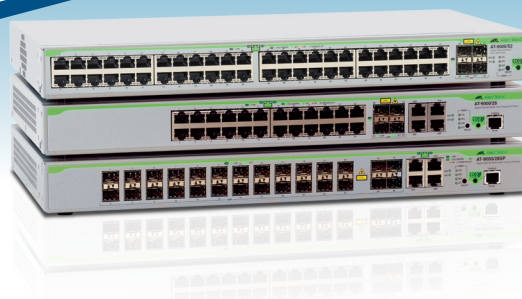


## AT-9000 Series

### Managed Layer 2~4 Gigabit Ethernet ECO-Switches



#### AT-9000 Series

The AT-9000 Series of high performance Layer 2~4 28- and 52-port Gigabit Ethernet switches brings advanced enterprise features to a more affordable level while supporting the changing needs of the SMB market space to improve the delivery of converged data. Support for jumbo Ethernet frames enables higher throughput of time-sensitive data.

The **AT-9000/28** is a 28-port Gigabit Managed switch with 24 fixed configuration 10/100/1000T ports and 4 additional 100/1000 SFP ports combined with 4 10/100/1000T ports.

The **AT-9000/28SP** is a 28-port Gigabit Managed switch with 24 100/1000 SFP ports and 4 additional 100/1000 SFP ports combined with 4 10/100/1000T ports.

The **AT-9000/52** is a 52-port Gigabit Managed switch with 4 fixed configuration 10/100/1000 ports and 4 additional 100/1000 SFP ports.

#### Management Stacking

Enhanced Stacking™ provides CLI-based management of up to 24 switches with the same effort as for one switch. The Allied Telesis solution uses open standard Ethernet interfaces as stacking links so that many switches can be remotely managed as one IP entity across different sites.

#### Secure Management

Only authorized administrators can access the management interface of the AT-9000 Series. Security protocols such as SSL, SSH and SNMPv3 facilitate this protection of your network for both local or remote connections.

#### Environmentally Friendly ECO-Switch

In keeping with our commitment to environmentally friendly processes and products, the AT-9000 Series is a green range of products designed to reduce power consumption, minimize hazardous waste and even reduce office noise pollution. Features include the use of high efficiency power supplies and low power chipsets. We have also included an ECO-Switch button on the front panel of all AT-9000 Series switches. This allows you to conserve additional power by turning off the port and mode LEDs when they are not required.

#### Low Power Consumption with Near Silent Operation

Specifically designed to be usable in a classroom or retail store environment, the AT-9000 Series uses the latest in low power technologies to minimize power consumption and operational noise.

#### Key Features

##### Easy, Well Known Management

- Industry Standard AlliedWare Plus® CLI
- Simple, intuitive, full featured Allied Telesis Web Interface
- Secure encrypted Web and CLI management with SSHv2 and SSLv3
- SNMP

##### Ideal for Classroom or Retail Environments

- 28 or 52 active ports
- Lower power consumption
- Near silent operation

##### Management Stacking

- Enhanced stacking up to 24 units
- Single IP address stack management

##### All the QoS Needed for an Open Office, Classroom or Retail Store Environment

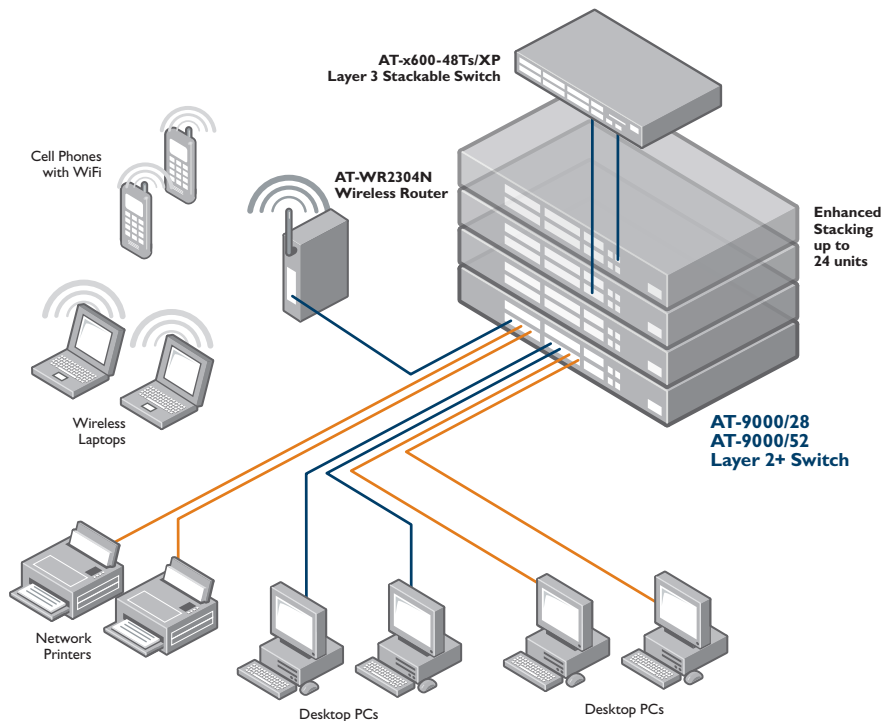
- Eight priorities queues
- IEEE 802.1p for Layer 2 QoS
- DSCP (Diffserv) for Layer 3 QoS
- IEEE 802.1p to DSCP remarking traffic ready for transport to the Layer 3 core of the network
- Layer 2 ~ 4 Access control lists (ACL)

##### Securing the Network at its Most Vulnerable Point

- IEEE 802.1x and RADIUS network login: for advanced control for user authentication and accountability
- Guest VLAN: to ensure visitors or unauthorized users connect only to services defined by IT, for example, Internet
- Dynamic VLAN
- TACACS+: for ease of management security administration

##### Access Control Lists

- Access Control Lists enable inspection of incoming frames and classify them based on various criteria. Specific actions can then be applied to these frames in order to more effectively manage the network traffic at Layer 2 through Layer 4. Typically, ACLs are used as a security mechanism, either permitting or denying entry (hence the name Access Control) for frames in a group.



### Ideal Branch Office and Wiring Closet Connectivity

Powerful line rate performance makes this switch ideal for branch offices or the wiring closet of larger offices. The state-of-the-art QoS capability of this product ensures reliable delivery of advanced network services such as voice and video, while effectively controlling the continually increasing traffic needs found in today's networks.

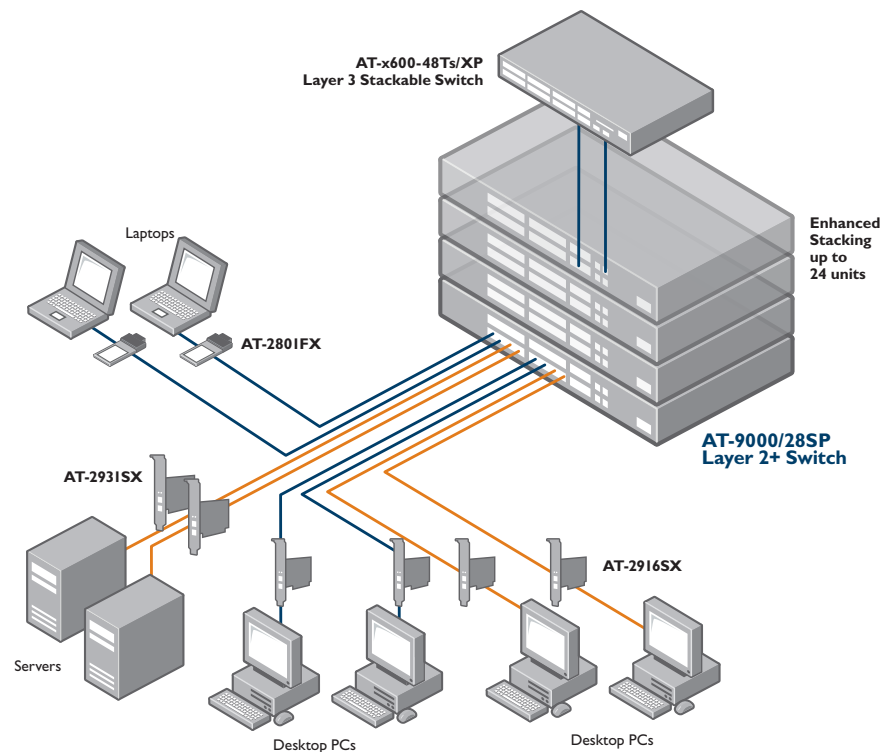
### Securing the Network Edge

To ensure the protection of your data, it is important to control access to your network. Protocols such as IEEE 802.1x port-based authentication guarantee that only known users are connected to the network. Unknown users who physically connect can be isolated to a pre-determined part of your network, offering guests such benefits as Internet access while ensuring the integrity of your private network data.

The switch is also fully compliant with Microsoft Network Access Protection (NAP) and Symantec Network Access Control (NAC).

### Easy Access Networking

Featuring an industry standard AlliedWare Plus® CLI and the Allied Telesis intuitive Web interface, the advanced features of the AT-9000 Series are accessible to a wide range of system administrators. The well-known CLI and Web interfaces significantly reduce learning time and minimize the cost of deployment.



## Product Specifications

### System Capacity

128MB RAM  
16MB flash memory  
8K MAC address  
4094 VLANs  
4Mbit packet buffer memory

### Maximum Bandwidth

Non-blocking for all packet sizes

	AT-9000/28	AT-9000/28SP	AT-9000/52
Throughput	41.6 Mpps		77.35 Mpps
Switching capacity	56 Gbps		104 Gbps
Switch fabric speed	62 Gbps		125 Gbps

Supports 9216 byte jumbo packets

### Wirespeed Switching on all Ethernet Ports

14,880pps for 10Mbps Ethernet  
148,800pps for 100Mbps Ethernet  
1,488,000pps for 1000Mbps Ethernet

### Latency

	AT-9000/28	AT-9000/28SP	AT-9000/52
10Mbit	78.77µsec	78.77µsec	76.86µsec
100Mbit	11.25µsec	25.22µsec	11.43µsec
1000Mbit	3.79µsec	3.84µsec	4.18µsec

### Power Characteristics

AC input electrical ratings 100-240V AC, 1A  
Frequency 50/60Hz

	AT-9000/28	AT-9000/28SP <sup>1</sup>	AT-9000/52
Typical power consumption in ECO-friendly mode	27.70W	23.12W	47.02W
Maximum power consumption	28.41W	23.48W	48.23W
Maximum power supply efficiency	83%	85%	83%
Heat dissipation	104.09BTU/hr	127.76BTU/hr	153.30BTU/hr

<sup>1</sup> Only for 990-002701-XX

### Environmental Specifications

Operating temperature 0°C to 40°C (32°F to 104°F)  
Storage temperature -25°C to 70°C (-13°F to 158°F)  
Operating humidity 5% to 90% non-condensing  
Storage humidity 5% to 95% non-condensing  
Operating altitude range, up to 3,000 meters (9,843 feet)

	AT-9000/28	AT-9000/28SP	AT-9000/52
Maximum acoustic noise	37.4dB	41.7dB	44.3dB

### Port Configurations

Auto-negotiation, MDI/MDI-X  
IEEE 802.3x Flow control / Back Pressure  
Head of line (HOL) Blocking Prevention  
Broadcast Storm Control  
Broadcast, Multicast, Unknown unicast rate limiting  
Port mirroring  
Ethernet statistics  
Bad Cable Detection  
Redundant Master / Slave Management

### Ethernet Specifications

RFC 894 Ethernet II Encapsulation  
IEEE 802.1D MAC Bridges  
IEEE 802.1Q Virtual LANs  
IEEE 802.2 Logical Link Control  
IEEE 802.3ab 1000T  
IEEE 802.3ad (LACP) Link Aggregation

IEEE 802.3u 100T  
IEEE 802.3x Full Duplex Operation  
IEEE 802.3z Gigabit Ethernet

### Quality of Service (QoS)

IEEE 802.Ip QoS  
Eight priority queues  
Strict Priority and Weighted Round Robin  
DSCP  
Rate Limiting  
Voice VLAN

### Spanning Tree Support

IEEE 802.1D Spanning-Tree Protocol (STP)  
IEEE 802.1w Rapid Spanning-Tree (RSTP)  
BPDU guard  
Loop guard

### Management

Web-based GUI  
Industry Standard AlliedWare Plus®  
Enhanced Stacking  
RFC 854 Telnet Client  
Telnet Sever  
NTP  
RFC 2616 HTTP  
RFC 1350 TFTP Download/Upload  
Zmodem Download/Upload  
RFC 1157 SNMPv1/v2c  
RFC 2570 SNMPv3  
RFC 1215 SNMP Traps  
RFC 1757 RMON 4 Groups: Stats, History, Alarms, Events  
Event Log  
RFC 3176 sFlow

### MIB Support

ATI Private MIB  
RFC 1155 MIB  
RFC 1213 MIB-II  
RFC 1493 Bridge MIB  
RFC 1643 Ethernet MIB  
RFC 2096 IP Forwarding Table MIB  
RFC 2790 Host MIB  
RFC 2863 The Interfaces Group MIB  
RFC 3176 sFlow MIB

### VLANs

Supports up to 4094 VLAN IDs  
Support for 255 active VLANs  
IEEE 802.1Q VLAN Tag  
Port-based VLANs  
MAC-based VLANs  
Port Protected VLANs  
IEEE 802.IP GVRP

### Link Aggregation

Static trunking  
IEEE 802.3ad Link Aggregation Control Protocol (LACP)  
Support for 12 groups per device and trunk can support up to 8 members per group

### Link Discovery

IEEE 802.1ab Link Layer Discovery Protocol (LLDP)  
Link Layer Discovery Protocol-Media Endpoint Discovery (LLDP-MED)

### General Protocols

RFC 768 UDP  
RFC 791 IP  
RFC 792 ICMP  
RFC 793 TCP  
RFC 826 ARP  
RFC 951 BootP  
RFC 1027 Proxy ARP  
RFC 1122 Internet Host Requirements

### IP Multicast

L2 Multicast Forwarding and Filtering up to 256 groups  
RFC 1112 IGMPv1 Snooping  
RFC 2236 IGMPv2 Snooping  
RFC 3376 IGMPv3 Snooping

### Security / 802.1x

L2-L4 Permit/Deny/Mirror ACLs  
SSHv2  
SSLv3  
RFC 2865 Radius  
RFC 1492 TACACS+  
Port Security (limited/dynamic)  
802.1x Port Base  
802.1x Multiple Host Mode  
IEEE 802.1x Supplicant  
IEEE 802.1x Authenticator  
IEEE 802.1x MD-5  
IEEE 802.1x LEAP  
IEEE 802.1x PEAP  
IEEE 802.1x EAP-TLS  
IEEE 802.1x TTLS  
IEEE 802.1x Dynamic VLANs  
IEEE 802.1x Guest VLANs  
IEEE 802.1x Secure VLANs  
IEEE 802.1x Multiple Supplicant Mode  
IEEE 802.1x Piggy-Back Mode  
Per-Port MAC Address Limiting  
Per-Port MAC Address Filtering  
Per-Port MAC Address Lockdown  
Microsoft NAP compliant  
Symantec NAC support

### IPv6

Static IPv6 Host

### Compliance Standards

IEEE 802.3 — 10T  
IEEE 802.3u — 100X with Auto-Negotiation  
IEEE 802.3ab — 1000T Gigabit Ethernet  
100FX SFP support  
1000X SFP support

### Safety and Electromagnetic Emissions Certifications

EMI: FCC Class A, CISPR 22 Class A, EN55022 Class A, C-TICK, VCCI  
Immunity: EN55024, EN61000-3-2 and EN61000-3-3  
Safety: UL 60950 (cULus), EN60950-1 (TUV)  
Quality and Reliability: MTBF — 340,000 hours

### RoHS Standards

Compliant with European and China RoHS standards

### Package Description

AT-9000/XX switch  
AC power cord  
Management cable (RJ-45 to DB-9)  
Rubber feet for desktop installation and 19" rack-mountable hardware kit accessories  
Install guide and CLI user's guide on CD

### Physical Specifications

AT-9000/28		
Dimensions (W x D x H)	440 mm x 256 mm x 44 mm	(17.33" x 10.08" x 1.73")
Weight	3.62 kg (8.00 lbs)	
AT-9000/28SP		
Dimensions (W x D x H)	440 mm x 256 mm x 44 mm	(17.33" x 10.08" x 1.73")
Weight	4.01 kg (8.85 lbs)	
AT-9000/52		
Dimensions (W x D x H)	440 mm x 256 mm x 44 mm	(17.33" x 10.08" x 1.73")
Weight	4.06 kg (8.95 lbs)	

\* Typical power is measured running 85% ports using 30m cable on a sample unit.

## Ordering Information



### Stackable Gigabit Ethernet Switches

#### AT-9000/28-xx

24 x 10/100/1000T RJ45 Ports  
 4 Combo Ports (4 x 10/100/1000T RJ45 Ports or 4 x 100/1000 SFP Ports)  
 Internal AC Power Supply

#### AT-9000/28SP-xx

24 x 10/100/1000T SFP Ports  
 4 Combo Ports (4 x 10/100/1000T RJ45 Ports or 4 x 100/1000 SFP Ports)  
 Internal AC Power Supply

#### AT-9000/52-xx

48 x 10/100/1000T RJ45 Ports  
 4 x 100/1000 SFP Ports  
 Internal AC Power Supply

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

### Country of Origin

Singapore

### Accessories

#### Small Form Pluggables (SFPs)

#### AT-SPTX

10/100/1000T RJ45, 100M (only supports 1000T)

#### AT-SPEX

Multi-mode Fiber, 2km, GbE, SFP, 1310nm

#### AT-SPSX

Multi-mode Fiber, 2km, GbE, SFP, 850nm

#### AT-SPLX10

Single-mode Fiber, 10km, GbE SFP, 1310nm

#### AT-SPLX10/I

Single-mode Fiber, 10km, GbE SFP, 1310nm

#### AT-SPLX40

Single-mode Fiber, 40km, GbE SFP, 1310nm

#### AT-SPZX80

Single-mode Fiber, 80km, GbE SFP, 1550nm

#### AT-SPFX/2

Multi-mode Fiber, 2km, 100FX, SFP, 850nm

#### AT-SPFX/15

Single-mode Fiber, 15km, 100FX, SFP, 1310nm

#### AT-SPBD10-13

Single-mode Fiber, 10km, GbE, SFP, 1490nm RX, 1490nm TX

#### AT-SPBD10-14

Single-mode Fiber, 10km, GbE, SFP, 1310nm RX, 1490nm TX

#### AT-SPFXBD-LC-13

Single-mode Fiber, 10km, 100FX, SFP, 1510nm RX, 1310nm TX

#### AT-SPFXBD-LC-15

Single-mode Fiber, 10km, 100FX, SFP, 1310nm RX, 1510nm TX

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USA Headquarters | 19800 North Creek Parkway | Suite 100 | Bothell | WA 98011 | USA | T: +1 800 424 4284 | F: +1 425 481 3895

European Headquarters | Via Motta 24 | 6830 Chiasso | Switzerland | T: +41 91 69769.00 | F: +41 91 69769.11

Asia-Pacific Headquarters | 11 Tai Seng Link | Singapore | 534182 | T: +65 6383 3832 | F: +65 6383 3830

[www.alliedtelesis.com](http://www.alliedtelesis.com)

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