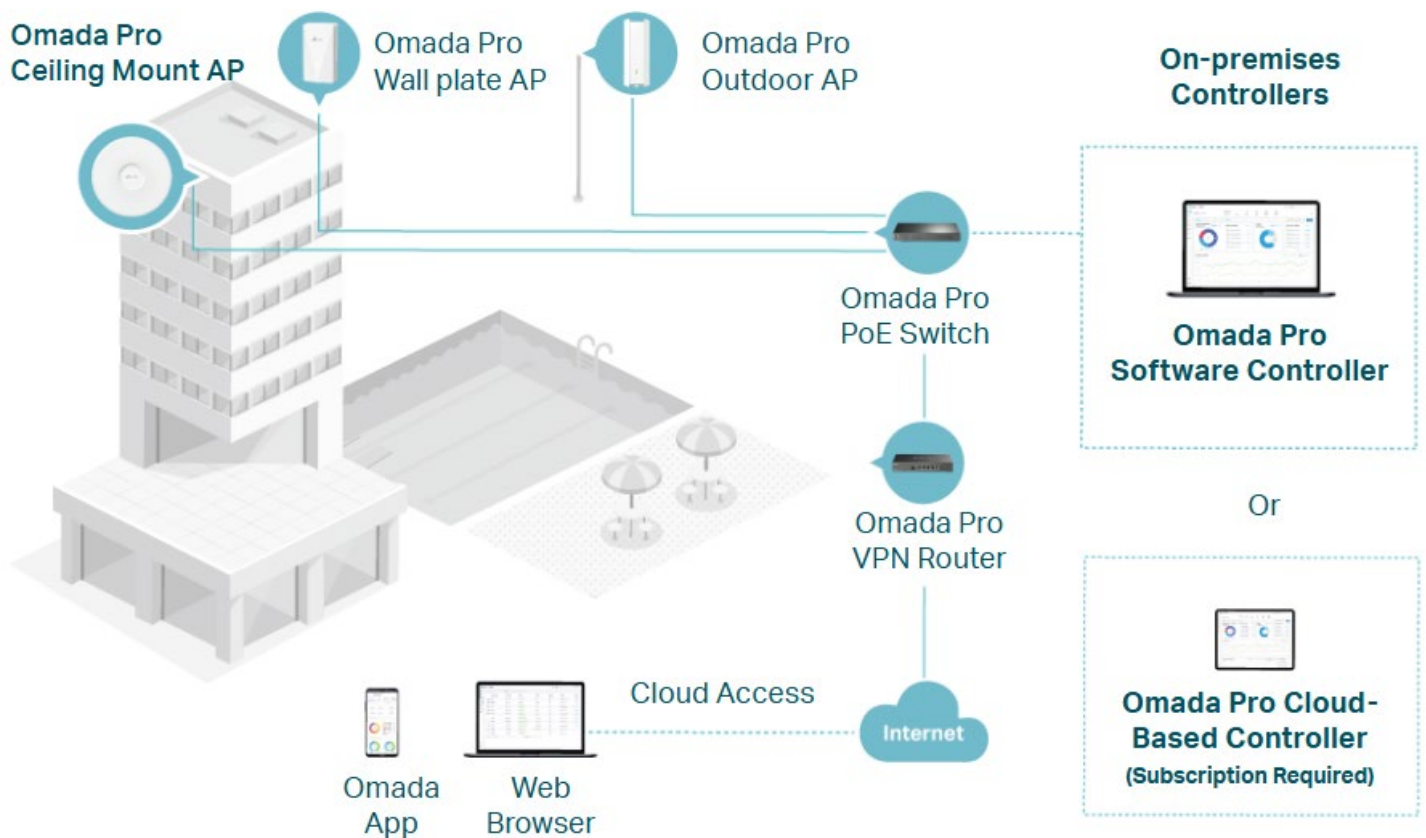
- 48× Gigabit PoE+ RJ45 ports and 6× 10 Gbps SFP+ slots
- Up to 1440 W total PoE budget*
- Physical stacking for built-in redundancy and performance
- M-LAG improve link reliability from the card level to the device level.
- L3 Features: OSPF, BGP, IS-IS, VRRP, VRF, PIM-SM/PIM-DM/PIM-SSM, ECMP, PBR, PTPv2
- Security Strategies: MACsec, Secure Boot, RADSEC, IMPB, SFTP, 802.1X, Port Security
- Highly available with two field-replaceable power supplies,** VRRP, ERPS, and BFD
- Easy O&M: NETCONF, Configuration Rollback, Hot Patching, and RSPAN
- Centralized cloud management via the web or the Omada app†

Product Pictures



Omada Pro Solution

Omada Pro is an intelligent cloud solution for enterprise networking, offering enterprise-grade product line designed to meet the high-capacity, security, and management needs of various industries, such as MDUs, hospitality, K-12 education, public works, and more.



MDUs



Hospitality



Public Works



Catering



Manufacturing



Retail

Specifications

Hardware Features & Performance		
Model		S6500-48GP6XF
General	Interface	48 × 10/100/1000Mbps RJ45 ports 6 × 1/10Gbps SFP+ Slots*
	Console Ports	1 × RJ45 + 1 × USB Type C
	Management Port	1 × RJ45
	USB Ports	2 × USB 2.0
	Flash	2×4 MB Nor + 8 GB EMMC
	DRAM	4GB DDR4
	Processor	Dual-Core ARM @1.5GHz CPU
PoE	PoE Standard	802.3af/at
	PoE Ports	48
	PoE Power Budget	764W (with 1*PSM900-AC, by default) 384W (with 1*PSM500-AC) 812W (with 2*PSM500-AC) 1176W (with 1*PSM500-AC and 1*PSM900-AC) 1440W (with 2*PSM900-AC)
	Fast PoE	Yes
	Perpetual PoE	Yes
Performance	Switching Capacity	216 Gbps
	Forwarding Bandwidth	108 Gbps
	Packet Forwarding Rate	160.7 Mpps
	MAC Address Table	32 K
	Packet Buffer	3 MB
	Stacking Port	10G SFP+ slot (all uplink ports can be used as stacking ports)**
	Stacking Bandwidth	Up to 120 Gbps (6 stacking ports)
	Max Stacking Number	12 in standalone mode, 4 in Omada controller mode
	Compatible Models for Stacking	S6500-24G4XF, S6500-48G6XF, S6500-24GP4XF, S6500-48GP6XF
	Transmission Method	Store and Forward
	Jumbo Frame	9 KB
Physical & Environmet	Power Supply	100-240 V ~50/60 Hz
	Redundant Power Supply	Max 2 hot swappable power supply module (shipping with one PSM900-AC module by default)***
	Suitable Power Supply Module	PSM500-AC, PSM900-AC
	Max Power Consumption	41.9 W (110 V/60 Hz) (With no PD connected) 1767.7 W (110 V/60 Hz) (With 1440W PD connected and powered by 2× PSM900-AC)
	Max Heat Dissipation	142.88 BTU/hr (110 V/60 Hz) (With no PD connected) 6,027.86 BTU/hr (110 V/60 Hz) (With 1440W PD connected and powered by 2× PSM900-AC)
	Standby Power Consumption	31.95 W (220 V/50 Hz)
	Noise	1× PSM900-AC power supply module: Min: 38.2 dBA @1m 25 °C Max: 60.6 dBA @1m 25 °C 2× PSM900-AC power supply modules: Min: 39.9 dBA @1m 25 °C Max: 62.3 dBA @1m 25 °C
	Fan Quantity	4 hot swappable fan modules, N+1 redundant
	Airflow	Front-to-back
	Surge Protection	Service port: ±6 kV in common mode Power port: ±6 kV in differential mode; ±6 kV in common mode
	ESD Protection	Air: ±15 kV, Contact: ±8 kV
	MTBF	648,538 h @ 25 °C
	Dimensions (W x D x H)	17.3 × 16.5 × 1.7 in (440 × 420 × 44 mm)
	Installation	Rackmount
	Operating Temperature & Altitude	-5 °C to 45 °C (23 °F to 113 °F) @ 2,000 meters -5 °C to 40 °C (23 °F to 104 °F) @ 3,000 meters
	Storage Temperature	-40 °C to 70 °C (-40 °F to 158 °F)
	Operation Humidity	10% to 90% RH, non-condensing
	Storage Humidity	5% to 90% RH, non-condensing
	Certification	CE, FCC, RoHS

*No more than two 10G RJ45 SFP+ modules are supported, and they can only be inserted into SFP+ slots 49&53.
**The 10G SFP+ slots support stacking only through 10G DAC/10G SFP+ modules rather than 1G SFP modules.
***An additional power supply module needs to be purchased separately.

Software Features [^]			
Model		S6500-48GP6XF	
System	System Info	• Device Description - Name - Location - System Contact • System Time - Manual - Synchronize with PC's Clock - SNTP Client • DST - Predefined Mode - Recurring Mode - Date Mode	• LED - LED on/off • System IP - Static IP/DHCP/BOOTP • System IPv6 - Link-local Address Config - Global Address Autoconfig via RA Message - Global Address Autoconfig via DHCPv6 Server - Add a Global Address Manually
	User Management	• User Settings • Access Level: 4 levels	• Password Recorvery Settings
	System Tools	• Config Restore/Backup - Web: HTTP - CLI: TFTP/Flash/USB • Firmware Upgrade - Web: HTTP - CLI: TFTP/Flash/USB	• System Reboot • System Reset • Boot Config (Dual Image) • Reboot Schedule • Config Rollback • Hot Patch
	Access Security	• Access Control Config - IP-based - MAC-based - Port-based - IPv6-based • HTTP Config - Enable/Disable - Session Config - Access User Number - Port Setting • SSL Config - SSLv3/TLSv1 Enable/Disable - CipherSuite Config - IPv6 SSL	• SSH Config - Enable/Disable - v2 - Encryption Algorithm - Data Integrity Algorithm - Port Setting - IPv6 SSH • Telnet Config - Enable/Disable - Port Setting - IPv6 Telnet • Console Port - Baud Rate setting
	Stack	• Stack Setting • Stack-port LAG: up to 6 groups, each group supports a maximum of all stackable-ports • Stackable Devices: up to 12 devices	• Stack MAC Address Switching Delay • Multi-active Detection (MAD) • Virtual MAC
	M-LAG	• M-LAG domain configuration • Dual-Active Detection • M-LAG Config Consistency Check	• Peer-link-port LAG: 1 Group, each group supports a maximum of all peerLinkable-ports • M-LAG Member Interface MAC Address Switching Delay
	SDM Template	• Default Template - IPv4 ACL Rules: 300 entries - MAC ACL Rules: 300 entries - Combined ACL Rules: 300 entries - IPv6 ACL Rules: 0 entries - IPv4 Source Guard: 299 entries - IPv6 Source Guard: 0 entries • IPv4 Access - IPv4 ACL Rules: 0 entries - MAC ACL Rules: 300 entries - Combined ACL Rules: 500 entries - IPv6 ACL Rules: 0 entries - IPv4 Source Guard: 499 entries - IPv6 Source Guard: 0 entries • IPv6 Access - IPv4 ACL Rules: 0 entries - MAC ACL Rules: 200 entries - Combined ACL Rules: 0 entries - IPv6 ACL Rules: 250 entries - IPv4 Source Guard: 0 entries - IPv6 Source Guard: 249 entries	• Omada - IPv4 ACL Rules: 0 entries - MAC ACL Rules: 0 entries - Combined ACL Rules: 600 entries - IPv6 ACL Rules: 150 entries - IPv4 Source Guard: 0 entries - IPv6 Source Guard: 0 entries • Extra - IPv4 ACL Rules: 600 entries - MAC ACL Rules: 800 entries - Combined ACL Rules: 600 entries - IPv6 ACL Rules: 300 entries - IPv4 Source Guard: 0 entries - IPv6 Source Guard: 0 entries
	Time Range	• Time Range Config	• Holiday Config
	PTP	• Profile: IEEE 1588v2 (PTPv2), IEEE 802.1AS	• Clock-type: oc, bc, e2etc, p2ptc
	File System	• File Operation • FTP • SFTP	• SCP • TFTP • USB Storage

Software Features [^]			
Model		S6500-48GP6XF	
L2 Features	Port	• Auto Negotiation/Auto MDI/MDIX • Port config - Status - Speed and Duplex - Flow Control(802.3x) - Jumbo Frame: 1518-9216 KB • Port Mirror - Ingress (Many to One) - Egress (Many to One) - RSPAN	• Port Security - Learn mode: Dynamic/Static/Permanent/Sticky - Port Max Learned MAC: 64 - Current Learned Number - Status - Exceed Max Learned Trap • Port Isolation • Loopback Detection - Alert - Port Based - VLAN Based
	DDM		
	LAG	• Hash Algorithm: SRC MAC/DST MAC/SRC MAC + DST MAC/SRC IP/DST IP/SRC IP + DST IP	• Static LAG: Up to 64 groups, up to 8 ports per group • LACP(802.3ad)
	Traffic Monitor	• TX Packets/Bytes • RX Packets/Bytes • TX Unicast/Multicast/Broadcast • RX Unicast/Multicast/Broadcast	• TX Errors • RX Errors • RX Packet Size Analysis
	MAC Address	• MAC Address Table: 32K entries • IVL/SVL: IVL • Create Static Unicast Address	• Bind Dynamic Address • Create Filtering Address • MAC Notification Settings
	VLAN	• 802.1Q VLAN(802.1q): 4K VLANs • MAC VLAN: 200 entries • Protocol VLAN - 16 Protocol VLAN Template - 12 Protocol VLAN Group	• QinQ(VLAN VPN): 256 entries • Private VLAN • GVRP
	L2 Multicast	• Max Multicast Groups: 4K (IGMP Snooping & MLD Snooping & MVR) • IGMP Snooping - IGMP V1/V2/V3 - Report Message Suppression - Fast Leave - Unknown Multicast Discard - Static Multicast Groups - IGMP Snooping Querier - IGMP Packet Statistics - IGMP Authentication - Multicast Filtering: 256 profiles and 16 entries per profile - Router Port Setting: Static Router Port/Forbidden Router Port • MVR	• MLD Snooping - MLD V1/V2 - Report Message Suppression - Unknown Multicast Discard - Fast Leave - Static Multicast Groups - MLD Snooping Querier - MLD Packet Statistics - Multicast Filtering: 256 profiles and 16 entries per profile - Router Port Setting: Static Router Port/Forbidden Router Port
	STP	• STP(802.1d) • RSTP(802.1w) • MSTP(802.1s) • MSTI instances: 16	• STP Security - Loop Protect - Root Protect - TC Protect - BPDU Protect - BPDU Filter
	LLDP (802.1ab)	• Local Info • Neighbor Info	• Statistic Info • LLDP-MED
	L2PT		
	PPPoE ID Insertion	• Circuit-ID Type	• Remote-ID
	PoE	• PoE Power Budget (Max): 1440W • Port Config - PoE Status: Enabled/Disabled - PoE Priority: Low/Middle/High - Power Limit - Time Range - PoE Profile	• PoE Profile Config • PoE Auto Recovery
	ERPS	• Ring: 16	
	Virtual MAC		
	Sticky MAC		

Software Features [^]			
Model		S6500-48GP6XF	
L3 Features	IPv4 Interfaces: 256(shared with IPv6 Interfaces) IPv6 Interfaces: 256(shared with IPv4 Interfaces)		
	IPv4 Static Routes: 1024 (shared with IPv6 Static Routes) IPv6 Static Routes: 512 (shared with IPv4 Static Routes)		
	IPv4 Host Routes: 6100 (shared with IPv4 Host Routes) IPv6 Host Routes: 6100 (shared with IPv6 Host Routes)		
	IPv4 Network Routes: 10240 (shared with IPv6 Network Routes) IPv6 Network Routes: 5120 (shared with IPv4 Network Routes)		
	ECMP	• Max ECMP Routes: 256 • Max ECMP Nexthops per Destination: 32	
	ARP	• Static ARP: 512 • Dynamic ARP: 7680	
	ND: 7680		
	DHCP	• DHCP Server - IP Pools: 64 - Max Leases: 8000 - Manual Binding Entries: 1000 - Exclude IP range Entries: 100	• DHCP Relay • DHCP L2 Relay • DHCPv6 Relay • DHCPv6 L2 Relay
	VRRP	• VRRP V2/V3 • VRRP Instance: 64 • VRRP Virtual IP: 32 per instance	
	OSPF	• OSPFv2 - OSPF Process: 16 - Graceful Restart - OSPFv2 BFD	• OSPFv3 - OSPFv3 Instance: 1 - OSPFv3 BFD
	RIP	• RIPv1/v2	• RIPng
	VRF	• VRF Instance: 1024	
	IS-IS	• IS-ISv4 • IS-ISv6 • IS-IS BFD	• IS-IS Instance: 16 • IS-IS Graceful Restart
	BGP	• BGPv4	• BGP Graceful Restart
	PIM	• PIM-DM (IPv4) • PIM-SM (IPv4) • PIM-SSM (IPv4)	• IPv4 Multicast Route entries: 1024
	IGMP	• Version: v1/v2/v3	• IGMP Multicast Groups: 2K
	BFD	• Template Numbers: 16	• Session Numbers: 8
	PBR		
	uRPF		
QoS	Class of Service	• Priority Queues: 8 Queues • Port Priority • 802.1P Priority • DSCP/ToS Priority	• Priority Schedule Mode: SP/WRR per Queue • Queue Weight Config: For WRR/ SP+WRR Mode
	Bandwidth Control	• Rate Limit - Ingress Rate Limit - Egress Rate Limit - Rate Limit Grade: 64kbps	• Storm Control - Control Mode: kbps/ratio - Broadcast - Multicast - Unknown Unicast
	Voice VLAN	• Supported OUI Numbers: 64	
	WRED	• WRED profile: 16	

Software Features [^]			
Model		S6500-48GP6XF	
Network Security	IP-MAC Binding	• Binding entries: 1024 entries • Manual Binding	• ARP Scanning • DHCP Snooping
	IPv6-MAC Binding	• Binding entries: 1024 entries • Manual Binding	• DHCPv6 Snooping • ND Snooping
	ARP Inspection	• ARP Detect entries: 1024 entries • ARP Detect	• ARP Defend • ARP Statistics
	ND Detection	• ND Detection entries: 1024 entries • ND Detect	• ND Statistics
	IP Source Guard	• IP Source Guard entries - Default SDM Template: 299 - IPv4 SDM Template: 499 - IPv6 SDM Template: 0	• Security Type - Source IP - Source IP + Source MAC
	IPv6 Source Guard	• IPv6 Source Guard entries - Default SDM Template: 0 - IPv4 SDM Template: 0 - IPv6 SDM Template: 249	• Security Type - Source IPv6 - Source IPv6 + Source MAC
	RA Guard: 30 entries		
	DoS Defend	• Scan SYNFIN • Xmascan • NULL Scan	• SYN sPort less 1024 • Ping Flooding • SYN/SYN-ACK Flooding
	DHCP Filter	• DHCPv4 Filter - Legal Server entries: 200	• DHCPv6 Filter - Legal Server entries: 200
	802.1x	• Control Type - Port Based - MAC Based • Auth Method: PAP/EAP-MD5/EAP-TLS/EAP-TTLS/EAP-PEAP	• Radius Authentication • Radius Accounting • Radius Server Load Balancing • RADSEC • Guest VLAN
	AAA		
	ACL	• Time-Range - Time Slice - Week Time-Range - Absolute Time-Range - Holiday • MAC ACL • IP ACL • Combined ACL • IPv6 ACL • Rule Operation - Permit - Deny • Policy Action - Mirror - Rate Limit - Redirect - QoS Remark • Binding - Port Binding - VLAN Binding	• Default Template - IPv4 ACL Rules: 300 entries - IPv6 ACL Rules: 0 entries - MAC ACL Rules: 300 entries - Combined ACL Rules: 300 entries • IPv4 Access - IPv4 ACL Rules: 0 entries - IPv6 ACL Rules: 0 entries - MAC ACL Rules: 300 entries - Combined ACL Rules: 500 entries • IPv6 Access - IPv4 ACL Rules: 0 entries - IPv6 ACL Rules: 250 entries - MAC ACL Rules: 200 entries - Combined ACL Rules: 0 entries • Omada - IPv4 ACL Rules: 0 entries - IPv6 ACL Rules: 150 entries - MAC ACL Rules: 0 entries - Combined ACL Rules: 600 entries • Extra - IPv4 ACL Rules: 600 entries - IPv6 ACL Rules: 300 entries - MAC ACL Rules: 800 entries - Combined ACL Rules: 600 entries
	MACSec (gcm-aes-128, gcm-aes-256)		
	Secure boot		
Virtualization	IP Tunnel	• IPv6 over IPv4 • IPv6 over IPv4 GRE	• IPv4 over IPv4 GRE • Tunnel entries: 100

Software Features [^]		
Model		S6500-48GP6XF
Maintenance	System Monitor	• CPU Monitor • Memory Monitor
	sFlow	
	OAM	• EFM - Link Monitoring - Remote Failure Indication Config - Statistics
	DLDP	
	SNMP	• SNMP Version: v1/v2c/v3 • SNMP Config - Global Config - SNMP View - SNMP Group - SNMP User - SNMP Community • Notification - Trap: IPv4/IPv6 - Inform: IPv4/IPv6 • RMON v1/v2 • Public MIBs • Private MIBs
	MIBs	• MIB II (RFC1213) • Interface MIB (RFC2233) • Ethernet Interface MIB (RFC1643) • Bridge MIB (RFC1493) • P/Q-Bridge MIB (RFC2674) • RMON MIB (RFC2819) • RMON2 MIB (RFC2021) • RADIUS Accounting Client MIB (RFC2620) • RADIUS Authentication Client MIB (RFC2618) • Remote Ping, Traceroute MIB (RFC2925) • Support TP-Link Private MIB
	NETCONF	
	IEEE802.3az Energy Efficient Ethernet (EEE)	
	DHCP Auto Install	
	Log	• Display/Filtering • Severity Level • Save to Flash • Remote Host • Backup Log
	Device Diagnostics	• Cable Test
	Network Diagnostics	• Ping • IPv6 Ping • Tracert • IPv6 Tracert
Others	Index	
	Show running config	• Use the show running config command to view device's running status via telnet. • Configuration File: Import/Export/Edit
Omada SDN Controller	Omada Pro SDN controller	

Ordering Information

Host Switch	
Model	Description
S6500-48GP6XF	Omada Pro 48-Port Gigabit Stackable L3 Managed PoE+ Switch with 6 10G Slots

Power Supply Module	
Model	Description
PSM500-AC	500 W AC Power Supply Module
PSM900-AC	900 W AC Power Supply Module

SFP/SFP+ Modules	
Model	Description
SM311LS	Gigabit SFP module, Single-mode, LC interface, Up to 20km distance
SM311LM	Gigabit SFP module, Multi-mode, LC interface, Up to 550m distance
SM321A	Gigabit WDM Bi-Directional SFP Module, single-mode, LC connector, TX: 1550 nm/RX: 1310 nm, 20 km
SM321A-2	Gigabit WDM Bi-Directional SFP Module, single-mode, LC connector, TX: 1550 nm/RX: 1310 nm, 2 km
SM321B	Gigabit WDM Bi-Directional SFP Module, single-mode, LC connector, TX: 1310 nm/RX: 1550 nm, 20 km
SM321B-2	Gigabit WDM Bi-Directional SFP Module, single-mode, LC connector, TX: 1310 nm/RX: 1550 nm, 2 km
SM5110-LR	10GBase-LR SFP+ LC Transceiver, single-mode, LC connector, 1310nm, 10 km
SM5110-SR	10GBase-SR SFP+ LC Transceiver, multi-mode, LC connector, 850nm, 300 m

Direct Attach Cable	
Model	Description
SM5220-1M	1 Meter 10G SFP+ Direct Attach Cable
SM5220-3M	3 Meter 10G SFP+ Direct Attach Cable

RJ45 SFP/SFP+ Modules	
Model	Description
SM331T	1000BASE-T RJ45 SFP Module
SM5310-T	10GBASE-T RJ45 SFP+ Module

MC Series Media Converter	
Model	Description
MC210CS	Gigabit Single-Mode Media Converter, up to 20 km, chassis mountable
MC200CM	Gigabit multi-mode SC SFP Transceiver, up to 550 m, chassis mountable
MC200L	Gigabit SFP slot supporting mini-GBIC modules, chassis mountable
MC1400	14-slot power supply chassis for TP-LINK MC Series Media Converter, 19-inch rack-mountable

†These functions require the use of the Omada Pro SDN Controller. Zero-Touch Provisioning requires the use of the Omada Pro Cloud-Based Controller.

^Some features are available only after upgrading to the latest software version.

Some models featured in this guide may be unavailable in your country or region. Visit TP-Link website for local sales information: www.tp-link.com.

PoE budget calculations are based on laboratory testing. Actual PoE power budget is not guaranteed and will vary as a result of client limitations and environmental factors.

Specifications are subject to change without notice. All the brands and product names are trademarks or registered trademarks of their respective holders. © 2025 TP-Link