Product Specifications

L3 16-Port 100/1000X SFP + 8-Port Gigabit TP/SFP + 4-Port 10G SFP+ Stackable Managed Switch

SGS-6310-16S8C4XR

Version 1.0

Change History:

Revision:	Date:	Author:	Change List
Version 1.0	2022/7/4	Sky Chen	Initial Release

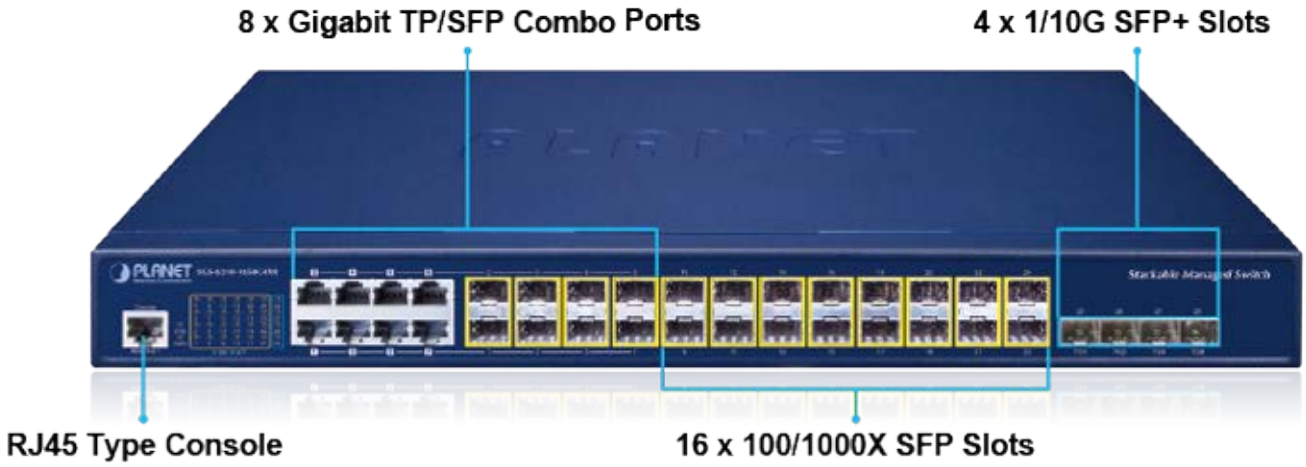
Author:	Sky Chen	**Editor:**	Sky Chen
Reviewed By:		**Approved By:**	Kent Kang

1. PRODUCT DESCRIPTION

Resilient 10Gbps and Layer 3 Routing Solution for Enterprise Networking

PLANET SGS-6310 series is a brand-new Layer 3 Stackable Managed Gigabit Switch with 10Gbps uplink capability for various kinds of network applications and flexible deployment. The **SGS-6310-16S8C4XR** features 24 100/1000BASE-X SFP ports and 8 10/100/1000BASE-T RJ45 copper ports, shared with Ports 1 to 8, and 4 1G/10GBASE-X SFP+ ports with 128Gbps switch fabric delivered in a 1U rugged case design.

The SGS-6310 series provides high-density performance, **Layer 3 IPv4/IPv6 static routing, RIP** and **OSPF dynamic routing** capability, **ERPS** ring, abundant **L2/L4 switching engine**, and **virtual switch stacking** technology to fulfill the need of heavy transmission of all applications. It gives the enterprises, service providers and campuses flexible control over port density, uplinks and switch stack performance at an affordable price.

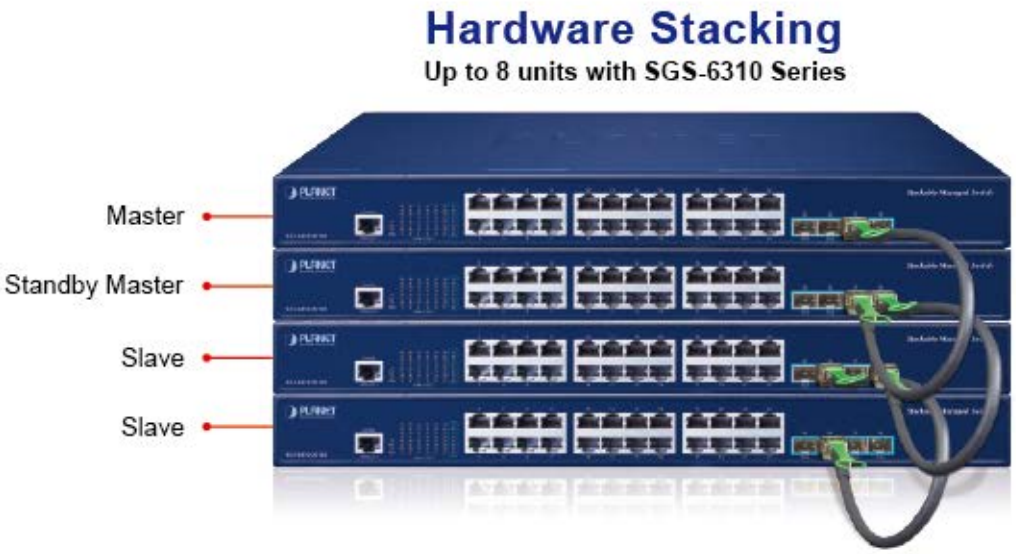


High Performance 10Gbps Ethernet Capacity

The four SFP+ ports built in the SGS-6310 series boasts a high-performance switch architecture that is capable of providing non-blocking switch fabric and wire-speed throughput as high as up to 80Gbps, which greatly meets high bandwidth demands in the LAN. Each of the SFP+ ports supports **Dual-Speed, 10GBASE-SR/LR** or **1000BASE-SX/LX**, meaning the administrator now can flexibly choose the suitable SFP/SFP+ transceiver according to the transmission distance or the transmission speed required to extend the network efficiently.

Centralized Hardware Stacking Management

Two of the 10G SFP+ ports can be configured to connect several SGS-6310 series for building a virtually logical facility. The stackable SGS-6310 series, suitable for the enterprises, service providers and telecoms, provides high port density, large uplink bandwidth and high stacking performance, thus giving great flexibility for different application requirements. The SGS-6310 series can connect as a ring for redundancy and ensures that data integrity is retained even if one switch in the stack fails. You can even hot-swap switches without disrupting the network operations.



Redundant Ring, Fast Recovery for Critical Network Applications

The SGS-6310 series supports redundant ring technology and features strong, rapid self-recovery capability to prevent interruptions and external intrusions. It incorporates advanced ITU-T **G.8032 ERPS** (Ethernet Ring Protection Switching) technology and Spanning Tree Protocol (802.1s MSTP) into customer's network to enhance system reliability and uptime in harsh environments. In a certain simple ring network, the recovery time could be less than 10ms to quickly bring the network back to normal operation.

Layer 3 Routing Support

The SGS-6310 series enables the administrator to conveniently boost network efficiency by configuring Layer 3 static routing manually, the RIP (Routing Information Protocol) or OSPF (Open Shortest Path First) settings automatically.

- The RIP can employ the hop count as a routing metric and prevent routing loops by implementing a limit on the number of hops allowed in a path from the source to a destination.
- The OSPF is an interior dynamic routing protocol for autonomous system based on link state. The protocol creates a database for link state by exchanging link states among Layer 3 switches, and then uses the Shortest Path First algorithm to generate a route table based on that database.

Strong Multicast

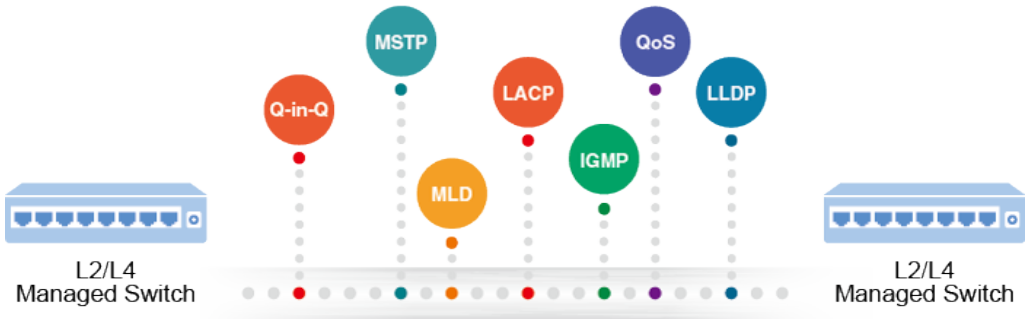
The SGS-6310 series supports abundant multicast features. In Layer 2, it features IPv4 IGMPv1/v2/v3 snooping and IPv6 MLD v1 snooping. With Multicast VLAN Register (MVR), multicast receiver/sender control and illegal multicast source detect functions which make the SGS-6310 series great for any robust networking.

Full IPv6 Support

The SGS-6310 series supports IPv4-to-IPv6 technologies including **IPv4 manual/automatic tunnel**, **IPv6-to-IPv4 tunnel**, and Intra-Site Automatic Tunnel Addressing Protocol (**ISATAP**) tunnel. It comprehensively supports IPv6 Neighbor Discovery, DHCPv6, Path MTU Discovery, IPv6-based Telnet, SSH and ACL, meeting the need of IPv6 network device management and service control.

Robust Layer 2 Features

The SGS-6310 series can be programmed for basic switch management functions such as port speed configuration, port aggregation, VLAN, Multiple Spanning Tree Protocol, bandwidth control and IGMP snooping. This switch provides 802.1Q tagged VLAN, Q-in-Q, voice VLAN and GVRP Protocol functions. By supporting port link aggregation, the SGS-6310 series allows the operation of a high-speed trunk combined with multiple ports. It enables up to 64 groups for trunking with a maximum of 8 ports for each group.



Excellent Layer 2 to Layer 4 Traffic Control

The SGS-6310 series is loaded with powerful traffic management and WRR features to enhance services offered by enterprises. The WRR functionalities include wire-speed Layer 4 traffic classifiers and bandwidth limitation which are particularly useful for multi-tenant unit, multi-business unit, Telco, or network service applications. It also empowers the enterprises to take full advantage of the limited network resources and guarantees the best in VoIP and video conferencing transmission.

Powerful Network Security

The SGS-6310 series offers comprehensive Layer 2 to Layer 4 **Access Control List** (ACL) for enforcing security to the edge. It can be used to restrict network access by denying packets based on source and destination IP address, TCP/UDP ports or defined typical network applications. Its protection mechanism also comprises **802.1x Port-based** and **MAC-based** user and device authentications, which can be deployed with RADIUS, to ensure the port level security and block illegal users.

Advanced IP Network Protection

The SGS-6310 series also provides **DHCP Snooping**, **IP Source Guard** and **Dynamic ARP Inspection** functions to prevent IP snooping from attack and discard ARP packets with invalid MAC address. The network administrators can now construct highly-secure corporate networks with considerably less time and effort than before.

Efficient and Secure Management

For efficient management, the SGS-6310 series is equipped with console, Web and SNMP management interfaces.

- With the built-in Web-based management interface, the SGS-6310 series offers an easy-to-use, platform-independent management and configuration facility.
- For text-based management, it can be accessed via Telnet and the console port. For reducing product learning time, the SGS-6310 series offers Cisco-like command and customer doesn't need to learn new command from these switches.
- For standard-based monitor and management software, it offers SNMPv3 connection which encrypts the packet content at each session for secure remote management.

Moreover, the SGS-6310 series offers secure remote management by supporting SSHv1/v2 and TLSv1.2 connection which encrypts the packet content at each session.

AC Redundant Power to Ensure Continuous Operation

The SGS-6310-16S8C4XR is equipped with 100~240V AC power supply unit for redundant power supply. A redundant power system is also provided to enhance the reliability with power supply unit. The redundant power system is specifically designed to handle the demands of high-tech facilities requiring the highest power integrity.

Intelligent SFP Diagnosis Mechanism

The SGS-6310 series supports **SFP-DDM** (**Digital Diagnostic Monitor**) function that greatly helps network administrator to easily monitor real-time parameters of the SFP and SFP+ transceivers, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.

2. PRODUCT FEATURES

Physical Ports

- 24 100/1000BASE-X SFP ports (Ports1 to 24)
- **8 10/100/1000BASE-T RJ45** copper ports, shared with (Ports1 to 8)
- **4 10GBASE-SR/LR SFP+** slots, compatible with 1000BASE-SX/LX/BX SFP
- RJ45 to DB9 console interface for switch basic management and setup

➢ **Stacking Features**

- **Hardware Stacking**
  - Virtualized multiple SGS-6310 series stacked into one logical facility
  - Connects with stack members via assigned 10G SFP+ interfaces
  - Single IP address stack management, supporting up to 8 hardware units stacked together
  - Stacking architecture supports redundant Ring mode

➢ **IP Routing Features**

- IPv4 routing protocol supports **RIPv1/v2** and **OSPFv2**
- IPv6 routing protocol supports **RIPng** and **OSPFv3**
- Routing interface provides per VLAN routing mode
- **VRRPv1/v3** protocol for redundant routing deployment
- Supports route redistribution
- Supports hardware-based wire-speed VLAN routing

➢ **Multicast Routing Features**

- Supports IPv4 IGMP v1/v2/v3, IGMP Snooping.
- Supports IGMP Fast Leave, MVR, IGMP filter
- Supports IPv6 MLD V1, MLD snooping
- Supports MLD v1

➢ **Layer 2 Features**

- 16K MAC address table, automatic source address learning and aging
- Supports VLAN
  - IEEE 802.1Q tag-based VLAN
  - Provider Bridging (VLAN Q-in-Q, IEEE 802.1ad) supported
  - GVRP protocol for dynamic VLAN management
  - Private VLAN Edge (PVE) supported
  - MAC-based VLAN
  - IP subnet-based VLAN
  - Voice VLAN
- Supports Link Aggregation
  - IEEE 802.3ad LACP (Link Aggregation Control Protocol)
  - Static mode and LACP mode

- Maximum 64 trunk groups, up to 8 ports per trunk group

- Supports Spanning Tree Protocol
  - STP, IEEE 802.1D (Classic Spanning Tree Protocol)
  - RSTP, IEEE 802.1w (Rapid Spanning Tree Protocol)
  - MSTP, IEEE 802.1s (Multiple Spanning Tree Protocol, spanning tree by VLAN)
  - Supports BPDU & root guard
- Port mirroring to monitor the incoming or outgoing traffic on a particular port (one-to-one and many-to-one)
- Provides port mirror (many-to-1)
- Supports G.8032 ERPS (Ethernet Ring Protection Switching)
- Loop protection to avoid broadcast loops
- Link Layer Discovery Protocol (LLDP)
- Compatible with Cisco UDLD (uni-directional link detection) that monitors a link between two switches and blocks the ports on both ends of the link if the link fails at any point between the two devices

➢ **Quality of Service**

- 8 priority queues on all switch ports
- Support for strict priority and WRR (Weighted Round Robin) CoS policies
- Traffic classification
  - IEEE 802.1p CoS/ToS
  - IPv4/IPv6 DSCP
  - Port-based WRR
- Strict priority and WRR CoS policies

➢ **Multicast**

- Supports IPv4 IGMP snooping v1, v2 and v3
- Supports IPv6 MLD v1 snooping
- Querier mode support
- Supports Multicast VLAN Register (MVR)

➢ **Security**

- Authentication
  - IEEE 802.1x port-based network access authentication
  - MAC-based network access authentication
  - Built-in RADIUS client to cooperate with the RADIUS servers for IPv4 and IPv6
  - RADIUS/TACACS+ login users access authentication
- Access Control List
  - IP-based Access Control List (ACL)
  - MAC-based Access Control List
  - Time-based ACL
- DHCP snooping to filter distrusted DHCP messages
- **IP Source Guard** prevents IP spoofing attacks
- **Dynamic ARP Inspection** discards ARP packets with invalid MAC address to IP address binding

- **Management**
  - IPv4 and IPv6 dual stack management
  - Switch Management Interface
    - Console and Telnet Command Line Interface
    - HTTP Web switch management
    - SNMP v1 and v2c switch management
    - SSHv1/v2, TLSv1.2 and SNMPv3 secure access
  - SNMP Management
    - Four RMON groups 1, 2, 3, 9 (history, statistics, alarms and events)
    - SNMP trap for interface Link Up and Link Down notification
  - BOOTP and DHCP for IP address assignment
  - System Maintenance
    - Firmware upload/download via TFTP or HTTP Protocol for IPv4 and IPv6
  - SNTP (Simple Network Time Protocol) for IPv4 and IPv6
  - User privilege levels control
  - Syslog server for IPv4 and IPv6
  - Supports sFlow
  - DHCP Functions
    - DHCP Option82
    - DHCP server/relay/client
  - Network Diagnostic
    - Supports ping, traceroute function for IPv4 and IPv6
    - Supports DDM (Digital Diagnostic Monitor)
  - Supports ISSU (In-service Software Upgrade) to guarantee non-stop user data transmission when the system is upgraded.

- **Redundant Power System**
  - 100~240V AC dual redundant power
  - Active-active redundant power failure protection
  - Backup of catastrophic power failure on one supply

3. PRODUCT SPECIFICATIONS

3.1 MAIN COMPONENTS

Switch ASIC:	RTL9301	x 1
Switch PHY:	RLT8214FC RTL8214QF	x 1 x 4
DRAM:	256Mbytes	x 1
Flash:	16Mbytes	x 1

3.2 FUNCTION SPECIFICATIONS

Product	**SGS-6310-16S8C4XR**
Hardware Specifications	
SFP/mini-GBIC Ports	24 100/1000BASE-X SFP ports (ports 1 to 24) Compatible with 100BASE-FX SFP transceiver
Copper Ports	8 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports, shared with Ports 1 to 8
10G SFP+ Ports	4 10GBASE-SR/LR SFP+ ports (ports 25 to 28) Backward compatible with 1000BASE-SX/LX/BX SFP transceiver
Console Port	1 x RJ45-to-RS232 serial port (9600, 8, N, 1)
DRAM	256Mbytes
Flash Memory	16Mbytes
Dimensions (W x D x H)	440 x 280 x 44 mm
Weight	4000g
Power Consumption	38 watts/129.58BTU
Power Requirements- AC	AC 100~240V, 50/60Hz
Fan	2
LED	System: SYS, PWR **Green** Ports: 10/100/1000T RJ45 Port: LNK/ACT **Green** 1/10G SFP+ Port: LNK/ACT **Green**
Switching Specifications	
Switch Architecture	Store-and-forward
Switch Fabric	128Gbps/non-blocking
Switch Throughput	95.23Mpps
Back Plane	128Gbps
Forwarding Rate	96 Mbps With 64 bytes
Address Table	16K MAC address table with auto learning function
ARP Table	2K
Routing Table	2040
VLAN Interface	64
IP Interface	64

ACL Table	1024
Shared Data Buffer	1.5MB
Jumbo Frame	9KBytes
Flow Control	Back pressure for half duplex IEEE 802.3x pause frame for full duplex
IPv4 Layer 3 Functions	
IP Routing Protocol	Static route RIPv1/v2 OSPFv2 Hardware-based Layer 3 routing
Routing Features	VRRP v1/v3 ARP ARP Proxy IGMP Proxy
IPv6 Layer 3 Functions	
IP Routing Protocol	RIPng OSPFv3 IPv6 LPM Routing IPv6 Policy-based Routing (PBR) IPv6 VRRPv3 IPv6 RA (Router Advertisement) Hardware-based Layer 3 routing
Routing Features	Configured Tunnels GRE Tunnel ISATAP Tunnel, 6 to 4 tunnels Manual tunnel
Other	ICMPv6, IPv6 ND
Layer 2 Functions	
Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable Bandwidth control on each port Port loopback detect
Port Status	Display each port's speed duplex mode, link status, flow control status and auto negotiation status
VLAN	IEEE 802.1Q tagged VLAN, up to 4K VLAN groups IEEE 802.1ad Q-in-Q (VLAN stacking) GVRP for dynamic VLAN management Private VLAN Edge (PVE) supported Protocol-based VLAN MAC-based VLAN IP subnet-based VLAN
Spanning Tree Protocol	STP, IEEE 802.1D (Classic Spanning Tree Protocol) RSTP, IEEE 802.1w (Rapid Spanning Tree Protocol) MSTP, IEEE 802.1s (Multiple Spanning Tree Protocol, spanning tree by VLAN) Supports BPDU and root guard
Multicast	IPv4 IGMP v1/v2/v3 snooping

	Querier mode support IPv6 MLD v1 snooping Multicast VLAN Register (MVR) Up to 1024 multicast groups (IPv4 + IPv6)
Link Aggregation	IEEE 802.3ad LACP/static trunk Supports 64 groups with 8 ports per trunk group
Bandwidth Control	TX/RX/Both At least 64Kbps step
QoS	8 priority queues on all switch ports Supports strict priority and Weighted Round Robin (WRR) CoS policies Traffic classification: - CAR, HQoS, MAC/IP/TCP/UDP - IEEE 802.1p CoS/ToS - IPv4/IPv6 DSCP - Port-based WRR - - Tail-Drop, WRED, flow monitoring and traffic shaping
Ring	Supports ITU-G G.8032 ERPS Recovery time < 10ms @ 3units Recovery time < 50ms @ 16units
Security Functions	
Access Control List	Supports Standard and Expanded ACL IP-based ACL/MAC-based ACL Time-based ACL Up to 1024 entries
Security	Port isolation, Port security, “IP+ MAC+ port” binding MAC sticky DAI & IP source guard, PPPoE+ L2/L3/L4 ACL flow identification Filtration Anti-attack from DDo S, TCP’ s SYN Flood, UDP Flood Broadcast / multicast / unknown unicast storm-control Supports MD5, SHA-256, RSA-1024, AES256
AAA Authentication	TACACS+ and IPv4/IPv6 over RADIUS
Network Access Control	IEEE 802.1x port-based network access control MAC-based authentication RADIUS/TACACS authentication
Switch Management Functions	
System Configuration	Console and Telnet Web browser SNMP v1, v2c
Secure Management Interfaces	SSHv1/v2, TLSv1.2 and SNMPv3
System Management	Supports both IPv4 and Ipv6 addressing Supports the user IP security inspection for Ipv4/Ipv6 SNMP Supports MIB and TRAP Supports RMON 1, 2, 3, 9 four groups Supports IPv4/IPv6 FTP/TFTP Supports IPv4/IPv6 NTP

	Supports the RADIUS authentication for IPv4/IPv6 Telnet user name and password The right configuration for users to adopt RADIUS server's shell management Supports Security IP safety net management function: avoid unlawful landing at nonrestrictive area Supports IPv4 and IPv6 DHCP server
Event Management	Supports Syslog server for IPv4 and IPv6
Hardware Stacking	8 members max. 2 10G SFP+ slots are functioned as Stacking Up and Down interfaces
Hardware Stacking Compatibility List	SGS-6310-24T4X SGS-6310-24P4X SGS-6310-16S8C4XR
SNMP MIBs	RFC 1213 MIB-II RFC 1215 Internet Engineering Task Force RFC 1271 RMON RFC 1354 IP-Forwarding MIB RFC 1493 Bridge MIB RFC 1643 Ether-like MIB RFC 1907 SNMP v2 RFC 2011 IP/ICMP MIB RFC 2012 TCP MIB RFC 2013 UDP MIB RFC 2096 IP forward MIB RFC 2233 if MIB RFC 2452 TCP6 MIB RFC 2454 UDP6 MIB RFC 2465 IPv6 MIB RFC 2466 ICMP6 MIB RFC 2573 SNMP v3 notify RFC 2574 SNMP v3 vacm RFC 2674 Bridge MIB Extensions (IEEE 802.1Q MIB) RFC 2674 Bridge MIB Extensions (IEEE 802.1P MIB)
Standard Conformance	
Regulatory Compliance	FCC Part 15 Class A, CE
Standards Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3z Gigabit 1000BASE-SX/LX IEEE 802.3ab Gigabit 1000BASE-T IEEE 802.3ae 10Gb/s Ethernet IEEE 802.3x flow control and back pressure IEEE 802.3ad port trunk with LACP IEEE 802.1D Spanning Tree Protocol IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol IEEE 802.1p Class of Service IEEE 802.1Q VLAN tagging IEEE 802.1ad Q-in-Q VLAN stacking/tunneling IEEE 802.1x port authentication network control IEEE 802.1ab LLDP

	RFC 768 UDP RFC 783 TFTP RFC 791 IP RFC 792 ICMP RFC 2068 HTTP RFC 1112 IGMP v1 RFC 2236 IGMP v2 RFC 3376 IGMP v3 RFC 2710 MLD v1 RFC 2328 OSPF v2 RFC 1058 RIP v1 RFC 2453 RIP v2 ITU-T G.8032 ERPS Ring
Environment	
Operating	Temperature: 0 ~ 50 degrees C Relative Humidity: 10 ~ 90% (non-condensing)
Storage	Temperature: -20 ~ 70 degrees C Relative Humidity: 5 ~ 95% (non-condensing)

3.3 PHYSICAL SPECIFICATIONS:

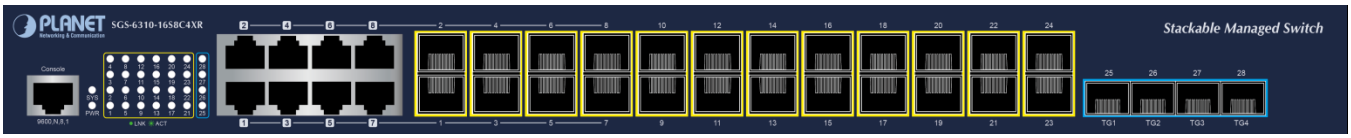
■ **Dimensions:**

440 x 280 x 44 mm (W x D x H), 1U height

■ **Weight:**

4kg

Front Panel:



■ **Rear Panel:**

■ **LED Definition**

- **System**

LED	Color	Function
PWR	Green	Lights to indicate that the Switch has power.
	Off	Power is off.
SYS	Green	Slow blinks to indicate the system is normally starting up.

- **Interfaces**

LED	Color		Function
LNK/ACT	Green	Lights	Indicating the port is running and the connection is successfully established.
		Blinks	Indicating that the switch is actively sending or receiving data over that port.

- **10G Status LED**

LED	Color		Function
LNK/ACT (Ports 25-28)	Green	Lights	Indicating the port is running and the connection is successfully established.
		Blinks	Indicating that the switch is actively sending or receiving data over that port.

3.4 ENVIRONMENTAL SPECIFICATIONS

Operating:

Temperature: 0°C ~ 50 degrees C

Relative Humidity: 10% ~ 90% (non-condensing)

Storage:

Temperature: -20°C ~ 70 degrees C

Relative Humidity: 5% ~ 95% (non-condensing)

3.5 ELECTRICAL SPECIFICATION

Input Voltage:	100~240V AC, 50/60Hz, 1.2A (max.)	
Power Consumption (System on):	110V: 11.6 watts	39.55BTU
	220V: 11.4 watts	38.87BTU
Power Consumption (Full Loading):	110V: 30.4 watts	103.66BTU
	220V: 29.8 watts	101.61BTU

3.6 REGULATORY COMPLIANCE

FCC Part 15 Class A, CE

3.7 RELIABILITY

MTBF > 50,000Hrs @ 25 degrees C

3.8 BASIC PACKAGING

☑ The SGS-6310-16S8C4XR	x 1
☑ Quick Installation Guide	x 1
☑ RJ45-to-DB9 RS232 Cable	x 1
☑ Two Rack-mounting Brackets with Attachment Screws	x 1
☑ AC Power Cord	x 1
☑ SFP Dust-proof Caps	x 28

3.9 PACKING INFORMATION

Box Dimensions (W x D x H):	576 x 448 x 94 mm
Weight (gross weight):	4.8kg
Carton Dimensions (W x D x H):	605 x 462 x 309 mm
Carton Weight (total weight):	15.4kg
Quantity:	3pcs in one carton