Allied Telesyn

Simply Connecting the World

AT-FH708SW
AT-FH712SW
AT-FH716SW
AT-FH724SW
AT-FH716

Dual-speed Hubs

Installation Guide

Statements

AT-FH708SW, AT-FH712SW, AT-FH716SW, AT-FH724SW or AT-FH716 in a Stacked Configuration

FCC Warning

RADIATED ENERGY
U.S. Federal Communications
Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note: Modifications or changes not expressly approved of by the manufacturer or the FCC, can void your right to operate this equipment.

Use Category 3, 4, or 5 unshielded or shielded twisted-pair cable for all 10 Mbps RJ45 connections, and Category 5 unshielded or shielded twisted-pair for all 100 Mbps RJ45 connections.

Class A (Canada Department of Communications)

Industry Canada

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

CE Mark Warning

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

This is to certify that this product complies with ISO/IEC Guide 22 and EN45014. It confirms to the following specifications:

EMC:	EN55022 (1988)/CISPR-22(1985)	Class A
	IEC1000-4-2(1995)	4kV CD, 8kV AD
	IEC1000-4-3(1995)	3V/m
	IEC1000-4-4(1995)	1kV - (power line), 0.5kV - signal line
	IEC1000-4-6(1995)	3Vrms

AT-FH708SW, AT-FH712SW, AT-FH716SW, AT-FH724SW, AT-FH716 in a Standalone Operation Only

FCC Warning

U.S. Federal Communications Commission

DECLARATION OF CONFORMITY

Manufacture Name:	AlliedTelesyn International, Corp.
Manufacture Address:	960 Stewart Drive, Suite B
	Sunnyvale, CA 94086 USA
Manufacture Telephone:	408-730-0950
Declares that the Product:	Dual-speed hubs
Model Numbers:	AT-FH708SW, AT-FH712SW, AT-FH716SW,
	AT-FH724SW, AT-FH716

This product complies with FCC Part 15B, Class B Limits:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device must not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RADIATED ENERGY

Note: This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with instructions, may cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on; the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.

WARNING: This product requires only Category 3, 4, or 5 shielded twisted-pair cable for all 10 Mbps RJ45 connections, and Category 5 shielded twisted-pair for all 100 Mbps RJ45 connections to comply with Class B emission limits. If not used with shielded cables, this product may cause radio interference in which case the user may be required to take adequate measures to reduce interference levels.

Canadian Department of Commissions

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

CE Mark Warning

This is to certify that this product complies with ISO/IEC Guide 22 and EN45014. It confirms to the following specifications:

EMC:	EN55022 (1988)/CISPR-22(1985)	Class B
	IEC1000-4-2(1995)	4kV CD, 8kV AD
	IEC1000-4-3(1995)	3V/m
	IEC1000-4-4(1995)	1kV - (power line), 0.5kV - signal line
	IEC1000-4-6(1995)	3Vrms

_____ Warning _____
This product requires shielded cables to comply with Class B emission limits. If not used with shielded cables, this product may cause radio interference in which case the user may be required to take adequate measures.

This product complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

_____ Warning _____
Do not plug a phone jack connector in the RJ45 port. This may damage the device.

AT-FH708SW, AT-FH716SW and AT-FH716 in a Stacked or Standalone Operation

Safety Compliance
UnderWriters Laboratories, Inc. (USA)

AT-FH712SW and AT-FH724SW in a Stacked or Standalone Operation

Safety Compliance CSA/NRTL

Important! Before making connections, make sure you have the correct cord set.

Wichtige Sicherheitshinweise

1. Bitte lesen Sie sich diese Hinweise sorgfältig durch.

2. Heben Sie diese Anleitung für den späteren Gebrauch auf.

3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie keine Flüssig- oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.

4. Um eine Beschädigung des Gerätes zu vermeiden sollten Sie nur Zubehörteile verwenden, die vom Hersteller zugelassen sind.

5. Das Gerät ist vor Feuchtigkeit zu schützen.

6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen. Verwenden Sie nur sichere Standorte und beachten Sie die Aufstellhinweise des Herstellers.

7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.

8. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.

9. Die Netzanschlußsteckdose muß aus Gründen der elektrischen Sicherheit einen Schutzleiterkontakt haben.

10. Verlegen Sie die Netzanschlußleitung so daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.

11. Alle Hinweise und Warnungen die sich am Gerät befinden sind zu beachten.

12. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.

13. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.

14. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.

15. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:

    a. Netzkabel oder Netzstecker sind beschädigt.

    b. Flüssigkeit ist in das Gerät eingedrungen.

    c. Das Gerät war Feuchtigkeit ausgesetzt.

    d. Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.

    e. Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.

    f. Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.

16. Bei Reparaturen dürfen nur Orginalersatzteile bzw. den Orginalteilen entsprechende Teile verwendet werden. Der Einsatz von ungeeigneten Ersatzteilen kann eine weitere Beschädigung hervorrufen.

17. Wenden Sie sich mit allen Fragen die Service und Reparatur betreffen an Ihren Servicepartner. Somit stellen Sie die Betriebssicherheit des Gerätes sicher.

Table of Content

Chapter 1
Product Description

Overview

This chapter describes the features of the AT-FH700 Series of stackable dual-speed Fast Ethernet hubs:

- ❑ AT-FH708SW

- ❑ AT-FH712SW

- ❑ AT-FH716SW

- ❑ AT-FH724SW

- ❑ AT-FH716

The AT-FH700 Series hubs were designed to provide a compact, flexible solution for corporate workgroups or small and medium businesses. These hubs provide 8, 12, 16 and 24 dual-speed ports (10/100 Mbps). The hubs contain two internal repeater buses: one for 10 Mbps traffic and another for 100 Mbps traffic.

The AT-FH708SW, AT-FH712SW, AT-FH716SW and AT-FH724SW hubs include an integrated two-port switch module that connects the 10 Mbps and 100 Mbps repeater buses. The switch module allows communications between devices operating at different speeds.

On the AT-FH716 model, traffic between connected devices of the same speed are confined within the appropriate repeater bus. Each of these ports automatically senses the speed of the attached device, and channels the data to the appropriate 10 Mbps or 100 Mbps segment.

Table 1 summarizes the features of each hub model:

Table 1 AT-FH700 Series Hub Models and Descripti o n

Model	Description
AT-FH708SW	Eight 10/100 Mbps twisted-pair ports One MDI/MDI-X switch associated with Port 8 Integrated switch module LED indicators for Power, Collision, Activity, Partition, and Link 10/100
AT-FH712SW	Twelve 10/100 Mbps twisted-pair ports One MDI/MDI-X switch associated with Port 12 Integrated switch module LED indicators for Power, Collision, Activity, Partition, and Link 10/100
AT-FH716SW	Sixteen 10/100 Mbps twisted-pair ports One MDI/MDI-X switch associated with Port 16 Integrated switch module LED indicators for Power, Collision, Activity, Partition, and Link 10/100
AT-FH724SW	Twenty-four 10/100 Mbps twisted-pair ports One MDI/MDI-X switch associated with Port 24 Integrated switch module LED indicators for Power, Collision, Activity, Partition, and Link 10/100
AT-FH716	Sixteen 10/100 Mbps twisted-pair (ports One MDI/MDI-X switch associated with Port 16 LED indicators for Power, Collision, Activity, Partition, and Link 10/100

───────────────────── **Note** ─────────────────────

For definitions of technical terms associated with Allied Telesyn's products, refer to the Glossary on Allied Telesyn's website at **www.alliedtelesyn.com.**

Key Features

The AT-FH700 Series hubs provide the following key features:

- ❑ IEEE 802.3 (10Base-T) and IEEE 802.3u (100Base-TX) compliant

- ❑ Class II repeater

- ❑ 8, 12, 16 and 24 10/100 Mbps dual-speed Fast Ethernet ports (RJ45 connectors)

- ❑ Category 5 UTP/STP cables for 10 Mbps and 100 Mbps transmissions; Category 3 UTP cables for 10 Mbps transmission only

- ❑ Auto-negotiate for 10/100 Mbps transmission speed

- ❑ Stacked configuration of up to six hubs with the use of a cascade cable, or standalone configuration

- ❑ Integrated switch module in the AT-FH708SW, AT-FH712SW, AT-FH716SW and AT-FH724SW models to allow transmissions between 10 Mbps and 100 Mbps devices connected to the hub stack

- ❑ Desktop or rack mounting options

Front Panels

Figure 1 through Figure 3 show the hub front panels.
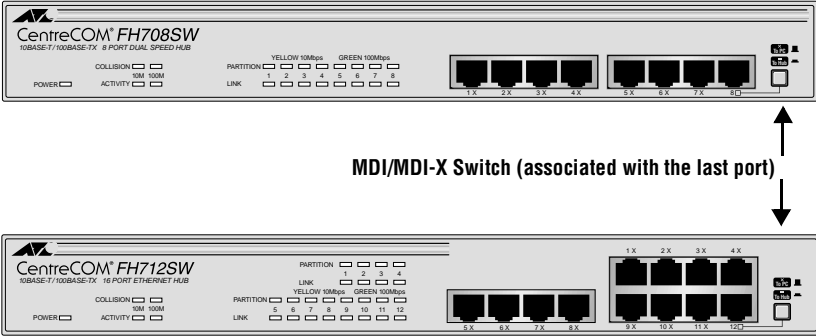
Figure 1 AT-FH708SW and AT-FH712SW Front Panels

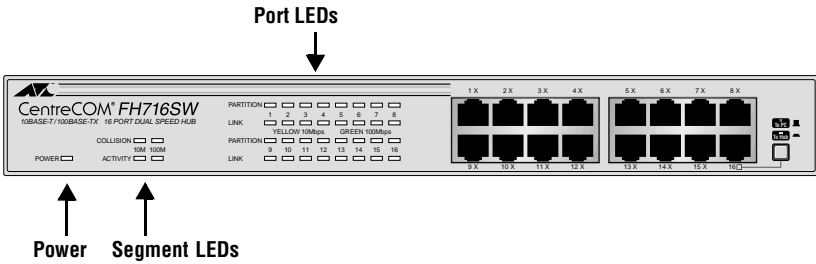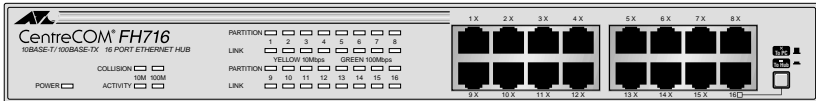**Figure 2** AT-FH716SW Front Panel
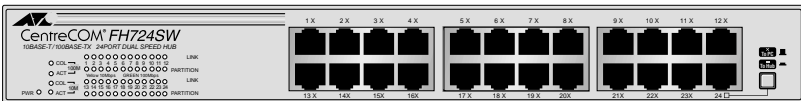

Figure 3 AT-FH716 Front Panel

Figure 4 AT-FH724SW Front Panel

Front Panel LEDs

The AT-FH700 Series hubs' front panel LEDs provide status in three areas:

❑   System-wide status

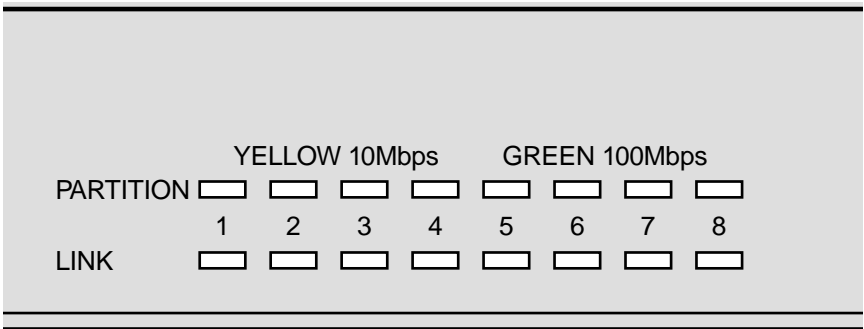❑   Segment status

❑   Per-port status

Figure 5 A Close Up of the Port LEDs for the 8-Port Model
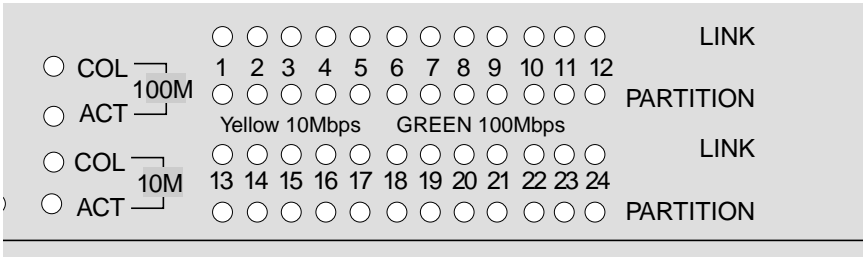
Figure 6 A Close Up of the Port LEDs for AT-FH724SW

For detailed explanations on the hubs' front panel LEDs, see Tabl e2.

Table 2 LED Indicators

LED	Description
System Status Indicator:	
Power	**Steady green** indicates the hub is receiving power.
Segment Status Indicators (one each for the 10 Mbps and 100 Mbps segments):	
Collision	**Flashing amber** indicates a collision has occurred in the 10 Mbps or 100 Mbps domain.
Activity	**Flashing green** indicates 10 Mbps or 100 Mbps traffic is traversing the respective segment.
Port Status Indicators:	
Partition	**Steady amber or red** indicates the port has been partitioned.
Link 10/100M	**Off** means there is no link on the port.
	Steady green indicates the port has established a 100 Mbps link.
	Steady amber indicates the port has established a 10 Mbps link.

Front Panel Connectors

All network ports on the AT-FH700 Series hubs use shielded RJ45 connectors. For 10 Mbps connections, use Category 3 or above. For 100 Mbps connections, use Category 5 or above cables only.

MDI /MDI-X Switch

Each hub has a MDI/MDI-X switch associated with either Port 8, Port 12, Port 16 or Port 24. The switch changes the associated port between MDI and MDI-X. The two settings provide you the flexibility of connecting any type of device with a straight-through cable:

❑   **To Hub** (in), for cascading to a switch or another hub

❑   **To PC** (out), for connection to a DTE (an end station or server)

Refer to Chapter 2 for additional information on cable lengths when cascading hubs.

Rear Panel

The rear panel shown in Figure 7 is common to all models.

Figure 7 AT-FH700 Series Rear Panel

Power Supply and Fan

Power connection to the AT-FH700 Series hubs are done through the power receptacle in the rear panel. The hubs use a universal internal switching power supply with 100 to 120 VAC, or 200 to 240 VAC (autoranging), 50/60 Hz input rating. The maximum power consumption is 27W. Cooling fans help maintain the hub's optimal temperature.

Stacking Connectors

Each AT-FH700 Series hub has two stacking connectors in the rear panel, **In** and **Out**, for inter-repeater connectivity. You can connect up to **six** hubs in a stack. Allied Telesyn supplies one stacking cable with each hub.

The hubs are fully stackable based on the following parameters:

❑ Units can be used as standalone units, or up to six units can be stacked using stacking cables-either SW, non-SW or both in combination.

❑ At least one SW unit is required to enable full communication for all ports.

❑ Where multiple SW units are stacked, any redundant switch circuits are automatically disabled.

More details on using the stacking connectors are described later in Chapter 2.

Rackmount Options

Rackmount kits are provided if you want to install your hubs in a standard 19-inch rack. Procedures for rackmounting are provided in Chapter 2.

Chapter 2
Installation

Verifying Package Contents

Make sure that the package includes the following items:

- ❑ One AT-FH700 Series hub

- ❑ One AC power cord

- ❑ Two rackmount brackets and eight screws

- ❑ Four self-adhesive rubber feet

- ❑ One stacking cable

- ❑ Warranty card

- ❑ This installation guide

If any of the above items is damaged or missing, contact your representative immediately.

Site Requirements

Make sure you observe the following site requirements:

❑ Choose a location that is less than 100 m (328 ft) away from servers, workstations, or switches.

──────────────────────────── **Caution** ────────────────────────────
Category 5 UTP/STP cables are environment-sensitive. Make sure the cable route is not too close to electrical noise sources such as power lines or fluorescent lights.
──

❑ Place the hub in a dust-free and moisture-free environment.

❑ Do not block ventilation openings on the unit.

❑ Do not place heavy objects on top of the hub.

❑ Use dedicated power circuits or power conditioners to supply power to the hub.

Standalone Desktop Installation

1. Attach the four self-adhesive rubber feet to the bottom of the hub, positioning them in the indentations.

2. Place the hub on a flat, level surface where power is easily accessible.

3. Attach one end of the power cord to the back of the hub and the other end to the power source.

   Make sure the Power LED on the front panel lights green.

4. Attach the data cables and observe normal operation as indicated by the port LEDs.

You are done with standalone desktop installation.

Rackmounting the Hubs

You will need a Phillips screwdriver for this installation.

1. Disconnect all data cables and then the power cord, if attached.

2. Attach the brackets to the side of the hub with the screws provided. See Figure 8.
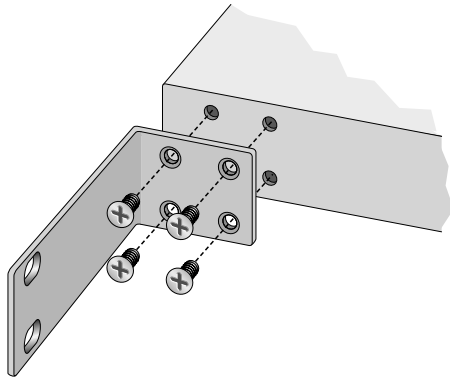

Figure 8 Attaching the Brackets

3. Mount the hub to the 19-inch rack using standard screws (not provided). See Figur e9.
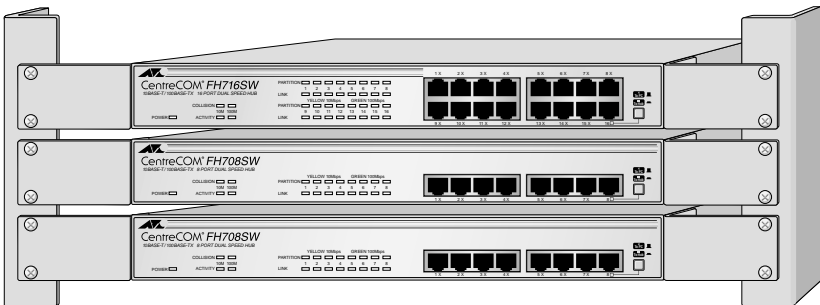
Figure 9 Rackmounted Hubs

4. Reconnect the power cord and then the data cables.

Stacking the Hubs

A stacking feature in each AT-FH700 Series hub's rear panel gives you the advantage of stacking up to six AT-FH700 Series hubs and still have all front panel ports available for station connections. Stacking six 16-port hubs provides you a maximum of 96 connections belonging to the same collision domain.

Allied Telesyn ships a stacking cable with every AT-FH700 Series hub. Do not use any other cable with the hubs' stacking ports.

To stack the hubs with the stacking cables:

1. Connect one end of the cable to the **Out** port of the top hub.

2. Connect the other end to the **In** port of the next hub. See Figur e10.
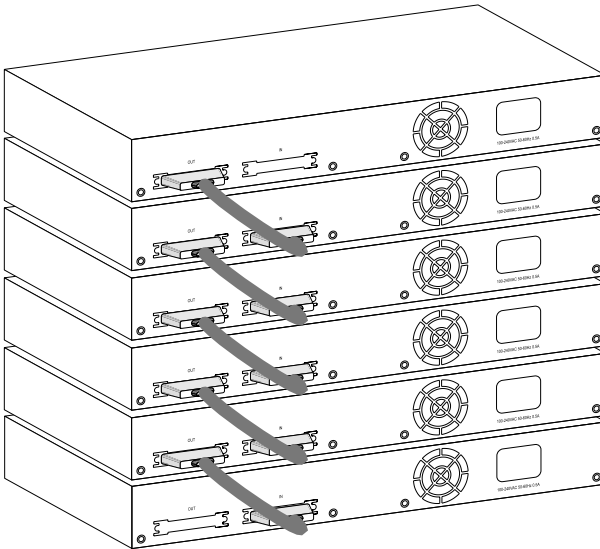
Figure 10 Stacking AT-FH700 Series Hubs

3. Connect additional hubs using the same scheme (up to 6 hubs), and using only the stacking cable that came with your hub.

See the section, Connecting Network Devices" beginning on page 13, for additional information on connecting 10 Mbps and 100 Mbps workstations and cabling restrictions when cascading hubs.

Connecting Network Devices

This section shows you how to connect:

❑ Ethernet and Fast Ethernet workstations

❑ An external Fast Ethernet switch

❑ A hub with the integrated switch module (either the AT-FH708SW, AT-FH712SW, AT-FH716SW or AT-FH724SW)

❑ Other network devices via cascading

This section also includes important information on cable length restrictions when cascading hubs.

Connecting Ethernet or Fast Ethernet Workstations

Use a straight-through wired UTP Cat 5 cable with RJ45 connectors to connect either a 10Base-T or 100Base-TX device directly to the hub's port (1 through 16). Do not exceed a maximum of 100 m (328 ft). The hub's autosensing capability does not require additional user configuration and enables transmission between devices of the same speeds (stations A and B in Figur e11).
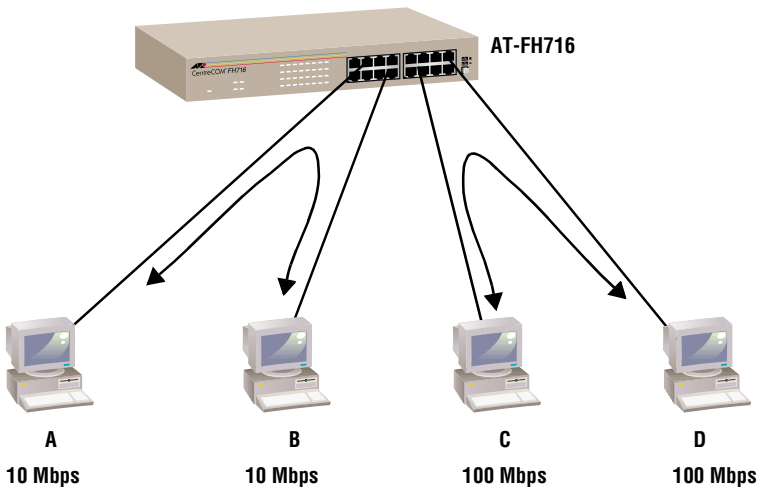
Figure 11 Connecting Ethernet Hubs

When using the AT-FH716 model as in Figu re11, a 10 Mbps device (station A or B) cannot transmit to a 100 Mbps device (station C or D).

Using An External Switch (AT-FH716)

If you require communication between devices of different transmission speeds across different domains, you may install an external 10/100 Mbps Fast Ethernet switch to the AT-FH716 hub (Figu re12).

**AT-8124 External
Switch**

10 Mbps

AT-FH716

100 Mbps

A	B	C	D
10 Mbps	**100 Mbps**	**10 Mbps**	**100 Mbps**
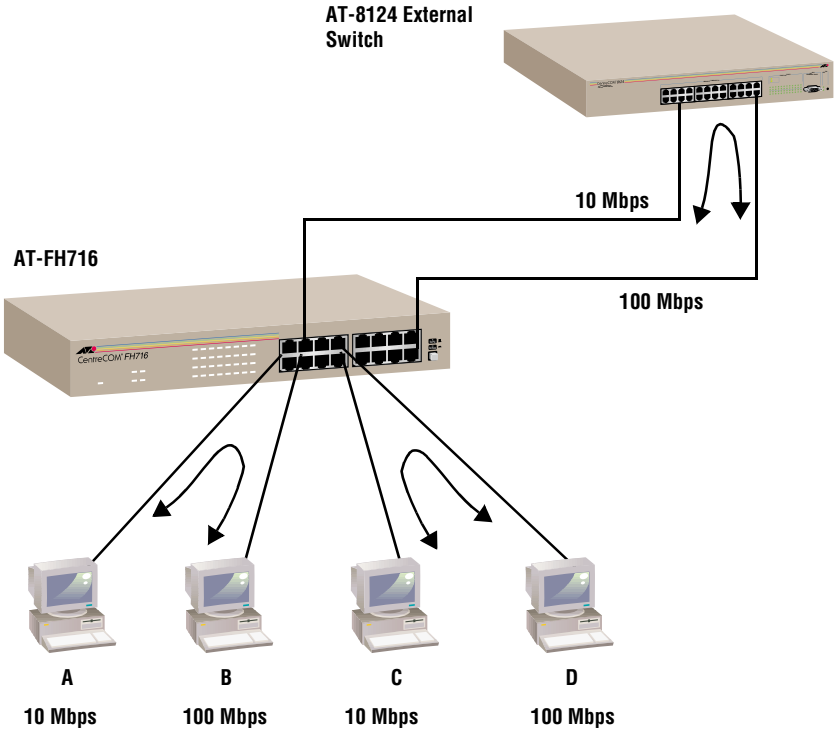
Figure 12 Transmission Through an External Switch

With the external switch solution, two separate hub ports are required, one for 10 Mbps communication, and the other for 100 Mbps. On the hub, use the port with an associated MDI/MDI-X switch to make one of the connections to the 10/100 Mbps external switch. On the external switch, configure one of its ports to enforce 10 Mbps fixed transmission speed. This way, devices belonging to the 10 Mbps domain can transmit information to devices in the100 Mbps domain via the external switch, and vice versa.

Using the Integrated Switch Module

Using a hub with the integrated switch module (models AT-FH708SW, AT-FH712SW, AT-FH716SW or AT-FH724SW) is the easiest and most cost-effective solution to enable communication between devices of dissimilar speeds. You can use either of these hub models for simple standalone configurations to connect both 10 Mbps and 100 Mbps devices.

In Figure 13, an AT-FH716SW hub becomes part of a hub stack to which workstations of varying speeds are connected. The AT-FH716SW's switching module enables the exchange of information between 10 Mbps and 100 Mbps stations. The learning function of the internal switch module stores the node address and the corresponding segment number (i.e., bus 1 or 2) of each incoming packet in a routing table. This information is used to confine traffic exchanged between legacy Ethernet devices within the slower repeater bus, leaving the other bus free to handle Fast Ethernet traffic. By confining traffic within its respective collision domain, the overall load on the network is significantly reduced
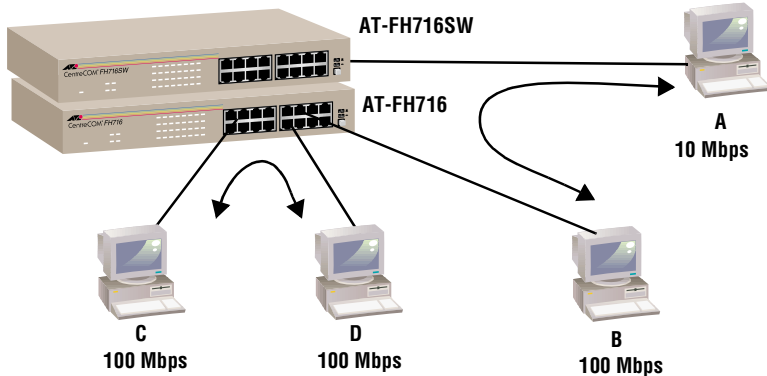
Figure 13 Transmission Through a Hub With the Integrated Switch Module

Concerning multiple switching module and auto-bypass support:

When using more than one AT-FH708SW, AT-FH712SW, AT-FH716SW or AT-FH724SW in a stack, only one hub with a switching module will be active at any time-the active module will be the uppermost. Stacking order is unimportant, the switching module does not have to be on top; however, if there are two switching modules in a stack, then the uppermost module is active and the lower one is in standby mode.

Note

The stack with multiple switches cannot operate correctly if there is a unit powered off between two switch units.

Connecting Devices to the MDI/MDI-X Ports

The last port of the hub (Port 8, Port 12, Port 16 or Port 24) has an associated MDI/MDI-X switch that changes the port from MDI to MDI-X, and vice versa.

Connect any 10 Mbps or 100 Mbps device to the port with a straight-through cable and use the following settings:

❑ Push the switch **In** (**To Hub,** or MDI) and cascade to a switch or another hub to the port.

❑ Push the switch **Out** (**To PC,** or MDI-X) and connect a DTE (an end station or server) to the port.
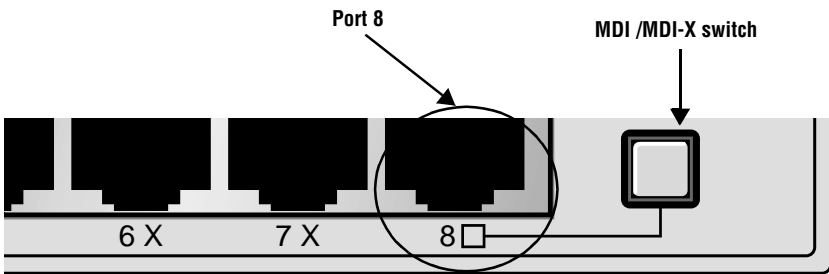
Figure 14 Closeup of the MDI/MDI-X Switch

Cable Length and Cascading Considerations

When cascading to another hub, the attached hubs function as a single logical hub, and all ports on the attached hubs belong to the same collision domain. You must consider the following restrictions on cable lengths and number of cascaded hubs:

When cascading to a Fast Ethernet hub, limit the cascade to two hubs. All end-node devices (workstations or servers) must be within 100 m (328 ft) of the hub. Overall length between any two nodes must not exceed 205 m (672 ft). The easiest way to cascade two Fast Ethernet hubs is to connect the MDI port on the front panel to an MDI-X port on the other hub. For example, if End Nodes A and B are linked to separate hubs in a two-hub system, each using 100 m (328 ft) of cable to connect to their respective hubs, then the inter-hub cabling is limited to 5 m (16 ft). The only way to extend inter-hub cabling is to reduce the cable length attaching the end nodes to their hubs. Based on the IEEE 802.3 specification, up to four 10 Mbps hubs can be connected on a 10 Mbps cascade.

Chapter 3
Troubleshooting

This chapter provides information to help you resolve problems you might encounter while using the hubs.

Contacting Allied Telesyn's Technical Support

If you are unable to fix any problems with the hub after trying the procedures in this chapter, contact Allied Telesyn's technical support department. Before doing so, be prepared to give the following information:

❑ Your equipment's model number

❑ A detailed description of the problem

Refer to Appendix D, "Where To Find Us," for a list of Allied Telesyn worldwide locations.

Verifying System Information

Verify that all attached devices have a valid connection. The hub monitors the link status for each port. If any device is properly connected and transmitting a link beat signal, the Link indicator on the front panel, lights up for the corresponding port. If the Link indicator fails to light up when you connect a device, check the following:

❑ Be sure the twisted-pair cable is properly attached to the connected device and the hub. The media connectors snap firmly into place when attached.

❑ Check if the cable is functioning properly by using it on another port and device that is known to be working correctly.

❑ Make sure the cable length does not exceed 100 m (328 ft). If you have cascaded two Fast Ethernet hubs together, be sure the interhub cabling does not exceed 5 m (16 ft).

❑   Verify that the workstation's adapter card is functioning properly by installing it in another workstation that has been successfully connected to the network.

❑   Make sure all hubs cascaded together are powered up.

Diagnosing Hub Indicators

You can easily monitor the hub through its front panel indicators. This section describes common problems you may encounter and possible solutions.

Symptom:	Link 10/100 indicator does not light up after making a connection.
Cause:	Network interface (e.g., a network adapter card in the attached device), network cable, or hub port is defective.
Solution:	Verify that the hub and attached device are powered on. Be sure the cable is plugged into both the hub and corresponding device. Verify that the proper cable type is used and its length does not exceed specified limits. Check the adapter on the attached device and cable connections for possible defects. Replace the defective adapter card or cable if necessary.
Symptom:	Power indicator does not light up (green) after powering on.
Cause:	Power outlet, power cord, or internal power supply is defective.
Solution:	Check the power outlet by plugging in another device that is known to function properly. Check the power cord with another device. If these measures do not work, there might be a problem with the power supply. Contact the nearest Allied Telesyn location.

Power and Cooling Problems

If the power indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or internal power supply as previously discussed. However, if the unit powers off after running for a while, check for loose power connections or power surges. Make sure the fan on the back of the unit is unobstructed and running when power is reapplied to the hub. If the fan is not running, call Allied Telesyn.

Appendix A

Product Specifications for the AT-FH700 Series Hubs

Standards Supported	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX Ethernet
Media	Category 5 UTP/STP (10 Mbps and 100 Mbps) Category 3 UTP (10 Mbps only)
Number of Ports	
AT-FH708SW	Eight 10/100 Mbps, auto-negotiating, RJ45 connectors
AT-FH712SW	Twelve 10/100 Mbps, auto-negotiating, RJ45 connectors
AT-FH716 and AT-FH716SW	Sixteen 10/100 Mbps, auto-negotiating, RJ45 connectors
AT-FH724SW	Twenty-four 10/100 Mbps, auto-negotiating, RJ45 connectors
Segments	One 10 Mbps One 100 Mbps
LED Indicators	
Per device	Power
Per segment	Collision, Activity
Per port	Link 10/100M, Partition
MDI/MDI-X	One port (Port 8, Port 12 or Port 16) associated with MDI/MDI-X switch
Hub Stacking	6 hubs per stack via stacking cables
Integrated Switch Module AT-FH708SW, AT-FH712SW, AT-FH716SW and AT-FH724SW	For 10 Mbps and 100 Mbps segment communication; 10/100 Mbps rate adoption and packet filtering between the two collision domains; store and forward mode
Mounting	Brackets for 19-inch rack mounting

Physical Specifications

Dimensions	330 x 204 x 44 mm (13 x 8 x 1.72 in)
Weight	2.1 kg (4.6 lb)

Electrical Specifications

Input line frequency	50-60 Hz
Input voltage	100-240 VAC
AC Power consumption	100-240 VAC, 50/60 Hz, 0.5A

Environmental Specifications

Operating temperature	0° to 50° C
Storage temperature	−30° to 60° C
Operating humidity	5% to 95% non-condensing

Electromagnetic Immunity	IEC 1000-4-2/3/4/6
Safety Agency Approvals	UL, CSA, TUV/GS on all models except AT-FH712SW, AT-FH724SW
	CSA/NRTL, TUV/GS on the AT-FH712SW, AT-FH724SW
EMI Certifications	CE Mark FCC Class A in stacked configuration FCC Class B in standalone configuration

Appendix B
Technical Support Fax Order

Name _____

Company _____

Address _____

City _____ State/Province _____

Zip/Postal Code _____ Country_____

Phone _____ Fax_____

Incident Summary

Model number of Allied Telesyn product I am using _____

Network software products I am using_____

_____

Brief summary of problem _____

_____

Conditions (list the steps that led up to the problem) _____

_____

_____

Detailed description (use separate sheet, if necessary)

_____

_____

_____

When completed, fax this sheet to the appropriate Allied Telesyn office. Fax numbers can be found on page25.

Appendix C
AT-FH700 Series Hubs Installation Guid Feedback

Please tell us what additional information you would like to see discussed in this guide. If there are topics you would like information on that were not covered in this guide, please photocopy this page, answer the questions and fax or mail this form back to Allied Telesyn. The mailing address and fax number are at the bottom of the page. Your comments are valuable when we plan future revisions of the guide.

I found the following the most valuable _____

_____

_____

_____

_____

I would like the following more develope   _____

_____

_____

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I would find the guide more useful if _____

_____

_____

_____

_____

Please fax or mail your feedback. Fax to 1-408-736-0100. Or mail to:
Allied Telesyn International, Corp.
c/o Technical Communications
960 Stewart Drive, Suite B
Sunnyvale, CA 94086 USA

PN 613-10710-00 Rev G

Appendix D
Where To Find Us

For Technical Support or Service		
Location	**Phone**	**Fax**
Americas United States, Canada, Mexico, Central America, South America	1 (800) 428-4835	1 (918) 628-3222
Asia Singapore, Taiwan, Thailand, Malaysia, Indonesia, Korea, Philippines, China, India	(+65) 3815-613	(+65) 3833-830
Australia Australia, New Zealand	(+61) 2-943-5111	(+61) 2-9438-4966
France France, Belgium, Luxembourg, The Netherlands, Middle East, Africa	(+33) 1-60-92-15-32	(+33) 1-69-28-37-49
Germany Germany, Switzerland, Austria, Eastern Europe	(+49) 30-435-900-126	(+49) 30-435-70-650
Hong Kong	(+852) 2-529-4111	(+852) 2 529-7661
Italy Italy, Spain, Portugal, Greece, Turkey, Israel	(+39) 02-416047	(+39) 02-419282
Japan	(+81) 3-3443-5640	(+81) 3-3443-2443
United Kingdom United Kingdom, Denmark, Norway, Sweden, Finland, Iceland	(+44) 1-235-442560	(+44) 1-235-442680
Technical Bulletin Board Service	1 (425) 483-7979	
Technical Support E-mail Address	TS1@alliedtelesyn.com	
CompuServe	Go ALLIED	
FTP Server	Addres s:ftp.alliedtelesyn.com [lowercase letters] Login: anonymous [lowercase letters] Password : y our e-mail address [requested by the server at login]	

For Sales or Corporate Information	
AlliedTelesyn International, Corp. 19015 North Creek Parkway Bothell, WA 98011 Tel: 1 (425) 487-8880 Fax: 1 (425) 489-9191	**Allied Telesyn International, Corp.** 960 Stewart Drive, Suite B Sunnyvale, CA 94086 Tel: 1 (800) 424-4284 (USA and Canada) Fax: 1 (408) 736-0100
World Wide Web:	http://www.alliedtelesyn.com