

S3-24P

Layer 3 Switch with 24 Ports PoE/12 Ports PoE+ and 10G Uplinks



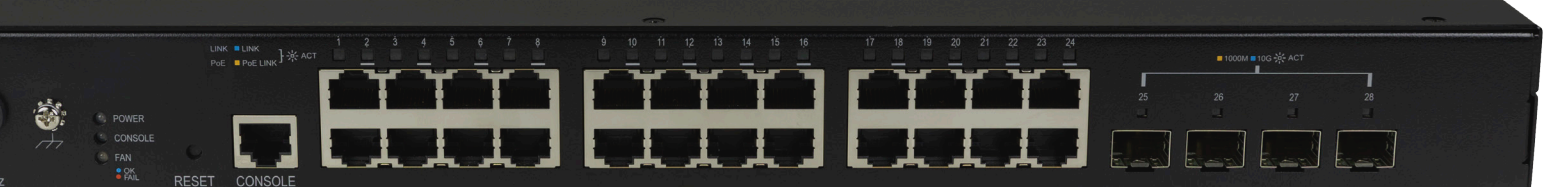
The S3-24P is a true Layer 3 switch designed to provide a high-power AV solution for high-end installations such as businesses, campuses, and multi-dwelling units. The S3-24P utilizes a powerful processor and advanced networking protocols to allow static and dynamic routing, enhanced security, and 10G uplinks for connections to other switches - ensuring high speeds throughout a network.

Key Features

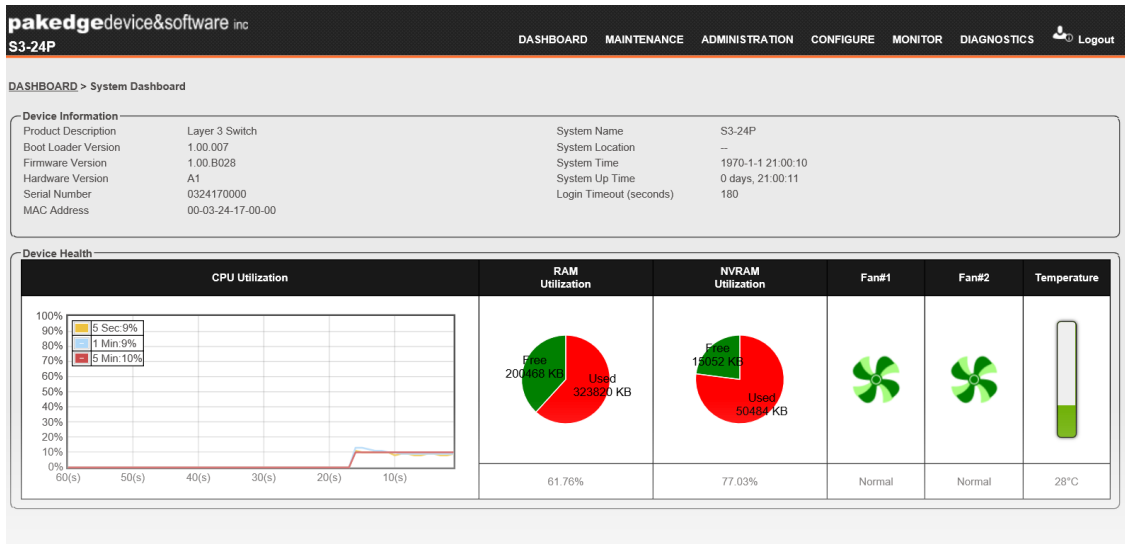
- 24 10/100/1000 rear-facing Ethernet Ports
- 24 PoE/PoE+ Ports - 370W Power Budget
- 4 10G fiber-capable SFP Ports
- Up to 512 Static Routes
- AVB-Ready (coming soon)
- Quiet Operation

Application Guide

- Networks with multiple Layer 3 switches connected by 10G fiber
- Applications with high bandwidth video over IP
- Large, distributed networks across multiple sites (campuses, businesses, etc)
- Complex audio/video-based networks (concert halls, stadiums, places of worship, etc.)
- Networks with up to 24 PoE or 12 PoE+ powered devices like wireless access points, IP Cameras, and VoIP Phones



Comprehensive GUI



A comprehensive GUI enables incredible control over the powerful features of the S3 Switch. Firmware updates, management, security features, and enhanced configurations are available at the click of a button. Useful diagnostics are displayed directly on the dashboard, including fan speeds, temperatures, and both RAM and CPU utilization.

Designed for AV with Pakedge TruStream

Multimedia based networks have unique characteristics - the content or traffic is bandwidth intensive (video) low latency; and in some cases time sensitive. Often, these networks require specialized protocols that can only be provided by a Layer 3 switch, which allows both static and dynamic routing - important for multicast AV devices.

S3 switches incorporate TruStream technologies designed for seamless and efficient processing of multimedia traffic. This suite of technologies enhance speed, throughput, and traffic management and is ideal for systems with multicast and broadcast devices. These features include:

- **Static Routing** - Allows the user to manually configure routes between separate router networks
- **Dynamic Routing** - Routing protocols which allow multiple routing devices (L3 Switch/Router) to automatically share and update their routing tables between one another.
- **Traffic Prioritization** - Traffic is prioritized and delivered by device, port, or media type based on user configurable specification. Latency sensitive applications like streaming video and VoIP telephony can be prioritized ahead of traffic on less sensitive devices.
- **Link Aggregation** - Multiple network connections are combined in parallel to create a trunk capable of increasing bandwidth and carry more traffic than a single connection
- **Multicast/Broadcast traffic management** - Prevents multicast traffic from overwhelming the network and slowing the system to a crawl by identifying multicast nodes and only passing traffic to those nodes.
- **Bandwidth Management** - Flow control and rate limits for smooth operation of bandwidth heavy applications.

Enhanced Security

The S3-24P is designed with several enhanced security features, making it ideal for environments where security is a priority. A few of these enhanced security features include:

- **IP Source Guard** - Enables individual ports to be bound to individual MAC/IP addresses, ensuring devices cannot be moved withing the network
- **802.11X** - Enables authentication from devices connected to the ports on the S3, ensuring no unauthorized devices are on the network.
- **AAA Authentication** - Ensures compatibility with RADIUS and TACACS servers for switch authentication control
- **Access Control Lists** - Allow or block individual devices based on MAC and IP addresses to ensure only authorized devices connect
- **Denial of Service Defense** - prevent external attacks that overload networks, shutting them down.
- **ARP Spoofing Prevention** - Prevent attacks that trick network equipment into believing that an unauthorized device is "trusted"
- **MAC Attack Defense** - Prevent an attack that exposes all kinds of devices within the network to external access
- **MAC Filtering** - block or allow devices based on MAC address or port number
- **Port Based Network Access Control** - Integrates with corporate authentication servers to manage large numbers of devices
- **Worm Attack Defense** - Prevent viruses from spreading to vulnerable devices throughout a network
- **IP Filtering** - Allow specific devices to pair to specific ports based on IP address, MAC address, or port number

10G Uplink Ports

Up to 4 10G fiber uplinks are available through the S3's 4 SFP ports. 10 Gigabit uplink ports allow the S3 to provide a true network backbone, with switch-to-switch connections at speeds 10x faster than traditional 10/100/1000 ports.

Power Over Ethernet

A power budget of 370 watts provides 802.3af PoE or 802.3at PoE+ to each of the 24 ports, allowing the easy connection and power of devices like IP security cameras, touch panels, wireless access points, and VoIP phones connected to the S3 switch.

Specifications

Layer 2 Features

Layer 2 Table

- MAC address table (up to 16k entries)
- Dynamic address learning
- Layer 2 unicast/multicast
- Static configuration
- Layer 2 multicast entries (up to 1023 entries)

Layer 2 Functions

- Basic Ethernet port management
- Digital diagnostic monitoring (DDM)
- Traffic storm control
- Jumbo frames (up to 9Kbytes)
- Layer 2 multicast control
- Static and dynamic link aggregation
- Mirroring (port mirroring, RSPAN, and ERSPAN)
- Quality of Service (bandwidth control, queues, and priority tag remarking)
- VLAN (802.1Q VLAN, 802.1ad, auto-voice VLAN, MAC-based VLAN, port-based VLAN, private VLAN, protocol-based VLAN, and subnet VLAN)

Layer 2 Protocols

- Spanning Tree Protocol (STP, RSTP, and MSTP)
- Local loop detection and prevention
- IGMP snooping (IGMPv1, IGMPv2, and IGMPv3)
- Multicast VLAN registration (MVR)
- Port-based IGMP snooping fast leave
- IGMP snooping proxy mode and transparent mode
- IGMP query
- Link Layer Discovery Protocol (LLDP)
- Link Layer Discovery Protocol Media Endpoint Discovery extension (LLDP-MED)

Service Access Control

- DHCP Snooping
- Dynamic ARP inspection
- IP Source Guard (IPSG)
- IEEE 802.1X (Authenticator role, dynamic VLAN assignment, EAP, TLS, TTLS, MD5 authentication, single/multiple host mode, time-based 802.1X sessions, RADIUS authentication, and unauthenticated VLAN/guest VLAN)
- DHCP server filtering

Layer 3 Features

Layer 3 Table

- IP optimized host prefixes (up to 1024 IPv4 and 512 IPv6 entries)
- IP routing entries (up to 512 IPv4 and 128 IPv6 entries)
- IP multicast groups (up to 255 IPv4 multicast groups)

Routing

- Static IPv4/IPv6 routes
- ICMPv4 and ICMPv6
- IPv4 address resolution protocol (ARP)
- IPv6 Neighbor Discovery (ND)
- Router interface (up to 256 IPv4 and 64 IPv6 router interfaces)
- IP multinetting
- Routing Information Protocol (RIPv2 and RIPv6)
- Open Shortest Path First (OSPFv2 and OSPFv3)

Multicast Routing Protocol

- IPv4 Protocol Independent Multicast Sparse Mode (PIM-SM)
- IPv4 Protocol Independent Multicast Source-Specific Multicast (SSM)
- IPv4 Protocol Independent Multicast Dense Mode (PIM-DM)
- Internet Group Management Protocol (IGMPv1, IGMPv2, and IGMPv3)

Management Features

Management Features

- Access Control Lists (ACL)
- Command Line Interface (CLI)
- DOS attack prevention
- DHCP client (IPv4/IPv6)
- DHCP relay (with Option 82)
- Event log (command and system logs)
- File system (extract/restore system configuration, extract/upgrade firmware)
- IPv4/IPv6 dual stacks (router mode and IPv4/IPv6 network management interface)
- Ping command
- RADIUS server and client
- TACACS+ server and client
- Simple Network Management Protocol (SNMPv1, SNMPv2c and SNMPv3)
- Simple Network Time Protocol (SNTP)
- Secure Shell (SSHv2)
- Secure Sockets Layer (SSLv2 and SSLv3)
- Static ARP table configuration
- System monitoring (environmental monitoring, system resources information, and system log)
- Telnet server (up to 8 simultaneous IPv4/IPv6 management sessions)
- Traceroute command
- Trusted host list
- User account management (privileges, password encryption, user account and password recovery)
- Web-based User Interface (Web UI)

Management Information Base (MIB)

Layer 2 MIBs

- IEEE8021-MSTP-MIB, IEEE8021-Q-BRIDGE-MIB, IEEE8023-LAG-MIB, LLDP-EXT-DOT1-V2-MIB, LLDP-EXT-DOT3-V2-MIB, LLDP-V2-MIB, P-BRIDGE-MIB, Q-BRIDGE-MIB

Layer 3 MIBs

- IP-FORWARD-MIB, IPMCAST-MIB, IP-MIB, MGMD-STD-MIB, OSPF-MIB, OSPFV3-MIB, PIM-BSR-MIB, PIM-MIB, PIM-STD-MIB, RIPv2-MIB

Management-MIBs

- DISMAN-PING-MIB, DISMAN-TRACEROUTE-MIB, EtherLike-MIB, IF-MIB, RMON-MIB, SNMP-COMMUNITY-MIB, SNMP-FRAMEWORK-MIB, SNMP-MPD-MIB, SNMP-NOTIFICATION-MIB, SNMP-TARGET-MIB, SNMP-USER-BASED-SM-MIB, SNMPv2-MIB, SNMP-VIEW-BASED-ACM-MIB
- Private-ACCESS-MANAGEMENT-MIB, Private-DDM-MIB, Private-ERROR-DISABLE-MIB, Private-LOOPDETECT-MIB, Private-PACKET-MONITORING-MIB, Private-SYSLOG-MIB, Private-SYSTEM-FILE-MIB, Private-SYSTEM-MONITORING-MIB

Private MIBs

- Private-BANDWIDTH-CONTROL-MIB, Private-L2FDB-MIB, Private-LACP-EXT-MIB, Private-MGMD-SNOOPING-MIB, Private-PRIVATE-VLAN-MIB, Private-STORM-CONTROL-MIB, Private-SWITCHPORT-MIB, Private-VLAN-MIB, Private-VLAN-TUNNEL-MIB, Private-VOICE-VLAN-MIB, Private-MVR-MIB

IP Application MIBs

- Private-DHCP-CLIENT-MIB, Private-DHCP6-CLIENT-MIB, Private-DHCP6-RELAY-MIB, Private-DOS-PREVENT-MIB, Private-MGMD-MIB, Private-RELAY-MIB, Private-SSH-MIB, Private-TIME-CONFIGURATION-MIB

Technical Specifications

Product Specifications

Physical	Form Factor	1RU Fixed Form Factor
	Physical Ports	24 Copper PoE Ports (10/100/1000 Mbps) 4 SFP+ Module Ports (1/10 Gbps)
Performance	Switching Capacity	128 Gbps
	Forwarding Rate	95.23 Mbps
	Maximum Transmission Units	9 Kbytes
Scalability	Number of MAC addresses	16,384 (max)
	Buffer Size	1.5 MB Shared
	Flash Memory Size	64 MB
Power Over Ethernet (PoE)	PoE Budget	370 Watts
	IEEE 802.3af (PoE) Support	Yes (Supplies 15.4 Watts per port)
	IEEE802.3at (PoE+) Support	Yes (Supplies 30 Watts per port)
	Automatic PD Discovery	Yes (Will supply power immediately if PD device detected)
	PoE Safety	Automatically disable individual ports when electrical current is over 600mA or when electrical short occurs
Power	AC Power Supply	Input Voltage - 100VAC to 240 VAC Frequency - 50Hz to 60Hz Efficiency - 85% to 88%
	Maximum Power Consumption	430 Watts 370 Watts with full PoE load and 30 Watts for guard band 30 Watts with full non-PoE load
	Maximum Heat Dissipation	1541 BTU/hr
Cooling	Number of Fans	3
	Fan Speeds	Variable
Noise Level*	Maximum Fan Noise	42.7 dBA
	Minimum Fan Noise	31.8 dBA

*Acoustic levels were measured in accordance with ISO7770:2010(E)

Product Specifications (cont'd)

Environment	Dimensions	44mm (H) x 440mm (W) x 210mm (D)
	Weight	5kg
	Operating Temperature	0°C to 45°C (32°F to 113°F)
	Storage Temperature	-20°C to 70°C (-4°F to 158°F)
	Operating Relative Humidity	10% to 90% (Non-condensing)
	Storage Relative Humidity	0% to 95% (Non-condensing)
	Altitude	0 to 2000 meters (0 to 6,562 feet)

Regulatory Standards Compliance

Regulatory Compliance	<ul style="list-style-type: none">Comply with CE Markings per directives 2004/108/EC and 2006/95/ECFCC/IC Report Class A	<ul style="list-style-type: none">UL/cUL Listed MarkCB
Safety	<ul style="list-style-type: none">UL/CSA-C22.2 NO. 60950-1-07BG4943.1	<ul style="list-style-type: none">CNS 14336-1
EMC	<ul style="list-style-type: none">EN 55022/EN 55024, Class AFCC CFR47, Part 15B, Class A	<ul style="list-style-type: none">ICES-003, Class A

