

Installing the HSSI Net Module in an ASN Platform

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Canadian Department of Communications Radio Interference Regulations

This digital apparatus (HSSI Net Module) does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

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Cet appareil numérique (HSSI Net Module) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

Canada Requirements Only *(continued)*

Canada CS-03 Rules and Regulations

Note: The Canadian Department of Communications label identifies certified equipment. The certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent the degradation of service in some situations.

Repairs to certified equipment should be made by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Notice: For equipment using loopstart lines, please note that the Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the RENs of all the devices does not exceed 5.0. The REN is located on the "FCC Rules Part 68" label located on the bracket of the module, or on the back of the unit.

Canada CS-03 -- Règles et règlements

Note: L'étiquette du ministère des Communications du Canada indique que l'appareillage est certifié, c'est-à-dire qu'il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l'appareillage fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer l'appareillage, s'assurer qu'il peut être branché aux installations du service de télécommunications local. L'appareillage doit aussi être raccordé selon des méthodes acceptées. Dans certains cas, le câblage interne du service de télécommunications utilisé pour une ligne individuelle peut être allongé au moyen d'un connecteur certifié (prolongateur téléphonique). Le client doit toutefois prendre note qu'une telle installation n'assure pas un service parfait en tout temps.

Les réparations de l'appareillage certifié devraient être confiées à un service désigné par le fournisseur. En cas de réparation ou de modification effectuées par l'utilisateur ou de mauvais fonctionnement de l'appareillage, le service de télécommunications peut demander le débranchement de l'appareillage.

Pour leur propre sécurité, les utilisateurs devraient s'assurer que les mises à la terre des lignes de distribution d'électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

AVIS: Veuillez prendre note que pour tout appareillage supportant des lignes de type "loopstart," vous pouvez utiliser le Ringer Equivalence Number (REN) attribué à chaque terminal pour déterminer le nombre maximal de terminaux qui peuvent être branchés à votre interface de téléphones. Le raccordement à l'interface pourra se composer de toute combinaison de terminaux, pour autant que la somme des RENs ne dépasse pas cinq. Le REN figure sur l'étiquette "FCC Rules Part 68" située sur le support du module ou à l'arrière de l'unité.

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About This Guide

Read this guide if you are responsible for installing a High-Speed Serial Interface (HSSI) Net Module in a Bay Networks® Access Stack Node (ASN™) platform.

If you want to	Go to
Install the HSSI net module in the ASN	Chapter 1
Interpret the LEDs on the HSSI net module	Chapter 2
Review information about the cables you can attach to the HSSI net module	Appendix A
Review the requirements for operating the HSSI net module in Europe	Appendix B

Conventions

ellipsis points	Horizontal (. . .) and vertical (:) ellipsis points indicate omitted information.
<i>italic text</i>	Indicates variable values in command syntax descriptions, new terms, file and directory names, and book titles.
quotation marks (“ ”)	Indicate the title of a chapter or section within a book.
separator (>)	Separates menu and option names in instructions and internal pin-to-pin wire connections. Example: Protocols > AppleTalk identifies the AppleTalk option in the Protocols menu. Example: Pin 7 > 19 > 20

Acronyms

DCE	data communications equipment
DSU	data service unit
DTE	data terminal equipment
HSSI	high-speed serial interface
LED	light emitting diode
SELV	safety extra-low voltage
TNV	telecommunications network voltage
WAN	wide area network

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Sydney, Australia	61-2-9927-8800	61-2-9927-8811
Tokyo, Japan	81-3-5402-0180	81-3-5402-0173

Chapter 1

Installing the HSSI Net Module

This chapter describes the tasks that you perform to install the HSSI net module in an ASN. You can install the net module in any ASN that is running BayRS Version 12.0 or later.

To install a HSSI net module:

1. Remove the ASN component tray.
2. Attach the antistatic wrist strap.
3. Remove the filler brackets.
4. Remove the net module you want to replace (if necessary).
5. Install the new net module.
6. Replace the filler brackets.
7. Replace the ASN component tray.



Note: Experienced network operators can safely perform the hardware procedures described in this guide.

Removing the ASN Component Tray

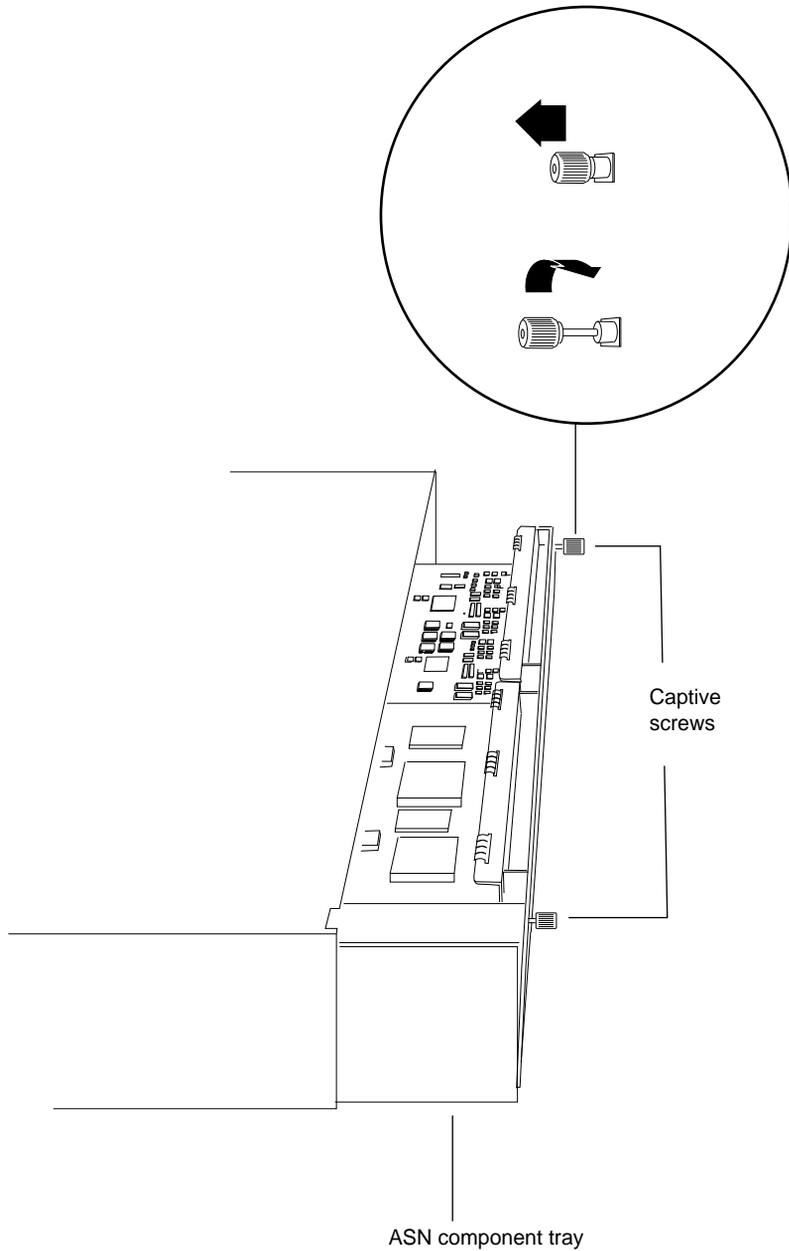
You need a Phillips screwdriver to complete this procedure.

To remove the ASN component tray:

1. **Turn off the ASN.**
2. **Detach all cables, including the power cable, from the ASN back panel.**
3. **Using a Phillips screwdriver, loosen the two captive screws that fasten the tray to the chassis (Figure 1-1).**
 - a. **Pull out the two captive screws and gently slide the tray out of the chassis a few inches ([Figure 1-1](#)).**
 - b. **Hold the sides and bottom of the tray to support it as you slide it out; try to keep the tray level.**
4. **Place the tray on a sturdy work surface.**



Caution: Do not touch any ASN components or boards until you have attached an antistatic wrist strap. See the next section, “Attaching the Antistatic Wrist Strap.”



ASN0031A

Figure 1-1. Removing the ASN Component Tray

Attaching the Antistatic Wrist Strap

The ASN comes with an antistatic wrist strap. The antistatic wrist strap directs the discharge of static electricity from your body to the chassis of the ASN, thereby protecting sensitive electronic components. You must wear the antistatic wrist strap whenever you handle the net module.



Caution: Electrostatic discharge can damage the hardware. Follow the procedure in this section to protect your equipment.

To attach the antistatic wrist strap:

1. **Remove the wrist strap from its package.**
2. **Place the looped end of the strap around your wrist.**
3. **Adjust the strap so that it fits snugly on your wrist.**
4. **Attach the alligator clip at the other end of the wrist strap to any unpainted, metal surface on the component tray.**

Removing a Filler Bracket

Filler brackets cover empty ASN net module positions and the openings above positions 1 and 3 ([Figure 1-2](#)). When you install a net module, you must remove the filler brackets from the openings above positions 1 and 3, and from the position in which you want to install the net module.



Note: This guide refers to the area where the net module ports are located as the “back end” of the component tray. To perform maintenance tasks on the ASN components, you face the back end of the tray.

To remove a filler bracket:

1. **Grasp the top edges of the bracket.**
2. **Lift the bracket up and toward the front of the tray to release it from the metal tabs that hold it in place.**

Remember that the net module ports are located at the back end of the component tray.

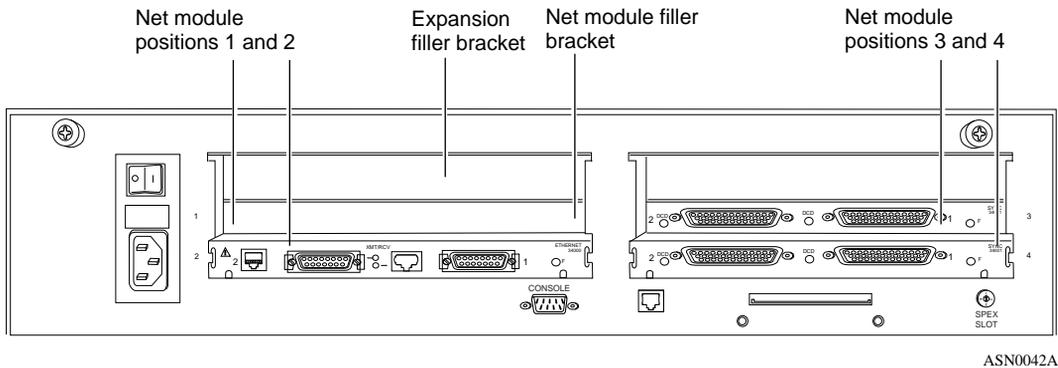


Figure 1-2. Locating Net Modules and Filler Brackets

Removing a Net Module

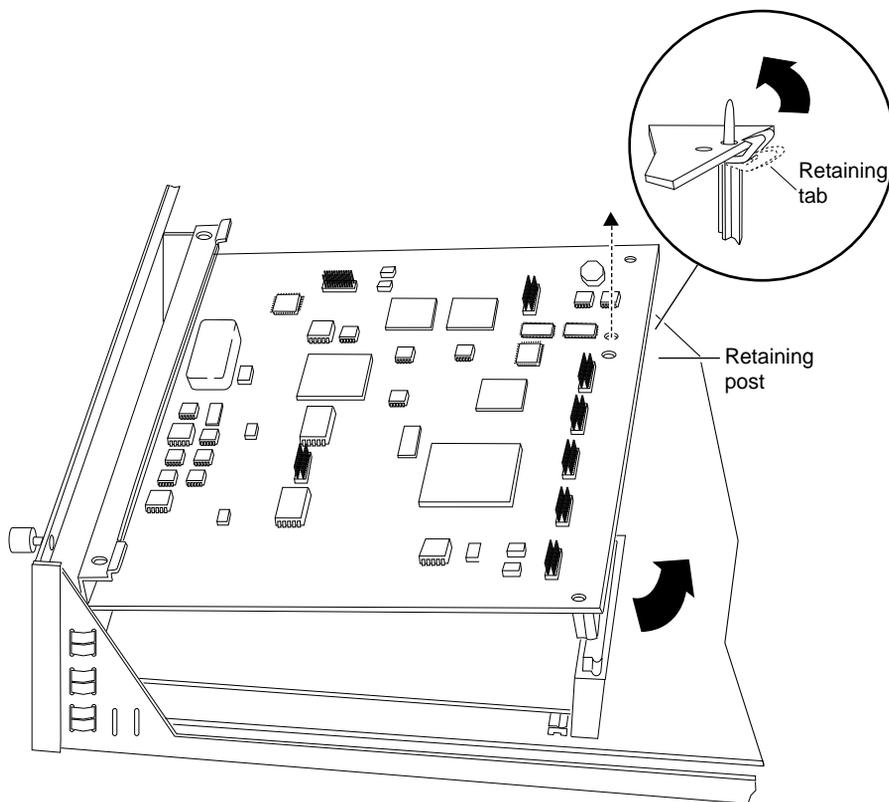
Read this section if you need to install a net module in a position that already contains one. To remove a net module from position 2 or 4 ([Figure 1-2](#)), you must first remove the filler bracket and net module (if any) above it. See the previous section, “[Removing a Filler Bracket](#).”



Caution: Do not touch any ASN components or boards until you have attached an antistatic wrist strap.

To remove a net module:

1. **Grasp the edge of the net module. Use your thumb to push back the white retaining tab ([Figure 1-3](#)).**



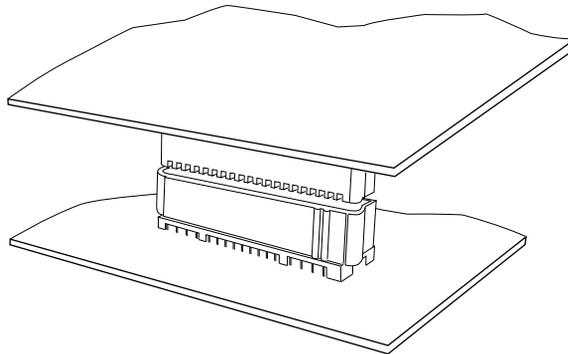
HSI0002A

Figure 1-3. Preparing to Remove a Net Module

2. Lift up to release the net module from the connector ([Figure 1-4](#)).



Caution: You must lift the net module straight up. If you move the net module back and forth or side to side, you can bend the connector pins. Attempting to reinstall a net module with bent connector pins can damage the power supply.



AMC0010A

Figure 1-4. Removing a Net Module from the Connector

3. Lift the net module bracket up and toward the front of the tray to release it from the metal tabs that hold it in place ([Figure 1-3](#)).

Installing a Net Module

Before you install a net module, note the following:

- To access position 2 or 4, you must remove the filler bracket and net module (if any) above it. See the sections “[Removing a Filler Bracket](#)” and “[Removing a Net Module](#)” earlier in this chapter.
- To install the net module in the position from which you just removed a net module, you must first delete the old net module from the ASN’s configuration file; then, install the new net module in the chassis. See *Configuring and Managing Routers with Site Manager* for more information.

To install a net module:

1. Align the slots in the net module bracket with the metal tabs in the net module position you want to use ([Figure 1-5](#)).

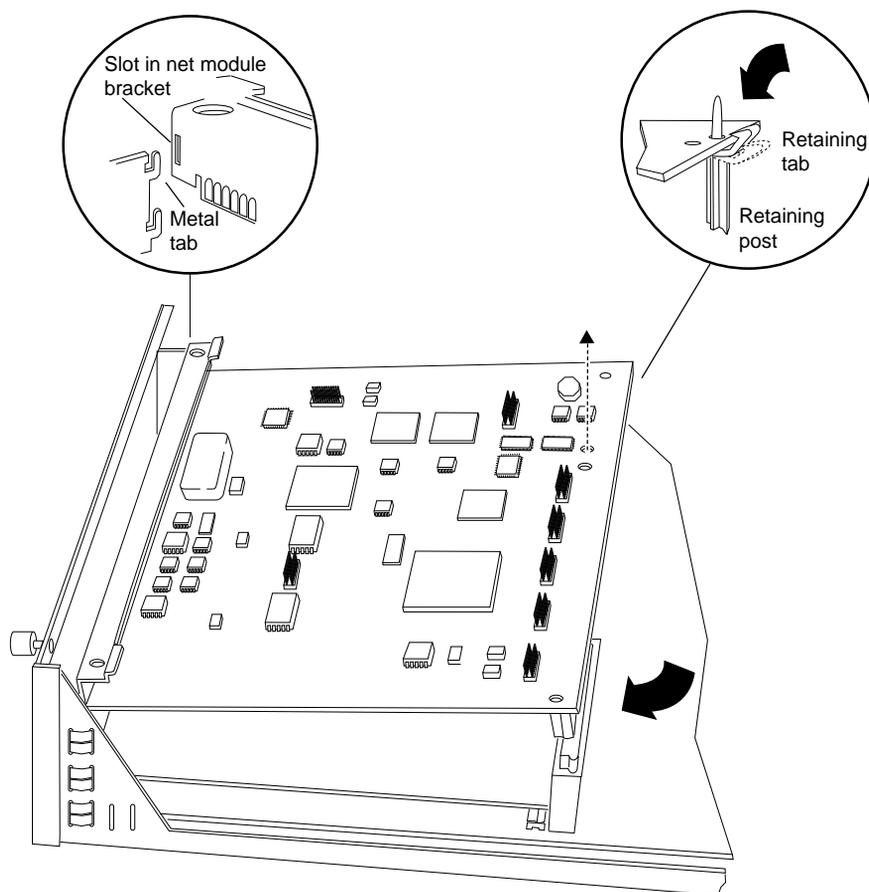
Do not rest the bracket on the metal tabs. Doing so makes it difficult to align the net module connector with the connector on the ASN system board.

2. Align the net module connector with the connector on the system board. Make sure that the white retaining post on the system board aligns with the hole in the net module ([Figure 1-5](#)).



Note: If you accidentally turn the white retaining post on the system board, it will not align with the hole in the net module. In this case, turn the post so that its rectangular base is perpendicular to the connector on the system board.

3. Press down on the net module to ensure that it is attached securely to the connector on the system board. Make sure that the white retaining tab snaps into place.
4. Position the net module bracket so that it rests on the metal tabs.



HS10003A

Figure 1-5. Aligning a Net Module

Installing a Filler Bracket

You must install filler brackets in any unused net module positions and in the openings above positions 1 and 3.



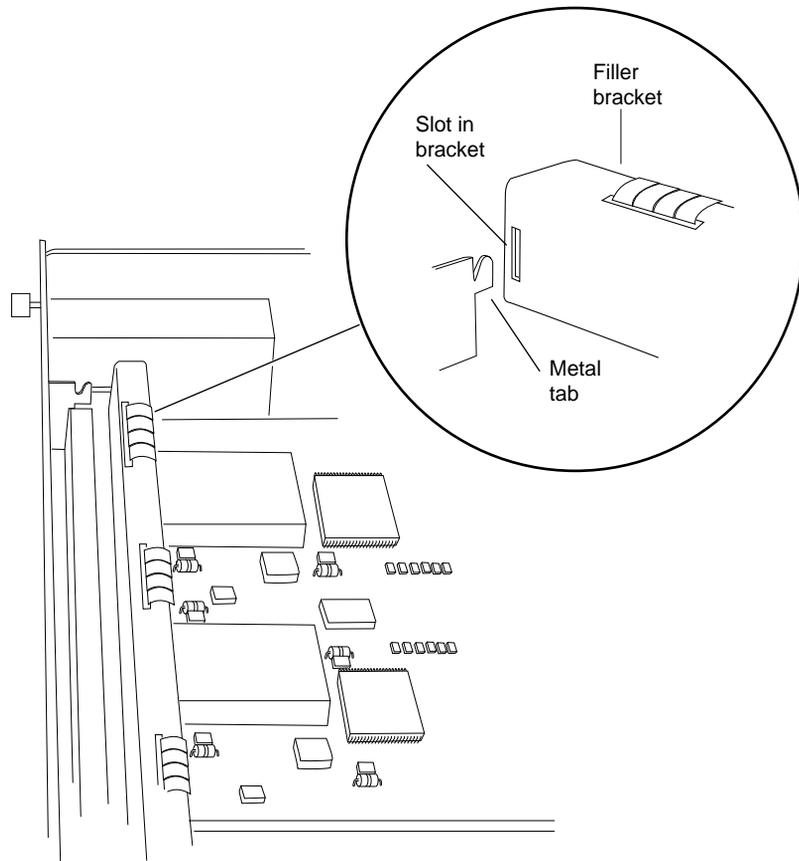
Note: The filler brackets you use above positions 1 and 3 are different from the brackets for unused net module positions (1 through 4). For the openings above positions 1 and 3, make sure that you use the brackets labeled “Expansion Filler” ([Figure 1-2](#) on [page 1-5](#)). The filler brackets for the unused net module positions are not labeled.

To install a filler bracket:

1. **Align the slot at each end of the bracket with the metal tabs in the net module position in which you are installing the bracket ([Figure 1-6](#)).**

Make sure that the edge of the bracket labeled “Top Surface” faces up.

2. **Position the bracket so that it rests on the metal tabs.**



ASN0043A

Figure 1-6. Installing a Filler Bracket

Replacing the ASN Component Tray

Before you replace the component tray, remove the alligator clip of the antistatic wrist strap from the chassis; then, remove your antistatic wrist strap.

To replace the component tray:

1. **Gently slide the tray into the chassis.**
2. **Use a Phillips screwdriver to tighten the two captive screws that fasten the tray to the chassis ([Figure 1-1](#) on [page 1-3](#)).**
3. **Reattach the cables to the proper connectors on the back panel.**

Chapter 2

Checking the HSSI Net Module LEDs

This chapter describes the LEDs on the HSSI net module.

The HSSI net module has five LEDs labeled LC, TM, CA, TA, and F. [\(Figure 2-1\)](#). [Table 2-1](#) describes the function of each LED.

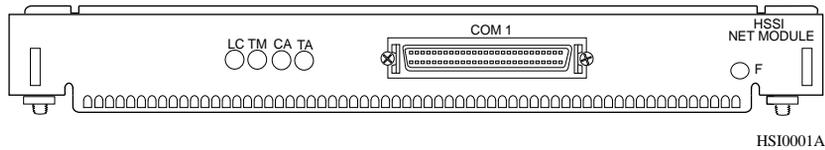


Figure 2-1. HSSI Net Module LEDs

Table 2-1. HSSI Net Module LEDs

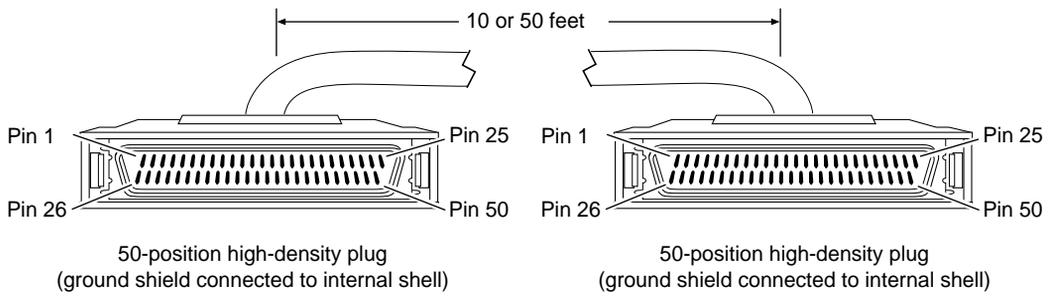
LED	Function
LC	Line loopback. Lights when the DTE is in line loopback mode.
TM	Test mode. Lights when the DCE is in test or diagnostics mode.
CA	DCE ready. Lights when the DCE is enabled and ready to transmit and receive data.
TA	DTE ready. Lights when the DTE is enabled and ready to transmit and receive data.
F (Fail)	Lights during the ASN power-up sequence and flashes during diagnostic testing. Turns off after the diagnostic testing completes successfully and the ASN boots. This LED remains on if the net module or any connector on the net module fails diagnostic testing. In this case, the Diag LED on the ASN front panel also lights.

Appendix A

Cabling Requirements for the HSSI Net Module

This appendix provides information about the cabling requirements for the HSSI net module.

For HSSI compliance, you must use an Order No. 7830 or 7831 cable. Order No. 7830 is a 10-foot cable; Order No. 7831 is a 50-foot cable. [Figure A-1](#) and [Table A-1](#) provide cabling information.



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Figure A-1. HSSI DCE to DTE Cable (Order No. 7830/7831)

Table A-1. HSSI DCE to DTE Cable (Order No. 7830/7831) Pin Assignments

Bay Networks Termination		Remote Termination	
Pin	Signal	Pin	Signal
1	Signal Ground	1	Signal Ground
26	Signal Ground	26	Signal Ground
2	Receive Timing+	2	Receive Timing+
27	Receive Timing-	27	Receive Timing-
3	DCE Available+	3	DCE Available+
28	DCE Available-	28	DCE Available-
4	Received Data+	4	Received Data+
29	Received Data-	29	Received Data-
5	Line Loopback+	5	Line Loopback+
30	Line Loopback-	30	Line Loopback-
6	Send Timing+	6	Send Timing+
31	Send Timing-	31	Send Timing-
7	Signal Ground	7	Signal Ground
32	Signal Ground	32	Signal Ground
8	DTE Available+	8	DTE Available+
33	DTE Available-	33	DTE Available-
9	Terminal Timing+	9	Terminal Timing+
34	Terminal Timing-	34	Terminal Timing-
10	Loopback CKT A+	10	Loopback CKT A+
35	Loopback CKT A-	35	Loopback CKT A-
11	Send Data+	11	Send Data+
36	Send Data-	36	Send Data-
12	Loopback CKT B+	12	Loopback CKT B+
37	Loopback CKT B-	37	Loopback CKT B-
24	Test Mode+	24	Test Mode+
49	Test Mode-	49	Test Mode-
13	Signal Ground	13	Signal Ground
38	Signal Ground	38	Signal Ground
19	Signal Ground	19	Signal Ground

(continued)

Table A-1. HSSI DCE to DTE Cable (Order No. 7830/7831) Pin Assignments *(continued)*

Bay Networks Termination		Remote Termination	
44	Signal Ground	44	Signal Ground
25	Signal Ground	25	Signal Ground
50	Signal Ground	50	Signal Ground

Appendix B

Requirements for European Operation

This appendix provides technical specifications and notes for operating the HSSI net module in Europe.

Installation Requirements

The net modules are approved only for installation in a host, and with host attachments, which are either type-approved for such apparatus or, if supplied after March 1, 1989, are marked with or supplied with a statement that the host is supplied under the terms of General Approval No. NS/G/1234/J/100003.

Installation of the HSSI net modules in an ASN will satisfy the conditions stated in this appendix. The ASN is supplied under the terms of General Approval No. NS/G/1234/J/100003.

Power Requirements

The HSSI net modules draw power from the host chassis. [Table B-1](#) lists the power requirements.

Table B-1. HSSI Net Module Power Requirements

Voltage	Amperage
+5 VDC	5 A
+12 VDC	0.75 A

The power drawn from the host chassis combined with that required for any other net modules and accessories must not exceed the power rating of the host chassis.

You must install the net modules so as not to impair the integrity of the network protection from hazardous voltages used or generated internally by the host chassis.

Clearance and Creepage Distances

You must maintain the clearance and creepage distances (shown as X and Y, respectively, in [Table B-2](#) and [Figure B-1](#)) between the HSSI net module and the following:

- The host chassis in which it is installed
- Any adjacent net modules installed in the host chassis

The exception to this rule is the edge connector, which is located on the host chassis backplane, where no minimum distance applies.

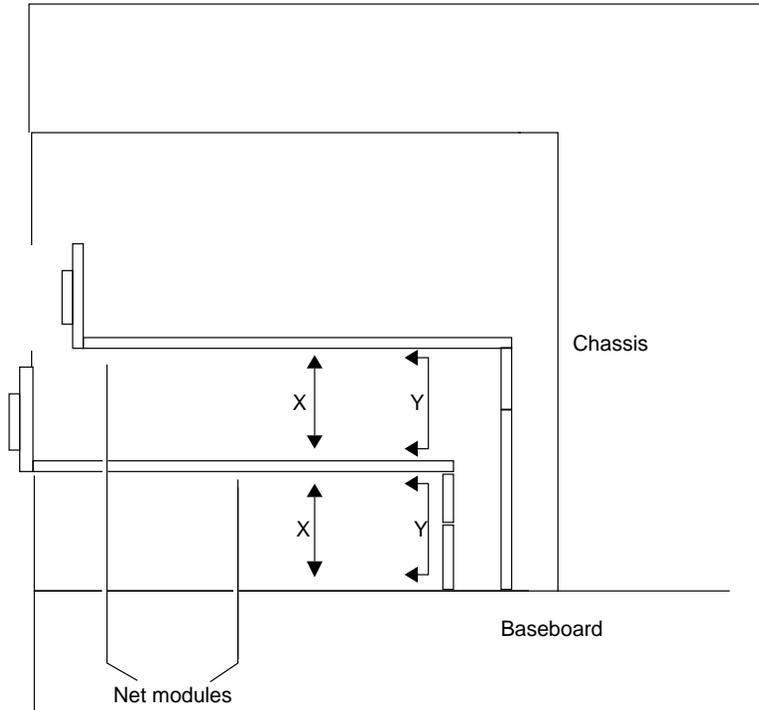
Table B-2. HSSI Net Module Clearance and Creepage Distances

Clearance (X)	Creepage (Y)	Voltage Used or Generated by Other Parts of the Host or Expansion Card
2.0 mm	2.4 (3.8) mm	Up to 50 V rms or VDC
2.6 mm	3.0 (4.8) mm	Up to 125 V rms or VDC
4.0 mm	5.0 (8.0) mm	Up to 250 V rms or VDC
4.0 mm	6.4 (10.0) mm	Up to 300 V rms or VDC

The creepage distances apply to a typical office environment. If the host chassis is exposed to conductive pollution or dry nonconductive pollution that could become conductive due to condensation, the creepage distances shown in parentheses in [Table B-2](#) apply.

You determine the clearance and creepage distances between adjacent points as follows ([Figure B-1](#)):

- The clearance distance (X) is the shortest distance between two points, measured through the air.
- The creepage distance (Y) is the shortest distance between two points, measured across a surface.



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Figure B-1. HSSI Net Module Clearance and Creepage Distances

If you have any questions, consult a telecommunications safety engineer.



Note: Failure to install a net module according to these instructions will invalidate the General Approval.

Safety Status

This section describes the safety status of the HSSI net module, as defined by European Standard EN41003.

[Table B-3](#) lists the safety status of interconnection points on the HSSI net module to the connectors on other equipment.

Table B-3. HSSI Net Module Safety Status

Port Location	Port Description	Type of Circuit
COM1	HSSI	Telecommunications network voltage (TNV) at safety extra-low voltage (SELV) levels
P1	Host port	SELV