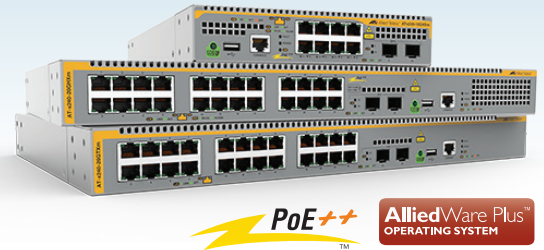Allied Telesis™

x240 Series

Multi-Gigabit Stackable Edge Switches

Allied Telesis x240 Series Layer 3 multi-gigabit switches offer an impressive set of features in a compact design, making them ideal for high-speed connectivity at the edge of the network.

PoE++

AlliedWare Plus™ OPERATING SYSTEM

Overview

Allied Telesis x240 Series switches provide a superior access solution for modern networks, supporting 10M/100M/1/2.5/5G connectivity for both legacy and high-speed end devices with maximum throughput. They enable an easy performance upgrade using existing Cat5e building cables.

Power over Ethernet (PoE++) models connect and power next-generation wireless access points, IP video surveillance cameras and IP telephony with up to 90W power delivery. With 8, 16 or 24 multi-gigabit ports and 10 gigabit SFP+ uplinks, the x240 series enables flexible deployment and secure access at the network edge.

The x240 Series can form a virtual chassis stack (VCStack™) allowing 2 units to be managed as a single virtual device for simplicity and resiliency.

High-speed wireless

The x240 Series provide support for both 2.5 and 5 Gigabit connectivity, allowing high-speed wireless to run at full capacity while avoiding the need to upgrade existing Cat5e/Cat6 cables.

Secure

Network Access Control (NAC) gives unprecedented control over user access to mitigate threats to network infrastructure.

Allied Telesis x240 switches use 802.1x port-based authentication, in partnership with standards-compliant dynamic VLAN assignment, to assess a user's adherence to network security policies and either grant access or offer remediation. Tri-authentication ensures the network is only accessed by known users and devices. Secure access is also available for guests.

Security from malicious network attacks is provided by a comprehensive range of features such as DHCP snooping,

STP root guard, BPDU protection and access control lists. Each of these can be configured to perform a variety of actions upon detection of a suspected attack.

Network protection

Advanced storm protection features include bandwidth limiting, policy-based storm protection and packet storm protection.

Network storms are often caused by cabling errors that result in a network loop. Allied Telesis x240 Series switches provide features to detect loops as soon as they are created. Loop detection and thrash limiting take immediate action to prevent network storms.

Manageable

The x240 runs the advanced AlliedWare Plus™ fully featured operating system, delivering a rich feature set and an industry-standard Command Line Interface (CLI). This reduces training requirements and is consistent across all AlliedWare Plus devices, simplifying network management.

The web-based Graphical User Interface (GUI) is an easy-to-use and powerful management tool, with comprehensive monitoring facilities.

Powerful network management

Meeting the increased management requirements of modern converged networks, Allied Telesis Autonomous Management Framework™ Plus (AMF Plus) automates many everyday tasks including configuration management. The complete network can be managed as a single virtual device with powerful centralized management features. Growing the network can be accomplished with plug-and-play simplicity, and network node recovery is fully zero-touch.

[1] Supported in a future release

AMF Plus secure mode increases network security with management traffic encryption, authorization, and monitoring.

Future-proof

x240 Series switches are Software Defined Networking (SDN) ready and able to support OpenFlow v1.3.

Easy network upgrade

Increasing network performance from existing 1 gigabit Allied Telesis edge switches to x240 multi-gigabit switches is easy. AMF Plus auto-recovery enables a plug-and-play upgrade, as the x240 switches are auto-configured to match the previous devices.

Key Features

- ▶ Autonomous Management Framework™ Plus (AMF Plus)
- ▶ AMF-Security compatible
- ▶ 10M/100M/1/2.5/5G multi-gigabit ports
- ▶ 10 Gigabit uplinks
- ▶ Up to 90W PoE++ power per port
- ▶ VCStack 2 units at any speed
- ▶ EPSR™ and G.8032 ERPS for resilient ring-based topologies
- ▶ Active Fiber Monitoring (AFM)
- ▶ Precision Time Protocol (PTP) Transparent mode[1]
- ▶ Link Monitoring
- ▶ Flexible ACLs
- ▶ Loop and storm protection
- ▶ Upstream Forwarding Only (UFO)
- ▶ OpenFlow for SDN
- ▶ NETCONF/RESTCONF with YANG data modelling

AMF PLUS   AMF-SEC   VCSTACK™   EPSRING™   ACTIVE FIBER MONITORING™

Key Features

Allied Telesis Autonomous Management Framework™ Plus (AMF Plus)

▶ AMF Plus is a sophisticated suite of management tools that provide a simplified approach to network management. Common tasks are automated or made so simple that the every-day running of a network can be achieved 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.

▶ An AMF Plus license operating in the network provides all standard AMF network management and automation features, and also enables the AMF Plus intentbased networking features menu in Vista Manager EX (from version 3.10.1 onwards)

Multi-gigabit performance

▶ The x240 Series connects at five speeds (10M/100M/1/2.5/5G), supporting anything from legacy devices to the latest high-speed wireless APs with maximum performance. When partnered with 10 gigabit uplink ports, any bottlenecks at the edge of the network are removed.

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.

▶ The x240 PoE models support up to 90W per port (PoE++) to connect high power devices such as high resolution PTZ cameras, enhanced infrared lighting and lighting controllers, remote Point of Sale (POS) kiosks, and more.

Virtual Chassis Stacking (VCStack™)

▶ Create a VCStack of two units with 40Gbps stacking bandwidth, and dual links for increased resiliency. VCStack provides high availability with network resources spread across stacked units, reducing the impact if a unit fails. Aggregating switch ports on different units across the stack provides excellent network resiliency.

Ethernet Protection Switched Ring (EPSRing™)

▶ EPSRing allows several x240 switches to join a protected ring capable of recovery within as little as 50ms. This feature is perfect for high availability in enterprise networks.

G.8032 Ethernet Ring Protection

▶ G.8032 provides standards-based high-speed ring protection, that can be deployed stand-alone, or interoperate with Allied Telesis EPSR.

▶ Ethernet Connectivity Fault Monitoring (CFM) proactively monitors links and VLANs, and provides alerts when a fault is detected.

Access Control Lists (ACLs)

▶ ACLs filter network traffic to control whether routed packets are forwarded or blocked, and can be applied to a specific port or a VLAN. This provides a powerful network security mechanism to select the types of traffic to be analyzed, forwarded, or influenced in some way.

Easy To Manage

▶ The AlliedWare Plus operating system incorporates an industry standard CLI, facilitating intuitive manageability.

▶ With three distinct modes, the CLI is very secure, and the use of SSHv2 encrypted and strongly authenticated remote login sessions ensures CLI access is not compromised.

NETCONF/RESTCONF

▶ NETCONF/RESTCONF with YANG data modeling provides a standardized way to represent data and securely configure devices.

Storm protection

Advanced packet storm control features protect the network from broadcast storms:

▶ Bandwidth limiting minimizes the effects of the storm by reducing the amount of flooding traffic.

▶ Policy-based storm protection is more powerful than bandwidth limiting, restricting damage and providing the ability to define the traffic rate that creates a broadcast storm. The action the device should take when it detects a storm can be configured, such as disabling the port from the VLAN or shutting the port down.

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 packets, called Loop Detection Frames (LDF), that the switch listens for. If a port receives an LDF packet, one can choose to disable the port, disable the link, or send an SNMP trap.

Spanning Tree Protocol (STP) Root Guard

▶ STP root guard designates which devices can assume the root bridge role in an STP network. This stops an undesirable device from taking over this role, where it could either compromise network performance or cause a security weakness.

Bridge Protocol Data Unit (BPDU) protection

▶ BPDU protection adds extra security to STP. It protects the spanning tree configuration by preventing malicious DoS attacks caused by spoofed BPDUs. If a BPDU packet is received on a protected port, the BPDU protection feature disables the port and alerts the network manager.

sFlow

▶ sFlow monitors networks to provide visibility for performance optimization, usage accounting/billing, and defense against security threats. Sampled packets sent to a collector provide a real-time view of network traffic.

Tri-authentication

▶ As well as 802.1x port-based authentication, web authentication enables guest access and MAC authentication supports end points that do not have an 802.1x supplicant. All three authentication methods—802.1x, MAC-based and Web-based—can be enabled simultaneously on the same port, resulting in tri-authentication.

¹ Supported in a future release

TACACS+ Command Authorization

▶ TACACS+ Command Authorization offers centralized control over which commands may be issued by each specific AlliedWare Plus device user. It complements authentication and accounting services for an AAA solution.

UniDirectional Link Detection

▶ UDLD monitors fiber-optic links between switches, and prevents traffic being sent across a bad link by blocking the ports at both ends of the link in the event that either the transmitter or receiver for that connection fails.

Optical DDM

▶ Most SFP/SFP+/QSFP transceivers support Digital Diagnostics Monitoring (DDM) of parameters such as optical output power, temperature, laser bias, etc. This simplifies diagnosing fiber connection problems.

Active Fiber Monitoring

▶ AFM prevents eavesdropping on fiber data or stacking links by monitoring received optical power. If an intrusion is detected, the link can be automatically shut down, or an alert sent.

VLAN Mirroring (RSPAN)

▶ VLAN mirroring allows traffic from a port on a remote switch to be analyzed locally. Traffic being transmitted or received on the port is duplicated and sent across the network on a special VLAN.

Find Me

▶ The "Find Me" feature is a visual way to identify the desired physical switch in a busy server room for maintenance or other purposes, by causing its LEDs to flash in a specified pattern.

Precision Time Protocol (PTP)¹

▶ PTP (IEEE 1588v2) sychronizes clocks throughout the network with micro-second accuracy, supporting industrial automation and control systems.

Link Monitoring (Linkmon)

▶ Linkmon health monitoring regularly sends probes over key links to gather metrics comprising latency, jitter, and probe loss. This supports pro-active management, and can be used with triggers to automate a change to network configuration in response to the declining health of a monitored link.

Upstream Forwarding Only (UFO)

▶ UFO lets you manage which ports in a VLAN can communicate with each other, and which only have upstream access to services, for secure multi-user deployment.

VLAN Translation

▶ VLAN Translation allows traffic arriving on a VLAN to be mapped to a different VLAN on the outgoing interface.

▶ Service Providers can provide customers with a unique VLAN ID, which can be changed for data transfer through the SP's network.

▶ In the Enterprise, it can be used to merge two networks together, without manually reconfiguring the VLAN numbering scheme.

Key Solutions

High performance at the network edge

The convergence of network services in the Enterprise has led to increasing demand for highly available networks with minimal downtime. The diagram shows x240 switches with high performance EPSR ring connectivity to the x530 VCStack core. This topology provides ring recovery in as little as 50ms if required, ensuring essential services and online business applications are always available.

Multi-gigabit connectivity provides a high-value solution with up to 5 x the performance of traditional 1 gigabit networks. Multi-gigabit PC connections and switch uplinks can maximize the use of existing Cat5e building backbone cables.
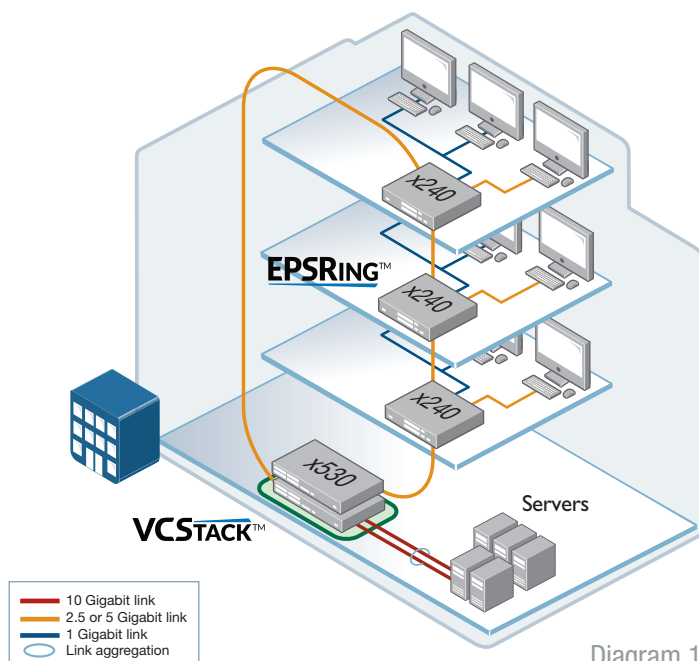
Resilient connectivity and easy management

The Power over Ethernet x240 models supply up to 90W (PoE++) per port to connect and power devices such as 4K PTZ security cameras. Using VCStack enables two x240 units to create resilient 2.5/5G mulit-gigabit connectivity to high-speed Wi-Fi 6 APs. This removes bottlenecks and maximizes performance for the many wireless devices used today.

AMF Plus provides an easy yet powerful solution for centralized administration and network automation. All x240 switches are automatically backed-up to the AMF Plus master, so device replacement is fully zero-touch and carried out with plug-and-play simplicity.

Vista Manager is Allied Telesis powerful monitoring and management platform providing easy visual network administration, the ability to configure multiple devices at once, and actionable reporting for proactive management. Vista Manager and AMF Plus combine to reduce the time and cost of network management.

———	10 Gigabit link
———	2.5 or 5 Gigabit link
———	1 Gigabit link
⬭	Link aggregation

Diagram 1

———	10 Gigabit link
———	2.5 or 5 Gigabit link
———	1 Gigabit link
⬭	Link aggregation

Diagram 2

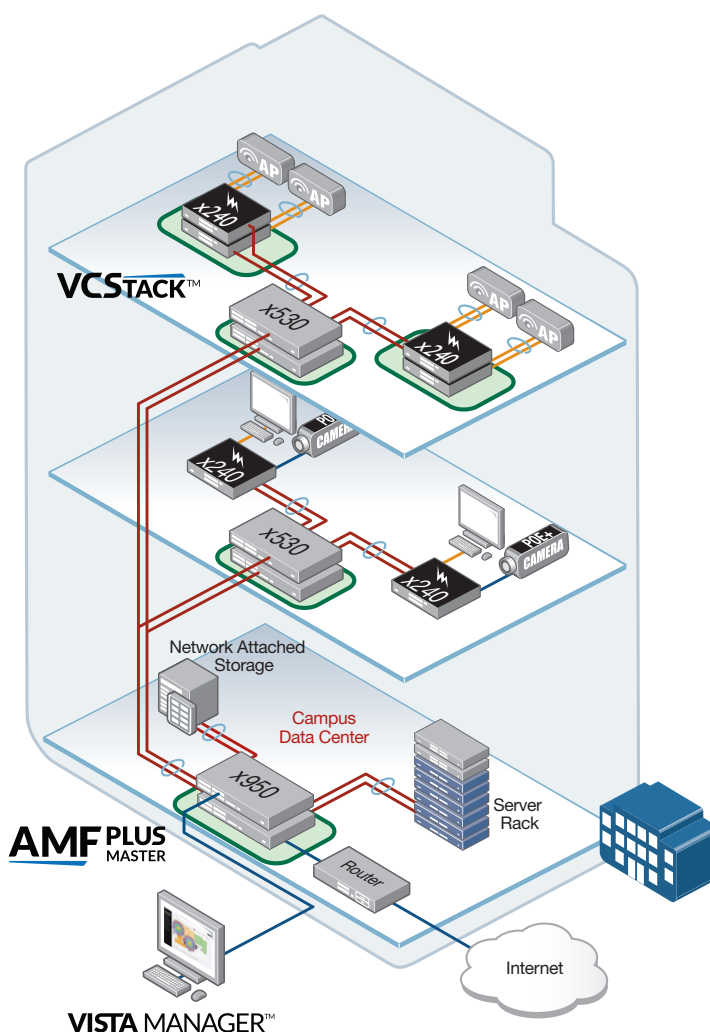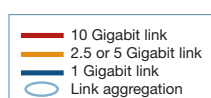# x240 Series | Multi-Gigabit Stackable Edge Switches

Product Specifications

PRODUCT	10M/100M/1/2.5/5 GIGABIT PORTS	1/10 GIGABIT SFP+ PORTS	TOTAL PORTS	POE ENABLE PORTS	SWITCHING FABRIC	FORWARDING RATE
x240-10GHXm	8	2	10	8	120Gbps	89.3Mpps
x240-10GTXm	8	2	10	-	120Gbps	89.3Mpps
x240-18GHXm[2]	16	2	18	16	200Gbps	148.8Mpps
x240-18GTXm[2]	16	2	18	-	200Gbps	148.8Mpps
x240-26GHXm	24	2	26	24	280Gbps	208.3Mpps
x240-26GTXm[2]	24	2	26	-	280Gbps	208.3Mpps

Physical specifications

PRODUCT	WIDTH X DEPTH X HEIGHT	WEIGHT	PACKAGED DIMENSIONS	WEIGHT
x240-10GHXm	210 x 346 x 42.5 mm (8.27 x 13.62 x 1.67 in)	2.7 kg (5.9 lb)	461 x 371 x 153 mm (18.15 x 14.60 x 6.02 in)	3.8 kg (8.3 lb)
x240-10GTXm	210 x 275 x 42.5 mm (8.27 x 10.83 x 1.67 in)	1.9 kg (4.2 lb)	433 x 257 x 102 mm (17.44 x 10.12 x 4.01 in)	2.6 kg (5.7 lb)
x240-18GHXm[2]	341 x 231 x 44 mm (13.42 x 9.09 x 1.73 in)	-	-	-
x240-18GTXm[2]	341 x 231 x 44 mm (13.42 x 9.09 x 1.73 in)	-	-	-
x240-26GHXm	440 x 290 x 44 mm (17.32 x 11.42 x 1.73 in)	4.3 kg (9.4 lb)	547 x 364 x 115 mm (21.53 x 14.33 x 4.53 in)	5.6 kg (12.3 lb)
x240-26GTXm[2]	440 x 290 x 44 mm (17.32 x 11.42 x 1.73 in)	3.7 kg (8.1 lb)	547 x 364 x 115 mm (21.53 x 14.33 x 4.53 in)	5.0 kg (11.0 lb)

Latency (microseconds)

PRODUCT	1GBPS	2.5GBPS	5GBPS	10GBPS
x240-10GHXm	5.6	8.7	6.1	2.9
x240-10GTXm	4.5	8.7	5.9	2.9
x240-18GHXm[2]	-	-	-	-
x240-18GTXm[2]	-	-	-	-
x240-26GHXm	4.5	8.6	6.0	3.0
x240-26GTXm[2]	4.4	8.6	5.9	2.9

[2] Models available in the future

Performance
- Up to 32K MAC addresses
- Up to 100 multicast entries
- 1GB DDR4 SDRAM
- 4094 configurable VLANs
- 256MB flash memory
- Packet Buffer memory: 3MB
- Supports 9KB L2 jumbo frames
- Wirespeed forwarding

Reliability
- Modular AlliedWare Plus operating system
- Full environmental monitoring of PSU internal temperature and internal voltages. SNMP traps alert network managers in case of any failure

Flexibility and compatibility
- 10G SFP+ ports will support any combination of Allied Telesis 1000Mbps SFP and 10GbE SFP+ modules and direct attach cables listed in this document under Ordering Information
- Port speed can be set manually or by auto-negotiation

Diagnostic tools
- Active Fiber Monitoring detects tampering on optical links
- Built-In Self Test (BIST)
- Find-me device locator
- Cable fault locator (TDR)
- Connectivity Fault Management (CFM) for use with G.8032 ERPS
- Link Monitoring
- Optical Digital Diagnostics Monitoring (DDM)
- Automatic link flap detection and port shutdown
- Ping polling for IPv4 and IPv6
- Port mirroring
  » No limit on mirrored ports
  » Up to 7 mirror (analyzer) ports
- VLAN mirroring (RSPAN)
- Uni-Directional Link Detection (UDLD)
- TraceRoute for IPv4 and IPv6

IP Features
- IPv4 static routing and RIP
- IPv4 and IPv6 dual stack
- Device management over IPv6 networks with SNMPv6, Telnetv6, SSHv6 and Syslogv6
- DHCP client for IPv4 and IPv6

Management
- Allied Telesis Autonomous Management Framework Plus (AMF Plus) enables powerful centralized management and zero-touch device installation and recovery
- Console management port on the front panel for ease of access
- NETCONF/RESTCONF northbound interface with YANG data modelling
- 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 with built-in text editor
- A USB socket allows software releases, configuration, and other files to be stored for backup and distribution to other devices
- Comprehensive SNMP MIB support for standards-based device management
- Management stacking allows up to 24 devices to be managed from a single console
- Voice VLAN
- Event-based triggers allow user-defined scripts to be executed upon selected system events

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 Features
- 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 enhanced recovery for extra resiliency
- Flexi-stacking - use any port-speed to stack
- Long-distance stacking with 10G SFP+ modules (LD-VCStack)
- VCStack fast failover minimizes network disruption
- Loop protection: loop detection and thrash limiting
- PVST+ compatibility mode
- Ethernet Ring Protection Switching (ITU-T G.8032 ERPS)

- ▶ Continuous Power over Ethernet (CPOE)
- ▶ RRP snooping
- ▶ STP root guard

Security Features
- ▶ Access Control Lists (ACLs) based on layer 3 and 4 headers, per VLAN or port
- ▶ Configurable ACLs for management traffic
- ▶ Dynamic ACLs assigned via port authentication
- ▶ ACL Groups enable multiple hosts/ports to be included in a single ACL, reducing configuration
- ▶ Auth-fail and guest VLANs
- ▶ RADIUS and TACACS+ Authentication, Authorization and Accounting (AAA)
- ▶ Bootloader can be password protected for device security
- ▶ BPDU protection
- ▶ DHCP snooping, IP source guard and Dynamic ARP Inspection (DAI)
- ▶ Local RADIUS server for user and device authentication
- ▶ Dynamic VLAN assignment
- ▶ MAC address filtering and MAC address lock-down
- ▶ Network Access and Control (NAC) features manage endpoint security
- ▶ Learn limits (intrusion detection) for single ports or LAGs

- ▶ Secure Copy (SCP)
- ▶ Strong password security and encryption
- ▶ Tri-authentication: MAC-based, web-based and IEEE 802.1x
- ▶ Secure File Transfer Protocol (SFTP) client
- ▶ Local RADIUS server for user and device authentication
- ▶ RADIUS group selection per VLAN or port
- ▶ SFTP client

VLAN Support
- ▶ Voice VLAN
- ▶ Private VLANs provide security and port isolation for multiple customers using the same VLAN
- ▶ VLAN ID translation

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:
  2,000 meters maximum (6,562 ft)

Electrical Approvals and Compliances
- ▶ EMC: EN55032 class A, FCC class A, VCCI class A, ICES-003 class A
- ▶ Immunity: EN55035, EN61000-3-levels 2 (Harmonics), and 3 (Flicker) – AC models only

Safety
- ▶ Standards: UL62368-1, CAN/CSA-C22.2 No.62368-1, EN62368-1, EN60825-1, AS/NZS62368.1
- ▶ Certification: UL, cUL

Restrictions on Hazardous Substances (RoHS) Compliance
- ▶ EU RoHS compliant
- ▶ China RoHS compliant

Power characteristics

PRODUCT	NO POE LOAD			FULL POE+ LOAD			MAX POE POWER (W)	POE SOURCING PORTS					
	MAX POWER CONSUMPTION (W)	MAX HEAT DISSIPATION (BTU/H)	NOISE* (DBA)	MAX POWER CONSUMPTION (W)	MAX HEAT DISSIPATION (BTU/H)	NOISE* (DBA)		POE (7.5W)	POE (15.4W)	POE + (30W)	POE ++ (45W)	POE ++ (60W)	POE ++ (90W)
x240-10GHXm	44	150	32-39	340	1200	39-55	240	8	8	8	5	4	2
x240-10GTXm	38	130	32-39	-	-	-	-	-	-	-	-	-	-
x240-18GHXm²	-	-	-	-	-	-	247	16	16	8	5	4	2
x240-18GTXm²	-	-	-	-	-	-	-	-	-	-	-	-	-
x240-26GHXm	86	290	38-52	540	1900	41-58	370	24	24	12	8	6	4
x240-26GTXm²	83	280	38-45	-	-	-	-	-	-	-	-	-	-

² Models available in the future

* NOISE Under 30°C to 50°C

Standards and Protocols

AlliedWare Plus Operating System
Version 5.5.4-2

Cryptographic Algorithms
FIPS Approved Algorithms
Encryption (Block Ciphers):
- ▶ AES (ECB, CBC, CFB and OFB Modes)
- ▶ 3DES (ECB, CBC, CFB and OFB Modes)

Block Cipher Modes:
- ▶ CCM
- ▶ CMAC
- ▶ GCM
- ▶ XTS

Digital Signatures & Asymmetric Key Generation:
- ▶ DSA
- ▶ ECDSA
- ▶ RSA

Secure Hashing:
- ▶ SHA-1
- ▶ SHA-2 (SHA-224, SHA-256, SHA-384. SHA-512)

Message Authentication:

- ▶ HMAC (SHA-1, SHA-2(224, 256, 384, 512)
Random Number Generation:
- ▶ DRBG (Hash, HMAC and Counter)

Non FIPS Approved Algorithms
RNG (AES128/192/256)
DES
MD5

Ethernet
IEEE 802.2 Logical Link Control (LLC)
IEEE 802.3 Ethernet
IEEE 802.3ab 1000BASE-T
IEEE 802.3ae 10 Gigabit Ethernet
IEEE 802.3af Power over Ethernet (PoE)
IEEE 802.3at Power over Ethernet up to 30W (PoE+)
IEEE 802.3az Energy Efficient Ethernet (EEE)
IEEE 802.3bt Power over Ethernet up to 90W (PoE++)
IEEE 802.3bz 2.5GBASE-T and 5GBASE-T ("multi-gigabit")
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 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 1518   An architecture for IP address allocation with CIDR
RFC 1519   Classless Inter-Domain Routing (CIDR)
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 2711   IPv6 router alert option

RFC 3484   Default address selection for IPv6
RFC 3587   IPv6 global unicast address format
RFC 3596   DNS extensions to support IPv6
RFC 4007   IPv6 scoped address architecture
RFC 4193   Unique local IPv6 unicast addresses
RFC 4213   Transition mechanisms for IPv6 hosts and routers
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

Management

AT Enterprise MIB including AMF Plus MIB and SNMP traps
Optical DDM MIB
SNMPv1, v2c and v3
ANSI/TIA-1057 LLDP-Media Endpoint Detection
IEEE 802.1ABLink Layer Discovery Protocol (LLDP)
RFC 1155   Structure and identification of management information for TCP/IP-based Internets
RFC 1157 (SNMP)   Simple Network Management Protocol
RFC 1212   Concise MIB definitions
RFC 1213 IP-based   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 1724   RIPv2 MIB extension
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 2819   RMON MIB (groups 1,2,3 and 9)
RFC 2863   Interfaces group MIB
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 4022   MIB for the Transmission Control Protocol (TCP)
RFC 4113   MIB for the User Datagram Protocol (UDP)
RFC 4188   Definitions of managed objects for bridges
RFC 4292   IP forwarding table MIB
RFC 4293   MIB for the Internet Protocol (IP)
RFC 4318   Definitions of managed objects for bridges with RSTP
RFC 4560   Definitions of managed objects for remote ping, traceroute and lookup operations
RFC 5424   Syslog protocol

Multicast support

IGMP query solicitation
IGMP snooping (IGMPv1, v2 and v3)
IGMP snooping fast-leave
MLD snooping (MLDv1 and v2)
RFC 2715   Interoperability rules for multicast routing protocols
RFC 3306   Unicast-prefix-based IPv6 multicast addresses
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

ITU-T G.8032 Ethernet Ring Protection Switching (ERPS)
IEEE 802.1ag Connectivity Fault Management (CFM), Continuity Check Protocol (CCP)
IEEE 802.1AXLink aggregation (static and LACP)
IEEE 802.1D MAC bridges
IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
IEEE 802.3adStatic and dynamic link aggregation

Routing Information Protocol (RIP)

RFC 1058   Routing Information Protocol (RIP)
RFC 2082   RIP-2 MD5 authentication
RFC 2453   RIPv2

Security Features

SSH remote login
SSLv2 and SSLv3
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 2560   X.509 Online Certificate Status Protocol (OCSP)
RFC 2818   HTTP over TLS ("HTTPS")
RFC 2865   RADIUS authentication
RFC 2866   RADIUS accounting

RFC 2868   RADIUS attributes for tunnel protocol support
RFC 2986   PKCS #10: certification request syntax specification v1.7
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
RFC 5176   RADIUS CoA (Change of Authorization)
RFC 5246   Transport Layer Security (TLS) v1.2
RFC 5280   X.509 certificate and Certificate Revocation List (CRL) profile
RFC 5425   Transport Layer Security (TLS) transport mapping for Syslog
RFC 5656   Elliptic curve algorithm integration for SSH
RFC 6125   Domain-based application service identity within PKI using X.509 certificates with TLS
RFC 6614   Transport Layer Security (TLS) encryption for RADIUS
RFC 6668   SHA-2 data integrity verification for SSH

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 client
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 client
RFC 3396   Encoding long options in DHCPv4
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 4954   SMTP service extension for authentication
RFC 5905   Network Time Protocol (NTP) version 4

VLAN support

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 802.3acVLAN tagging

Feature Licenses

NAME	DESCRIPTION	INCLUDES
AT-FL-x240-APP	VLAN Q-in-Q and PTP license	▶ VLAN Q-in-Q ▶ PTP Transparent Mode[1] ▶ VLAN translation
AT-FL-x240-OF13-1YR	OpenFlow license	▶ OpenFlow v1.3 for 1 year
AT-FL-x240-OF13-5YR	OpenFlow license	▶ OpenFlow v1.3 for 5 years

[1] Supported in a future release

x240 Series | Multi-Gigabit Stackable Edge Switches

Ordering Information

AT-x240-10GTXm
8-port 10M/100M/1/2.5/5G L3 stackable switch with 2 SFP+ ports

AT-x240-10GHXm
8-port 10M/100M/1/2.5/5G PoE++ L3 stackable switch with 2 SFP+ ports

AT-x240-18GTXm[2]
16-port 10M/100M/1/2.5/5G L3 stackable switch with 2 SFP+ ports

AT-x240-18GHXm[2]
16-port 10M/100M/1/2.5/5G PoE++ L3 stackable switch with 2 SFP+ ports

AT-x240-26GTXm[2]
24-port 10M/100M/1/2.5/5G L3 stackable switch with 2 SFP+ ports

AT-x240-26GHXm
24-port 10M/100M/1/2.5/5G PoE++ L3 stackable switch with 2 SFP+ ports

AT-RKMT-J13
Rack mount kit for x240-18GTXm/18GHXm

AT-RKMT-J14
Rack mount kit for x240-10GTXm/10GHXm

AT-RKMT-J15
Rack mount tray for x240-10GTXm/10GHXm

AT-BRKT-J24
Wall mount bracket

AT-STND-J03
Stand-kit for x240-10GTXm/10GHXm/18GTXm/18GHXm

[2] Models available in the future

10G SFP+ Modules

Any 10G SFP+ module or cable can be used for stacking with the front panel 10G ports

AT-SP10SR
10GSR 850 nm short-haul, 300 m with MMF

AT-SP10SR/I
10GSR 850 nm short-haul, 300 m with MMF industrial temperature

AT-SP10LRa/I
10GLR 1310 nm medium-haul, 10 km with SMF industrial temperature

AT-SP10ZR80/I
10GER 1550 nm long-haul, 80 km with SMF industrial temperature

AT-SP10TM
1G/10G, 100m copper, TAA[3]

AT-SP10BD10/I-12
10 GbE Bi-Di (1270 nm Tx, 1330 nm Rx) fiber up to 10 km industrial temperature, TAA[3]

AT-SP10BD10/I-13
10 GbE Bi-Di (1330 nm Tx, 1270 nm Rx) fiber up to 10 km industrial temperature, TAA[3]

AT-SP10BD20-12
10 GbE Bi-Di (1270 nm Tx, 1330 nm Rx) fiber up to 20 km, TAA[3]

AT-SP10BD20-13
10 GbE Bi-Di (1330 nm Tx, 1270 nm Rx) fiber up to 20 km, TAA[3]

AT-SP10BD40/I-12
10 GbE Bi-Di (1270 nm Tx, 1330 nm Rx) fiber up to 40 km industrial temperature, TAA[3]

AT-SP10BD40/I-13
10 GbE Bi-Di (1330 nm Tx, 1270 nm Rx) fiber up to 40 km industrial temperature, TAA[3]

AT-SP10BD80/I-14
10 GbE Bi-Di (1270 nm Tx, 1330 nm Rx) fiber up to 80 km industrial temperature, TAA[3]

AT-SP10BD80/I-15
10 GbE Bi-Di (1330 nm Tx, 1270 nm Rx) fiber up to 80 km industrial temperature, TAA[3]

AT-SP10TW1
1 meter SFP+ direct attach cable

AT-SP10TW3
3 meter SFP+ direct attach cable

1G SFP Modules

AT-SPTXc
100 m, 10/100/1000T SFP, RJ-45

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

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

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

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

AT-SPLX10a
1000LX SFP, LC, SMF, 1310nm (10km), TAA[2]

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

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

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

AT-SPBD10-14
1000LX (LC) GbE Bi-Di (1490 nm Tx, 1310 nm Rx) fiber up to 10 km

AT-SPBD20-13/I
1000LX (LC) GbE single-mode Bi-Di (1310 nm Tx, 1490 nm Rx) fiber up to 20 km, industrial temperature

AT-SPBD20-14/I
1000LX (LC) GbE single-mode Bi-Di (1490 nm Tx, 1310 nm Rx) fiber up to 20 km, industrial temperature

AT-SPBD40-13/I
1000LX (LC) GbE single-mode Bi-Di (1310 nm Tx, 1490 nm Rx) fiber up to 40 km, industrial temperature

AT-SPBD40-14/I
1000LX (LC) GbE single-mode Bi-Di (1490 nm Tx, 1310 nm Rx) fiber up to 40 km, industrial temperature

[3] Trade Agreement Act compliant

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