

Stackable L3 Managed Switch Datasheet

MODELS: SG6428X / SG6428XHP / SG6654X / SG6654XHP



Overview

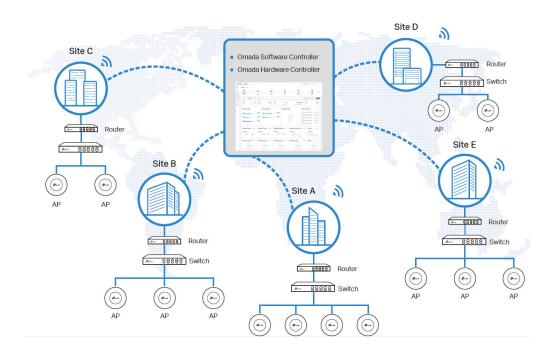
TP-Link's Omada Stackable L3 switches provide a wide range of switches, from Gigabit RJ45 ports to 25 Gbps SFP28 slots. They can be used at the core layer, aggregation layer, or access layer of large enterprise and campus networks. The switches include optional PoE+ support, highly scalable Layer 3 routing, and dual power supplies for mission-critical networks

Omada Solution



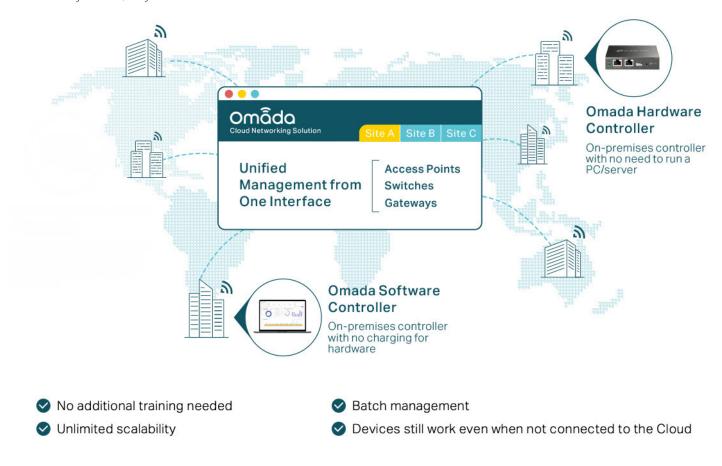
Software Defined Networking (SDN) with Cloud Access

Omada Software Defined Networking (SDN) platform integrates network devices, including access points, switches and gateways, providing 100% centralized cloud management. Omada creates a highly scalable network——all controlled from a single interface. Seamless wireless and wired connections are provided, ideal for use in hospitality, education, retail, offices, and more.



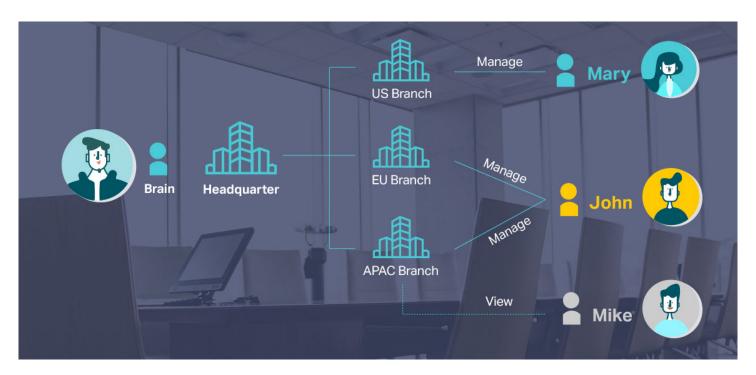
Hassle-Free Centralized Cloud Management

100% centralized cloud management of the whole network from different sites——all controlled from a single interface anywhere, anytime.



Assign Different Management Roles

Multi-user privilege assignment is available to increase management efficiency and security. Multi-person management, multi-level permissions, and the ability to add admins as needed, enable flexible network operation and maintenance.

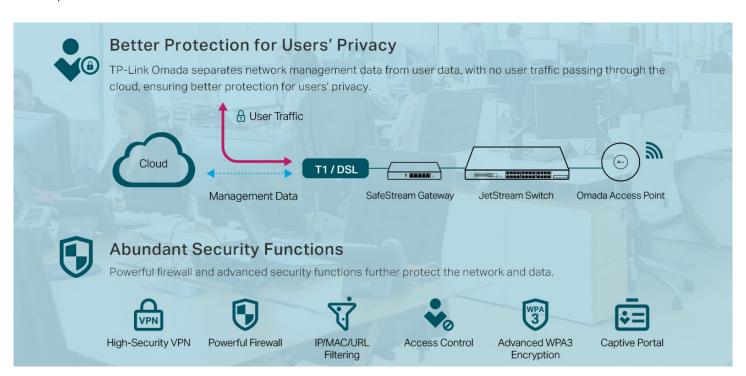


Easy and Intelligent Network Monitoring

The easy-to-use dashboard makes it easy to see your real-time network status; check network usage and traffic distribution; receive network condition logs, abnormal event warnings, and notifications; or even track key data for better business results. Network topology helps IP admins quickly see and troubleshoot connection at a glance.



Comprehensive Protection for the Whole Network



Switch Product Features

High-Speed and Flexible Connectivity

The core/aggregation switches are equipped with 25 Gbps SFP28 slots and provide up to 820 Gbps switching capacity per unit. The access switches provide 10G SFP+ slots, and Gigabit RJ45 ports, creating flexible options to match your business needs.

Abundant Layer 3 Capabilities

Static Routing, RIP, OSPF, and ECMP come with abundant Layer 3 routing protocols that support a scalable network. Multicast routing protocols guarantee efficient routing for multicast groups. DHCP Server and DHCP Relay are also supported.

Highly Available

Physically stack for built-in redundancy and performance. Redundant power supplies and fans make it an ideal choice for reliable networking architecture. VRRP allows a group of switches to dynamically back up each other. ERPS supports rapid protection and recovery in a ring topology.

Numberous L2+ features

The L3 managed switches support a complete lineup of L2 features, including 802.1Q VLAN, Port Mirroring, STP/RSTP/MSTP, Link Aggregation Control Protocol and 802.3x Flow Control function. Any more, the switch provides advanced features for network maintenance. Such as Loopback Detection, Cable Diagnostics and IGMP Snooping. IGMP snooping ensures the switch intelligently forward the multicast stream only to the appropriate subscribers while IGMP throttling & filtering restrict each subscriber on a port level to prevent unauthorized multicast access.

High PoE Capability

Provide 24/48-port 802.3at PoE+ output for powering network devices. Up to 720/1440W PoE budget (depends on the number and model of power modules) meets the needs of most PoE devices. Perpetual PoE provides uninterrupted power to connected PDs even when the PSE switch is rebooting. And with fast PoE, the switch saves PoE power settings across a reboot.

ISP Features

The L3 managed switches support a bundle of ISP features such as 802.3ah OAM, DDM, sFlow, QinQ, L2PT PPPoE ID Insertion, IGMP authentication etc. 802.3ah OAM and Device Link Detection Protocol (DLDP) functions improve monitor and troubleshoot Ethernet networks, help facilitate network management. DDM(Digital Diagnostic Monitoring) function helps view the status of SFP modules inserting to the Switch and to configure alarm settings, warning settings, temperature threshold settings, voltage threshold settings, bias current threshold settings, TX power threshold settings, and Rx power threshold settings.

Enterprise Level Management Features

TP-Link's new Omada L3 managed switches are easy to use and manage. It supports various user-friendly standard management features, such as intuitive web-based Graphical User Interface (GUI), industry-standard Command Line Interface (CLI), SNMP (v1/v2c/v3), and RMON. This allows the switch to provide valuable status information and send reports on abnormal events. It also supports Dual Image and Dual Configuration to provide improved reliability and network uptime.

Low-Carbon and Eco-Friendly

The newest chip brings lower energy consumption. The CPU reasonably adjusts workload according to the situation of data forwarded via ports and further reduces power consumption. Smart fans regulate the rotation speed flexibly based on the temperature, guaranteeing lower power consumption.

Specifications

Product Picture			
	Model	SG6428X	SG6428XHP
	Interface	24 × 10/100/1000Mbps RJ45 ports 4 × 10G SFP+ Slots*	
	Console Ports	1 × RJ45 + 1 × USB Type C	
	Management Port	1 × RJ45	
General	USB Ports	2 × USB 2.0	
	Flash	2×4 MB Nor + 8 GB EMMC	
	DRAM	4 GB DDR4	
	Processor	Dual-core ARM @1.5GHz CPU	
	PoE Standard	-	802.3af/at, support perpetual PoE and fast Po
	PoE Ports	-	24
PoE	PoE Power Budget	-	402W (with 1× PSM500-AC, by default) 720W (with 1× PSM900-AC) 720W (with 2× PSM500-AC) 720W (with 1× PSM500-AC and 1× PSM900-AC) AC) 720W (with 2× PSM900-AC)
	Switching Capacity	128 Gbps	720W (WILIT 2* PSIVI900-AC)
	Forwarding Bandwidth	64 Gbps	
	Packet Forwarding Rate	95.2 Mpps	
	MAC Address Table		
	Packet Buffer	32K	
	Stacking Port	3MB 10G SFP+ slot (all uplink ports can be used as stacking ports)	
erformance	Stack bandwidth	Up to 80 Gbps (4 stack ports)	
	Stacking number (max)	4	
	Compatible models for stacking	SG6428X, SG6654X	SG6428XHP, SG6654XHP
	Transmission Method	Store and Forward	
	Jumbo Frame	9 KB	
	Power Supply	100–240 V∼50/60 Hz	
	Redundant Power Supply	2 internal fixed power supply modules	Max 2 hot swappable power supply module (shipping with one PSM500-AC module by default)**
	Suitable Power Supply Module	-	PSM500-AC, PSM900-AC
	Max Power Consumption Max Heat Dissipation	28.4 W (220 V/50 Hz) 96.91 BTU/hr (220 V/50 Hz)	42.9 W (110 V/60 Hz) (With no PD connected) 916.6 W (110 V/60 Hz) (With 720W PD connected and powered by 2× PSM500-AC) 146.29 BTU/hr (110 V/60 Hz) (With no PD connected)
		90.9 1 BT0/III (220 V/30 HZ)	3,125.61 BTU/hr (110 V/60 Hz) (With 720W PE connected and powered by 2× PSM500-AC)
	Standby Power Consumption	13.0 W (220 V/50 Hz)	31.95 W (220 V/50 Hz)
	Noise	Min: 15.6 dBA @1m 25 ℃ Max: 39.7 dBA @1m 25 ℃	1× PSM500-AC power supply module: Min: 35.2 dBA @1m 25 °C Max: 55.2 dBA @1m 25 °C 2× PSM500-AC power supply modules: Min: 39.2 dBA @1m 25 °C Max: 57.4 dBA @1m 25 °C
Physical &	Fan Quantity	4 internal fixed fans	4 hot swappable fan modules, N+1 redundant
Environmet	Airflow	Front-to-back	Front-to-back
	Surge Protection	Service port: ±6 kV in common mode Power port: ±4 kV in differential mode; ±4 kV in common mode	Service port: ±6 kV in common mode Power port: ±6 kV in differential mode; ±6 kV i common mode
	ESD Protection	Air: ±15 kV, Contact: ±8 kV	Air: ±15 kV, Contact: ±8 kV
	MTBF	614,086 h @ 25 °C	753,531 h @ 25 °C
	Dimensions (W x D x H)	17.3 × 15.0 × 1.7 in (440 × 380 × 44 mm)	17.3 × 16.5 × 1.7 in (440 × 420 × 44 mm)
	Installation	Rackmount	
	Operating Temperature & Altitude	-5 °C to 50 °C (23 °F to 122 °F) @ 300 meters -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	-5 °C to 45 °C (23 °F to 113 °F) @ 2,000 meter -5 °C to 40 °C (23 °F to 104 °F) @ 3,000 meter
	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	

^{*}No more than two 10G RJ45 SFP+ modules are supported, and they can only be inserted into SFP+ slots 25&27. **An additional power supply module needs to be purchased separately.

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	Model	SG6654X	SG6654XHP
	Interface	48× 10/100/1000Mbps RJ45 ports 6× 10G SFP+ Slots*	
	Console Ports	1× RJ45 + 1× USB Type C	
	Management Port	1× RJ45	
General	USB Ports	2× USB 2.0	
	Flash	2×4 MB Nor + 8GB EMMC	
	DRAM	4 GB DDR4	
	Processor	Dual-core ARM @1.5GHz CPU	
	PoE Standard	-	802.3af/at, support perpetual PoE and fast Po
	PoE Ports	-	48
PoE	PoE Power Budget	-	384W (with 1× PSM500-AC) 764W (with 1× PSM900-AC, by default) 812W (with 2× PSM500-AC) 1176W (with 1× PSM900-AC and 1× PSM500AC) AC) 1440W (with 2× PSM900-AC)
	Switching Capacity	216 Gbps	1446W (With 2.41 GM3666 7.6)
	Forwarding Bandwidth	108 Gbps	
	Packet Forwarding Rate	160.7 Mpps	
	MAC Address Table	32 K	
	Packet buffer	3MB	
orform	Stacking Port	10G SFP+ slot (all uplink ports can be	used as stacking ports)
erformance	Stack bandwidth	Up to 120 Gbps (6 stack ports)	
	Stacking number (max)	4	
	Compatible models for stacking	SG6654X, SG6428X	SG6654XHP, SG6428XHP
	Transmission Method	Store and Forward	
	Jumbo Frame	9 KB	
	Power Supply	100-240 V ~50/60 Hz	
	Redundant Power Supply	2 internal fixed power supply modules	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	39.8 W (220 V/50 Hz)	67.24 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) 229.29 BTU/hr (110 V/60 Hz) (With no PD
	Max Heat Dissipation	135.81 BTU/hr (220 V/50 Hz)	connected) 6,027.86 BTU/hr (110 V/60 Hz) (With 1440W F connected and powered by 2× PSM900-AC)
	Standby Power Consumption	16.2 W (220 V/50 Hz)	41.43 W (220 V/50 Hz)
	Noise	Min: 14.8 dBA @1m 25 °C Max: 40.7 dBA @1m 25 °C	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
Physical &	Fan Quantity	4 internal fixed fans	4 hot swappable FAN modules, N+1 redundant
Environmet	Airflow	Front-to-back	Front-to-back
	Surge Protection	Service port: ±6 kV in common mode Power port: ±4 kV in differential mode; ±4 kV in common mode	Service port: ±6 kV in common mode Power port: ±6 kV in differential mode; ±6 kV i common mode
	ESD Protection	Air: ±15 kV, Contact: ±8 kV	Air: ±15 kV, Contact: ±8 kV
	MTBF	547,093 h @ 25 °C	648,538 h @ 25 °C
	Dimensions (W x D x H)	17.3 × 15.0 × 1.7 in (440 × 380 × 44 mm)	17.3 × 16.5 × 1.7 in (440 × 420 × 44 mm)
	Installation	Rackmount	
	Operating Temperature	-5 °C to 50 °C (23 °F to 122 °F) @ 300 meters -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	-5 °C to 45 °C (23 °F to 113 °F) @ 2,000 meter -5 °C to 40 °C (23 °F to 104 °F) @ 3,000 meter
	Storage Temperature	-40 °C to 70 °C (-40 °F to 158 °F)	
	Operation Humidity	10% to 90% RH, non-condensing	
		5% to 90% RH, non-condensing	

 $^{^*\}text{No more than two 10G RJ45 SFP+ modules are supported, and they can only be inserted into SFP+ slots 49\&53.}$

^{**}An additional power supply module needs to be purchased separately.

Software Features		
Model	SG6428X / SG6428XH	P/SG6654X/SG6654XHP
SDN Support	Support Omada Hardware ControllerAutomatic Device DiscoveryBatch ConfigurationBatch Firmware Upgrading	Intelligent Network MonitoringAbnormal Event WarningsUnified ConfigurationReboot Schedule
Basic Function	Auto Negotiation/Auto MDI/MDIX 802.3X Flow Control & Back Pressure	Auto-Uplink Every Port
Stacking	Basic Feature Max Unit Number Topology Hot Plug in/out Global Fabric Config Unit ID Config Stack Status/Error-Info Automatic Stacking	Fabric Port Config Port Config Port Status
L3 Features	 IP Interfaces: IPv4: Max 256, IPv6: Max 256 Static Routing Max 1,024, IPv6: Max 512 Host Route Table: Max 6,100 entries RIP: Version v1/v2, Max 8,190 RIPng: Max 4,097 OSPF: Version v2/v3; v2: Max 8,190, v3: Max 4,097 VRRP: Version v2/v3, Max 64 groups ECMP: 256 entries, max 32 ECMP Nexhops per Destination	 Static ARP 512 static entries Dynamic ARP 7,680 dynamic entries Proxy ARP DHCP Server: Max 8K IP Pools Max 1,000 Manual Binding Entries DHCP Relay: Relayed Interface Relayed VLAN
L2 Features	 Link Aggregation Static link aggregation 802.3ad LACP Up to 8 ports per group Up to 64 LAG Groups Spanning Tree Protocol 802.1d STP 802.1w RSTP 802.1s MSTP Up to 16 MSTI instances STP Security: TC Protect, BPDU Filter, BPDU Protect, Root Protect, Loop Protect Loopback Detection Port based VLAN based Flow Control 802.3x Flow Control HOL Blocking Prevention 	 Supports 2,048 IGMP groups ERPS: Up to 16 ERPS rings Mirroring Port Mirroring OPU Mirroring One-to-One Many-to-One Tx/Rx/Both RSPAN Mac Address MAC Address Table Static MAC: Max 128 entries Dynamic MAC Address: Max 32k entries Filtering MAC Address: Max 128 entries PIM-DM(IPv4) Max 1,024 Multicast Route Entries
L2 Multicast	IGMP Snooping IGMP v1/v2/v3 Snooping Fast Leave IGMP Snooping Querier IGMP Authentication L2 Multicast Table Dynamic Multicast: Max 4,093 entries Static Multicast: Max 4,093 entries IGMP Authentication Static Multicast IP Multicast VLAN Registration (MVR): Max 4,093 entries	 MLD Snooping MLD v1/v2 Snooping Fast Leave MLD Snooping Querier Static Group Config Limited IP Multicast Multicast Filtering: 256 profiles and 16 entries per profile
VLAN	 VLAN Group (802.1q VLAN) - Max 4K VLAN Groups 802.1Q Tagged VLAN MAC VLAN entries: 200 Multicast VLAN Management VLAN VLAN VPN (QinQ): Max 256 entries GVRP 	 Protocol VLAN: Protocol Template 16, Protocol VLAN 12 entries VLAN VPN VLAN Mapping VLAN Replace Voice VLAN Private VLAN
QoS	Class of Service - 8 Queues of Priority - Port Priority - IEEE 802.1p Priority - DSCP Priority - Queue Min-Bandwidth - Schedule Mode (SP, WRR, SP+WRR)	 Bandwidth Control Rate Limit Storm Control User-Defined OUI Smoother Performance Action for Flows QoS remark (802.1P Remark, DSCP Remark)

Software Features		
Model	SG6428X / SG6428X	HP/SG6654X/SG6654XHP
ACL	MAC ACL Source MAC Destination MAC ULAN ID User Priority Ether Type IP ACL Source IP Destination IP Fragment IP Protocol TCP Flag TCP/UDP Port DSCP/IP TOS Combined ACL IPv6 ACL Policy Mirroring Redirect Rate Limit QoS Remark ACL apply to Port/VLAN Time-based ACL	- default template: IPv4 ACL Rules: 300 entries MAC ACL Rules: 300 entries Combined ACL: 300 entries IPv4 Source Guard: 299 entries - IPv4 access template: IPv6 ACL Rules: 0 entries MAC ACL Rules: 300 entries Combined ACL: 500 entries IPv4 Source Guard: 499 entries - IPv6 access template: IPv4 ACL Rules: 0 entries MAC ACL Rules: 200 entries IPv6 ACL: 250 entries IPv6 Source Guard: 249 entries - omada template: IPv4 ACL Rules: 0 entries MAC ACL Rules: 0 entries Combined ACL: 600 entries IPv4 Source Guard: 0 entries
Security	 Port Isolation CPU-Deffend ARP Inspection (Dynamic ARP Inspection) DoS Defend IP-MAC-Port Binding 1,024 Entries DHCP Snooping ARP Inspection IPv4 Source Guard IPv6-MAC Port Binding 1,024 Entries DHCPv6 Snooping ND Detection ND Detection ND Snooping IPv6 Source Guard DHCP Filter Static/Dynamic Port Security Up to 64 MAC addresses per port 	 Broadcast/Multicast/Unknown-unicast Storm Control kbps/ratio control mode 802.1X Port base authentication Mac base authentication VLAN Assignment MAB Guest VLAN Support RADIUS authentication and accountability AAA (including TACACS+) Secure web management through HTTPS with SSLv3/TLS 1.2 Secure Command Line Interface (CLI) management with SSHv2 IP/Port/MAC based access control
ISP Features	802.3ah Ethernet Link OAM L2PT (Layer 2 Protocol Tunneling) PPPoE ID Insertion	Device Link Detect Protocol (DLDP)sFlowDDM
Management	Web-based GUI Web-Based HTTP or HTTPS TFTP/TFTPv6 FTP/FTPv6 File System Debug CLI Console Telnet Telnet SNMP V1/v2c/v3 SNMP Trap SNMP Inform RMON (1, 2, 3, 9 groups) Link Layer Discovery Protocol (LLDP) VCT (Virtual Cable Test) System IP Static IP DHCP Client BOOTP Client BOOTP Client BOOTP Auto Install	 Maintenance - CPU/Memory Monitor System Log Cable Test Ping/Tracert Pingv6 ICMP/ICMP v6 Time Setting NTP DST System Tools Dual Image Config Restore/Backup Firmware Upgrade System Reboot/Reset User Management User Settings Access Level Password Recorvery Settings SDM Template EEE
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

Ordering Information

Host Switch	
Model	Description
SG6428X	Omada 24-Port Gigabit Stackable L3 Managed Switch with 4 10G Slots
SG6428XHP	Omada 24-Port Gigabit Stackable L3 Managed PoE+ Switch with 4 10G Slots
SG6654X	Omada 48-Port Gigabit Stackable L3 Managed Switch with 6 10G Slots
SG6654XHP	Omada 48-Port Gigabit Stackable L3 Managed PoE+ Switch with 6 10G Slots

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

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

FC Series Media Converter	
Model	Description
FC111A-20	100Mbps Single-Mode WDM Media Converter, up to 20 km, TX:1550nm, RX:1310nm, chassis mountable
FC111B-20	100Mbps Single-Mode WDM Media Converter, up to 20 km, TX:1310nm, RX:1550nm, chassis mountable
FC311A-2	Gigabit Single-Mode WDM Media Converter, up to 2 km, TX:1550nm, RX:1310nm, chassis mountable
FC311B-2	Gigabit Single-Mode WDM Media Converter, up to 2 km, TX:1310nm, RX:1550nm, chassis mountable
FC311A-20	Gigabit Single-Mode WDM Media Converter, up to 20 km, TX:1550nm, RX:1310nm, chassis mountable
FC311B-20	Gigabit Single-Mode WDM Media Converter, up to 20 km, TX:1310nm, RX:1550nm, chassis mountable
FC1400	14-slot power supply chassis for TP-LINK FC Series Media Converter, 19-inch rack-mountable

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.

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