



AT-8116

Fast Ethernet Intelligent Switch

Installation Guide

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Electrical Safety and Installation Requirements

U.S. Federal Communications Commission

RADIATED ENERGY

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.

Canadian Department of Communications

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.

STANDARDS: This product meets the following standards.

RFI Emission EN55022 Class A

WARNING: In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Immunity EN50082-1

Electrical Safety EN60950, UL1950



SAFETY

ELECTRICAL NOTICES

WARNING: ELECTRIC SHOCK HAZARD

To prevent ELECTRIC shock, do not remove cover. No user-serviceable parts inside. This unit contains HAZARDOUS VOLTAGES and should only be opened by a trained and qualified technician. To avoid the possibility of ELECTRIC SHOCK disconnect electric power to the product before connecting or disconnecting the LAN cables.



LIGHTNING DANGER

DANGER: DO NOT WORK on equipment or CABLES during periods of LIGHTNING ACTIVITY.

INSTALLATION

ELECTRICAL—TYPE CLASS 1 EQUIPMENT

THIS EQUIPMENT MUST BE EARTHED. Power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts.

ELECTRICAL—CORD NOTICE

Use power cord, maximum 4.5 meters long, rated 6 amp minimum, 250V, made of HAR cordage molded IEC 320 connector on one end and on the other end a plug approved by the country of end use.



CAUTION: Air vents must not be blocked and must have free access to the room ambient air for cooling.



FUSE RATING

For continued protection against risk of fire replace only with the same type and rating of fuse.

OPERATING TEMPERATURE

This product is designed for a maximum ambient temperature of 40 degrees C.

ALL COUNTRIES: Install product in accordance with local and National Electrical Codes.

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Chapter 1

Introduction

The AT-8116 is a high-performance 10/100Mbps switch representing the next generation in switching technology. The AT-8116 employs highly-integrated ASIC technology and a Gigabit/sec backplane to significantly boost network performance. Its high density and performance combine with exceptional functionality, such as RMON support, VLAN capabilities and Full Duplex switching, to achieve optimal network switching without expensive changes to the desktop PC or cabling system. The AT-8116 exemplifies the design flexibility which enables deployment as both a departmental and enterprise switch, while enhancing network connectivity.

Description

The AT-8116 high-density switch features 16 dual-speed 10/100 UTP ports with auto-sensing. Highly-integrated ASIC technology enables a maximum throughput of over 2,000,000pps and 1.6 Gbps.

The switch boasts extensive management capabilities, such as the ability to access the learning table and per/port counter statistics, and to set configurations. Built-in RMON support for Groups 1, 2, 3, and 9 allows in-depth analysis of traffic flow, while implementation of the Spanning Tree Algorithm prevents broadcast loops and provides fail-safe network redundancy.

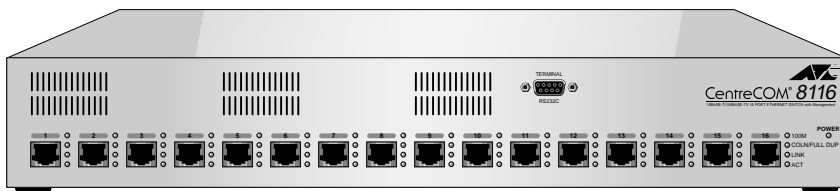


Figure 1: AT-8116 Front View

Theory of Operation

Ethernet segment switches divide a large local network into smaller segments, insulating each from the other's local traffic and increasing aggregate bandwidth, while still retaining full connectivity. The AT-8116 is designed to be self-configuring and extremely fast, making installation simple and providing an increase in available bandwidth.

The switch learns on which port stations are located by remembering the source address of every packet received on every port. When packets are received for stations that the switch has learned, they will be forwarded to only the port on which the station is located. This is in contrast to a hub, which sends every packet to every port.

If the switch receives a packet addressed to a station which the switch has not learned, the packet is sent to every port, except the port on which it was received, just as a hub would. This insures that full connectivity is maintained. The high port density of the AT-8116 allows for dedicated high-performance workstation links.

Features

- ❑ Complies with IEEE 802.3 and IEEE 802.3u standards
- ❑ Sixteen auto-sensing 10/100Mbps UTP ports
- ❑ All ports operate at wire speed with an aggregate throughput of over 2,000,000pps
- ❑ Employs highly-integrated ASIC technology; high-speed backplane design; 8 MB of buffer memory
- ❑ Learning table for up to 8K Mac address entries
- ❑ Terminal-based Command Line Interface (CLI) management
- ❑ Spanning tree algorithm prevents broadcast loops and provides fail-safe network redundancy
- ❑ Port-based VLAN supports broadcast domain VLANs to eliminate network-clogging broadcast storms

Front Panel

The front panel of the AT-8116 is illustrated below in Figure 2. The following tables describe its various LEDs and components and their functions.

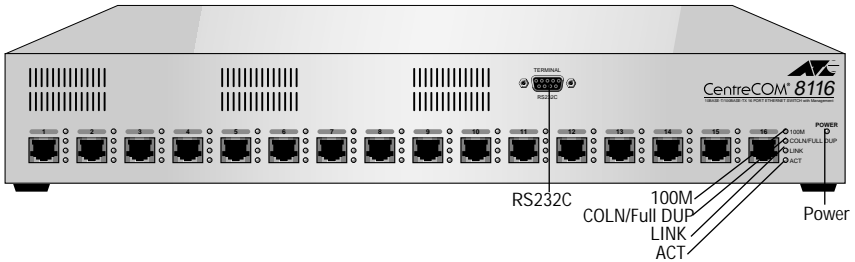


Figure 2: AT-8116 Front Panel

Table 1: AT-8116 LEDs and Ports

LED	Color	Description
100M	Green	ON indicates 100Mbps mode
COLN/ FULL DUP	Yellow or Green	Yellow Blinking for port collision; Green ON when port is configured for Full Duplex
LINK	Green	ON indicates a valid link connection
ACT	Green	Blinking indicates port activity
Power	Green	ON indicates normal operation mode

Table 2: RJ45 and RS232 Ports

RJ45	16, RJ45 10/100 Mb UTP ports
RS232	One, RS232 connection for NMS

Rear Panel

The power connection and ON/OFF switch are located on the rear panel of the AT-8116. The two fan holes **MUST** be kept unobstructed.

Power Connection

Plug the power cord into an easily accessible outlet and turn on the ON/OFF switch.

Chapter 2

Installation

The AT-8116 can operate as a stand-alone unit or in conjunction with any of Allied Telesyn's other Ethernet and Fast Ethernet offerings. It supports local and SNMP management.

Verifying Package Contents

- AT-8116 Fast Ethernet Switch
- Power cord (for 110V units only)
- Rack-mounting brackets
- Null modem cable
- This installation guide

Installing the AT-8116

This section outlines the installation and operation of the AT-8116.

The AT-8116 comes as a 19" rack-mounted unit. However, it can be placed in either a rack mount, using the enclosed rack-mount brackets, or on a secure flat surface. Ensure that the unit is within reach of the necessary connections (i.e. power outlet, Ethernet connections, and, if the AT-8116 will be monitored via the serial port, a PC, UNIX workstation, or modem. The unit is powered by a wide-range power supply for either 115 - 240 VAC 50/60Hz, 0.5 A operation.

Warning

Free air flow must be maintained in order to permit adequate cooling of the unit. FAN holes MUST be unobstructed.

Rack Mounting

If rack-mounted units are installed in a closed or multi-rack assembly, they may require further evaluation by certification agencies. The following items must be considered:

1. The ambient temperature within the rack may be greater than room ambient temperature. Installation should be such that the amount of air flow required for safe operation is not compromised. The maximum temperature for equipment in this environment is 40°C. Consideration should be given to the maximum rated ambient temperature.
2. Installation should be such that a hazardous stability condition is not inadvertently created due to uneven loading.

Network Connections

Connecting an Ethernet Device to a 10Base-T or 100Base-TX Port

The 10/100Base-TX ports on the AT-8116 are designed to be connected directly to a workstation, using a standard straight-through patch cable. In order to cascade switches or connect a hub to the switch, a crossover cable must be used. The RJ45 ports are defined as MDI-X ports.

The cable connections to the 10/100 ports should be UTP Category 5, and cable length is limited to 100 meters on each port. Figure 3 and Figure 4 shows the pin assignments for the RJ45 connector.

Note

Cables must comply with the ANSI/TIA/EIA specification, commonly referred to as T568A or T568B.

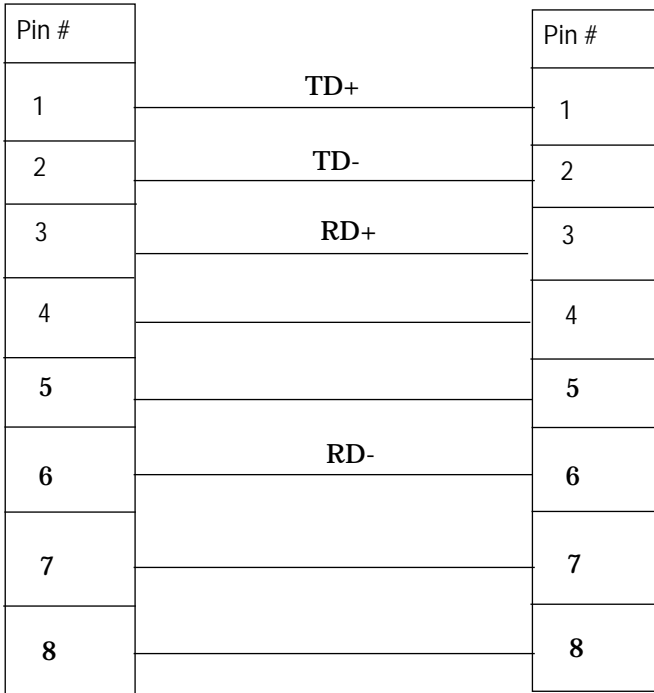


Figure 3: Straight Cable Connection Between an AT-8116 and a Server/PC

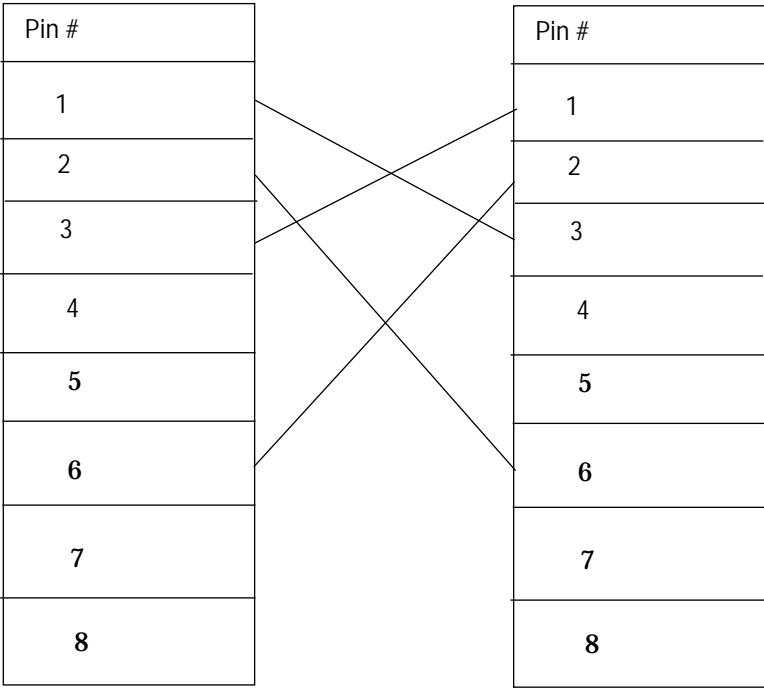


Figure 4: Crossover Between AT-8116 and Hub or Another Switch

Chapter 3

Applications and Configurations

Applications

A switch boosts network performance by segmenting a single large collision domain into smaller, separate collision domains and providing dedicated connections for intensive networks using work stations and servers. In addition, the Full Duplex capability of Ethernet switches permits connectivity for backbone applications or high throughput for high-performance dedicated servers. The AT-8116 combines 10/100Mbps auto-sensing ports with a high-speed backplane design to enable deployment as both a departmental and backbone switch.

Typical Applications

The AT-8116 seamlessly integrates Fast Ethernet and legacy 10Mbps Ethernet networks, creates a high-performance collapsed Fast Ethernet backbone and drives high bandwidth server farms and power users. Figure 5 illustrates various connection possibilities of the AT-8116. One switch can connect up to sixteen 10/100Mbps UTP ports. Attachments can include 10Mbps and 100Mbps servers, a Fast Ethernet backbone, 10/100Mbps hubs, all functioning in Half or Full Duplex mode. Port connectivity can be over 10Base-T/100Base-TX copper cabling. See Figure 5.

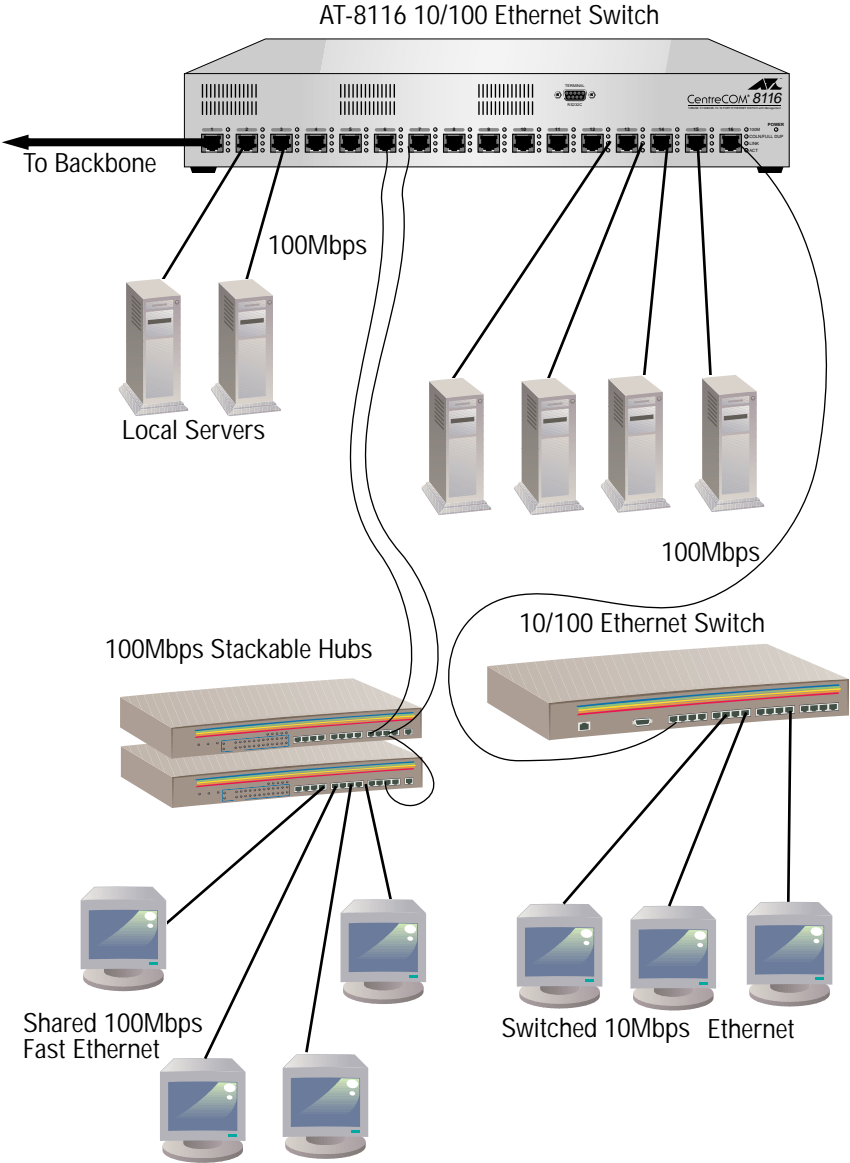


Figure 5: Various Application Possibilities of the AT-8116

Configuring Your Network

Links Between Switches

An Ethernet to Fast Ethernet switch offers the network administrator a possible upgrade path. At first, the switch can be used simply to segment the existing 10Mbps Ethernet, immediately boosting performance. Next, with the addition of a Fast Ethernet NIC, a file server can be migrated to Fast Ethernet, increasing its availability. As needed, additional file servers or individual users can be moved to Fast Ethernet, while leaving all other parts of the network running 10Mbps as usual. If some of the shared Ethernet segments are still congested, but don't warrant a full 100Mbps, additional switches can further divide the shared segments, creating a collapsed 100Mbps backbone and small switched 10Mbps segments.

Fast Ethernet provides 10 times the bandwidth than regular Ethernet. Software, except for low-level drivers which are always card specific, works with Fast Ethernet without modification. Frames from a device using Fast Ethernet require only physical layer conversion. The AT-8116 combines switched 10/100Mbps technology in a seamless integration of regular Ethernet and the IEEE 802.3u 100Base-TX standard.

Device Configuration

The AT-8116 provides CLI management. The switch can autosense the speed for each port. However, the switch must be manually configured for the correct duplex mode.

For full information on configuring the AT-8116, see the **AT-8116 User's Guide** on our website at **www.alliedtelesyn.com/manuals.htm**.

Appendix A

Technical Specifications

Table 3 lists the AT-8116 technical specifications.

Table 3: AT-8116 Technical Specifications

Compatibility	
IEEE 802.3; IEEE 802.3u (Fast Ethernet Standard)	
Electrical	
Rating	115 - 240 VAC, 0.5A
Frequency	50 - 60 Hz
Power Consumption-	50W
Connectors	
Ethernet Ports	16, RJ45s
RS232	DB-9
Port LEDs	
100M ON indicates port is operating at 100Mbps	Green
COLN/FULL DUP Yellow Blinking indicates collision/Green ON indicates Full duplex	Yellow/Green
LINK ACT	Green (ON indicates a valid link to software) Green (Blinking indicates port activity)
General LED	
POWER ON indicates normal operation	Green
Learning Table	8K MAC address
Physical	3.5" x 19" x 14.65" (1.5U)

Table 3: AT-8116 Technical Specifications *(Continued)*

Weight	8 lb
Environment	
Operating Temperature	40°C
Storage temperature	10°C to 50°C
Humidity	85% maximum, non-condensing
Standards Compliance	
UL-1950; EN60500; VCCI; FCC Part 15 Class A	

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 ATI office. Fax numbers can be found on page 17.

Appendix C

Where To Find Us

For Technical Support or Service		
Location	Phone	Fax
Asia Singapore, Taiwan, Thailand, Malaysia, Indonesia, Korea, Philippines, China, India	(+65) 3815-613	(+65) 3833-830
Australia Australia, New Zealand	(612) 416-0619	(612) 416-9764
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) 2-416047	(+39) 2-419282
Japan	(+81) 3-3443-5640	(+81) 3-3443-2443
North America United States, Canada, Mexico, Central America, South America	1 (800) 428-4835	1 (425) 481-3790
United Kingdom United Kingdom, Denmark, Norway, Sweden, Finland, Iceland	(+44) 1-235-442560	(+44) 1-235-442490
Technical Support E-mail Address	TS1@alliedtelesyn.com	
Technical Bulletin Board Service	1 (425) 483-7979	
CompuServe	Go ALLIED	
World Wide Web	http://www.alliedtelesyn.com	

For Information Regarding Allied Telesyn International	
Allied Telesyn International 19015 North Creek Parkway Bothell, WA 98011 Tel: 1 (425) 487-8880 Fax: 1 (425) 489-9191	Allied Telesyn International 950 Kifer Road Sunnyvale, CA 94086 Tel: 1 (800) 424-4284 (USA and Canada) Fax: 1 (408) 736-0100

For Sales Information

Australia

Lindfield, NSW

Tel: (612) 416-0619, Fax: (612) 416-9764

Canada

Rexdale, Ontario

Tel: (416) 675-6738, Fax: (416) 675-0057

Richmond, British Columbia

Tel: (604) 244-0678, Fax: (604) 270-3644

England

Abingdon, Oxon

Tel: (+44) 1235-442500, Fax: (+44) 1235-442590

France

Les Ulis

Tel: (+33) 1-60921525, Fax: (+33) 169-28-37-49

Germany

Berlin

Tel: (+49) 30-435-90-00, Fax: (+49) 30-435-706-50

Freising

Tel: (+49) 8161-9906-0, Fax: (+49) 8161-9906-22

Hong Kong

Mongkok

Tel: (+852) 2-529-4111, Fax: (+852) 2-529-7661

Italy

Milano

Tel: (+39) 2-416047, Fax: (+39) 2-419282

Japan

Machida-shi, Tokyo

Tel: (+81) 427-21-8141, Fax: (+81) 427-21-8848

Yodogawa-ku, Osaka

Tel: (+81) 6-391-6310, Fax: (+81) 6-391-6325

Singapore

Tel: (+65) 383-3832, Fax: (+65) 383-3830

United States

Scottsdale, AZ

Tel: (602) 423-7087 Fax: (602) 423-7088

Los Angeles, CA

Tel: (310) 412-8684, Fax: (310) 412-8685

Mission Viejo, CA

Tel: (714) 699-0628, Fax: (714) 699-0276

San Diego, CA

Tel: (619) 279-3899, Fax: (619) 279-3897

Santa Ana, CA

Tel: (714) 838-0434, Fax: (714) 838-9721

Clearwater, FL

Tel: (813) 726-0022, Fax: (813) 726-0234

Norcross, GA

Tel: (770) 448-7214, Fax: (770) 448-2600

Reading, MA

Tel & Fax: (617) 944-3492

Eden Prairie, MN

Tel: (612) 829-7506, Fax: (612) 903-5284

St. Louis, MO

Tel: (314) 894-6160, Fax: (314) 894-3773

Dover, NH

Tel: (603) 743-3010, Fax: (603) 743-6327

Plaistow, NH

Tel: (603) 382-0815, Fax: (603) 382-0818

Portsmouth, NH

Tel: (603) 431-6461, Fax: (603) 431-1649

Morrisville, NC

Tel: (919) 468-0831, Fax: (919) 468-0829

Lake Oswego, OR

Tel: (503) 699-3130, Fax: (503) 636-6575

Austin, TX

Tel: (512) 261-6378, Fax: (512) 261-6379

Dallas, TX

Tel: (214) 365-9471, Fax: (214) 365-9472

San Antonio, TX

Tel: (210) 646-8744

Vienna, VA

Tel: (703) 506-0196, Fax: (703) 506-1986