

## Product Specifications

### L2+ 8-Port 2.5G 802.3at PoE + 2-Port 1G/10G SFP+ Managed Multigigabit Switch

### MGS-5220-8P2X

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
1.0	2017/12/15	Peter Chen / Angeline Huang	Initial release

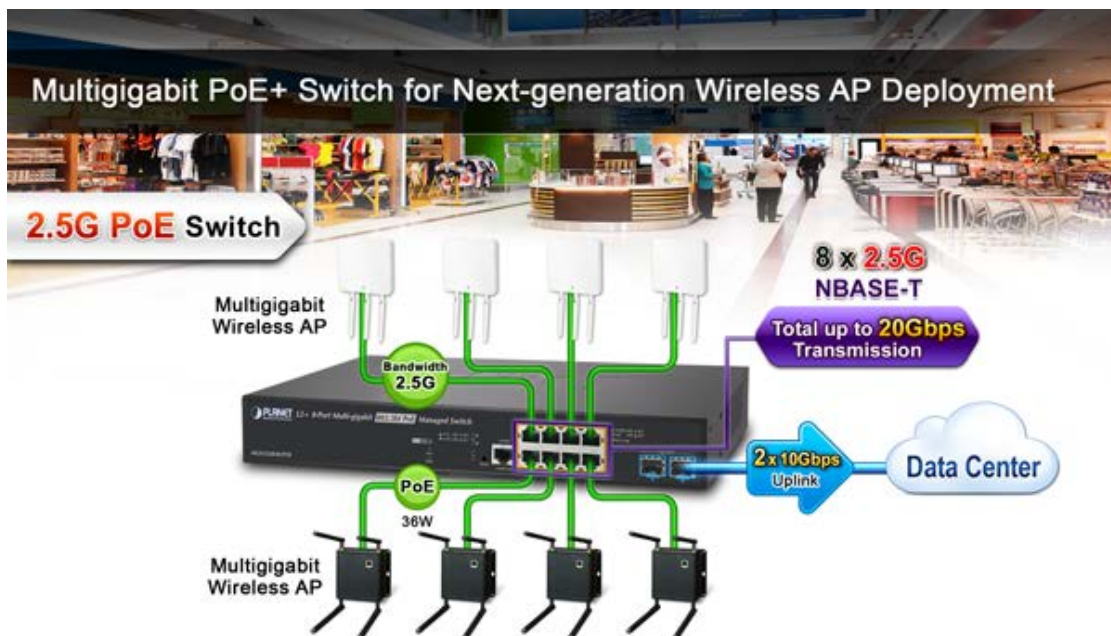
<b>Author</b>	Peter Chen / Angeline Huang	<b>Editor:</b>	Peter Chen / Angeline Huang
<b>Reviewed by:</b>		<b>Approved by:</b>	Kent Kang

## 1. PRODUCT DESCRIPTION



### New Generation of Multigigabit PoE+ Managed Switch with Full PoE Power Budget

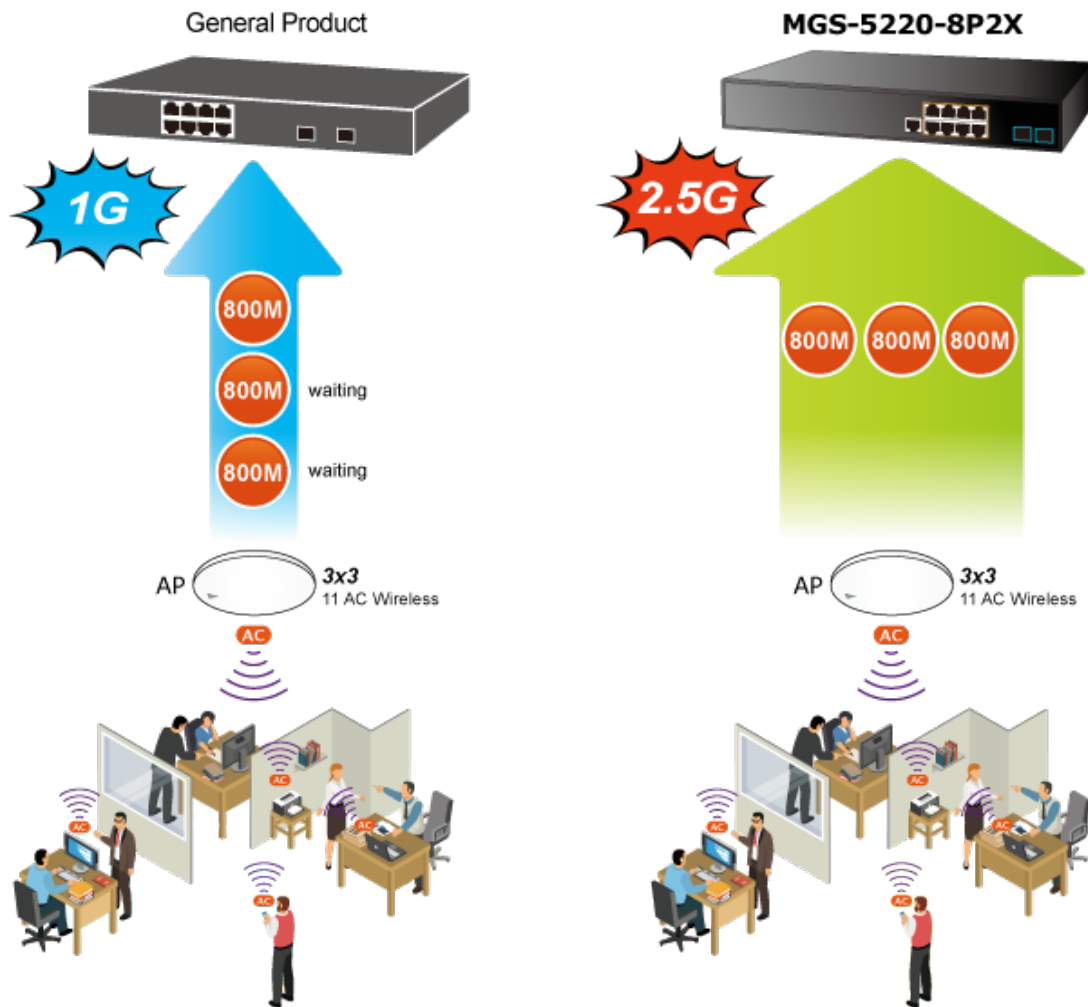
The MGS-5220-8P2X, PLANET's first Layer 2+ Managed **Multigigabit** Switch providing 2.5Gbps data rate and PoE over UTP cables, is designed for the demand of high-bandwidth required network equipment, such as 802.11ac Wave 2 wireless AP. Offering a perfect hardware configuration with **8 100/1000/2500BASE-T** ports featuring **30-watt 802.3at PoE+**, and **2 extra 1/10 Gigabit BASE-X SFP+ fiber slots**, the MGS-5220-8P2X breaks the bandwidth limitation of connecting the wireless network with the wired network. Featuring **hardware-based Layer 3 static routing** capability, Layer 2 and Layer 4 switching engine, and PLANET Intelligent PoE functions, it provides a highly-secure, environment-friendly network management and accelerates the deployment of wireless network infrastructure for enterprises and smart cities.



### 2.5Gbps Capability for Diversified Bandwidth Applications

With the terminal access rates of 802.11ac wireless APs reaching as high as 1.2Gbps to 2.6Gbps, Gigabit ports have been unable to satisfy the demand. Supporting both 1Gbps and 2.5Gbps capability and 802.3af/at POE output, the MGS-5220-8P2X can deliver not only data to 802.11ac wireless APs, but also power to other powered devices such as APs and IP cameras.

## New Generation of Multigigabit Switch



### Cybersecurity Network Solution to Minimize Security Risks

The cybersecurity feature to protect the switch management and enhance the security for mission-critical network without extra deployment cost and effort. Use the newest kernel of SSH and SSL protocols to provide strong protection against advanced threats. The network administrator can now construct highly-secure corporate networks with considerably less time and effort than before.

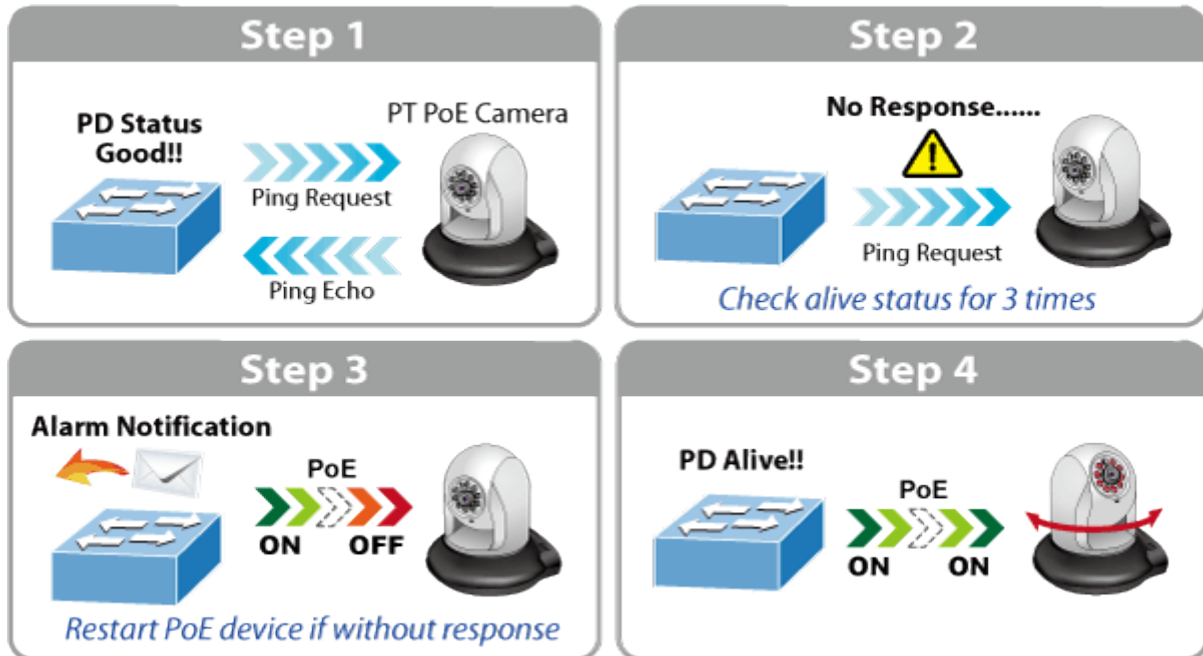
### Built-in Unique PoE Functions for Surveillance Management

As a managed PoE Switch for surveillance network, the MGS-5220-8P2X features the following intelligent PoE management functions:

- **PD Alive Check**
- **Scheduled Power Recycling**
- **SMTP/SNMP Trap Event Alert**
- **PoE Schedule**

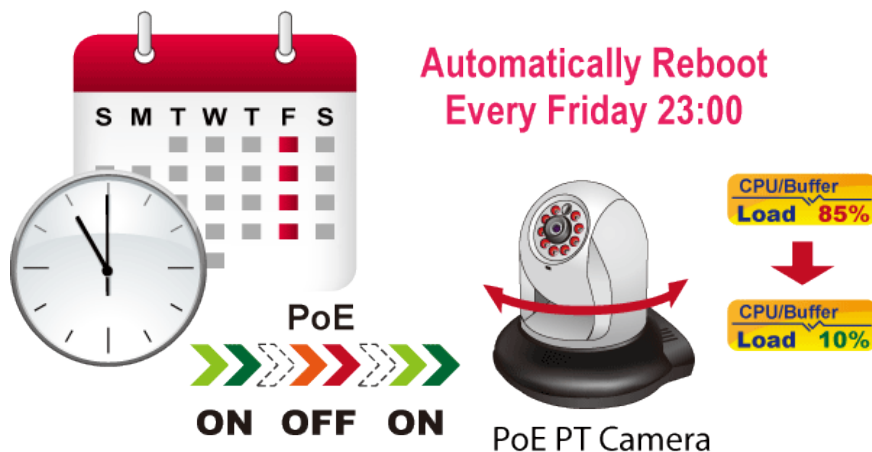
### Intelligent Powered Device Alive Check

The MGS-5220-8P2X can be configured to monitor a connected PD (powered device) status in real time via ping action. Once the PD stops working and it is without response, the MGS-5220-8P2X will resume the PoE port power and bring the PD back to work. It will greatly enhance the network reliability through the PoE port resetting the PD's power source, thus reducing administrator management burden.



### Scheduled Power Recycling

The MGS-5220-8P2X allows each of the connected PDs to reboot at a specified time each week. Therefore, it will reduce the chance of PD crash resulting from buffer overflow.



### SMTP/SNMP Trap Event Alert

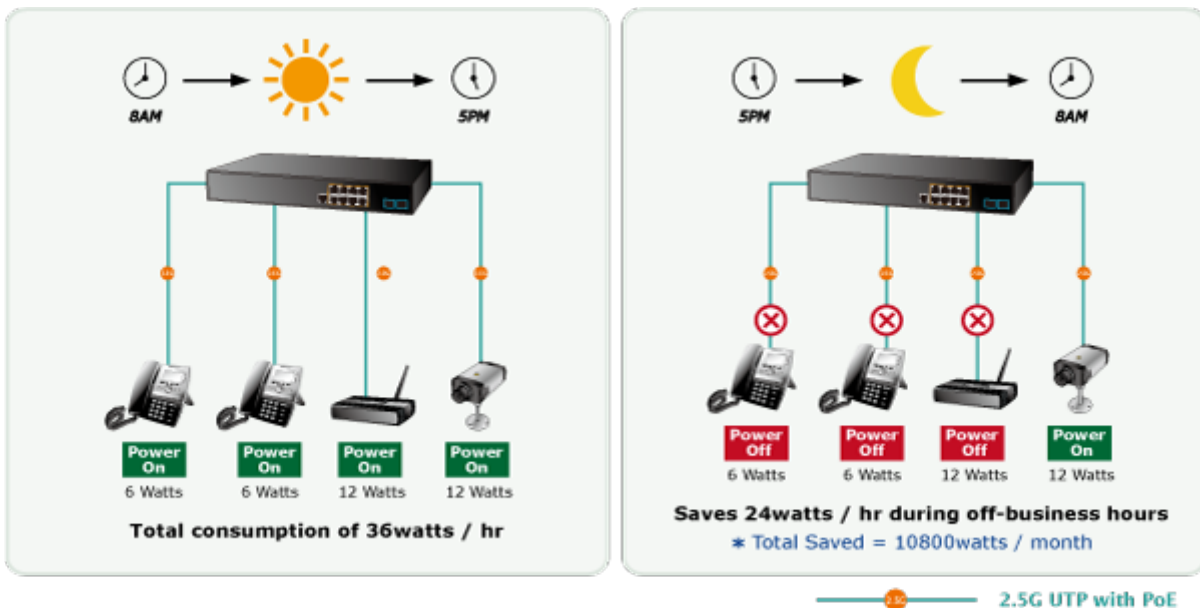
Though most NVR or camera management software offers SMTP email alert function, the MGS-5220-8P2X further provides event alert function to help to diagnose the abnormal device owing to whether or not there is a break of the network connection, loss of PoE power or the rebooting response by the PD Alive Check process.

# SMTP/SNMP Trap Event Alert



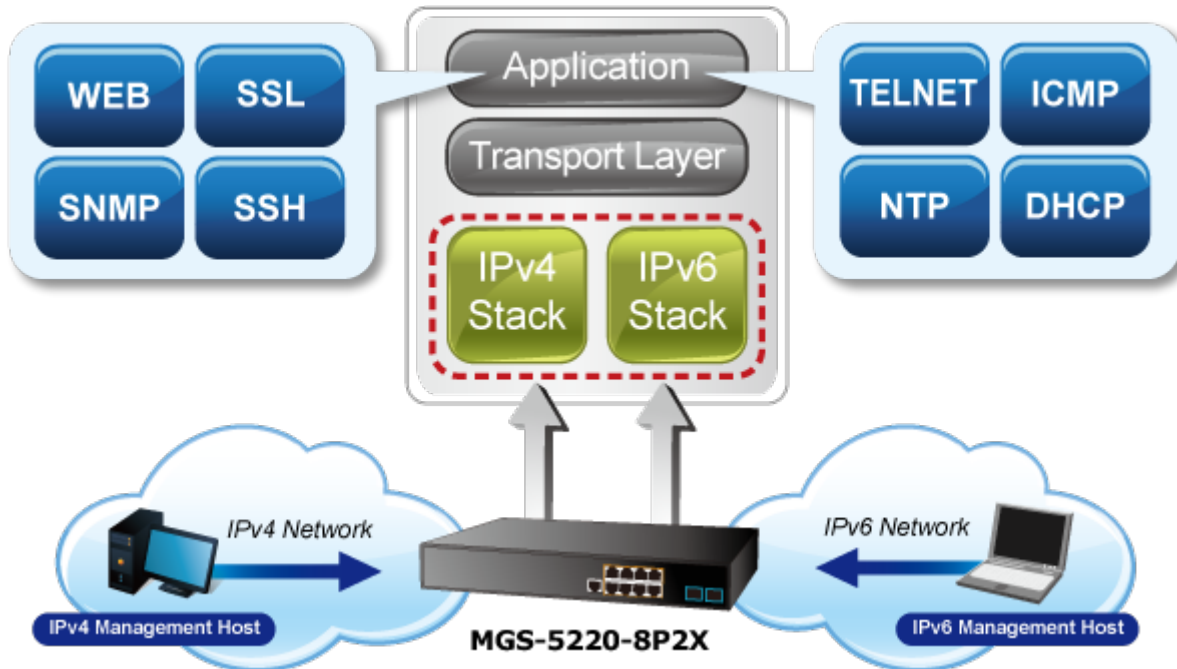
## PoE Schedule for Energy Saving

Besides being used for IP surveillance, the MGS-5220-8P2X is certainly applicable to build any PoE network including VoIP and wireless LAN. Under the trend of energy saving worldwide and contributing to the environmental protection on the Earth, the MGS-5220-8P2X can effectively control the power supply besides its 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 and enterprises save energy and budget.



### Solution for IPv6 Networking

With the support for IPv6/IPv4 protocol, and easy and friendly management interfaces, the MGS-5220-8P2X is the best choice for IP surveillance, VoIP and wireless service providers to connect with the IPv6 network. It also helps SMBs to step in the IPv6 era with the lowest investment and without having to replace the network facilities even though ISPs establish the IPv6 FTTx edge network.



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

To help customers stay on top of their businesses, the MGS-5220-8P2X 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 MGS-5220-8P2X 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 MGS-5220-8P2X allows the operation of a high-speed trunk combining multiple ports. Supporting 6 trunk groups, it enables a maximum of up to 8 ports per trunk and supports connection fail-over as well.

### Powerful Security

The MGS-5220-8P2X 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 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 MGS-5220-8P2X 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 build highly-secure corporate networks with considerably less time and effort than before.

### User-friendly Secure Management

For efficient management, the MGS-5220-8P2X is equipped with console, web and SNMP management interfaces. With the built-in web-based management interface, the MGS-5220-8P2X offers an easy-to-use, platform independent management and configuration facility. The MGS-5220-8P2X supports SNMP and it can be managed via any management software based on the standard SNMP v1 and v2 protocols. For reducing product learning time, the MGS-5220-8P2X offers Cisco-like command via Telnet or console port and customer doesn't need to learn new command from these switches. Moreover, the MGS-5220-8P2X offers remote secure management by supporting **SSH**, **SSL** and **SNMPv3** connection which can encrypt the packet content at each session.



### Flexible and Extendable Solution

The 2 mini-GBIC SFP+ slots built in the MGS-5220-8P2X support dual speed as it features 1G/10G BASE-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 MGS-5220-8P2X supports **SFP-DDM (Digital Diagnostic Monitor)** function that greatly helps network administrator to easily monitor real-time parameters of the SFP transceivers, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.

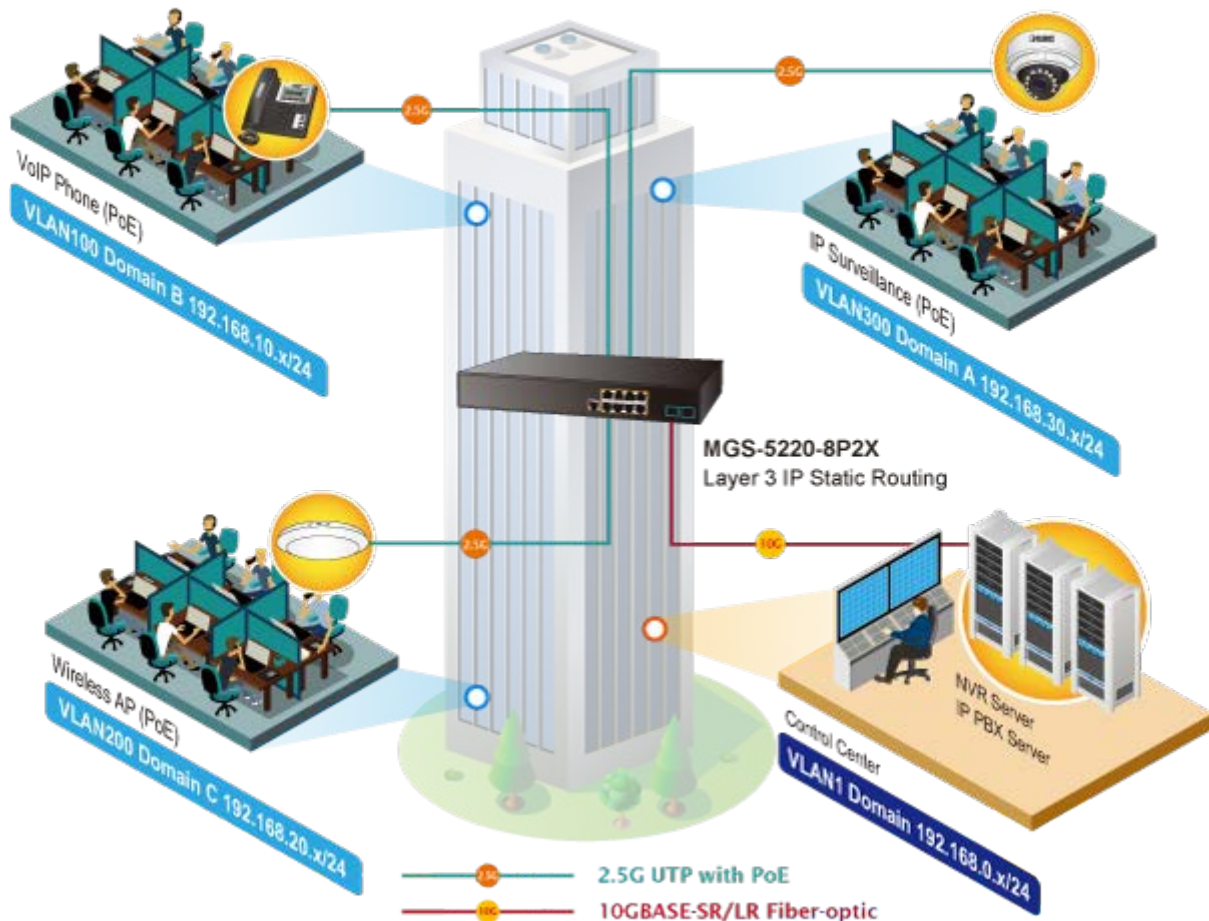
## Applications

### Layer 3 VLAN Static Routing and PoE Application

With the built-in robust IPv4/IPv6 Layer 3 traffic routing protocols, the MGS-5220-8P2X ensures reliable routing between VLANs and network segments. The routing protocols can be applied by VLAN interface with up to 128 routing entries. The MGS-5220-8P2X is certainly a cost-effective and ideal solution for enterprises.

Providing up to 8 Multigigabit High-power PoE ports and in-line power interface, the MGS-5220-8P2X High-power PoE Switch can easily build a centrally-controlled power network shared by wireless Gigabit AP, IP phone system, or mega-pixel IP camera system group for the enterprises.

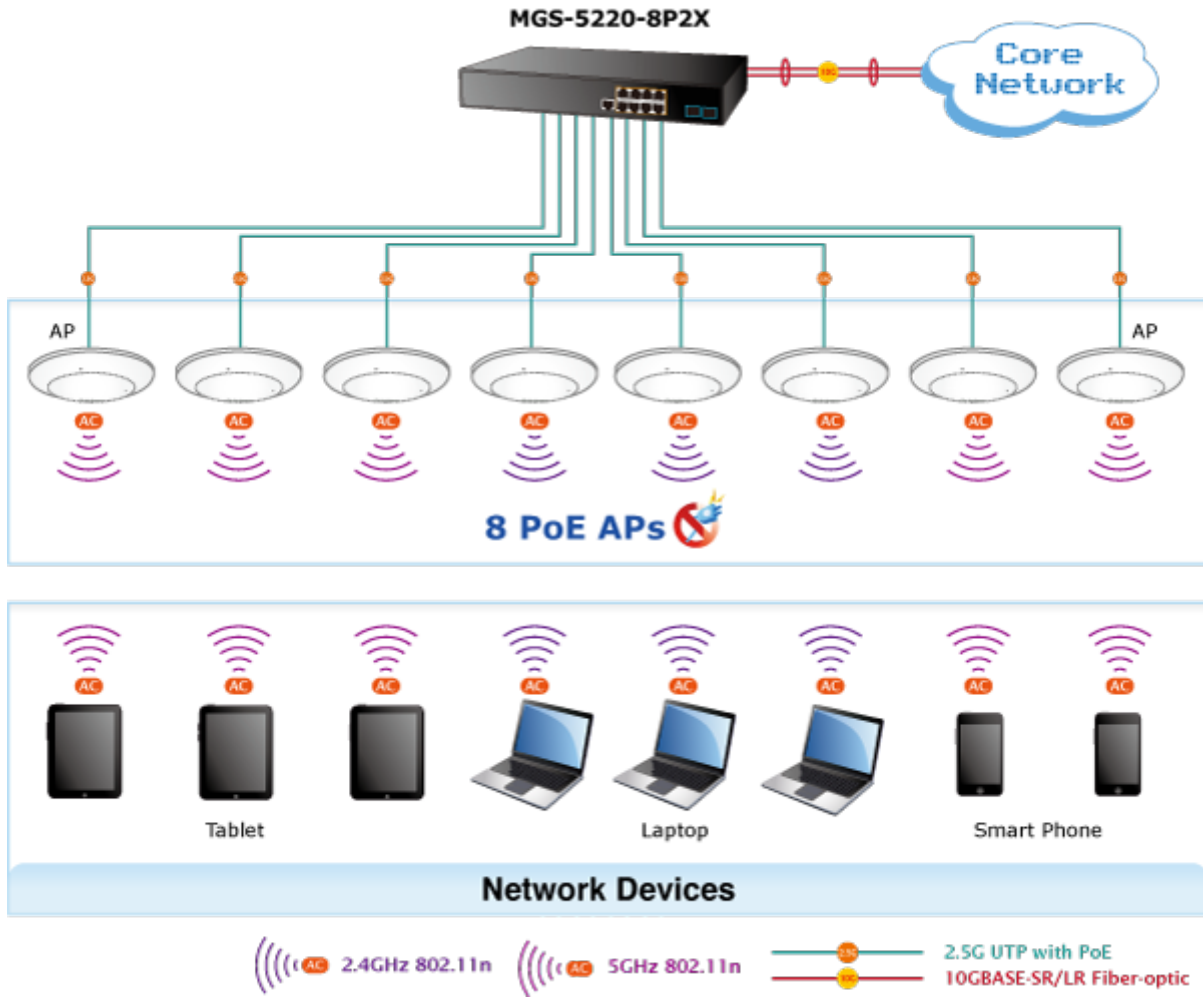
## VLAN Routing + PoE Applications



### PoE Wi-Fi Hotspot Solution with Extended Network Infrastructure for Public Spaces

The MGS-5220-8P2X comes with non-blocking design, desktop size and SFP fiber-optic modules, bringing network infrastructure higher flexibility but lower in cost. Providing eight 100/1000/2500 BASE-T PoE ports, in-line power interfaces and two 10 Gigabit SFP interfaces, the MGS-5220-8P2X can easily build a Networking Authentication on Wireless LAN Controllers system for the enterprises. For instance, it can work with the Wireless Controller and RADIUS Server to perform comprehensive security for wireless user authentication with powered APs.





## 2. PRODUCT FEATURES

### ➤ **Physical Port**

- **8-Port 100/1000/2500 BASE-T** with 30W PoE injector
- **2-port 1/10 GBASE-X SFP+**
- RS-232 RJ45 console interface for switch basic management and setup

### ➤ **Power over Ethernet**

- Up to 8 ports of IEEE 802.3af/802.3at devices powered
- Supports PoE Power up to 30.8 watts for each PoE port
- Auto detects powered device (PD)
- Circuit protection prevents power interference between ports
- Remote power feeding up to 100 meters
- PoE management
  - PoE port status monitoring
  - Total PoE power budget control
  - Over temperature protection
  - PoE usage threshold
  - Temperature threshold
  - Per port PoE function enable/disable
  - PoE port power feeding priority
  - Per PoE port power limit
  - PD classification detection
  - PoE port sequence

### ➤ **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
  - STP, IEEE 802.1D Spanning Tree Protocol
  - RSTP, IEEE 802.1w Rapid Spanning Tree Protocol
  - MSTP, 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 5 trunk groups, up to 8 ports per trunk group
  - Up to 20Gbps 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

➤ **Layer 3 IP Routing Features**

- Supports maximum 128 static routes and route summarization

➤ **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 co-operate 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 un-trusted 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

➤ **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 Option82
- 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 Linkup and Linkdown notification
- System Log
- PLANET Smart Discovery Utility for deployment management

### 3. PRODUCT SPECIFICATIONS

#### 3.1 MAIN COMPONENTS

Switch ASIC	VITESSE VSC7444	x 1
CPU	500MHz MIPS 24KEc CPU (integrated with VSC7444)	x 1
1G/2.5G PHY	Aqunatia AQR409 (Quad PHY)	x 2
PoE Controller	PD69200 x 1	x 1
PoE PSE	PD69208 x 1	x 1
Flash Size	128MB SPI NAND	x 1
DRAM Size	512Mbytes	x 1

#### 3.2 FUNCTION SPECIFICATIONS

Product	<b>MGS-5220-8P2X</b>
<b>Hardware Specifications</b>	
Copper Ports	8 x 100/1000/2500 BASE-T RJ45 auto-MDI/MDI-X ports
SFP/mini-GBIC Slots	2 x 1/10G BASE-X SFP interfaces with Port-9 to Port-10
PoE Injector Port	8 ports with 802.3at/af PoE injector function with Port-1 to Port-8
Console	1 x RJ45 serial port (115200 , 8, N, 1)
Switch Architecture	Store-and-Forward
Switch Fabric	80Gbps
Throughput	59.52Mpps@64Bytes
Address Table	16K entries, automatic source address learning and aging
Shared Data Buffer	16Mbits
Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex
Jumbo Frame	9KB
Reset Button	< 5 sec: System reboot > 5 sec: Factory default
LED	<p><b>System:</b>            Fan Alert (Green), SYS (Green), PWR (Green)</p> <p><b>100/1000/2500 BASE-T RJ45 Interfaces (Port 1 to Port 8):</b>            100/1000Mbps LNK/ACT (Green)            2500 Mbps (Orange)            PoE-in-Use (Orange)</p> <p><b>1/10G Mbps SFP Interfaces (Port 9 to Port 10):</b>            1G LNK/ACT (Green)            10G Mbps (Orange)</p>
Power Requirements	100~240V AC, 50/60Hz
Power Consumption (Full Loading)	320 watts/1091.9 BTU (max.)
ESD Protection	6KV DC
Dimensions (W x D x H)	330 x 200 x 43.5 mm, 1U height
Weight	2kg
<b>Power over Ethernet</b>	
PoE Standard	IEEE 802.3at PoE Plus, PSE
PoE Power Supply Type	End-span

<b>PoE Power Output</b>	Per port 54V DC, max. 30.8 watts	
<b>Power Pin Assignment</b>	1/2(+), 3/6(-)	
<b>PoE Power Budget</b>	<b>240 watts (max.) @ 25 degrees C</b> <b>200 watts (max.) @ 50 degrees C</b>	
<b>PoE Ability</b>	<b>PD @ 7 watts</b>	<b>8 units</b>
	<b>PD @ 15.4 watts</b>	<b>8 units</b>
	<b>PD @ 30.8 watts</b>	<b>8 units</b>
<b>Layer2 Management Functions</b>		
<b>Basic Management Interfaces</b>	Console; Web browser; SNMP v1, v2c	
<b>Secure Management Interfaces</b>	SSH, SSL, SNMP v3	
<b>Port Configuration</b>	Port disable/enable Auto-negotiation 100/1000/2500 Mbps 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 tag-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	
<b>Link Aggregation</b>	IEEE 802.3ad LACP/static trunk Supports 5 trunk groups with 8 ports per trunk	
<b>QoS</b>	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	
<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: 10Kbps~13000Mbps Egress: 10Kbps~13000Mbps	
<b>SNMP MIBs</b>	RFC 1213 MIB-II RFC 2863 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 Power over Ethernet MIB
<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 hardware static routing IPv6 hardware static routing
<b>Standards Conformance</b>	
<b>Regulatory Compliance</b>	FCC Part 15 Class A, CE
<b>Standards Compliance</b>	IEEE 802.3u 100BASE-TX/100BASE-FX IEEE 802.3z 1000BASE-SX/LX IEEE 802.3ab 1000BASE-T IEEE 802.3bz 2.5GBASE-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 802.1x 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 v1 RFC 2236 IGMP v2 RFC 3376 IGMP v3 RFC 2710 MLD v1 FRC 3810 MLD v2 ITU-T G.8032 Ethernet Ring Protection Switching
<b>Environments</b>	
<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:

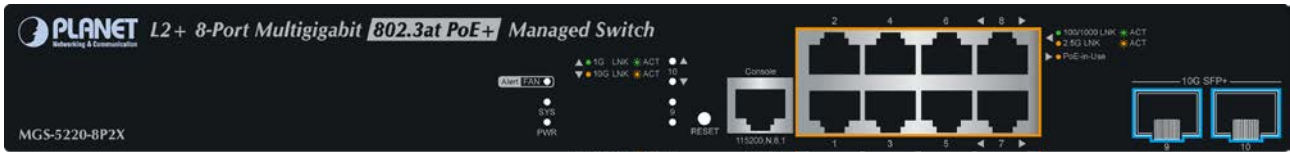
#### Dimensions:

330 x 200 x 43.5 mm (W x D x H)

#### Weight:

2kg

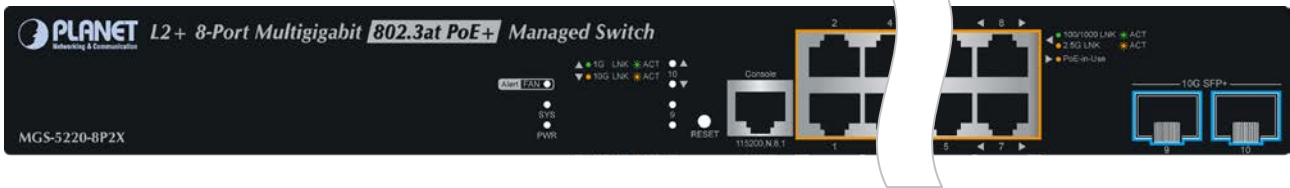
#### Front View



#### Rear Panel:



#### LED Definition



#### System / Alert (MGS-5220-8P2X)

LED	Color	Function
Fan Alert	Green	Lights to indicate that the fan is not working.
SYS	Green	Lights to indicate the system is working. Off to indicate the system is booting.
PWR	Green	Lights to indicate the Switch has power.

#### 100/1000/2500BASE-T PoE+ Port

LED	Color	Function
LNK/ACT	Green	<b>Lights</b> To indicate the link through that port is successfully established. <b>Blinks</b> To indicate that the switch is actively sending or receiving data over that port.
PoE In-Use	Orange	<b>Lights</b> To indicate the port is providing 54VDC in-line power. <b>Off</b> To indicate the connected device is not a PoE powered device (PD).

#### 1/10 BASE-X SFP Interfaces (Port-9 to Port-10)

LED	Color	Function
LNK/ACT	Green	<b>Lights</b> To indicate the link through that port is successfully established. <b>Blinks</b> To indicate that the switch is actively sending or receiving data over that port.
2500Mbps	Orange	<b>Lights</b> To indicate that the port is operating at <b>2500Mbps</b> . <b>Off</b> If LNK/ACT LED is off, it indicates that the port is link-down.



### 3.4 ENVIRONMENTAL SPECIFICATIONS

**Operating:**

**Temperature:** 0 ~50 degrees C

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

### 3.5 ELECTRICAL SPECIFICATIONS

<b>Product</b>	MGS-5220-8P2X
<b>Input Voltage:</b>	100~240V AC, 50/60Hz, 3.5A
<b>Power Consumption (System on):</b>	33.6 watts @ AC 110V 33 watts @ AC 240V
<b>Power Consumption (PoE + Ethernet Full Loading)</b>	272 watts @ AC 110V 275 watts @ AC 240V

### 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 MGS-5220-8P2X 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"/> Rubber Feet	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 2

### 3.9 PACKING DIMENSIONS

<b>Dimensions:</b>	520 x 450 x 90mm
<b>Weight:</b>	19.6 KG (Gross Weight)
<b>Quantity:</b>	6pcs in one carton