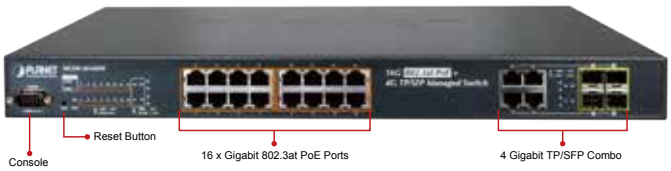
16-Port 10/100/1000Mbps 802.3at PoE + 4-Port Gigabit TP / SFP Combo Managed Switch

Ideal Solution for Secure IP Surveillance Construction

Particularly designed for the growing popular IP Surveillance applications, PLANET Gigabit 802.3at PoE Managed Switch WGSW-20160HP is positioned as a Surveillance Switch with central management of remote Power control and IP camera monitoring. The WGSW-20160HP provides built-in L2/L4 Switching engine and intelligent PoE functions along with 16 10/100/1000Base-T ports featuring 30Watts 802.3at PoE in RJ-45 copper interfaces and 4 extra Gigabit TP/SFP combo interfaces supporting high speed transmission of surveillance images and videos.



Perfect Integration Solution for IP PoE Camera and NVR System

Differentiated from general IT industrial PoE Switch which usually contains 12 or 24 PoE ports, the WGSW-20160HP provides 16 802.3at PoE+ ports for catering to medium to large scale of IP Surveillance networks with lower total cost. With 40Gbps high performance switch architecture and 230Watts PoE power budget by WGSW-20160HP, the recorded video files from 16 PoE IP Cameras can be powered by WGSW-20160HP and saved in the 8 / 16 / 32-channel NVR systems or surveillance software to perform comprehensive security monitoring. For instance, one WGSW-20160HP can combine with one 16-Channel NVR and 16 PoE IP cameras as a kit for the administrators centrally and efficiently manage the surveillance system in the local LAN and the remote site via Internet.

Physical Port

- **16-Port 10/100/1000Base-T** RJ-45 copper with IEEE 802.3at / 802.3af Power over Ethernet Injector function
- 4 10/100/1000Mbps TP and SFP shared combo interfaces, SFP(Mini-GBIC) supports 100/1000Mbps Dual mode, shared with Port-17 to Port-20
- RS-232 DB9 console interface for basic management and setup

Power over Ethernet

- Complies with IEEE 802.3at High Power over Ethernet End-Span PSE
- Complies with IEEE 802.3af Power over Ethernet End-Span PSE
- Up to 16 ports of IEEE 802.3af / 802.3at devices powered
- Supports PoE Power up to 30.8 Watts for each PoE ports
- Auto detect 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 limit
  - PD classification detection
  - PD Alive-check
  - PoE schedule

Flexible and Extendable Uplink Solution

The WGSW-20160HP provides 4 extra Gigabit TP/SFP combo interfaces supporting 10/100/1000Base-T RJ-45 copper to connect 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 uplinks to backbone switch and monitor center in long distance. The distance can be extended from 550 meters to 2km (Multi-Mode fiber) 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.

Centralized Power Management for Gigabit Ethernet PoE Networking

To fulfill the needs of higher power required PoE network applications with Gigabit speed transmission, WGSW-20160HP features high performance Gigabit IEEE 802.3af PoE (Up to 15.4Watts) and IEEE 802.3at PoE+ (Up to 30Watts) on all ports. It perfectly satisfies the PoE IP camera which needs high power consumption such as IR, PTZ, Speed Dome cameras or even Box type IP cameras with built in fan and heater.

The PoE capabilities provided also help to reduce deployment costs for network devices as a result of freeing from restrictions of power outlet locations. Power and data switching are integrated into one unit, delivered over a single cable and managed centrally. It thus eliminates cost for additional AC wiring and reduces installation time.

Built-in Unique PoE Functions for Surveillance Management

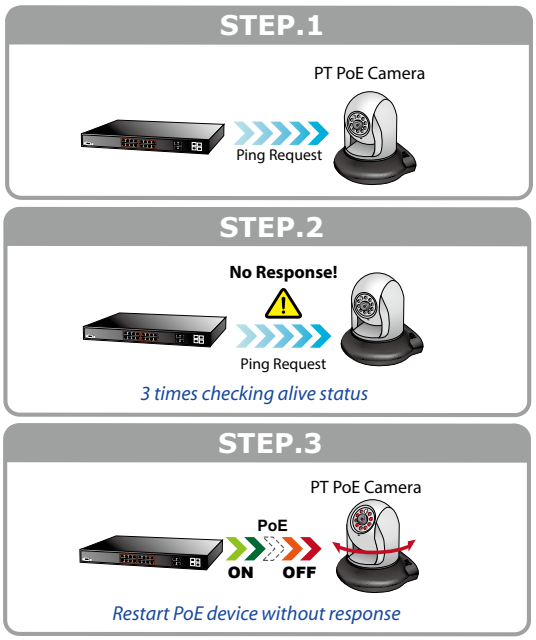
As a managed PoE Switch for surveillance network, the WGSW-20160HP features four special PoE Management functions:

- PD ALIVE Check
- Schedule Power Recycle
- SMTP/SNMP Trap Event Alert
- PoE Schedule

Intelligent Powered Device Alive Check

The WGSW-20160HP can be configured to monitor connected PD (Powered Device) status in real-time via ping action. Once the PD stops working and no response, the WGSW-20160HP 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 reduce administrator management burden.

PoE PD Alive-checking

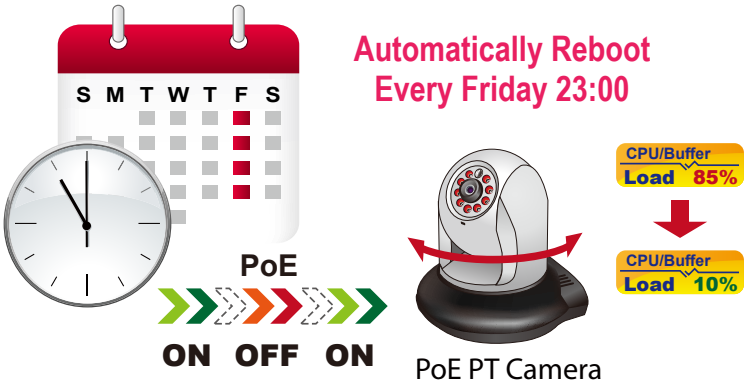


Layer 2 Features

- 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
  - Provider Bridging (VLAN Q-in-Q) support (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 10 trunk groups, up to 16 ports per trunk group
  - Up to 32Gbps 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

Schedule Power Recycle

The WGSW-20160HP allows each of the connected PoE IP cameras to reboot in a specific time each week. Therefore, it will reduce the chance of IP camera 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 further provides event alert function to help to diagnose the abnormal device owing to whether the network connection break, lost of PoE power or the rebooting response by PD Alive Check process.

PoE Schedule for Energy Saving

Besides applied in IP Surveillance, the WGSW-20160HP is certainly applicable to construct any PoE network including VoIP and Wireless LAN. Under the trend of energy saving worldwide and contributes to environment protection on the earth, the WGSW-20160HP 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 SMB or Enterprise save power and money.

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

- 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
- IP-Based Access Control List (ACL)
- MAC-Based Access Control List
- Source MAC / IP address binding
- DHCP Snooping to filter untrusted 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

Cost-Effective PoE Switch solution for IPv6 Networking

Faced with the increasingly large number of IP cameras and Wireless APs be installed and deployed in all kind of application. More and more network equipments start to support IPv6 protocol for next generation networking. To fulfill the demand of IPv6, the WGSW-20160HP supports both IPv4 and IPv6 management functions, it can work with original IPv4 network structure and also support the new IPv6 network structure. With easy and friendly management interfaces and plenty of management functions included, the WGSW-20160HP is the best choice for IP Surveillance and Wireless service providers to connect with IPv6 network.

Efficient Management

For efficient management, the WGSW-20160HP Managed Switch is equipped with console, WEB and SNMP management interfaces. With the built-in Web-based management interface, the WGSW-20160HP offers an easy-to-use, platform-independent management and configuration facility. The WGSW-20160HP supports standard Simple Network Management Protocol (SNMP) and can be managed via any standard-based management software. For text-based management, the WGSW-20160HP can be accessed via Telnet and the console port. Moreover, the WGSW-20160HP offers secure remote management by supporting SSH, SSL and SNMPv3 connection which encrypt the packet content at each session.

Robust Layer 2 Features

The WGSW-20160HP can be programmed for advanced switch management functions such as dynamic Port link aggregation, Q-in-Q VLAN, private VLAN, Multiple Spanning Tree protocol(MSTP), Layer 2 to Layer 4 QoS, bandwidth control and IGMP / MLD Snooping. The WGSW-20160HP provides 802.1Q Tagged VLAN, and the VLAN groups allowed will be maximally up to 255. Via aggregation of supporting ports, the WGSW-20160HP allows the operation of a high-speed trunk combining multiple ports and supports fail-over as well.

Powerful Security

The WGSW-20160HP 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 ports or defined typical network applications. Its protection mechanism also comprises of 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. The WGSW-20160HP 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.

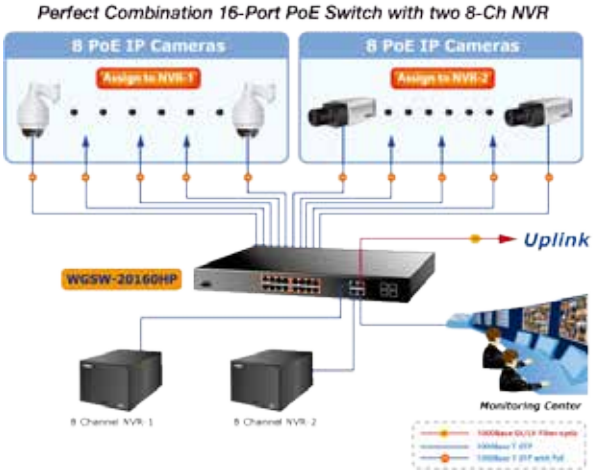
Management

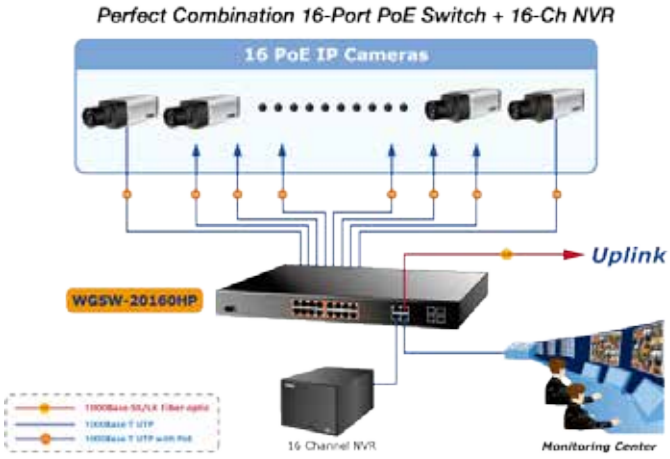
- Switch Management Interfaces
  - Console / Telnet Command Line Interface
  - Web switch management
  - SNMP v1, v2c, and v3 switch management
  - SSH / SSL secure access
- Four RMON groups (history, statistics, alarms, and events)
- IPv6 IP Address / NTP / DNS management
- Built-in Trivial File Transfer Protocol (TFTP) client
- BOOTP and DHCP for IP address assignment
- Firmware upload/download via HTTP / TFTP
- DHCP Relay
- DHCP Option82
- User Privilege levels control
- NTP (Network Time Protocol)
- Link Layer Discovery Protocol (LLDP) Protocol
- Cable Diagnostic technology provides the mechanism to detect and report potential cabling issues
- Reset button for system reboot or reset to factory default
- PLANET Smart Discovery Utility for deploy management
- ICMPv6

Application

High Power IP Surveillance and Wireless LAN Service in Public Transportation

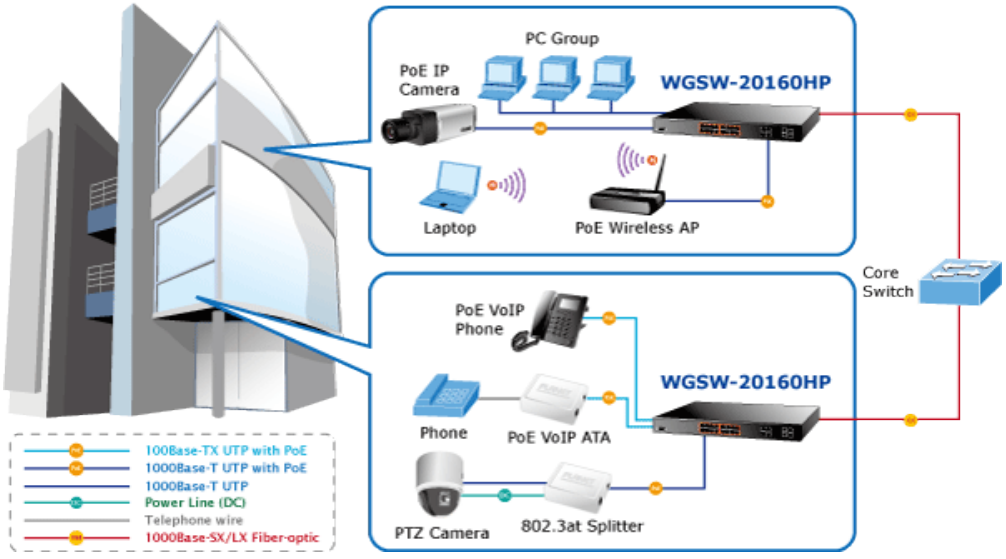
Providing up to 16 PoE, in-line power interfaces and 4 Gigabit TP / SFP combo interfaces, the WGSW-20160HP can easily build a power centrally controlled IP Camera system for the enterprises. It can work with 8 / 16 / 32-Channel NVR and surveillance software to perform comprehensive security monitoring. For instance, one WGSW-20160HP can combine with one 16-Channel NVR or with 2 8-Channel NVRs; that is, each of its PoE port can link to a specific PoE IP camera for the administrators centrally and efficiently manage the surveillance system in one site. The 4 Gigabit TP / SFP combo interfaces in the WGSW-20160HP also provide flexible Gigabit TP or fiber connection for uplink to public server groups.





IP Office Department / Workgroup PoE Switch

Applying the capability of IEEE 802.3at Power over Ethernet standard, the WGSW-20160HP 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 WGSW-20160HP enables the wireless LAN deployment more efficient for 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.



Specification

Product		WGSW-20160HP
Hardware Specification		
Copper Ports		16 10/ 100/1000Base-T RJ-45 Auto-MDI/MDI-X ports
10/100/1000Mbps / SFP Combo Interfaces		4 10/100/1000Mbps TP and SFP shared combo interfaces, SFP(Mini-GBIC) supports 100/1000Mbps Dual mode, shared with Port-17 to Port-20
Console		1 x RS-232 DB9 serial port (115200, 8, N, 1)
Switch Architecture		Store-and-Forward
Switch Fabric		40Gbps / non-blocking
Throughput		29.7Mpps@64Bytes
Address Table		8K entries, automatic source address learning and ageing
Share Data Buffer		4 megabits
Flow Control		IEEE 802.3x Pause Frame for Full-Duplex Back pressure for Half-Duplex
Jumbo Frame		9Kbytes
Reset Button		< 5 sec: System reboot > 5 sec: Factory Default
Dimension (W x D x H)		440 x 300 x 44.5 mm, 1U high
Weight		4.1kg
LED		System : Power (Green), SYS (System, Green) Alert : FAN1 (Green), FAN2 (Green) PoE Ethernet Interfaces (Port 1 to Port 16) : LNK/ACT (10/100/1000Mbps, Green), PoE In-Use (Orange) 10/100/1000Base-T Combo Ports (Port 17 to port 20) : 1000 (LNK/ACT, Green), 10/100 (LNK/ACT, Orange) 100/1000Mbps SFP Combo Interfaces (Port 17 to Port 20) : 1000 (LNK/ACT, Green), 100 (LNK/ACT, Orange)
Power Requirement		100~240V AC, 50/60Hz, 2A
Power Consumption		Max 22 Watts / 75BTU
ESD Protection		6KV DC
Power over Ethernet		
PoE Standard		IEEE 802.3af / 802.3at PoE / PSE
PoE Power Supply Type		End-Span
PoE Power Output		Per Port 56V DC Max. 30.8 Watts
Power Pin Assignment		1/2(+), 3/6(-)
PoE Power Budget		230 Watts Max.
PoE Ability	Number of PD @ 7 Watts	16
	Number of PD @ 15.4 Watts	14
	Number of PD @ 30.8 Watts	7

Layer 2 Management Function	
Basic Management Interfaces	Console, Telnet, Web Browser, SNMP v1, v2c
Secure Management Interfaces	SSH, SSL, SNMP v3
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, 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
Link Aggregation	IEEE 802.3ad LACP / Static Trunk Supports 10 groups of 16-Port trunk support
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: 500Kb~80Mbps Egress: 64Kb~80Mbps
SNMP MIBs	RFC-1213 MIB-II IF-MIB 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-2933 IGMP-STD-MIB RFC-3411 SNMP-Frameworks-MIB IEEE 802.1X PAE LLDP MAU-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 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 FRC 3810 MLD version 2
Environment	
Operating	Temperature : 0 ~ 50 Degree C Relative Humidity : 5 ~ 95% (non-condensing)
Storage	Temperature : -10 ~ 70 Degree C Relative Humidity : 5 ~ 95% (non-condensing)

Ordering Information

WGSW-20160HP	16-Port 10/100/1000Mbps 802.3at PoE + 4-Port Gigabit TP / SFP Combo Managed Switch

Available Modules for WGSW-20160HP

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

Related PoE Products

ICA-2200	Full HD PoE Box IP Camera
ICA-2500	5 Mega-Pixel PoE Box IP Camera
ICA-3350V	3 Mega-Pixel Vari-Focal Bullet IR IP Camera
ICA-5350V	3 Mega-Pixel Vandal Proof IR IP Camera
ICA-HM101	2 Mega-Pixel PoE Cube IP Camera
ICA-HM126	H.264 Full HD Box IP Camera
ICA-HM127	3 Mega-Pixel H.264 Box IP Camera
ICA-HM131	H.264 Full-HD Fixed Dome IP Camera
ICA-HM131R	H.264 Real Time Full-HD Fixed Dome IP Camera
ICA-HM132	H.264 2 Mega-Pixel 20M IR Vari-Focal Dome IP Camera
ICA-HM136	H.264 2 Mega-Pixel 20M IR Vandal Proof Dome IP Camera
ICA-HM312	2 Mega-Pixel 25M IR Outdoor Bullet PoE IP Camera
ICA-HM316	2 Mega-Pixel Outdoor IR PoE IP Camera
ICA-HM351	2 Mega-Pixel 35M IR Outdoor Box PoE IP Camera
ICA-HM620	2 Mega-Pixel PoE Plus Speed Dome Internet Camera
POE-152S	IEEE 802.3af Power over Ethernet Splitter
POE-162S	IEEE 802.3at Gigabit High Power over Ethernet Splitter
POE-E101	IEEE 802.3af Power over Ethernet Extender
POE-E201	IEEE 802.3at Power over Ethernet Extender
WNAP-C3220	802.11n Wireless Ceiling Mount PoE Access Point
WNAP-1120PE	802.11n Wireless Access Point with PoE
WNAP-6350	2.4GHz 300Mbps 802.11b/g/n Wireless Outdoor Access Point
WNAP-7350	5GHz 300Mbps 802.11a/n Wireless Outdoor Access Point
VIP-254PT	802.3af PoE SIP IP Phone
VIP-255PT	Multi–Language PoE IP Phone
VIP-256PT	802.3af PoE SIP IP Phone
VIP-360PT	Business PoE IP Phone
VIP-361PE	Professional PoE IP Phone (5-Line)
VIP-560PE	Professional PoE IP Phone with Expansion Function
VIP-560PT	Professional PoE IP Phone
ICF-1700	Touch Screen Internet Multimedia Phone

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