

# FS970M Series

## Fast Ethernet Managed Access Switches

The Allied Telesis FS970M Series provides high performance Fast Ethernet connectivity at the edge of the network. These switches support security and full management features for small- and medium-sized enterprises, government, education, video surveillance, and Point of Sale (POS) applications.

### Overview

The FS970M Series consists of fiber and copper, Power over Ethernet (PoE), and non-PoE models to meet different requirements from different SMB networks. The copper models support configurations of 8, 24, and 48 × 10/100TX Fast Ethernet ports. PoE models support the IEEE 802.3at (PoE+) standard, delivering up to 30 Watts of power for video surveillance and security applications. The FS970M Series also includes fiber models configured with 24 × 100FX fiber ports, or a versatile option with 16 × 100FX fiber ports and an additional 8 × 10/100TX ports. All FS970M Series models also provide two Gigabit combo (10/100/1000T/SFP) uplink ports for faster, long distance connectivity.

### Simple Management

Managing a network with a smaller IT infrastructure can be a challenge. The FS970M Series features full management capabilities, with simplified deployment and minimum configuration time.

The FS970M Series also provides special features that facilitate simple and effective network management such as LLDP-MED, Voice VLAN, and Web management. With LLDP-MED, the user can auto-configure end stations, sending preconditioned traffic that adheres to Voice VLAN. Voice VLAN segregates VoIP traffic from regular Ethernet traffic and applies a higher Quality of Service (QoS). This takes the complexity out of VoIP deployments, ensuring high voice quality and protecting time-sensitive voice traffic from being flooded by other data.

An industry-standard CLI, combined with a simple and intuitive Web management interface, reduces the

training needs for IT support teams, enabling customers with less technical backgrounds to easily troubleshoot or make adjustments to the network.

### Enhanced Stacking

The Allied Telesis FS970M Series of managed switches makes network configuration and management simple. Enhanced Stacking allows management, configuration, and software upgrades for up to 24 switches with a single command in a single management session.



The switches can also share the same IP address, reducing the number of addresses assigned to network devices for remote management. Remotely managing a new switch in your LAN is as simple as plugging it in. Once connected to the LAN, the device can be managed remotely from any workstation.

### Quality of Service

The FS970M Series also supports priority QoS, which prioritizes data with a simple command — providing

## Key Features

### Simplified Management

- ▶ Industry standard CLI
- ▶ Simple, intuitive, full-featured Web interface
- ▶ Secure, encrypted Web and CLI management with SSHv2 and SSL
- ▶ SNMP v1, v2C, v3

### Layer 3 Routing

- ▶ The FS970M Series provides static IPv4 routing at the edge of the network, as well as support for RIPv1 and RIPv2

### Security at the Edge

- ▶ Edge is the most vulnerable point of the network and the FS970M Series provides a full set of security features including Multi Supplicant Authentication, IEEE 802.1x, RADIUS, and TACACS+ and Dynamic VLAN
- ▶ Guest VLAN ensures visitors or unauthorized users connect only to services defined by IT, such as Internet services
- ▶ Access Control Lists (ACLs) enable inspection of incoming frames and classify them based on various criteria. Specific actions can then be applied in order to more effectively manage the network traffic. Typically ACLs are used as a security mechanism, either permitting or denying entry (for frames in a group, but ACLs can also be applied to QoS)

### Centralized Power with PoE+

- ▶ PoE+ provides centralized power connection to media, cameras, IP phones and wireless access points
- ▶ PoE+ reduces costs and offers greater flexibility with the capability to connect devices requiring more power (up to 30W) such as pan-tilt-zoom security cameras

### Fiber Connectivity

- ▶ All models feature two Gigabit fiber-capable combo ports
- ▶ Fiber enables long distance connectivity, using existing fiber infrastructure to interconnect buildings and departments
- ▶ Some models provide fixed 16 or 24 fiber Fast Ethernet ports
- ▶ Fiber provides even higher security for government, hospitals, and locations with highly-secured data
- ▶ Fiber provides complete immunity to electrical interference, ideal for high voltage environments and in locations with high EMI (Electromagnetic Interference), such as alongside utility lines, conveyor belts, power lines, and railroad track



better service to selected network traffic while minimizing the complexity of QoS deployment in the network. Allied Telesis QoS gives the user more control over the traffic of data, and allocates network resources more efficiently. QoS is also fundamental for IP Triple Play (voice, video, and data) applications.

## Environmentally Friendly

The FS970M Series is designed to

reduce power consumption and to minimize hazardous waste. Fans are designed to minimize noise pollution. High efficiency power supplies, low power chipsets, and effective power management deliver both a reduced carbon footprint and cost savings for the end user.



## Effective Traffic Monitoring

In order to fully understand the performance of the network — and ensure the ongoing smooth delivery of critical data — users must be able to measure and analyze the traffic in real time.

The FS970M Series facilitates effective traffic monitoring with sFlow, an industry-standard technology for monitoring high-speed switched networks. sFlow provides complete visibility into the use of the network, enabling performance optimization, accounting, billing for usage, and even defense against security threats.

## Investment Protection

With the depletion of IPv4 address space, IPv6 is rapidly becoming a mandatory requirement for many healthcare, education, government, and enterprise customers. To meet this need, now and into the future, the FS970M Series supports IPv6 applications.

## Network Protection

To ensure protection of data and the network, the FS970M Series provides a solid set of security features and secure management options.

FS970M Series switches use IEEE 802.1x port-based authentication and dynamic VLAN assignment to

assure compliance to network security policies and either grant access or offer remediation. 802.1x and MAC 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 Access Control (NAC) gives unprecedented control over user access to the network in order to mitigate threats to network infrastructure.

## Smooth Network

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. The Allied Telesis FS970M Series provides features to detect loops as soon as they are created. Loop detection and broadcast storm control take immediate action to prevent network storms.

## Specifications

### System Capacity

128MB RAM  
16MB flash memory  
16K MAC addresses  
266MHz CPU

### Maximum Bandwidth

Non-blocking for all packet sizes

### Wirespeed Switching on all Ethernet Ports

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

### Port Configuration

Auto-negotiation, duplex, MDI/MDI-X, IEEE 802.3x flow control/back pressure  
Head of Line (HOL) blocking prevention  
Broadcast storm control  
Link flap protection  
Group link control  
Port mirroring

## Ethernet Specifications

RFC 894 Ethernet II encapsulation  
IEEE 802.1D MAC bridges  
IEEE 802.1Q Virtual LANs  
IEEE 802.2 Logical link control  
IEEE 802.3ac VLAN TAG  
IEEE 802.1ax-2008 (LACP) link aggregation  
IEEE 802.3u 100TX  
IEEE 802.3x Full-duplex operation  
IEEE 802.3z Gigabit Ethernet  
IEEE 802.3af Power over Ethernet class 3  
IEEE 802.3at Power over Ethernet class 4 Jumbo frames (9198 bytes)

## Quality of Service (QoS)

Eight egress queues per port  
Egress rate limiting  
Voice VLAN  
Automatic QoS  
IEEE 802.1p Class of Service with strict and weighted round robin scheduling  
RFC 2474 DSCP for IP-based QoS  
RFC 2475 Differentiated services architecture Layer 2, 3, and 4 criteria

## Link Aggregation

IEEE 802.3ad LACP - 8 groups  
Static link aggregation - 24 groups

## Link Discovery

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

## Spanning-Tree Protocol

IEEE 802.1D Spanning-Tree Protocol  
IEEE 802.1D-2004 Rapid Spanning-Tree Protocol  
IEEE 802.1q-2005 Multiple Spanning-Tree Protocol (15 instances)  
BPDU guard  
Loop guard  
Root guard

## Management

RFC 854 Telnet server  
Console management port  
Industry-standard CLI  
Web GUI  
Enhanced Stacking  
RFC 1866 HTML  
RFC 2068 HTTP  
RFC 2616 HTTPS  
RFC 1350 TFTP  
zModem  
RFC 1305 SNMP  
RFC 1155 MIB  
RFC 1157 SNMPv1  
RFC 1901 SNMPv2c  
RFC 3411 SNMPv3  
RFC 1757 RMON 4 groups: Stats, History, Alarms and Events  
RFC 3164 Syslog protocol (client)  
Event log  
RFC 3176 sFlow  
Auto config

## MIB Support

RFC 1213 MIB-II  
RFC 1215 TRAP MIB  
RFC 1493 Bridge MIB  
RFC 2863 Interfaces group MIB  
RFC 1643 Ethernet-like MIB  
RFC 2618 RMON MIB  
RFC 2674 IEEE 802.1Q MIB  
RFC 2096 IP forwarding table MIB  
Allied Telesis Managed Switch MIB



PRODUCT	10/100TX FE PORTS	100FX PORTS	1GIG/SFP UPLINKS	PoE+ PORTS	SWITCHING CAPACITY	FORWARDING RATE	LATENCY	
							10MB	100MB
AT-FS970M/8	8	–	2	–	5.6Gbps	4.1Mpps	80µs	10µs
AT-FS970M/8PS	8	–	2	8	5.6Gbps	4.1Mpps	80µs	10µs
AT-FS970M/8PS-E	8	–	2	8	5.6Gbps	4.1Mpps	80µs	10µs
AT-FS970M/24C	24	–	2	–	8.8Gbps	6.5Mpps	82µs	12µs
AT-FS970M/24PS	24	–	2	24	8.8Gbps	6.5Mpps	81µs	12µs
AT-FS970M/24LPS	24	–	2	24	8.8Gbps	6.5Mpps	81µs	12µs
AT-FS970M/16F8-LC	8	16	2	–	8.8Gbps	6.5Mpps	81µs	11µs
AT-FS970M/16F8-SC	8	16	2	–	8.8Gbps	6.5Mpps	81µs	11µs
AT-FS970M/24F	–	24	2	–	8.8Gbps	6.5Mpps	81µs	11µs
AT-FS970M/48	48	–	2	–	13.6Gbps	10.1Mpps	81µs	12µs
AT-FS970M/48PS	48	–	2	48	13.6Gbps	10.1Mpps	81µs	12µs

Per port MAC address filtering  
 MAC address security/lockdown  
 RFC 1321 MD-5  
 EAP, EAP-TLS, LEAP, PEAP, TTLS  
 Dynamic VLANs  
 Guest VLANs  
 Secure VLANs  
 Layer 2/3/4/ Access Control Lists (ACLs)  
 SSLv3 for Web management  
 SSL  
 SSH  
 SSH session time out  
 Microsoft NAP compliant  
 Symantec NAC support

**IPv6**  
 IPv6 host  
 IPv6 ACL  
 ICMPv6  
 Dual-stack IPv4/IPv6 management  
 IPv6 applications: Web/SSL, Telnet server/SSH

**IP Routing**

Static IPv4 routing – 4K  
 RIPv1, v2  
 Proxy ARP

**Compliance Standards**

IEEE 802.3 – 10T  
 IEEE 802.3u – 100TX with auto-negotiation  
 IEEE 802.3ab – 1000T Gigabit Ethernet  
 100FX SFP support  
 1000X SFP support

**Environmental Specifications**

Operating temperature: 0°C to 40°C (AT-FS970M/8PS-E supports up to 50°C)  
 Storage temperature: -25°C to 70°C  
 Operating humidity: 5% to 90% non-condensing  
 Storage humidity: 5% to 95% non-condensing  
 Max operating altitude: 3,048 m (10,000 ft)  
 Airflow: front (port side) to back (fan/power side)

**Safety and Electromagnetic Emissions Certifications**

EMI: FCC class A, CISPR class A, EN55022 class A, C-TICK, VCCI Class A, CE, EN61000-3-2, EN61000-3-3  
 Immunity: EN55024  
 Safety: UL 60950-1 (cULus), EN60950-1 (TUV), EN60825

**RoHS Standards**

Compliant with European and China RoHS standards

**Physical Characteristics**

Dimensions (W x D x H):

AT-FS970M/8	33 cm x 20.3 cm x 4.4 cm (13 in x 8.1 in x 1.7 in)
AT-FS970M/8PS	33 cm x 20.3 cm x 4.4 cm (13 in x 8.1 in x 1.7 in)
AT-FS970M/8PS-E	33 cm x 20.3 cm x 4.4 cm (13 in x 8.1 in x 1.7 in)
AT-FS970M/24C	33 cm x 20.3 cm x 4.4 cm (13 in x 8.1 in x 1.7 in)
AT-FS970M/24PS	44.1 cm x 32.3 cm x 4.4 cm (17.3 in x 12.7 in x 1.7 in)
AT-FS970M/24LPS	44.1 cm x 32.3 cm x 4.4 cm (17.3 in x 12.7 in x 1.7 in)
AT-FS970M/16F8-LC	44.1 cm x 32.3 cm x 4.4 cm (17.3 in x 12.7 in x 1.7 in)
AT-FS970M/16F8-SC	44.1 cm x 32.3 cm x 4.4 cm (17.3 in x 12.7 in x 1.7 in)
AT-FS970M/24F	44.1 cm x 29.1 cm x 4.4 cm (17.3 in x 11.5 in x 1.7 in)
AT-FS970M/48	44.1 cm x 29.1 cm x 4.4 cm (17.3 in x 11.5 in x 1.7 in)

**Power and Noise Characteristics**

PRODUCT	MAX POWER CONSUMPTION	MAX HEAT DISSIPATION	NOISE	VOLTAGE	FREQUENCY
AT-FS970M/8	9.1W	31 BTU/hr	Fanless	100-240V AC (10% auto-ranging)	47-63Hz
AT-FS970M/8PS	230W*	150 BTU/hr	51.8 dB	100-240V AC (10% auto-ranging)	47-63Hz
AT-FS970M/8PS-E	230W*	150 BTU/hr	51.8 dB	100-240V AC (10% auto-ranging)	47-63Hz
AT-FS970M/24C	18.3W	62 BTU/hr	Fanless	100-240V AC (10% auto-ranging)	47-63Hz
AT-FS970M/24PS	460W*	300 BTU/hr	57.0 dB	100-240V AC (10% auto-ranging)	47-63Hz
AT-FS970M/24LPS	230W	150 BTU/hr	57.0 dB	100-240V AC (10% auto-ranging)	47-63Hz
AT-FS970M/16F8-LC	22W	75 BTU/hr	55.4 dB	100-240V AC (10% auto-ranging)	47-63Hz
AT-FS970M/16F8-SC	22W	75 BTU/hr	55.4 dB	100-240V AC (10% auto-ranging)	47-63Hz
AT-FS970M/24F	22W	75 BTU/hr	55.4 dB	100-240V AC (10% auto-ranging)	47-63Hz
AT-FS970M/48	23.2W	77 BTU/hr	Fanless	100-240V AC (10% auto-ranging)	47-63Hz <small>*With maximum PoE load</small>
AT-FS970M/48PS	460W*	314 BTU/hr	58.9 dB	100-240V AC (10% auto-ranging)	47-63Hz

**Power over Ethernet Specifications**

POWER SUPPLY UNIT	POE POWER AVAILABLE	MAXIMUM POE PORTS SUPPORTED		
		IEEE 802.3af CLASS 2	IEEE 802.3af CLASS 3	IEEE 802.3at CLASS 4
AT-FS970M/8PS	185W	8	8	6
AT-FS970M/8PS-E	185W	8	8	6
AT-FS970M/24PS	370W	24	24	12
AT-FS970M/24LPS	185W	24	12	6
AT-FS970M/48PS	370W	48	24	12

**VLAN**

4096 VLANs (IEEE 802.1Q)  
 Port-based VLANs  
 MAC-based VLANs – 256  
 IP subnet-based VLANs – 256  
 Port-based Private VLANs  
 GARP VLAN Registration Protocol (GVRP)

**IP Multicast**

IGMP snooping  
 Multicast groups – 255

**General Protocols**

RFC 768 UDP  
 RFC 791 IP  
 RFC 792 ICMP  
 RFC 793 TCP  
 RFC 826 ARP  
 RFC 950 Subnetting, ICMP

RFC 1027 Proxy ARP  
 RFC 1035 DNS  
 RFC 1122 Internet host requirements  
 DHCP client  
 DHCP snooping  
 DHCP option 82  
 RFC 3046 DHCP relay  
 RFC 951 BootP

**Security / IEEE 802.1x**

TACACS+  
 RFC 2865 RADIUS client  
 RFC 2866 RADIUS accounting  
 IEEE 802.1x port-based Network Access Control (NAC)  
 Supplicant  
 Authenticator  
 IEEE 802.1x multiple supplicant mode  
 Piggy-back mode  
 Per port MAC address limiting

AT-FS970M/48PS	44.1 cm × 32.3 cm × 4.4 cm (17.3 in × 12.7 in × 1.7 in)
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Weight:

AT-FS970M/8	1.9 kg (4.2 lbs)
AT-FS970M/8PS	2.3 kg (5.1 lbs)
AT-FS970M/8PS-E	2.3 kg (5.1 lbs)
AT-FS970M/24C	2.2 kg (4.8 lbs)
AT-FS970M/24PS	5.0 kg (11.0 lbs)
AT-FS970M/24LPS	4.4 kg (9.7 lbs)
AT-FS970M/16F8-LC	4.4 kg (9.75 lbs)
AT-FS970M/16F8-SC	4.4 kg (9.75 lbs)
AT-FS970M/24F	4.4 kg (9.75 lbs)
AT-FS970M/48	4.0 kg (8.9 lbs)
AT-FS970M/48PS	5.6 kg (12.3 lbs)

Package Description

- AT-FS970M/xx switch
- AC power cord(s)
- Management cable (RJ-45 to DB-9)
- Rubber feet for desktop installation
- Install Guide and CLI user's guide available at [alliedtelesis.com](http://alliedtelesis.com)



Ordering Information

Fast Ethernet Switches

**AT-FS970M/8-xx**  
8-port 10/100TX switch with 2 Gigabit/SFP combo uplinks and one fixed AC power supply

**AT-FS970M/8PS-xx**  
8-port 10/100TX PoE+ switch with 2 Gigabit/SFP combo uplinks and one fixed AC power supply

**AT-FS970M/8PS-E-xx**  
8-port 10/100TX extended temperature PoE+ switch with 2 Gigabit/SFP combo uplinks and one fixed AC power supply

**AT-FS970M/24C-xx**  
24-port 10/100TX compact switch with 2 Gigabit/SFP combo ports and one fixed AC power supply

**AT-FS970M/24PS-xx**  
24-port 10/100TX PoE+ switch with 2 Gigabit/SFP combo ports and two fixed AC power supplies

**AT-FS970M/24LPS-xx**  
24-port 10/100TX PoE+ switch with 2 Gigabit/SFP combo ports and one fixed AC power supply

**AT-FS970M/16F8-LC-xx**  
16-port 100FX and 8-port 10/100TX switch with 2 Gigabit/SFP combo uplinks and two fixed AC power supplies

**AT-FS970M/16F8-SC-xx**  
16-port 100FX and 8-port 10/100TX switch with 2 Gigabit/SFP combo uplinks and two fixed AC power supplies

**AT-FS970M/24F-xx**  
24-port 100FX switch with 2 Gigabit/SFP combo uplinks and two fixed AC power supplies

**AT-FS970M/48-xx**  
48-port 10/100TX compact switch with 2 Gigabit/SFP combo ports and one fixed AC power supply

**AT-FS970M/48PS-xx**  
48-port 10/100TX PoE+ switch with 2 Gigabit/SFP combo ports and two fixed AC power supplies

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

Small Form Pluggable Optics Modules

**AT-SPSX**  
SFP, MMF, 1000Mbps, 220 / 500 m, 850 nm, LC

**AT-SPSX-I**  
SFP, MMF, 1000Mbps, 220 / 550m, 850 nm, LC  
Extended temperature: -40°C to 85°C

**AT-SPEX**  
SFP, MMF, 1000Mbps, 2 km, 1310 nm, LC

**AT-SPLX10**  
SFP, SMF, 1000Mbps, 10 km, 1310 nm, LC

**AT-SPLX10/I**  
SFP, SMF, 1000Mbps, 10 km, 1310 nm, LC  
Extended temperature: -40°C to 85°C

**AT-SPLX40**  
SFP, SMF, 1000Mbps, 40 km, 1310 nm, LC

**AT-SPZX80**  
SFP, SMF, 1000Mbps, 80 km, 1550 nm, LC

**AT-SPBD10-I3**  
SFP, SMF, 1000Mbps, 10 km, 1310/1490 nm, LC-BiDi

**AT-SPBD10-I4**  
SFP, SMF, 1000Mbps, 10 km, 1490/1310 nm, LC-BiDi

**AT-SPFX/2**  
SFP, MMF, 100Mbps, 2 km, 1310 nm, LC

**AT-SPFXBD-LC-I3**  
SFP, SMF, 100Mbps, 10 km, 1310/1510 nm, LC-BiDi

**AT-SPFXBD-LC-I5**  
SFP, SMF, 100Mbps, 10 km, 1510/1310 nm, LC-BiDi

**AT-SPFX/I5**  
SFP, SMF, 100Mbps, 15 km, 1310 nm, L