APPENDIX C

Hardware Specifications and Cable Pinouts

This appendix contains the following sections:

- Hardware Specifications—All models of Cisco 1600 series routers.
- Cable Pinouts—Cables that can be used with Cisco 1600 series routers.

Hardware Specifications

Table C-1 lists the system specifications for Cisco 1600 series routers.

Table C-1 System Specifications

Description	Specification
Processor	Motorola MC68360 QUICC (33 MHz)
Dimensions	
• Height	2.19 in. (5.56 cm)
• Width	11.15 in. (28.32 cm)
• Depth	8.67 in. (22.02 cm)
Weight	
• Minimum (no WAN interface card installed)	1.65 LB (0.75 kg)
• Maximum	1.80 LB (0.82 kg)
Power (external)	14 VDC (+ / – 8%), minimum 1A
Console port	RJ-45 connector
10BaseT port	RJ-45 connector
AUI port	DB-15 connector
Flash memory slot	Flash PC card
Serial port (Cisco 1601)	DB-60 connector
DSU/CSU port (Cisco 1602)	RJ-48S connector
ISDN ports[1] (Cisco 1603 and Cisco 1604)	RJ-45 connector
Temperature	
• Operating	32 to 104°F (0 to 40°C)
• Nonoperating	-4 to 149°F (–20 to 65°C)
Operating humidity	5 to 95%, noncondensing

1 ISDN ports refer to the ISDN S/T and the ISDN U ports.

Cable Pinouts

This section includes the following pinouts:

- 10BaseT Port Pinouts
- Straight-Through 10BaseT Cable (RJ-45 to RJ-45) Pinouts
- Console Cable and Adapter Pinouts
- 56-kbps DSU/CSU (RJ-48S) Pinouts
- ISDN BRI S/T Port Pinouts (RJ-45)
- ISDN BRI U Port Pinouts (RJ-45)
- EIA/TIA-232 DTE Cable Pinouts (DB-60 to DB-25)
- EIA/TIA-449 DTE Cable Pinouts (DB-60 to DB-37)
- X.21 DTE Cable Pinouts (DB-60 to DB-15)
- V.35 Cable Pinouts (DB-60 to 34-Pin)
- EIA-530 DTE Cable Pinouts (DB-60 to DB-25)

Table C-2 10BaseT Port Pinouts

8 Pin[1]	Description
1	TX+
2	TX–
3	RX+
6	RX–

1 Pins 4, 5, 7, and 8 are not used.

Table C-3 Straight-Through 10BaseT Cable (RJ-45 to RJ-45) Pinouts

RJ-45 Pin	Signal	Direction	RJ-45 Pin
1	TX+	—>	1
2	TX–	—>	2
3	RX+	<—	3
4	–	–	4
5	–	–	5
6	RX–	<—	6
7	–	–	7
8	–	–	8

The EIA/TIA-232 console port is configured as data terminal equipment (DTE) and uses an RJ-45 connector. A console cable kit is provided with your router to connect a console (an ASCII terminal or PC running terminal emulation software) to the console port. The console cable kit contains an RJ-45-to-RJ-45 rollover cable and a RJ-45-to-DB-25 female DTE adapter (labeled Terminal). Table C-4 lists the pinouts for the asynchronous serial console port, the RJ-45-to-RJ-45 rollover cable, and the RJ-45-to-DB-25 female DTE adapter.

Table C-4 Console Cable and Adapter Pinouts

	Console Port (DTE)	RJ-45-to-RJ-45 Roll-Over Cable			
Signal	**RJ-45 Pin**	**RJ-45 Pin**	**DB-9 Pin**	**DB-25 Pin**	**Signal**
–	1	8	7	4	–
DTR	2	7	4	20	DSR
TxD	3	6	3	2	RxD
GND	4	5	5	7	GND
GND	5	4	5	7	GND
RxD	6	3	2	3	TxD
DSR	7	2	6	6	DTR
–	8	1	8	5	–

You can identify a rollover cable by comparing the two modular ends of the cable. (See Figure C-1.) Holding the cables in your hand, side-by-side, with the tab at the back, the wire connected to the pin on the outside of the left connector (pin 1) should be the same color as the pin on the outside of the right connector (pin 8). On Cisco cables, pin 1 is white on one connector, and pin 8 is white on the other connector.

Figure C-1 Identifying a Rollover Cable

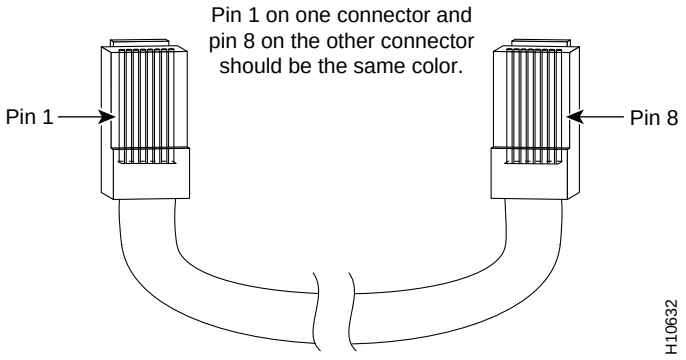

Table C-5 56-kbps DSU/CSU (RJ-48S) Pinouts

8 Pin[1]	Description
1	Transmit
2	Transmit
7	Receive
8	Receive

1 Pins 3, 4, 5, and 6 are not used.

Table C-6 ISDN BRI S/T Port Pinouts (RJ-45)

8 Pin[1]	TE[2]	NT[3]	Polarity
3	Transmit	Receive	+
4	Receive	Transmit	+
5	Receive	Transmit	–
6	Transmit	Receive	–

1 Pins 1, 2, 7, and 8 are not used.
2 TE refers to terminal terminating layer 1 aspects of TE1, TA, and NT functional groups. This applies to the Cisco 1603 and the ISDN BRI S/T WAN interface card.
3 NT refers to network terminating layer 1 aspects of NT1 and NT2 functional groups. This applies to the Cisco 1604 ISDN S/T port.

Table C-7 ISDN BRI U Port Pinouts (RJ-45)

8 Pin[1]	Function
3	No connection
4	Signal—Tip or Ring
5	Signal—Tip or Ring
6	No connection

1 Pins 1, 2, 7, and 8 are not used.

The serial port on the router uses a universal port, a 60-pin receptacle that supports the following serial interfaces: EIA/TIA-232, EIA/TIA-449, X.21, V.35, and EIA-530. The shielded serial transition cable determines the electrical interface type. The router end of all of the cables is a 60-pin connector.

DTE connectors have a plug connector at the network end. (DCE connectors have a receptacle at the network end.) However, V.35 is available in DTE mode either a receptacle or a plug connector at the network end. The serial port operates in DTE and DCE modes.

The tables that follow list the signal pinouts for the DTE mode serial transition cables for each router interface type.

Figure C-2 shows the EIA/TIA-232 serial cable assembly, and Table C-8 lists the EIA/TIA-232 cable pinouts.

Figure C-2 EIA/TIA-232 Serial Cable Assembly

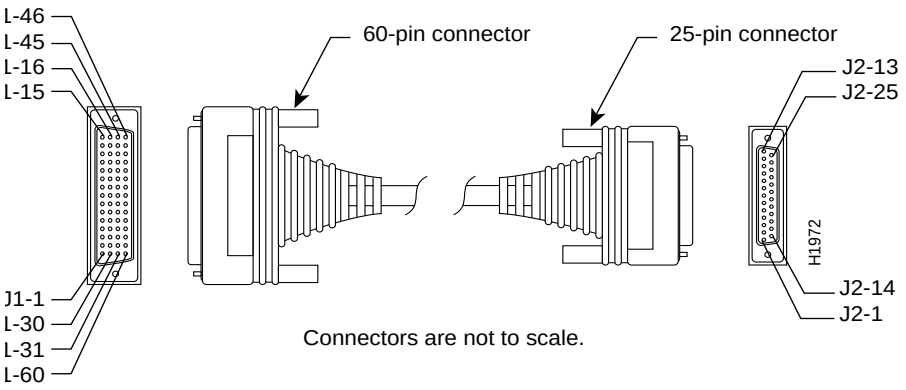

Table C-8 EIA/TIA-232 DTE Cable Pinouts (DB-60 to DB-25)

60 Pin[1]	Signal	Description	Direction	25 Pin	Signal
J1-50 J1-51 J1-52	MODE_0 GND MODE_DCE	Shorting group	–	–	–
J1-46	Shield GND	Single	–	J2-1	Shield GND
J1-41 Shield	TxD/RxD –	Twisted pair no. 5	—> –	J2-2 Shield	TxD –
J1-36 Shield	RxD/TxD –	Twisted pair no. 9	<— –	J2-3 Shield	RxD –
J1-42 Shield	RTS/CTS –	Twisted pair no. 4	—> –	J2-4 Shield	RTS –
J1-35 Shield	CTS/RTS –	Twisted pair no. 10	<— –	J2-5 Shield	CTS –
J1-34 Shield	DSR/DTR –	Twisted pair no. 11	<— –	J2-6 Shield	DSR –
J1-45 Shield	Circuit GND –	Twisted pair no. 1	– –	J2-7 Shield	Circuit GND –
J1-33 Shield	DCD/LL –	Twisted pair no. 12	<— –	J2-8 Shield	DCD –
J1-37 Shield	TxC/NIL –	Twisted pair no. 8	<— –	J2-15 Shield	TxC –
J1-38 Shield	RxC/TxCE –	Twisted pair no. 7	<— –	J2-17 Shield	RxC –
J1-44 Shield	LL/DCD –	Twisted pair no. 2	—> –	J2-18 Shield	LTST –
J1-43 Shield	DTR/DSR –	Twisted pair no. 3	—> –	J2-20 Shield	DTR –
J1-39 Shield	TxCE/TxC –	Twisted pair no. 6	—> –	J2-24 Shield	TxCE –

1 Any pin not referenced is not connected.

Figure C-3 EIA/TIA-449 Serial Cable Assembly

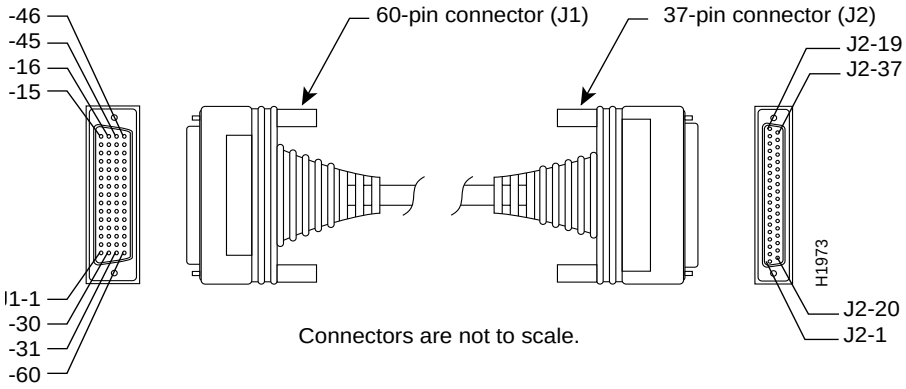

Table C-9 EIA/TIA-449 DTE Cable Pinouts (DB-60 to DB-37)

60 Pin[1]	Signal	Description	Direction	37 Pin	Signal
J1-49 J1-48	MODE_1 GND	Shorting group	–	–	–
J1-51 J1-52	GND MODE_DCE	Shorting group	–	–	–
J1-46	Shield_GND	Single	_	J2-1	Shield GND
J1-11 J1-12	TxD/RxD+ TxD/RxD–	Twisted pair no. 6	—> —>	J2-4 J2-22	SD+ SD–
J1-24 J1-23	TxC/RxC+ TxC/RxC–	Twisted pair no. 9	<— <—	J2-5 J2-23	ST+ ST–
J1-28 J1-27	RxD/TxD+ RxD/TxD–	Twisted pair no. 11	<— <—	J2-6 J2-24	RD+ RD–
J1-9 J1-10	RTS/CTS+ RTS/CTS–	Twisted pair no. 5	—> —>	J2-7 J2-25	RS+ RS–
J1-26 J1-25	RxC/TxCE+ RxC/TxCE–	Twisted pair no. 10	<— <—	J2-8 J2-26	RT+ RT–
J1-1 J1-2	CTS/RTS+ CTS/RTS–	Twisted pair no. 1	<— <—	J2-9 J2-27	CS+ CS–
J1-44 J1-45	LL/DCD Circuit_GND	Twisted pair no. 12	—> _	J2-10 J2-37	LL SC
J1-3 J1-4	DSR/DTR+ DSR/DTR–	Twisted pair no. 2	<— <—	J2-11 J2-29	DM+ DM–
J1-7 J1-8	DTR/DSR+ DTR/DSR–	Twisted pair no. 4	—> —>	J2-12 J2-30	TR+ TR–
J1-5 J1-6	DCD/DCD+ DCD/DCD–	Twisted pair no. 3	<— <—	J2-13 J2-31	RR+ RR–
J1-13 J1-14	TxCE/TxC+ TxCE/TxC–	Twisted pair no. 7	—> —>	J2-17 J2-35	TT+ TT–
J1-15 J1-16	Circuit_GND Circuit_GND	Twisted pair no. 9	– –	J2-19 J2-20	SG RC

1 Any pin not referenced is not connected.

Figure C-4 X.21 Cable Assembly

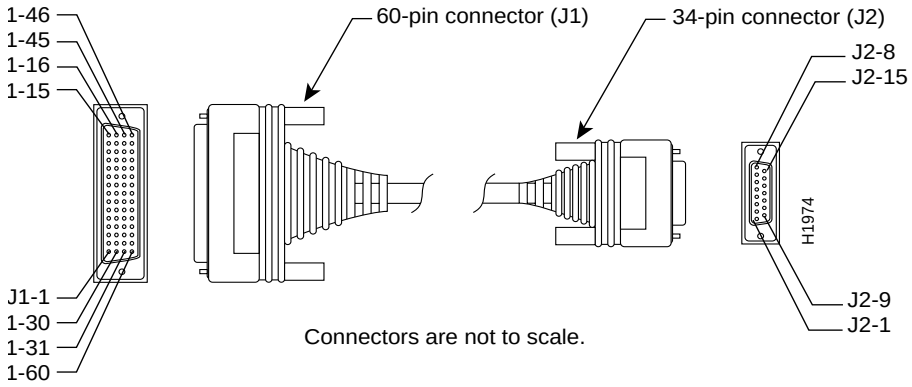

Table C-10 X.21 DTE Cable Pinouts (DB-60 to DB-15)

60 Pin[1]	Signal	Description	Direction	15 Pin	Signal
J1-48 J1-47	GND MODE_2	Shorting group	–	–	–
J1-51 J1-52	GND MODE_DCE	Shorting group	–	–	–
J1-46	Shield_GND	Single	–	J2-1	Shield GND
J1-11 J1-12	TxD/RxD+ TxD/RxD–	Twisted pair no. 3	—> —>	J2-2 J2-9	Transmit+ Transmit–
J1-9 J1-10	RTS/CTS+ RTS/CTS–	Twisted pair no. 2	—> —>	J2-3 J2-10	Control+ Control–
J1-28 J1-27	RxD/TxD+ RxD/TxD–	Twisted pair no. 6	<— <—	J2-4 J2-11	Receive+ Receive–
J1-1 J1-2	CTS/RTS+ CTS/RTS–	Twisted pair no. 1	<— <—	J2-5 J2-12	Indication+ Indication–
J1-26 J1-25	RxC/TxCE+ RxC/TxCE–	Twisted pair no. 5	<— <—	J2-6 J2-13	Timing+ Timing–
J1-15 Shield	Control_GND –	Twisted pair no. 4	– –	J2-8 Shield	Control GND –

1 Any pin not referenced is not connected.

Figure C-5 V.35 Cable Assembly

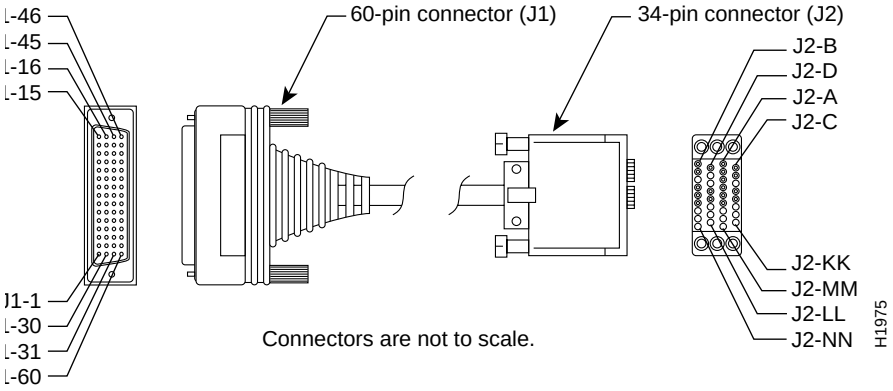

Table C-11 V.35 Cable Pinouts (DB-60 to 34-Pin)

60 Pin[1]	Signal	Description	Direction	34 Pin	Signal
J1-49 J1-48	MODE_1 GND	Shorting group	–	–	–
J1-50 J1-51 J1-52	MODE_0 GND MODE_DCE	Shorting group	–	–	–
J1-53 J1-54 J1-55 J1-56	TxC/NIL RxC_TxCE RxD/TxD GND	Shorting group	–	–	–
J1-46	Shield_GND	Single	–	J2-A	Frame GND
J1-45 Shield	Circuit_GND –	Twisted pair no. 12	– –	J2-B Shield	Circuit GND –
J1-42 Shield	RTS/CTS –	Twisted pair no. 9	—> –	J2-C Shield	RTS –
J1-35 Shield	CTS/RTS –	Twisted pair no. 8	<— –	J2-D Shield	CTS –

Table C-11 V.35 Cable Pinouts (DB-60 to 34-Pin) (Continued)

60 Pin[1]	Signal	Description	Direction	34 Pin	Signal
J1-34	DSR/DTR	Twisted pair no. 7	<—	J2-E	DSR
Shield	–		–	Shield	–
J1-33	DCD/LL	Twisted pair no. 6	<—	J2-F	RLSD
Shield	–		–	Shield	–
J1-43	DTR/DSR	Twisted pair no. 10	—>	J2-H	DTR
Shield	–		–	Shield	–
J1-44	LL/DCD	Twisted pair no. 11	—>	J2-K	LT
Shield	–		–	Shield	–
J1-18	TxD/RxD+	Twisted pair no. 1	—>	J2-P	SD+
J1-17	TxD/RxD–		—>	J2-S	SD–
J1-28	RxD/TxD+	Twisted pair no. 5	<—	J2-R	RD+
J1-27	RxD/TxD–		<—	J2-T	RD–
J1-20	TxCE/TxC+	Twisted pair no. 2	—>	J2-U	SCTE+
J1-19	TxCE/TxC–		—>	J2-W	SCTE–
J1-26	RxC/TxCE+	Twisted pair no. 4	<—	J2-V	SCR+
J1-25	RxC/TxCE–		<—	J2-X	SCR–
J1-24	TxC/RxC+	Twisted pair no. 3	<—	J2-Y	SCT+
J1-23	TxC/RxC–		<—	J2-AA	SCT–

1 Any pin not referenced is not connected.

Figure C-6 EIA-530 Cable Assembly

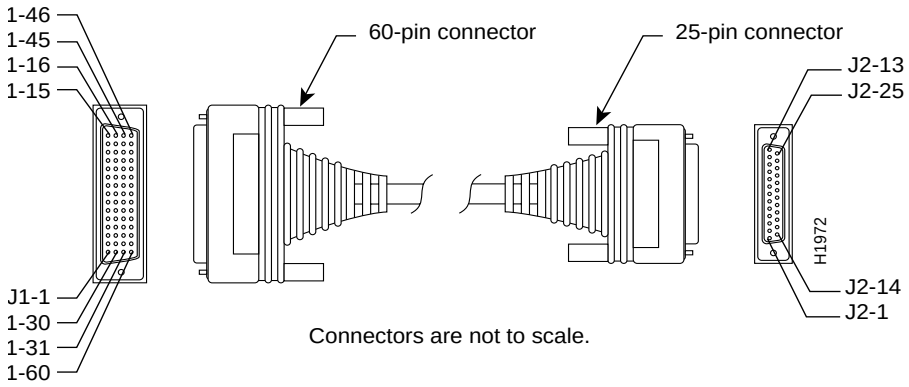

Table C-12 EIA-530 DTE Cable Pinouts (DB-60 to DB-25)

60 Pin[1]	Signal	25 Pin	Signal	Direction DTE DCE[2]
J1-11	TxD/RxD+	J2-2	BA(A), TxD+	—>
J1-12	TxD/RxD–	J2-14	BA(B), TxD–	—>
J1-28	RxD/TxD+	J2-3	BB(A), RxD+	<—
J1-27	RxD/TxD–	J2-16	BB(B), RxD–	<—
J1-9	RTS/CTS+	J2-4	CA(A), RTS+	—>
J1-10	RTS/CTS–	J2-19	CA(B), RTS–	—>
J1-1	CTS/RTS+	J2-5	CB(A), CTS+	<—
J1-2	CTS/RTS–	J2-13	CB(B), CTS–	<—
J1-3	DSR/DTR+	J2-6	CC(A), DSR+	<—
J1-4	DSR/DTR–	J2-22	CC(B), DSR–	<—
J1-46	Shield_GND	J2-1	Shield	Shorted
J1-47	MODE_2	–	–	
J1-48	GND	–	–	Shorted
J1-49	MODE_1	–	–	
J1-5	DCD/DCD+	J2-8	CF(A), DCD+	<—
J1-6	DCD/DCD–	J2-10	CF(B), DCD–	<—
J1-24	TxC/RxC+	J2-15	DB(A), TxC+	<—
J1-23	TxC/RxC–	J2-12	DB(B), TxC–	<—
J1-26	RxC/TxCE+	J2-17	DD(A), RxC+	<—
J1-25	RxC/TxCE–	J2-9	DD(B), RxC–	<—
J1-44	LL/DCD	J2-18	LL	—>
J1-45	Circuit_GND	J2-7	Circuit_ GND	–
J1-7	DTR/DSR+	J2-20	CD(A), DTR+	—>
J1-8	DTR/DSR–	J2-23	CD(B), DTR–	—>
J1-13	TxCE/TxC+	J2-24	DA(A), TxCE+	—>
J1-14	TxCE/TxC–	J2-11	DA(B), TxCE–	—>

1 Any pin not referenced is not connected.

2 The EIA-530 interface cannot be operated in DCE mode. A DCE cable is not available for the EIA-530 interface.