



## PSG-5116A



# PoE NETWORK SWITCH

16-Port L2 Managed GIGABIT PoE SWITCH

## Scope of Application

The PSG-5116A is an L2 Managed Gigabit PoE+ switch. Provide a range of physical interface types, multiple easy-to-deploy management interfaces, and advanced Layer 2 features (which is working on Layer 2 of OSI model). PSG-5116A helps provide a cost-efficient and flexible solution for building and expanding business networks. These switches can be deployed at the Enterprise's access level and in converged networks.

The PSG-5116A support 16 10/100/1000BASE-T ports with PoE+ (802.3af/at) and allow to supply up to 30W per port. In addition, PSG-5116A support two gigabit SFP ports for optical connections using multi-mode or single-mode SFP transceivers.

The PSG-5116A provide high performance, powerful L2 and L2+ features like enterprise-level QoS, advanced security protection and IP-MAC Access Control List (ACL) functions protect against broadcast storm, ARP and IGMP Snooping, etc. An enterprise-level Quality of Services provides enhanced traffic management capabilities to move your data smoother and faster. Moreover, the easy to use web GUI interfaces and CLI, SNMP, SSH provide faster and easy setup and configuration with less downtime. PSG-5116A provide a reliable, scalable, secure solution for small medium and campus, ISP networks.

The PSG-5116A's important management commands, such as downloading firmware or a configuration file, offer a sophisticated method of batch operations for multiple switches.

## Features Highlight

### Advance Features

The PSG-5116A comes equipped with a complete L2 features, including MAC Address administration, Loop Detection, Spanning Tree Protocol (STP) IGMP snooping (IGMP v1/v2/v3), port mirroring with one-to-one and Many-to-one capabilities, IEEE 802.3ad Link Aggregation Control Protocol (LACP). The IEEE 802.3x Flow Control function allows servers to directly connect to the switch for fast, reliable data transfers.

Network maintenance and Troubleshooting features include loopback detection significantly speeds up troubleshooting by automatically detecting and shutting down switching loops. The fiber port transceiver information feature, designed primarily for administrators, determines the fiber transceiver connection status, quality and quickly discovers errors.

The PSG-5116A supports a large integration of Powered Devices such as Wireless AP, IP Cameras or VoIP Phones within a friendly enterprise budget and be designed for satisfying customer needs. The switch is complied with L2 features supporting smart PoE+ (IEEE 802.3af/at) to fulfill the demands of transmitting voice, video, data and power over a single network cable and stands for a total PoE power budget 330W.

### Connectivity

#### Support Auto-MDI/MDIX

Adjusts automatically to straight-through or crossover on all 10/100/1000 ports.

#### Packet storm protection (Storm Control)

Protects against broadcast, multicast, or unknown unicast (DLF) storms with user-defined thresholds.

#### IEEE 802.3x flow control

Provides a mechanics allowing the receiving party of a connection to control the rate of the sending party. As a result of this, the throughput of data streams destined to slow clients increases because packets are no longer discarded but the throughput of streams destined to fast clients is reduced considerably.

#### Jumbo frame supports up to 10 kilobytes frames

Enabling jumbo frames can improve network performance by making data transmissions more efficient. The CPUs on switches and routers can only process one frame at a time. By putting a larger payload into each frame, the CPUs have fewer frames to process. In return, this can reduce the amount of heat the network devices generate.

#### Port Mirroring

Port Mirroring, is a method of monitoring network traffic. With port mirroring enabled, the switch sends a copy of all network packets seen on one port (or an entire VLAN) to another port, where the packet can be analyzed.





## Features Highlight

### Network Security Features

#### Access Control Lists

A permission-based systems that assign people in an organization different levels of access to files and information. Allows for traffic filtering. ACLs rules can be based on MAC-address or IP-address. Support IPv4 and IPv6 based network.

#### IEEE 802.1X and RADIUS network authentication

Connect to Radius and controls port-based access for authentication and accountability.

#### Port Isolation

Port isolation allows a network administrator to prevent traffic from being sent between specific ports. This can be configured in addition to an existing VLAN configuration, so even client traffic within the same VLAN will be restricted.

#### Port Security

Port Security helps secure the network by preventing unknown devices from forwarding packets. When a link goes down, all dynamically locked addresses are freed. You can limit the number of MAC addresses on a given port. Packets that have a matching MAC address (secure packets) are forwarded; all other packets (unsecure packets) are restricted.

#### ARP attack protection

ARP inspection is a security feature that rejects invalid and malicious ARP packets. The feature prevents a class of man-in-the-middle attacks, MAC flooding, where an unfriendly station intercepts traffic for other stations by poisoning the ARP caches of its unsuspecting neighbors. The miscreant sends ARP requests or responses mapping another station's IP address to its own MAC address. PSG-5116A also support ARP inspection rate-limit and ARP inspection validate.

#### STP BPDU port protection

Blocks Bridge Protocol Data Unit (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks.

#### STP Root guard

Root Guard protects the Spanning Tree Protocol (STP) topology attack of replacing the original Root Bridge with a rogue Root Bridge. Protects the network by blocking malicious attacks or misconfiguration.

#### DHCP Snooping

DHCP Snooping is a layer 2 security technology incorporated into the operating system of a capable network switch that drops DHCP traffic determined to be unacceptable. DHCP Snooping prevents unauthorized (rogue) DHCP servers offering IP addresses to DHCP clients.

#### Port speed limit

Rate-limiting for all traffic operates on a per-port basis to allow only the specified bandwidth to be used for inbound or outbound traffic. When traffic exceeds the configured limit, it is dropped. This effectively sets a usage level on a given port and is a tool for enforcing maximum service level commitments granted to network users.

#### Management password

Provides security so that only authorized access to the web browser interface is allowed.

#### IP Source Guard

A security feature that restricts IP traffic on nonrouted, Layer 2 interfaces by filtering traffic based on the DHCP snooping and ARP Inspection.

### Performance

#### Speed duplex

Half/full-duplex with auto-negotiating capability on every port can double the throughput.

#### IGMP Snooping

Internet Group Management Protocol (IGMP) snooping constraints the flooding of IPv4 multicast traffic on VLANs on a device. It reduce flooding of packets and offer efficient managed of broadcast traffic by reducing network congestion.

#### Gigabit SFP Fiber ports

SFP ports enable Gigabit switches to connect to a wide variety of fiber and Ethernet cables in order to extend switching functionality throughout the network. Fiber is particularly suited for connecting at distance beyond 100 meters limitation of UTP cabling.

### Layer 2 Switching

#### VLAN support

Supports IEEE 802.1Q with 4094 VLAN ID.

#### VLAN Type

Port-based VLAN, MAC-based VLAN, Access VLAN, Trunk VLAN, and Management VLAN.

#### Spanning Tree

Supports standard IEEE 802.1d Spanning Tree Protocol (STP), IEEE 802.1w Rapid Spanning-Tree Protocol (RSTP) for rapid convergence.

#### BPDU filtering

BPDU filter is a feature used to filter sending or receiving BPDUs on a switchport. It is extremely useful on those ports which are configured as portfast ports as there is no need to send or receive any BPDU messages on of these ports.

### The Topology Map

Topology Map embedded Element Management System that allows users to view the topology map of connected devices and neighboring switches along with the link status. Its LLDP feature allows it to advertise its identities and capabilities on the wired Ethernet. This map like feature simplifies the network connection viewing and helps patterning by clicking on the icon.

### Dashboard

The dashboard is an intelligent system provides apparent views of real-time switch parameters in an engaging, easy-view format for the end-users. Dashboard's at-a-glance designs with the color scheme enable the users for easy understanding and troubleshooting within the device and connected network.

## Features Highlight

### Fine-grained Service Management

Beside basic port-based VLAN function, PSG-5116A provides higher and flexible levels of VLAN configuration related to MAC and Protocol-based. While MAC-based comprises of defining a virtual network according to the MAC addresses of stations, the Protocol-based VLAN makes it possible to create a virtual network by protocol type. These features along with VLAN stacking enable ISPs to flexibly deliver services with extra security and separation. As a result, ISPs using PSG-5116A can experience fine-grained service management fulfilling the requirements of their subscribers.

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### Delivers Enhanced Ring/Path Redundancy and Bandwidth Aggregation

Short spans of missed communication due to link failures can have a negative impact on the network. Recovery and redundancy features are critical for networks handling heavy video and data traffic. Dual Homing, LACP and RSTP provide a highly reliable network with redundancy connections whenever required and guarantee continuous network uptime.

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### Layer 3 Services

#### IPv4 and IPv6 Client

Simplifies management of DHCP addresses in IPv4 and IPv6 networks with multiple subnets.

#### Address Resolution Protocol (ARP)

The job of the ARP is essentially to translate 32-bit addresses to 48-bit addresses and vice-versa. This is necessary because in IP Version 4 (IPv4), the most common level of Internet Protocol (IP) in use today, an IP address is 32-bits long, but MAC addresses are 48-bits long.

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### Resiliency and high availability

#### IEEE 802.3ad Link aggregation

Enables you to group Ethernet interfaces at the physical layer to form a single link layer interface, also known as a link aggregation group (LAG) or bundle in order to increase the bandwidth capability and to create resilient and redundant links. Link Aggregation also provides load balancing where the processing and communications activity is distributed across several links in a trunk so that no single link is overwhelmed.

#### Enhance Ring/Path Redundancy

Short spans of missed communication due to link failures can have a negative impact on the network. Recovery and redundancy features are critical for networks handling heavy video and data traffic. Dual Homing and RSTP provide a highly reliable network with redundancy connections whenever required and guarantee continuous network uptime.

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### Energy Saving

#### IEEE 802.3az Energy-Efficient Ethernet (EEE)

EEE is very effective in reducing the total power consumed per port and it saves a lot of energy on the long run for organizations having a large number of network devices. EEE is very effective with edge devices (like computers, edge switches, etc.) and can save a lot of power when these devices are EEE compliant as their utilization pattern generally consists of long periods of silence and a few traffic bursts at (almost) full capacity.

#### Energy Conservation design

Fanless design leads to a quiet operation. This passive thermal management becomes a cost-effective and energy-efficient solution for switches to maintain optimum operating temperature without causing much noise.

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### Comprehensive Traffic Prioritization

Network applications need different levels of services delivered to them reliably without any transmission delays and interruptions. The PSG-5116A Series has comprehensive QoS mechanisms that assign priority to applications and send only specific dedicated traffic to them. In addition, bandwidth management functions of the switch allocate greater bandwidth for mission-critical communications. With increased control, administrators can prevent unpredictable errors and utilize the bandwidth more effectively.

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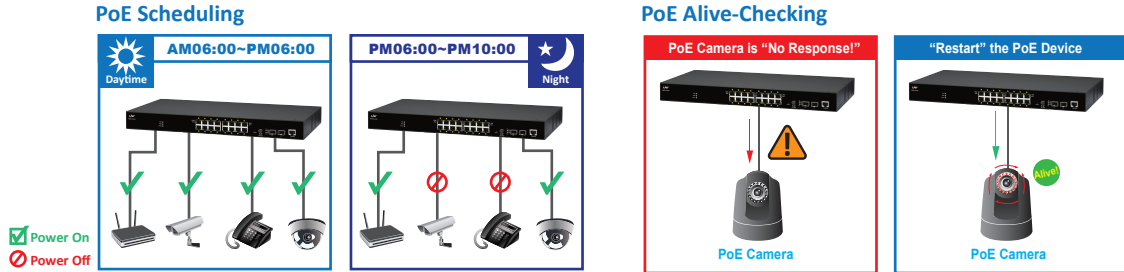
### Efficient Network Monitoring and Management Tools

The PSG-5116A features SNMP and RMON, industry standard management protocols, which give enhanced approaches for real-time traffic analysis, remote monitoring and management of individual switches, this avoids high OPEX with increasing efficiency and performance. The switch is assimilated with intelligent e-mail alarm system and SNMP Trap functionality to detect system abnormality along with faster troubleshooting. In addition to this, the device maintains a system log for the subsequent analysis of abnormal and unwanted flaws.

## Applications

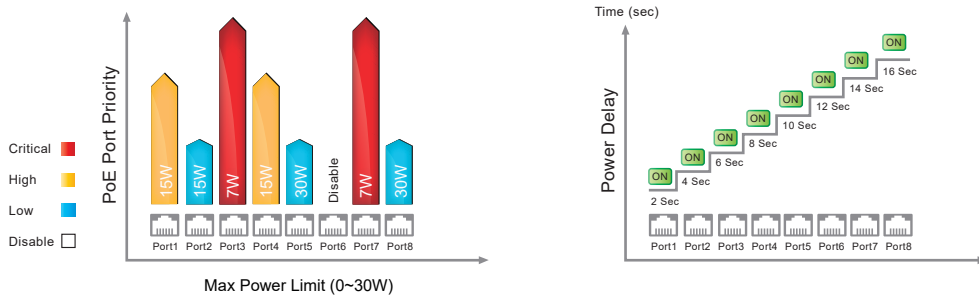
### PoE Scheduling with Alive-Checking

To utilize power more efficiently, PSG-5116A is designed with intelligent PoE features. With user-configurable power budget limit feature, administrators can set power on each port to a desired hourly/weekly schedule and can enable or disable the power output to the Powered Devices accordingly. To monitor real-time status of Powered Devices, the switch sends alive-checking packets to Powered Devices which reduces management burden and increases system reliability.



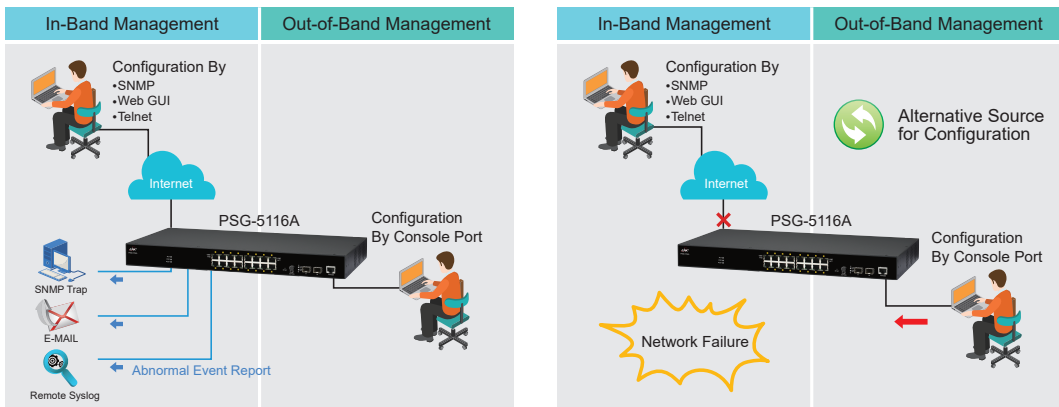
### PoE Power Feeding Priority and Power Delay Functionalities

PSG-5116A is developed with innovative PoE functionalities such as Power Feeding Priority and Power Delay. The Power Feeding Priority is applicable in the scenario where the power supply is not steady; specifically when the supply goes down, the respective power budget also reduces which is not sufficient to handle all attached Powered Devices. Hence, to deal with this situation the administrator can set up the power feeding priority as critical, high, low, disable to specific ports depending upon the essentiality of PDs. The Power Delay feature is introduced to secure the devices during the huge power fluctuation as the ports are getting activated all sudden. To address this severe problem, the ports are configurable with some delay seconds for activation which minimizes the risk of damage to the devices. Addition to the functionalities, the switch provides a Maximum Power Limit Function where each port can be constructed with a variety of PoE power consumption starting from 0~30W to achieve efficient power budget management.



### Efficient Network Monitoring and Proactive Capability

PSG-5116A is configured with SNMP v1/v2c/v3 which gives an enhanced approach for traffic analysis, monitoring and management within a surveillance network. The switch is assimilated with intelligent e-mail alarm system and SNMP Trap functionality to detect system abnormality along with Faster Troubleshooting. In addition to this, the device maintains a system log for the subsequent analysis of abnormal and unwanted flaws. For efficient network management, the switch is integrated with a Console Port (Out-of-Band Management) which provides an alternative source to deal with network failure (SNMP, GUI and Telnet).



## Technical Data

Standards	
IEEE 802.3	10Base-T (Ethernet)
IEEE 802.3u	100Base-TX/FX (Fast Ethernet)
IEEE 802.3ab	1000Base-T (Gigabit Ethernet)
IEEE 802.3z	1000Base-X (SX/LX)
IEEE 802.3x	Flow Control
IEEE 802.3ad	Link Aggregation (LACP)
IEEE 802.3az	Energy-Efficient Ethernet
IEEE 802.3af	PoE
IEEE 802.3at	PoE+
IEEE 802.1Q	VLAN tagging
IEEE 802.1d	Spanning Tree Protocol (STP)
IEEE 802.1w	Rapid Spanning Tree Protocol (RSTP)
IEEE 802.1s	Multiple Spanning Tree Protocol (MSTP)
IEEE 802.1p	QoS
IEEE 802.1x	Port-based authentication
IEEE 802.1ab	LLDP
Interface	
Port	16 x 10/100/1000Base-T, RJ45 port with PoE 2 x 100Base-FX/1000Base-X, SFP port 1 x Console Port
LED Panel	PWR, ALM, POST, 1000/PoE, LNK/ACT
Features	
Performance	Switching Capacity: 36Gbps
	Forwarding Rate: 26.78Mpps
	Packet Buffer Memory: 4.1Mbits
	Jumbo Frame size: 10KBytes
	MAC Address: 8K
	Flash Memory: 32MB
Features	SDRAM: 128MB
	Transmission Method: Store and Forward
	Auto-negotiation, Auto MDI/MDI-X, Storm Control, Flow Control, Port Speed Limit (Rate Limit)
	4094 VLAN IDs available, 256 Active VLAN, Port-based VLAN, MAC-based VLAN, Q-in-Q ACCESS VLAN, TRUNK VLAN, 802.1Q tagged VLAN
Internet Protocol	IPv4, IPv6, IPv4/IPv6 dual stack
IGMP Snooping	IGMP v1/v2/v3 Snooping
MLD Snooping	MLD Snooping for IPv6
MAC Management	MAC address display/inquire, Static MAC settings, MAC address search (Static, Dynamic, Port, MAC)
Loop Detection	Provides support to enable loop detection
Spanning Tree	STP, RSTP, MSTP BPDU Filtering, BPDU Guard, Root Guard, Port Priority
Storm Control	Broadcast/Unknown Unicast/Multicast Maximum 4 ports per group
Link Aggregation	Provides up to 3 groups LACP with dynamic or static
Access Control List	Source MAC Address, Destination MAC Address, Source IP, Destination IP, Source Application, Destination Application, Source Interface, Ethernet Type, VLAN
Xpress Ring	ERPS (G.8032)
QoS	802.1p Priority, DSCP, Priority Queue Schedule, SPQ, WRR, WFQ, Priority/Queue Mapping Support 8 Queues
PoE/PoE+	PoE Scheduling, PD Alive Check, PoE Power on/off, PoE Priority, Power budget control per system, Power budget control per port, Power delay

Features	
Port Mirroring	One-to-one, Many-to-one
	Mirroring port transmission Mirroring packet receiving and sending
Port Speed Limit	Egress and ingress speed limit
DHCP Snooping	Prevent illegal DHCP server
DHCP Binding	Static Binding (MAC/IP/VLAN to Port) Binding Table
ARP Inspection	Prevent the ARP request deception Prevent the ARP reply to cheat
AAA	Radius, TACACS+
L3 Services	IPv4 DHCP Server IPv4 Static Route
Network Management	RMON, SNMP v1/v2c/v3, IPv4/IPv6 Client, LLDP, DHCP Client/Relay/Option 82, Server Control, SFP Info., The MIB II, Ethernet MIB
Device Management	WEB management interface (GUI), User Account, System Information, System Log, Syslog, System Upgrade, Configuration Management, SNMP Trap, SNMP, HTTP, HTTPS, Telnet/SSH, CLI
Power	
PoE Power Budget	330W
Power Input	AC Power Input with Internal Power Supply
Power Requirement	100-240VAC, 50/60Hz
Mechanical and Environment	
Housing	Metal
Dimensions (W x H x D)	440 x 44 x 284 (mm)
Weight	3.80kg
Mounting	19" Rack Mount with L-shaped Bracket
Operating Temperature	0°C to 50°C
Storage Temperature	-40°C to 85°C
Optering Humidity	5% to 95% RH (non-condensing)
Storage Humidity	5% to 95% RH (non-condensing)
Energy Conservation Design	Fanless
Surge Protection (On-board)	PoE port: 1KV
	Power: 2KV
	ESD: 8KV (Air) / 4KV (Contact) EFT: 1KV
Certifications	
EMC	FCC Class A, CE
	EN 55024/32 Class A
	EN 61000-3-2/3
	EN 61000-6-2/4
	IEC 60068-2-27
	IEC 60068-2-31
Green Product	IEC 60068-2-6
	EN/IEC/UL 60950-1
	RoHS
Ordering Information	
PSG-5116A	16-Port L2 Managed GIGABIT PoE SWITCH
<b>Note :</b> * Specifications subject to change without notice.	

# Drawing

