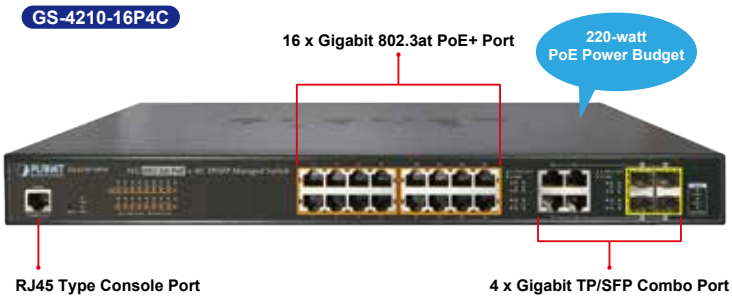
# 16-Port 10/100/1000T 802.3at PoE + 4-Port Gigabit TP/SFP Combo Managed Switch

*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 for different kinds of PoE applications, the GS-4210-16P4C provides a quick, safe and cost-effective Power over Ethernet network solution for small businesses and enterprises.




*Built-in Unique PoE Functions for Powered Devices 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

## 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

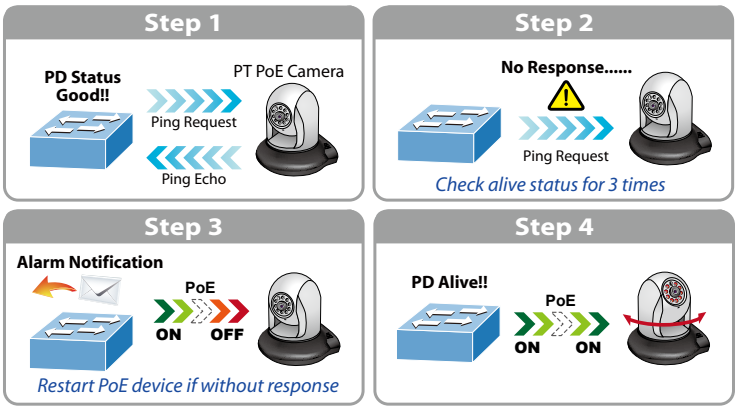
- Complies with IEEE 802.3at Power over Ethernet Plus, end-span PSE
- Backward compatible with IEEE 802.3af Power over Ethernet
- Up to 16 ports of IEEE 802.3af/802.3at devices powered
- Supports PoE power up to 30.8 watts for each PoE port
- Auto detects powered device (PD)
- Circuit protection prevents 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)

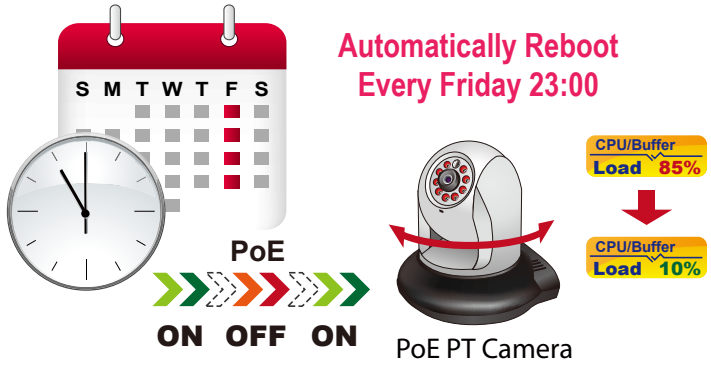
*Intelligent Powered Device Alive-Check*

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.

- 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

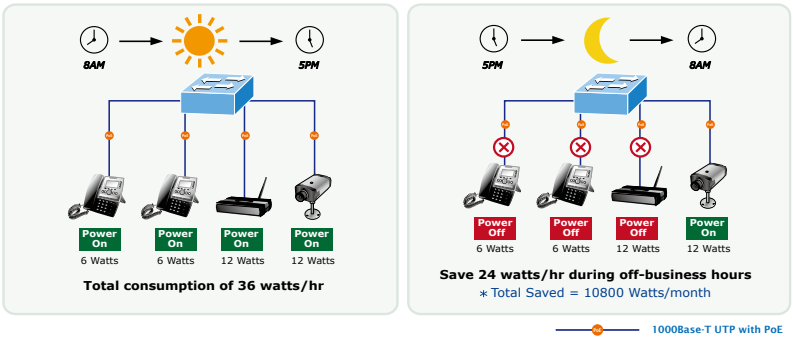
- Supports IPv4 IGMP snooping v2 and v3
- Supports IPv6 MLD snooping v1 and v2
- IGMP querier mode support
- IGMP snooping port filtering
- MLD snooping port filtering

## 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




### *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.

### *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.


  - 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

*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.

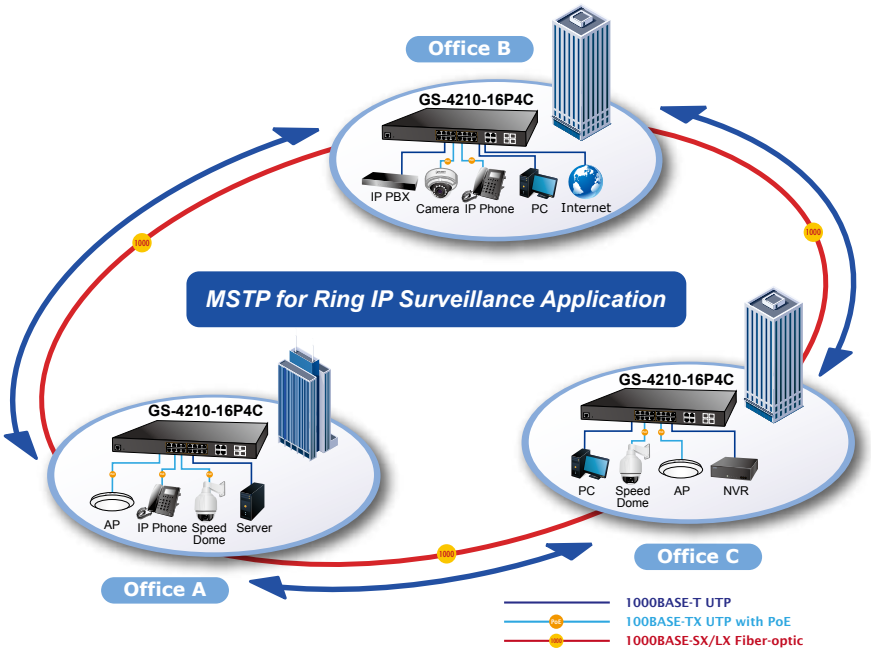
*Intelligent SFP Diagnosis Mechanism*

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.

# Applications

*Multiple Spanning Tree Protocol with PoE IP Office Solution for SMBs and Workgroups*

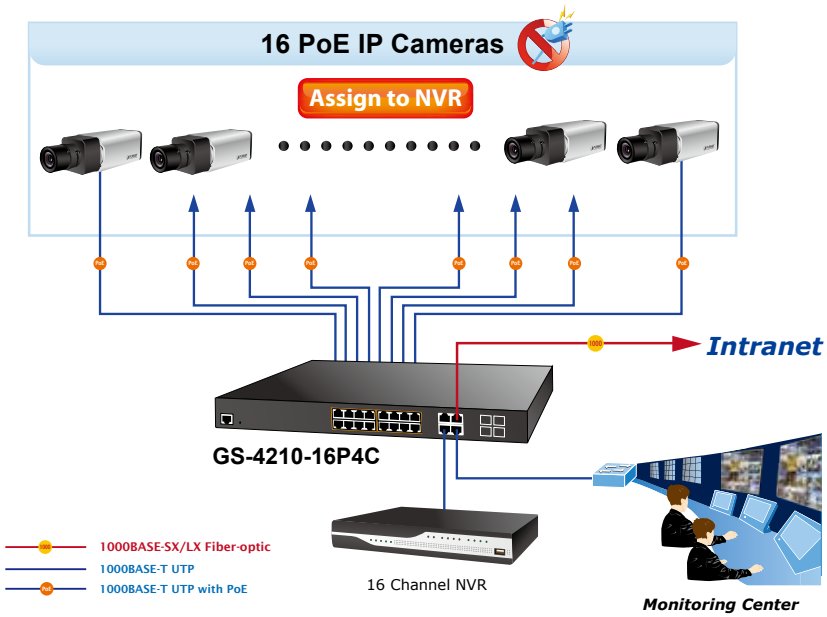
The GS-4210-16P4C features strong rapid self-recovery capability to prevent interruptions and external intrusions. It incorporates Multiple Spanning Tree Protocol (802.1s MSTP) into customer's automation network to enhance system reliability and uptime. Applying the IEEE 802.3at Power over Ethernet standard, the GS-4210-16P4C can directly connect with any IEEE 802.3at end-nodes like PTZ (Pan, Tilt & Zoom) network cameras and speed dome cameras. The GS-4210-16P4C can easily build a power that can centrally control a wireless AP/IP camera/VoIP system for SMBs and workgroups in the enterprises with high availability network infrastructure.




*High Scalability and Best Security for Today's IP Networking and Cyber Security Solution*

The GS-4210-16P4C comes with non-blocking design and SFP fiber-optic modules, bringing network infrastructure higher flexibility but lower in cost. Providing sixteen 10/100/1000BASE-T PoE ports and four Gigabit TP/SFP combo ports, the GS-4210-16P4C can easily build a networking security on the cyber security system for the enterprises. For instance, it can work with the router and UTM to perform comprehensive security for today's businesses.

***Perfect Combination 16-Port PoE Switch + 16-Ch NVR***



# 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.<br>Supports 100/1000Mbps dual mode and DDM |
| PoE Injector Port | 16 ports with 802.3at/af PoE injector function (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<br>Back pressure for half-duplex |
| Jumbo Frame | 10K bytes |
| Reset Button | < 5 sec: System reboot<br>> 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<br>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<br>Many-to-1 monitor |
| VLAN | 802.1Q tagged-based VLAN<br>Up to 256 VLAN groups, out of 4094 VLAN IDs<br>802.1ad Q-in-Q tunneling<br>Voice VLAN<br>Protocol VLAN<br>Private VLAN (protected port)<br>GVRP |
| Link Aggregation | IEEE 802.3ad LACP and static trunk<br>Supports 4 groups of 8-port trunk |
| Spanning Tree Protocol | STP/RSTP/MSTP |
| IGMP Snooping | IGMP (v2/v3) Snooping<br>IGMP Querier<br>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<br>Port number<br>802.1p priority<br>802.1Q VLAN tag<br>DSCP field in IP packet<br>Traffic classification based, strict priority and WRR |

| | |
|---|---|
| Security | IEEE 802.1X – Port-based authentication<br>Built-in RADIUS client to cooperate with RADIUS server<br>RADIUS/TACACS+ user access authentication<br>IP-MAC port binding<br>MAC filtering<br>Static MAC address<br>DHCP Snooping and DHCP Option82<br>STP BPDU guard, BPDU filtering and BPDU forwarding<br>DoS attack prevention<br>ARP inspection<br>IP source guard |
| Management Functions | |
| Basic Management Interfaces | Web browser; telnet; SNMP v1, v2c<br>Firmware upgrade by HTTP/TFTP protocol through Ethernet network<br>Remote/local syslog<br>System log<br>LLDP protocol<br>SNTP |
| Secure Management Interfaces | SSH, SSL, SNMP v3 |
| SNMP MIBs | RFC 1213 MIB-II<br>RFC 1215 Generic Traps<br>RFC 1493 Bridge MIB<br>RFC 2674 Bridge MIB Extensions<br>RFC 2737 Entity MIB (version 2)<br>RFC 2819 RMON (1, 2, 3, 9)<br>RFC 2863 Interface Group MIB<br>RFC 3635 Ethernet-like MIB |
| Standards Conformance | |
| Regulatory Compliance | FCC Part 15 Class A, CE |
| Standards Compliance | IEEE 802.3 10BASE-T<br>IEEE 802.3u 100BASE-TX/100BASE-FX<br>IEEE 802.3z Gigabit SX/LX<br>IEEE 802.3ab Gigabit 1000T<br>IEEE 802.3x flow control and back pressure<br>IEEE 802.3ad port trunk with LACP<br>IEEE 802.1D Spanning Tree Protocol<br>IEEE 802.1w Rapid Spanning Tree Protocol<br>IEEE 802.1s Multiple Spanning Tree Protocol<br>IEEE 802.1p Class of Service<br>IEEE 802.1Q VLAN tagging<br>IEEE 802.1x Port Authentication Network Control<br>IEEE 802.1ab LLDP<br>IEEE 802.3af Power over Ethernet<br>IEEE 802.3at High Power over Ethernet<br>RFC 768 UDP<br>RFC 793 TFTP<br>RFC 791 IP<br>RFC 792 ICMP<br>RFC 2068 HTTP<br>RFC 1112 IGMP version 1<br>RFC 2236 IGMP version 2<br>RFC 3376 IGMP version 3<br>RFC 2710 MLD version 1<br>RFC 3810 MLD version 2 |
| Environment | |
| Operating | Temperature: 0 ~ 50 degrees C<br>Relative Humidity: 5 ~ 95% (non-condensing) |
| Storage | Temperature: -20 ~ 70 degrees C<br>Relative Humidity: 5 ~ 95% (non-condensing) |

## Ordering Information

| | |
|---|---|
| GS-4210-16P4C | 16-Port 10/100/1000T 802.3at PoE + 4-Port Gigabit TP/SFP Combo Managed Switch (220W PoE budget) |

## Related Products

| | |
|---|---|
| GS-4210-24P4C | 24-Port 10/100/1000T 802.3at PoE + 4-Port Gigabit TP/SFP Combo Managed Switch (220W PoE budget) |
| GS-4210-16UP4C | 16-Port 10/100/1000T Ultra PoE + 4-Port Gigabit TP/SFP Combo Managed Switch |
| GS-4210-24UP4C | 24-Port 10/100/1000T Ultra PoE + 4-Port Gigabit TP/SFP Combo Managed Switch |
| IPOE-E202 | Industrial 1-Port 802.3at PoE+ to 2-Port 802.3af PoE Extender |
| POE-E202 | 1-Port 802.3at PoE+ to 2-Port 802.3af/at Gigabit PoE Extender |

## Available 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 |

## Available 100Mbps Modules

| | |
|---|---|
| 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 |

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