

Product Specifications

16-Port 10/100/1000T 802.3at PoE + 4-Port Gigabit TP/SFP Combo Managed Switch

GS-4210-16P4C

Version 1.0

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Change History:

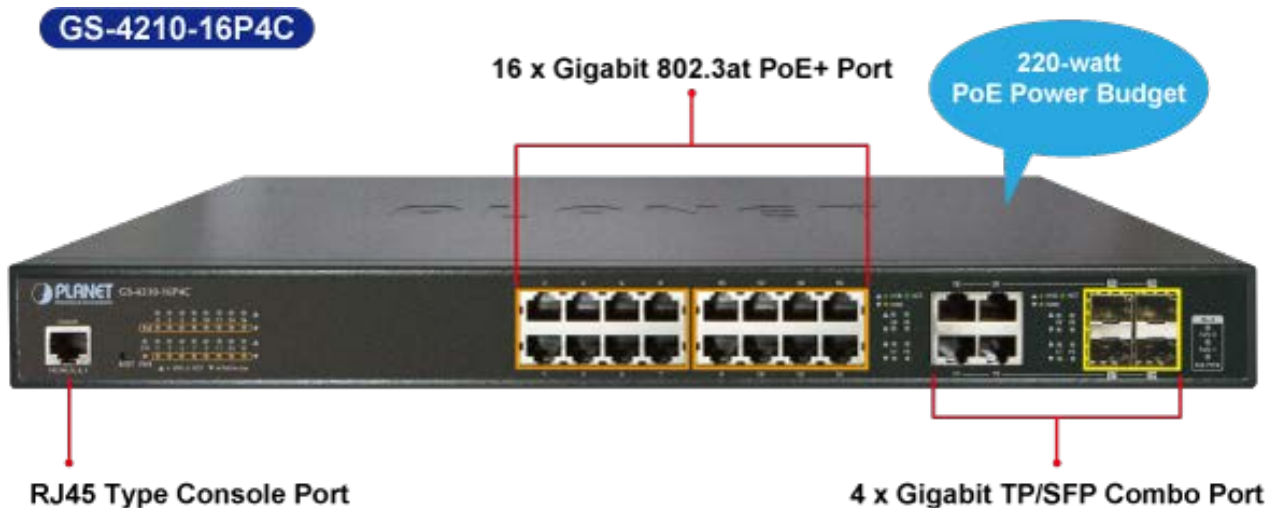
Revision:	Date:	Author:	Change List
Version 1.0	08/02	Calvin Chao	Initial Release

Author:	Calvin Chao	Editor:	Calvin Chao
Reviewed by:		Approved by:	Kent Kang

1. PRODUCT DESCRIPTION

A Perfect PoE+ Managed Switch with Advanced L2/L4 Switching and Security

The GS-4210-16P4C is a new generation of PLANET Gigabit PoE+ Managed Switch series featuring PLANET **intelligent PoE** functions to improve the availability of critical business applications. It provides IPv6/IPv4 dual stack management and built-in L2/L4 Gigabit switching engine along with **16 10/100/1000BASE-T** ports featuring **30-watt 802.3at PoE+** and **4 additional Gigabit TP/SFP combo ports**. With a total power budget of up to 220 watts of PoE applications, the GS-4210-16P4C and provide a quick, safe and cost-effective Power over Ethernet network solution for small businesses and enterprises.



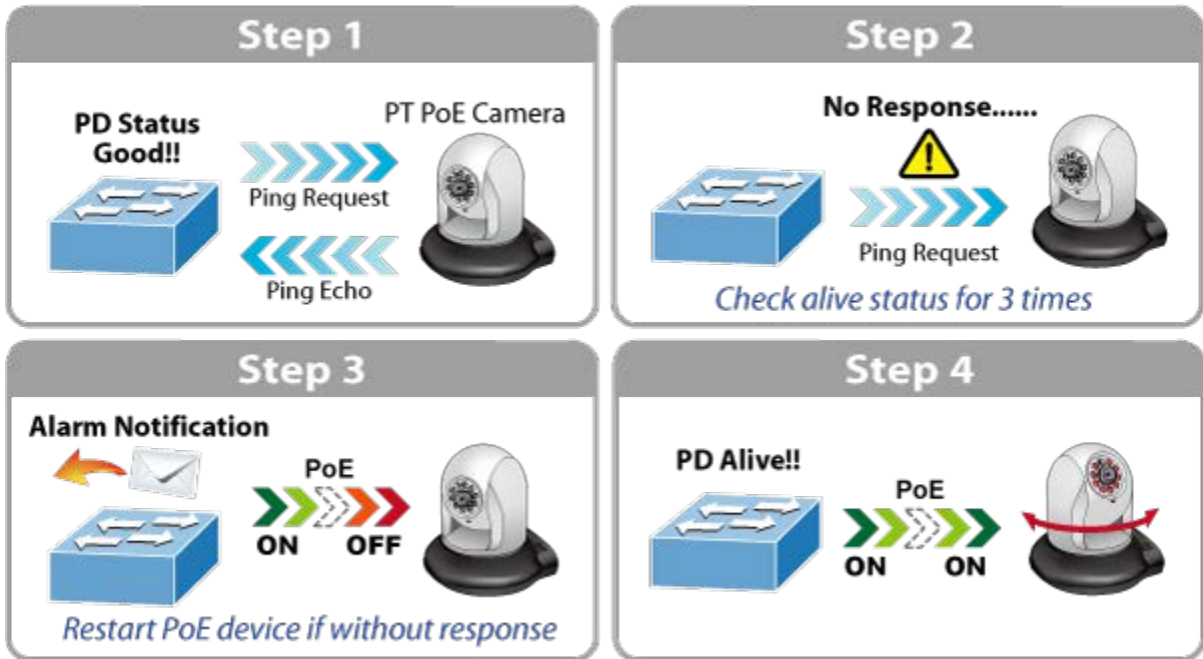
Built-in Unique PoE Functions for Powered Device Management

As the PoE managed switch for surveillance, wireless and VoIP networks, the GS-4210-16P4C features special PoE management functions:

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

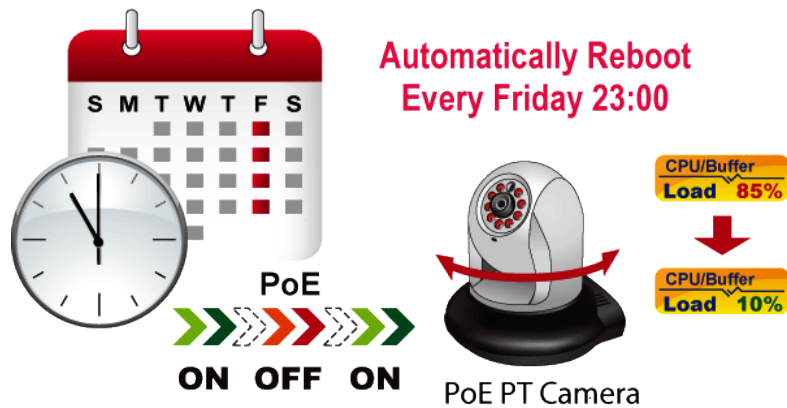
Intelligent Powered Device Alive-Check

The GS-4210-16P4C 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-4210-16P4C 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 and reducing administrator management burden.



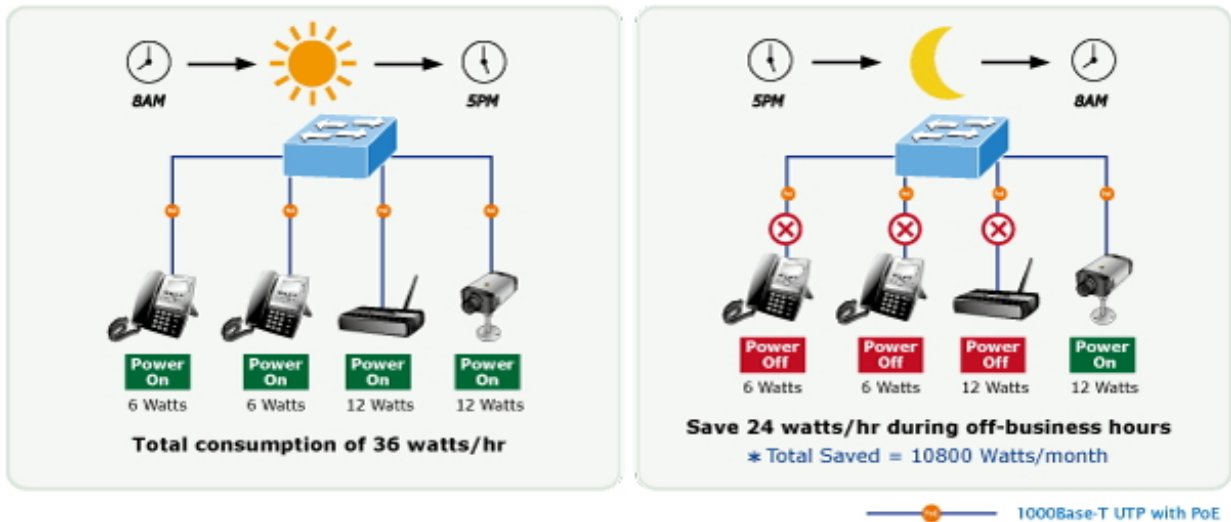
Scheduled Power Recycling

The GS-4210-16P4C allows each of the connected PoE IP cameras or PoE wireless access points to reboot at a specific time each week. Therefore, it 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-4210-16P4C 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 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-4210-16P4C enables the administrator to monitor the status of the power usage of the connected PDs in real time. Thus, it greatly enhances the management efficiency of the facilities.

Environment-friendly, Smart Fan Design for Silent Operation

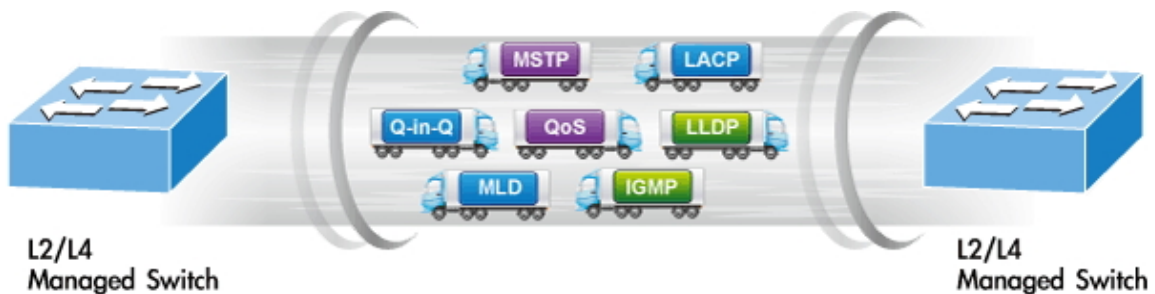
The GS-4210-16P4C features a low noise design and an effective ventilation system. It supports the smart fan technology that automatically controls the speed of the built-in fan to reduce noise and maintain the temperature of the PoE switch for optimal power output capability. The GS-4210-16P4C is able to operate reliably, stably and quietly in any environment without affecting its performance.

IPv6/IPv4 Dual Stack

Supporting both IPv6 and IPv4 protocols, the GS-4210-16P4C helps the SMBs to step in the IPv6 era with the lowest investment as its network facilities need not be replaced or overhauled if the IPv6 FTTx edge network is set up.

Robust Layer 2 Features

The GS-4210-16P4C can be programmed for advanced switch management functions such as dynamic port link aggregation, 802.1Q VLAN and Q-in-Q VLAN, Multiple Spanning Tree protocol (MSTP), loop and BPDU guard, IGMP snooping, and MLD snooping. Via the link aggregation, the GS-4210-16P4C allows the operation of a high-speed trunk to combine with multiple ports such as a 16Gbps fat pipe, and supports fail-over as well. Also, the Link Layer Discovery Protocol (LLDP) is the Layer 2 protocol included to help discover basic information about neighboring devices on the local broadcast domain.



Efficient Traffic Control

The GS-4210-16P4C is loaded with robust QoS features and powerful traffic management to enhance services to business-class data, voice, and video solutions. The functionality includes broadcast/multicast **storm control**, per port **bandwidth control**, IP DSCP QoS priority and remarking. It guarantees the best performance for VoIP and video stream transmission, and empowers the enterprises to take full advantage of the limited network resources.

Powerful Security

The powerful unit offers comprehensive **IPv4 / IPv6** Layer 2 to Layer 4 **Access Control List (ACL)** for enforcing security to the edge. It can be used to restrict network access by denying packets based on source and destination IP address, TCP/UDP ports or defined typical network applications. Its protection mechanism also comprises **802.1X port-based** user and device authentication, which can be deployed with RADIUS to ensure the port level security and block illegal users. With the **protected port** function, communication between edge ports can be prevented to guarantee user privacy. Furthermore, **Port security** function allows to limit the number of network devices on a given port.

Advanced Network Security

The GS-4210-16P4C also provides **DHCP snooping**, **IP source guard** and **dynamic ARP inspection** functions to prevent IP snooping from attack and discard ARP packets with invalid MAC address. The network administrators can now construct highly-secured corporate networks with considerably less time and effort than before.

Friendly and Secure Management

For efficient management, the GS-4210-16P4C is equipped with **console**, **web**, **Telnet** and **SNMP** management interfaces. With the built-in web-based management interface, the GS-4210-16P4C offers an easy-to-use, platform-independent management and configuration facility. By supporting standard Simple Network Management Protocol (SNMP), the switch can be managed via any standard management software. For text-based management, the switch can be accessed via Telnet and the console port. Moreover, the GS-4210-16P4C offers secure remote management by supporting **SSH**, **SSL** and **SNMPv3** connections which encrypt the packet content at each session.

Flexibility and Long-distance Extension Solution

The GS-4210-16P4C provides 4 extra gigabit TP interfaces supporting 10/100/1000BASE-T RJ45 copper that connects with surveillance network devices such as NVR, video streaming server or NAS to facilitate surveillance management. Or through these **dual-speed fiber SFP slots**, it can also connect with the **100BASE-FX / 1000BASE-SX/LX SFP** (Small Form-factor Pluggable) fiber transceiver to be uplinked to the backbone switch and monitoring center in long distance. The distance can be extended from 550 meters to 2 kilometers (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-4210-16P4C supports **SFP-DDM (Digital Diagnostic Monitor)** function that can easily monitor real-time parameters of the SFP for network administrator, such as optical output power, optical input power, temperature, laser bias current and transceiver supply voltage.

2. PRODUCT FEATURES

▶ **Physical Port**

- **20-port 10/100/1000BASE-T** gigabit RJ45 copper with 16-port **IEEE 802.3at/af PoE** injector.
- **4 100/1000BASE-X mini-GBIC/SFP** slots, shared with port-17 to port-20 compatible with 100BASE-FX SFP
- RJ45 console interface for switch basic management and setup

▶ **Power over Ethernet**

- Complies with IEEE 802.3at Power over Ethernet Plus, end-span PSE
- Backward compatible with IEEE 802.3af Power over Ethernet
- Up to 16 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
 - Total PoE power budget control
 - Per port PoE function enable/disable
 - PoE Port power feeding priority
 - Per PoE port power limitation
 - PD classification detection
 - 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 Store and Forward architecture, broadcast storm control, runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth
- Supports **VLAN**
 - IEEE 802.1Q tagged VLAN
 - Provider Bridging (VLAN Q-in-Q) support (IEEE 802.1ad)
 - Protocol VLAN
 - Voice VLAN
 - Private VLAN
 - Management VLAN
 - GVRP
- Supports **Spanning Tree Protocol**
 - STP (Spanning Tree Protocol)
 - RSTP (Rapid Spanning Tree Protocol)
 - MSTP (Multiple Spanning Tree Protocol)
 - STP BPDU Guard, BPDU filtering and BPDU forwarding
- Supports **Link Aggregation**

- IEEE 802.3ad Link Aggregation Control Protocol (LACP)
- Cisco ether-channel (static trunk)
- Maximum 4 trunk groups, up to 8 ports per trunk group

- Provides port mirror (many-to-1)
- Loop protection to avoid broadcast loops

▶ **Quality of Service**

- Ingress and egress rate limit per port bandwidth control
- Storm control support
 - Broadcast/Unknown unicast/Unknown multicast
- Traffic classification
 - IEEE 802.1p CoS
 - TOS/DSCP/IP precedence of IPv4/IPv6 packets
- Strict priority and Weighted Round Robin (WRR) CoS policies

▶ **Multicast**

- Supports IPv4 IGMP snooping v2 and v3
- Supports IPv6 MLD snooping v1, v2
- IGMP querier mode support
- IGMP snooping port filtering
- MLD snooping port filtering

▶ **Security**

- Authentication
 - IEEE 802.1X port-based network access authentication
 - Built-in RADIUS client to cooperate with the RADIUS servers
 - RADIUS/TACACS+ login user access authentication
- Access control list
 - IPv4/IPv6 IP-based ACL
 - MAC-based ACL
- MAC security
 - Static MAC
 - MAC filtering
- Port security for source MAC address entries filtering
- DHCP snooping to filter distrusted DHCP messages
- Dynamic ARP Inspection discards ARP packets with invalid MAC address to IP address binding
- IP source guard prevents IP spoofing attacks
- DoS attack prevention
- SSH/SSL

▶ **Management**

- IPv4 and IPv6 dual stack management
- Switch management interface
 - Web switch management
 - Telnet command line interface
 - SNMP v1, v2c and v3
 - SSH and SSL secure access
- User privilege levels control
- Built-in Trivial File Transfer Protocol (TFTP) client
- BOOTP and DHCP for IP address assignment
- System maintenance
 - Firmware upload/download via HTTP/TFTP
 - Configuration upload/download through web interface
 - Dual images
 - Hardware reset button for system reboot or reset to factory default
- SNTP Network Time Protocol
- Cable diagnostics
- Link Layer Discovery Protocol (LLDP) and LLDP-MED
- SNMP trap for interface link up and link down notification
- Event message logging to remote syslog server
- Four RMON groups (history, statistics, alarms and events)
- PLANET smart discovery utility
- Smart fan with speed control

3. PRODUCT SPECIFICATIONS

3.1 MAIN COMPONENTS

Switch ASIC:	Realtek RTL8382M	x 1
Giga PHY:	Realtek RTL8218B	x 2
Combo PHY:	Realtek RTL8214FC	x 1
Flash:	16M bytes	x 1
DDR RAM:	128M bytes	x 1
PoE Chip	Power Design PD69012	x 2
Open Frame Power Supply:	Gospower Power Supply	x 1
	Output: 52V DC, 4.8A (GS-4210-16P4C)	
	LTE Power Supply	x 1
	Output: 12V DC, 4.2A	

3.2 FUNCTION SPECIFICATIONS

Product	GS-4210-16P4C
Hardware Specifications	
Copper Ports	20 x 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports
SFP/mini-GBIC Slots	4 x 100/1000BASE-X SFP interfaces shared with Port-17 to Port-20. Supports 100/1000Mbps dual mode and DDM
PoE Injector Port	16 ports with 802.3at / af PoE injector function with Port-1 to Port-16
Console	1 x RS-232-to-RJ45 serial port (115200, 8, N, 1)
Switch Architecture	Store-and-Forward
Switch Fabric	40Gbps/non-blocking
Switch Throughput@64Bytes	29.76Mpps
Address Table	8K entries
Shared Data Buffer	4.1 megabits
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
LED	PWR, SYS, LNK/ACT, PoE-in-Use, 1000, FAN 1 Alert, FAN 2 Alert, PoE PWR Alert
Smart Fan	2
Dimensions (W x D x H)	440 x 300 x 44.5 mm, 19-inch, 1U height
Weight	4.132kg
Power Requirements	AC 100~240V, 50/60Hz, auto-sensing
ESD Protection	6KV DC
Power Consumption/ Dissipation	251 watts (max.)/861.2 BTU
Enclosure	Metal
Power over Ethernet	
PoE Standard	IEEE 802.3af/802.3at PoE/PSE
PoE Power Supply Type	End-span
PoE Power Output	Per Port 52V DC, 30.8 watts (max.)
Power Pin Assignment	1/2(+), 3/6(-)
PoE Power Budget	220 watts (max.) @ 25 degrees C 190 watts (max.) @ 50 degrees C
PoE Ability PD @ 9 watts	16 units
PoE Ability PD @ 15.4 watts	14 units
PoE Ability PD @ 30 watts	7 units

Layer 2 Functions	
Port Mirroring	TX/RX/both Many-to-1 monitor
VLAN	802.1Q tagged-based VLAN Up to 256 VLAN groups, out of 4094 VLAN IDs 802.1ad Q-in-Q tunneling Voice VLAN Protocol VLAN Private VLAN (Protected port) GVRP
Link Aggregation	IEEE 802.3ad LACP and static trunk Supports 4 groups of 8-port trunk
Spanning Tree Protocol	STP / RSTP / MSTP
IGMP Snooping	IGMP (v2/v3) Snooping IGMP Querier Up to 256 multicast groups
MLD Snooping	MLD (v1/v2) Snooping, up to 256 multicast groups
Access Control List	IPv4/IPv6 IP-based ACL/MAC-based ACL
QoS	8 mapping ID to 8 level priority queues <ul style="list-style-type: none"> - Port number - 802.1p priority - 802.1Q VLAN tag - DSCP field in IP packet Traffic classification based, strict priority and WRR
Security	IEEE 802.1X – Port-based authentication Built-in RADIUS client to co-operate with RADIUS server RADIUS/TACACS+ user access authentication IP-MAC port binding MAC filter Static MAC address DHCP Snooping and DHCP Option82 STP BPDU guard, BPDU filtering and BPDU forwarding DoS attack prevention ARP inspection IP source guard
Management Functions	
Basic Management Interfaces	Web browser; Telnet; SNMP v1, v2c Firmware upgrade by HTTP / TFTP protocol through Ethernet network Remote/local syslog System log LLDP protocol SNTP
Secure Management Interfaces	SSH, SSL, SNMP v3

SNMP MIBs	<p>RFC 1213 MIB-II RFC 1215 Generic Traps RFC 1493 Bridge MIB RFC 2674 Bridge MIB Extensions RFC 2737 Entity MIB (Version 2) RFC 2819 RMON (1, 2, 3, 9) RFC 2863 Interface Group MIB RFC 3635 Ethernet-like MIB</p>
Standards Conformance	
Regulatory Compliance	FCC Part 15 Class A, CE
Standards Compliance	<p>IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX/100BASE-FX IEEE 802.3z Gigabit SX/LX IEEE 802.3ab Gigabit 1000T IEEE 802.3x 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 High Power over Ethernet 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</p>
Environment	
Operating	<p>Temperature: 0 ~ 50 degrees C Relative Humidity: 5 ~ 95% (non-condensing)</p>
Storage	<p>Temperature: -20 ~ 70 degrees C Relative Humidity: 5 ~ 95% (non-condensing)</p>

3.3 PHYSICAL SPECIFICATIONS:

Dimensions:

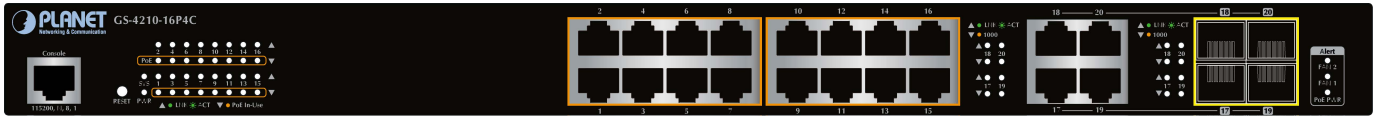
440 x 300 x 44.5 mm (W x D x H), 1U height

Weight:

GS-4210-16P4C: 4,312g

■ Front Panel:

GS-4210-16P4C:



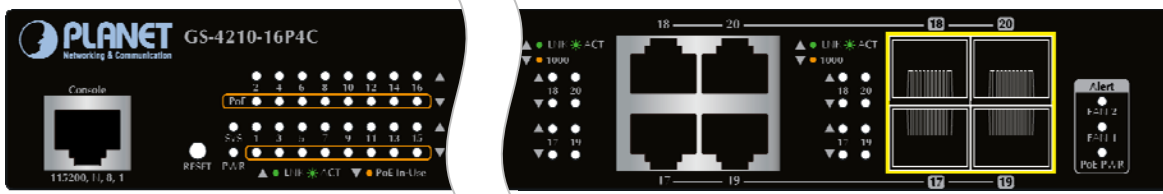
■ Rear Panel:

GS-4210-16P4C:



■ LED Definition

GS-4210-16P4C:



■ System Alert

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.
FAN 1	Red	Lights to indicate that FAN1 is down.
FAN 2	Red	Lights to indicate that FAN2 is down.
PoE PWR	Red	Lights to indicate that the PoE power is down.

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

LED	Color	Function
LNK/ACT	Green	Lights: To indicate the link through that port is successfully established. Blinks: To indicate that the switch is actively sending or receiving data over that port.
PoE	Orange	Lights: To indicate the port is providing 52V DC in-line power. Off: To indicate the connected device is not a PoE Powered Device (PD)

■ **10/100/1000BASE-T Interfaces (Port-17 to Port-20)**

LED	Color	Function
LNK/ACT	Green	Lights: To indicate the link through that port is successfully established. Blinks: To indicate that the switch is actively sending or receiving data over that port.
1000	Orange	Lights: To indicate that the port is operating at 1000Mbps . Off: If LNK/ACT LED is lit, it indicates that the port is operating at 10/100Mbps . If LNK/ACT LED is off, it indicates that the port is link down.

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

LED	Color	Function
LNK/ACT	Green	Lights: To indicate the link through that port is successfully established. Blinks: To indicate that the switch is actively sending or receiving data over that port.
1000	Orange	Lights: To indicate that the port is operating at 1000Mbps . Off: If LNK/ACT LED is lit, it indicates that the port is operating at 100Mbps . If LNK/ACT LED is off, it indicates that the port is link down.

3.4 ENVIRONMENTAL SPECIFICATIONS

Operating:

Temperature: 0°C ~ 50 degrees C
 Relative Humidity: 20% ~ 95% (non-condensing)

Storage:

Temperature: -20°C ~ 70 degrees C
 Relative Humidity: 20% ~ 95% (non-condensing)

3.5 ELECTRICAL SPECIFICATIONS

Model	GS-4210-16P4C	
AC Power Input Voltage:	100 ~ 240VAC, 50 / 60Hz, auto-sensing.	
Power Consumption (System on):	110V	27.0 watts/92.6 BTU
	220V	39.0 watts/133.8 BTU
Power Consumption (PoE Full Loading):	110V	247.0 watts/847. BTU
	220V	251.0 watts/861.2 BTU

3.6 TEMPERATURE DETECTION SPECIFICATIONS

GS-4210-16P4C:

Over Temperature Protection

PoE Chip Temperature Value	Status
< 53 degrees C	PoE power budget is limited to 220 watts
53 ~ 55 degrees C	PoE power budget is limited to 205 watts
> 55 degrees C	PoE power budget is limited to 190 watts

Smart Fan Speed Control

PoE Chip Temperature Value	Status
< 43 degrees C	Fan is in low speed
> 44 degrees C	Fan is in high speed

3.7 REGULATORY COMPLIANCE

FCC Class A, CE.

3.8 REALIABILITY

MTBF > 50,000 hrs @ 25 degrees C

3.9 BASIC PACKAGING

- GS-4210-16P4C Switch x 1
- Quick Installation Guide x 1
- Power Cord x 1
- RS-232 to RJ-45 Cable x 1
- SFP Dust Cap x 4
- Two Rack-mounting Brackets with Attachment Screws x 2

3.10 PACKING DIMENSIONS

Dimensions: 520 (W) x 450 (D) x 90 mm (H)

Weight: TBD KG (gross weight)
2pcs in one carton