NETBUILDER II® HSS RS-232 3-PORT DCE/DTE MODULE INSTALLATION GUIDE

ABOUT THIS GUIDE

Introduction

This guide describes how to install, cable, maintain, and troubleshoot the HSS RS-232 3-Port DCE/DTE module for the NETBuilder II® system. The information in this guide applies to all NETBuilder II chassis.

For more information about the 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 lists the notice icons that are used throughout this guide, and Table 2 lists text conventions that are also 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 HSS RS-232 3-Port DTE/DCE module into the NETBuilder II® system and includes the following procedures:

- Preparing for installation
- Changing the module jumper settings if connecting one or more of the cable connectors to data terminal equipment (DTE)
- Installing the module in a NETBuilder II 4- or 8-Slot chassis
- Installing the module in a NETBuilder II 8-Slot Extended chassis
- Cabling the module

You must have NETBuilder software version 7.2 or later and CEC firmware version 2.1 or later to use the module. If you want to change a port from DTE to data communication equipment (DCE), you must have NETBuilder software version 9.1 or later.

In order to use the module with DTE devices, you must order an adapter kit (3C6044) that contains three DTE-to-DCE adapters.

For information about the features of the HSS RS-232 3-Port DTE/DCE module, refer to Chapter 2.

Before Installing the Module

To prepare to 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.
- Do not touch pins, leads, or solder connections on the module.
- Handle the module 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 the shipping carton contains the following items:

- HSS RS-232 3-Port DTE/DCE module
- HSS RS-232 3-Port cable
- This guide

You can order an adapter kit (3C6044) that contains DTE-to-DCE adapters to connect the module to a DTE device, such as a mainframe or a cluster controller. The adapter kit contains three DTE-to-DCE adapters and a release note that shows the adapter pin-outs.

If an item is missing from an undamaged carton, contact your network supplier.

4 Write down the serial number and the three MAC addresses from the label on the component side of the module on the following line. You will need this information if you have to contact your network supplier.
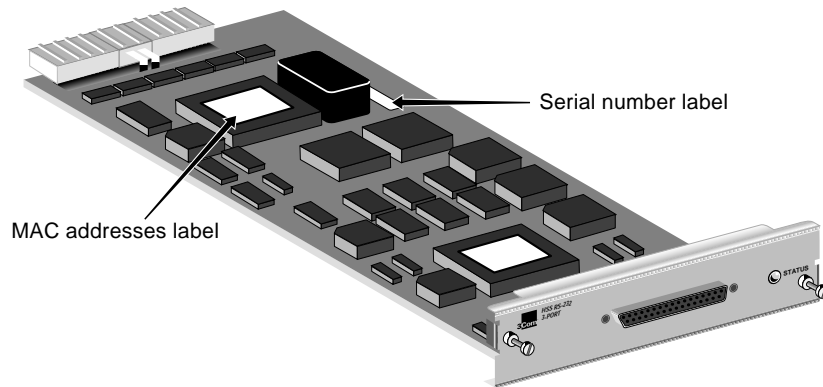
Serial number example: S/N:1DN12345

MAC addresses example: 0800021A4B5C, 0800021A4B5D, 0800021A4B5E

The MAC addresses are also encoded in the module EEPROM. Use the procedure in the *NETBuilder II Base System Installation Guide* to display the MAC addresses encoded in the EEPROM.

Software/Hardware Compatibility

Verify that you have NETBuilder software version 7.2 or later and CEC firmware version 2.1 or later.

If you want to change a module port setting from DTE to DCE so that you can connect to a DTE device, you must be running NETBuilder software version 9.1 or later.

▶ *If you change a port setting from DTE to DCE, you must set the -PATH Service CLock parameter from External to Internal for that port. Refer to the CLock parameter in the "Path Service Parameters" chapter in the NETBuilder Family Bridge/Router Reference Guide for instructions.*

Changing the Jumper Settings

This section describes how to change the jumpers to enable the module to connect to DTE devices. Skip this section if you are using only DCE devices.

The jumpers on the module are factory-set to support connecting the module ports to DCE devices with an RS-232 3-Port cable. Typical DCE devices are modems, ISDN terminal adapters, and CSU/DSUs.

To connect one or more of the connectors on the 3-Port cable to a DTE device, such as a cluster controller or a mainframe computer, change the jumper settings as follows:

1 Remove the jumper located in the E-4 position (see Figure 1-1).

2 For the ports you want to connect to DTE devices, move the jumpers from the DTE row of pins to the DCE row of pins (see Figure 1-1).

⚠ **CAUTION:** *When changing jumper settings on the module and when cabling the module to devices, be aware that when the RS-232 3-Port cable is connected to the module, the positioning of the three hydra cables carrying the port signals are not visually in a direct or expected line with the location of the jumpers on the module to which the signals correspond. (See Figure 1-1.)*

▶ *When any one of the three ports on the module are changed from DTE to DCE, the test-mode configuration is lost for all three ports.*

Figure 1-1 shows the jumper in the E3 slot for port J3(C) set to DCE and shows two ports set to DTE.
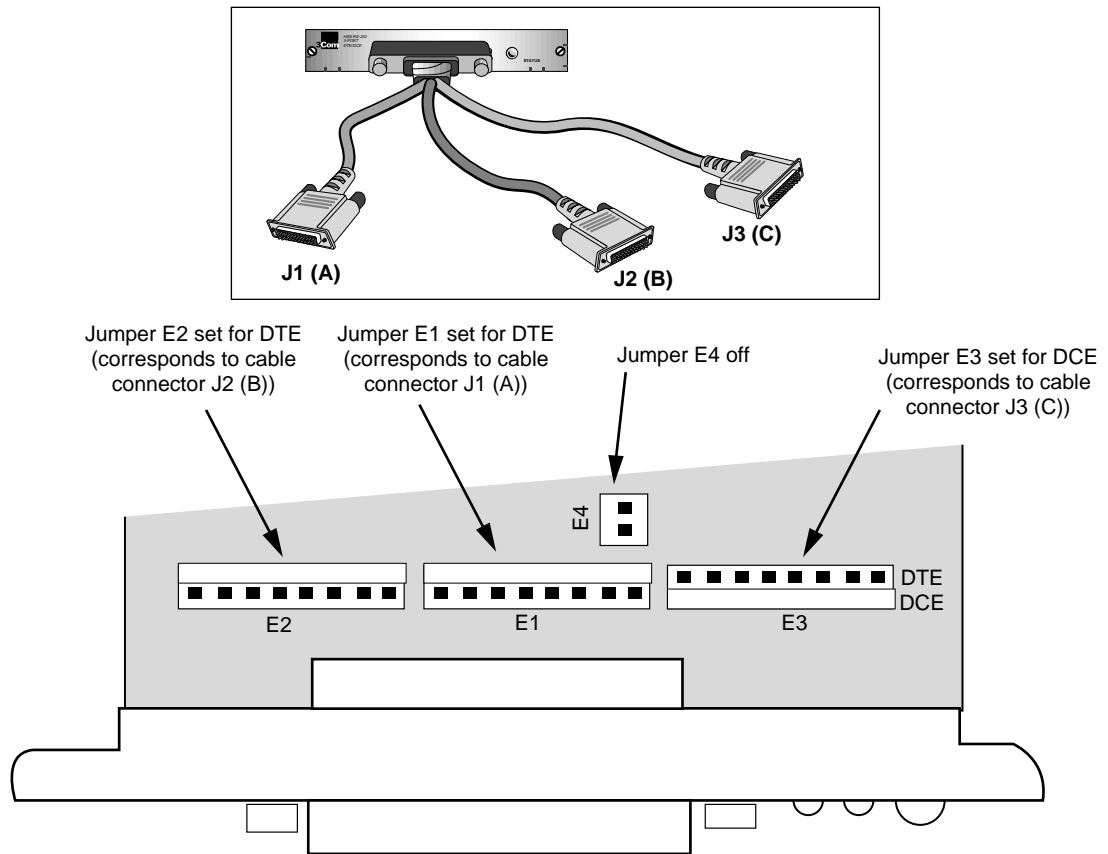
Figure 1-1   Changing the Jumper Settings to Connect to DTE Devices

When cabling one or more of the module ports to a DTE device, you need to attach a DTE-to-DCE adapter available from 3Com to the connector of each of the three cables that is to connect to a DTE device. This procedure is described in "Cabling Instructions" on .

You also must set the -PATH Service CLock parameter from External to Internal for the port that you are connecting to a DTE device. Refer to the CLock parameter in the "Path Service Parameters" chapter in the NETBuilder Family Bridge/Router Reference Guide for instructions.

Installing the Module in a 4- or 8-Slot Chassis

You can install up to three HSS RS-232 3-Port DTE/DCE modules at a time into a NETBuilder II 4-Slot chassis and up to seven in an 8-Slot chassis.

■ You will need a small flat-blade screwdriver.

■ You can safely install a module without turning off or rebooting the NETBuilder II system.

To install the module into a NETBuilder II 4- or 8-Slot chassis, follow these steps:

1 Remove the filler panel from the I/O slot you have selected.

You do not need to remove the cable strain-relief bracket that came with your NETBuilder II chassis.

(a) Loosen captive screws
with small screwdriver

(b) Push tab to the side

(c) Slide filler panel
out of rear panel
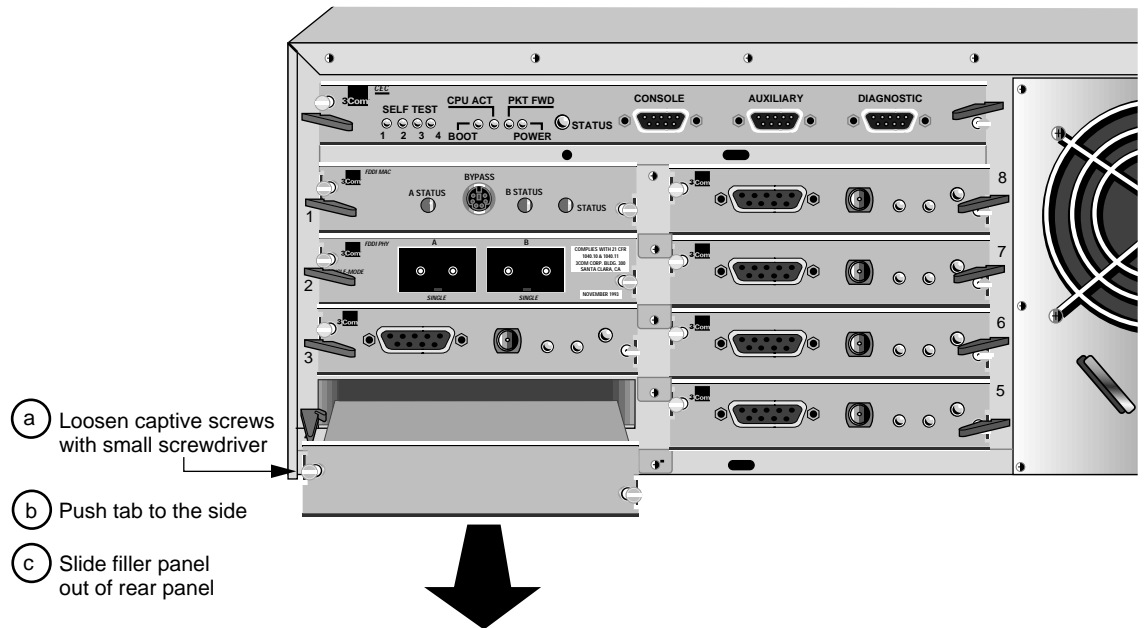
WARNING: *Only remove the filler panel from the I/O slot that will house the RS-232 3-Port module. All unused I/O slots require filler panels to maintain proper cooling of the unit and regulatory compliance. Failure to cover open slots can result in overheating of the NETBuilder II system and voiding of the warranty.*

2 Insert the module into the slot.

1 Make sure module is right side up

2 Grasp left and right sides of LED panel

3 Slide board along guide rails until it engages ejector tab notch

4 Push ejector tab closed until the module is flush with the chassis
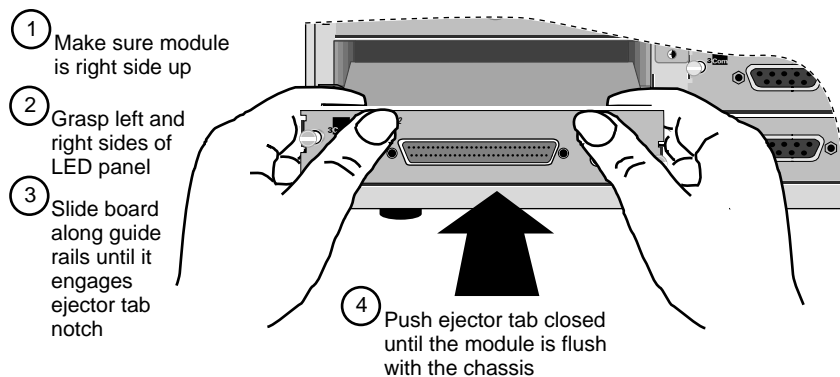
3 Hand-tighten the captive screws. Then gently tighten them with a small (1/8 - 3/16″) screwdriver. Do **not** overtighten.

A solid connection of the connector/LED panel to the chassis is required for proper operation. Do **not** use the screws to force the board into place.

Refer to "Cabling the Module" to finish the installation.

Installing the Module in an Extended Chassis

You can install up to seven HSS RS-232 modules into a NETBuilder II 8-Slot Extended chassis.

- You will need a small flat-blade screwdriver.

- You can safely install a module without turning off or rebooting the NETBuilder II system.

To install the module into a NETBuilder II 8-Slot Extended chassis, follow these steps:

1 Remove the card carrier from the I/O slot you have selected.

The card carrier acts as a filler panel when a module is not installed.

You do not need to remove the cable strain-relief bracket that came with your NETBuilder II chassis.

a Loosen top and bottom captive screws with a screwdriver. Do *not* loosen center captive screw.

b Push ejector tabs apart

c Slide card carrier out of chassis
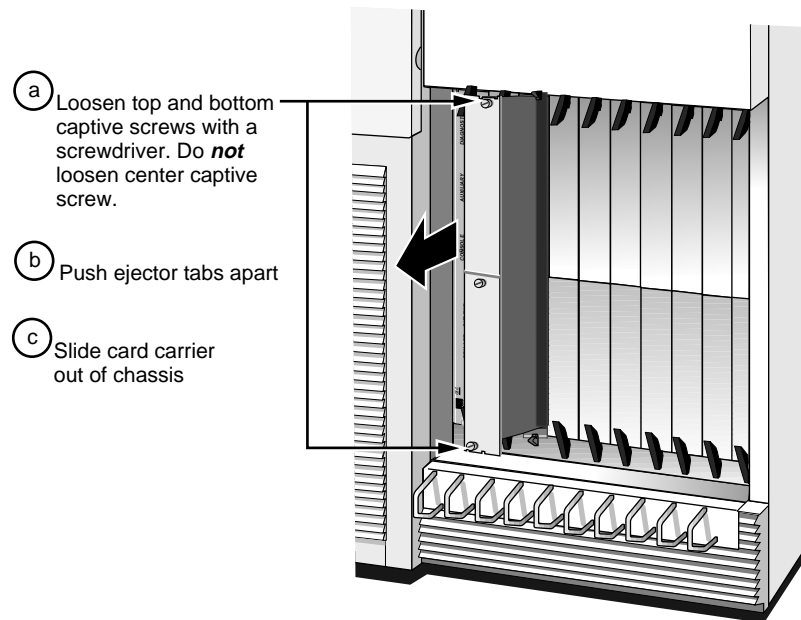
WARNING: *Only remove the card carrier from the I/O slot that will house the RS-232 3-Port module. All unused I/O slots must be covered by a card carrier to maintain proper cooling of the unit and regulatory compliance. Failure to cover open slots can result in overheating of the NETBuilder II base system and voiding of the warranty.*

2 Install the module onto the card carrier.

Remove filler panel from card carrier

Install module in card carrier

a Remove locking pin

!WARNING!
DO NOT TURN UNIT ON
WITHOUT A BLANKING
PLATE OR I/O MODULE
IN EVERY SLOT. UNIT
FAILURE MAY RESULT.

b Loosen screw

c Tighten screw

Module

Plate

d Insert locking pin from bottom of plate.
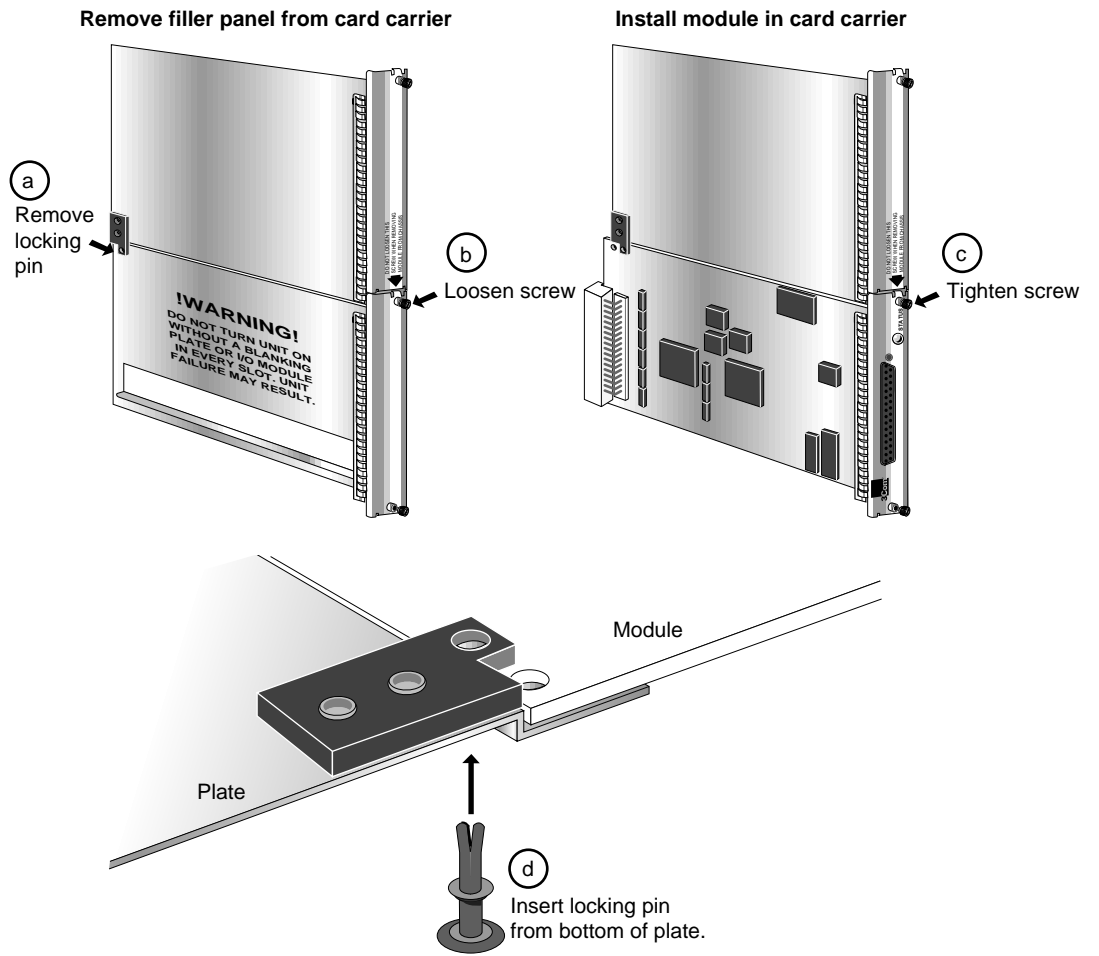
3 Insert the card carrier into the slot.

a Make sure module is right side up

b Grasp left and right sides of LED panel

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

d Slide board along guide rails until it engages ejector tab notches

e Push ejector tabs towards the LED panel until the module is flush with the chassis
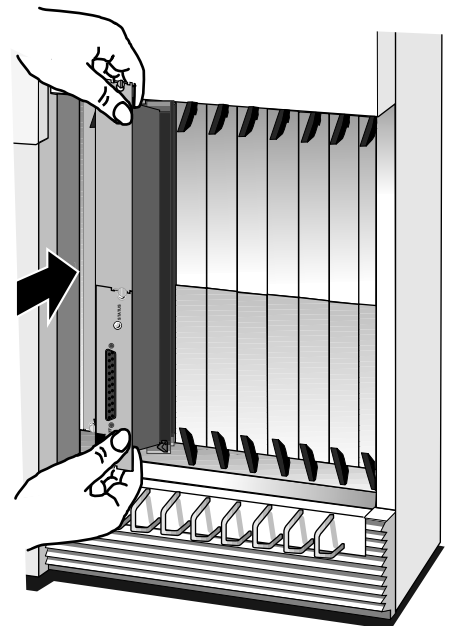
4 Hand-tighten the captive screws. Then gently tighten them with a small (1/8 - 3/16″) screwdriver. Do **not** overtighten.

A solid connection of the connector/LED panel to the chassis is required for proper operation. Do **not** use the screws to force the board into place.

Refer to "Cabling the Module" to finish the installation.

Cabling the Module

This section contains compliance, cabling, and pinout information for the RS-232 3-Port cable and the DTE-to-DCE adapter, which are used to cable the RS-232 3-Port module to DCE and DTE devices.

Cable Compliance

Table 1-1 lists the supported cabling emissions compliance.

Table 1-1   Cable Emissions Compliance

		Emissions Compliance	
Cable Type	Connectors	FCC Class A VCCI Class A	EN55022 Class B VDE Class B
HSS RS-232 3-Port cable	50-pin socket at one end of the cable to connect to the 50-pin connector on the RS-232 module.	Yes	Yes
	Three 25-pin RS-232 connectors at the other end of cable to connect to devices with RS-232 ports.		
DTE-to-DCE adapter	25-pin socket connectors at either end of adapter (one labeled "To DTE" and the other "NB II ") for the module port to connect to a DTE device. (See the CAUTION next)	Yes	Yes

CAUTION: *Although each end of the DTE-to-DCE adapter has a 25-pin socket connector, you must attach the end of the adapter labeled "NB-II" to the 25-pin connector on the RS-232 3-Port cable. Connect the other end of the adapter labeled "To DTE" to the 25-pin connector on the DTE device (such as a cluster controller).*

Cabling Guidelines

The 50-pin socket on the HSS RS-232 3-Port cable connects to the 50-pin connector on the HSS RS-232 3-Port DTE/DCE module. The three 25-pin connectors at the other end of the 3-port cable connect to RS-232 connectors on a DCE device (such as a modem, ISDN terminal adapter, or a CSU/DSU).

To connect one or more of the three 25-pin connectors on the 3-port cable to a DTE device (such as an IBM cluster controller or an IBM mainframe computer), you must first change the port's jumper setting from DTE to DCE correctly as described in "Changing the Jumper Settings" , and attach a DTE-to-DCE adapter provided by 3Com to the corresponding cable connector.

The cabling instructions in the next section describe how to connect the HSS RS-232 3-Port module to DCE and DTE devices.

Cabling Instructions   To cable the module to DCE and DTE devices, follow these steps:

1 Attach the 50-pin socket connector on the HSS RS-232 3-Port cable to the 50-pin connector on the module as shown in Figure 1-2.

Hold the connector firmly in place while
hand-tightening the screws on either side.
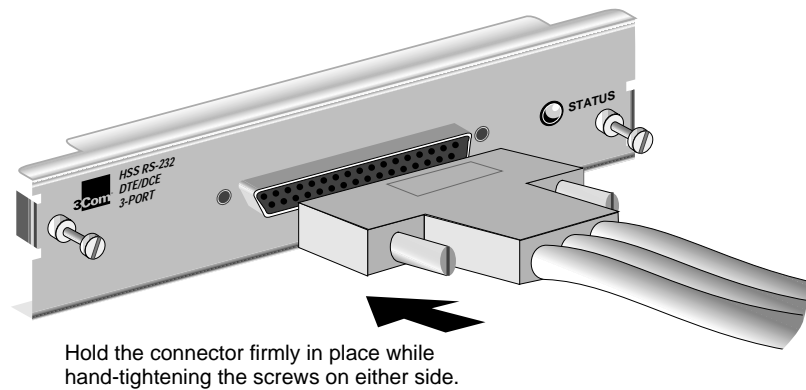
Figure 1-2   Attaching the RS-232 3-Port Cable to the Module

2 Route the cable through the cable strain-relief bracket as shown in Figure 1-3.

Route the cable through
these two arms
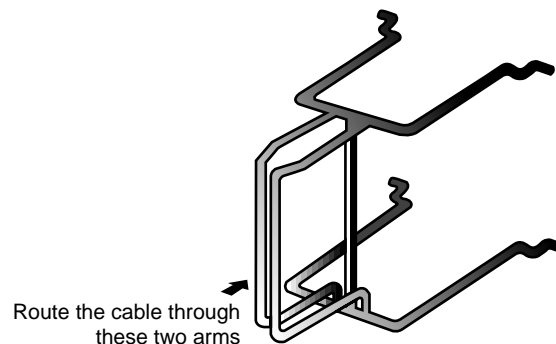
Figure 1-3   Routing the Cable Through the Cable Strain-Relief Bracket

CAUTION: *Because of the weight of the 3-Port cable, use the strain-relief bracket to decrease the possibility of damage to the module. If the cable is too large to fit in the bracket along with other NETBuilder II module cables, use cable ties or other means of strain relief.*

3 Although you can attach each of the three connectors to an RS-232 interface on a DCE device such as a modem, ISDN terminal adapter, or CSU/DSU, you do not need to attach all three connectors.

To attach one of these connectors to a DTE device, you must change the jumper settings on the module to support a DCE-to-DTE device connection. Refer to "Changing the Jumper Settings" for information.

![Caution icon] **CAUTION:** *When changing jumper settings on the module and when cabling the module to devices, be aware that when the RS-232 3-Port cable is connected to the module, the positioning of the three hydra cables carrying the port signals are not visually in a direct or expected line with the location of the jumpers on the module to which the signals correspond. (See Figure 1-1.)*

4 Attach the end of the DTE-to-DCE adapter labeled "NB II" to the end of the 25-pin connector on the cable. Connect the end of the adapter labeled "To DTE" to the DTE device as shown in Figure 1-4. You can connect the adapter end directly to a DB-25 male connector on the DTE device or to a DB-25 male connector on a cable coming from the DTE device.

![Caution icon] **CAUTION:** *Be sure to use the labels on the adapter to connect it properly. It is easy to connect the adapter incorrectly, because both ends are female DB-25 connectors.*
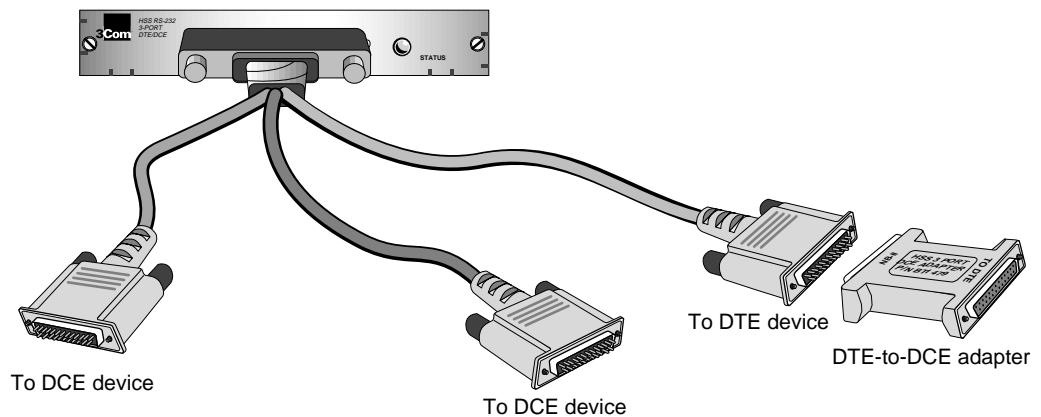
Figure 1-4 Attaching the DTE-to-DCE Adapter

Module Connector to RS-232 Cable Pin Assignments

You can connect each hydra head of the HSS RS-232 3-Port cable directly to an RS-232 interface. If you need an RS-232 extension cable, refer to Table 1-2 for the pin assignments of the RS-232 cable.

Table 1-2 HSS RS-232 3-Port Module Connector and Cable Pin Assignments

RS-232 Port Pinout						RS-232 Cable Pinout
A	B	C	Signal	I/O	Signal Description	(25 pin male)
1	18	35	GND	-	Shield	1
2	19	36	TD	output	Transmit Data	2
5	22	39	TXC	input	Transmit Signal Element Timing	15
13	30	46	TT	output	Transmit Signal Element Timing	24
8	25	41	RTS	output	Request to Send	4
3	20	37	RD	input	Receive Data	3
9	26	42	CTS	input	Clear to Send	5
6	23	40	RXC	input	Receive Signal Element Timing	17
11	28	44	DSR	input	Data Set Ready	6
10	27	43	DTR	output	Data Terminal Ready	20
12	29	45	DCD	input	Receive Carrier Detect	8
16	33	49	LL	output	Local Loop-back	18
17	34	50	RL	output	Remote Loop-back	21

Table 1-2   HSS RS-232 3-Port Module Connector and Cable Pin Assignments

RS-232 Port Pinout						RS-232 Cable Pinout
A	B	C	Signal	I/O	Signal Description	(25 pin male)
15	32	48	RI	input	Ring Indicate	22
14	31	47	TM	input	Test Mode	25
7	21	38	SG	-	Signal Ground	7
4	24	38	SG	-	Signal Ground	

⚠ **CAUTION:** *All interconnecting cables must be properly shielded to reduce the potential for interference. Only cables from 3Com are guaranteed to meet emissions standards. If other cables are used, 3Com cannot guarantee compliance.*

DTE-to-DCE Adapter Pin Assignments

Figure 1-5 lists the pin assignments for the DTE-to-DCE adapter.
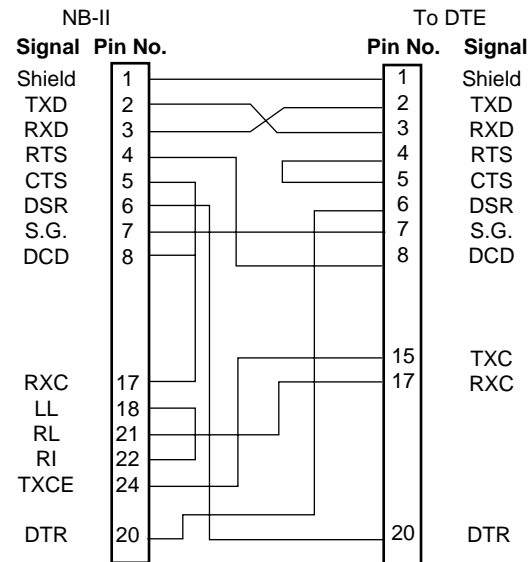
Figure 1-5   Pin Assignments for the DTE-to-DCE Adapter

2

OVERVIEW OF THE MODULE

This chapter describes the features, components, and specifications for an HSS RS-232 3-Port DTE/DCE module. It also illustrates how this module and a NETBuilder II Bridge/Router might be used in a typical network.

Module Features

Table 2-1 summarizes the features of the HSS RS-232 3-Port module.

Table 2-1   HSS RS-232 3-Port DTE/DCE Module Features

Feature	Summary
Three ports	Provides maximum port density in a single module, saving slots for other NETBuilder II system modules.
Hot-swap capability	Allows you to install or remove and reinstall the module without turning off the NETBuilder II system.
Cable support	Supports RS-232/RS-334.
Clocking	External or internal (with the DTE-to-DCE adapter, 3C6044)
Interface	RS-232. Can connect to DCE devices and, with a DTE-to-DCE adapter, can connect to DTE devices.
Self-test and diagnostic capability	Monitors the network and signals network status through the LED.
Accessible information on the EEPROM	Provides HSS RS-232 3-Port DTE/DCE module product information that can be accessed with the monitor utility.

Typical Network Configuration

Figure 2-1 shows a typical use of the HSS RS-232 3-Port DTE/DCE module and the NETBuilder II Bridge/Router in a network.

Figure 2-1 Typical HSS RS-232 3-Port DTE/DCE Module and NETBuilder II Bridge/Router Network

Module Components

This section describes the HSS RS-232 3-Port DTE/DCE module components. (See Figure 2-2.)
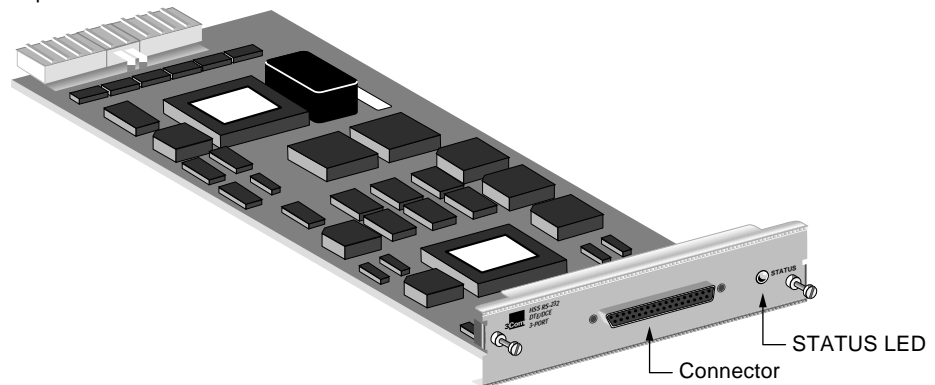
Figure 2-2 HSS RS-232 3-Port DTE/DCE Module Components

STATUS LED   The tricolor STATUS LED is located on the front panel. Table 2-2 explains the LED states.

Table 2-2   LED States
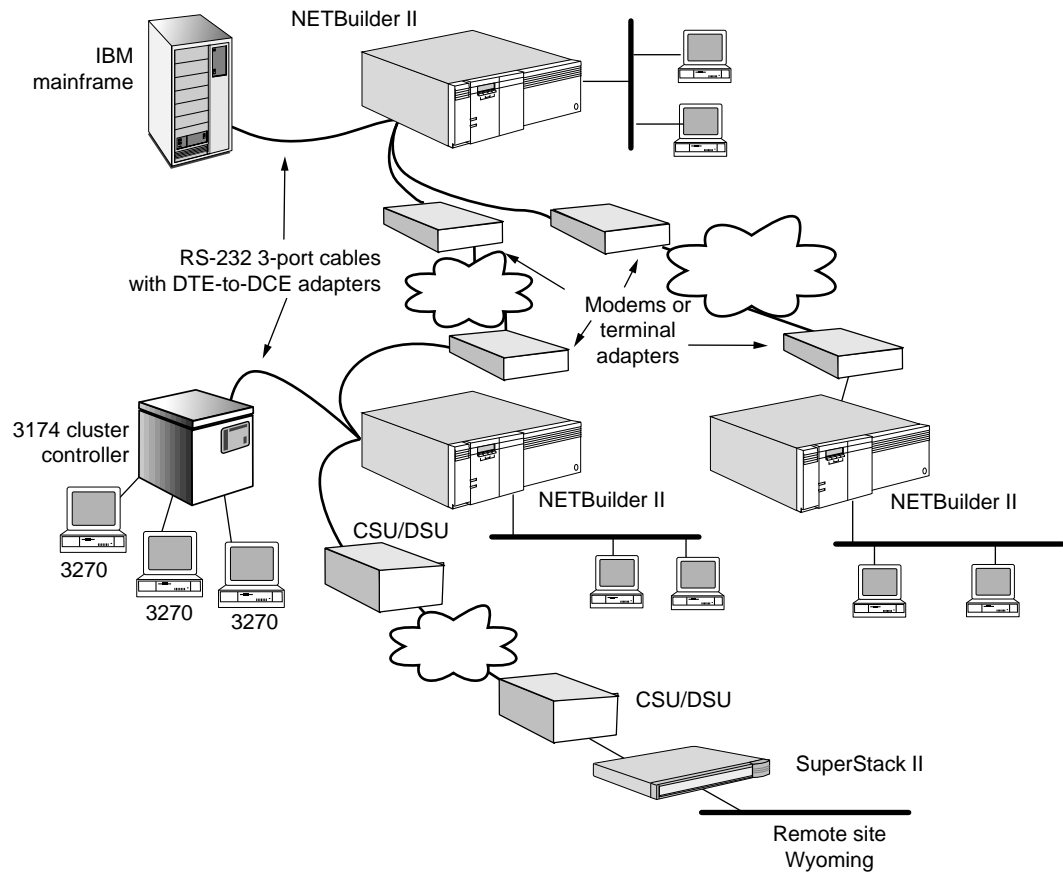
LED	Color	Indicates
STATUS	Green	Normal operation
	Off	Module disabled
	Yellow	Self-test
	Red	Fault or reset

Connectors   Table 2-3 lists connector information for the module, cable, and DTE-to-DCE adapter.

Table 2-3   Connectors for the HSS RS-232 3-Port Module, RS-232 3-Port Cable, and DTE/DCE Adapter

Location	Connectors	No. of Pins	Purpose
Backplane connector	J1 and J3	48-pin	Connects module to the core bus
	J2	8-pin	Power connector
Front panel	50-pin cable connector	50-pin	Connects module to HSS RS-232 3-Port cable
HSS RS-232 3-port cable	50-pin cable connector	50-pin	Connects to 50-pin connector on the module
	Three RS-232 DB-25 connectors	25-pin	Connects module to RS-232 interfaces
DTE-to-DCE adapter	DB-25 female connector on both sides	25-pin	Enables a module port to connect to a DTE device

Specifications

Table 2-4 lists the physical attributes of the module, Table 2-5 lists the maximum current consumption, and Table 2-6 lists the module line speeds

Table 2-4   Physical Attributes

Attribute	Description
Length	8.8 in (22.3 cm)
Width	3.9 in (9.9 cm)
Height	0.6 in (1.5 cm)
Weight	8.5 oz. (0.24 kg)

Table 2-5   Maximum Current Consumption

+5 Volts	+12 Volts	-12 Volts
1.0 amp	0.04 amp	0.04 amp

Table 2-6   HSS RS-232 3-Port DTE/DCE Module Line Speeds[*]

RS-232/RS-334 Compliant Cable Length	Baud Rate
112 Ft. (34.444 m)	19.2 kbps
35 Ft. (10.670 m)	28.8 kbps
10 Ft. (3.048 m)	56k bps
0 Ft. (HSS RS-232 3-Port cable alone)	128 kbps (supports most terminal adapters)

[*] Line speeds are selected through software. Refer to the software manuals for more information.

3

TROUBLESHOOTING AND REPLACING THE MODULE

This chapter describes how to troubleshoot and replace the HSS RS-232 3-Port DTE/DCE module. Malfunctions that can occur include:

- Self-test failure at startup
- Inappropriate network connection
- Nonworking module

Troubleshooting

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

Table 3-1 Troubleshooting the HSS RS-232 3-Port DTE/DCE Module

Symptom	Cause and Action
The following message is displayed at startup: `HSS RS-232 3-Port Interface: Self Tests failed - slot X` (The value of X can be 1 through 4 or 1 through 8, depending on which NETBuilder II chassis you have.)	*Self-test failure* ■ Check to see if the card 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 board has a physical interface to another serial device and the following message is displayed: `Path 1 Available` `Path 1B Available` `Path 1C Available` but the next message is *not* displayed: `Path 1 Up` `Path 1B Up` `Path 1C Up`	*Incomplete path* ■ Make sure the cable is securely attached. ■ If the cable is attached correctly and your paths are still not coming up, make sure there is a complete data path and correct clocking between both ends of the serial link. Check DSU/CSU and telco connections.
The connection to a directly attached DTE device does not come up.	*Misconfiguration* ■ If the paths do not come up, check that your software configuration is correct, and make sure that the DTE-to-DCE configuration is correct and consistent with the software configuration.
The STATUS LED is off when there is power to the system and other installed modules are operating.	*Disabled module* ■ The module may not be properly connected to the NETBuilder II backplane. Remove and reinsert the module. ■ If it is still not working, replace the module.

Table 3-1   Troubleshooting the HSS RS-232 3-Port DTE/DCE Module (continued)

Symptom	Cause and Action
The module status LED is red.	*Error Condition*
	■ Check that all cable connections are intact.
	■ Check that the NETBuilder II base system is operating correctly.
	■ Check that the network you are connected to is operating correctly.
	■ Check that the connected serial device is operating correctly.
	■ If none of these actions solve the problem, replace the module and/or contact your network supplier for assistance.

Replacing the Module

If any component in the module fails, you must replace the entire module. The 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 will need a small flatblade screwdriver.

To remove and replace the HSS RS-232 3-Port DTE/DCE module, follow these steps:

1 Disconnect any network cabling from the module, then remove the cable from the strain-relief bracket. You do not need to remove the bracket.

2 Unscrew the two captive screws that anchor the module in the slot until they disengage from the chassis (if you are removing the module from an Extended chassis, unscrew only the top and bottom captive screws). Do not remove the screws from the I/O panel.

3 Push the tab 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 in Chapter 1.

CAUTION: *If you are not going to replace the module right away, place a filler panel over the empty slot 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.*

A
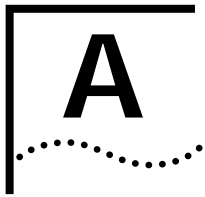
TECHNICAL SUPPORT

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 Analog 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 Digital Modem

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) 9937 5000	Japan	(81) (3) 3345 7251
(Melbourne)	(61) (3) 9653 9515	Mexico	(525) 531 0591
Belgium*	0800 71429	Netherlands*	06 0227788
Brazil	(55) (11) 546 0869	Norway*	800 13376
Canada	(416) 498 3266	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) 2501 1111	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

If a product does not operate as warranted above during the applicable warranty period, 3Com shall, at its option and expense, repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. Any replaced or repaired product or part has a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

3Com shall not be responsible for any software, firmware, information, or memory data of Customer contained in, stored on, or integrated with any products returned to 3Com pursuant to any warranty.

SOFTWARE: 3Com warrants that the software programs licensed from it will perform in substantial conformance to the program specifications therefor for a period of ninety (90) days from the date of purchase from 3Com or its Authorized Reseller. 3Com warrants the media containing software against failure during the warranty period. No updates are provided. 3Com's sole obligation with respect to this express warranty shall be (at 3Com's discretion) to refund the purchase price paid by Customer for any defective software products, or to replace any defective media with software which substantially conforms to 3Com's applicable published specifications. Customer assumes responsibility for the selection of the appropriate applications program and associated reference materials. 3Com makes no warranty or representation that its software products will work in combination with any hardware or applications software products provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected. For any third party products listed in the 3Com software product documentation or specifications as being compatible, 3Com will make reasonable efforts to provide compatibility, except where the non-compatibility is caused by a "bug" or defect in the third party's product.

STANDARD WARRANTY SERVICE: Standard warranty service for hardware products may be obtained by delivering the defective product, accompanied by a copy of the dated proof of purchase, to 3Com's Corporate Service Center or to an Authorized 3Com Service Center during the applicable warranty period. Standard warranty service for software products may be obtained by telephoning 3Com's Corporate Service Center or an Authorized 3Com Service Center, within the warranty period. Products returned to 3Com's Corporate Service Center must be pre-authorized by 3Com with a Return Material Authorization (RMA) number marked on the outside of the package, and sent prepaid, insured, and packaged appropriately for safe shipment. The repaired or replaced item will be shipped to Customer, at 3Com's expense, not later than thirty (30) days after receipt of the defective product by 3Com.

WARRANTIES EXCLUSIVE: IF A 3COM PRODUCT DOES NOT OPERATE AS WARRENTED ABOVE, CUSTOMER'S SOLE REMEDY FOR BREACH OF THAT WARRANTY SHALL BE REPAIR REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT 3COM'S OPTION. TO THE FULL EXTENT ALLOWED BY LAW, THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, TERMS, OR CONDITIONS EXPRESS OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES, ERMS, OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND SATISFACTORY QUALITY. 3COM NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE OR USE OF ITS PRODUCTS.

3COM SHALL NOT BE LIABLE UNDER THIS WARRANTY IF ITS TESTING AND EXAMINATION DISCLOSE THAT THE ALLEGED DEFECT IN THE PRODUCT DOES NOT EXIST OR WAS CAUSED BY CUSTOMER'S OR ANY THIRD PERSON'S MISUSE, NEGLECT, IMPROPER INSTALLATION OR TESTING, UNAUTHORIZED ATTEMPTS TO REPAIR OR MODIFY, OR ANY OTHER CAUSE BEYOND THE RANGE OF THE INTENDED USE, OR BY ACCIDENT, FIRE, LIGHTNING, OR OTHER HAZARD.

LIMITATION OF LIABILITY: TO THE FULL EXTENT ALLOWED BY LAW 3COM ALSO EXCLUDES FOR ITSELF AND ITS SUPPLIERS ANY LIABILITY, WHETHER BASED IN CONTRACT OR TORT (INCLUDING NEGLIGENCE), FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FOR LOSS OF REVENUE OR PROFITS, LOSS OF BUSINESS, LOSS OF INFORMATION OR DATE, OR OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE, OR INTERRUPTION OF ITS PRODUCTS, EVEN IF 3COM OR ITS AUTHORIZED RESELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, AND LIMITS ITS LIABILITY TO REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT 3COM'S OPTION. THIS DISCLAIMER OF LIABILITY FOR DAMAGES WILL NOT BE AFFECTED IF ANY REMEDY PROVIDED HEREIN SHALL FAIL OF ITS ESSENTIAL PURPOSE.

Some countries, states, or provinces do not allow the exclusion or limitation of implied warranties or the limitation of incidental or consequential damages for certain products supplied to consumers, so the above limitations and exclusions may be limited in their application to you. This warranty gives you specific legal rights which may vary depending on local law.

GOVERNING LAW: This Limited Warranty shall be governed by the laws of the state of California.

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3/18/96