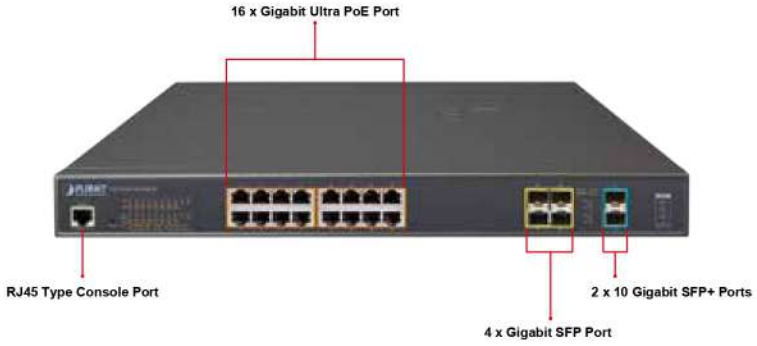
L3 16-Port 10/100/1000T Ultra PoE + 4-Port 100/1000X SFP + 2-Port 10G SFP+ Managed Switch

Amazing Ultra PoE Managed Switches with Layer3 Switching and Security

PLANET GS-5220-16UP4S2X(R) s 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.

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
  - 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

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

- 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
- 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

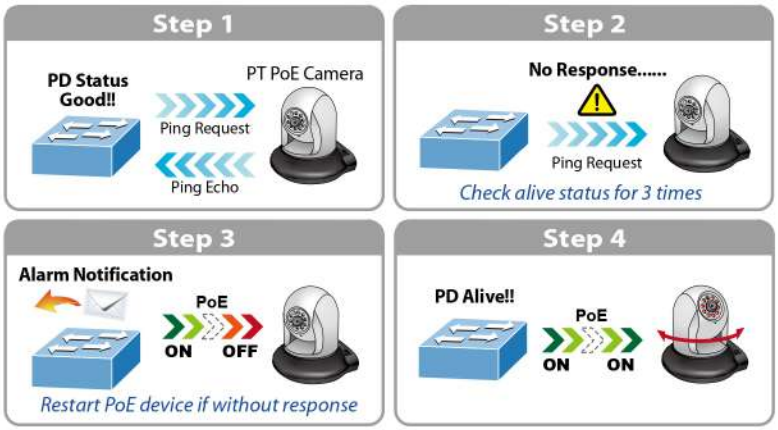
Built-in Unique PoE Functions for Powered Devices Management

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

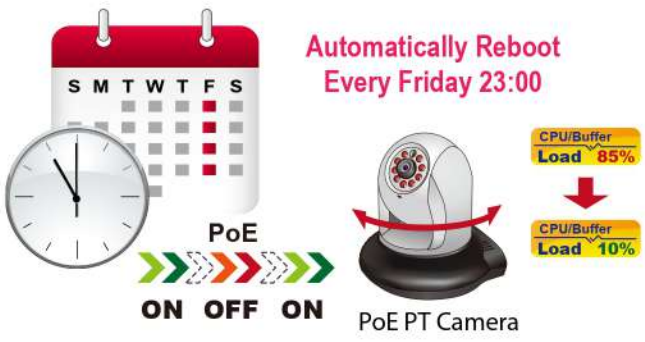
Intelligent Powered Device Alive Check

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.



- 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

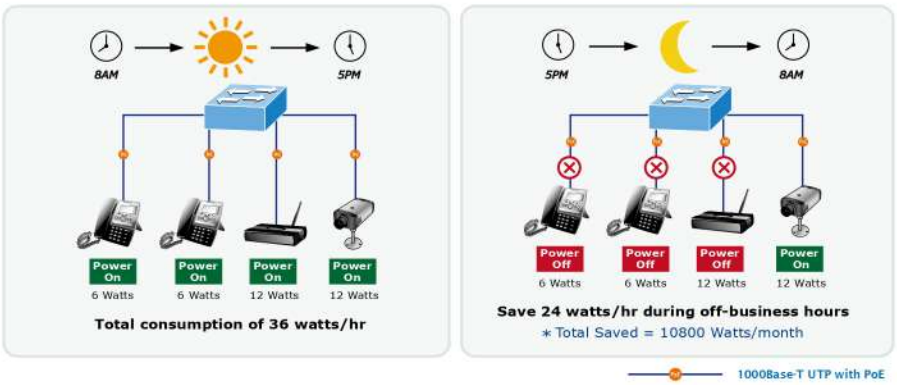
- IPv4 and IPv6 dual stack management
- Switch Management Interfaces
  - Console/Telnet Command Line Interface
  - Web switch management
  - SNMP v1, v2c, and v3 switch management
  - SSH/SSL secure access
- **IPv6** IP address/NTP/DNS management
- Built-in Trivial File Transfer Protocol (TFTP) client
- 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
  - 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

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 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

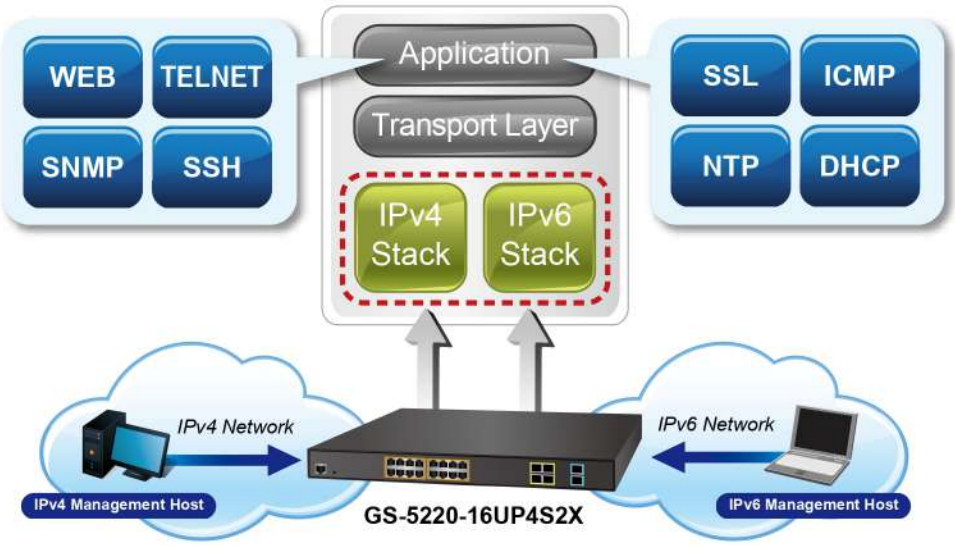
The GS-5220-16UP4S2XR is particularly equipped with one 100~240V AC power supply unit and one 36~60V DC power supply unit to provide an enhanced reliable and scalable redundant power supply. The continuous power system is specifically designed to fulfill the demands of high-tech facilities requiring 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.



IPv4 and IPv6 VLAN Routing for Secure and Flexible Management

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 Diagnosis Mechanism

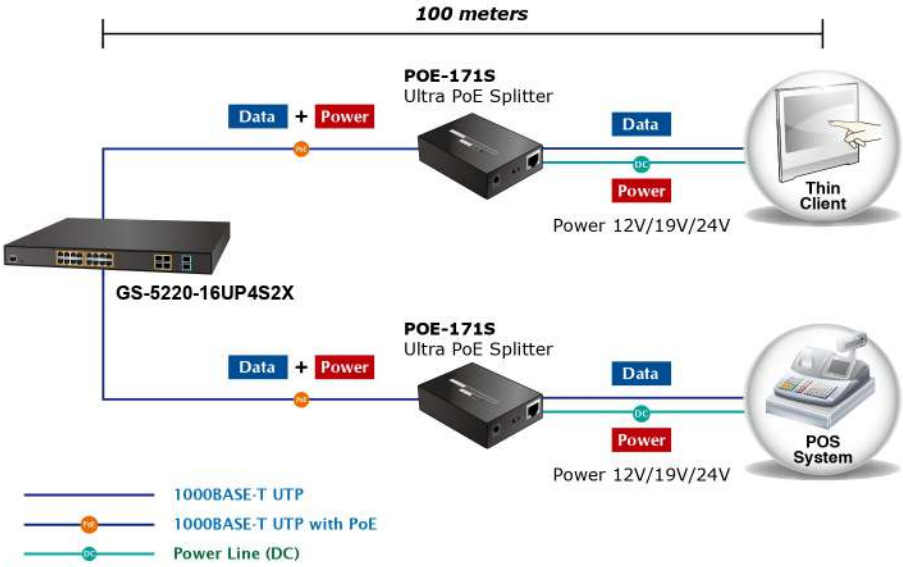
The GS-5220-16UP4S2X(R) PoE Series supports **SFP-DDM (Digital Diagnostic Monitor)** function that greatly helps network administrator to easily monitor real-time parameters of the SFP and SFP+ transceivers, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.

*Digital Diagnostic Monitor **(DDM)***

Applications

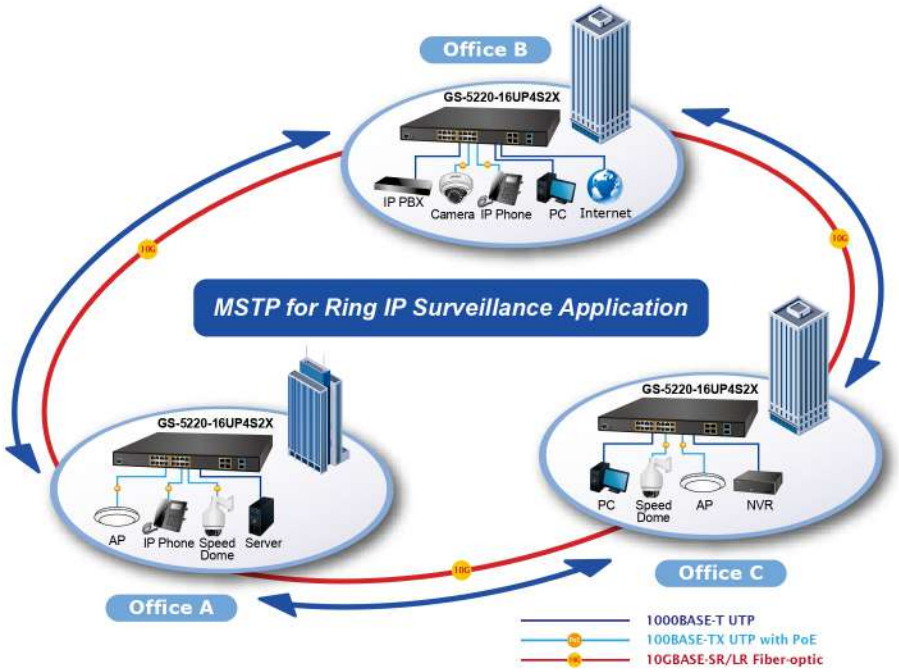
Ultra PoE Networking Solution

PLANET GS-5220-16UP4S2X(R) can easily build an ultra PoE networking solution on the cyber security system for the enterprises. For instance, it can work with the POS system and thin client to perform comprehensive security protection for today's businesses. The GS-5220-16UP4S2X(R) and POE-171S/IPOE-171S Ultra PoE Splitter operate as a pair to provide the easiest way to power your Ethernet devices which need high power input. Receiving data and power from the GS-5220-16UP4S2X(R), the POE-171S/IPOE-171S separates digital data and power into several optional outputs (12V, 19V or 24V DC) to non-PoE devices such as laptops, thin client, POS system, PTZ (Pan, Tilt & Zoom) network cameras, PTZ speed dome, color touch-screen IP phones, multi-channel wireless LAN access points and other network devices at distance up to 100 meters.



Optimal Redundant Ring for Faster Recovery of Managed Network

The GS-5220-16UP4S2X(R) PoE 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 (802.1w RSTP) 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, thus enabling the management network to keep on operating.



Specifications

Product	GS-5220-16UP4S2X	GS-5220-16UP4S2XR
Hardware Specifications		
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	
Jumbo Frame	10K bytes	
Reset Button	< 5 sec: System reboot > 5 sec: Factory default	
Weight	4466g	4503g
LED	System: SYS (Green) AC/PWR (Green) DC (Green) (GS-5220-16UP4S2XVR Only) Ring (Green) Fan1/2/3 Alert (Red) PoE PWR Alert (Red) PoE Ethernet Interfaces (Port-1 to Port-16): bt PoE (Green) , af/at PoE (Orange) Ethernet Interfaces (Port-1 to Port-16): 1000 LNK/ACT (Green), 10/100 LNK/ACT (Orange) 100/1000Mbps SFP Interfaces (Port-17 to Port-20): 1000 (Green), 100 (Orange) 1/10G SFP+ Interfaces (Port-21 to Port-22): 1G (Green), 10G (Orange)	
Power Consumption	Max. 439.4 watts/1498.3 BTU	AC: Max. 439.4 watts/1498.3 BTU DC: Max. 31.9 watts/108.7 BTU
Power Requirements – AC	AC 100~240V, 50/60Hz, 7A	
Power Requirements – DC	--	DC 36~60V, 2A
ESD Protection	6KV DC	
Fan	3 smart fans	
Power over Ethernet		
PoE Standard	IEEE 802.3af/802.3at/802.3bt Ultra PoE PSE	
PoE Power Supply Type	End-span/Mid-span/UPoE	
PoE Power Output	Per port 54V DC, 75 watts (max.)	
Power Pin Assignment	End-span: 1/2(-), 3/6(+) Mid-span: 4/5(+), 7/8(-) UPoE: 1/2(-), 3/6(+),4/5(+), 7/8(-)	
PoE Power Budget	400 watts (max.)	
PoE Ability PD @ 15 watts	16 units	
PoE Ability PD @ 30 watts	13 units	
PoE Ability PD @ 60 watts	6 units	
Layer 2 Management Functions		
Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable	
Port Status	Display each port's speed duplex mode, link status, flow control status, auto-negotiation status, trunk status	
Port Mirroring	TX/RX/Both Many-to-1 monitor	
VLAN	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	
Link Aggregation	IEEE 802.3ad LACP/static trunk 11 groups with 6 port per trunk	

Spanning Tree Protocol	IEEE 802.1D Spanning Tree Protocol (STP) IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)	
QoS	Traffic classification based, strict priority and WRR 8-level priority for switching: - Port number - 802.1p priority - 802.1Q VLAN tagging - DSCP/ToS field in IP packet	
IGMP Snooping	IGMP (v1/v2/v3) snooping, up to 255 multicast groups IGMP querier mode support	
MLD Snooping	MLD (v1/v2) snooping, up to 255 multicast groups MLD querier mode support	
Access Control List	IP-based ACL/MAC-based ACL Up to 256 entries	
Bandwidth Control	Per port bandwidth control Ingress: 100Kbps~1000Mbps Egress: 100Kbps~1000Mbps	
Layer 3 Functions		
IP Interfaces	Max. 128 VLAN interfaces	
Routing Table	Max. 128 routing entries	
Routing Protocols	IPv4 OSPFv2 IPv4 hardware static routing IPv6 hardware static routing	
Management		
Basic Management Interfaces	Console; Telnet; Web browser; SNMP v1, v2c	
Secure Management Interfaces	SSH, SSL, SNMP v3	
SNMP MIBs	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		
Regulatory Compliance	FCC Part 15 Class A, CE	
Standards Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX/100BASE-FX IEEE 802.3z Gigabit SX/LX IEEE 802.3ab Gigabit 1000T 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 802.1x Port Authentication Network Control IEEE 802.1ab LLDP IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus IEEE 802.3bt 4-pair Power over Ethernet RFC 768 UDP RFC 793 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 FRC 3810 MLD v2
Environment		
Operating	Temperature: 0 ~ 50 degrees C Relative Humidity: 5 ~ 95% (non-condensing)	
Storage	Temperature: -10 ~ 70 degrees C Relative Humidity: 5 ~ 95% (non-condensing)	

Ordering Information

GS-5220-16UP4S2X	L3 16-Port 10/100/1000T Ultra PoE + 4-Port 100/1000X SFP + 2-Port 10G SFP+ Managed Switch
GS-5220-16UP4S2XR	L3 16-Port 10/100/1000T Ultra PoE + 4-Port 100/1000X SFP + 2-Port 10G SFP+ Managed Switch with System Redundant Power

Related Products

GS-5220-24UP4X	L3 24-Port 10/100/1000T Ultra PoE + 4-Port 10G SFP+ Managed Switch (400W)
GS-5220-24UP4XR	L3 24-Port 10/100/1000T Ultra PoE + 4-Port 10G SFP+ Managed Switch with System Redundant Power (400W)
GS-5220-24UPL4X	L3 24-Port 10/100/1000T Ultra PoE + 4-Port 10G SFP+ Managed Switch (600W)
GS-5220-24UPL4XR	L3 24-Port 10/100/1000T Ultra PoE + 4-Port 10G SFP+ Managed Switch with System Redundant Power (600W)
GS-4210-16UP4C	16-Port 10/100/1000T Ultra PoE + 4-Port Gigabit TP/SFP Combo Managed Switch (400W)
GS-4210-24UP4C	24-Port 10/100/1000T UltraPoE + 4-Port Gigabit TP/SFP Combo Managed Switch
UPOE-800G	8-Port 10/100/1000T Ultra PoE Managed Injector Hub (400W)
UPOE-1600G	16-Port 10/100/1000T Ultra PoE Managed Injector Hub (600W)
POE-171	Single-Port 10/100/1000Mbps Ultra PoE Injector (60 watts, external power supply)
POE-173	Single-Port 10/100/1000Mbps Ultra PoE Injector (60 watts, internal power supply)
POE-171S	Single-Port 10/100/1000Mbps Ultra PoE Splitter (12V/19V/24V)
IPOE-171S	Industrial Single-Port 10/100/1000Mbps Ultra PoE Splitter (12V/24V, -40~75 degrees C)
IPOE-E174	1-Port Ultra PoE to 4-Port 802.3af/at Gigabit PoE Extender

Available 10Gbps Modules

CB-DASFP-0.5M	10G SFP+ Directly-attached Copper Cable (0.5m in length)
CB-DASFP-2M	10G SFP+ Directly-attached Copper Cable (2m in length)
MTB-RJ	Mini GBIC 10G TP Module - 30m
MTB-SR	10GBASE-SR mini-GBIC module - 300m
MTB-LR	10GBASE-LR mini-GBIC module – 10km
MTB-LA20	10GBASE-LX (WDM,TX:1270nm) mini-GBIC module - 20km
MTB-LB20	10GBASE-LX (WDM,TX:1330nm) mini-GBIC module - 20km
MTB-LA40	10GBASE-LX (WDM,TX:1270nm) mini-GBIC module - 40km
MTB-LB40	10GBASE-LX (WDM,TX:1330nm) mini-GBIC module - 40km
MTB-LA60	10GBASE-LX (WDM,TX:1270nm) mini-GBIC module - 60km
MTB-LB60	10GBASE-LX (WDM,TX:1330nm) mini-GBIC module - 60km

Available 1000Mbps Modules

MGB-GT	SFP-Port 1000BASE-T Module
MGB-SX	SFP-Port 1000BASE-SX mini-GBIC module - 220/550m
MGB-LX	SFP-Port 1000BASE-LX mini-GBIC module - 10km
MGB-L30	SFP-Port 1000BASE-LX mini-GBIC module - 30km
MGB-L50	SFP-Port 1000BASE-LX mini-GBIC module - 50km
MGB-L70	SFP-Port 1000BASE-LX mini-GBIC module - 70km
MGB-L120	SFP-Port 1000BASE-LX mini-GBIC module - 120km
MGB-LA10	SFP-Port 1000BASE-LX (WDM,TX:1310nm) mini-GBIC module - 10km
MGB-LB10	SFP-Port 1000BASE-LX (WDM,TX:1550nm) mini-GBIC module - 10km
MGB-LA20	SFP-Port 1000BASE-LX (WDM,TX:1310nm) mini-GBIC module - 20km
MGB-LB20	SFP-Port 1000BASE-LX (WDM,TX:1550nm) mini-GBIC module - 20km
MGB-LA40	SFP-Port 1000BASE-LX (WDM,TX:1310nm) mini-GBIC module - 40km
MGB-LB40	SFP-Port 1000BASE-LX (WDM,TX:1550nm) mini-GBIC module - 40km

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