

Cable Specifications

This appendix describes cable signals and pinouts.

The cables available from us meet FCC part 15J Class B requirements. When constructing your own cables, refer to applicable standards for regulatory compliance, interference considerations, and cable length limitations.

Note All pins not listed are not connected.

Following are the signal summaries in this appendix:

- Console and Auxiliary Port Signals and Pinouts
- Serial Cable Pinouts
 - Ethernet (AUI) Cable Pinouts
 - 10BaseT Connector Pinouts
- Token Ring Port Pinouts
 - Token Ring STP Port Pinouts
 - Token Ring UTP Port Pinouts
- Serial Cable Pinouts
 - EIA/TIA-232 Serial Cable Assembly
 - EIA/TIA-449 Serial Cable Assembly
 - V.35 Serial Cable Assembly

Console and Auxiliary Port Signals and Pinouts

- X.21 Serial Cable Assembly
- EIA-530 Serial Cable Assembly
- BRI Pinouts
- CT1/PRI Pinouts
- CT1/PRI-CSU Pinouts
- CE1/PRI Pinouts

Console and Auxiliary Port Signals and Pinouts

The EIA/TIA-232 console port is configured as DTE and uses an RJ-45 connector.

The router ships with a cable kit 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 RJ-45-to-DB-9 and RJ-45-to-DB-25 female DTE adapters (labeled Terminal). Table C-1 lists pinouts for the asynchronous serial console port, the RJ-45-to-RJ-45 rollover cable, and the RJ-45-to-DB-9 and RJ-45-to-DB-25 female DTE adapters. Auxiliary port pinouts are the same as the console port pinouts.

Table C-1 Console and Auxiliary Port, Cable, and Adapter Signals and Pinouts

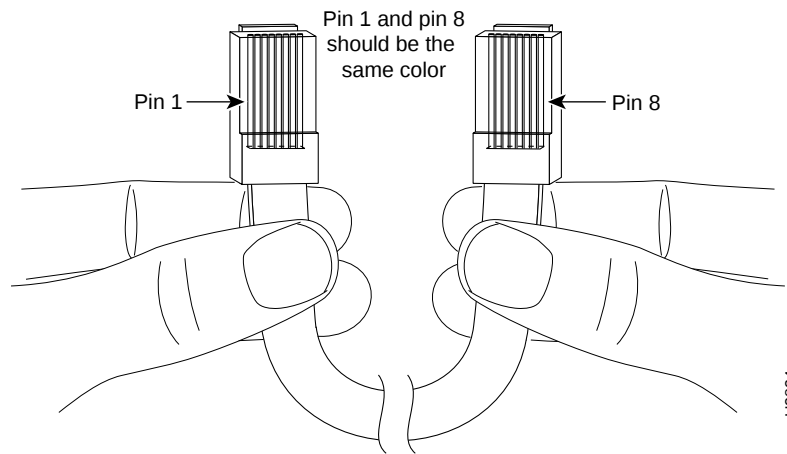
		Auxiliary and Console Port (DTE)			
		RJ-45-to-RJ-45 Rollover Cable	RJ-45-to-DB-9 Adapter	RJ-45-to-DB-25 Adapter	
Signal	RJ-45 Pin	RJ-45 Pin	DB-9 Pin	DB-25 Pin	Signal
RTS	1	8	8	5	CTS
DTR	2	7	6	6	DSR
TxD	3	6	2	3	RxD
GND	4	5	5	7	GND
GND	5	4	5	7	GND
RxD	6	3	3	2	TxD

Table C-1 Console and Auxiliary Port, Cable, and Adapter Signals and Pinouts

	Auxiliary and Console Port (DTE)	RJ-45-to-RJ-45 Rollover Cable	RJ-45-to-DB-9 Adapter	RJ-45-to-DB-25 Adapter	
Signal	RJ-45 Pin	RJ-45 Pin	DB-9 Pin	DB-25 Pin	Signal
DSR	7	2	4	20	DTR
CTS	8	1	7	4	RTS

You can identify a rollover cable by comparing the modular plugs at the two ends of the cable. When you hold the plugs side by side, with the tab at the back, the wire connected to the pin on the outside of the left plug should be the same color as the wire connected to the pin on the outside of the right plug. (See Figure C-1.) If you purchased your cable from us, pin 1 is white on one connector, and pin 8 is white on the other (a rollover cable connects pins 1 and 8, 2 and 7, 3 and 6, and 4 and 5).

Figure C-1 Identifying a Rollover Cable



Serial Cable Pinouts

All serial interface types except EIA-530 are available in DTE or DCE format: DTE with a plug connector at the network end and DCE with a receptacle at the network end. V.35 is available in either mode with either gender at the network end. EIA-530 is available in DTE only.

The tables in this section list the signal pinouts for both the DTE-mode and DCE-mode serial port adapter cables for each serial interface type.

Note The serial WAN interface card uses a universal high-density, 60-pin receptacle. Each universal port requires a serial port adapter cable that determines the port's electrical interface type and mode: DTE or DCE. Although all port adapter cables use a universal plug at the quad serial module end, the network end of each cable type uses the physical connectors commonly used for the interface. (For example, the network end of the EIA/TIA-232 port adapter cable is a DB-25 connector, the most widely used EIA/TIA-232 connector.)

EIA/TIA-232 Serial Cable Assembly

Figure C-2 shows the EIA/TIA-232 serial cable assembly; Table C-2 lists the DTE pinouts; and Table C-3 lists the DCE pinouts. Arrows indicate signal direction: —> indicates DTE to DCE, and <— indicates DCE to DTE.

Figure C-2 EIA/TIA-232 Cable Assembly

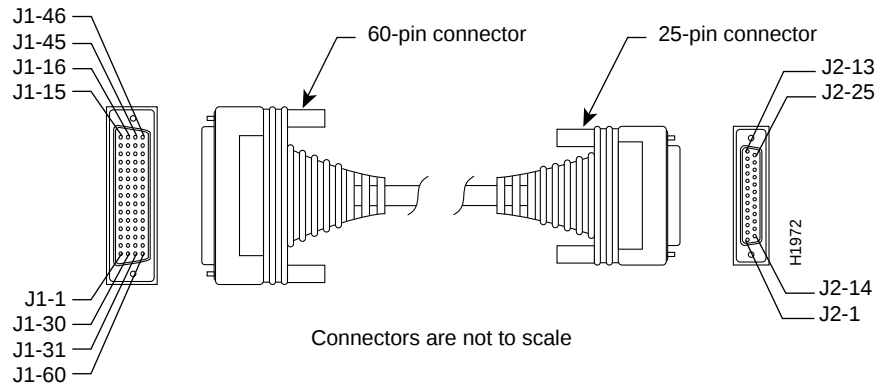


Table C-2 EIA/TIA-232 Serial DTE Cable Pinouts (DB-60 to DB-25)

60 Pin	Signal	Note	Direction	25 Pin	Signal
J1-50	MODE_0	Shorting group	—	—	—
J1-51	GND				
J1-52	MODE_DC E				
J1-46	Shield GND	Single	—	J2-1	Shield GND
J1-46	Shield GND	Single	—	J2-1	Shield GND
J1-41	TXD/RXD	Twisted pair no. 5	—>	J2-2	TXD
Shield	—		—	Shield	—
J1-36	RXD/TXD	Twisted pair no. 9	<—	J2-3	RXD
Shield	—		—	Shield	—

Serial Cable Pinouts

Table C-2 EIA/TIA-232 Serial DTE Cable Pinouts (DB-60 to DB-25) (Continued)

60 Pin	Signal	Note	Direction	25 Pin	Signal
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 —

Table C-3 EIA/TIA-232 DCE Cable Pinouts (DB-60 to DB-25)

60 Pin	Signal	Note	Direction	25 Pin	Signal
J1-50 J1-51	MODE_0 GND	Shorting group	—	—	—

Table C-3 EIA/TIA-232 DCE Cable Pinouts (DB-60 to DB-25) (Continued)

60 Pin	Signal	Note	Direction	25 Pin	Signal
J1-36 Shield	RXD/TXD —	Twisted pair no. 9	<— —	J2-2 Shield	TXD —
J1-41 Shield	TXD/RXD —	Twisted pair no. 5	—> —	J2-3 Shield	RXD —
J1-35 Shield	CTS/RTS —	Twisted pair no. 10	<— —	J2-4 Shield	RTS —
J1-42 Shield	RTS/CTS —	Twisted pair no. 4	—> —	J2-5 Shield	CTS —
J1-43 Shield	DTR/DSR —	Twisted pair no. 3	—> —	J2-6 Shield	DSR —
J1-45 Shield	Circuit GND —	Twisted pair no. 1	— —	J2-7 Shield	Circuit GND
J1-44 Shield	LL/DCD —	Twisted pair no. 2	—> —	J2-8 Shield	DCD —
J1-39 Shield	TXCE/TXC —	Twisted pair no. 7	—> —	J2-15 Shield	TXC —
J1-40 Shield	NIL/RXC —	Twisted pair no. 6	—> —	J2-17 Shield	RXC —
J1-33 Shield	DCD/LL —	Twisted pair no. 12	<— —	J2-18 Shield	LTST —
J1-34 Shield	DSR/DTR —	Twisted pair no. 11	<— —	J2-20 Shield	DTR —
J1-38 Shield	RXC/TXCE —	Twisted pair no. 8	<— —	J2-24 Shield	TXCE —

EIA/TIA-449 Serial Cable Assembly

Figure C-3 shows the EIA/TIA-449 serial cable assembly; Table C-4 lists the DTE pinouts; Table C-5 lists the DCE pinouts. Arrows indicate signal direction: —> indicates DTE to DCE, and <— indicates DCE to DTE.

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

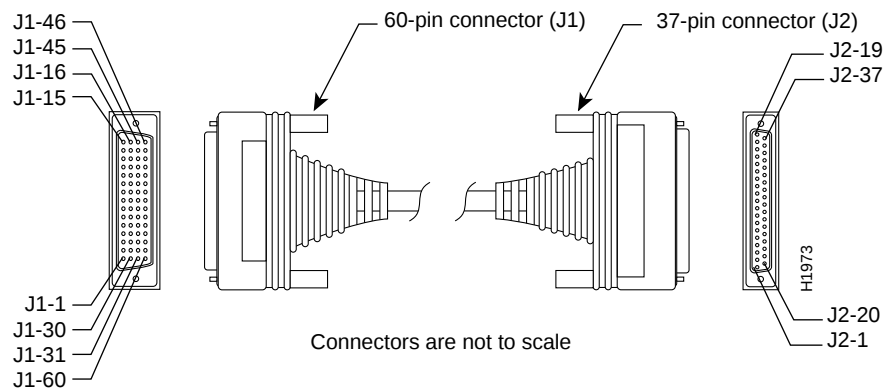


Table C-4 EIA/TIA-449 DTE Cable Pinouts (DB-60 to DB-37)

60 Pin	Signal Name	Note	Direction	37 Pin	Signal Name
J1-49	MODE_1	Shorting group	—	—	—
J1-48	GND				
J1-51	GND	Shorting group	—	—	—
J1-52	MODE_DCE				
J1-46	Shield_GND	Single	—	J2-1	Shield GND
J1-11	TXD/RXD+	Twisted pair no. 6	—>	J2-4	SD+
J1-12	TXD/RXD-		—>	J2-22	SD-
J1-24	TXC/RXC+	Twisted pair no. 9	<—	J2-5	ST+
J1-23	TXC/RXC-		<—	J2-23	ST-

Table C-4 EIA/TIA-449 DTE Cable Pinouts (DB-60 to DB-37) (Continued)

60 Pin	Signal Name	Note	Direction	37 Pin	Signal Name
J1-28	RXD/TXD+	Twisted pair no. 11	<—	J2-6	RD+
J1-27	RXD/TXD–		<—	J2-24	RD–
J1-9	RTS/CTS+	Twisted pair no. 5	—>	J2-7	RS+
J1-10	RTS/CTS–		—>	J2-25	RS–
J1-26	RXC/TXCE+	Twisted pair no. 10	<—	J2-8	RT+
J1-25	RXC/TXCE–		<—	J2-26	RT–
J1-1	CTS/RTS+	Twisted pair no. 1	<—	J2-9	CS+
J1-2	CTS/RTS–		<—	J2-27	CS–
J1-44	LL/DCD	Twisted pair no. 12	—>	J2-10	LL
J1-45	Circuit_GND		–	J2-37	SC
J1-3	DSR/DTR+	Twisted pair no. 2	<—	J2-11	DM+
J1-4	DSR/DTR–		<—	J2-29	DM–
J1-7	DTR/DSR+	Twisted pair no. 4	—>	J2-12	TR+
J1-8	DTR/DSR–		—>	J2-30	TR–
J1-5	DCD/DCD+	Twisted pair no. 3	<—	J2-13	RR+
J1-6	DCD/DCD–		<—	J2-31	RR–
J1-13	TXCE/TXC+	Twisted pair no. 7	—>	J2-17	TT+
J1-14	TXCE/TXC–		—>	J2-35	TT–
J1-15	Circuit_GND	Twisted pair no. 9	–	J2-19	SG
J1-16	Circuit_GND		–	J2-20	RC

Table C-5 EIA/TIA-449 Serial DCE Cable Pinouts (DB-60 to DB-37)

60 Pin	Signal Name	Note	Direction	37 Pin	Signal Name
J1-49	MODE_1	Shorting group	–	–	–
J1-48	GND		–	–	–
J1-46	Shield_GND	Single	–	J2-1	Shield GND

Serial Cable Pinouts

Table C-5 EIA/TIA-449 Serial DCE Cable Pinouts (DB-60 to DB-37) (Continued)

60 Pin	Signal Name	Note	Direction	37 Pin	Signal Name
J1-28	RXD/TXD+	Twisted pair no. 11	<—	J2-4	SD+
J1-27	RXD/TXD—		<—	J2-22	SD—
J1-13	TXCE/TXC+	Twisted pair no. 7	—>	J2-5	ST+
J1-14	TXCE/TXC—		—>	J2-23	ST—
J1-11	TXD/RXD+	Twisted pair no. 6	—>	J2-6	RD+
J1-12	TXD/RXD—		—>	J2-24	RD—
J1-1	CTS/RTS+	Twisted pair no. 1	<—	J2-7	RS+
J1-2	CTS/RTS—		<—	J2-25	RS—
J1-24	TXC/RXC+	Twisted pair no. 9	—>	J2-8	RT+
J1-23	TXC/RXC—		—>	J2-26	RT—
J1-9	RTS/CTS+	Twisted pair no. 5	—>	J2-9	CS+
J1-10	RTS/CTS—		—>	J2-27	CS—
J1-29	NIL/LL	Twisted pair no. 12	—>	J2-10	LL
J1-30	Circuit_GND		—	J2-37	SC
J1-7	DTR/DSR+	Twisted pair no. 4	—>	J2-11	DM+
J1-8	DTR/DSR—		—>	J2-29	DM—
J1-3	DSR/DTR+	Twisted pair no. 2	<—	J2-12	TR+
J1-4	DSR/DTR—		<—	J2-30	TR—
J1-5	DCD/DCD+	Twisted pair no. 3	—>	J2-13	RR+
J1-6	DCD/DCD—		—>	J2-31	RR—
J1-26	RXC/TXCE+	Twisted pair no. 10	<—	J2-17	TT+
J1-25	RXC/TXCE—		<—	J2-35	TT—
J1-15	Circuit_GND	Twisted pair no. 8	—	J2-19	SG
J1-16	Circuit_GND		—	J2-20	RC

V.35 Serial Cable Assembly

Figure C-4 shows the V.35 serial cable assembly; Table C-6 lists the DTE pinouts; Table C-7 lists the DCE pinouts. Arrows indicate signal direction: —> indicates DTE to DCE, and <— indicates DCE to DTE.

Figure C-4 V.35 Serial Cable Assembly

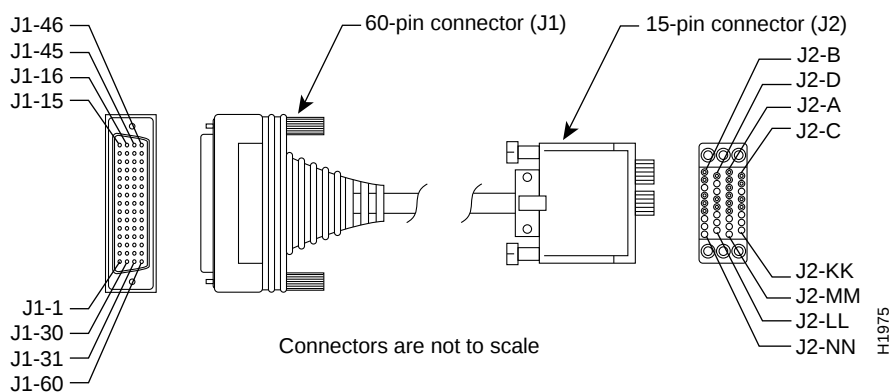


Table C-6 V.35 Serial DTE Cable Pinouts (DB-60 to Winchester-Type 34 Pin)

60 Pin	Signal Name	Type	Direction	34 Pin	Signal Name
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

Serial Cable Pinouts

Table C-6 V.35 Serial DTE Cable Pinouts (DB-60 to Winchester-Type 34 Pin)

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

Table C-7 V.35 DCE Cable Pinouts (DB-60 to Winchester-Type 34 Pin)

60 Pin	Signal Name	Type	Direction	34 Pin	Signal Name
J1-49 J1-48	MODE_1 GND	Shorting group	—	—	—
J1-50 J1-51	MODE_0 GND	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 —
J1-35 Shield	CTS/RTS —	Twisted pair no. 8	<— —	J2-C Shield	RTS —
J1-42 Shield	RTS/CTS —	Twisted pair no. 9	—> —	J2-D Shield	CTS —
J1-43 Shield	DTR/DSR —	Twisted pair no. 10	—> —	J2-E Shield	DSR —
J1-44 Shield	LL/DCD —	Twisted pair no. 11	—> —	J2-F Shield	RLSD —
J1-34 Shield	DSR/DTR —	Twisted pair no. 7	<— —	J2-H Shield	DTR —
J1-33 Shield	DCD/LL —	Twisted pair no. 6	<— —	J2-K Shield	LT —
J1-28 J1-27	RxD/TxD+ RxD/TxD—	Twisted pair no. 5	<— <—	J2-P J2-S	SD+ SD—
J1-18 J1-17	TxD/RxD+ TxD/RxD—	Twisted pair no. 1	—> —>	J2-R J2-T	RD+ RD—
J1-26 J1-25	RxC/TxCE+ RxC/TxCE—	Twisted pair no. 4	<— <—	J2-U J2-W	SCTE+ SCTE—

Serial Cable Pinouts

Table C-7 V.35 DCE Cable Pinouts (DB-60 to Winchester-Type 34 Pin)

60 Pin	Signal Name	Type	Direction	34 Pin	Signal Name
J1-22	NIL/RxC+	Twisted pair no. 3	—>	J2-V	SCR+
J1-21	NIL/RxC-		—>	J2-X	SCR-
J1-20	TxCE/TxC+	Twisted pair no. 2	—>	J2-Y	SCT+
J1-19	TxCE/TxC-		—>	J2-AA	SCT-

X.21 Serial Cable Assembly

Figure C-5 shows the X.21 serial cable assembly; Table C-8 lists the DTE pinouts; Table C-9 lists the DCE pinouts. Arrows indicate signal direction: —> indicates DTE to DCE, and <— indicates DCE to DTE.

Figure C-5 X.21 Serial Cable Assembly

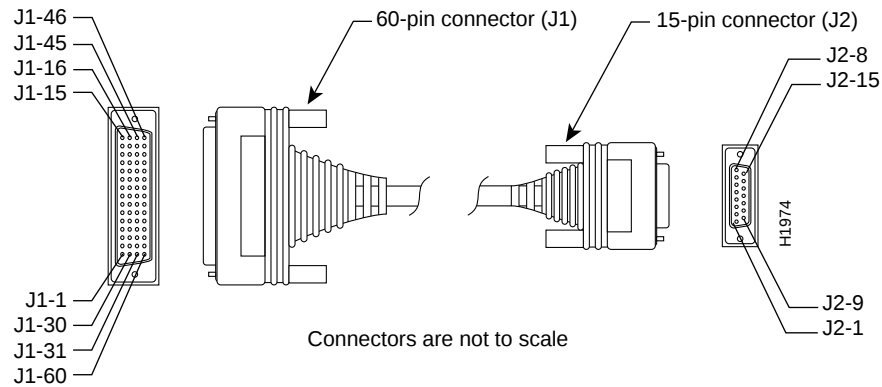


Table C-8 X.21 Serial DTE Cable Pinouts (DB-60 to DB-15)

60 Pin	Signal Name	Type	Direction	15 Pin	Signal Name
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 -

Table C-9 X.21 Serial DCE Cable Pinouts (DB-60 to DB-15)

60 Pin	Signal Name	Type	Direction	15 Pin	Signal Name
J1-48 J1-47	GND MODE_2	Shorting group	-	-	-
J1-46	Shield_GND	Single	-	J2-1	Shield GND
J1-28 J1-27	RXD/TXD+ RXD/TXD-	Twisted pair no. 6	<— <—	J2-2 J2-9	Transmit+ Transmit-

Serial Cable Pinouts

Table C-9 X.21 Serial DCE Cable Pinouts (DB-60 to DB-15)

60 Pin	Signal Name	Type	Direction	15 Pin	Signal Name
J1-1	CTS/RTS+	Twisted pair no. 1	<—	J2-3	Control+
J1-2	CTS/RTS–		<—	J2-10	Control–
J1-11	TXD/RXD+	Twisted pair no. 3	—>	J2-4	Receive+
J1-12	TXD/RXD–		—>	J2-11	Receive–
J1-9	RTS/CTS+	Twisted pair no. 2	—>	J2-5	Indication+
J1-10	RTS/CTS–		—>	J2-12	Indication–
J1-24	TXC/RXC+	Twisted pair no. 4	—>	J2-6	Timing+
J1-23	TXC/RXC–		—>	J2-13	Timing–
J1-15	Control_GND	Twisted pair no. 5	–	J2-8	Control GND
Shield	–		–	Shield	–

EIA-530 Serial Cable Assembly

Figure C-6 shows the EIA-530 serial cable assembly, and Table C-10 lists the pinouts. Arrows indicate signal direction: —> indicates DTE to DCE, and <— indicates DCE to DTE.

Figure C-6 EIA-530 Serial Cable Assembly

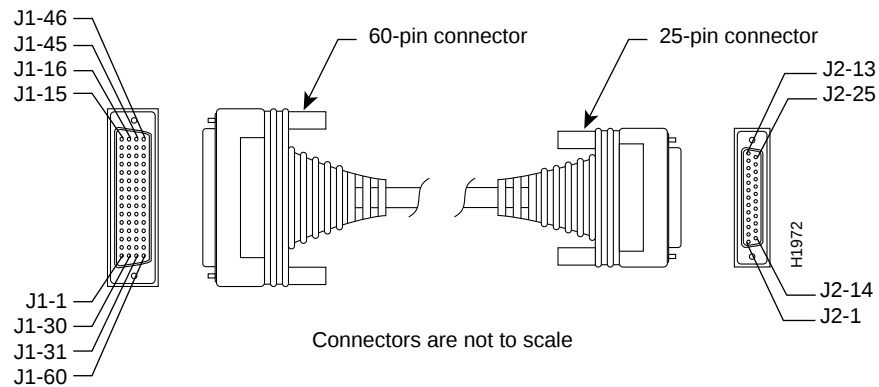


Table C-10 EIA-530 Serial DTE Cable Pinouts (DB-60 to DB-25)

60 Pin	Signal Name	25 Pin	Signal Name	Direction	
				DTE	DCE ¹
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–	—>	

Ethernet Cable Pinouts

Table C-10 EIA-530 Serial DTE Cable Pinouts (DB-60 to DB-25) (Continued)

60 Pin	Signal Name	25 Pin	Signal Name	Direction	
				DTE	DCE ¹
J1-13	TXCE/TXC+	J2-24	DA(A),	—>	
J1-14	TXCE/TXC–	J2-11	TXCE+ DA(B), TXCE–	—>	
J1-51	GND	–	–	Shorted	
J1-52	MODE_DCE	–	–		

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

Ethernet Cable Pinouts

This section provides the pinouts and signal descriptions for the Ethernet (AUI) cable and 10BaseT connector.

Ethernet (AUI) Cable Pinouts

Figure C-7 shows the Ethernet (AUI) cable assembly and Table C-11 lists the pinouts.

Figure C-7 Ethernet (AUI) Cable Assembly

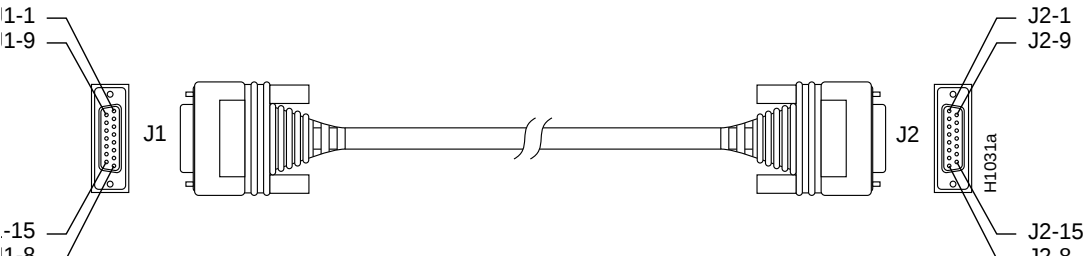


Table C-11 Ethernet (AUI) Pinouts

Pin	Ethernet Circuit	Signal Name
3	DO-A	Data Out Circuit A
10	DO-B	Data Out Circuit B
11	DO-S	Data Out Circuit Shield
5	DI-A	Data In Circuit A
12	DI-B	Data In Circuit B
4	DI-S	Data In Circuit Shield
7	CO-A	Control Out Circuit A (not connected)
15	CO-B	Control Out Circuit B (not connected)
8	CO-S	Control Out Circuit Shield (not connected)
2	CI-A	Control In Circuit A
9	CI-B	Control In Circuit B
1	CI-S	Control In Circuit Shield
6	VC	Voltage Common
13	VP	Voltage Plus
14	VS	Voltage Shield (L25 and M25)
Shell	PG	Protective Ground

10BaseT Connector Pinouts

Figure C-8 shows the 10BaseT (RJ-45) connector, and Table C-12 lists the pinouts.

Figure C-8 10BaseT RJ-45 Connector

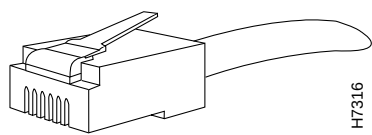


Table C-12 RJ-45 Connector Pinouts

Pin	Description
1	TX+
2	TX-
3	RX+
4	-
5	-
6	RX-
7	-
8	-

Token Ring Port Pinouts

The 1E1R 2-slot module provides both UTP and STP Token Ring connections.

Token Ring STP Port Pinouts

Table C-13 shows the Token Ring STP port pinouts used by the 1E1R 2-slot module.

Table C-13 Token Ring STP Port (DB-9) Pinouts

9-Pin	Signal Name
1	RX–
2	Ground
3	+5 Volt, fused
4	Ground
5	TX–
6	+RX
7	Ground
8	Ground
9	+TX

Token Ring UTP Port Pinouts

Table C-14 shows the Token Ring UTP port pinouts used by the 1E1R 2-Slot module.

Table C-14 Token Ring UTP Port (DB-9) Pinouts

RJ-45 Pins	Signal
1	GND
2	GND
3	Tx

BRI Pinouts

Table C-14 **Token Ring UTP Port (DB-9) Pinouts**

RJ-45 Pins	Signal
4	Rx
5	Tx
6	Rx
7	GND
8	Not used

BRI Pinouts

The BRI port pinouts are shown in Table C-15.

Table C-15 **BRI Port (RJ-45) Pinouts**

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 NT2 functional groups.
3. NT refers to network terminating layer 1 aspects of NT1 and NT2 functional groups.



Caution To prevent damage to the system, make certain you connect the BRI cable to the BRI connector *only* and not to any other RJ-45 connector.

CT1/PRI Pinouts

Two standard T1 serial cables are available for the CT1/PRI module: null-modem and straight-through. A straight-through cable connects the router to an external CSU. Null-modem cables are used for back-to-back operation and testing.

The T1 interface cable has two 15-pin DB connectors at each end to connect the CT1/PRI with the external T1 CSU. Figure C-9 shows the T1 interface cable, connectors, and pinouts. Table C-16 lists the pinouts for the null-modem T1 cable and Table C-17 lists the pinouts for the straight-through T1 cable.

Figure C-9 T1 Interface Cable

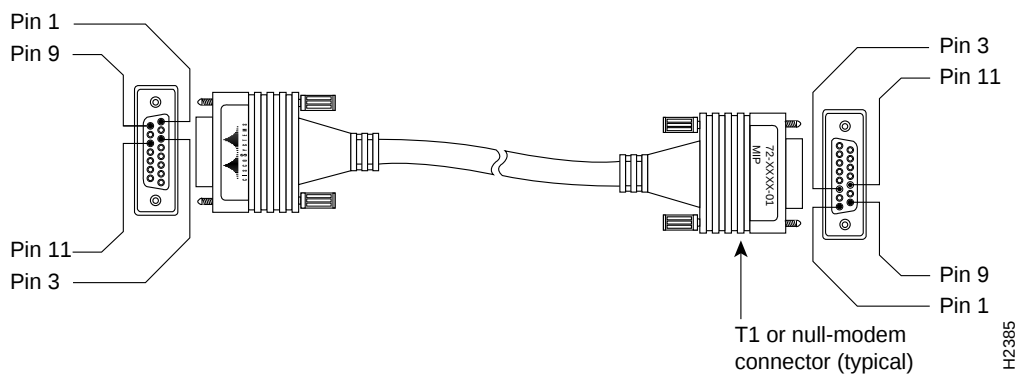


Table C-16 Null-Modem T1 Cable Pinouts

15-Pin DB Connector		15-Pin DB Connector	
Signal	Pin	Pin	Signal
Transmit Tip	1	3	Receive Tip
Receive Tip	3	1	Transmit Tip
Transmit Ring	9	11	Receive Ring
Receive Ring	11	9	Transmit Ring

Table C-17 Straight-Through T1 Cable Pinouts

15-Pin DB Connector		15-Pin DB Connector	
Signal	Pin	Pin	Signal
Transmit Tip	1	1	Transmit Tip
Transmit Ring	9	9	Transmit Ring
Receive Tip	3	3	Receive Tip
Receive Ring	11	11	Receive Ring

CT1/PRI-CSU Pinouts

Table C-18 lists the CT1/PRI-CSU module port pinouts. Use a straight-through RJ-48C-to-RJ-48C cable to connect the T1 port to an RJ-48C jack.

Table C-18 CT1/PRI-CSU module Port (RJ-48C) Pinouts

RJ-48C Pin	Description
1	Receive Ring
2	Receive Tip
4	Ring
5	Tip

CE1/PRI Pinouts

Cisco Systems makes four cables for the CE1/PRI modules. All four have DB-15 connectors on the CE1/PRI end and either BNC, DB-15, Twinax, or RJ-45 connectors on the network end. Figure C-10, to Figure C-13 show the CE1/PRI interface cables.

Figure C-10 E1 Interface Cable for 75-Ohm, Unbalanced Connections with BNC Connectors

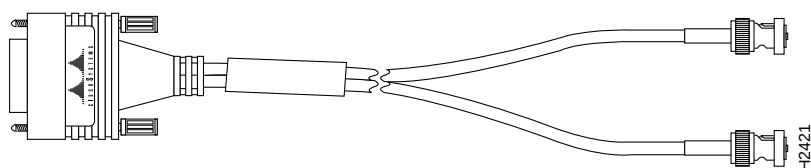


Figure C-11 E1 Interface Cable for 120-Ohm, Balanced Connections with DB-15 Connectors

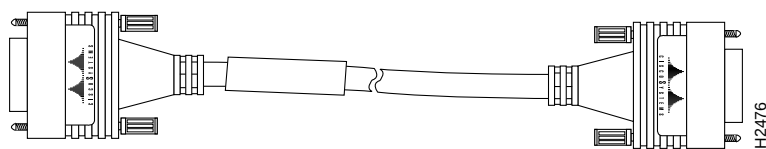


Figure C-12 E1 Interface Cable for 120-Ohm, Balanced Connections with Twinax Connectors

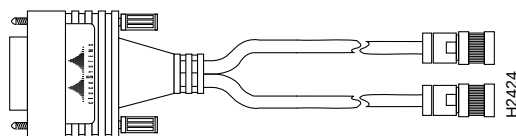


Figure C-13 E1 Interface Cable for 120-Ohm, Balanced Connections with an RJ-45 Connector

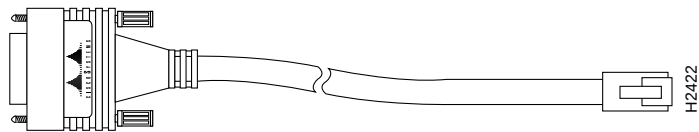


Table C-19 lists the Pinouts for the CE1/PRI interface cables.

Table C-19 E1 Interface Cable Pinouts

CE1/PRI End		Network End						
DB-15		BNC	DB-15		Twinax		RJ-45	
Pin	Signal ¹	Signal	Pin	Signal	Pin	Signal	Pin	Signal
9	TX Tip	TX Tip	1	TX Tip	TX-1	TX Tip	1	TX Tip
2	TX Ring	TX Shield	9	TX Ring	TX-2	TX Ring	2	TX Ring
10	TX Shield	–	2	TX Shield	Shield	TX Shield	3	TX Shield
8	RX Tip	RX Tip	3	RX Tip	RX-1	RX Tip	4	RX Tip
15	RX Ring	RX Shield	11	RX Ring	RX-2	RX Ring	5	RX Ring
7	RX Shield	–	4	RX Shield	Shield	RX Shield	6	RX Shield

1. TX = transmit. RX = receive.