

AT-IX5-28GPX

HIGH AVAILABILITY VIDEO SURVEILLANCE SWITCH



The Allied Telesis IX5-28GPX offers an impressive set of features in a high-value package, making it ideal for IP video surveillance environments.



The Allied Telesis IX5-28GPX provides a high performing and scalable solution for today's networks. With 24 PoE+ enabled 10/100/1000Mbps ports, two I/O Gigabit uplinks, plus the ability to stack up to four units, the AT-IX5-28GPX is the ideal solution for video surveillance applications where high performance and resilient PoE power are critical.

High availability

The IX5 was designed with reliability in mind. It guarantees continual delivery of data and streaming video. Dual hot-swappable load-sharing power supplies provide resilient system and end-point power; with up to 30 Watts available to power today's pan, tilt and zoom cameras. Factor in the ability to operate at up to 50°C, and the IX5 is an easy choice for modern video surveillance environments.



Network resiliency

You can form a Virtual Chassis Stack (VCStack™) of up to four devices so you can maintain or reconfigure your network as necessary, without affecting uptime.

Ethernet Protection Switched Ring (EPSRing™) ensures distributed network environments have high-speed access to online resources and applications, and guaranteed data throughput.

Simplified network management

Modern converged networks have increasing management requirements. Allied Telesis Management Framework (AMF) automates many everyday tasks, including configuration management, saving you valuable time and resources. With AMF's powerful centralized management features, you can manage your complete network as a single virtual device. You can easily grow your network with plug-and-play simplicity, and network node recovery is fully zero-touch.

Advanced operating system

The IX5 runs the advanced AlliedWare Plus™ fully featured operating system, delivering a rich feature set and an industry-standard CLI. The industry-standard CLI reduces training requirements and is consistent across all AW+ devices, simplifying network management.

Secure

Advanced security features protect the network from the edge to the core. Unprecedented control over user access is provided with Network Access Control (NAC), to mitigate threats to network infrastructure. This ensures the network is accessed only by known users and devices - users' adherence to network security policies is checked, and either access is granted or remediation is offered. Secure access can also be

provided for guests. A secure network environment is guaranteed, with powerful control over network traffic types, secure management options, and other multi-layered security features built right into the AT-IX5-28GPX switch.

Future-proof

The flexibility of the AT-IX5-28GPX, coupled with the ability to seamlessly add new nodes to a VCStack of multiple units, ensures a future-proof network. The AT-IX5-28GPX comes with a comprehensive IPv6 feature set, ensuring it is ready for all your future network traffic demands.

ECO friendly

The IX5 supports Energy Efficient Ethernet, which automatically reduces the power consumed by the switch whenever there is no traffic on a port. This sophisticated feature can significantly reduce operating costs, by reducing the power requirements of the switch and any associated cooling equipment.



New Features

- » Dual hot-swappable PSUs
- » Stackable up to 4 units
- » High performance multicasting
- » Up to 30W PoE+ power on every port
- » AMF ready

VCStack™

EPSRing™

AMF™

Key Features

Reliable

- » Dual hot-swappable load-sharing power supplies maximize network uptime, ensuring a resilient solution where always-on access is required.

Allied Telesis Management Framework (AMF)

- » Allied Telesis Management Framework (AMF) is a sophisticated suite of management tools that provide a simplified approach to network management. Common tasks are automated or made so simple that you can achieve the every-day running of a network without the need for highly-trained, and expensive, network engineers. Powerful features like centralized management, auto-backup, auto-upgrade, auto-provisioning and auto-recovery enable plug-and-play networking and zero-touch management.

VCStack™(Virtual Chassis Stacking)

- » Create a VCStack of up to four IX5 units with 40Gbps of stacking bandwidth to each unit. VCStack provides a highly available system where network resources are spread out across stacked units, reducing the impact if one of the units fails. Aggregating switch ports on different units across the stack provides excellent network resiliency.

Long-distance Stacking

- » Long-distance stacking allows a VCStack to be created over longer distances, perfect for a distributed network environment.

EPSRing™(Ethernet Protection Switched Ring)

- » EPSRing and 10 Gigabit Ethernet allow several IX5 switches to form a high-speed protected ring capable of recovery within as little as 50ms. This feature is ideal for large IP surveillance environments.
- » Super-Loop Protection enables a link between two EPSR nodes to be in separate EPSR domains, improving redundancy and network fault resiliency.

Industry-leading Quality of Service (QoS)

- » Comprehensive low-latency wire speed QoS provides flow-based traffic management with full classification, prioritization, traffic shaping and min/max bandwidth profiles. Boosted network performance and guaranteed delivery of business-critical Ethernet services and applications are provided. Time-critical services such as voice and video take precedence over non-essential services such as file downloads, maintaining responsiveness of Enterprise applications.

Loop Protection

- » Thrash limiting, also known as rapid MAC movement, detects and resolves network loops. It is highly user-configurable — from the rate of looping traffic to the type of action the switch should take when it detects a loop.
- » With thrash limiting, the switch only detects a loop when a storm has occurred, which can potentially cause disruption to the network. To avoid this, loop detection works in conjunction with thrash limiting to send special Loop Detection Frame (LDF) packets that the switch listens for. If a port receives an LDF packet, you can choose to disable the port, disable the link, or send an SNMP trap. This feature can help to detect loops before a network storm occurs, avoiding the risk and inconvenience of traffic disruption.

Power over Ethernet Plus (PoE+)

- » With PoE, a separate power connection to media endpoints such as IP phones and wireless access points is not necessary. PoE+ reduces costs and provides even greater flexibility, providing the capability to connect devices requiring more power (up to 30 Watts) such as, tilt and zoom security cameras.

Link Layer Discovery Protocol – Media Endpoint Discovery (LLDP – MED)

- » LLDP-MED extends LLDP basic network endpoint discovery and management functions. LLDP-MED allows for media endpoint specific messages, providing detailed information on power requirements, network policy, location discovery (for Emergency Call Services) and inventory.

Voice VLAN

- » Voice VLAN automatically separates voice and data traffic into two different VLANs. This automatic separation places delay-sensitive traffic into a voice-dedicated VLAN, which simplifies QoS configurations.

sFlow

- » sFlow is an industry-standard technology for monitoring high-speed switched networks. It provides complete visibility into network use, enabling performance optimization, usage accounting/billing, and defense against security threats. Sampled

packets sent to a collector ensure it always has a real-time view of network traffic.

Dynamic Host Configuration Protocol (DHCP) Snooping

- » DHCP servers allocate IP addresses to clients, and the switch keeps a record of addresses issued on each port. IP source guard checks against this DHCP snooping database to ensure only clients with specific IP and/or MAC address can access the network. DHCP snooping can be combined with other features, like dynamic ARP inspection, to increase security in Layer 2 switched environments, and also provides a traceable history, which meets the growing legal requirements placed on service providers.

Tri-authentication

- » Authentication options on the IX5 also include alternatives to IEEE 802.1x port-based authentication, such as web authentication to enable guest access and MAC authentication for endpoints that do not have an IEEE 802.1x supplicant. All three authentication methods—IEEE 802.1x, MAC-based and Web-based—can be enabled simultaneously on the same port for tri-authentication.

Access Control Lists (ACLs)

- » AlliedWare Plus delivers industry-standard Access Control functionality through ACLs. ACLs filter network traffic to control whether routed packets are forwarded or blocked at the port interface. This provides a powerful network security mechanism to select the types of traffic to be analyzed, forwarded, or influenced in some way.

Terminal Access Controller Access-Control System Plus (TACACS+) Authentication and Accounting

- » TACACS+ provides access control for network users from a centralized server. Authentication is carried out via communication between the local switch and a TACACS+ server to check the credentials of users seeking network access. Accounting keeps a record of commands entered during user sessions to ensure a secure network and clear audit trail.



Key Solutions

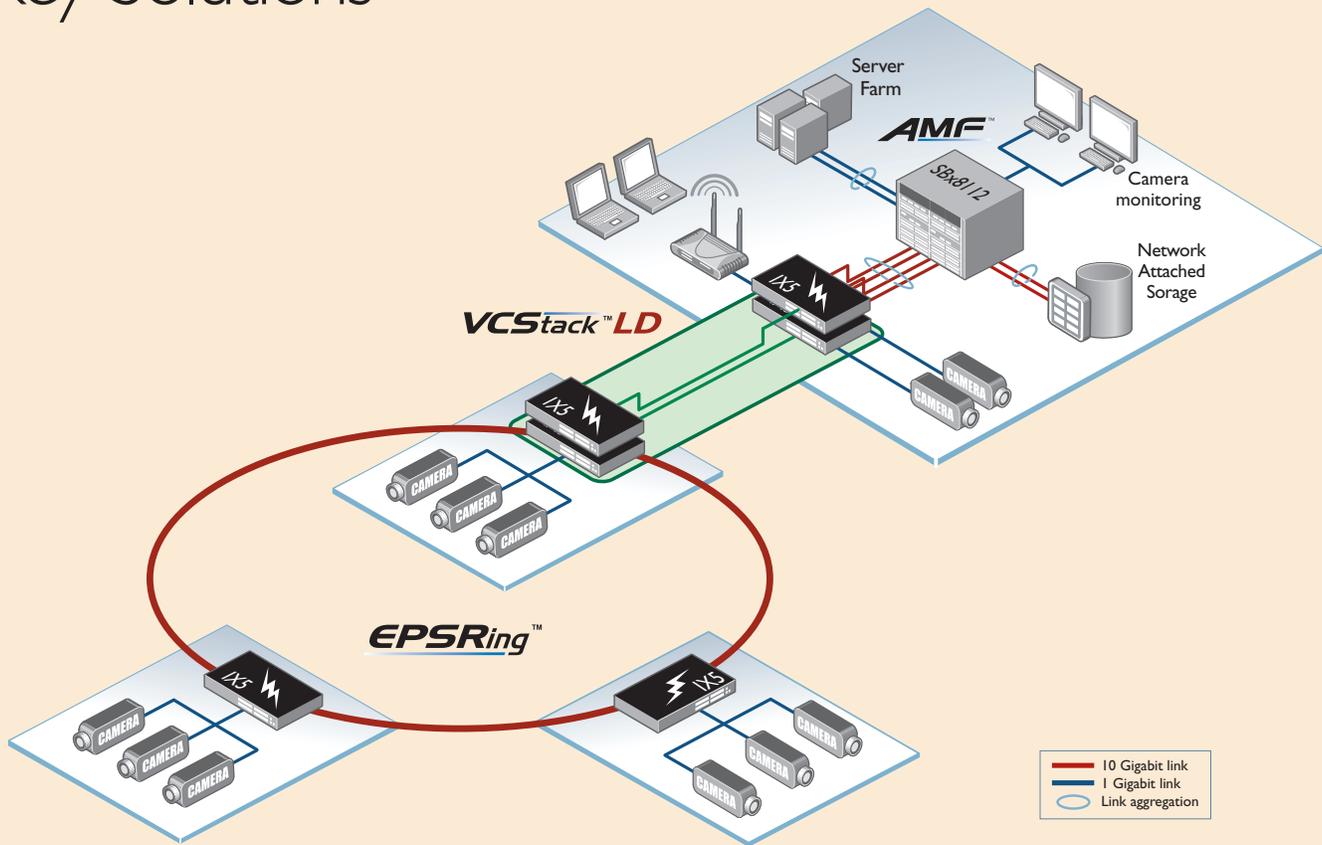


Diagram 1: IP Video Surveillance

IP Video Surveillance

With the evolution of CCTV technology to digital IP-based systems, the emphasis has moved from simple video footage monitoring, to intelligent systems with video analytics capable of identifying abnormal events or behavior. As intelligence increases in these systems, so too do the applications for this technology – from retail outlets, warehouses and office buildings, to hotels, hospitals and advanced traffic monitoring systems.

Modern high definition digital images are sharper and clearer than ever before. Large amounts of digital video can be stored on Network-Attached Storage (NAS) systems, and digital images don't degrade over time.

Allied Telesis provides secure and resilient IP video surveillance network solutions. The key features of our AT-IX5-28GPX switch make it ideal for use in advanced surveillance systems:

- Dual hot-swappable load-sharing power supplies, and support for operation up to 50°C ensure maximum network uptime.
- Power over Ethernet (PoE+) provides up to 30 Watts to end-points, supporting the latest generation of pan, tilt and zoom IP cameras.
- High performance multicast support manages large numbers of digital video streams across the network.
- Long-Distance Virtual Chassis Stacking (VCStack-LD) is ideal to spread network distribution, while keeping total resilience.
- Ethernet Protection Switched Rings (EPSR) provides a high-speed ring topology with failover in a little as 50ms, supporting large IP surveillance environments with an 'always-on' solution.

With the AT-IX5-28GPX and other advanced switching products, Allied Telesis IP video surveillance solutions are dependable, scalable and ready for the next generation of digital monitoring technologies.

Product Specifications

| PRODUCT | 10/100/1000T (RJ-45) COPPER PORTS | 100/1000X SFP PORTS | 1/10 GIGABIT SFP+ PORTS | 10 GIGABIT STACKING PORTS | MAX POE+ PORTS | SWITCHING FABRIC | FORWARDING RATE |
|--------------|-----------------------------------|---------------------|-------------------------|---------------------------|----------------|------------------|-----------------|
| AT-IX5-28GPX | 24 | - | 2 | 2* | 24 | 128Gbps | 95.2Mpps |

* Stacking ports can be configured as additional 1G/10G Ethernet ports when unit is not stacked

Performance

- » 40 Gbps of stacking bandwidth
- » Supports 13kB Jumbo frames
- » Wirespeed multicasting
- » Up to 16K MAC addresses
- » 512MB DDR SDRAM
- » 64MB flash memory
- » Packet Buffer memory: 2MB

Reliability

- » Modular AlliedWare Plus operating system
- » Redundant power supplies load share providing uninterrupted power and extra reliability
- » Full environmental monitoring of PSUs, fans, temperature and internal voltages. SNMP traps alert network managers in case of any failure

Power Characteristics

- » AC voltage: 90 to 260V (auto-ranging)
- » Frequency: 47 to 63Hz

Expandability

- » Stackable up to four units of IX5 in a VCStack

Flexibility and Compatibility

- » SFP+ ports will support any combination of 1000X, 1000SX, 1000LX, 1000ZX, 1000ZX CWDM SFPs or 10G-SR, 10G-LR, 10G-ER SFP+ modules
- » Stacking ports can be configured as 10G Ethernet ports

Diagnostic Tools

- » Built-In Self Test (BIST)
- » Find-me device locator
- » Automatic link flap detection and port shutdown
- » Optical Digital Diagnostic Monitoring (DDM)
- » Ping polling for IPv4 and IPv6
- » Port mirroring
- » TraceRoute for IPv4 and IPv6

IPv4 Features

- » Black hole routing
- » Directed broadcast forwarding
- » DNS relay
- » IPv4 static routing
- » UDP broadcast helper (IP helper)

IPv6 Features

- » DHCPv6 relay, DHCPv6 client
- » DNSv6 relay, DNSv6 client
- » IPv4 and IPv6 dual stack
- » IPv6 hardware ACLs
- » Device management over IPv6 networks with SNMPv6, Telnetv6 and SSHv6
- » NTPv6 client and server
- » IPv6 static routing

Management

- » Front panel 7-segment LED provides at-a-glance status and fault information
- » Allied Telesis Management Framework (AMF) enables powerful centralized management and zero-touch device installation and recovery
- » Console management port on the front panel for ease of access
- » Eco-friendly mode allows ports and LEDs to be disabled to save power
- » Web-based Graphical User Interface (GUI)
- » Industry-standard CLI with context-sensitive help
- » Powerful CLI scripting engine
- » Comprehensive SNMP MIB support for standards-based device management
- » Built-in text editor
- » Event-based triggers allow user-defined scripts to be executed upon selected system events
- » USB interface allows software release files, configurations and other files to be stored for backup and distribution to other devices

Quality of Service (QoS)

- » 8 priority queues with a hierarchy of high priority queues for real time traffic, and mixed scheduling, for each switch port
- » Limit bandwidth per port or per traffic class down to 64kbps
- » Wirespeed traffic classification with low latency essential for VoIP and real-time streaming media applications
- » Policy-based QoS based on VLAN, port, MAC and general packet classifiers
- » Policy-based storm protection
- » Extensive remarking capabilities
- » Taildrop for queue congestion control
- » Strict priority, weighted round robin or mixed scheduling
- » IP precedence and DiffServ marking based on layer 2, 3 and 4 headers

Resiliency

- » Stacking ports can be configured as 10G Ethernet ports
- » Control Plane Prioritization (CPP) ensures the CPU always has sufficient bandwidth to process network control traffic
- » Dynamic link failover (host attach)
- » EPSRing (Ethernet Protection Switched Rings) with SuperLoop Protection (SLP)
- » EPSR enhanced recovery for extra resiliency
- » Long-Distance stacking (LD-VCStack)
- » Loop protection: loop detection and thrash limiting
- » PVST+ compatibility mode
- » STP root guard
- » VCStack fast failover minimizes network disruption

Security

- » Access Control Lists (ACLs) based on layer 3 and 4 headers
- » Configurable auth-fail and guest VLANs
- » Authentication, Authorisation and Accounting (AAA)
- » Bootloader can be password protected for device security
- » BPDU protection
- » DHCP snooping, IP source guard and Dynamic ARP Inspection (DAI)
- » DoS attack blocking and virus throttling
- » Dynamic VLAN assignment
- » MAC address filtering and MAC address lock-down
- » Network Access and Control (NAC) features manage endpoint security
- » Port-based learn limits (intrusion detection)
- » Private VLANs provide security and port isolation for multiple customers using the same VLAN
- » Secure Copy (SCP)
- » Strong password security and encryption
- » Tri-authentication: MAC-based, web-based and IEEE 802.1x

Environmental Specifications

- » Operating temperature range: 0°C to 50°C (32°F to 122°F)
Derated by 1°C per 305 meters (1,000 ft)
- » Storage temperature range: -25°C to 70°C (-13°F to 158°F)
- » Operating relative humidity range: 5% to 90% non-condensing
- » Storage relative humidity range: 5% to 95% non-condensing
- » Operating altitude: 3,048 meters maximum (10,000 ft)

Electrical Approvals and Compliances

- » EMC: EN55022 class A, FCC class A, VCCI class A, ICES-003 class A
- » Immunity: EN55024, EN61000-3-levels 2 (Harmonics), and 3 (Flicker) – AC models only

Safety

- » Standards: UL60950-1, CAN/CSA-C22.2 No. 60950-1-03, EN60950-1, EN60825-1, AS/NZS 60950.1
- » Certification: UL, cUL

Restrictions on Hazardous Substances (RoHS) Compliance

- » EU RoHS compliant
- » China RoHS compliant

Country of Origin

- » Singapore

Physical Specifications and MTBF Figures

| PRODUCT | WIDTH | DEPTH | HEIGHT | MOUNTING | WEIGHT | |
|--------------|-------------------|-------------------|-----------------|----------------|-------------------|-------------------|
| | | | | | UNPACKAGED | PACKAGED |
| AT-IX5-28GPX | 440 mm (17.32 in) | 480 mm (18.89 in) | 44 mm (1.73 in) | 1RU Rack-mount | 5.4 kg (11.91 lb) | 7.4 kg (16.32 lb) |

Power and Noise Characteristics

| PRODUCT | NO POE LOAD | | | FULL POE+ LOAD | | |
|--------------|-----------------------|----------------------|--------|-----------------------|----------------------|--------|
| | MAX POWER CONSUMPTION | MAX HEAT DISSIPATION | NOISE | MAX POWER CONSUMPTION | MAX HEAT DISSIPATION | NOISE |
| AT-IX5-28GPX | 81W | 276 BTU/h | 44 dBA | 626W | 703 BTU/hr | 52 dBA |

Noise: tested to ISO7779; front bystander position

Latency (microseconds)

| PRODUCT | PORT SPEED | | | |
|--------------|------------|---------|-------|--------|
| | 10MBPS | 100MBPS | 1GBPS | 10GBPS |
| AT-IX5-28GPX | 117µs | 14.4µs | 4.4µs | 3.1µs |

PSU PoE Options

| PSU | MAX POE POWER | MAX POE PORTS AT 15W PER PORT | MAX POE+ PORTS AT 30W PER PORT |
|---------------|---------------|-------------------------------|--------------------------------|
| 1 x AT-PWR800 | 370w | 24 | 12 |
| 2 x AT-PWR800 | 720w | 24 | 24 |

Standards and Protocols

AlliedWare Plus Operating System

Version 5.4.4

Authentication

- RFC 1321 MD5 Message-Digest algorithm
- RFC 1828 IP authentication using keyed MD5

Encryption

- FIPS 180-1 Secure Hash standard (SHA-1)
- FIPS 186 Digital signature standard (RSA)
- FIPS 46-3 Data Encryption Standard (DES and 3DES)

Ethernet

- IEEE 802.1AX Link aggregation (static and LACP)
- IEEE 802.2 Logical Link Control (LLC)
- IEEE 802.3 Ethernet
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3ad Static and dynamic link aggregation
- IEEE 802.3ae 10 Gigabit Ethernet
- IEEE 802.3af Power over Ethernet (PoE)
- IEEE 802.3at Power over Ethernet plus (PoE+)
- IEEE 802.3az Energy Efficient Ethernet (EEE)
- IEEE 802.3u 100BASE-X
- IEEE 802.3x Flow control - full-duplex operation
- IEEE 802.3z 1000BASE-X

IPv4 Standards

- RFC 768 User Datagram Protocol (UDP)
- RFC 791 Internet Protocol (IP)
- RFC 792 Internet Control Message Protocol (ICMP)
- RFC 793 Transmission Control Protocol (TCP)
- RFC 826 Address Resolution Protocol (ARP)
- RFC 894 Standard for the transmission of IP datagrams over Ethernet networks
- RFC 919 Broadcasting Internet datagrams
- RFC 922 Broadcasting Internet datagrams in the presence of subnets
- RFC 932 Subnetwork addressing scheme
- RFC 950 Internet standard subnetting procedure
- RFC 951 Bootstrap Protocol (BootP)
- RFC 1027 Proxy ARP
- RFC 1035 DNS client
- RFC 1042 Standard for the transmission of IP datagrams over IEEE 802 networks

- RFC 1071 Computing the Internet checksum
- RFC 1122 Internet host requirements
- RFC 1191 Path MTU discovery
- RFC 1256 ICMP router discovery messages
- RFC 1518 An architecture for IP address allocation with CIDR
- RFC 1519 Classless Inter-Domain Routing (CIDR)
- RFC 1542 Clarifications and extensions for BootP
- RFC 1591 Domain Name System (DNS)
- RFC 1812 Requirements for IPv4 routers
- RFC 1918 IP addressing
- RFC 2581 TCP congestion control

IPv6 Standards

- RFC 1981 Path MTU discovery for IPv6
- RFC 2460 IPv6 specification
- RFC 2464 Transmission of IPv6 packets over Ethernet networks
- RFC 3056 Connection of IPv6 domains via IPv4 clouds
- RFC 3484 Default address selection for IPv6
- RFC 3596 DNS extensions to support IPv6
- RFC 4007 IPv6 scoped address architecture
- RFC 4193 Unique local IPv6 unicast addresses
- RFC 4291 IPv6 addressing architecture
- RFC 4443 Internet Control Message Protocol (ICMPv6)
- RFC 4861 Neighbor discovery for IPv6
- RFC 4862 IPv6 Stateless Address Auto-Configuration (SLAAC)
- RFC 5014 IPv6 socket API for source address selection
- RFC 5095 Deprecation of type 0 routing headers in IPv6
- RFC 5175 IPv6 Router Advertisement (RA) flags option
- RFC 6105 IPv6 Router Advertisement (RA) guard

Management

- AMF MIB and SNMP traps
- AT Enterprise MIB
- SNMPv1, v2c and v3
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- RFC 1155 Structure and identification of management information for TCP/IP-based Internets
- RFC 1157 Simple Network Management Protocol (SNMP)
- RFC 1212 Concise MIB definitions
- RFC 1213 MIB for network management of TCP/IP-based Internets: MIB-II
- RFC 1215 Convention for defining traps for use with the SNMP

- RFC 1227 SNMP MUX protocol and MIB
- RFC 1239 Standard MIB
- RFC 2011 SNMPv2 MIB for IP using SMIv2
- RFC 2012 SNMPv2 MIB for TCP using SMIv2
- RFC 2013 SNMPv2 MIB for UDP using SMIv2
- RFC 2096 IP forwarding table MIB
- RFC 2578 Structure of Management Information v2 (SMIv2)
- RFC 2579 Textual conventions for SMIv2
- RFC 2580 Conformance statements for SMIv2
- RFC 2674 Definitions of managed objects for bridges with traffic classes, multicast filtering and VLAN extensions
- RFC 2741 Agent extensibility (AgentX) protocol
- RFC 2787 Definitions of managed objects for VRRP
- RFC 2819 RMON MIB (groups 1,2,3 and 9)
- RFC 2863 Interfaces group MIB
- RFC 3164 Syslog protocol
- RFC 3176 sFlow: a method for monitoring traffic in switched and routed networks
- RFC 3411 An architecture for describing SNMP management frameworks
- RFC 3412 Message processing and dispatching for the SNMP
- RFC 3413 SNMP applications
- RFC 3414 User-based Security Model (USM) for SNMPv3
- RFC 3415 View-based Access Control Model (VACM) for SNMP
- RFC 3416 Version 2 of the protocol operations for the SNMP
- RFC 3417 Transport mappings for the SNMP
- RFC 3418 MIB for SNMP
- RFC 3621 Power over Ethernet (PoE) MIB
- RFC 3635 Definitions of managed objects for the Ethernet-like interface types
- RFC 3636 IEEE 802.3 MAU MIB
- RFC 4188 Definitions of managed objects for bridges
- RFC 4318 Definitions of managed objects for bridges with RSTP
- RFC 4560 Definitions of managed objects for remote ping, traceroute and lookup operations
- RFC 6527 Definitions of managed objects for VRRPv3

Multicast Support

- IGMP query solicitation
- IGMP snooping (IGMPv1, v2 and v3)
- IGMP snooping fast-leave
- IGMP/MLD multicast forwarding (IGMP/MLD proxy)
- MLD snooping (MLDv1 and v2)
- RFC 1112 Host extensions for IP multicasting (IGMPv1)
- RFC 2236 Internet Group Management Protocol v2 (IGMPv2)
- RFC 3376 IGMPv3
- RFC 4541 IGMP and MLD snooping switches

Quality of Service (QoS)

- IEEE 802.1p Priority tagging
- RFC 2211 Specification of the controlled-load network element service
- RFC 2474 DiffServ precedence for eight queues/port
- RFC 2475 DiffServ architecture
- RFC 2597 DiffServ Assured Forwarding (AF)
- RFC 2697 A single-rate three-color marker
- RFC 2698 A two-rate three-color marker
- RFC 3246 DiffServ Expedited Forwarding (EF)

Resiliency

- IEEE 802.1D MAC bridges
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- RFC 5798 Virtual Router Redundancy Protocol version 3 (VRRPv3) for IPv4 and IPv6

Security

- SSH remote login
- SSLv2 and SSLv3
- TACACS+ accounting and authentication
- IEEE 802.1X authentication protocols (TLS, TTLS, PEAP and MD5)
- IEEE 802.1X multi-suplicant authentication
- IEEE 802.1X port-based network access control
- RFC 2246 TLS protocol v1.0
- RFC 2865 RADIUS
- RFC 2866 RADIUS accounting
- RFC 2868 RADIUS attributes for tunnel protocol support
- RFC 3546 Transport Layer Security (TLS) extensions
- RFC 3579 RADIUS support for Extensible Authentication Protocol (EAP)
- RFC 3580 IEEE 802.1x RADIUS usage guidelines
- RFC 3748 PPP Extensible Authentication Protocol (EAP)
- RFC 4251 Secure Shell (SSHv2) protocol architecture
- RFC 4252 Secure Shell (SSHv2) authentication protocol
- RFC 4253 Secure Shell (SSHv2) transport layer protocol
- RFC 4254 Secure Shell (SSHv2) connection protocol

Services

- RFC 854 Telnet protocol specification
- RFC 855 Telnet option specifications
- RFC 857 Telnet echo option
- RFC 858 Telnet suppress go ahead option
- RFC 1091 Telnet terminal-type option
- RFC 1350 Trivial File Transfer Protocol (TFTP)

- RFC 1985 SMTP service extension
- RFC 2049 MIME
- RFC 2131 DHCPv4 (server, relay and client)
- RFC 2132 DHCP options and BootP vendor extensions
- RFC 2554 SMTP service extension for authentication
- RFC 2616 Hypertext Transfer Protocol - HTTP/1.1
- RFC 2821 Simple Mail Transfer Protocol (SMTP)
- RFC 2822 Internet message format
- RFC 3046 DHCP relay agent information option (DHCP option 82)
- RFC 3315 DHCPv6 (server, relay and client)
- RFC 3633 IPv6 prefix options for DHCPv6
- RFC 3646 DNS configuration options for DHCPv6
- RFC 3993 Subscriber-ID suboption for DHCP relay agent option
- RFC 4330 Simple Network Time Protocol (SNTP) version 4
- RFC 5905 Network Time Protocol (NTP) version 4

VLAN Support

- Generic VLAN Registration Protocol (GVRP)
- IEEE 802.1ad Provider bridges (VLAN stacking, Q-in-Q)
- IEEE 802.1Q Virtual LAN (VLAN) bridges
- IEEE 802.1v VLAN classification by protocol and port
- IEEE 802.3ac VLAN tagging

Voice over IP (VoIP)

- LLDP-MED ANSI/TIA-1057
- Voice VLAN



AT-IX5-28GPX Front view



AT-IX5-28GPX Rear view with 1 power supply



AT-IX5-28GPX Rear view with 2 power supplies



Ordering Information

Switch and Power Supply options

AT-IX5-28GPX-00
24-port 10/100/1000BASE-T stackable PoE+ switch with 4 SFP+ ports and 2 power supply bays

AT-PWR800-xx
800W AC system and PoE+ power supply

Where xx = 10 for US power cord
20 for no power cord
30 for UK power cord
40 for Australian power cord
50 for European power cord

10GbE SFP+ Modules

AT-SPI0SR
10GSR 850 nm short-haul, 300 m with MMF

AT-SPI0LR
10GLR 1310 nm medium-haul, 10 km with SMF

AT-SPI0LR/I
10GLR 1310 nm medium-haul, 10 km with SMF industrial temperature

AT-SPI0LRM
10GLR 1310 nm medium-haul, 10 km with MMF

AT-SPI0ER40/I
10GER 1310nm long-haul, 40km with SMF industrial temperature

AT-SPI0ZR80/I
10GER 1550nm long-haul, 80 km with SMF industrial temperature

AT-SPI0TW1
1 meter SFP+ direct attach cable

AT-SPI0TW3
3 meter SFP+ direct attach cable

AT-SPI0TW7
7 meter SFP+ direct attach cable

Stacking Accessories

AT-STACKXS/I.0
1 meter copper stacking cable

AT-STACKXS/7.0
7 meter copper stacking cable

AT-STACKOP/0.3
Optical Stacking Module, 300m with MMF

AT-STACKOP/9.0
Optical Stacking Module, 9km with SMF

SFP Modules

AT-SPSX
1000SX GbE multi-mode 850nm fiber up to 550m

AT-SPSX/I
1000SX GbE multi-mode 850nm fiber up to 550m industrial temperature

AT-SPEX
1000X GbE multi-mode 1310nm fiber up to 2km

AT-SPLX10
1000LX GbE single-mode 1310nm fiber up to 10km

AT-SPLX10/I
1000LX GbE single-mode 1310nm fiber up to 10km industrial temperature

AT-SPBD10-I3
1000LX GbE Bi-Di (1310nm Tx, 1490nm Rx) fiber up to 10km

AT-SPBD10-I4
1000LX GbE Bi-Di (1490nm Tx, 1310nm Rx) fiber up to 10km

AT-SPLX40
1000LX GbE single-mode 1310nm fiber up to 40km

AT-SPZX80
1000ZX GbE single-mode 1550nm fiber up to 80km

Feature Licenses

| NAME | DESCRIPTION |
|-----------------------|---|
| AT-FL-IX5-EPSR | EPSR Master License Allows the AT-IX5-28GPX to function as the master node in an EPSR network (The AT-IX5-28GPX can function as an EPSR transit node without a license) |