

## Product Specifications

### L3 16-Port 10/100/1000T Ultra PoE + 4-Port 100/1000X SFP + 2-Port 10G SFP+ Managed Switch

**GS-5220-16UP4S2X**

**GS-5220-16UP4S2XR**

Version 2.0

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Change History:

Revision	Date	Author	Change List
2.0	2018/8/3	Bryant Wu	Firmware Update to Linux 4.4
1.0	2017/5/4	Bryant Wu	Initial release

<b>Author</b>	Bryant Wu	<b>Editor:</b>	Bryant Wu
<b>Reviewed by:</b>		<b>Approved by:</b>	Kent Kang

## 1. PRODUCT DESCRIPTION



### Amazing Ultra PoE Managed Switches with Layer3 Switching and Security

PLANET GS-5220-16UP4S2X(R) Series of cost-optimized, 1U, Gigabit PoE Managed Switches featuring PLANET **intelligent PoE** functions to improve the availability of critical business applications. They provide IPv6/IPv4 dual stack management and built-in **Layer 3 OSPF/static routing** Gigabit switching along with **16 10/100/1000BASE-T** ports featuring **75-watt Ultra PoE**, **4 Gigabit SFP ports** and **2 additional 10Gigabit SFP+ ports**. With a total power budget of up to 400 watts for different kinds of PoE applications, the GS-5220-16UP4S2X(R) PoE Series provides a quick, safe and cost-effective PoE network solution for small businesses and enterprises.

### Convenient and Smart ONVIF Devices with Detection Feature

PLANET has newly developed an awesome feature -- ONVIF Support -- which is specifically designed for co-operating with Video IP Surveillances. From the GS-5220-16UP4S2X(R) **PoE** Series GUI, clients just need one click to search and show all of the ONVIF devices via network application. In addition, clients can upload floor images to the switch series, making the deployments of surveillance and other devices easy for planning and inspection purposes. Moreover, clients can get real-time surveillance's information and online/offline status. They allow PoE reboot control from the GUI.

### 75 Watts of Power over 4-pair UTP

The GS-5220-16UP4S2X(R) **PoE** Series that features **ultra PoE** adopts the IEEE 802.3at/af standard. Instead of delivering power over 2-pair twisted UTP – be it end-span (Pins 1,2,3 and 6) or mid-span (Pins 4,5,7 and 8), they provide the capability to source up to 75 watts of power by using all the four pairs of standard Cat.5e/6 Ethernet cabling. In the new 4-pair system, two PSE controllers will be used to power both the data pairs and the spare pairs. They can offer more PoE applications, such as:

- PoE PTZ speed dome
- Any network device that needs higher PoE power to work normally
- Thin-client
- AIO (All-in-One) touch PC
- Remote digital signage display

## Built-in Unique PoE Functions for Powered Devices Management

Being the managed PoE switches for surveillance, wireless and VoIP networks, the GS-5220-16UP4S2X(R) **PoE** Series feature the following special PoE management functions:

- PD alive check
- Scheduled power recycling
- PoE schedule
- PoE usage monitoring

### Intelligent Powered Device Alive Check

The GS-5220-16UP4S2X(R) **PoE** Series can be configured to monitor connected PD (powered device) status in real time via ping action. Once the PD stops working and responding, the GS-5220-16UP4S2X(R) **PoE** Series will resume the PoE port power and bring the PD back to work. They will greatly enhance the network reliability through the PoE port resetting the PD's power source and reducing administrator management burden.

### Scheduled Power Recycling

The GS-5220-16UP4S2X(R) **PoE** Series allows each of the connected PoE IP cameras or PoE wireless access points to reboot at a specified time each week. Therefore, they will reduce the chance of IP camera or AP crash resulting from buffer overflow.

### PoE Schedule for Energy Saving

Under the trend of energy saving worldwide and contributing to environmental protection, the GS-5220-16UP4S2X(R) **PoE** Series can effectively control the power supply besides their capability of giving high watts power. The "**PoE schedule**" function helps you to enable or disable PoE power feeding for each PoE port during specified time intervals and it is a powerful function to help SMBs or enterprises save power and money. It also increases security by powering off PDs that should not be in use during non-business hours.

### PoE Usage Monitoring

Via the power usage chart in the web management interface, the GS-5220-16UP4S2X(R) **PoE** Series enables the administrator to monitor the status of the power usage of the connected PDs in real time. Thus, they greatly enhance the management efficiency of the facilities.

### Layer 3 Routing Support

The GS-5220-16UP4S2X(R) **PoE** Series enables the administrator to conveniently boost network efficiency by configuring Layer 3 IPv4/IPv6 VLAN static routing manually, and the **OSPFv2** (Open Shortest Path First) settings automatically. 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.

### Cost-effective 10Gbps Uplink Capacity

10G Ethernet is a big leap in the evolution of Ethernet. The two 10G SFP+ slots of the GS-5220-16UP4S2X(R) **PoE** Series support **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

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the network efficiently. They greatly support SMB network to achieve the maximum performance of 10Gbps in a cost-effective way.

**Redundant AC/DC Power Supply to Ensure Continuous Operation**

The GS-5220-16UP4S2XR is particularly equipped with one 100~240V AC power supply unit and one 36~60V DC power supply unit to provide an enhanced reliable and scalable redundant power supply. The continuous power system is specifically designed to fulfill the demands of high-tech facilities requiring the highest power integrity. With the 36~60V DC power supply, the GS-5220-16UP4S2XR are able to act as a telecom-level device that can be located in the electronic room.

**Environment-friendly, Smart Fan Design for Silent Operation**

The GS-5220-16UP4S2X(R) PoE Series features a 19-inch metal housing, a low noise design and an effective ventilation system. They support the smart fan technology that automatically controls the speed of the built-in fan to reduce noise and maintain the temperature of the PoE switch for optimal power output capability. The GS-5220-16UP4S2X(R) PoE Series is able to operate reliably, stably and quietly in any environment without affecting its performance.

**Solution for IPv6 Networking**

By supporting IPv6/IPv4 dual stack and plenty of management functions with easy and friendly user interfaces, the GS-5220-16UP4S2X(R) PoE Series is the best choice for IP surveillance, VoIP and wireless service providers to deploy the IPv6 network. They also help the SMBs to step in the IPv6 era with the lowest investment and without having to replace the network facilities while the ISPs construct the IPv6 FTTx edge network.

**Robust Layer 2 Features**

The GS-5220-16UP4S2X(R) PoE Series can be programmed for advanced switch management functions, such as dynamic port link aggregation, **Q-in-Q VLAN**, **Multiple Spanning Tree Protocol (MSTP)**, Layer 2/4 QoS, bandwidth control and **IGMP/MLD snooping**. The GS-5220-16UP4S2X(R) PoE Series allows the operation of a high-speed trunk combining with multiple ports.

**Powerful Security**

The GS-5220-16UP4S2X(R) PoE Series offers a comprehensive **Layer 2 to Layer 4 access control list (ACL)** for enforcing security to the edge. It can be used to restrict to network access by denying packets based on source and destination IP address, TCP/UDP port number or defined typical network applications. Its protection mechanism also comprises **802.1x Port-based** and **MAC-based** user and device authentication. With the **private VLAN** function, communication between edge ports can be prevented to ensure user privacy.

**Enhanced Security and Traffic Control**

The GS-5220-16UP4S2X(R) PoE 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 administrator can now construct highly-secure corporate networks with considerably less time and effort than before.

### User-friendly Secure Management

For efficient management, the GS-5220-16UP4S2X(R) PoE Series is equipped with console, web and SNMP management interfaces. With the built-in web-based management interface, it offers an easy-to-use, platform independent management and configuration facility. The GS-5220-16UP4S2X(R) PoE Series supports SNMP and it can be managed via any management software based on the standard SNMP v1 or v2 Protocol. For reducing product learning time, the GS-5220-16UP4S2X(R) PoE Series offers **Cisco-like command** via Telnet or console port and customer doesn't need to learn new command from these switches. Moreover, the GS-5220-16UP4S2X(R) PoE Series offers the remotely secure management by supporting **SSH, SSL** and **SNMP v3** connection where the packet content can be encrypted at each session.

### Flexible and Extendable Solution

The 4 mini-GBIC SFP slots built in the GS-5220-16UP4S2X and GS-5220-16UP4S2XR supports dual speed as it features 100BASE-FX and 1000BASE-SX/LX SFP (Small Form-factor Pluggable) fiber-optic modules. Now the administrator can flexibly choose the suitable SFP transceiver according to not only the transmission distance, but also the transmission speed required. The distance can be extended from 550 m to 2 km (multi-mode fiber) and to 10/20/30/40/50/70/120 km (single-mode fiber or WDM fiber). They are well suited for applications within the enterprise data centers and distributions

### Intelligent SFP/SFP+ Diagnosis Mechanism

The GS-5220-16UP4S2X(R) PoE 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 Port

- 16 10/100/1000BASE-T Gigabit RJ45 copper ports with 16-port **IEEE 802.3af/at/bt Ultra PoE** injector
- 4 100/1000BASE-X mini-GBIC/SFP slots
- 2 10GBASE-SR/LR SFP+ slots, compatible with 1000BASE-SX/LX/BX SFP
- RJ45 console interface for switch basic management and setup

### ➤ 802.3bt Ultra Power over Ethernet

- Complies with IEEE 802.3at Power over Ethernet Plus, end-span/mid-span PSE
- Backward compatible with IEEE 802.3af Power over Ethernet
- Up to 16 ports of IEEE 802.3af/IEEE 802.3at/IEEE 802.3bt ultra PoE devices powered
- Supports PoE power up to 75 watts for each ultra PoE port
- Auto detects powered device (PD)
- Circuit protection prevents power interference between ports
- Remote power feeding up to 100 meters
- PoE management
  - Total PoE power budget control
  - Per port PoE function enable/disable
  - PoE admin-mode control

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- PoE port power feeding priority
- Per PoE port power limitation
- PD classification detection
- Temperature threshold control
- PD alive check
- PoE schedule

 > **Layer 2 Features**

- Prevents packet loss with back pressure (half-duplex) and IEEE 802.3x pause frame flow control (full-duplex)
- High performance of Store-and-Forward architecture and runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth
- Storm Control support
  - Broadcast/Multicast/Unknown unicast
- Supports **VLAN**
  - IEEE 802.1Q tagged VLAN
  - Up to 255 VLANs groups, out of 4094 VLAN IDs
  - Supports provider bridging (VLAN Q-in-Q, IEEE 802.1ad)
  - Private VLAN Edge (PVE)
  - Protocol-based VLAN
  - MAC-based VLAN
  - Voice VLAN
- Supports Spanning Tree Protocol
  - IEEE 802.1D Spanning Tree Protocol
  - IEEE 802.1w Rapid Spanning Tree Protocol
  - IEEE 802.1s Multiple Spanning Tree Protocol, spanning tree by VLAN
  - BPDU Guard
- Supports **Link Aggregation**
  - 802.3ad Link Aggregation Control Protocol (LACP)
  - Cisco ether-channel (static trunk)
  - Maximum 11 trunk groups, up to 6 ports per trunk group
- Provides port mirror (many-to-1)
- Port mirroring to monitor the incoming or outgoing traffic on a particular port
- Loop protection to avoid broadcast loops
- Supports E.R.P.S. (Ethernet Ring Protection Switching)

 > **Layer 3 Features**

- Supports maximum 128 static routes and route summarization
- IP dynamic routing protocol supports OSPFv2
- Routing interface provides per VLAN routing mode

 > **Quality of Service**

- Ingress Shaper and Egress Rate Limit per port bandwidth control
- 8 priority queues on all switch ports
- Traffic classification
  - IEEE 802.1p CoS
  - TOS/DSCP/IP precedence of IPv4/IPv6 packets
  - IP TCP/UDP port number
  - Typical network application

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- Strict priority and Weighted Round Robin (WRR) CoS policies
- Supports QoS and In/Out bandwidth control on each port
- Traffic-policing on the switch port
- DSCP remarking

**➤ Multicast**

- Supports IGMP snooping v1, v2 and v3
- Supports MLD snooping v1 and v2
- Querier mode support
- IGMP snooping port filtering
- MLD snooping port filtering
- Multicast VLAN Registration (MVR) support

**➤ Security**

- Authentication
  - IEEE 802.1x port-based/MAC-based network access authentication
  - Built-in RADIUS client to cooperate with the RADIUS servers
  - TACACS+ login users access authentication
  - RADIUS/TACACS+ users access authentication
- Access Control List
  - IP-based Access Control List (ACL)
  - MAC-based Access Control List
- Source MAC/IP address binding
- DHCP Snooping to filter untrusted DHCP messages
- Dynamic ARP Inspection discards ARP packets with invalid MAC address to IP address binding
- IP Source Guard prevents IP spoofing attacks
- IP address access management to prevent unauthorized intruder

**➤ Management**

- IPv4 and IPv6 dual stack management
- Switch Management Interfaces
  - Console/Telnet Command Line Interface
  - Web switch management
  - SNMP v1, v2c, and v3 switch management
  - SSH/SSL secure access
- IPv6 IP address/NTP/DNS management
- Built-in Trivial File Transfer Protocol (TFTP) client
- BOOTP and DHCP for IP address assignment
- System Maintenance
  - Firmware upload/download via HTTP/TFTP
  - Reset button for system reboot or reset to factory default
  - Dual images
- DHCP Relay
- DHCP Option 82
- User Privilege levels control
- NTP (Network Time Protocol)
- Link Layer Discovery Protocol (LLDP) and LLDP-MED
- Network Diagnostic

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- ICMPv6/ICMPv4 remote ping
- Cable diagnostic technology provides the mechanism to detect and report potential cabling issues
- SMTP/Syslog remote alarm
- Four RMON groups (history, statistics, alarms and events)
- SNMP trap for interface Link Up and Link Down notification
- System Log
- PLANET Smart Discovery Utility for deployment management
- Smart fan with speed control

➤ **Redundant Power System (GS-5220-16UP4S2XR)**

- Redundant 100~240V AC/36-60V DC dual power
- Active-active redundant power failure protection
- Backup of catastrophic power failure on one supply
- Fault tolerance and resilience

### 3. PRODUCT SPECIFICATIONS

#### 3.1 MAIN COMPONENTS

Switch ASIC	Vitesse VSC7444	x 1
CPU	MIPS 500MHz (integrated with VSC7444)	x 1
PoE Controller	Microsemi PD69200	x 1
PoE PSE	Microsemi PD69208M	x 4
Flash Size	32M bytes	x 1
DRAM Size	256M bytes	x 1

#### 3.2 FUNCTION SPECIFICATIONS

Product	GS-5220-16UP4S2X	GS-5220-16UP4S2XR
<b>Hardware Specifications</b>		
Hardware Version	2	
Copper Ports	16 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports	
SFP/mini-GBIC Slots	4 100/1000BASE-X SFP interfaces, Compatible with 100BASE-FX SFP transceiver	
SFP+ Slots	2 10GBASE-SR/LR SFP+ interfaces (Port-17 to Port-18) Compatible with 1000BASE-SX/LX/BX SFP transceiver	
Console	1 x RS232-to-RJ45 serial port (115200, 8, N, 1)	
Switch Architecture	Store-and-Forward	
Switch Fabric	80Gbps/non-blocking	
Throughput	59.52Mpps@64Bytes	
Address Table	16K entries, automatic source address learning and aging	
Shared Data Buffer	32M bits	
Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex	



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<b>Jumbo Frame</b>	10K bytes	
<b>Reset Button</b>	< 5 sec: System reboot > 5 sec: Factory default	
<b>Dimensions (W x D x H)</b>	440 x 300 x 44.5 mm, 1U height	
<b>Weight</b>	4466g	4503g
<b>LED</b>	<p><b>System:</b>                  SYS (Green)                  AC/PWR (Green)                  DC (Green) (GS-5220-16UP4S2XVR Only)                  Ring (Green)                  Fan1/2/3 Alert (Red)                  PoE PWR Alert (Red)</p> <p><b>PoE Ethernet Interfaces (Port-1 to Port-16):</b>                  bt PoE (Green) , af/at PoE (Orange)</p> <p><b>Ethernet Interfaces (Port-1 to Port-16):</b>                  1000 LNK/ACT (Green), 10/100 LNK/ACT (Orange)</p> <p><b>100/1000Mbps SFP Interfaces (Port-17 to Port-20):</b>                  1000 (Green), 100 (Orange)</p> <p><b>1/10G SFP+ Interfaces (Port-21 to Port-22):</b>                  1G (Green), 10G (Orange)</p>	
<b>Power Consumption</b>	Max. 439.4 watts/1498.3 BTU	AC: Max. 439.4 watts/1498.3 BTU DC: Max. 31.9 watts/108.7 BTU
<b>Power Requirements – AC</b>	AC 100~240V, 50/60Hz, 7A	
<b>Power Requirements – DC</b>	--	DC 36~60V, 2A
<b>ESD Protection</b>	6KV DC	
<b>Fan</b>	3 smart fans	
<b>Power over Ethernet</b>		
<b>PoE Standard</b>	IEEE 802.3af/802.3at/802.3bt Ultra PoE PSE	
<b>PoE Power Supply Type</b>	End-span/Mid-span/UPoE	
<b>PoE Power Output</b>	Per port 54V DC, 75 watts (max.)	
<b>Power Pin Assignment</b>	End-span: 1/2(-), 3/6(+) Mid-span: 4/5(+), 7/8(-) UPoE: 1/2(-), 3/6(+), 4/5(+), 7/8(-)	
<b>PoE Power Budget</b>	400 watts (max.)	
<b>PoE Ability PD @ 15 watts</b>	16 units	
<b>PoE Ability PD @ 30 watts</b>	13 units	
<b>PoE Ability PD @ 60 watts</b>	6 units	
<b>Layer 2 Management Functions</b>		
<b>Port Configuration</b>	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable	
<b>Port Status</b>	Display each port's speed duplex mode, link status, flow control status, auto-negotiation status, trunk status	
<b>Port Mirroring</b>	TX/RX/Both Many-to-1 monitor	

<b>VLAN</b>	802.1Q tagged based VLAN Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN Voice VLAN MVR (Multicast VLAN registration) Up to 255 VLAN groups, out of 4095 VLAN IDs	
<b>Link Aggregation</b>	IEEE 802.3ad LACP/static trunk 11 groups with 6 port per trunk	
<b>Spanning Tree Protocol</b>	IEEE 802.1D Spanning Tree Protocol (STP) IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)	
<b>QoS</b>	Traffic classification based, strict priority and WRR 8-level priority for switching: <ul style="list-style-type: none"> <li>- Port number</li> <li>- 802.1p priority</li> <li>- 802.1Q VLAN tagging</li> <li>- DSCP/ToS field in IP packet</li> </ul>	
<b>IGMP Snooping</b>	IGMP (v1/v2/v3) snooping, up to 255 multicast groups IGMP querier mode support	
<b>MLD Snooping</b>	MLD (v1/v2) snooping, up to 255 multicast groups MLD querier mode support	
<b>Access Control List</b>	IP-based ACL/MAC-based ACL Up to 256 entries	
<b>Bandwidth Control</b>	Per port bandwidth control Ingress: 100Kbps~1000Mbps Egress: 100Kbps~1000Mbps	
<b>Layer 3 Functions</b>		
<b>IP Interfaces</b>	Max. 128 VLAN interfaces	
<b>Routing Table</b>	Max. 128 routing entries	
<b>Routing Protocols</b>	IPv4 OSPFv2 IPv4 hardware static routing IPv6 hardware static routing	
<b>Management</b>		
<b>Basic Management Interfaces</b>	Console; Telnet; Web browser; SNMP v1, v2c	
<b>Secure Management Interfaces</b>	SSH, SSL, SNMP v3	
<b>SNMP MIBs</b>	RFC 1213 MIB-II RFC 1493 Bridge MIB RFC 1643 Ethernet MIB RFC 2863 Interface MIB RFC 2665 Ether-Like MIB RFC 2819 RMON MIB (Groups 1, 2, 3 and 9) RFC 2737 Entity MIB	RFC 2618 RADIUS Client MIB RFC 2863 IF-MIB RFC 2933 IGMP-STD-MIB RFC 3411 SNMP-Frameworks-MIB RFC 4292 IP Forward MIB RFC 4293 IP MIB RFC 4836 MAU-MIB IEEE 802.1X PAE LLDP

Standards Conformance																																	
<b>Regulatory Compliance</b>	FCC Part 15 Class A, CE																																
<b>Standards Compliance</b>	<table border="0"> <tr> <td>IEEE 802.3 10BASE-T</td> <td>IEEE 802.1Q VLAN tagging</td> </tr> <tr> <td>IEEE 802.3u 100BASE-TX/100BASE-FX</td> <td>IEEE 802.1x Port Authentication Network Control</td> </tr> <tr> <td>IEEE 802.3z Gigabit SX/LX</td> <td>IEEE 802.1ab LLDP</td> </tr> <tr> <td>IEEE 802.3ab Gigabit 1000T</td> <td>IEEE 802.3af Power over Ethernet</td> </tr> <tr> <td>IEEE 802.3ae 10Gb/s Ethernet</td> <td>IEEE 802.3at Power over Ethernet Plus</td> </tr> <tr> <td>IEEE 802.3x flow control and back pressure</td> <td>IEEE 802.3bt 4-pair Power over Ethernet</td> </tr> <tr> <td>IEEE 802.3ad port trunk with LACP</td> <td>RFC 768 UDP</td> </tr> <tr> <td>IEEE 802.1D Spanning Tree Protocol</td> <td>RFC 793 TFTP</td> </tr> <tr> <td>IEEE 802.1w Rapid Spanning Tree Protocol</td> <td>RFC 791 IP</td> </tr> <tr> <td>IEEE 802.1s Multiple Spanning Tree Protocol</td> <td>RFC 792 ICMP</td> </tr> <tr> <td>IEEE 802.1p Class of Service</td> <td>RFC 2068 HTTP</td> </tr> <tr> <td></td> <td>RFC 1112 IGMP v1</td> </tr> <tr> <td></td> <td>RFC 2236 IGMP v2</td> </tr> <tr> <td></td> <td>RFC 3376 IGMP v3</td> </tr> <tr> <td></td> <td>RFC 2710 MLD v1</td> </tr> <tr> <td></td> <td>RFC 3810 MLD v2</td> </tr> </table>	IEEE 802.3 10BASE-T	IEEE 802.1Q VLAN tagging	IEEE 802.3u 100BASE-TX/100BASE-FX	IEEE 802.1x Port Authentication Network Control	IEEE 802.3z Gigabit SX/LX	IEEE 802.1ab LLDP	IEEE 802.3ab Gigabit 1000T	IEEE 802.3af Power over Ethernet	IEEE 802.3ae 10Gb/s Ethernet	IEEE 802.3at Power over Ethernet Plus	IEEE 802.3x flow control and back pressure	IEEE 802.3bt 4-pair Power over Ethernet	IEEE 802.3ad port trunk with LACP	RFC 768 UDP	IEEE 802.1D Spanning Tree Protocol	RFC 793 TFTP	IEEE 802.1w Rapid Spanning Tree Protocol	RFC 791 IP	IEEE 802.1s Multiple Spanning Tree Protocol	RFC 792 ICMP	IEEE 802.1p Class of Service	RFC 2068 HTTP		RFC 1112 IGMP v1		RFC 2236 IGMP v2		RFC 3376 IGMP v3		RFC 2710 MLD v1		RFC 3810 MLD v2
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	RFC 3810 MLD v2																																
Environment																																	
<b>Operating</b>	Temperature: 0 ~ 50 degrees C Relative Humidity: 5 ~ 95% (non-condensing)																																
<b>Storage</b>	Temperature: -10 ~ 70 degrees C Relative Humidity: 5 ~ 95% (non-condensing)																																

**3.3 PHYSICAL SPECIFICATIONS:**

**Dimensions:**

440 x 300 x 44.5 mm (W x D x H)

**Weight:**

4466g (GS-5220-16UP4S2X)

4503g (GS-5220-16UP4S2XR)

**Front View**

**GS-5220-16UP4S2X:**



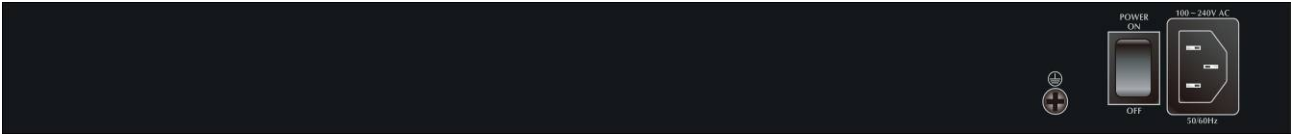
**GS-5220-16UP4S2XR:**



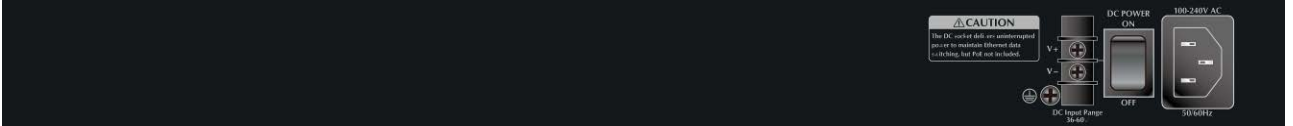
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■ **Rear Panel:**

**GS-5220-16UP4S2X:**



**GS-5220-16UP4S2XR:**



■ **LED Definition**

■ **System / Alert (GS-5220-16UP4S2X)**

LED	Color	Function
PWR	Green	Lights to indicate that the Switch has power.
SYS	Green	Lights to indicate the system is working. Off to indicate the system is booting.
Ring	Green	Lights to indicate that the ERPS Ring has been created successfully.
FAN 1	Red	Lights to indicate that FAN1 is down.
FAN 2	Red	Lights to indicate that FAN2 is down.
FAN 3	Red	Lights to indicate that FAN3 is down.
PoE PWR	Red	Lights to indicate that the PoE power is down.

■ **System / Alert (GS-5220-16UP4S2XR)**

LED	Color	Function
AC	Green	Lights to indicate that the Switch has power from AC
DC	Green	Lights to indicate that the Switch has power from DC
SYS	Green	Lights to indicate the system is working. Off to indicate the system is booting.
Ring	Green	Lights to indicate that the ERPS Ring has been created successfully.
FAN 1	Red	Lights to indicate that FAN1 is down.
FAN 2	Red	Lights to indicate that FAN2 is down.
FAN 3	Red	Lights to indicate that FAN3 is down.
PoE PWR	Red	Lights to indicate that the PoE power is down.

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**■ 10/100/1000BASE-T Interfaces (Port-1 to Port-16)**

LED	Color	Function
Ethernet	Green	<b>Lights:</b> To indicate that the port is operating at 1000Mbps. <b>Blinks:</b> To indicate that the switch is actively sending or receiving data over that port.
	Orange	<b>Lights:</b> To indicate that the port is operating at 10/100Mbps. <b>Blinks:</b> To indicate that the switch is actively sending or receiving data over that port.
PoE	Green	<b>Lights:</b> To indicate the port is providing DC in-line power with Ultra PoE mode. <b>Off:</b> To indicate the connected device is not a PoE Powered Device (PD)
	Orange	<b>Lights:</b> To indicate the port is providing DC in-line power with End-span/Mid-span mode.. <b>Off:</b> To indicate the connected device is not a PoE Powered Device (PD)

**■ 100/1000BASE-SX/LX SFP Interfaces (Port-17 to Port-20)**

LED	Color	Function
1000	Green	<b>Lights:</b> To indicate that the port is operating at 1000Mbps. <b>Blinks:</b> To indicate that the switch is actively sending or receiving data over that port.
100	Orange	<b>Lights:</b> To indicate that the port is operating at 100Mbps. <b>Blinks:</b> To indicate that the switch is actively sending or receiving data over that port.

**■ 1/10GBASE-SR/LR SFP+ Interfaces (Port-21 to Port-22)**

LED	Color	Function
10G	Orange	<b>Lights:</b> To indicate that the port is operating at 10Gbps. <b>Blinks:</b> To indicate that the switch is actively sending or receiving data over that port.
1000	Green	<b>Lights:</b> To indicate that the port is operating at 1000Mbps. <b>Blinks:</b> To indicate that the switch is actively sending or receiving data over that port.

**3.4 ENVIRONMENTAL SPECIFICATIONS**
**Operating:**
**Temperature:** 0 ~50 degrees C

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

**Storage:**
**Temperature:** -40 ~85 degrees C

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

**Confidential**

### 3.5 ELECTRICAL SPECIFICATIONS

Product	GS-5220-16UP4S2X	GS-5220-16UP4S2XR
<b>Input Voltage</b>	100~240V AC, 50/60Hz, 7A	100~240V AC, 50/60Hz, 7A 36 ~ 60V DC @ 2A (only for system)
<b>Power Consumption (System on)</b>	16.2 watts/55.2 BTU @ DC 36V (GS-5220-16UP4S2XR) 16.5 watts/56.2 BTU @ DC 48V (GS-5220-16UP4S2XR) 16.9 watts/57.6 BTU @ DC 60V (GS-5220-16UP4S2XR) 26.6 watts/90.7 BTU @ AC 100V 26.4 watts/90 BTU @ AC 110V 27.6 watts/94.1 BTU @ AC 120V 25.9 watts/88.3 BTU @ AC 220V 25.6 watts/87.3 BTU @ AC 240V	
<b>Power Consumption (Ethernet Full Loading)</b>	31.4 watts/107 BTU @ DC 36V (GS-5220-16UP4S2XR) 31.6 watts/107.7 BTU @ DC 48V (GS-5220-16UP4S2XR) 31.9 watts/108.7 BTU @ DC 60V (GS-5220-16UP4S2XR) 38.8 watts/132.3 BTU @ AC 100V 39.2 watts/133.6 BTU @ AC 110V 39.4 watts/134.3 BTU @ AC 120V 38.6 watts/131.6 BTU @ AC 220V 38 watts/129.5 BTU @ AC 240V	
<b>Power Consumption (PoE + Ethernet Full Loading)</b>	438.8 watts/1496.3 BTU @ AC 100V 439.2 watts/1497.6 BTU @ AC 110V 439.4 watts/1498.3 BTU @ AC 120V 438.6 watts/1495.6 BTU @ AC 220V 438 watts/1493.5 BTU @ AC 240V	

### 3.6 REGULATORY COMPLIANCE

FCC Part 15 Class A, CE

### 3.7 RELIABILITY

MTBF &gt; 50,000hrs @ 25 degrees C

### 3.8 BASIC PACKAGING

<input checked="" type="checkbox"/> The GS-5220-16UP4S2X/GS-5220-16UP4S2XR Switch	x 1
<input checked="" type="checkbox"/> Quick Installation Guide	x 1
<input checked="" type="checkbox"/> RJ45-to-DB9 RS232 cable	x 1
<input checked="" type="checkbox"/> Two Rack-mounting Brackets with Attachment Screws	x 1
<input checked="" type="checkbox"/> Power Cord	x 1
<input checked="" type="checkbox"/> SFP Dust Cap	x 6

**Confidential**

### 3.9 PACKING DIMENSIONS

<b>Box Dimensions (W x D x H)</b>	567 x 392 x 93 mm
<b>Weight</b>	5.75kg
<b>Carton Dimensions (W x D x H)</b>	600 x 221 x 432 mm
<b>Carton Weight</b>	11.5kg
<b>Quantity</b>	2pcs in one carton