



## Hardware Features & Performance

Product Picture			
Model		TL-SG3452X	TL-SG3452XP
General	Interface	48 10/100/1000Mbps RJ45 Ports 4 10GE SFP+ Slots	
	Console	1 RJ45 Console Port, 1 Micro-USB Console Port	
	Flash	32 MB	
	DRAM	512 MB	
	Port Standard	IEEE 802.3i:10BASE-T Ethernet; IEEE 802.3u:100BASE-X Fast Ethernet; IEEE 802.3ab:1000BASE-T Gigabit Ethernet; IEEE 802.3z:1000BASE-X Gigabit Ethernet (Optical fiber) IEEE 802.3ae: 10 Gigabit Ethernet over fiber	
PoE	PoE Standard	-	802.3af/at
	PoE Ports	-	48, up to 30 W
	PoE Power Budget	-	500 W
Performance	Switching Capacity	176 Gbps	
	Packet Forwarding Rate	130.94 Mpps	
	MAC Address Table	16 K	
	Transmission Method	Store and Forward	
	Packet Buffer	12 Mbit	
	Number of IP Interfaces	16	
	Number of Static Routers	48 (IPv4, IPv6)	
	Jumbo Frame	9 KB	
Physical & Environment	Power Supply	100-240 V AC~50/60 Hz	
	Max Power Consumption	32.72 W (110V/60Hz)	49.19 W (110V/60Hz) (no PD connected) 635.70 W (110V/60Hz) (with 500 W PD connected)
	Max Heat Dissipation	111.65 BTU/hr (110 V/60 Hz)	167.85 BTU/hr (110 V/60 Hz) (no PD connected) 2169.2 BTU/hr (110 V/60 Hz) (with 500 W PD connected)
	Standby Power Consumption	13.38 W (110 V/60 Hz)	28.61 W (110 V/60 Hz)
	Dimensions (W x D x H)	17.3 x 8.7 x 1.7 in (440 x 220 x 44 mm)	17.3 x 13.0 x 1.7 in (440 x 330 x 44 mm)
	Fan Quantity	-	3
	Installation	Rack Mountable	
	Operating Temperature	0 °C to 45 °C (32 °F to 113 °F)	0 °C to 40 °C (32 °F to 104 °F)
	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	

## Software Features

Model	TL-SX3008F / TL-SX3016F / TL-SX3206HPP / TL-SG3210XHP-M2 V2 / TL-SG3428X-M2 / TL-SG3428XPP-M2 / TL-SG3428X V1.20 / TL-SG3428X-UPS / TL-SG3428XMP V3 / TL-SG3428XF / TL-SG3452X / TL-SG3452XP	
SDN Support	<ul style="list-style-type: none"> <li>• Support Omada Hardware Controller (OC200/OC300), Software Controller</li> <li>• Automatic Device Discovery</li> <li>• Batch Configuration</li> <li>• Batch Firmware Upgrading</li> </ul>	<ul style="list-style-type: none"> <li>• Intelligent Network Monitoring</li> <li>• Abnormal Event Warnings</li> <li>• Unified Configuration</li> <li>• Reboot Schedule</li> </ul>
L3 Features	<ul style="list-style-type: none"> <li>• 16 IPv4/IPv6 Interfaces (32 IPv4/IPv6 Interfaces for TL-SG3428X-M2 &amp; TL-SG3428XPP-M2)</li> <li>• Static Routing <ul style="list-style-type: none"> <li>- 48 static routes</li> </ul> </li> <li>• Static ARP <ul style="list-style-type: none"> <li>- 128 static entries</li> </ul> </li> <li>• 512 ARP Entries</li> </ul>	<ul style="list-style-type: none"> <li>• Proxy ARP</li> <li>• Gratuitous ARP</li> <li>• DHCP Server</li> <li>• DHCP Relay <ul style="list-style-type: none"> <li>- DHCP interface relay</li> <li>- DHCP VLAN relay</li> </ul> </li> <li>• DHCP L2 Relay</li> </ul>
L2 Features	<ul style="list-style-type: none"> <li>• Link Aggregation <ul style="list-style-type: none"> <li>- Static link aggregation</li> <li>- 802.3ad LACP</li> <li>- Up to 8 aggregation groups and up to 8 ports per group</li> </ul> </li> <li>• Spanning Tree Protocol <ul style="list-style-type: none"> <li>- 802.1d STP</li> <li>- 802.1w RSTP</li> <li>- 802.1s MSTP</li> <li>- STP Security: TC Protect, BPDU Filter, BPDU Protect, Root Protect, Loop Protect</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Loopback Detection <ul style="list-style-type: none"> <li>- Port based</li> <li>- VLAN based</li> </ul> </li> <li>• Flow Control <ul style="list-style-type: none"> <li>- 802.3x Flow Control</li> <li>- HOL Blocking Prevention</li> </ul> </li> <li>• Mirroring <ul style="list-style-type: none"> <li>- Port Mirroring</li> <li>- CPU Mirroring</li> <li>- One-to-One</li> <li>- Many-to-One</li> <li>- Tx/Rx/Both</li> </ul> </li> </ul>
L2 Multicast	<ul style="list-style-type: none"> <li>• Supports 1000 (IPv4, IPv6) IGMP groups (511 groups for TL-SG3428X-M2 &amp; TL-SG3428XPP-M2)</li> <li>• IGMP Snooping <ul style="list-style-type: none"> <li>- IGMP v1/v2/v3 Snooping</li> <li>- Fast Leave</li> <li>- IGMP Snooping Querier</li> <li>- IGMP Authentication</li> </ul> </li> <li>• IGMP Authentication</li> <li>• MVR</li> </ul>	<ul style="list-style-type: none"> <li>• MLD Snooping <ul style="list-style-type: none"> <li>- MLD v1/v2 Snooping</li> <li>- Fast Leave</li> <li>- MLD Snooping Querier</li> <li>- Static Group Config</li> <li>- Limited IP Multicast</li> </ul> </li> <li>• Multicast Filtering: 256 profiles and 16 entries per profile</li> </ul>
VLAN	<ul style="list-style-type: none"> <li>• VLAN Group (802.1q VLAN) <ul style="list-style-type: none"> <li>- Max 4K VLAN Groups</li> </ul> </li> <li>• 802.1Q Tagged VLAN</li> <li>• MAC VLAN entries: 30 (10 for TL-SG3210XHP-M2 and 256 for TL-SG3428X-M2 &amp; TL-SG3428XPP-M2)</li> <li>• Protocol VLAN: Protocol Template 16, Protocol VLAN 16 (Protocol Template 16 and Protocol VLAN 12 for TL-SX3008F and TL-SX3016F)</li> </ul>	<ul style="list-style-type: none"> <li>• Private VLAN (except for TL-SG3428X-M2 &amp; TL-SG3428XPP-M2)</li> <li>• GVRP</li> <li>• VLAN VPN <ul style="list-style-type: none"> <li>- VLAN Mapping</li> <li>- VLAN Replace</li> </ul> </li> <li>• Voice VLAN</li> </ul>
QoS	<ul style="list-style-type: none"> <li>• 8 priority queues</li> <li>• 802.1p CoS/DSCP priority</li> <li>• Queue scheduling <ul style="list-style-type: none"> <li>- SP (Strict Priority)</li> <li>- WRR (Weighted Round Robin)</li> <li>- SP+WRR</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Bandwidth Control <ul style="list-style-type: none"> <li>- Port/Flow based Rating Limiting</li> </ul> </li> <li>• Smoother Performance</li> <li>• Action for Flows <ul style="list-style-type: none"> <li>- QoS remark (802.1P Remark, DSCP Remark)</li> </ul> </li> </ul>

## Software Features

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ACL	<ul style="list-style-type: none"> <li>• MAC ACL               <ul style="list-style-type: none"> <li>- Source MAC</li> <li>- Destination MAC</li> <li>- VLAN ID</li> <li>- User Priority</li> <li>- Ether Type</li> </ul> </li> <li>• IP ACL               <ul style="list-style-type: none"> <li>- Source IP</li> <li>- Destination IP</li> <li>- Fragment</li> <li>- IP Protocol</li> <li>- TCP Flag</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- TCP/UDP Port</li> <li>- DSCP/IP TOS</li> <li>• Combined ACL</li> <li>• IPv6 ACL</li> <li>• Policy               <ul style="list-style-type: none"> <li>- Mirroring</li> <li>- Redirect</li> <li>- Rate Limit</li> <li>- QoS Remark</li> </ul> </li> <li>• ACL apply to Port/VLAN</li> <li>• Time-based ACL</li> </ul>
Security	<ul style="list-style-type: none"> <li>• IP-MAC-Port Binding               <ul style="list-style-type: none"> <li>- 512 Entries</li> <li>- DHCP Snooping</li> <li>- ARP Inspection</li> <li>- IPv4 Source Guard</li> </ul> </li> <li>• IPv6-MAC               <ul style="list-style-type: none"> <li>- Port Binding</li> <li>- 512 Entries</li> <li>- DHCPv6 Snooping</li> <li>- ND Detection</li> <li>- ND Snooping</li> <li>- IPv6 Source Guard</li> </ul> </li> <li>• DoS Defend</li> <li>• DHCP Filter</li> <li>• Static/Dynamic Port Security               <ul style="list-style-type: none"> <li>- Up to 64 MAC addresses per port</li> </ul> </li> <li>• Broadcast/Multicast/Unknown-unicast Storm Control               <ul style="list-style-type: none"> <li>- kbps/ratio/pps control mode</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 802.1X               <ul style="list-style-type: none"> <li>- Port base authentication</li> <li>- Mac base authentication</li> <li>- VLAN Assignment</li> <li>- MAB</li> <li>- Guest VLAN</li> <li>- Support RADIUS authentication and accountability</li> </ul> </li> <li>• AAA (including TACACS+)</li> <li>• Port Isolation</li> <li>• Secure web management through HTTPS with SSLv3/TLS 1.2</li> <li>• Secure Command Line Interface (CLI) management with SSHv1/SSHv2</li> <li>• IP/Port/MAC based access control</li> </ul>
ISP Features	<ul style="list-style-type: none"> <li>• 802.3ah Ethernet Link OAM</li> <li>• L2PT (Layer 2 Protocol Tunneling)</li> <li>• PPPoE ID Insertion</li> <li>• ERPS</li> </ul>	<ul style="list-style-type: none"> <li>• Device Link Detect Protocol (DLDP)</li> <li>• sFlow (except for TL-SG3428X-M2 &amp; TL-SG3428XPP-M2)</li> <li>• DDM</li> </ul>
Management	<ul style="list-style-type: none"> <li>• Web-based GUI</li> <li>• Command Line Interface (CLI) through consoleport, telnet</li> <li>• SNMPv1/v2c/v3               <ul style="list-style-type: none"> <li>- Trap/Inform</li> <li>- RMON (1, 2, 3, 9 groups)</li> </ul> </li> <li>• SDM Template</li> <li>• DHCP/BOOTP Client</li> <li>• 802.1ab LLDP/LLDP-MED</li> </ul>	<ul style="list-style-type: none"> <li>• DHCP Auto Install</li> <li>• Dual Image, Dual Configuration</li> <li>• CPU Monitoring</li> <li>• Cable Diagnostics</li> <li>• EEE*</li> <li>• Password Recovery</li> <li>• SNTP</li> <li>• System Log</li> </ul>

\*TL-SX3008F and TL-SX3016F do not support this feature.

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IPv6 Support	<ul style="list-style-type: none"> <li>• IPv6 Dual IPv4/IPv6</li> <li>• Multicast Listener Discovery (MLD) Snooping</li> <li>• IPv6 ACL</li> <li>• IPv6 Interface</li> <li>• Static IPv6 Routing</li> <li>• IPv6 neighbor discovery (ND)</li> <li>• Path maximum transmission unit (MTU) discovery</li> <li>• Internet Control Message Protocol (ICMP) version 6</li> <li>• TCPv6/UDPv6</li> </ul>	<ul style="list-style-type: none"> <li>• IPv6 applications                         <ul style="list-style-type: none"> <li>- DHCPv6 Client</li> <li>- Ping6</li> <li>- Tracert6</li> <li>- Telnet (v6)</li> <li>- IPv6 SNMP</li> <li>- IPv6 SSH</li> <li>- IPv6 SSL</li> <li>- Http/Https</li> <li>- IPv6 TFTP</li> </ul> </li> </ul>
MIBs	<ul style="list-style-type: none"> <li>• MIB II (RFC1213)</li> <li>• Interface MIB (RFC2233)</li> <li>• Ethernet Interface MIB (RFC1643)</li> <li>• Bridge MIB (RFC1493)</li> <li>• P/Q-Bridge MIB (RFC2674)</li> <li>• RMON MIB (RFC2819)</li> </ul>	<ul style="list-style-type: none"> <li>• RMON2 MIB (RFC2021)</li> <li>• RADIUS Accounting Client MIB (RFC2620)</li> <li>• RADIUS Authentication Client MIB (RFC2618)</li> <li>• Remote Ping, Traceroute MIB (RFC2925)</li> <li>• Support TP-Link Private MIB</li> </ul>

# Ordering Information

Host Switch	
Model	Description
TL-SX3008F	JetStream 8-Port 10GE SFP+ L2+ Managed Switch
TL-SX3016F	JetStream 16-Port 10GE SFP+ L2+ Managed Switch
TL-SX3206HPP	JetStream 6-Port 10GE L2+ Managed Switch with 4-Port PoE++
TL-SG3210XHP-M2 V2	JetStream 8-Port 2.5GBASE-T and 2-Port 10GE SFP+ L2+ Managed Switch with 8-Port PoE+
TL-SG3428X-M2	JetStream 24-Port 2.5GBASE-T L2+ Managed Switch with 4 10GE SFP+ Slots
TL-SG3428XPP-M2	JetStream 24-Port 2.5GBASE-T and 4-Port 10GE SFP+ L2+ Managed Switch with 16-Port PoE+ & 8-Port PoE++
TL-SG3428X V1.20	JetStream 24-Port Gigabit L2+ Managed Switch with 4 10GE SFP+ Slots
TL-SG3428X-UPS	JetStream 24-Port Gigabit L2+ Managed Switch with 4 10GE SFP+ Slots and UPS Power Supply
TL-SG3428XMP V3	JetStream 24-Port Gigabit and 4-Port 10GE SFP+ L2+ Managed Switch with 24-Port PoE+
TL-SG3428XF	JetStream 24-Port SFP L2+ Managed Switch with 4 10GE SFP+ Slots
TL-SG3452X	JetStream 48-Port Gigabit L2+ Managed Switch with 4 10GE SFP+ Slots
TL-SG3452XP	JetStream 48-Port Gigabit and 4-Port 10GE SFP+ L2+ Managed Switch with 48-Port PoE+

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

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