# L2+ 8-Port 10/100/1000T + 2-Port 100/1000X SFP Managed 802.3at PoE Switch

Centralized Power Management for Gigabit Ethernet Networking

To fulfill the demand of higher power required PoE network applications with Gigabit speed transmission, PLANET has launched a new desktop 13-inch size Gigabit Managed Switch, WGSD-10020HP, which features high-performance Gigabit IEEE 802.3at PoE Plus on all copper ports. A maximum of 30 watts is available on each Gigabit copper port of the WGSD-10020HP for powering each PD, with a maximum PoE delivery of 150 watts for all PoE ports in order to satisfy the increasing needs of power consumption by PDs. Providing Gigabit throughput and high power supply, the WGSD-10020HP optimizes the installation and power management of network devices such as 11n wireless access points (APs) with Gigabit PoE LAN port, security PTZ / Speed Dome network video camera, color touch-screen PoE video phones, thin-clients and more.

8 x Gigabit 802.3at PoE+ Port

Alarm / PoE / PWR LED   Reset Button   2 x 100/1000Base-X SFP Slot
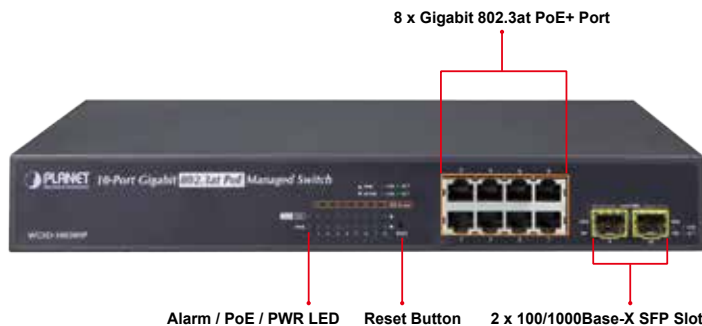
Built-in Unique PoE Functions for Powered Devices Management

As a managed PoE Switch for surveillance, wireless and VoIP network, the WGSD-10020HP features special PoE management functions:

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

Physical Port

- **8-Port 10/100/1000BASE-T** Gigabit Ethernet RJ-45 with **IEEE 802.3af / 802.3at PoE** Injector
- **2 100/1000BASE-X mini-GBIC/SFP** slots, SFP type auto detection
- RS-232 DB9 console interface for basic management and setup
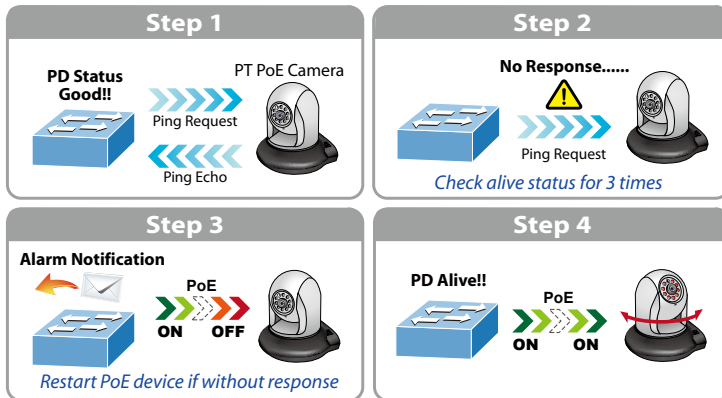
Power over Ethernet

- Complies with IEEE 802.3at Power over Ethernet Plus
- Backward compatible with IEEE 802.3af Power over Ethernet
- Up to 8 ports for IEEE 802.3af / at 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 100m
- 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

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 / Unicast / Unknown-unicast
- Supports **VLAN**
  - IEEE 802.1Q tagged VLAN
  - Up to 255 VLANs groups, out of 4095 VLAN IDs
  - Provider Bridging (VLAN Q-in-Q) support (IEEE 802.1ad)
  - Private VLAN Edge (PVE)
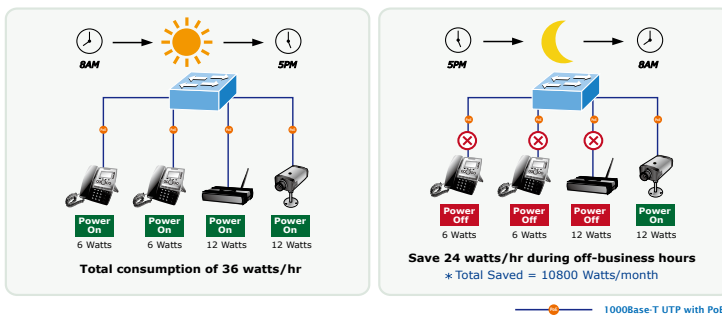 - Protocol-based VLAN
  - MAC-based VLAN

Intelligent Powered Device Alive Check

The WGSD-10020HP PoE Gigabit Managed Switch can be configured to monitor connected PD (Powered Device) status in real-time via ping action. Once the PD stops working and responding, the WGSD-10020HP will recycle 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 reduce administrator management burden.

Step 1	Step 2
PD Status Good!! PT PoE Camera Ping Request Ping Echo	**No Response......** Ping Request *Check alive status for 3 times*
Step 3	Step 4
Alarm Notification PoE ON OFF *Restart PoE device if without response*	**PD Alive!!** PoE ON ON

PoE Schedule for Energy Saving

Under the trend of energy saving worldwide and contributing to environment protection on the Earth, the WGSD-10020HP can effectively control the power supply along with its capability of giving high watts power over Ethernet. The "**PoE schedule**" function enables you to activate or inactivate PoE power feeding for each PoE port during specified time intervals, which is a powerful function to help SMBs or enterprises save power and money.

8AM — 5PM Power On 6 Watts, Power On 6 Watts, Power On 12 Watts, Power On 12 Watts **Total consumption of 36 watts/hr**	5PM — 8AM Power Off 6 Watts, Power Off 6 Watts, Power Off 12 Watts, Power On 12 Watts **Save 24 watts/hr during off-business hours** ∗ Total Saved = 10800 Watts/month

1000Base-T UTP with PoE

Solution for IPv6 Networking

By supporting IPv6 / IPv4 dual stack and plenty of management functions with easy and friendly management interfaces, the WGSD-10020HP 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 but not necessary to replace the network facilities while the ISP constructs the IPv6 FTTx edge network.

IPv4 and IPv6 Software VLAN Routing for Secure and Flexible Management

To help customers stay on top of their businesses, the WGSD-10020HP not only provides ultra high transmission performance and excellent layer 2 technologies, but also offers IPv4/IPv6 **Software VLAN routing** feature which allows to cross over different VLANs and different IP addresses for the purpose of having a highly secured, flexible management and simpler networking application.

- – IP Subnet-based VLAN
- – Voice VLAN
- – Management 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
  - – STP BPDU Guard and BPDU filtering
- Supports **Link Aggregation**
  - – IEEE 802.3ad Link Aggregation Control Protocol (LACP)
  - – Cisco ether-channel (Static Trunk)
  - – Maximum 5 trunk groups, up to 5 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 32 software 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
- Traffic-policing policies on the switch port
- DSCP remarking

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

Robust Layer 2 Features

The WGSD-10020HP 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 WGSD-10020HP allows the operation of a high-speed trunk combining multiple ports.It enables you to configure up to 5 ports as a trunk group (a maximum of 5 trunk groups are available), and supports connection fail-over as well.

L2/L4 Managed Switch — L2/L4 Managed Switch

Powerful Security

The WGSD-10020HP offers 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.

Enhanced Security and Traffic Control

The WGSD-10020HP 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-secured corporate networks with considerably less time and effort than before.

User-friendly Secure Management

For efficient management, the WGSD-10020HP managed switch series is equipped with console, Web and SNMP management interfaces. With the built-in web-based management interface, the WGSD-10020HP offers an easy-to-use, platform independent management and configuration facility. The WGSD-10020HP supports SNMP and it can be managed via any management software based on standard of SNMP v1 and v2 protocol. For reducing product learning time, the WGSD-10020HP offers Cisco-like command via Telnet or console port and customer doesn't need to learn new command from these switches. Moreover, the WGSD-10020HP offers remote secure management by supporting SSH, SSL and SNMPv3 connection which can be encrypted the packet content at each session.

Flexible and Extendable Solution

The two mini-GBIC SFP slots built in the WGSD-10020HP support dual speed as it features 100BASE-FX and 1000BASE-SX/LX SFP (Small Form-factor Pluggable) fiber-optic modules, meaning 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 above 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 WGSD-10020HP 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.

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
  - IPv4 / IPv6 IP-based ACL
  - MAC-based ACL
- Source MAC / IP address binding
- 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
- 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
- User Privilege levels control
- System Maintenance
  - Firmware upload/download via HTTP / TFTP
  - Configuration upload / download through Web interface
  - Dual Images
  - Reset button for system reboot or reset to factory default
  - Built-in Trivial File Transfer Protocol (TFTP) client
- Four RMON groups (history, statistics, alarms, and events)
- IPv6 / NTP / DNS management and ICMPv6
- BOOTP and DHCP for IP address assignment
- DHCP Relay
- DHCP Option82
- NTP (Network Time Protocol)
- Link Layer Discovery Protocol (LLDP) Protocol and LLDP-MED
- Cable diagnostic technology provides the mechanism to detect and report potential cabling issues
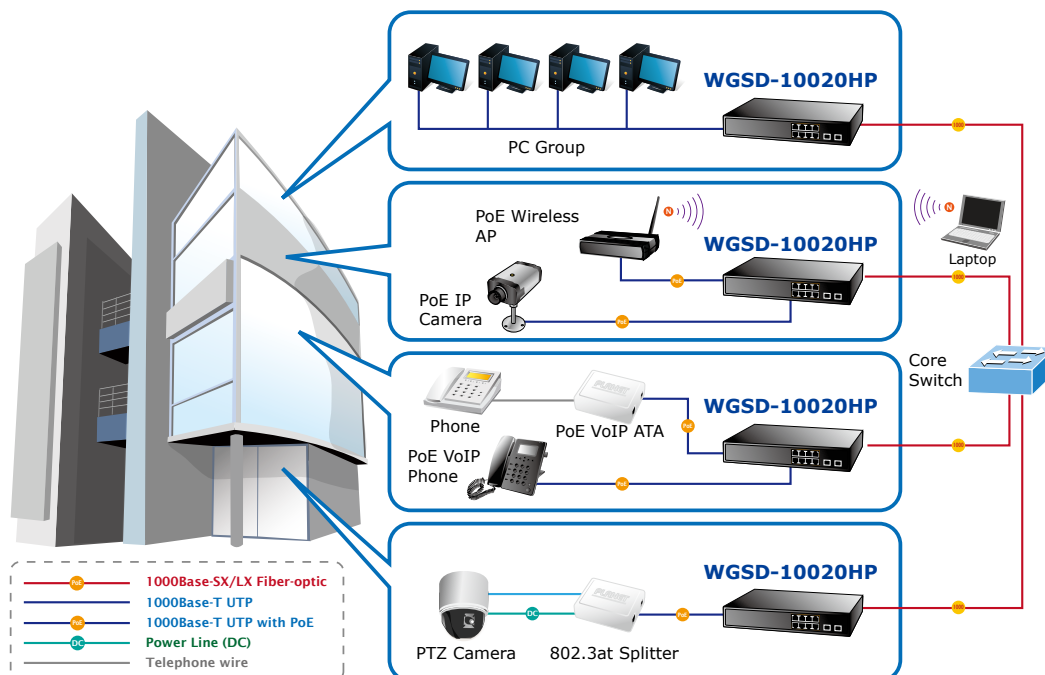- PLANET Smart Discovery Utility for deploy management

Applications

High Power IP Surveillance and Wireless LAN Service in Public Transportation

Applying the capability of IEEE 802.3at Power over Ethernet standard, the WGSD-10020HP can directly connect with any IEEE 802.3at end-node like PTZ (Pan, Tilt & Zoom) network cameras, speed dome IP cameras, color touch-screen Voice over IP (VoIP) telephones, and multi-channel wireless LAN access points. Besides the wired Internet network, the WGSD-10020HP enables the wireless LAN deployment to be more efficient in the transportation stations to bring high-speed Internet services in wide areas. By adopting PoE Wireless LAN structure, the transportation authority gains benefits from less cost while providing better Internet services in wider areas for the travelers.
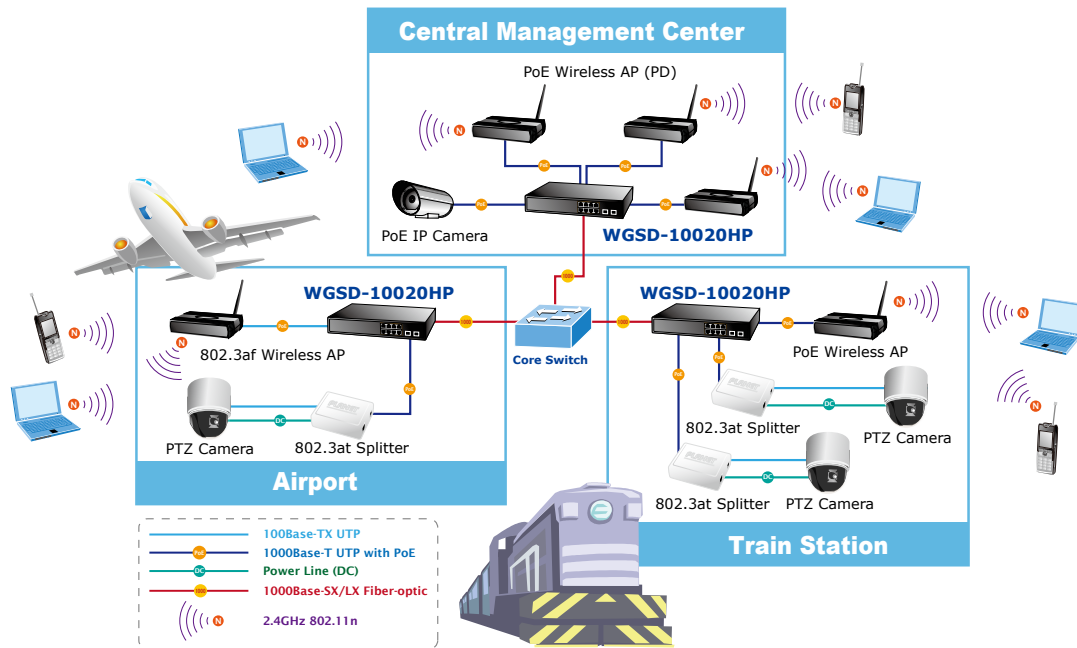
VoIP Network in IP Office

With the business office expansion, 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. PLANET WGSD-10020HP 802.3at Desktop PoE Switch, which is backward compatible with 802.3af standard, helps enterprises to create an integrated data, voice, and powered network. PLANET 802.3af / 802.3at compliant IP phones and analog telephony adapters can be installed without any additional power cable because the power can be provided via the standard Ethernet cable from the connected WGSD-10020HP. With the WGSD-10020HP, the deployment of IP telephony system becomes more reliable and cost effective, which helps enterprises save tremendous cost when upgrading from the traditional telephony system to IP telephony communications infrastructure.

Specifications

Product	WGSD-10020HP
Hardware Specifications	
Copper Ports	8 10/ 100/1000BASE-T RJ45 Auto-MDI/MDI-X ports
SFP/mini-GBIC Slots	2 1000BASE-SX/LX/BX SFP interfaces (Port-9 and Port-10) Supports 100/1000Mbps dual mode and DDM
Console Port	1 x RS-232 DB9 serial port (115200, 8, N, 1)
Switch Architecture	Store-and-Forward
Switch Fabric	20Gbps / non-blocking
Switch Throughput	14.88Mpps@64Bytes
Address Table	8K entries, automatic source address learning and ageing
Shared Data Buffer	1392 kilobytes
ESD Protection	6KV
Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex
Jumbo Frame	9Kbytes
Reset Button	< 5 seconds: System reboot > 5 seconds: Factory default
Dimensions (W x D x H)	330 x 155 x 43.5 mm, 1U high
Weight	1.8kg
LED	Power, fan alert, 10/100/1000 Link / Act per RJ-45 port, 100/1000 Link / Act per SFP port, PoE In-Use for Port-1~ 8
Power Consumption	Max. 172.9 watts / 589.6 BTU
Power Requirements	100~240V AC, 50/60Hz
Power over Ethernet	
PoE Standard	IEEE 802.3af PoE / 802.3at PoE+ PSE
PoE Power Supply Type	End-span
PoE Power Output	Per port 56V DC, 30.8 watts (max.)
Power Pin Assignment	1/2(+), 3/6(-)
PoE Power Budget	150 watts (max.)
PoE Ability	PD @ 7 Watts	8 units
	PD @ 15.4 Watts	8 units
	PD @ 30.8 Watts	4 units
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 tagged based VLAN Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN Voice VLAN IP Subnet-based VLAN MVR (Multicast VLAN Registration) Up to 255 VLAN groups, out of 4094 VLAN IDs
Link Aggregation	IEEE 802.3ad LACP / Static Trunk 5 groups of 5-Port trunk supported
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
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: 100Kbps~1000Mbps Egress: 100Kbps~1000Mbps
Layer 3 Functions	
IP Interfaces	Max. 8 VLAN interfaces
Routing Table	Max. 32 routing entries
Routing Protocols	IPv4 software Static Routing IPv6 software Static Routing
Management	
Basic Management Interfaces	Console / Telnet / Web browser / SNMP v1, v2c
Secure Management Interfaces	SSH, SSL, SNMP v3
SNMP MIBs	RFC 1213 MIB-II RFC 1493 Bridge MIB RFC 1643 Ethernet MIB RFC 2863 Interface MIB RFC 2665 Ether-Like MIB RFC 2819 RMON MIB (Group 1, 2, 3 and 9) RFC 2737 Entity MIB RFC 2618 RADIUS Client MIB RFC 2863 IF-MIB RFC 2933 IGMP-STD-MIB RFC 3411 SNMP-Frameworks-MIB RFC 4292 IP Forward MIB RFC 4293 IP MIB RFC 4836 MAU-MIB IEEE 802.1X PAE LLDP Power over Ethernet MIB
Standards Conformance	
Regulation Compliance	FCC Part 15 Class A, CE
Standards Compliance	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 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus IEEE 802.1ab LLDP 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 FRC 3810 MLD version 2
Environment	
Operating	Temperature: 0 ~ 50 degrees C Relative Humidity: 20 ~ 95% (non-condensing)
Storage	Temperature: -20 ~ 70 degrees C Relative Humidity: 20 ~ 95% (non-condensing)

Ordering Information

WGSD-10020HP	L2+ 8-Port 10/100/1000T + 2 100/1000X SFP Managed 802.3at PoE Switch

Related Products

WGSD-10020	L2+ 8-Port 10/100/1000T + 2 100/1000X SFP Managed Switch
WGSW-20160HP	L2+ 16-Port 10/100/1000T 802.3at PoE + 4-Port Gigabit TP/SFP Combo Managed Switch (230W)
WGSW-24040HP	L2+ 24-Port 10/100/1000T 802.3at PoE with 4-Port Shared SFP Managed Switch (220W)
WGSW-24040HP4	L2+ 24-Port 10/100/1000T 802.3at PoE with 4-Port Shared SFP Managed Switch (440W)
WGSW-48040HP	L2+ 48-Port 10/100/1000T 802.3at PoE with 4-Port Shared SFP Managed Switch (600W)
POE-E201	IEEE 802.3at Power over Gigabit Ethernet Extender

Available Modules

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

WGSD-10020HPV3