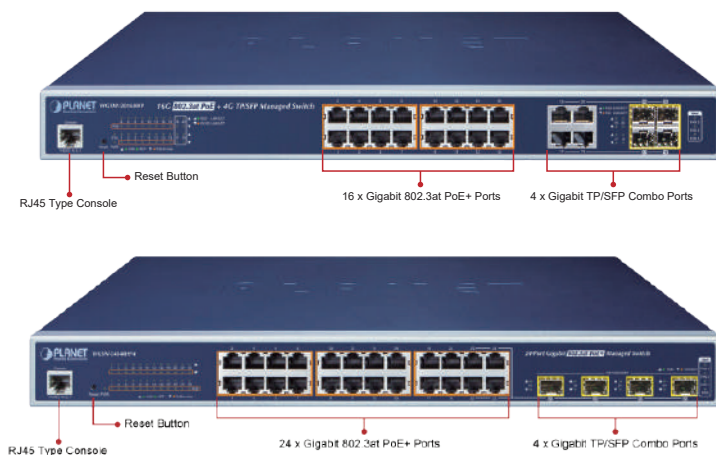


L2+ 16/24-Port 10/100/1000BASE-T 802.3at PoE+ Managed Switch



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

PLANET WGSW-20160HP and WGSW-24040HP4 Layer 2+ Managed Gigabit Switches support both IPv4 and IPv6 protocols and Layer 3 static routing, and provide 16/24 10/100/1000BASE-T ports featuring 36-watt 802.3at PoE+ and 4 extra Gigabit TP/SFP combo interfaces (WGSW-20160HP), and 4 100/1000BASE-X SFP+ fiber slots (WGSW-24040HP4). Each of the 16/24 Gigabit ports provides 36 watts of power, with a total power budget of up to 220/440 watts for the different types of PoE applications being employed. It provides a quick, safe and cost-effective Power over Ethernet network solution to IP security surveillance for small businesses and enterprises.



Network with Cybersecurity Helps Minimize Security Risks

The WGSW-20160HP and WGSW-24040HP4 come with enhanced cybersecurity to fend off cyberthreats and cyberattacks. They support SSHv2 and TLS protocols to provide strong protection against advanced threats. Served as a key point to transmit data to customer's critical equipment in a business network, the cybersecurity feature protects the switch management and enhances the security of the mission-critical network without any extra deployment cost and effort.

Physical Port

- 16/24-port 10/100/1000BASE-T RJ45 copper with 802.3at PoE+ injector function
- 4 10/100/1000Mbps TP and SFP shared combo interfaces, supporting 100/1000Mbps dual mode, shared with Ports 17 to 20 (WGSW-20160HP)
- 4 100/1000BASE-X SFP slots, shared with port-21 to port-24 (WGSW-24040HP4)
- RS232 RJ45 console interface for switch basic management and setup

Power over Ethernet

- Complies with IEEE 802.3at Power over Ethernet Plus/end-span PSE
- Up to 16/24 IEEE 802.3af/802.3at devices powered
- Supports PoE power up to 36 watts for each PoE port
- Auto detects powered device (PD)
- Circuit protection prevents power interference between ports
- Remote power feeding up to 100 meters in standard mode and 250m in extended mode
- PoE management features
 - PoE admin-mode control
 - PoE management mode selection
 - Per port PoE function enable/disable
 - PoE port power feeding priority
 - Per PoE port power limit
 - PoE Port Status monitoring
 - PD classification detection
 - Sequence port PoE
 - PoE extension
- Intelligent PoE features
 - Temperature threshold control
 - PoE usage threshold control
 - PoE schedule
 - PD alive check
 - LLDP PoE neighbors

Layer 2 Features

- Prevents packet loss with back pressure (half-duplex) and IEEE 802.3x pause frame flow control (full-duplex)

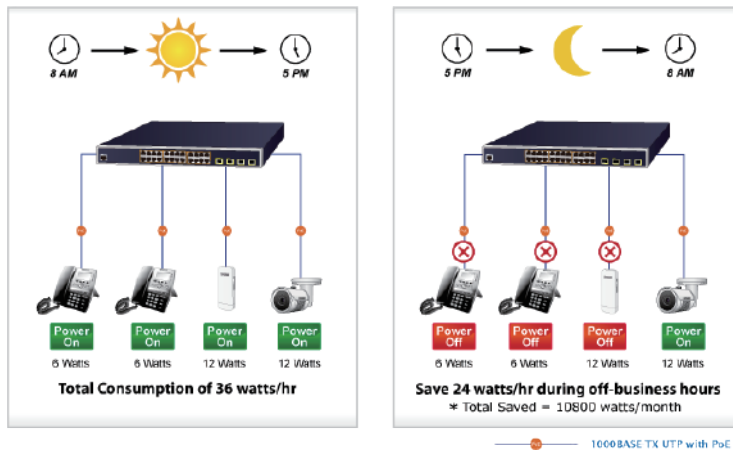
Built-in Unique PoE Functions for Surveillance Management

As a managed PoE Switch for surveillance network, the WGSW-20160HP and WGSW-24040HP4 feature the following intelligent PoE management functions:

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

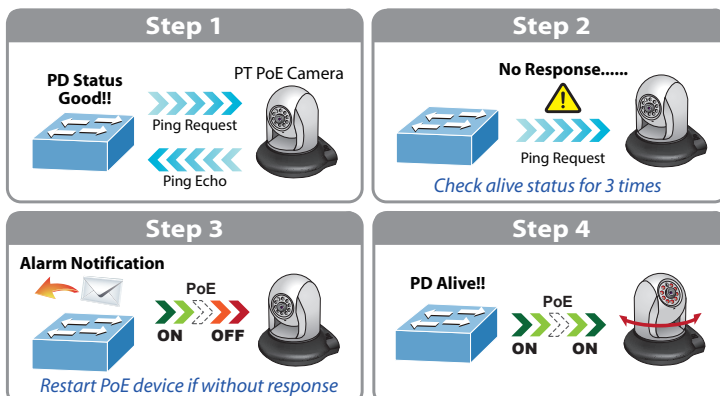
PoE Schedule for Energy Saving

Besides being used for IP surveillance, the WGSW-20160HP and WGSW-24040HP4 are 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 WGSW-20160HP and WGSW-24040HP4 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.



Intelligent Powered Device Alive Check

The WGSW-20160HP and WGSW-24040HP4 can be configured to monitor a connected PD status in real time via ping action. Once the PD stops working and it is without response, the WGSW-20160HP and WGSW-24040HP4 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.



- High performance of Store-and-Forward architecture and runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth
- Storm Control support
 - Broadcast/Multicast/Unicast
- Supports **VLAN**
 - IEEE 802.1Q tagged VLAN
 - Up to 4K VLANs groups, out of 4094 VLAN IDs
 - Supports provider bridging (VLAN Q-in-Q, IEEE 802.1ad)
 - Private VLAN Edge (PVE)
 - Port Isolation
 - MAC-based VLAN
 - IP Subnet-based VLAN
 - Protocol-based VLAN
 - VLAN Translation
 - Voice VLAN
 - GVRP
- 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 Filtering/BPDU Guard
- Supports **Link Aggregation**
 - 802.3ad Link Aggregation Control Protocol (LACP)
 - Cisco ether-channel (static trunk)
 - Maximum 10/12 trunk groups, up to 4 ports per trunk group
 - Up to 8Gbps 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
- Compatible with Cisco uni-directional link detection(UDLD) that monitors a link between two switches and blocks the ports on both ends of the link if the link fails at any point between the two devices
- Provides ONVIF for co-operating with PLANET video IP surveillances

Layer 3 IP Routing Features

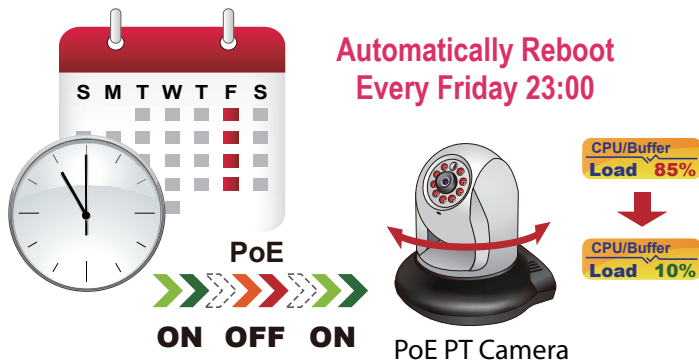
- Supports maximum 32 static routes and route summarization

Quality of Service

- Ingress Shaper and Egress Rate Limit per port bandwidth control

Scheduled Power Recycling

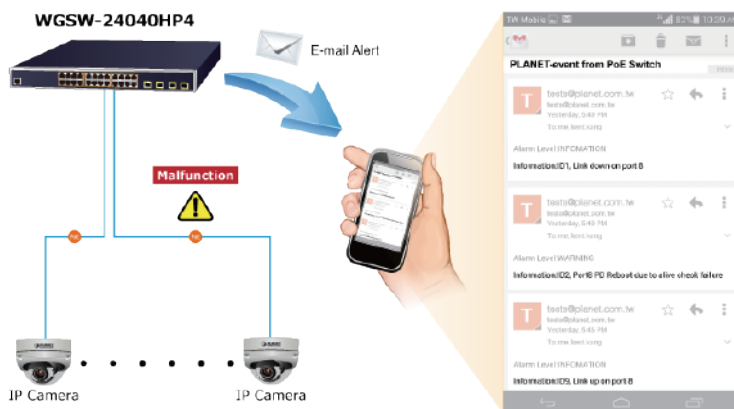
The WGSW-20160HP and WGSW-24040HP4 allow each of the connected PDs to reboot at a specified time each week. Therefore, it will reduce the chance of PD crash resulting from buffer overflow.



SMTP/SNMP Trap Event Alert

Though most NVR or camera management software offers SMTP email alert function, the WGSW-20160HP and WGSW-24040HP4 further provide 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



Convenient and Smart ONVIF Devices with Detection Feature

PLANET has newly developed an awesome feature -- ONVIF Support -- which is specifically designed for cooperating with video IP surveillances. From the WGSW-20160HP and WGSW-24040HP4 GUI, you just need one click to search and show all of the ONVIF devices via network application. In addition, you can upload floor images to the switch and remotely monitor what is going on in the production line. Moreover, you can get real-time surveillance's information and online/offline status, and can have PoE reboot control from GUI.

- 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 IPv4 IGMP Snooping v1, v2 and v3
- Supports IPv6 MLD Snooping v1 and v2
- Querier mode support
- IPv4 IGMP Snooping port filtering
- IPv6 MLD Snooping port filtering
- Multicast VLAN Registration (MVR) support

Security

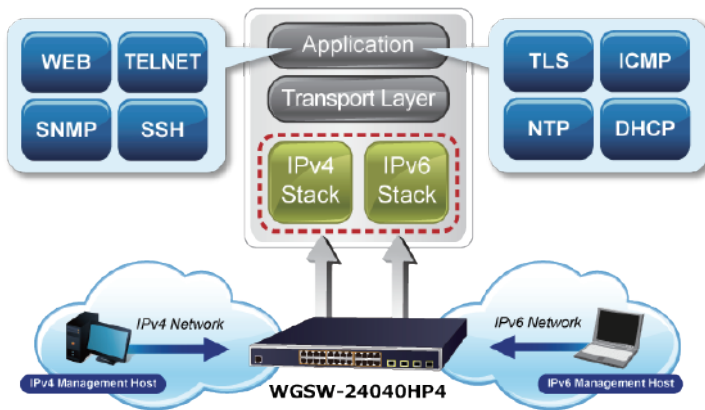
- Authentication
 - IEEE 802.1x Port-based/MAC-based network access authentication
 - Built-in RADIUS client to co-operate with the RADIUS servers
 - TACACS+ login users access authentication
 - RADIUS/TACACS+ users access authentication
- Access Control List
 - IP-based Access Control List (ACL)
 - 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
- IP address access management to prevent unauthorized intruder

Management

- IPv4 and IPv6 dual stack management
- Switch Management Interfaces
 - Web switch management
 - Console/Telnet Command Line Interface

Solution for IPv6 Networking

With the support for IPv6/IPv4 protocol, and easy and friendly management interfaces, the WGSW-20160HP and WGSW-24040HP4 are the best choices for IP surveillance, VoIP and wireless service providers to connect with the IPv6 network. They also help 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 WGSW-20160HP and WGSW-24040HP4 not only provide ultra high transmission performance and excellent layer 2 technologies, but also offer 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 Layer 2 Features

The WGSW-20160HP and WGSW-24040HP4 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-5220-8P2T2S allows the operation of a high-speed trunk combining multiple ports. Supporting 12 trunk groups, it enables a maximum of up to 4 ports per trunk and supports connection fail-over as well.



Powerful Security

The WGSW-20160HP and WGSW-24040HP4 offer 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.

- SNMP v1 and v2c switch management
- SSHv2, TLSv1.2 and SNMP v3 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
 - Reset button for system reboot or reset to factory default
 - Dual Images
- DHCP Relay
- DHCP Option82
- DHCP Server
- User Privilege levels control
- NTP (Network Time Protocol)
- UPnP
- Link Layer Discovery Protocol (LLDP) and LLDP-MED
- Network Diagnostic
 - SFP-DDM (Digital Diagnostic Monitor)
 - 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 NMS System and Smart Discovery Utility for deployment management
- Provides ONVIF for co-operating with PLANET video IP surveillances

Enhanced Security and Traffic Control

The WGSW-20160HP and WGSW-24040HP4 also provide **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 WGSW-20160HP and WGSW-24040HP4 are equipped with console, web and SNMP management interfaces. With the built-in web-based management interface, the WGSW-20160HP and WGSW-24040HP4 offer an easy-to-use, platform independent management and configuration facility. The WGSW-20160HP and WGSW-24040HP4 support SNMP and they can be managed via any management software based on the standard SNMP v1 and v2 protocols. For reducing product learning time, the WGSW-20160HP and WGSW-24040HP4 offer Cisco-like command via Telnet or console port and customer doesn't need to learn new command from these switches. Moreover, the WGSW-20160HP and WGSW-24040HP4 offer remote secure management by supporting **SSH**, **TLS** and **SNMPv3** connection which can encrypt the packet content at each session.



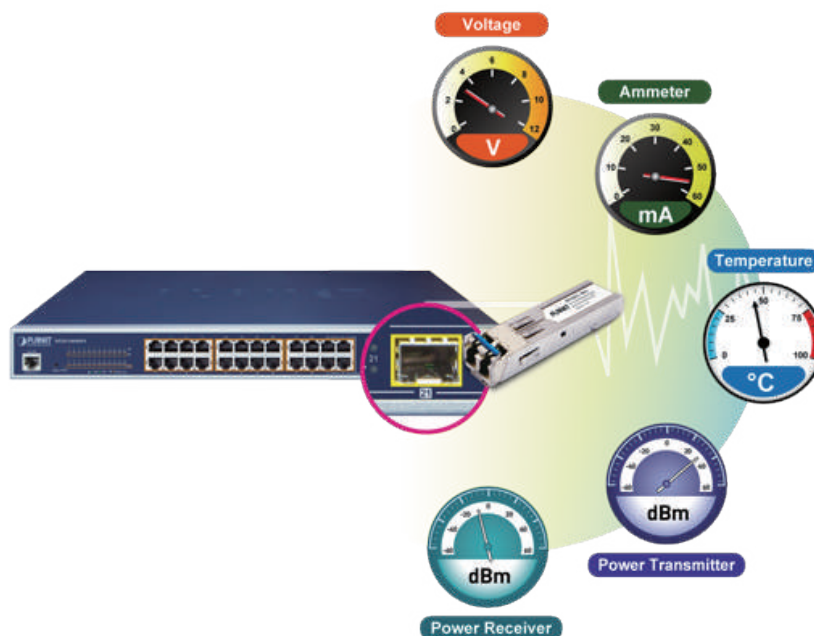
Flexible and Extendable Solution

The 4 mini-GBIC SFP slots built in the WGSW-20160HP and WGSW-24040HP4 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 10/20/40/60/80/120 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 WGSW-20160HP and WGSW-24040HP4 support **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.

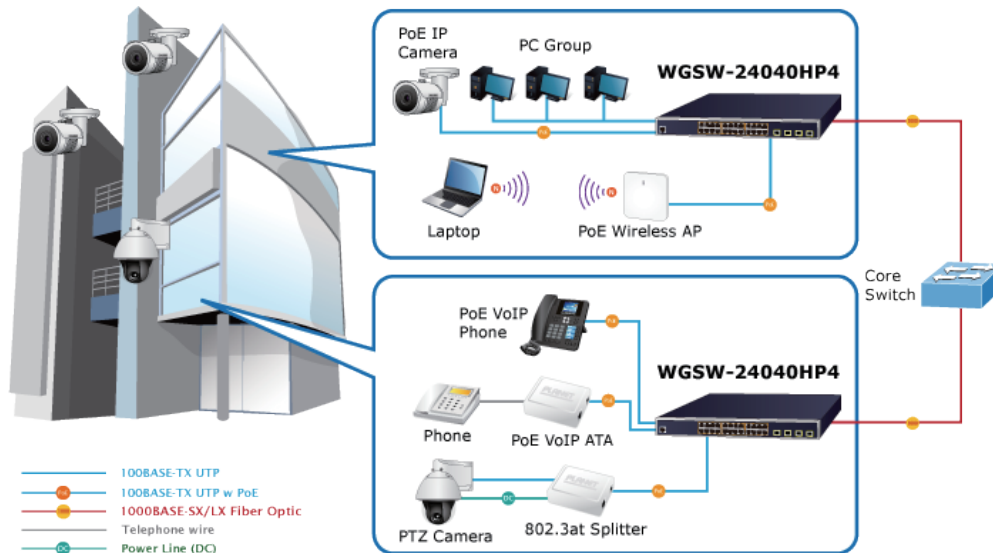
Digital Diagnostic Monitor (DDM)



Applications

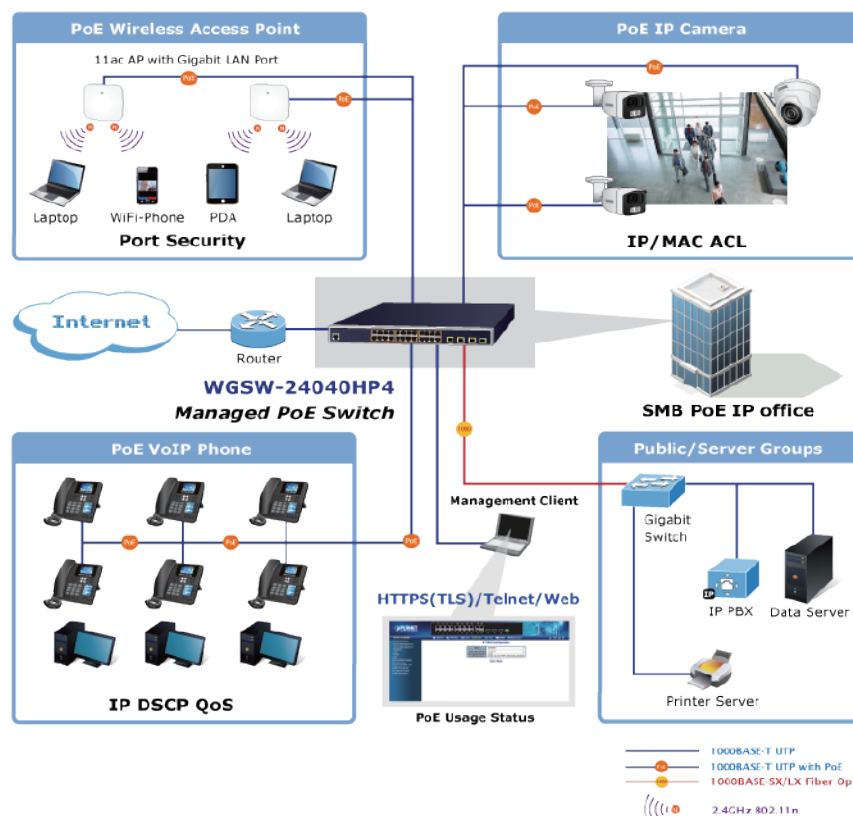
IP Office Department/Workgroup PoE Switch

As the business expands, the additional telephones required could be installed at less cost via the implementation of PoE IP telephony system than that of the traditional circuit wiring telephony system. The WGSW-20160HP and WGSW-24040HP4 help enterprises to efficiently create an integrated data, voice, and powered VoIP network. PLANET IEEE 802.3af compliant IP phones can be installed without any power cable because it can be powered via the standard Ethernet cable from the connected WGSW-20160HP and WGSW-24040HP4. With the WGSW-20160HP and WGSW-24040HP4, IP telephony deployment becomes more reliable and cost effective, thus helping enterprises save tremendous cost when upgrading from the traditional telephony system to an IP telephony communications infrastructure.



IP Office Backbone PoE Switch

Providing up to 16/ 24 PoE, in-line power interfaces, the WGSW-20160HP and WGSW-24040HP4 can easily build an IP phone system, IP camera system, or wireless AP group for the enterprises in which power can be centrally controlled. For instance, IP cameras or wireless APs can be easily installed in the company for surveillance demands or building a wireless roaming environment in the office. Without the power socket limitation, the WGSW-20160HP and WGSW-24040HP4 make the deployment of IP cameras or wireless LAN AP easier and more efficient. The 4 Gigabit TP/SFP combo interfaces in the WGSW-20160HP and WGSW-24040HP4 also offer flexible Gigabit TP or fiber connection for uplinking to public server groups.

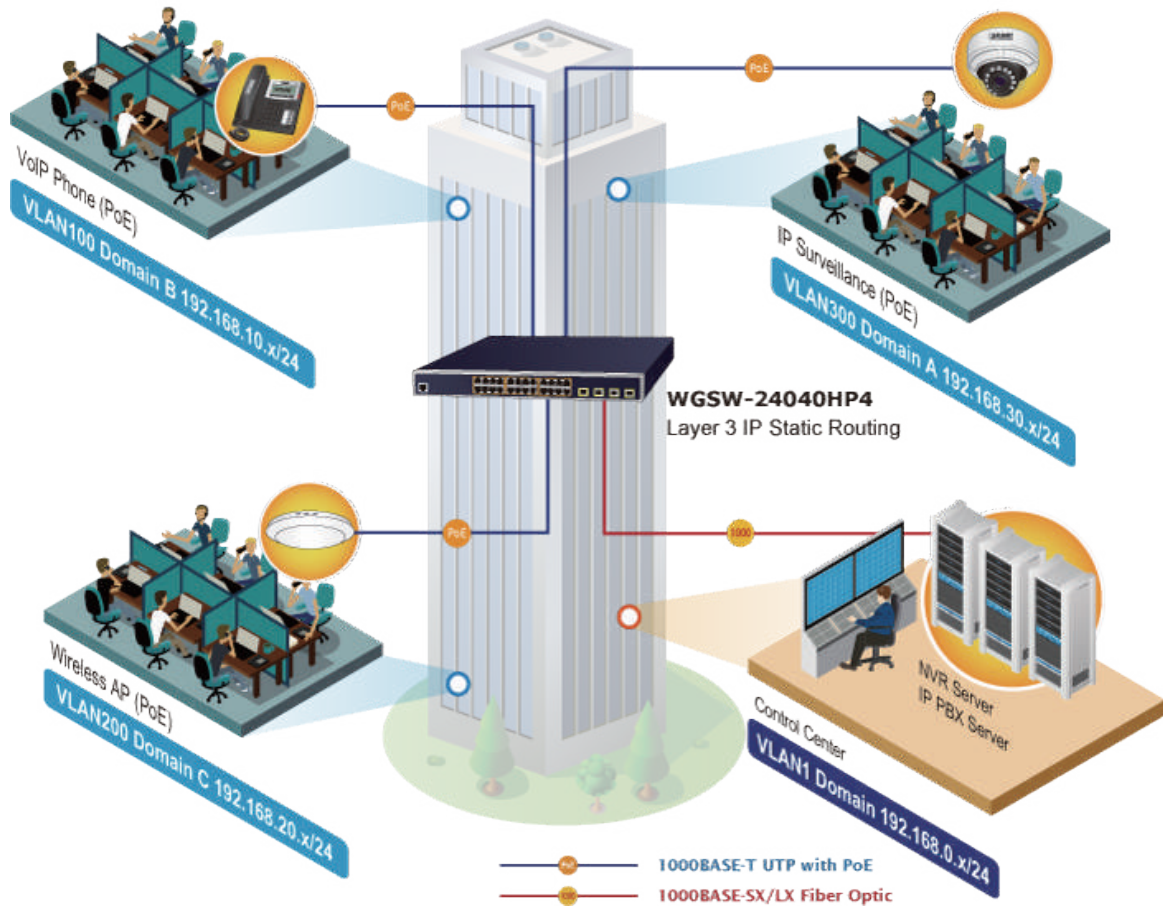


Layer 2+ VLAN Static Routing and PoE Application

With the built-in robust IPv4/IPv6 Layer 3 traffic routing protocols, the WGSW-20160HP and WGSW-24040HP4 ensure reliable routing between VLANs and network segments. The routing protocols can be applied by VLAN interface with up to 32 routing entries. The WGSW-20160HP and WGSW-24040HP4 are certainly a cost-effective and ideal solution for enterprises.

Providing up to 16/24 Gigabit PoE+ ports and in-line power interface, the WGSW-20160HP and WGSW-24040HP4 PoE+ Managed 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



Specifications

Product	WGSW-20160HP	WGSW-24040HP4	
Hardware Specifications			
10/100/1000BASE-T Copper Ports (Auto MDI/MDIX)	16	24	
10/100/1000Mbps TP/SFP Combo Interfaces	Shared with Port-17 to Port-20	Shared with Port-21 to Port-24	
802.3at/af PoE Injector Port	Port-1 to Port-16	Port-1 to Port-24	
Power Requirements	100~240V AC, 50/60Hz, 4A	100~240V AC, 50/60Hz, 6.5A	
Power Consumption (Full Loading)	282 watts/962BTU	521watts/1777BTU	
Dimensions (W x D x H)	440 x 300 x 44.5 mm, 1U high	440 x 200 x 44.5 mm, 1U high	
Weight	3.9 kg	4.2 kg	
Console	1 x RJ45 serial port (115200, 8, N, 1)		
Reset Button	< 5 sec: System reboot > 5 sec: Factory Default		
Smart Fan	3		
ESD Protection	6KV DC		
LED	System: Power (Green), SYS (System, Green) Alert: FAN 1 (Red), FAN 2 (Red), FAN 3 (Red) PoE Ethernet Interfaces (Port 1 to Port 16): LNK/ACT (10/100/1000Mbps, Green), PoE In-Use (Amber) 10/100/1000BASE-T Combo Ports (Port 17 to port 20): 1000 (LNK/ACT, Green) 10/100 (LNK/ACT, Amber) 100/1000Mbps SFP Combo Interfaces (Port 17 to Port 20): 1000 (LNK/ACT, Green) 100 (LNK/ACT, Amber)	System: Power (Green) Alert: FAN 1 (Red), FAN 2 (Red), FAN 3 (Red), PWR (Red) PoE Ethernet Interfaces (Port 1 to Port 24): LNK/ACT (10/100/1000Mbps, Green) PoE-in-Use (Amber) 100/1000Mbps SFP Combo Interfaces (Port 21 to Port 24):1000 (Green),LNK/ACT(Amber)	
Switching			
Switch Architecture	Store-and-Forward		
Switch Fabric	40Gbps / non-blocking	48Gbps/non-blocking	
Throughput	29.7Mpps@64Bytes	35.7Mpps@64Bytes	
Address Table	8K entries, automatic source address learning and ageing		
SDRAM	128M Bytes		
Flash	512Mbits		
Flow Control	IEEE 802.3x pause frame for full duplex Back pressure for half duplex		
Jumbo Frame	9K bytes		
Power over Ethernet Specifications			
PoE Standard	IEEE 802.3at/802.3af Power over Ethernet		
PoE Power Supply Type	End-span		
PoE Power Output	Per port 54V DC, 590mA. max. 36 watts		
Power Pin Assignment	1/2(+), 3/6(-)		
PoE Power Budget	220 watts max. @25 degrees C 190 watts max. @50 degrees C	440 watts max. @25 degrees C 380 watts max. @50 degrees C	
PoE Ability	PD @ 7 watts	16 units	24 units
	PD @ 15.4 watts	14 units	24 units
	PD @ 30.8 watts	7 units	14 units
PoE Management			
Active POE Device Alive Detection	Yes		
PoE Power Recycling	Yes, daily or predefined schedule		
PoE Schedule	4 schedule profiles		
PoE System Management	System PoE admin control Total PoE power budget control Auto power input and PoE budget control PoE Legacy mode Over-temperature threshold alarm PoE usage threshold alarm		

Layer 3 Functions	
IP Interface	Max. 8 VLAN interfaces
Routing Table	Max. 32 routing entries
Routing Protocols	IPv4 software static routing IPv6 software static routing
Layer 2 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 tag-based VLAN Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN VLAN Translation Voice VLAN MVR (Multicast VLAN Registration) GVRP Up to 4K VLAN groups, out of 4094 VLAN IDs
Link Aggregation	IEEE 802.3ad LACP (static trunk) Supports 10/12 trunks groups with 4 ports per trunk group
Spanning Tree Protocol	IEEE 802.1D Spanning Tree Protocol IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol
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	IPv4 IGMP Snooping (v1/v2/v3) IPv4 IGMP Querier mode support Up to 255 multicast groups
MLD Snooping	IPv6 MLD Snooping ((v1/v2) IPv6 MLD Querier mode support Up to 255 multicast groups
Bandwidth Control	Per port bandwidth control Ingress: 10Kbps~3276Mbps Egress: 10Kbps~3276Mbps
Security Functions	
Access Control List	IP-based ACL/MAC-based ACL ACL based on: - MAC Address - IP Address - Ethertype - Protocol Type - VLAN ID - DSCP - 802.1p Priority Up to 256 entries
Security	Port security IP source guard Dynamic ARP inspection Command line authority control based on user level
AAA	RADIUS client TACACS+ client
Network Access Control	IEEE 802.1x port-based network access control MAC-based authentication Local/RADIUS authentication

Management Functions	
Basic Management Interfaces	Console; Telnet; Web Browser; SNMP v1, v2c
Secure Management Interfaces	SSHv2, TLS v1.2, SNMP v3
System Management	Firmware upgrade by HTTP protocol through Ethernet network Configuration upload/download through HTTP Remote Syslog System log LLDP protocol NTP PLANET Smart Discovery Utility
Event Management	Remote Syslog Local System log SMTP
ONVIF	ONVIF device discovery ONVIF device monitoring Floor Map
SNMP MIBs	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
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 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
Environments	
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

WGSW-20160HP	L2+ 16-Port 10/100/1000BASE-T 802.3at PoE + 4G TP/SFP Combo Managed Switch (220 watts)
WGSW-24040HP4	L2+ 24-Port 10/100/1000Mbps 802.3at PoE+ Managed Switch with 4 Shared SFP Ports (440 watts)

Related PoE Products

GS-5220-8P2T2S	L2+ 8-Port 10/100/1000T 802.3at PoE + 2-Port 10/100/1000T + 2-Port 100/1000X SFP Managed Switch
POE-161S	IEEE 802.3at Gigabit Power over Ethernet Plus Splitter with 5V/12VDC output (10/100/1000Mbps)
POE-162S	IEEE 802.3at Gigabit Power over Ethernet Plus Splitter with 12V/24VDC output (10/100/1000Mbps)
IPOE-162S	Industrial IEEE 802.3at Gigabit High Power over Ethernet Splitter
POE-E201	IEEE 802.3at Power over Gigabit Ethernet Extender
POE-E202	1-Port 802.3at PoE+ to 2-port 802.3af/at Gigabit PoE Extender

Available 100Mbps Modules for WGSW-20160HP/WGSW-24040HP4

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

Available 1000Mbps Modules for WGSW-20160HP/WGSW-24040HP4

MGB-GT	SFP-Port 1000 BASE-T Module
MGB-LX	SFP-Port 1000 BASE-LX mini-GBIC module - 20km
MGB-SX	SFP-Port 1000 BASE-SX mini-GBIC module - 550m
MGB-SX2	SFP-Port 1000 BASE-SX mini-GBIC module - 2km
MGB-L40	SFP-Port 1000 BASE-LX mini-GBIC module - 40km
MGB-L80	SFP-Port 1000 BASE-LX mini-GBIC module - 80km
MGB-L120	SFP-Port 1000 BASE-LX mini-GBIC module - 120km
MGB-LA10	SFP-Port 1000 BASE-BX (WDM, TX:1310nm) mini-GBIC module - 10km
MGB-LB10	SFP-Port 1000 BASE-BX (WDM, TX:1550nm) mini-GBIC module - 10km
MGB-LA20	SFP-Port 1000 BASE-BX (WDM, TX:1310nm) mini-GBIC module - 20km
MGB-LB20	SFP-Port 1000 BASE-BX (WDM, TX:1550nm) mini-GBIC module - 20km
MGB-LA40	SFP-Port 1000 BASE-BX (WDM, TX:1310nm) mini-GBIC module - 40km
MGB-LB40	SFP-Port 1000 BASE-BX (WDM, TX:1550nm) mini-GBIC module - 40km
MGB-LA80	SFP-Port 1000 BASE-BX (WDM, TX:1490nm) mini-GBIC module - 80km
MGB-LB80	SFP-Port 1000 BASE-BX (WDM, TX:1550nm) mini-GBIC module - 80km