Allied Telesis

# 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.

AlliedWare Plus™ OPERATING SYSTEM

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 1/10 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.

PoE plus

### 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.

VCStack™

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

EPSRing™

### 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.

AMF™

### 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.

eco friendly

## New Features

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

# 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

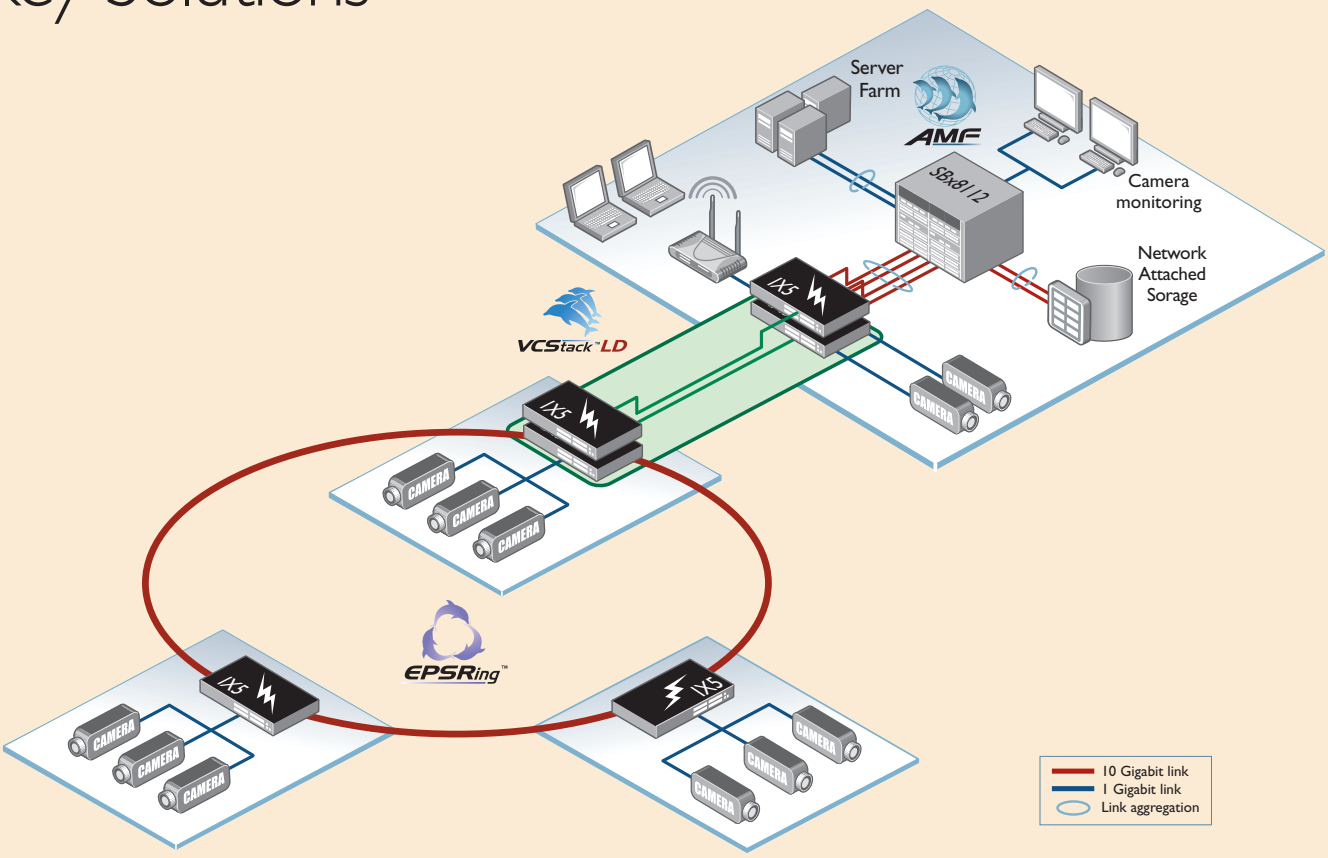


Diagram 1: IP Video Surveillance

## 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 9kB Jumbo frames
» Wirespeed multicasting
» Up to 32K MAC addresses
» 512MB DDR SDRAM
» 64MB flash memory
» Packet Buffer memory: IX5-28 - 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
» Optical Digital Diagnostic Monitoring (DDM)
» Ping polling for IPv4 and IPv6
» Port mirroring
» TraceRoute for IPv4 and IPv6

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

### IPv6 Features
» IPv6 static routing
» 6to4 tunneling
» DHCPv6 relay
» DNSv6
» IPv4 and IPv6 dual stack
» Device management over IPv6 networks with SNMPv6, Telnetv6 and SSHv6
» NTPv6

### 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)
» 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

### Resiliency Features
» 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
» EPSR enhanced recovery
» EPSR SuperLoop Protection (SLP)
» Automatic link flap detection and shutdown
» Long-Distance stacking (VCStack-LD)
» Loop protection: loop detection and thrash limiting
» PVST+ compatibility mode
» STP root guard
» VCStack fast failover minimizes network disruption

### Security Features
» Access Control Lists (ACLs)
» Configurable auth-fail and guest VLANs
» Authentication, Authorization and Accounting (AAA)
» 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 | 632W | 2156 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 5.4.3 - 3.7

### 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 Features
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 Features
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
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
IGMP snooping fast-leave
IGMP/MLD multicast forwarding (IGMP/MLD proxy)
MLD snooping (v1 and v2)
RFC 1112 Host extensions for IP multicasting (IGMPv1)
RFC 1112 Host extensions for IP multicasting (IGMPv1)
RFC 2236 Internet Group Management Protocol v2 (IGMPv2)
RFC 2715 Interoperability rules for multicast routing protocols
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 Features**

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 Features**

SSH remote login
SSLv2 and SSLv3
TACACS+ accounting and authentication
IEEE 802.1X authentication protocols (TLS, TTLS, PEAP and MD5)
IEEE 802.1X multi-supplicant 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-SP10SR
10GSR 850 nm short-haul, 300 m with MMF

AT-SP10LR
10GLR 1310 nm medium-haul, 10 km with SMF

AT-SP10ER
10GER 1310nm long-haul, 40km with SMF

AT-SP10TW1
1 meter SFP+ direct attach cable

AT-SP10TW3
3 meter SFP+ direct attach cable

AT-SP10TW7
7 meter SFP+ direct attach cable

### Stacking Accessories

AT-STACKXS/1.0
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

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

AT-SPBD10-13
1000LX GbE Bi-Di (1310nm Tx, 1490nm Rx) fiber up to 10km

AT-SPBD10-14
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**<br>Allows the AT-IX5-28GPX to function as the master node in an EPSR network<br>(The AT-IX5-28GPX can function as an EPSR transit node without a license) |

Allied Telesis
the solution : the network

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