



AT-8202

AT-8203

*ATM and FDDI Uplink and Accelerator
Cards For the FORMULA 8200™ Fast
Ethernet Workgroup Switch*

Installation Guide

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Electrical Safety and Installation Requirements

STANDARDS: This product meets the following standards.

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 the 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 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.

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

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.



This is a "CLASS 1 LED PRODUCT."



LIGHTNING DANGER

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



INSTALLATION

ELECTRICAL—AUTO VOLTAGE ADJUSTMENT

This product will automatically adjust to any voltage between the ranges shown on the label.

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.

CAUTION: DO NOT detach rubber feet from the product unless an Allied Telesyn vertical mounting chassis is being used.

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

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Uplink Card Installation

This guide shows you how to install:

- ❑ One of the following uplink cards in the lower PCI slot of the FORMULA 8200 switch:
 - ATM uplink card, model AT-8202
 - FDDI uplink card, model AT-8203
- ❑ The accelerator card in the upper PCI slot

The accelerator card provides improved performance to the uplink card and switch.

Who Should Use This Guide

This guide is written for technical personnel responsible for installing the uplink and accelerator cards in the FORMULA 8200 switch, installing the switch, and connecting devices to its ports. Installers must be familiar with Ethernet, Fast Ethernet, and ATM or FDDI technology.

About the ATM Uplink Card

The ATM uplink card connects your Ethernet networks with high-speed and capacity of ATM networks, providing connectivity between servers, workgroups, workstations, and ATM backbones.

The ATM uplink card supports the following ATM key functions:

- ❑ 155 Mbps, OC-3c/STM-1 data rate
- ❑ Switched virtual circuit (SVC) or permanent virtual circuit (PVC) connections, including trunking and point-to-point (PTOP) connections
- ❑ ATM Forum's LAN Emulation Client (LEC) standard

- ❑ RFC 1577 Classical IP (CIP) and ARP over ATM
- ❑ ATM Forum's User Network Interface (UNI) 3.0 or 3.1 signaling standard
- ❑ ATM Forum's Interim Local Management Interface (ILMI) 1.0

About the FDDI Uplink Card

————— Note —————

Contact your supplier for the FDDI uplink card's availability.

—————

The FDDI uplink card provides fiber optic connectivity between switched Ethernet and Fast Ethernet networks and FDDI backbone network. The FDDI module supports two types of connectivity:

- ❑ Single-attachment stations (SAS)
- ❑ Dual-attachment stations (DAS)

The card also includes an optical bypass connector and LEDs that provide visual status of the card (Figure 1).

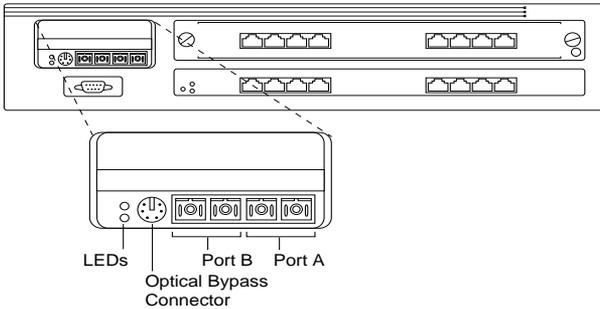


Figure 1: The FDDI Uplink Card (Model AT-8203) in the FORMULA 8200 Switch

As shown in Figure 2, the FDDI uplink allows workstations on Ethernet and Fast Ethernet networks to reach remote systems across a fiber optic backbone ring network.

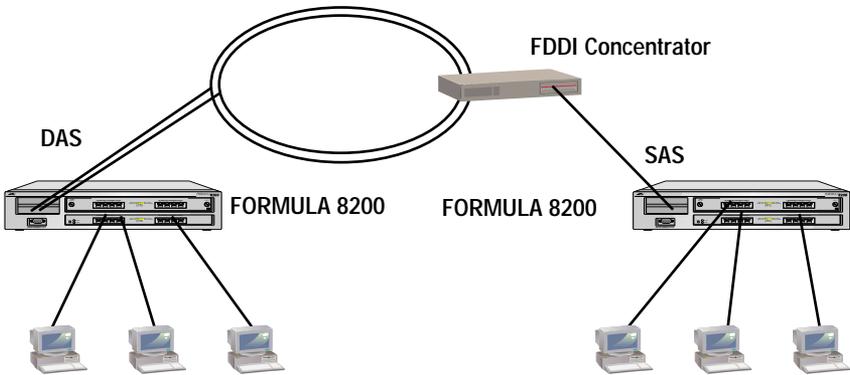


Figure 2: The FORMULA 8200 in an FDDI Network

Remote systems can be network file servers, workstations, FDDI concentrators, switches, or routers running compatible TCP/IP software. The FDDI uplink module supports IP and ARP packets over FDDI networks, as described in RFC 1390.

The following features are supported by the FDDI uplink module:

- Asynchronous LLC frames for downlink bridging
- Ethernet Type II, IEEE 802.3 SNAP packets for uplink capability (protocol sensitive)
- Translational bridging between FDDI and Ethernet
- IP and ARP frame encapsulation (RFC 1042 and RFC 1390)
- IP fragmentation (RFC 791)
- 802.1d Spanning Tree algorithm
- 64 CAM entries with aging algorithm for MAC address filtering
- Standard FDDI MIB support using SNMP, as well as SMT 7.3 support
- Configuration through command-line interface
- Board status LEDs
- Two SC (fiber optic) connectors supporting both DAS and SAS configurations
- Optical bypass connector

Verifying Your Uplink Package

Your uplink card package consists of:

- This installation guide
- One of the following cards:
 - 155 Mbps ATM uplink OC-3 MMF card (model AT-8202), or
 - FDDI uplink card (model AT-8203)
- One accelerator card
- Warranty card

If any of these components are damaged, contact your shipping carrier representative. If any components are missing, please phone the Allied Telesyn. Refer to Appendix D, “Where To Find Us,” on page 23.

Prerequisites for Card Installation

Before installing the uplink and accelerator cards, make sure you have the following:

- An installed FORMULA 8200 switch and that it is functioning properly
- Firmware version 1.4.3 or greater to support the uplink and accelerator cards

If your switch does not have the latest firmware, download it from Allied Telesyn’s FTP server. See Appendix D, “Where To Find Us” on page 23, for information on how to access the server.

Installing the Uplink Card

Caution

Prior to installing the uplink card, make sure you have successfully installed the FORMULA 8200 switch with firmware version 1.4.3 or greater, and that it is functioning properly.

You will need a #1 Phillips screwdriver for this procedure.

To install the uplink card in the FORMULA 8200, use the following steps:

1. Turn off power to the FORMULA 8200.

The power switch is located on the rear panel of the chassis, as shown in Figure 3.

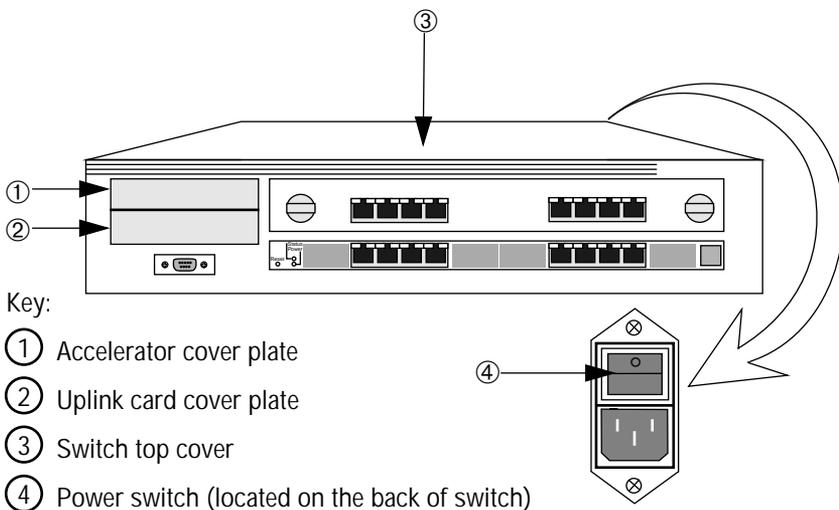


Figure 3: FORMULA 8200 Front Panels and Power Switch

2. Unplug the unit.

When installing or removing cards in a switch, always remove all power by unplugging the unit.

3. Disconnect and label all connections to the switch, if present.

To install the uplink card, you must take the top cover off of the switch. To remove the top cover, it may be necessary to remove the switch from the rack or tabletop location.

4. Remove additional hardware, such as rackmounting brackets.

Note

If the switch is installed on the desktop, you need not remove the rubber feet.

Warning

Use proper static-free procedures prior to opening the unit and touching components.

5. Remove the top cover from the unit, as follows:
 - a. Remove the screw from the back of the unit that locks the cover in place. Retain the screw for replacing the cover later.
 - b. Lift the cover and slide it off (Figure 4).

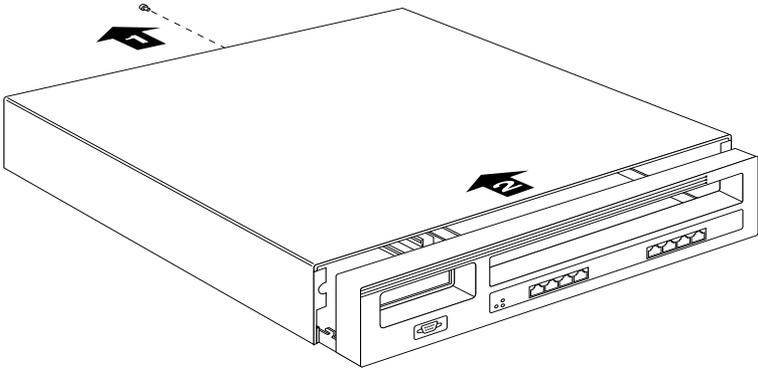


Figure 4: Chassis Top Removal

6. Using a #1 Phillips screwdriver, remove the screw that secures the cover plate to the uplink panel (Figure 5).

Save the screw to secure the uplink card.

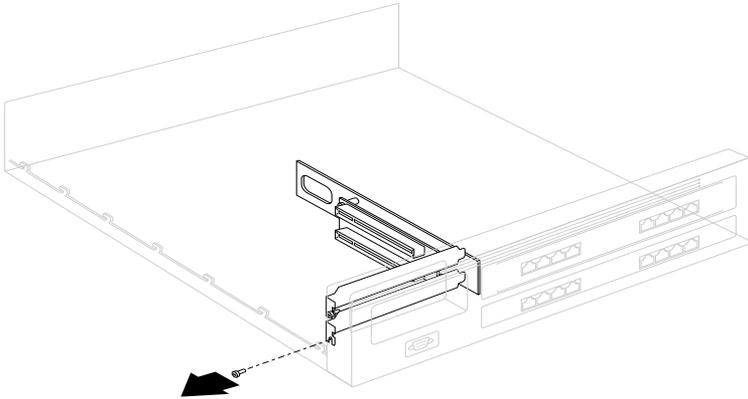


Figure 5: Cover Plate Removal

7. Install the uplink card into the lower PCI slot (Figure 6).

Ensure that the uplink card is fully seated in the lower PCI slot. Align the back edge of the board in the card guide as you are installing it.

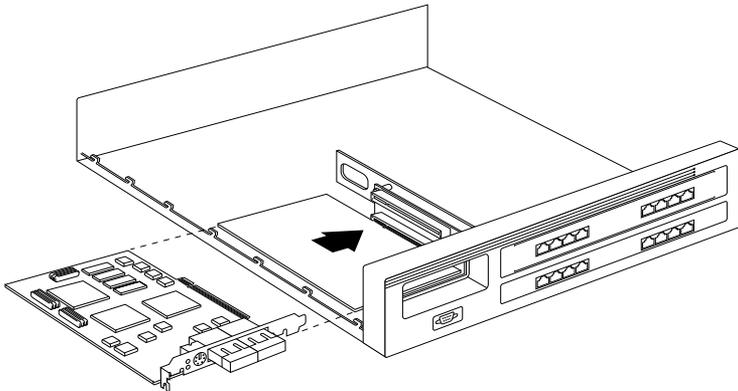


Figure 6: Uplink Card Insertion

Caution

The uplink card will not function if it is installed into the upper PCI slot. The upper PCI slot is intended for the accelerator card only.

- Using the screw from Step 6, secure the uplink card to the chassis (Figure 7).

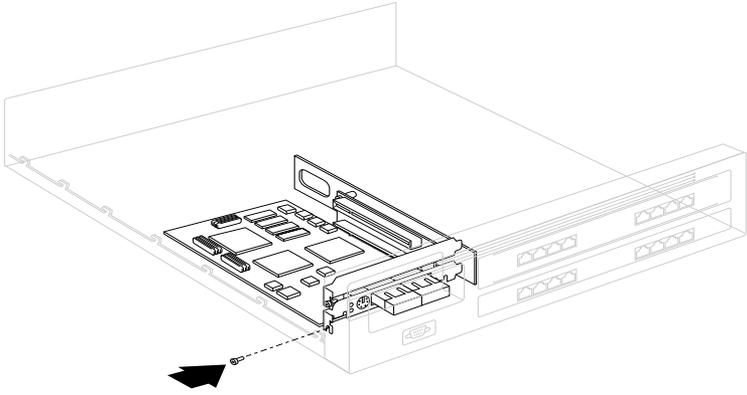


Figure 7: Uplink Card Attachment to Chassis

- Proceed immediately to the next sections to install the accelerator card, replace the cover, and then re-initialize the switch.

Installing the Accelerator Card

Before following these procedures, make sure the uplink card is already installed in the lower slot.

1. Using a #1 Phillips screwdriver, remove the screw that secures the cover plate to the uplink panel (Figure 8).

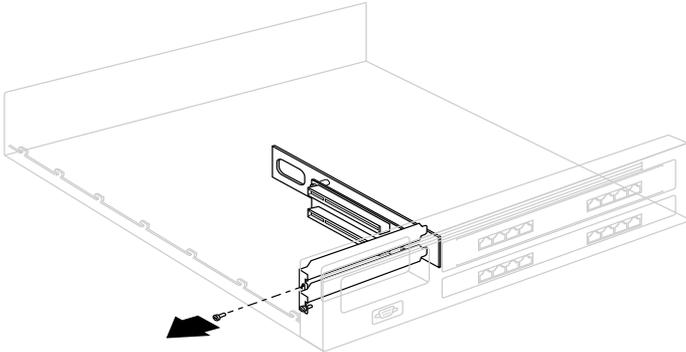


Figure 8: Cover Plate Removal for Top PCI Slot

2. Insert the accelerator card into the top PCI slot and ensure that it is fully seated. Line up the back edge of the accelerator card with the card guide, as shown in Figure 9.

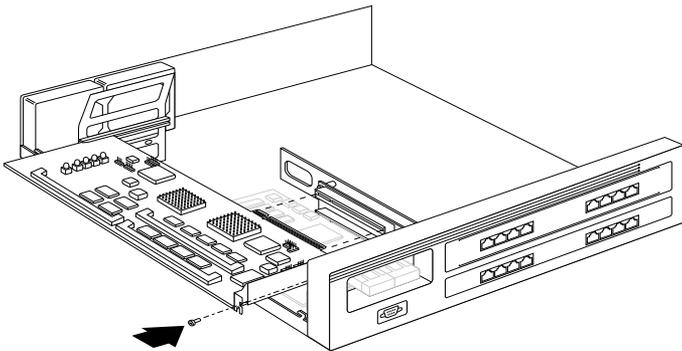
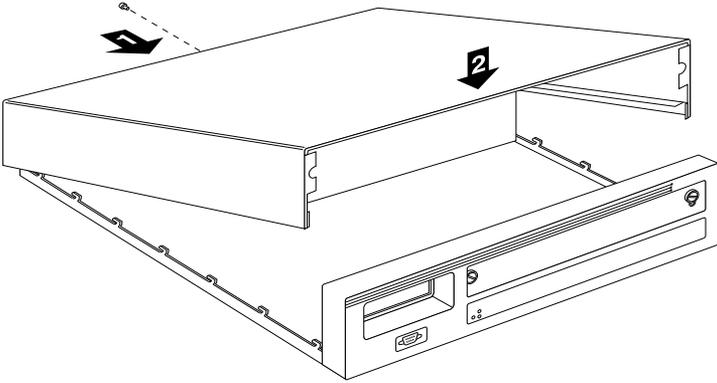


Figure 9: Accelerator Card Insertion

3. Seat the accelerator card firmly in the top PCI connector.
4. Using the screw from Step 1, secure the accelerator card to the chassis.

Replacing the Chassis Top Cover

1. Slip the back of the cover over the back chassis rails, as shown in Figure 10.



AC-4003

Figure 10: Chassis Top Cover Replacement

2. Lower the cover onto the chassis, being careful to align the latches along the chassis sides with the latch cutouts on the cover.
3. Once the cover is in position, gently push it forward toward the front bezel until it latches into position.
4. Secure the cover by inserting and tightening the original screw you removed from the back when you took the cover off in Step 5 on page 6.
5. Reattach rackmount brackets if applicable, and return the unit to the rack, bench, or table.

Initializing the Switch

1. Connect a terminal to the switch's console port so you can monitor the boot process. Refer to your *FORMULA 8200 Installation Guide* for the procedures.
2. Apply power to the switch.

The switch firmware runs post diagnostics where it decompresses data and loads it into the DRAM. The process takes about 15 to 20 seconds.

During switch initialization, watch for the following messages that indicate the successful installation of the uplink and accelerator cards:

```
Attaching network interface lo0... done.
```

```
Initializing accelerator... done.
```

3. Reattach the network cables to the ports, one at a time, beginning with the leftmost port. Observe that port's LED to ensure normal operations; then, attach the cable to the next port.

Attaching the cables one at a time and ensuring link stability helps you isolate problems in case some links may have problems.

This completes the uplink card and accelerator card hardware installation.

Interpreting the LEDs

The ATM uplink card has one link LED. If there is a valid link, the LED is solid green. If the uplink card is not connected to any device, or there is a problem with the link, the LED is off.

The FDDI uplink card has two LEDs. Table 1 provides information about what the LEDs mean in various states.

Table 1: FDDI LED States

LED Status		Board Status	Description
Yellow	Green		
Off	Off	Fail	Adapter card is not functional, or driver is not loaded. Call Allied Telesyn's Technical Support.
Off	On	Ring Op	Ring operation THRU B (DAS) wrap S for SAS
On	Off	Cable Error	Adapter card is unable to connect; there is a possible cable problem. Fix the cable problem.
On	On	Ring Op/ Wrapped	Ring operation: wrap A or B (DAS), unused for SAS

Cabling Requirements for the FDDI Uplink Card

The FDDI uplink card provides two dual SC connector ports (Figure 11). These ports allow both SAS and DAS configurations. Use 62.5/125 micron multimode cables.

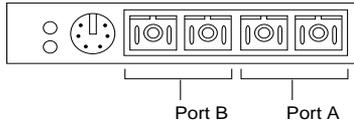


Figure 11: FDDI Uplink Card's Dual SC Connector Ports

You can attach a plastic clip to hold the cable ends (see Figure 12) for easy connection and disconnection on the FDDI uplink card.

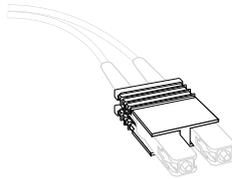


Figure 12: Plastic Clip for FDDI Connectors

SAS Cable Connections

For a SAS configuration, connect Port A of the FDDI Uplink module to the M port of an FDDI concentrator, as shown in Figure 13.

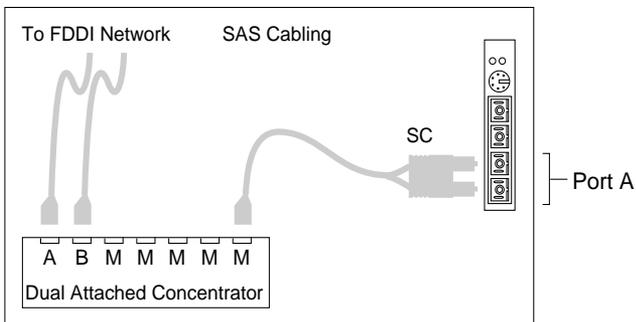


Figure 13: SAS Cable Connection

DAS Cable Connections

For a DAS configuration, connect Port A and Port B to their corresponding ports at the host, as shown in Figure 14.

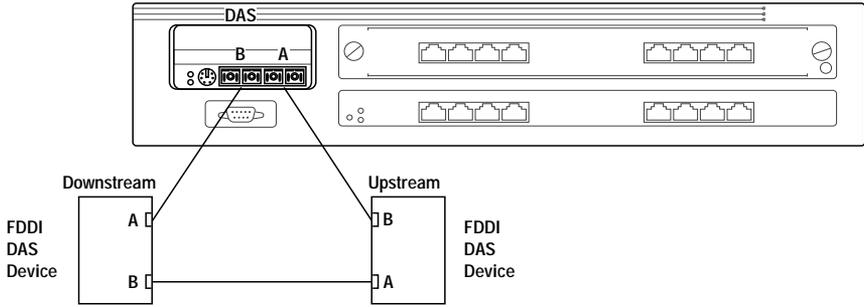


Figure 14: DAS Cable Connections

Optical Bypass Connector

The FDDI uplink card provides a standard optical bypass connector for installation of an optical bypass relay, if you choose to use one. See Figure 15.

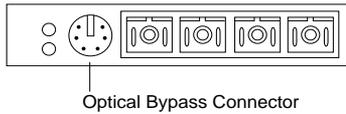


Figure 15: Optical Bypass Connector

The optical bypass connector must be a DIN connector. For additional information about installing or using an optical bypass connector, refer to the instructions provided by your optical bypass relay manufacturer.

Where to Go From Here

To configure, operate, and monitor the switch, download the following guides from Allied Telesyn's website at **www.alliedtelesyn.com/manuals.htm**:

- ❑ *Software Release Notes* for information on your version of switch firmware
- ❑ *AT-8202 ATM Uplink User's Guide* for ATM-specific commands
- ❑ *AT-8203 FDDI Uplink User's Guide* for FDDI-specific commands
- ❑ *FORMULA 8200 User's Guide* for Ethernet commands

In Case of Problems

The uplink cards provide transparent operation once they have been installed and configured. If you suspect that the card you have installed is malfunctioning or is causing system problems, refer to the LEDs for the card's operational status. Refer also to the switch's system and port LEDs to further isolate the problem.

If you are unable to resolve the problem, contact Allied Telesyn's Technical Support. See Appendix D, "Where To Find Us" on page 23, for contact information.

Appendix A

Product Specifications for the FORMULA 8200 Switch With the Uplink Card

Network Protocol	Ethernet and Fast Ethernet
Standards Supported	802.1d 802.3i, 10Base-T 802.3u, 100Base-T
Data Rate	ATM uplink: 155 Mbps, OC-3c/STM1 multimode fiber FDDI uplink: 100 Mbps
Hardware Architecture	
Processor	MIPS 4650
Processor DRAM	8 Mbytes
Flash memory	2 Mbytes
Physical Specifications	
Dimensions	3.5"H x 17" W x 18"D (8.97 x 43.6 x 46.2 cm)
Weight	19 lbs (8.6 kg)
Electrical Specifications	
Input line frequency	47-63 Hz
Input current	3-6 Amps
Input voltage	90-264 VAC, auto-selectable
Environmental Specifications	
Operating temperature	0° to 40° C (32° to 104° F)
Storage temperature	-20° to 60° C (-18° to 148° F)
Operating humidity	85% maximum relative humidity, noncondensing
Storage humidity	95% maximum relative humidity, noncondensing
Operating altitude	0 to 10,000 ft.

For Electromagnetic Immunity, Electromagnetic Emissions, and Safety Agency Approvals, see the *FORMULA 8200 Installation Guide*.

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 page 23.

Appendix C

***FORMULA 8200 Uplink Card Installation
Guide Feedback***

Please tell us what additional information you would like to see discussed in the guide. If there are topics you would like information on that were not covered in the guide, please photocopy this page, answer the questions and fax or mail this form back to Allied Telesyn International Corp. 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 developed _____

I would find the guide more useful if _____

Please fax or mail your feedback. Fax to 1-425-481-3790. Or mail to:
Allied Telesyn Technical Communications Department
19015 North Creek Parkway
Bothell, WA 98011 USA

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 (425) 481-3790
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
United Kingdom United Kingdom, Denmark, Norway, Sweden, Finland, Iceland	(+44) 1-235-442560	(+44) 1-235-442490
Technical Bulletin Board Service	1 (425) 483-7979	
Technical Support E-mail Address	TS1@alliedtelesyn.com	
CompuServe	Go ALLIED	
World Wide Web	http://www.alliedtelesyn.com	
FTP Server	Address: ftp.alliedtelesyn.com [lowercase letters] Login: anonymous [lowercase letters] Password: your e-mail address [requested by the server at login]	

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

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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