NETBUILDER II® MP ATMLINK™ OC-3 MODULE INSTALLATION GUIDE

Multimode and Single-mode modules

ABOUT THIS GUIDE

Introduction

This guide describes how to install, cable, and troubleshoot the MP ATMLink™ OC-3 multimode or single-mode version module (referred to as the ATMLink module throughout this guide) for the NETBuilder II® system. The information in this guide applies to all NETBuilder II chassis.

For more information about NETBuilder II base system installation, refer to the *NETBuilder II Base System Installation Guide*.

This guide is intended for the system administrator, network equipment installer, or network manager who is responsible for installing and managing the network hardware. It assumes a working knowledge of network operations, but it does not assume prior knowledge of 3Com® internetworking equipment.

If the information in the release notes shipped with your product differs from the information in this guide, follow the release notes.

Conventions

Table 1 and Table 2 list conventions that are used throughout this guide.

Table 1 Notice Icons

Icon	Type	Description
	Information Note	Information notes call attention to important features or instructions.
	Caution	Cautions alert you to personal safety risk, system damage, or loss of data.
	Warning	Warnings alert you to the risk of severe personal injury.

Table 2   Text Conventions

Convention	Description
"Enter" vs. "Type"	When the word "enter" is used in this guide, it means type something, then press the Return or Enter key. Do not press the Return or Enter key when an instruction simply says "type."
"Syntax" vs. "Command"	When the word "syntax" is used in this guide, it indicates that the general form of a command syntax is provided. You must evaluate the syntax and supply the appropriate port, path, value, address, or string; for example:
	Enable RIPIP by using the following syntax:
	`SETDefault !<port> -RIPIP CONTrol = Listen`
	In this example, you must supply a port number for !<port>.
	When the word "command" is used in this guide, it indicates that all variables in the command have been supplied and you can enter the command as shown in text; for example:
	Remove the IP address by entering the following command:
	`SETDefault !0 -IP NETaddr = 0.0.0.0`
	For consistency and clarity , the full form syntax (upper- and lowercase letters) is provided. However, you can enter the abbreviated form of a command by typing only the uppercase portion and supplying the appropriate port, path, address, value, and so forth. You can enter the command in either upper- or lowercase letters at the prompt.
Text represented as `screen display`	`This typeface` is used to represent displays that appear on your terminal screen, for example:
	`NetLogin:`
Text represented as **`commands`**	**`This typeface`** is used to represent commands that you enter, for example:
	`SETDefault !0 -IP NETaddr = 0.0.0.0`
Keys	When specific keys are referred to in the text, they are called out by their labels, such as "the Return key" or "the Escape key," or they may be shown as [Return] or [Esc].
	If two or more keys are to be pressed simultaneously, the keys are linked with a plus sign (+), for example:
	Press [Ctrl]+[Alt]+[Del].
Italics	*Italics* are used to denote *new terms* or *emphasis*.

1

INSTALLATION

This chapter describes how to install the ATMLink module into the NETBuilder II system and includes information on the following:

- Preinstallation procedure
- Installation in a NETBuilder II 4- or 8-Slot chassis
- Installation in a NETBuilder II 8-Slot extended chassis
- Cabling the module

For information about the module's features, refer to Chapter 2.

Before Installing the Module

Before you install the module into the NETBuilder II system, follow these steps:

1 Observe appropriate electrostatic discharge (ESD) precautions.

ESD can damage circuit board components. Failures resulting from ESD may not be covered under your warranty. To prevent this, follow these handling procedures:

- Keep the module in its antistatic shielded bag until you are ready to install it.
- Do not touch pins, leads, or solder connections on the board.
- Handle the board by the edges only.
- Store or ship the module in static-protective packaging.

Observe proper grounding techniques when handling the module: Use a foot strap and grounded mat, or wear a grounded static discharge wrist strap.

2 Inspect the module for shipping damage.

If you find any damage, contact the shipping company to file a report. If the module must be returned to your network supplier, ship it in its original shipping carton. If the original carton was damaged in shipment, repack the module in a carton that provides equivalent protection.

3 Verify that you have received all the contents.

When you purchase the ATMLink module, you receive the following:

- MP ATMLink OC-3 module (multimode or single-mode version)
- This guide
- *NETBuilder II EMC Configuration Exceptions*

If an item is missing from an undamaged carton, contact your network supplier to secure a replacement.

4 Write down the serial number and the MAC address on the following line. You will need this information if you have to contact your network supplier.
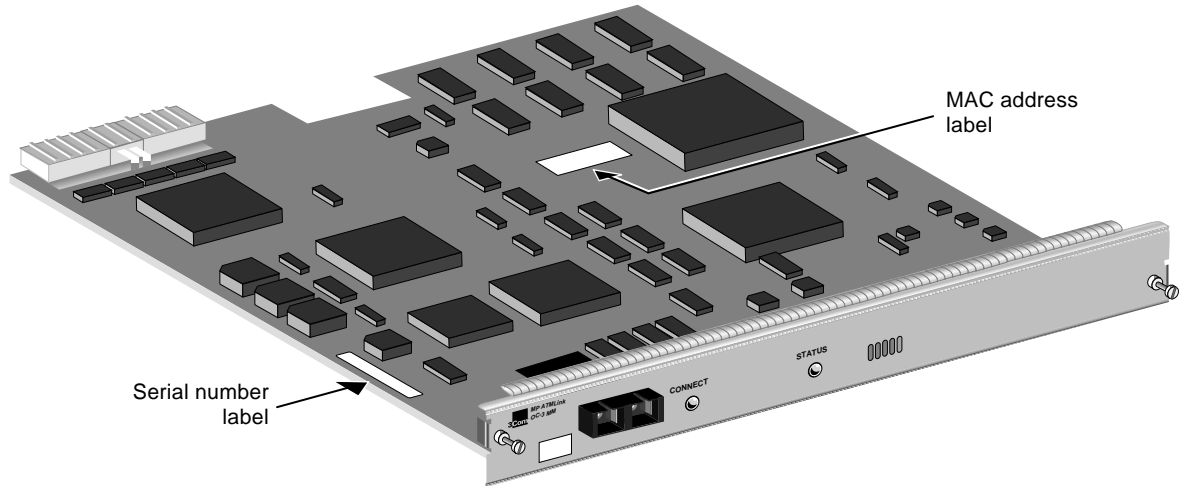
Serial number example: S/N:4FGE123456

MAC address example: 0800021A4B5C

The MAC address is also encoded in the module's EEPROM. Use the procedure in the *NETBuilder II Base System Installation Guide* to display the MAC address encoded in the EEPROM.

Software and Hardware Requirements

The ATMLink module needs version 9.0 or later of the NETBuilder Family Bridge/Router software, and the accompanying CEC firmware version 2.3 or later.

The NETBuilder II system supports up to two ATMLink modules in a chassis.

You must have a CEC module with 20 MB RAM.

The ATMLink module is a multiprocessor module, and requires the bootfile MPATM.29K to be present on the boot media.

Chassis Compatibility

Some older 4-Slot and 8-Slot chassis are unable to accomodate extended-format modules such as the ATMLink module. If your chassis does not have a removable center divider between I/O slots, you will not be able to install extended-format modules.

If your chassis does have a removable center divider but is still an older model, you will need a field upgrade kit if you plan to install your module in the *bottom slots*. Refer to the following section to determine if you need a field upgrade kit.

Field Upgrade Kit for Older Chassis

When installing ATMLink modules into the bottom slots of older 4-slot and 8-slot chassis, EMI spring clips must be installed to ensure continued compliance with emissions requirements. Contact your 3Com service organization to obtain spring clips and installation instructions (or field upgrade kit). The following illustration identifies the chassis configuration that requires the use of the field upgrade kit. The illustration shows the 4-Slot chassis, but it also applies to the 8-Slot chassis.

Older chassis

Newer chassis
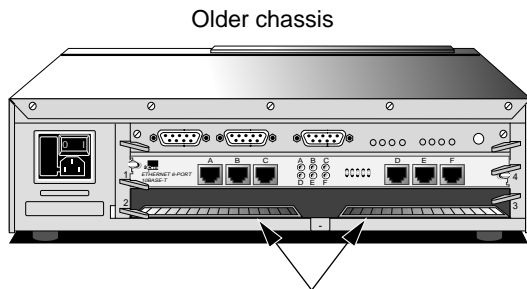
If the bottom slot of your chassis has two separate shielding strips, you **will** need the field upgrade kit in order to install an extended-format module in the bottom slot of the chassis.
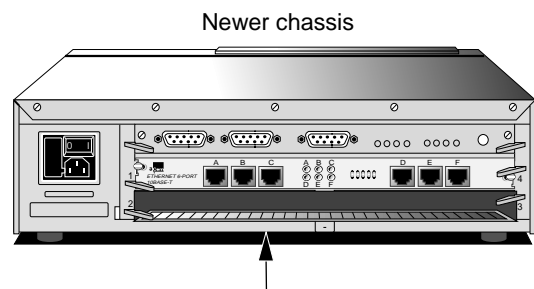
If the bottom slot of your chassis has one shielding strip that extends the full width of the slot, you **do not** need the upgrade kit to install an extended-format module in the bottom slot of the chassis.

Installing in the 4- or 8-Slot Chassis

Use this procedure to install the module into the NETBuilder II 4-slot or 8-slot chassis. To install in the NETBuilder II 8-slot extended chassis, see the next section. You can safely install a module without turning off or rebooting the NETBuilder II system.

You will need a small flat-blade screwdriver for this procedure.

The transceiver used on the single-mode module is IEC 825 Class 1 compliant. Optical instruments should not be used to view the laser output.

1 Remove the cable strain-relief bracket (if installed) and the blanking plate from the I/O slot you have selected.

If you plan to install your module in the bottom slots, refer to "Field Upgrade Kit for Older Chassis" to determine whether you need a field upgrade kit.

4-Slot chassis

(a) Remove cable strain-relief bracket.

(b) Remove blanking plates and center divider.

8-Slot chassis

(a) Remove cable strain-relief bracket.

(b) Remove blanking plates and center divider.

⚡ **WARNING:** *Only remove the blanking plates from I/O slots that will house the ATMLink module. All unused I/O slots require blanking plate covers to maintain proper cooling of the unit and regulatory compliance. Failure to cover open slots can result in overheating of the NETBuilder II system and voiding of the warranty.*

2 Insert the module into the slot.

(a) Push ejector tabs apart.

(b) Make sure module is right side up.

(c) Grasp left and right sides of LED panel.

(d) Slide module along guide rails until it engages the backplane.

(e) Push ejector tabs into closed position.

(f) Finger-tighten the captive screws, then gently tighten them with a small (1/8" – 3/16") screwdriver. Do not overtighten the screws.
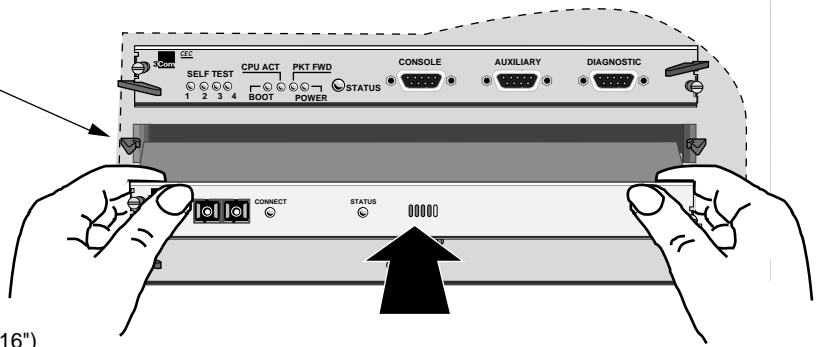
⚡ **WARNING:** *The use of optical instruments increases eye hazard.*

ATTENTION: L'utilisation d'instruments optiques augmentura les troubles visuels.

3 Replace the cable strain-relief bracket if necessary.

Refer to "Cabling the Module" to finish installation. See also "Network Configuration" for more information on ATM networks.
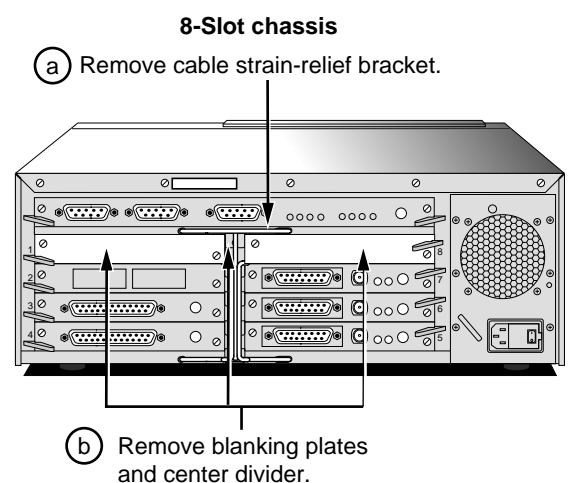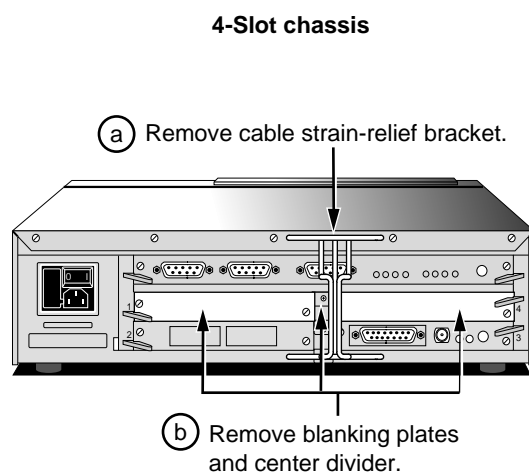
Installing in the Extended Chassis

Use this procedure to install the module into the NETBuilder II 8-Slot Extended chassis. To install in the NETBuilder II 4- or 8-Slot chassis, see the previous section. You can safely install a module without turning off or rebooting the NETBuilder II system.

You will need a small flat-blade screwdriver for this procedure.

1 Remove the card carrier/blanking plate from the I/O slot you have selected. You can install the ATMLink module in any slot except the two far-left slots reserved for the CEC module.

⚡ **WARNING:** *Only remove the blanking plate from an I/O slot that will house the ATMLink module. All unused I/O slots require blanking plate covers to maintain proper cooling of the unit and regulatory compliance. Failure to cover open slots can result in overheating of the NETBuilder II system and voiding of the warranty.*

You do not need to remove the cable strain-relief bracket that came with your NETBuilder II chassis.
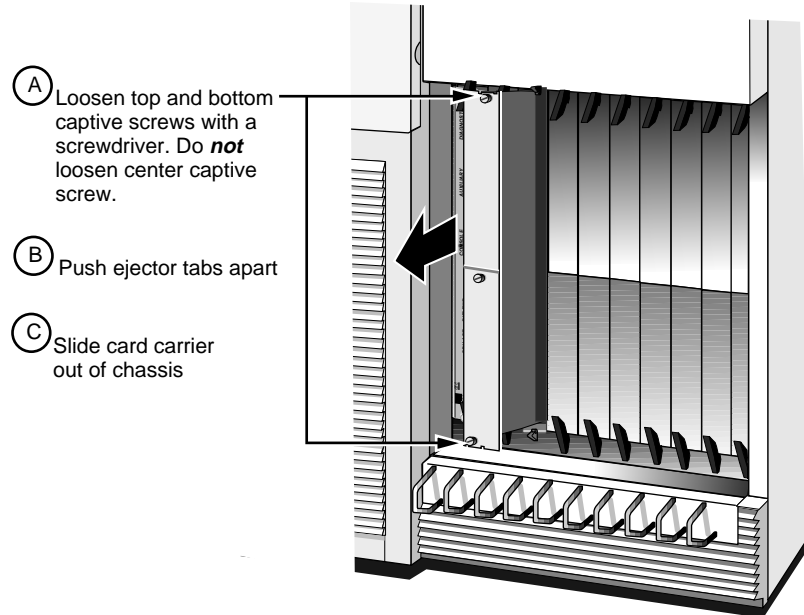
Ⓐ Loosen top and bottom captive screws with a screwdriver. Do *not* loosen center captive screw.

Ⓑ Push ejector tabs apart

Ⓒ Slide card carrier out of chassis

2 Insert the module into the slot.

ⓐ Make sure module is right side up.

ⓑ Grasp left and right sides of LED panel.

ⓒ Turn the module vertically so the 3Com logo is on the bottom.

ⓓ Slide module along the guide rails until it engages ejector tabs' notches.

ⓔ Push ejector tabs all the way closed until the module is flush with the chassis.

tab open   tab closed
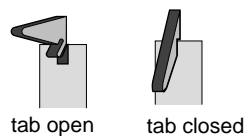
ⓕ Finger tighten the screws and then gently tighten them with a small screwdriver (1/8" - 3/16"). Do not overtighten the screws.
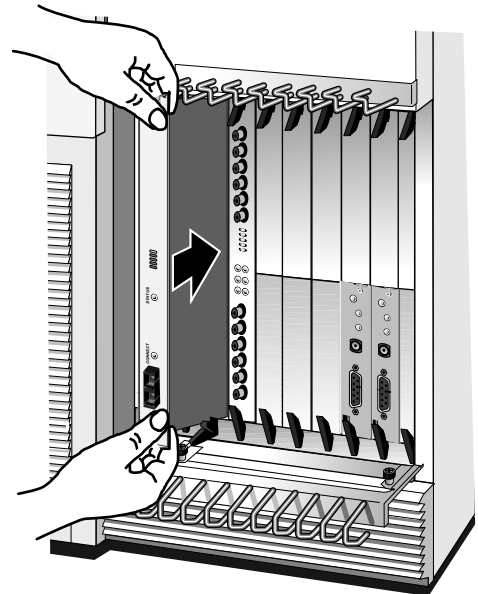
Refer to "Cabling the Module to finish installation. See also "Network Configuration for more information on ATM networks.

Cabling the Module

Table 1-1 lists supported cabling and emissions compliance for the ATMLink module. Two types of ATMLink modules are available. The multimode version of the module uses the multimode cable. The single-mode version of the module uses the single-mode cable.

Table 1-1   Cable Support and Emissions Compliance

| Cable Type | Maximum Cable Length | Connector | Emissions Compliance | |
			FCC Class A VCCI Class A	EN 55022 Class B VDE Class B
Multimode duplex fiber of 62.5/125 μm	2 km	Duplex SC	Yes	Yes
Single-mode duplex fiber of 8.5/125 μm	16 km*	Duplex SC	Yes	Yes

* This maximum cable length specification for single-mode fiber cable is derived using an optical budget of 16 dB and a typical cable attentuation of 1dB/km producing a working maximum cable length of 16 km.

Single-mode duplex fiber is certified Class 1 laser safe.

2

OVERVIEW OF THE MODULE

This chapter describes the features, specifications, and typical use of the ATMLink module for the NETBuilder II system. The ATMLink module is available in either the multimode or the single-mode version.

ATMLink Module Features

Table 2-1 summarizes the module's features.

Table 2-1   ATMLink Module Features

Feature	Summary
Hot-swap capability	Allows you to install and/or remove the module without turning off the NETBuilder II system or rebooting.
Cables support	Multimode (multimode module version) duplex fiber of 62.5/125 μm at lengths up to 2 km with SC connector.
	Single-mode (single-mode module version) duplex fiber of 8.5/125 μm at lengths up to 16 km with SC connector.
Line speed	155 Mbps (SONET STS-3c/OC-3, SDH STM-1 standard)
Multiprocessor	High-speed on-board RISC processor.
Accessible information on the EEPROM	Provides ATMLink module product information that can be accessed with the Monitor utility.

Network Configuration

Figure 2-1 shows an ATM network consisting of a campus with three buildings. Each building has a NETBuilder II system with an ATMLink module connected to a central ATM switch.
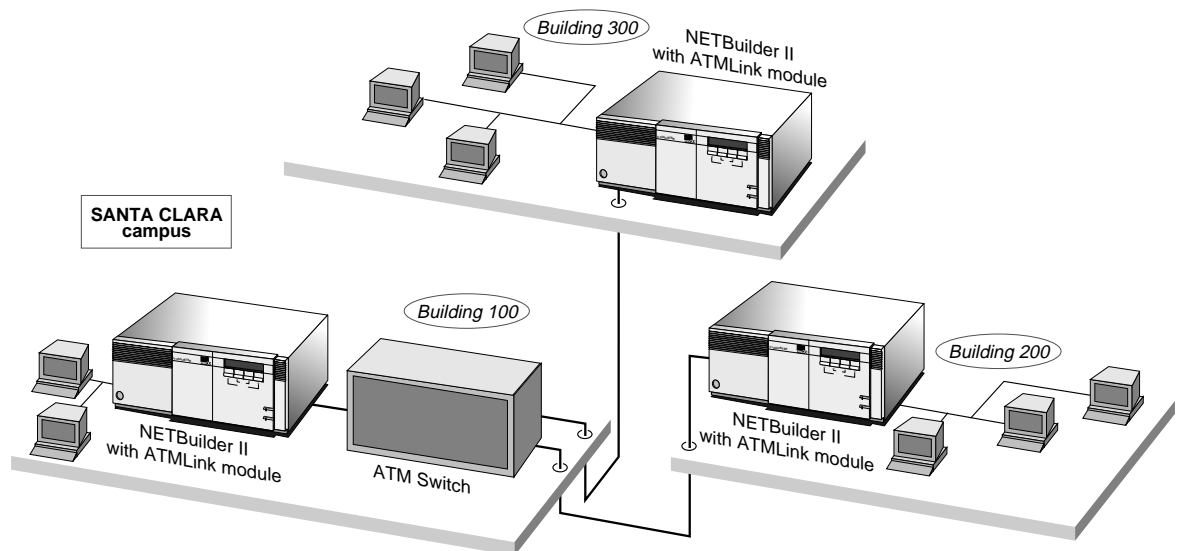
Figure 2-1   Campus Network with an ATM Switch

Laser Safety

This section describes laser saftey and usage precautions.

USA and International

The Class 1 Laser Product label shown below is affixed to the front panel of the single-mode module.

CLASS 1 LASER PRODUCT
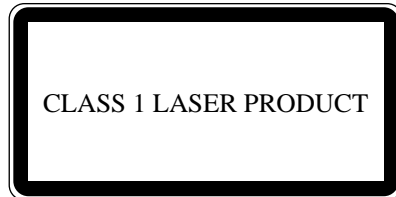
The NETBuilder II ATMLink single-mode modules are certified Class 1 laser-safe. Class 1 is defined by the U.S. Department of Health and Human Services 21 CFR 1040.10 and 1040.11.

The ATMLink single-mode modules use laser components for which the laser emissions are continuously monitored and adjusted by internal electro-optic circuits.

You are not required to adjust the emissions and maintenance is not needed.

WARNING: The use of optical instruments increases eye hazard. Optical instruments should not be used to view the laser output.

ATTENTION*: L'utilisation d'instruments optiques augmentura les troubles visuels.*

Canada

Certified only to Canadian Electrical Code.

Certifie en vertu du code Canadien de l'Electrique seulement.

Specifications

This section describes the ATMLink module components and gives the specifications of the board.

Both versions of the ATMLink module, multimode and single-mode, contain the same general components. The single-mode version supports single-mode optical fiber. A warning label on the front panel of the single-mode version of the module identifies the module as supporting single-mode fiber.

WARNING: *The use of optical instruments increases eye hazard. Do not look directly into the cable or module optical connectors.*

The transceiver used on the single-mode module is IEC 825 Class 1 compliant.
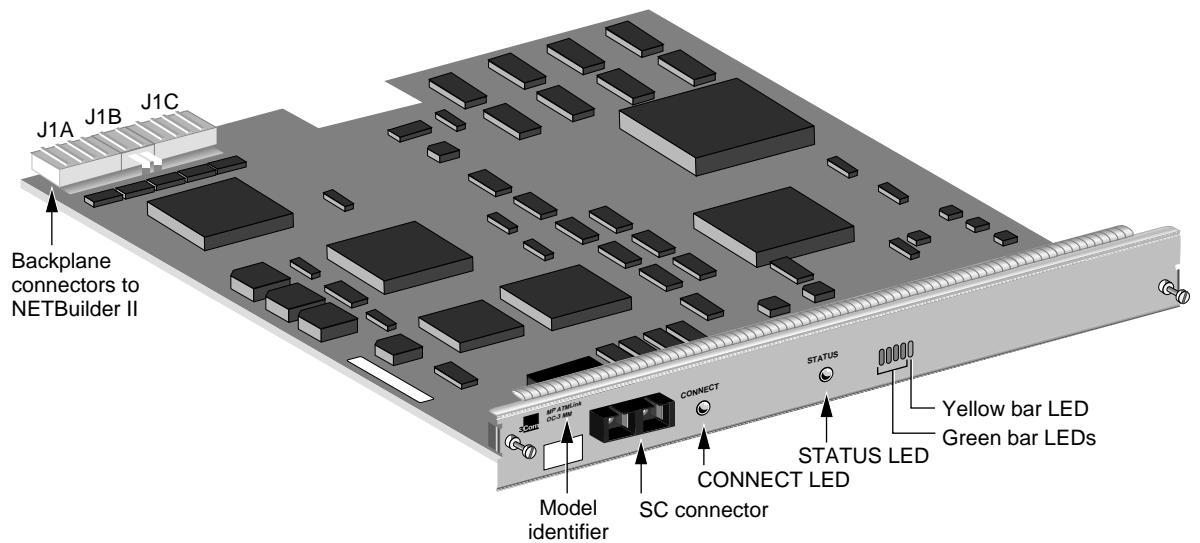
LEDs   The ATMLink module has seven LEDs for displaying information. Table 2-2 describes each of the LEDs.

Table 2-2   ATMLink Module LEDs

LED	State	Meaning
STATUS	Off	Not functioning: it may be disabled or there is no power to the system.
	Red	Reset.
		Path is down.
	Red, blinking	Self-test failure.
	Green	Functioning normally.
	Yellow	Self-test mode during start-up.
		Path disabled during start-up.
CONNECT	Off	No connection.
	Green	Module is functioning normally: connected to an active network.
4 Green bar LEDs	Green	Firmware initialization during start-up: the pattern indicates the self-test code being performed.
	Green, intermittent	Reflect the degree of traffic during operation.
1 Yellow bar LED	Yellow	MP software initializing during start-up.
	Yellow, intermittent	Traffic congestion.

Connectors   Table 2-3 describes the ATMLink module's connectors.

Table 2-3   ATMLink Module Connectors

Location	Connectors	No. of Pins	Purpose
Backplane connector	J1A and J1C	48-pin	Connects module to the core bus.
	J1B	8-pin	Power connector.
Front connector panel	SC	Duplex	Connects multimode module to multimode duplex fiber of 62.5/125 μm.
			Connects single-mode module to single-mode duplex fiber of 8.5/125 μm.

Physical Specifications   The following tables list the module's physical dimensions, environmental requirements, and maximum current consumption.

Table 2-4   Physical Dimensions

Attribute	Description
Length	9.3 in (22.3 cm)
Width	10.8 in (27.4 cm)
Height	0.6 in (1.5 cm)
Weight	1.2 lbs (0.54 kg)

Table 2-5   Environmental Requirements

Parameter	Requirement	
	Minimum	Maximum
Temperature:		
Operating	32˚F (0˚C)	122˚F (50˚C)
Nonoperating	-4˚F (-20˚C)	140˚F (60˚C)
Altitude:		
Operating	Sea level	15,000 ft. (4,572 m)
Nonoperating	Sea level	40,000 ft. at 32˚F (12,191 m at 0˚C)
Relative humidity:		
Operating	10% noncondensing	90% noncondensing
Nonoperating	10% noncondensing	90% noncondensing
Vibration:		
Operating		0.25 G at 5–500 Hz
Nonoperating		0.25 G at 5–500 Hz
Shock:		
Nonoperating		30 G at 1/2 sine for 11 ms

Table 2-6   Maximum Current Consumption

+5 Volts	+12 Volts	-12 Volts
6 A	0.08 A	0.04 A

3

TROUBLESHOOTING AND REPLACING THE MODULE

This chapter describes how to troubleshoot and replace the ATMLink module.

Troubleshooting

Table 3-1 describes common malfunctions that can occur with the module. If you are unable to resolve a problem, you will need to contact your network supplier. Refer to Appendix A for information about who to contact in your area.

Table 3-1 Troubleshooting the ATMLink Module

Symptom	Cause and Action
The following message is displayed at startup: `ATM Interface: Self Tests failed – slot X` (The value of X can be 1 through 4 or 1 through 8, depending on whether you have a 4- or an 8-slot NETBuilder II chassis.)	*Self-test failure* ■ Check to see if the module is inserted completely into the NETBuilder II chassis. ■ Make sure there are no bent pins on the NETBuilder II backplane. If you still have a self-test failure, contact your network supplier.
The module's STATUS LED is **red**.	*Error condition* ■ Check that all cable connections are intact. ■ Check that the NETBuilder II base system is operating correctly and has finished booting. ■ Check that the network you are connected to is operating correctly. ■ Try hot swapping the module in the chassis. Check that there are no bent pins on the NETBuilder II backplane and check to see that the module is inserted completely into the NETBuilder II chassis. If none of these actions solve the problem, replace the module and/or contact your network supplier for assistance.
The module's STATUS LED is **off** when there is power to the NETBuilder II system and other installed modules are operating.	*The module may not be properly connected to the NETBuilder II backplane.* Remove and reinsert the module. *The module slot position may be disabled.* Refer to the software manual to determine how to use the `SETDefault !<port> -PATH CONTrol = Enabled` command with an external console or network management connection to reenable the module's path. If none of these actions solve the problem, replace the module and/or contact your network supplier.

Replacing the Module

If any component in the module fails, you will need to replace the entire module. The ATMLink module can be hot-swapped, which means that you can safely remove and install a new one without turning off or rebooting the NETBuilder II system.

You may need a small flat-blade screwdriver to perform the following procedure. To remove and replace the module, follow these steps:

1 Disconnect any network cabling from the module.

WARNING: The use of optical instruments will increase eye hazard. Optical instruments should not be used to view the laser output.

ATTENTION*: L'utilisation d'instruments optiques augmentura les troubles visuels.*

2 Unscrew the two captive screws (use a screwdriver if necessary) that anchor the module in the slot until they disengage from the chassis. Do not remove the screws from the I/O panel.

3 Push the tabs outward from the module.

The board disengages from the NETBuilder II backplane and partially ejects from the slot.

4 Use both hands to grasp the board and gently pull it from the slot.

5 Install the new module using the procedures outlined in Chapter 1.

A
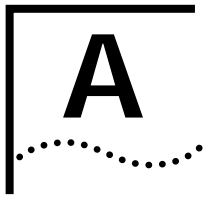
TECHNICAL SUPPORT

3Com provides easy access to technical support information through a variety of services. This appendix describes these services.

Online Technical Services

3Com offers worldwide product support seven days a week, 24 hours a day, through the following online systems:

- 3Com Bulletin Board Service (3ComBBS)
- World Wide Web site
- 3ComForum on CompuServe®
- 3ComFacts℠ automated fax service

3Com Bulletin Board Service

3ComBBS contains patches, software, and drivers for all 3Com products, as well as technical articles. This service is available via modem or ISDN seven days a week, 24 hours a day.

Access by Modem

To reach the service by modem, set your modem to 8 data bits, no parity, and 1 stop bit. Call the telephone number nearest you:

Country	Data Rate	Telephone Number
Australia	up to 14400 bps	(61) (2) 9955 2073
France	up to 14400 bps	(33) (1) 69 86 69 54
Germany	up to 9600 bps	(49) (89) 627 32 188 (49) (89) 627 32 189
Hong Kong	up to 14400 bps	(852) 2537 5608
Italy (fee required)	up to 14400 bps	(39) (2) 273 00680
Japan	up to 14400 bps	(81) (3) 3345 7266
Singapore	up to 14400 bps	(65) 534 5693
Taiwan	up to 14400 bps	(886) (2) 377 5840
U.K.	up to 28800 bps	(44) (1442) 278278
U.S.	up to 28800 bps	(1) (408) 980 8204

Access by ISDN

ISDN users can dial-in to 3ComBBS using a digital modem for fast access up to 56 Kbps. To access 3ComBBS using ISDN, dial the following number:

(408) 654 2703

World Wide Web Site   Access the latest networking information on 3Com's World Wide Web site by entering our URL into your Internet browser:

http://www.3Com.com/

This service features news and information about 3Com products, customer service and support, 3Com's latest news releases, selected articles from 3TECH™ (3Com's award-winning technical journal) and more.

3ComForum on CompuServe   3ComForum is a CompuServe-based service containing patches, software, drivers, and technical articles about all 3Com products, as well as a messaging section for peer support. To use 3ComForum, you need a CompuServe account.

To use 3ComForum:

1   Log on to CompuServe.

2   Enter **go threecom**.

3   Press [Return] to see the 3ComForum main menu.

3ComFacts Automated Fax Service   3Com Corporation's interactive fax service, 3ComFacts, provides data sheets, technical articles, diagrams, and troubleshooting instructions on 3Com products 24 hours a day, seven days a week.

Call 3ComFacts using your touch-tone telephone. International access numbers are:

Country	Telephone Number
Hong Kong	(852) 2537 5610
U.K.	(44) (1442) 278279
U.S.	(1) (408) 727 7021

Local access numbers are available within the following countries:

Country	Telephone Number	Country	Telephone Number
Australia	800 123853	Netherlands	06 0228049
Belgium	0800 71279	Norway	800 11062
Denmark	800 17319	Portugal	0505 442607
Finland	98 001 4444	Russia (Moscow only)	956 0815
France	05 90 81 58	Spain	900 964445
Germany	0130 8180 63	Sweden	020 792954
Italy	1678 99085	U.K.	0800 626403

Support from Your Network Supplier

If additional assistance is required, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

■ Diagnostic error messages

■ A list of system hardware and software, including revision levels

■ Details about recent configuration changes, if applicable

If you are unable to contact your network supplier, see the following section on how to contact 3Com.

Support from 3Com

If you are unable to receive support from your network supplier, technical support contracts are available from 3Com.

In the U.S. and Canada, call **(800) 876-3266** for customer service.

If you are outside the U.S. and Canada, contact your local 3Com sales office to find your authorized service provider:

Country	Telephone Number	Country	Telephone Number
Australia (Sydney)	(61) (2) 959 3020	Japan	(81) (3) 3345 7251
(Melbourne)	(61) (3) 653 9515	Mexico	(525) 531 0591
Belgium*	0800 71429	Netherlands*	06 0227788
Brazil	(55) (11) 546 0869	Norway*	800 13376
Canada	(905) 882 9964	Singapore	(65) 538 9368
Denmark*	800 17309	South Africa	(27) (11) 803 7404
Finland*	0800 113153	Spain*	900 983125
France*	05 917959	Sweden*	020 795482
Germany*	0130 821502	Taiwan	(886) (2) 577 4352
Hong Kong	(852) 868 9111	United Arab Emirates	(971) (4) 349049
Ireland*	1 800 553117	U.K.*	0800 966197
Italy*	1678 79489	U.S.	(1) (408) 492 1790

* These numbers are toll-free.

Returning Products for Repair

A product sent directly to 3Com for repair must first be assigned a Return Materials Authorization (RMA) number. A product sent to 3Com without an RMA number will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, call or fax:

Country	Telephone Number	Fax Number
U.S. and Canada	(800) 876 3266, option 2	(408) 764 7120
Europe	31 30 60 29900, option 5	(44) (1442) 275822
Outside Europe, U.S., and Canada	(1) (408) 492 1790	(1) (408) 764 7290

LIMITED WARRANTY

HARDWARE: 3Com warrants its hardware products to be free from defects in workmanship and materials, under normal use and service, for the following lengths of time from the date of purchase from 3Com or its Authorized Reseller:

Internetworking products	One year
Network adapters	Lifetime
Ethernet stackable hubs and	
Unmanaged Ethernet fixed port repeaters	Lifetime* (One year if not registered)
*Power supply and fans in these stackable hubs and unmanaged repeaters	One year
Other hardware products	One year
Spare parts and spares kits	90 days

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