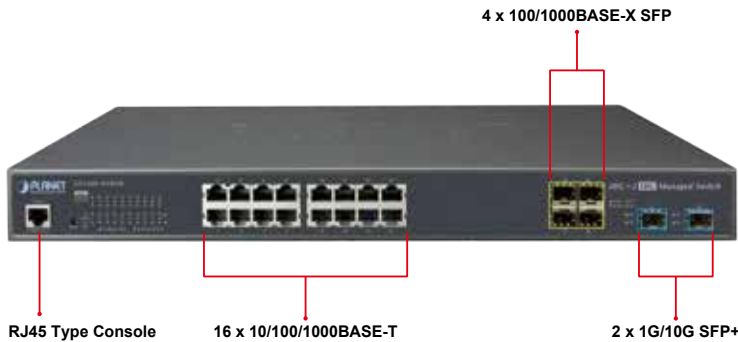


## L2+ 16-Port 10/100/1000T + 4-Port 100/1000X SFP + 2-Port 10G SFP+ Managed Switch



### IPv6 Routing and 10G Ethernet Switch Solutions for SMBs

PLANET GS-5220-16T4S2X and GS-5220-16T4S2XR Layer 2+ Managed Gigabit Switches support both **IPv4** and **IPv6** protocols and **hardware Layer 3 static routing** capability, and provide **16 10/100/1000Mbps Gigabit Ethernet ports**, **4 additional Gigabit SFP slots** and **2 10G SFP+ uplink slots**. The GS-5220-16T4S2X series can handle extremely large amounts of data in a secure topology linking to a data center/ service provider backbone or high capacity servers. They can work with a 10Gbps SFP+ server adapter to help SMBs build the 10Gbps Ethernet network providing 10Gbps NAS (Network Attached Storage) or heavy transmission of video streaming service at an affordable price.



### Cost-effective 10Gbps Uplink Capacity

10G Ethernet is a big leap in the evolution of Ethernet. The two 10G SFP+ slots of the GS-5220-16T4S2X 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 because the 10GbE interface usually could be available in Layer 3 Switch but Layer 3 Switch could be too expensive to SMBs.

### Physical Port

- 16-port 10/100/1000BASE-T RJ45 copper
- 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 basic management and setup

### 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 12 trunk groups, up to 10 ports per trunk group
  - Up to 32Gbps bandwidth (full duplex mode)
- 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

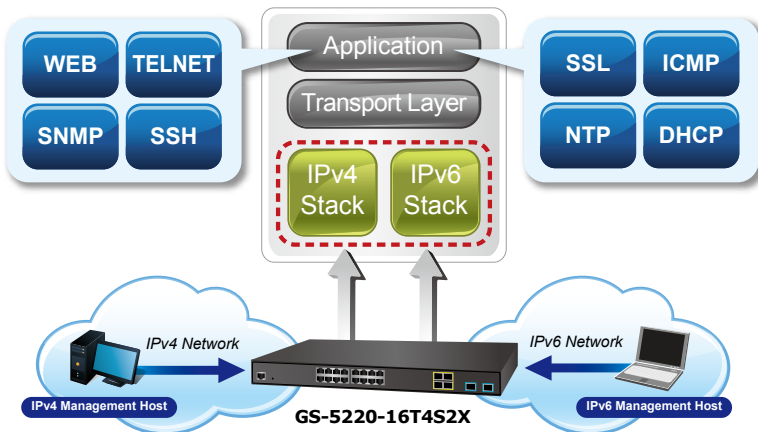
**Digital Input and Digital Output for External Alarm**

The GS-5220-16T4S2XR 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-5220-16T4S2XR is able to act as a telecom-level device that can be located in the electronic room.



**Solution for IPv6 Networking**

By supporting IPv6/IPv4 dual stack and plenty of management functions with easy and friendly-user interfaces, the GS-5220 series is the best choice for IP surveillance, VoIP and wireless service providers to deploy the IPv6 network. It also helps the SMBs to step in the IPv6 era with the lowest investment but not necessary to replace the network facilities while the ISPs construct the IPv6 FTTx edge network.



**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 policies 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
- Auto DoS rule to defend DoS attack
- IP address access management to prevent unauthorized intruder

### IPv4 and IPv6 VLAN Routing for Secure and Flexible Management

To help customers stay on top of their businesses, the GS-5220 switch series not only provides ultra high transmission performance and excellent layer 2 technologies, but also offers IPv4/IPv6 VLAN routing feature which allows to crossover different VLANs and different IP addresses for the purpose of having a highly-secure, flexible management and simpler networking application.

### Robust Layer2 Features

The GS-5220 series can be programmed for advanced switch management function, 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 series allows the operation of a high-speed trunk combining multiple ports. It consists of a maximum of 12 trunk groups with 10 ports for each group, and supports connection fail-over as well.



### Powerful Security

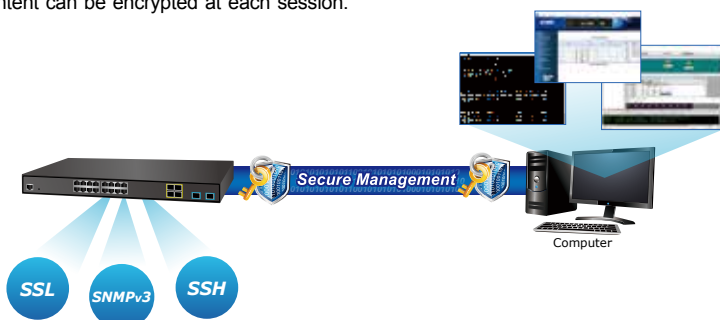
The GS-5220 series offers a comprehensive **Layer 2 to Layer 4 access control list (ACL)** for enforcing security to the edge. It can be used to restrict to network access by denying packets based on source and destination IP address, TCP/UDP port number or defined typical network applications. Its protection 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 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 managed switch series is equipped with console, web and SNMP management interfaces. With the built-in web-based management interface, the GS-5220 series offers an easy-to-use, platform independent management and configuration facility. The GS-5220 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 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 series offers the remotely secure management by supporting **SSH**, **SSL** and **SNMPv3** connection where the packet content can be encrypted at each session.



### 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
- 

### Redundant Power System (GS-5220-16T4S2XR)

- 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

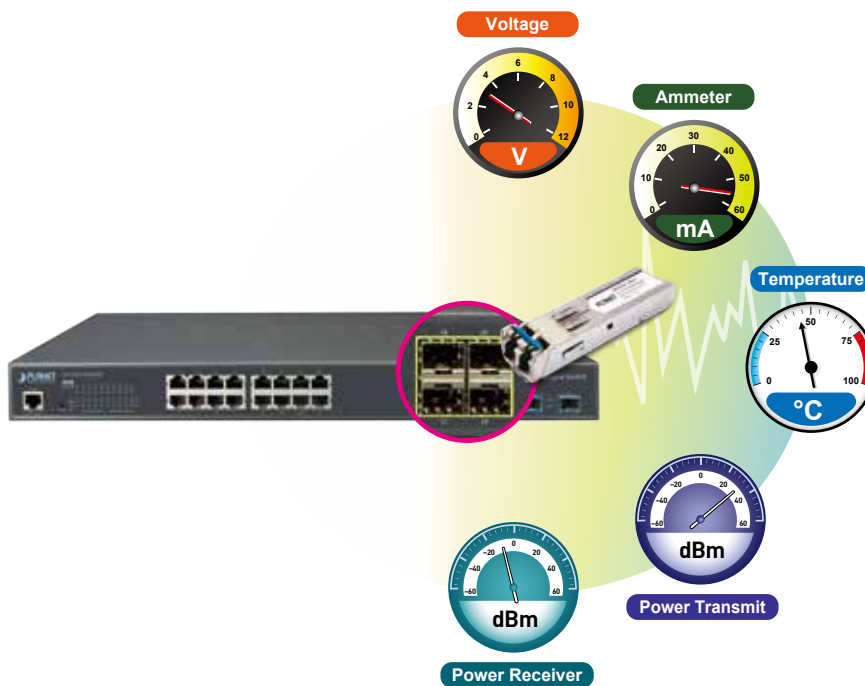
*Flexible and Extendable Solution*

The 4 mini-GBIC SFP slots built in the GS-5220-16T4S2X and GS-5220-16T4S2XR support 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 meters to 2km (multi-mode fiber) and up to 10/20/30/40/50/70/120 kilometers (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-5220-16T4S2X and GS-5220-16T4S2XR support **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)

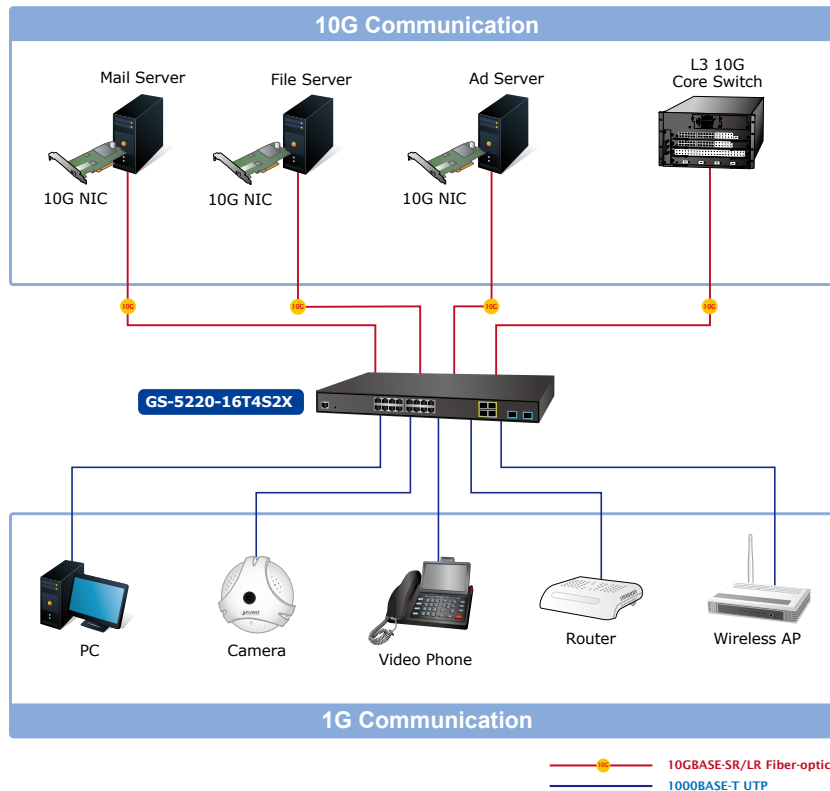


## Applications

### Excellent Solution to Core/Data Center Security and QoS Switch

The GS-5220-16T4S2X and GS-5220-16T4S2XR perform 80Gbps non-blocking switch fabric, so they can easily provide a local 10Gbps high bandwidth Ethernet network for the backbone of your department. With the four built-in SFP+ ports, the GS-5220-16T4S2X and GS-5220-16T4S2XR provide the uplink to the backbone network through the 10G Ethernet LR/SR SFP+ modules. They further improve the network efficiency and protect the network clients by offering the security and QoS features.

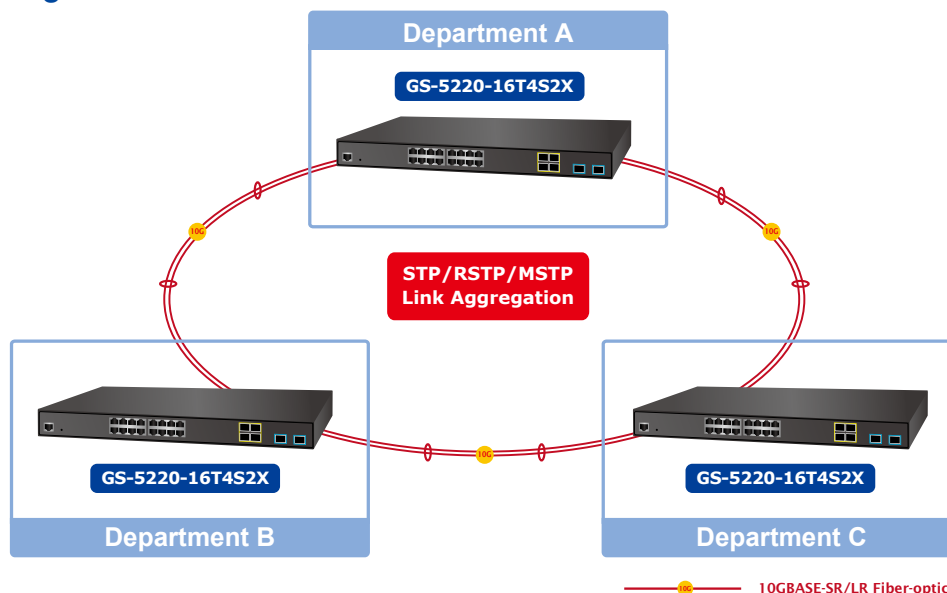
### High Performance Server Service



### Good Reliability Solution for Virtualization and Data Replication/Backup

By means of improving the technology of Optical Fiber Ethernet with highly-flexible, highly-extendable and easy-to-install features, the GS-5220-16T4S2X and GS-5220-16T4S2XR offer up to 10Gbps data exchange speed via optical fiber interface and the transmission distance can be extended to 10km. The GS-5220-16T4S2X and GS-5220-16T4S2XR are the ideal solution for SMBs to build redundant connection and establish high bandwidth for server farm.

### High Bandwidth Redundant Connection



## Specifications

Product	GS-5220-16T4S2X	GS-5220-16T4S2XR
<b>Hardware Specifications</b>		
Copper Ports	16 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports	
SFP/mini-GBIC Slots	4 100/1000BASE-X SFP interfaces with Port-17 to Port-20 Supports 100/1000Mbps dual mode and DDM	
10Gbps Fiber Uplink Ports	2 1/10GBASE-SR/LR SFP+ slots	
Console	1 RJ45 serial port (115200, 8, N, 1)	
Switch Architecture	Store-and-Forward	
Switch Fabric	80Gbps/non-blocking	
Throughput	59.5 Mpps@64 bytes	
Address Table	16K entries, automatic source address learning and aging	
Shared Data Buffer	4 megabits	
Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex	
Jumbo Frame	9K bytes	
Reset Button	< 5 sec: System reboot > 5 sec: Factory default	
LED	System: SYS (Green) AC (Green) DC (Green) (GS-5220-16T4S2XR Only) Fan Alert (Red) Ethernet Interfaces (Port 1 to Port 16): 1000 LNK/ACT (Green), 10/100 LNK/ACT (Orange) 100/1000Mbps SFP Combo Interfaces (Port 17 to Port 20): 1000 (Green), 100 (Orange) 1/10G SFP+ Interfaces (Port 21 to Port 22): 1000 (Green), 10G (Orange)	
Power Requirements	100~240V AC, 50/60Hz, 1A	100-240V AC, 50/60Hz, 1A 48V DC @ 2A, Range: 36 ~ 60V
Power Consumption (Full Loading)	Max. 28.1 Watts/95.8 BTU @ AC 110V Max. 28.4 Watts/96.9 BTU @ AC 220V	Max. 26.5 Watts/90.4 BTU @ DC 36V Max. 26.9 Watts/91.7 BTU @ DC 48V Max. 27.3 Watts/93.1 BTU @ DC 60V Max. 28.1 Watts/95.8 BTU @ AC 110V Max. 28.4 Watts/96.9 BTU @ AC 220V
ESD Protection	6KV DC	
Dimensions (W x D x H)	440 x 200 x 44.5 mm, 1U high	
Weight	2754g (GS-5220-16T4S2X) 2789g (GS-5220-16T4S2XR)	
<b>Layer 2 Management Function</b>		
Basic Management Interfaces	Console; Telnet; Web browser; SNMP v1, v2c	
Secure Management Interfaces	SSH, SSL, SNMP v3	
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, up to 255 VLAN groups 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 4094 VLAN IDs	
Link Aggregation	IEEE 802.3ad LACP/Static Trunk Maximum 12 trunk groups, up to 10 ports per trunk group	
QoS	Traffic classification based, strict priority and WRR 8-level priority for switching - Port number - 802.1p priority - 802.1Q VLAN tag - 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: 500Kb~80Mbps Egress: 64Kb~80Mbps	
SNMP MIBs	RFC 1213 MIB-II IF-MIB RFC 1493 Bridge MIB RFC 1643 Ethernet MIB RFC 2863 Interface MIB RFC 2665 Ether-Like MIB RFC 2737 Entity MIB	RFC 2819 RMON MIB (Groups 1, 2, 3 and 9) RFC 2618 RADIUS Client MIB RFC 3411 SNMP-Frameworks-MIB IEEE 802.1X PAE LLDP MAU-MIB PoE Ethernet MIB
<b>Standards Conformance</b>		
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 1000BASE-SX/LX IEEE 802.3ab 1000BASE-T 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 RFC 768 UDP RFC 793 TFTP RFC 791 IP RFC 792 ICMP RFC 2068 HTTP RFC 1112 IGMP version 1 RFC 2236 IGMP version 2 RFC 3376 IGMP version 3 RFC 2710 MLD version 1 RFC 3810 MLD version 2
<b>Environments</b>		
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-5220-16T4S2X	L2+ 16-Port 10/100/1000T + 4-Port 100/1000X SFP + 2-Port 10G SFP+ Managed Ethernet Switch
GS-5220-16T4S2XR	L2+ 16-Port 10/100/1000T + 4-Port 100/1000X SFP + 2-Port 10G SFP+ Managed Ethernet Switch with 48VDC Redundant Power

## Related Products

GS-5220-20T4C4X	L2+ 24-Port 10/100/1000T + 4-Po + 2-Port 10G SFP+ Managed Ethernet Switchrt Shared SFP + 4-Port 10G SFP+ Managed Switch
GS-5220-20T4C4XR	L2+ 20-Port 10/100/1000T + 4-Port Gigabit TP/SFP Combo + 4-Port 10G SFP+ Managed Ethernet Switch with 48VDC Redundant Power
GS-5220-48T4X	L2+ 48-Port 10/100/1000T + 4-Port 10G SFP+ Managed Switch
GS-5220-46S2C4X	L2+ 46-Port 100/1000BASE-X SFP + 2-Port Gigabit TP/SFP + 4-Port 10G SFP+ Managed Switch
GS-5220-44S4C	L2+ 44-Port 100/1000BASE-X SFP + 4-Port Gigabit TP/SFP Managed Switch
GS-5220-16S8C	L2+ 24-Port 100/1000X SFP + 8-Port Shared TP Managed Switch

## Available Modules for GS-5220-16T4S2X series

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-LR	SFP+ Port 10GBASE-LR mini-GBIC Module (Single mode/1310nm/max. 10km)
MTB-SR	SFP+ Port 10GBASE-SR mini-GBIC Module (Multi-mode/850nm/max. 300m)
MGB-GT	SFP-Port 1000BASE-T Module
MGB-SX	SFP-Port 1000BASE-SX mini-GBIC module
MGB-LX	SFP-Port 1000BASE-LX mini-GBIC module
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
MFB-FX	SFP-Port 100BASE-FX Transceiver (1310nm) -- 2km
MFB-F20	SFP-Port 100BASE-FX Transceiver (1310nm) -- 20km
MFB-F40	SFP-Port 100BASE-FX Transceiver (1310nm) -- 40km
MFB-F60	SFP-Port 100BASE-FX Transceiver (1310nm) -- 60km
MFB-FA20	SFP-Port 100BASE-BX Transceiver (WDM,TX:1310nm) -- 20km
MFB-FB20	SFP-Port 100BASE-BX Transceiver (WDM,TX:1550nm) -- 20km