

Product Specifications

Layer 3 12-Port 10GBASE-X SFP+ Managed Ethernet Switch XGS-6311-12X

Version 1.0

This document contains confidential proprietary information and is property of PLANET. The contents of this document should not be disclosed to unauthorized persons without the written consent of PLANET.

Change History:

Revision:	Date:	Author:	Change List
Version 1.0	2022/7/3	Sky Chen	Initial Release

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

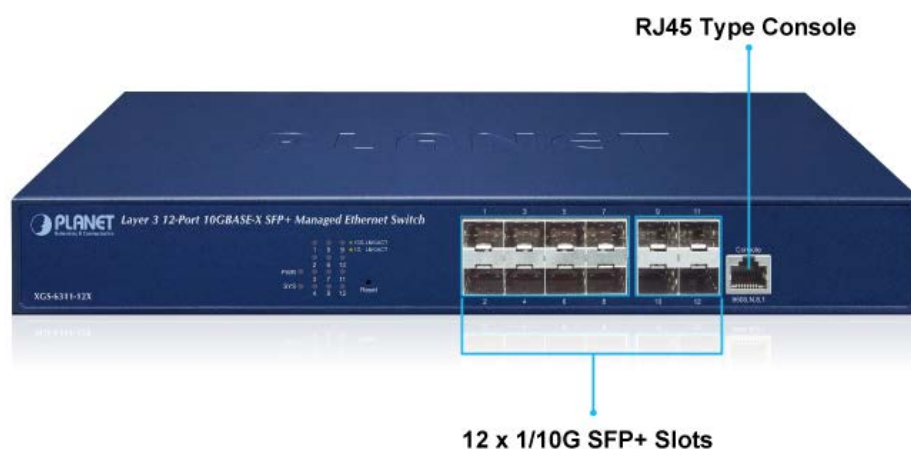
1. PRODUCT DESCRIPTION

Perfect Managed All-port 10Gbps Switch with Layer 3 Switching and Security

PLANET XGS-6311-12X is a **fully-managed all-port 10Gbps Ethernet switch** designed for the demand of high-bandwidth required network equipment, such as Wi-Fi 6/6E wireless AP, NAS and workstation. It features **12 10GBASE-X SFP+ fiber** ports that are flexibly designed to extend the connection distance.

The XGS-6311-12X provides high-density performance, **Layer 3 static routing, RIP (Routing Information Protocol) and OSPF (Open Shortest Path First)** with **10Gbps** interfaces.

With such a favorable data link capability, hardware-based Layer 3 routing performance, Layer 2 switching engine and user-friendly yet advanced IPv6/IPv4 management interfaces, it helps to accelerate the deployment of the next-generation high-bandwidth required network for metro, smart cities and enterprises.



High Performance 10Gbps Ethernet Capacity

The twelve SFP+ slots built in the XGS-6311-12X support dual-speed, **10GBASE-SR/LR** or **1000BASE-SX/LX**. With 10Gbps interfaces, the XGS-6311-12X boasts a high-performance switch architecture that is capable of providing non-blocking switch fabric and wire-speed throughput as high as **240Gbps**, which greatly simplifies the tasks of upgrading the LAN for catering to increasing bandwidth demands.

Redundant Ring, Fast Recovery for Critical Network Applications

The XGS-6311-12X 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 50ms to quickly bring the network back to normal operation.

Layer 3 Routing Support

The XGS-6311-12X enables the administrator to conveniently boost network efficiency by configuring Layer 3 static routing manually, and the **RIP** or **OSPF** 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 XGS-6311-12X supports abundant multicast features. In Layer 2, it features IPv4 IGMPv1/v2/v3 snooping and IPv6 MLD v1/v2 snooping. In Layer 3 multicast protocols, it features IGMPv1/v2/v3 With Multicast VLAN Register (MVR), multicast receiver/sender control and illegal multicast source detect functions which make the XGS-6311-12X great for any robust networking.

Full IPv6 Support

The XGS-6311-12X provides **IPv6 management** and enterprise-level secure features such as **SSH, ACL, WRR** and **RADIUS** authentication. It thus helps the enterprises to step in the IPv6 era with the lowest investment. In addition, you don't need to replace the network facilities when the IPv6 FTTx edge network is built.

Robust Layer 2 Features

The XGS-6311-12X can be programmed for basic switch management functions such as port speed configuration, port aggregation, VLAN, Multiple Spanning Tree Protocol, WRR and bandwidth control. This switch provides 802.1Q tagged VLAN, **Q-in-Q**, voice VLAN and GVRP Protocol functions. By supporting port aggregation, the XGS-6311-12X allows the operation of a high-speed trunk combined with multiple ports.

Excellent Layer 2 to Layer 4 Traffic Control

The XGS-6311-12X is loaded with powerful traffic management and WRR features to enhance services offered by telecoms. 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 Security

The XGS-6311-12X 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 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 XGS-6311-12X 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 XGS-6311-12X is equipped with console, Web and SNMP management interfaces.

- With the built-in Web-based management interface, the XGS-6311-12X 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 XGS-6311-12X 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 XGS-6311-12X offers secure remote management by supporting SSHv2 and SSLv3 connection which encrypts the packet content at each session.

Intelligent SFP Diagnosis Mechanism

The XGS-6311-12X 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**

- **12 10GBASE-SR/LR SFP+** slots, backward compatible with 1000BASE-SX/LX/BX SFP
- RJ45 type RS232 console interface for switch basic management and setup

➤ **IP Routing Features**

- IP routing protocol supports **RIPv1/v2, OSPFv2**
- Routing interface provides per VLAN routing mode
- Supports route redistribution

➤ **Multicast Routing Features**

- Supports IGMP v1/v2/v3 and MLD v1/v2

➤ **Layer 2 Features**

- Complies with the IEEE 802.3, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3z Gigabit Ethernet standard
- Prevents packet loss flow control
 - IEEE 802.3x pause frame flow control in full-duplex mode
 - Back pressure flow control in half-duplex mode
- High performance Store-and-Forward architecture, broadcast storm control, port loopback detection
- 32K MAC address table, automatic source address learning and aging
- Supports VLAN
 - IEEE 802.1Q tag-based VLAN
 - GVRP for dynamic VLAN management
 - Provider Bridging (VLAN Q-in-Q, IEEE 802.1ad) supported
 - Private VLAN Edge (PVE) supported
 - GVRP protocol for Management VLAN
 - Protocol-based VLAN
 - MAC-based VLAN
 - IP subnet VLAN
- Supports Link Aggregation
 - Maximum 64 trunk groups, up to 8 ports per trunk group
 - IEEE 802.3ad LACP (Link Aggregation Control Protocol)
 - Cisco ether-channel (static trunk)
- 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 (many to many)
- Provides port mirror (many-to-1)
- Supports G.8032 ERPS (Ethernet Ring Protection Switching)

➤ **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 and v2 snooping
- Querier mode support
- Supports Multicast VLAN Register (MVR)

➤ **Security**

- 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
- TACACS+ login users access authentication
- IP-based Access Control List (ACL)
- MAC-based Access Control List
- Supports DHCP snooping
- Supports ARP inspection
- **IP Source Guard** prevents IP spoofing attacks
- **Dynamic ARP Inspection** discards ARP packets with invalid MAC address to IP address binding

➤ **Management**

- Management IP for IPv4 and IPv6
- Switch Management Interface
 - Console/Telnet Command Line Interface
 - Web switch management
 - SNMP v1, v2c, and v3 switch management
 - SSH/SSL/TLS secure access
- BOOTP and DHCP for IP address assignment
- 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 DDM
- Four RMON groups 1, 2, 3, 9 (history, statistics, alarms and events)
- Supports sFlow
- Supports ULDP

- Supports ULPP (Uplink Protection Protocol)
- Supports ULSM (Uplink State Monitor protocol)
- Supports LLDP/LLDP MED
- Supports DHCP Option82/43/60/61/67
- Supports ping, trace route function for IPv4 and IPv6

3. PRODUCT SPECIFICATIONS

3.1 MAIN COMPONENTS

Switch ASIC:	RTL9313-CG	x 1
CPU:	MIPS 800MHz	x 1
DRAM:	512Mbytes	x 1
Flash:	32Mbytes	x 1

3.2 FUNCTION SPECIFICATIONS

Product	XGS-6311-12X
Hardware Specifications	
SFP+ Slots	12 10GBASE-SR/LR SFP+ interfaces (port-1 to port-12) Compatible with 1000BASE-SX/LX/BX SFP transceiver
Console	1 x RJ45-to-RS232 serial port (9600, 8, N, 1)
CPU	MIPS 800MHz
RAM	512Mbytes
Flash Memory	32Mbytes
Dimensions (W x D x H)	330 x 230 x 43.6 mm, 1U height
Weight	1988g
Power Consumption	Max. 16.4 watts/55.9 BTU (Power on without any connection) Max. 30.2 watts/102.9 BTU (Full loading)
Power Requirements	AC 100~240V, 50/60Hz
Fan	1
LED	System: PWR (Green), SYS (Green) Ports: 10G LNK/ACT (Green) 1G LNK/ACT (Amber)
Switching Specifications	

Switch Architecture	Store-and-forward
Switch Fabric	240Gbps/non-blocking
Switch Throughput	178.56Mpps
Address Table	32K MAC address table with auto learning function
ARP Table	8K
Routing Table	12K
IP Interface	1024
ACL Table	4K
Shared Data Buffer	16MB
Flow Control	Back pressure for half duplex IEEE 802.3x pause frame for full duplex
Jumbo Frame	12KB
IPv4 Layer 3 Functions	
IP Routing Protocol	Static route RIPv1/v2 OSPFv2
Multicast Routing Protocol	IGMP v1/v2/v3
Layer 3 Protocol	ARP ARP Proxy IGMP Proxy
IPv6 Layer 3 Functions	
Other	ICMPv6,ND,DNSv6
Layer 2 Function	
Port Configuration	Port disable/enable 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	<p>802.1Q tagged based VLAN, up to 4K VLAN groups</p> <p>802.1ad Q-in-Q (VLAN stacking)</p> <p>GVRP for VLAN management</p> <p>Private VLAN Edge (PVE) supported</p> <p>Protocol-based VLAN</p> <p>MAC-based VLAN</p> <p>IP subnet VLAN</p>
Bandwidth Control	TX/RX/Both
Link Aggregation	<p>IEEE 802.3ad LACP/static trunk</p> <p>Supports 64 groups with 8 ports per trunk group</p>
QoS	<p>8 priority queues on all switch ports</p> <p>Supports strict priority and Weighted Round Robin (WRR) CoS policies</p> <p>Traffic classification:</p> <ul style="list-style-type: none"> - IEEE 802.1p CoS/ToS - IPv4/IPv6 DSCP - Port-based WRR
Multicast	<p>IPv4 IGMP v1/v2/v3 snooping</p> <p>IPv4 Querier mode support</p> <p>IPv6 MLD v1/v2 snooping</p> <p>Multicast VLAN Register (MVR)</p> <p>Up to 1024</p>
Security Function	
Access Control List	<p>Supports Standard and Expanded ACL</p> <p>IP-based ACL/MAC-based ACL</p> <p>Time-based ACL</p> <p>Up to 2K entries</p>
Security	<p>Port isolation</p> <p>Supports IP + MAC + port binding</p>

	<p>Identification and filtering of L2/L3/L4 based ACL</p> <p>Defend against DOS or TCP attacks</p> <p>Suppression of broadcast, multicast and unknown unicast packet</p> <p>DHCP Snooping, DHCP Option 82/43/60/61/67</p> <p>Command line authority control based on user levels</p>
AAA	TACACS+ and IPv4/IPv6 over RADIUS
Authentication	IEEE 802.1x port-based network access control
Management Function	
System Configuration	Console, Telnet, Web browser, SNMP v1, v2c
Secure Management Interfaces	SSHv2, TLSv1.2, SNMPv3
Management	<p>IPv4 and IPv6 dual stack management</p> <p>User IP security inspection for IPv4/IPv6 SNMP</p> <p>SNMP v1, v2c and v3</p> <p>SNMP MIB and TRAP</p> <p>SNMP RMON 1, 2, 3, 9 four groups</p> <p>IPv4/IPv6 FTP/TFTP</p> <p>IPv4/IPv6 NTP</p> <p>RADIUS authentication for IPv4/IPv6 Telnet user name and password</p> <p>IPv4/IPv6 SSH</p> <p>The right configuration for users to adopt RADIUS server's shell management</p> <p>CLI, console, Telnet</p> <p>Security IP safety net management function: avoid unlawful landing at nonrestrictive area</p> <p>Syslog server for IPv4 and IPv6</p> <p>TACACS+</p>
SNMP MIBs	<p>RFC 1213 MIB-II</p> <p>RFC 1215 Internet Engineering Task Force</p> <p>RFC 1271 RMON</p> <p>RFC 1354 IP-Forwarding MIB</p> <p>RFC 1493 Bridge MIB</p> <p>RFC 1643 Ether-like MIB</p>

	<p>RFC 1907 SNMP v2</p> <p>RFC 2011 IP/ICMP MIB</p> <p>RFC 2012 TCP MIB</p> <p>RFC 2013 UDP MIB</p> <p>RFC 2096 IP forward MIB</p> <p>RFC 2233 if MIB</p> <p>RFC 2452 TCP6 MIB</p> <p>RFC 2454 UDP6 MIB</p> <p>RFC 2465 IPv6 MIB</p> <p>RFC 2466 ICMP6 MIB</p> <p>RFC 2573 SNMP v3 notify</p> <p>RFC 2574 SNMP v3 vacm</p> <p>RFC 2674 Bridge MIB Extensions (IEEE 802.1Q MIB)</p> <p>RFC 2674 Bridge MIB Extensions (IEEE 802.1P MIB)</p>
Standard Conformance	
Regulatory Compliance	FCC Part 15 Class A, CE
Standards Compliance	<p>IEEE 802.3 10BASE-T</p> <p>IEEE 802.3u 100BASE-TX</p> <p>IEEE 802.3z Gigabit 1000BASE-SX/LX</p> <p>IEEE 802.3ab Gigabit 1000BASE-T</p> <p>IEEE 802.3ae 10Gb/s Ethernet</p> <p>IEEE 802.3x flow control and back pressure</p> <p>IEEE 802.3ad port trunk with LACP</p> <p>IEEE 802.1ag CFM</p> <p>IEEE 802.1D Spanning Tree Protocol</p> <p>IEEE 802.1w Rapid Spanning Tree Protocol</p> <p>IEEE 802.1s Multiple Spanning Tree Protocol</p> <p>IEEE 802.1p Class of Service</p> <p>IEEE 802.1Q VLAN tagging</p> <p>IEEE 802.1X port authentication network control</p> <p>IEEE 802.1ab LLDP</p> <p>RFC 768 UDP</p> <p>RFC 783 TFTP</p> <p>RFC 793 TCP</p> <p>RFC 791 IP</p> <p>RFC 792 ICMP</p> <p>RFC 2068 HTTP</p>

	RFC 1112 IGMP v1 RFC 2236 IGMP v2 RFC 3376 IGMP v3 RFC 2710 MLD v1 RFC 3810 MLD v2 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: 5 ~ 90% (non-condensing)
Storage	Temperature: -10 ~ 70 degrees C Relative Humidity: 5 ~ 90% (non-condensing)

3.3 PHYSICAL SPECIFICATIONS:

■ Dimensions:

330 x 230 x 43.6 mm (W x D x H), 1U height

■ Weight:

1988g

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	Lights: to indicate the system is normally starting up.

• Per 1G/10G BASE-SR/LR SFP+ Port (Port-1 to Port-12)

LED	Color	Function	
10G LNK/ACT	Green	Lights	To indicate the port is running at 10Gbps and successfully established
		Blinks	Indicating that the switch is actively sending or receiving data over that port.
1G LNK/ACT	Amber	Lights	To indicate the port is running at 1Gbps.
		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: 5% ~ 90% (non-condensing)

Storage:

Temperature: -10°C ~ 70 degrees C

Relative Humidity: 5% ~ 90% (non-condensing)

3.5 ELECTRICAL SPECIFICATION

Input Voltage:	100~240V AC, 50/60Hz, 2A (max.)	
Power Consumption (System on):	110V: 16.4 watts	55.9BTU
	220V: 16 watts	54.5BTU
Power Consumption (Full Loading):	110V: 30.2 watts *	102.9BTU
	220V: 30 watts *	102.3BTU

3.6 REGULATORY COMPLIANCE

FCC Part 15 Class A, CE

3.7 RELIABILITY

MTBF > 50,000Hrs @ 25 degrees C

3.8 BASIC PACKAGING

<input checked="" type="checkbox"/> The XGS-6311-12X	x 1
<input checked="" type="checkbox"/> Quick Installation Guide Sheet	x 1
<input checked="" type="checkbox"/> RJ45-to-DB9 RS232 Cable	x 1
<input checked="" type="checkbox"/> Rack-mount Accessory Kit	x 1
<input checked="" type="checkbox"/> SFP Dust Cap	x12
<input checked="" type="checkbox"/> AC Power Cord	x 1
<input checked="" type="checkbox"/> Rubber Feet	x 4

3.9 PACKING INFORMATION

Box Dimensions (W x D x H):	394 x 310 x 90 mm
Gross Weight:	2.6kg
Carton Dimensions (W x D x H):	482 x 410 x 340 mm
Total Carton Weight :	14.3kg
Quantity:	5pcs in one carton