



Installing High-Speed Serial Interface Cables

Product Numbers: CAB-HS11(=), CAB-HNUL(=)

This document describes how to install High-Speed Serial Interface (HSSI) cables for Cisco 7000 series, Cisco 7200 series (including a Cisco 7206 as a router shelf in a Cisco AS5800 Universal Access Server), Cisco 7400 series Internet routers, Cisco 7500 series routers, and Cisco 4000 series routers; and Cisco uBR7200 series universal broadband routers.

These cables connect directly to the following hardware:

- PA-H and PA-2H port adapters—Used in the Cisco uBR7200 series universal broadband routers and the following Cisco 7000 family routers:
 - Cisco 7200 series (including the Cisco 7206 used as a router shelf in a Cisco AS5800 Universal Access Server)
 - Cisco 7400 series
 - Cisco 7500 series
- HSSI Interface Processor (HIP)—An interface processor used in Cisco 7000 series and Cisco 7500 series routers
- NP-1HSSI—A network processor module used in Cisco 4500, Cisco 4500-M, Cisco 4700, and Cisco 4700-M routers

Use this document in conjunction with the following documents (at the following URLs):

- *PA-H HSSI Port Adapter Installation and Configuration*
http://www.cisco.com/univercd/cc/td/doc/product/core/cis7505/portadpt/hssi_pa/pa-h/index.htm
- *PA-2H Dual-Port HSSI Port Adapter Installation and Configuration*
http://www.cisco.com/univercd/cc/td/doc/product/core/cis7505/portadpt/hssi_pa/pa-2h/index.htm
- *High Speed Serial Interface (HSSI) Interface Processor (HIP) Installation and Configuration Guide*
<http://www.cisco.com/univercd/cc/td/doc/product/core/cis7000/interpr/hssi/index.htm>
- *Installing and Configuring HSSI Network Processor Modules in Cisco 4000 Series Routers*
http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/cis4000/4000cn/4134hssi.htm



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**Note**

The Cisco 7206 can be used as a router shelf in a Cisco AS5800 Universal Access Server. The steps for installing HSSI cables on a Cisco 7200 series router and a Cisco 7206 router shelf are the same. The procedures that reference the Cisco 7200 series also apply to the Cisco 7206 router shelf, unless otherwise noted.

Sections in this publication include the following:

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Product Description

Each HSSI port on the HIP, PA-H, PA-2H, or NP-1HSSI uses a female, 50-pin, SCSI-II-type connector.

**Caution**

Although the HSSI connector and the HSSI cable are similar to SCSI-II format, they are not identical. The HSSI cable specification is more stringent than that for SCSI-II. If you use a SCSI-II cable instead of an HSSI cable, proper operation cannot be guaranteed.

Two types of cables are available for use with a HSSI ports:

- HSSI cable (CAB-HSI1[=]) used to connect your router to an external DSU (and the HSSI network)
- Null modem HSSI cable (CAB-HNUL[=]) used to connect two routers back-to-back

**Note**

For information on how to enable two routers for back-to-back operation, refer to the configuration notes for the HIP, PA-H, PA-2H, or NP-1HSSI.

HSSI Interface Cable

[Figure 1](#) shows the HSSI cable CAB-HSI1(=) (Part Number 72-0710-xx). [Table 1](#) provides pinouts. The cable has a male DB-50 (SCSI) connector on each end.

Figure 1 HSSI Interface Cable Connectors

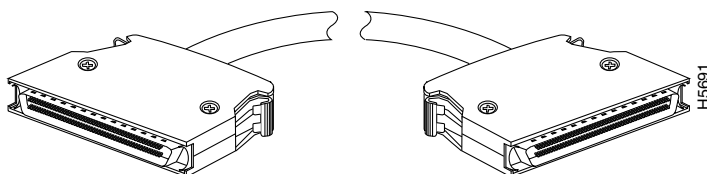


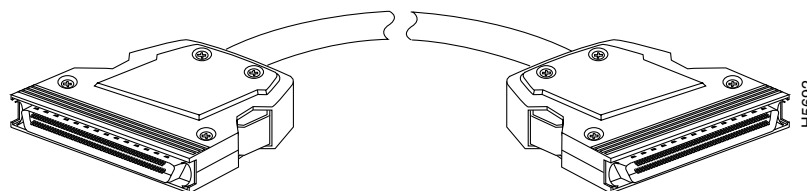
Table 1 HSSI Interface Cable Pinouts

Signal Name	+ Side Pin No.	– Side Pin No.	Direction ¹	
			Router	DSU
SG (signal ground)	1	26	—	
RT (receive timing)	2	27	<—	
CA (DCE available)	3	28	<—	
RD (receive data reserved)	4	29	<—	
LC (loopback circuit C)	5	30	<—	
ST (send timing)	6	31	<—	
SG (signal ground)	7	32	—	
TA (DTE available)	8	33	—>	
TT (terminal timing)	9	34	—>	
LA (loopback circuit A)	10	35	—>	
SD (send data)	11	36	—>	
LB (loopback circuit B)	12	37	—	
SG (signal ground)	13	38	—>	
5 (ancillary to DCE)	14–18	39–43	—	
SG (signal ground)	19	44	<—	
5 (ancillary from DCE)	20–24	45–49	—	
SG (signal ground)	25	50	—	

1. Router is + side (DTE). DSU is – side (DCE).

Null Modem Cable

Figure 2 on page 3 shows the HSSI null modem cable CAB-HNUL(=) (Part Number 72-0727-xx). Table 2 provides pinouts. The cable has a male DB-50 (SCSI) connector on each end. Refer to “Connecting the HSSI Cable” on page 4 for connection instructions.

Figure 2 Null Modem Cable Connectors**Table 2 HSSI Null Modem Cable Pinouts**

Signal Name	From Pins	Direction	To Pins	Signal Name
RT (receive timing)	2, 27	—>	9, 34	TT (terminal timing)
CA (DCE available)	3, 28	—>	8, 33	TA (DTE available)

Table 2 HSSI Null Modem Cable Pinouts (Continued)

Signal Name	From Pins	Direction	To Pins	Signal Name
RD (receive data)	4, 29	—>	11, 36	SD (send data)
LC (loopback C)	5, 30	—>	10, 35	LA (loopback A)
ST (send timing)	6, 31	—>	6, 31	ST (send timing)
TA (DTE available)	8, 33	—>	3, 28	CA (DCE available)
TT (terminal timing)	9, 34	—>	2, 27	RT (receive timing)
LA (loopback A)	10, 35	—>	5, 30	LC (loopback C)
SD (send data)	11, 36	—>	4, 29	RD (receive data)
GND (ground)	1, 26, 7, 32, 13, 38, 19, 44, 25, 50	—	1, 26, 7, 32, 13, 38, 19, 44, 25, 50	GND (ground)
Loopback (not connected)	12, 37	—		
			12, 37	Loopback (not connected)
Not used	14–18, 20–24, 39–43, 45–49		14–18, 20–24, 39–43, 45–49	Not used

Connecting the HSSI Cable

Connect the HSSI cable between the router and a T3, E3, or SONET DSU as shown in [Figure 3](#) (HIP), [Figure 4](#) (PA-H), or [Figure 5](#) (NP-1HSSI).

Figure 3 Connecting an HSSI Cable to the HIP

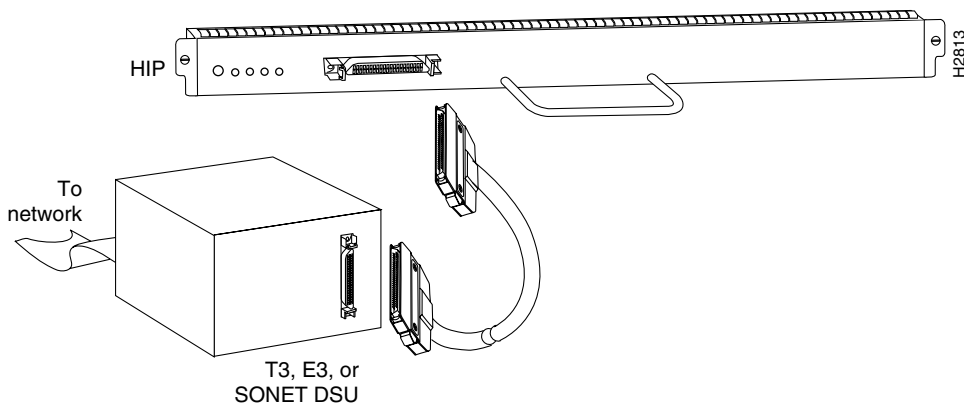
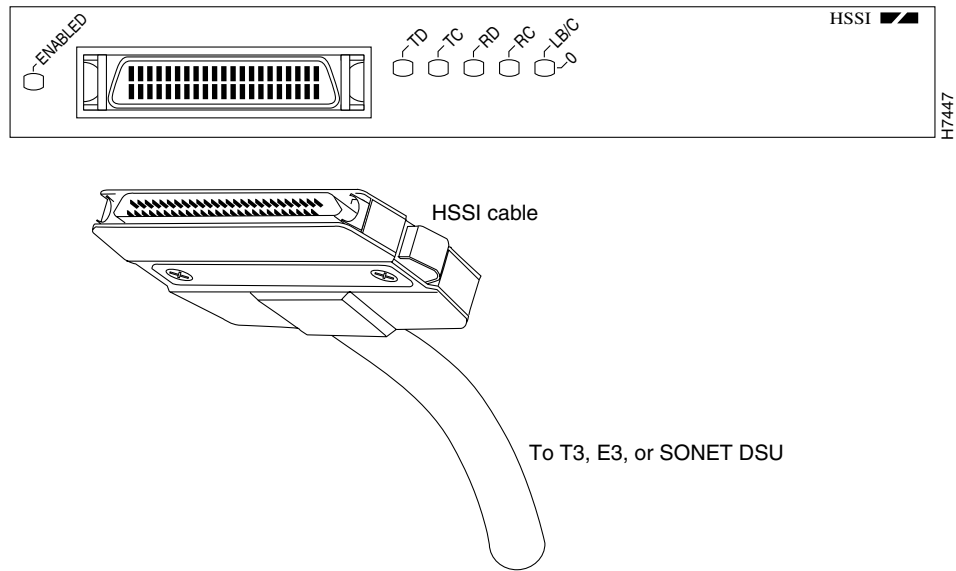


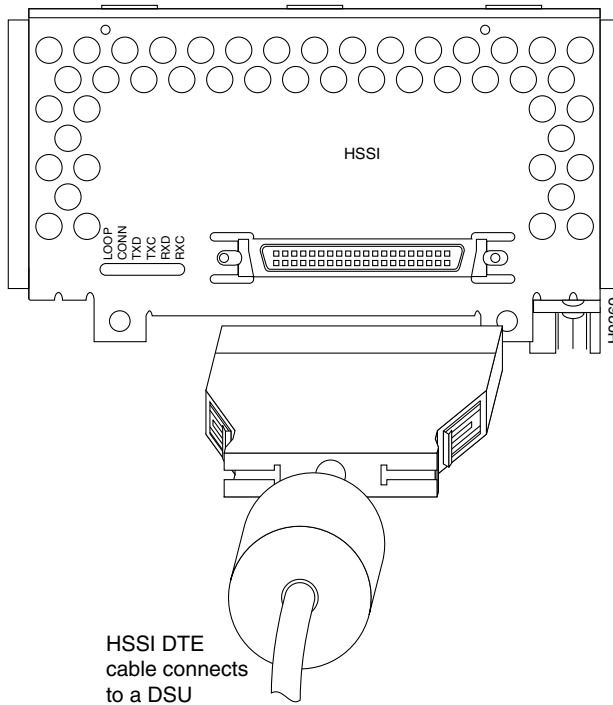
Figure 4 Connecting an HSSI Cable to PA-H—Shown without Handle



Note

PA-2H (not shown) has two HSSI ports and is otherwise identical to PA-H.

Figure 5 Connecting an HSSI Cable to NP-1HSSI



HSSI DTE
cable connects
to a DSU

Connecting the Null Modem Cable

To connect two routers directly, back-to-back, connect the null modem cable between the HSSI ports in two separate routers. The two routers must be in the same location and can be two Cisco 4000 series routers, two Cisco 7000 series routers, two Cisco 7200 series routers, two Cisco 7500 series, two Cisco uBR7200 series universal broadband routers, two Cisco 7400 series Internet routers, or any two routers of each router series listed. With a null modem connection, you can verify the operation of the HSSI or to link the routers directly in order to build a larger node.

Figure 6 shows cable connection for two HIP boards, and Figure 7 shows cable connection for two NP-1HSSI network processor modules.

Figure 6 Connecting a Null Modem Cable to the HIP

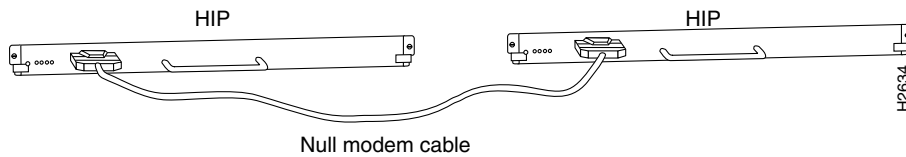
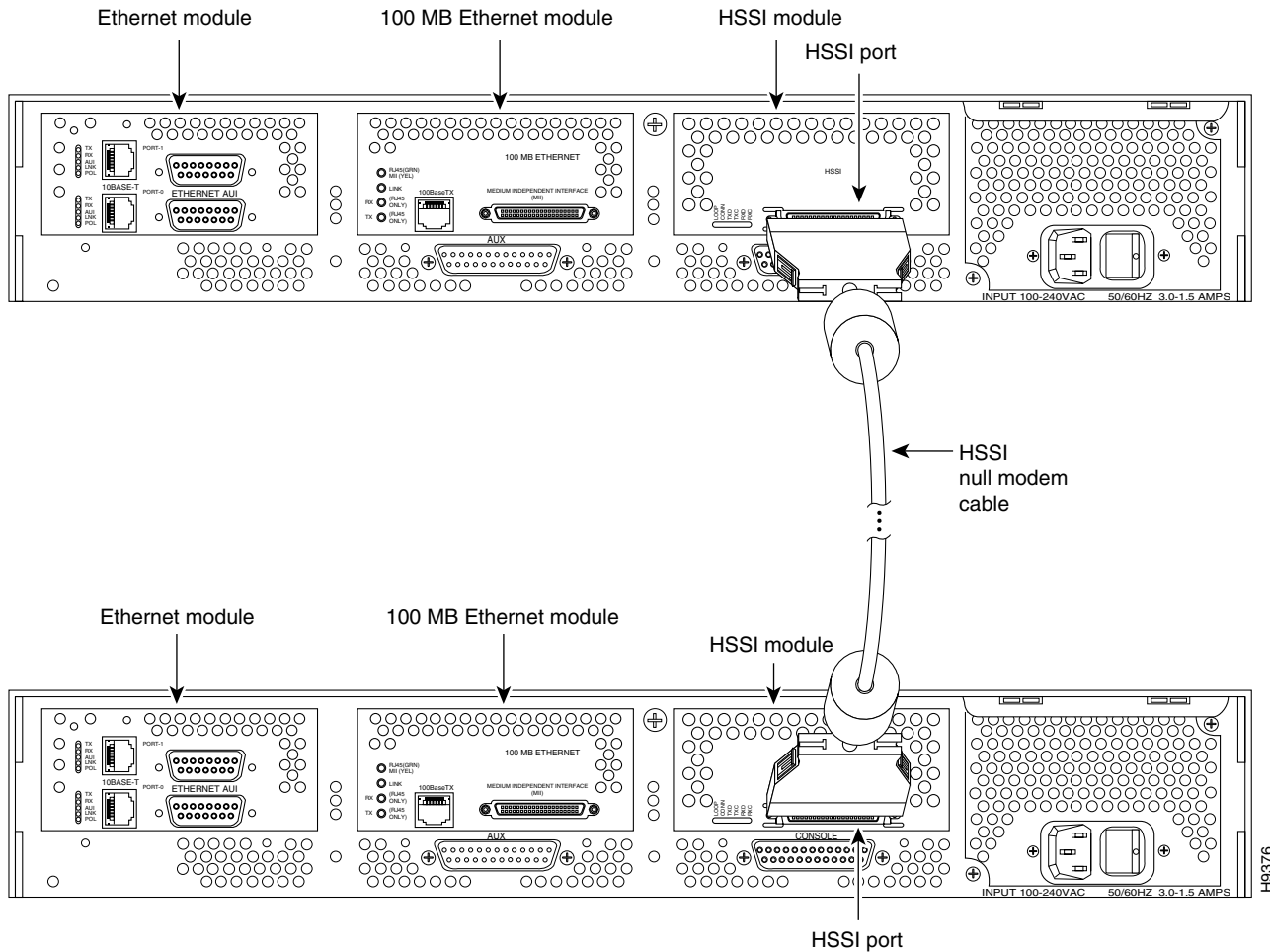


Figure 7 Connecting a Null Modem Cable to the NP-1HSSI



Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

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<http://www.cisco.com/univercd/home/home.htm>

You can access the Cisco website at this URL:

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Ordering Documentation

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Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool automatically provides recommended solutions. If your issue is not resolved using the recommended resources, your service request will be assigned to a Cisco TAC engineer. The TAC Service Request Tool is located at this URL:

<http://www.cisco.com/techsupport/servicerequest>

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To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)

EMEA: +32 2 704 55 55

USA: 1 800 553 2447

For a complete list of Cisco TAC contacts, go to this URL:

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- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:
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