APPENDIX C

Cabling Specifications for the Universal Access Server

This appendix provides the following pinout information:

- Console and Auxiliary Port Signals and Pinouts
- Ethernet Cable Assembly and Pinouts
- Dual T1/PRI Card Port Pinouts
- Dual E1 or T1/PRI Card Cable Assemblies and Pinouts
- Synchronous Serial Cable Assemblies and Pinouts
- Alarm Port Pinouts

Note The tables in this appendix specify pinouts only for the pins used. Pins not listed are not used.

Console and Auxiliary Port Signals and Pinouts

The access server comes with a console and auxiliary cable kit that contains the cable and adapters you need to connect a console (an ASCII terminal or PC running terminal emulation software) or modem to your access server. The console and auxiliary cable kit includes the following items:

- RJ-45-to-RJ-45 rollover cable. (See the next section, “Identifying a Rollover Cable,” for more information.)
- RJ-45-to-DB-9 female DTE adapter (labeled Terminal).

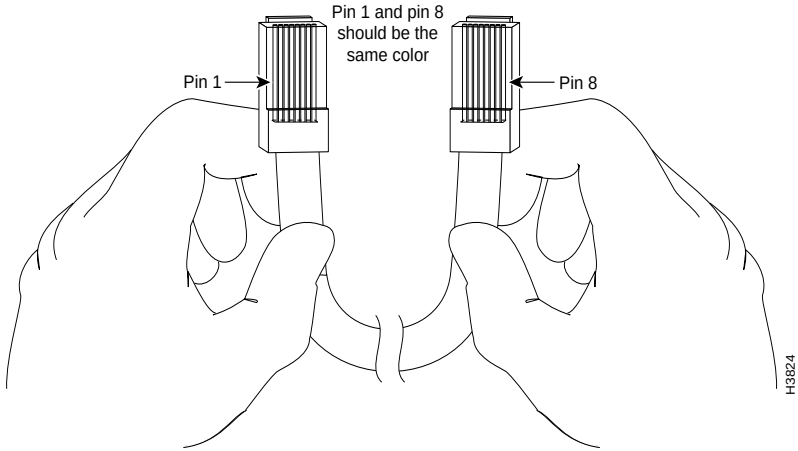
- RJ-45-to-DB-25 female DTE adapter (labeled Terminal).
- RJ-45-to-DB-25 male DCE adapter (labeled Modem).

For console connections, proceed to the section "Console Port Signals and Pinouts" later in this appendix; for modem connections, proceed to the section "Auxiliary Port Signals and Pinouts" later in this appendix.

Identifying a Rollover Cable

You can identify a rollover cable by comparing the two modular ends of the cable. Holding the cables 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 your cable was purchased from Cisco Systems, pin 1 will be white on one connector, and pin 8 will be white on the other (a rollover cable reverses pins 1 and 8, 2 and 7, 3 and 6, and 4 and 5).

Figure C-1 Identifying a Rollover Cable



Console Port Signals and Pinouts

Use the RJ-45-to-RJ-45 rollover cable and RJ-45-to-DB-9 female DTE adapter (labeled Terminal) to connect the console port to a PC running terminal emulation software. Figure C-2 shows how to connect the console port to a PC. Table C-1 lists the pinouts for the asynchronous serial console port, the RJ-45-to-RJ-45 rollover cable, and the RJ-45-to-DB-9 female DTE adapter (labeled Terminal).

Figure C-2 Connecting the Console Port to a PC

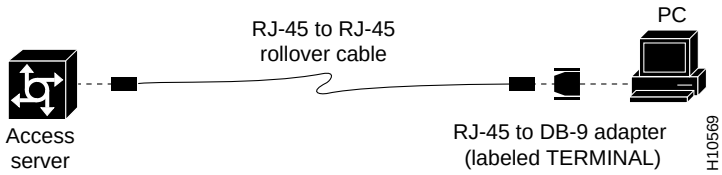


Table C-1 Console Port Signaling and Cabling Using a DB-9 Adapter

Console Port (DTE)	RJ-45-to-RJ-45 Rollover Cable		RJ-45-to-DB-9 Terminal Adapter	Console Device
Signal	**RJ-45 Pin**	**RJ-45 Pin**	**DB-9 Pin**	**Signal**
RTS	1[1]	8	8	CTS
DTR	2	7	6	DSR
TxD	3	6	2	RxD
GND	4	5	5	GND
GND	5	4	5	GND
RxD	6	3	3	TxD
DSR	7	2	4	DTR
CTS	8[1]	1	7	RTS

1. Pin 1 is connected internally to Pin 8.

Use the RJ-45-to-RJ-45 rollover cable and RJ-45-to-DB-25 female DTE adapter (labeled Terminal) to connect the console port to a terminal. Figure C-3 shows how to connect the console port to a terminal. Table C-2 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 (labeled Terminal).

Figure C-3 Connecting the Console Port to a Terminal

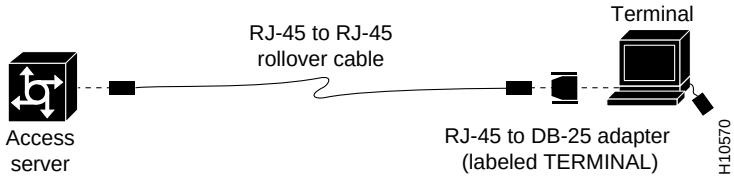


Table C-2 Console Port Signaling and Cabling Using a DB-25 Adapter

Console Port (DTE)[1]	RJ-45-to-RJ-45 Rollover Cable		RJ-45-to-DB-25 Terminal Adapter	Console Device
Signal	**RJ-45 Pin**	**RJ-45 Pin**	**DB-25 Pin**	**Signal**
RTS	1[2]	8	5	CTS
DTR	2	7	6	DSR
TxD	3	6	3	RxD
GND	4	5	7	GND
GND	5	4	7	GND
RxD	6	3	2	TxD
DSR	7	2	20	DTR
CTS	8[1]	1	4	RTS

1. You can use the same cabling to connect a console to the auxiliary port.
2. Pin 1 is connected internally to Pin 8.

Auxiliary Port Signals and Pinouts

Use the RJ-45-to-RJ-45 rollover cable and RJ-45-to-DB-25 male DCE adapter (labeled Modem) to connect the auxiliary port to a modem. Figure C-4 shows how to connect the auxiliary port to a modem. Table C-3 lists the pinouts for the asynchronous serial auxiliary port, the RJ-45-to-RJ-45 rollover cable, and the RJ-45-to-DB-25 male DCE adapter (labeled Modem).

Figure C-4 Connecting the Auxiliary Port to a Modem

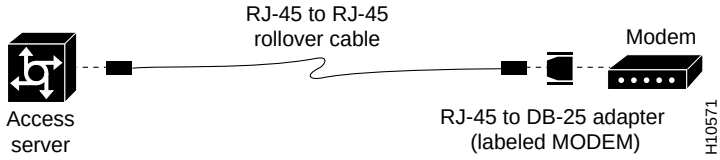


Table C-3 Auxiliary Port Signaling and Cabling Using a DB-25 Adapter

AUX Port (DTE)	RJ-45-to-RJ-45 Rollover Cable		RJ-45-to-DB-25 Modem Adapter	Modem
Signal	**RJ-45 Pin**	**RJ-45 Pin**	**DB-25 Pin**	**Signal**
RTS	1	8	4	RTS
DTR	2	7	20	DTR
TxD	3	6	3	TxD
GND	4	5	7	GND
GND	5	4	7	GND
RxD	6	3	2	RxD
DSR	7	2	8	DCD
CTS	8	1	5	CTS

Ethernet Cable Assembly and Pinouts

This section describes the pinouts for the Ethernet ports and cables.

Figure C-5 shows an Ethernet attachment unit interface (AUI) cable assembly, and Table C-4 lists the AUI cable pinouts.

Figure C-5 Ethernet (AUI) Cable Assembly

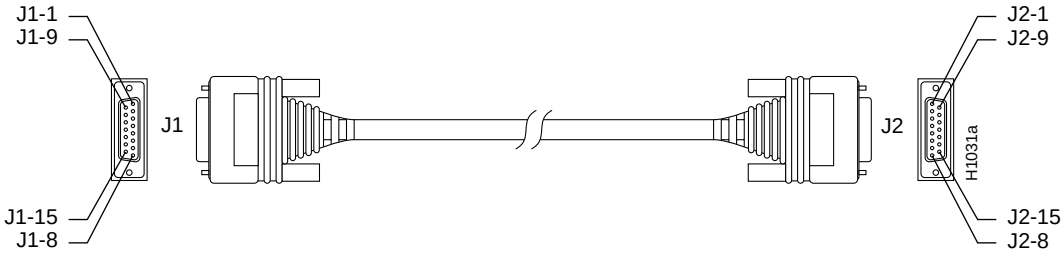


Table C-4 Ethernet (AUI) Cable Pinouts (DB-15)

Pin	Ethernet Circuit	Signal
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
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

Table C-4 Ethernet (AUI) Cable Pinouts (DB-15) (Continued)

Pin	Ethernet Circuit	Signal
14	VS	Voltage Shield (L25 and M25)
Shell	PG	Protective Ground

Dual T1/PRI Card Port Pinouts

Table C-5 lists the dual T1/PRI card port pinouts. Use a straight-through RJ-48C-to-RJ-48C cable to connect the T1 port to an RJ-48C jack.

Table C-5 Dual T1/PRI Card Port (RJ-48C) Pinouts

RJ-48C 8 Pin[1]	Description
1	Receive Ring from telco
2	Receive Tip from telco
4	Transmit Ring to telco
5	Transmit Tip to telco

1. Pins 3, 6, 7, and 8 are not used.

Dual E1 or T1/PRI Card Cable Assemblies and Pinouts

Table C-6 lists the six serial cables available from Cisco Systems for connecting the E1 or T1/PRI card ports.

Table C-6 E1 or T1/PRI Interface Cables

Cable Description	Part Number	Product Number
DB-15 to BNC	72-0818-01	CAB-E1-BNC
DB-15 to DB-15 Null	72-0838-01	CAB-E1-DB15
DB-15 to Twinax	72-0819-01	CAB-E1-TWINAX
DB-15 to RJ-48C	72-0820-03	CAB-E1-PRI/TE
DB-15 to RJ-48C	72-1255-01	CAB-E1-PRI/NT
RJ-48C to RJ-48C	72-1181-01	CAB-T1-PRI

Five serial E1 cables are available from Cisco Systems for connecting the dual E1/PRI card ports. All five have DB-15 connectors on the E1 end and either BNC, DB-15, Twinax, or RJ-48C connectors on the network end. Figure C-6, Figure C-7, Figure C-8, and Figure C-9 show the E1 interface cables. Table C-7 lists the pinouts for the E1 interface cables connecting to the dual E1/PRI card.

Figure C-6 E1 Interface Cable for 75-Ohm, Unbalanced Connections (with BNC Connectors)

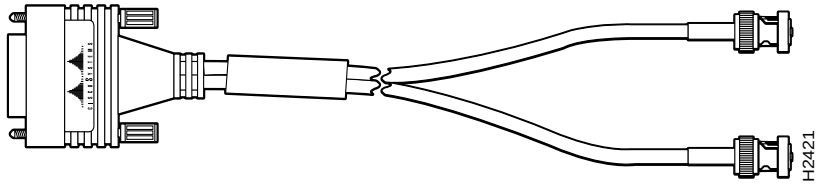


Figure C-7 E1 Interface Cable for 120-Ohm, Balanced Connections (with DB-15 Connector)

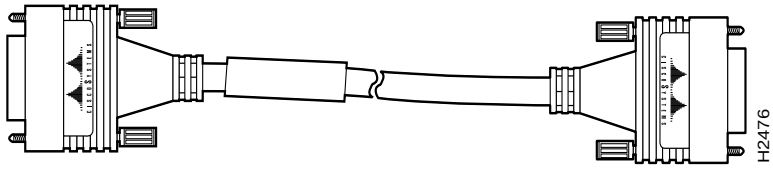


Figure C-8 E1 Interface Cable for 120-Ohm, Balanced Connections (with Twinax Connectors)

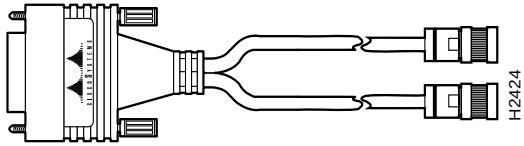


Figure C-9 E1 Interface Cable for 120-Ohm, Balanced Connections (with RJ-48C Connector)

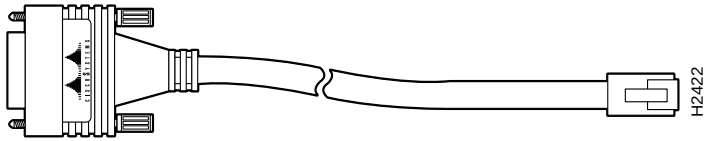


Table C-7 EI Interface Cable Pinouts

CE1 End		Network End								
DB-15[1]		BNC	DB-15		Twinax		RJ-45[2]		RJ-45/NT[3]	
Pin	Signal[4]	Signal	Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
8	RX Tip	TX Tip	1	TX Tip	TX-1	TX Tip	4	RX Tip	1	TX Tip
15	RX Ring	TX Shield	9	TX Ring	TX-2	TX Ring	5	RX Ring	2	TX Ring

Table C-7 EI Interface Cable Pinouts (Continued)

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

1. Any pins not described in this table are not connected.
2. Connected as a network interface.
3. Connected as a network terminal.
4. TX = transmit; RX = receive.

Synchronous Serial Cable Assemblies and Pinouts

The illustrations and tables in this section provide assembly drawings and pinouts for the EIA-530 data communications equipment (DCE), EIA/TIA-232, EIA/TIA-449, V.35, and X.21 DTE and DCE cables, which are used with the five-in-one synchronous serial WAN port.

EIA-530

Figure C-10 shows the EIA-530 serial cable assembly, and Table C-8 lists the pinouts. Arrows indicate signal direction: a right arrow (—>) indicates DTE to DCE, and a left arrow (<—) indicates DCE to DTE.

Figure C-10 EIA-530 Serial Cable Assembly

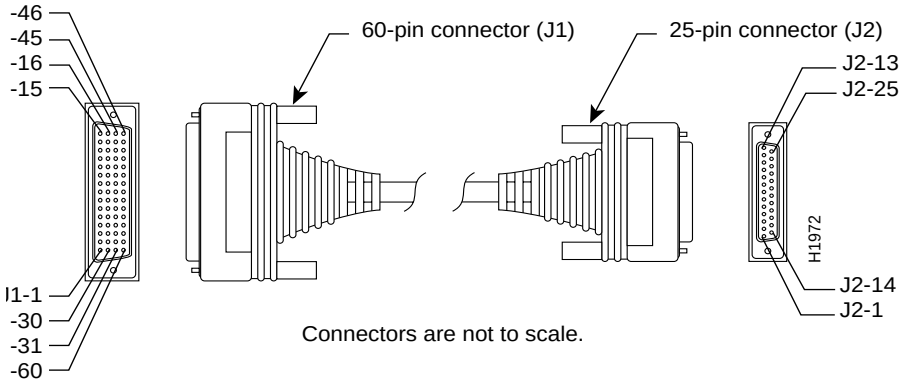


Table C-8 EIA-530 DTE Cable Pinouts (DB-60 to DB-25)

60 Pin	Signal	25 Pin	Signal	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	–	–	

Table C-8 EIA-530 DTE Cable Pinouts (DB-60 to DB-25) (Continued)

60 Pin	Signal	25 Pin	Signal	Direction DTE DCE[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. The EIA-530 interface cannot be operated in DCE mode. A DCE cable is not available for the EIA-530 interface.

EIA/TIA-232

Figure C-11 shows the EIA/TIA-232 cable assembly. Table C-9 lists the DTE pinouts. Table C-10 lists the DCE pinouts. Arrows indicate signal direction: a right arrow (—>) indicates DTE to DCE, and a left arrow (<—) indicates DCE to DTE.

Figure C-11 EIA/TIA-232 Cable Assembly

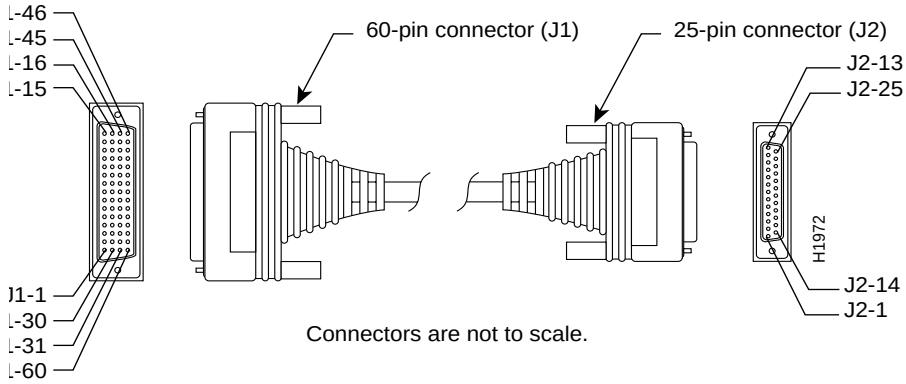


Table C-9 EIA/TIA-232 DTE Cable Pinouts (DB-60 to DB-25)

60 Pin	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 –

Table C-9 EIA/TIA-232 DTE Cable Pinouts (DB-60 to DB-25) (Continued)

60 Pin	Signal	Description	Direction	25 Pin	Signal
J1-33	DCD/LL	Twisted pair no. 12	<—	J2-8	DCD
Shield	–		–	Shield	–
J1-37	TxC/NIL	Twisted pair no. 8	<—	J2-15	TxC
Shield	–		–	Shield	–
J1-38	RxC/TxCE	Twisted pair no. 7	<—	J2-17	RxC
Shield	–		–	Shield	–
J1-44	LL/DCD	Twisted pair no. 2	—>	J2-18	LTST
Shield	–		–	Shield	–
J1-43	DTR/DSR	Twisted pair no. 3	—>	J2-20	DTR
Shield	–		–	Shield	–
J1-39	TxCE/TxC	Twisted pair no. 6	—>	J2-24	TxCE
Shield	–		–	Shield	–

Table C-10 EIA/TIA-232 DCE Cable Pinouts (DB-60 to DB-25)

60 Pin	Signal	Description	Direction	25 Pin	Signal
J1-50	MODE_0	Shorting group	–	–	–
J1-51	GND				
J1-46	Shield GND	Single	–	J2-1	Shield GND
J1-36	RxD/TxD	Twisted pair no. 9	<—	J2-2	TxD
Shield	–		–	Shield	–
J1-41	TxD/RxD	Twisted pair no. 5	—>	J2-3	RxD
Shield	–		–	Shield	–
J1-35	CTS/RTS	Twisted pair no. 10	<—	J2-4	RTS
Shield	–		–	Shield	–
J1-42	RTS/CTS	Twisted pair no. 4	—>	J2-5	CTS
Shield	–		–	Shield	–
J1-43	DTR/DSR	Twisted pair no. 3	—>	J2-6	DSR
Shield	–		–	Shield	–

Table C-10 EIA/TIA-232 DCE Cable Pinouts (DB-60 to DB-25) (Continued)

60 Pin	Signal	Description	Direction	25 Pin	Signal
J1-45	Circuit GND	Twisted pair no. 1	–	J2-7	Circuit GND
Shield	–		–	Shield	
J1-44	LL/DCD	Twisted pair no. 2	—>	J2-8	DCD
Shield	–		–	Shield	–
J1-39	TxCE/TxC	Twisted pair no. 7	—>	J2-15	TxC
Shield	–		–	Shield	–
J1-40	NIL/RxC	Twisted pair no. 6	—>	J2-17	RxC
Shield	–		–	Shield	–
J1-33	DCD/LL	Twisted pair no. 12	<—	J2-18	LTST
Shield	–		–	Shield	–
J1-34	DSR/DTR	Twisted pair no. 11	<—	J2-20	DTR
Shield	–		–	Shield	–
J1-38	RxC/TxCE	Twisted pair no. 8	<—	J2-24	TxCE
Shield	–		–	Shield	–

EIA/TIA-449

Figure C-12 shows the EIA/TIA-449 cable assembly. Table C-11 lists the DTE pinouts. Table C-12 lists the DCE pinouts. Arrows indicate signal direction: a right arrow (—>) indicates DTE to DCE, and a left arrow (<—) indicates DCE to DTE.

Figure C-12 EIA/TIA-449 Cable Assembly

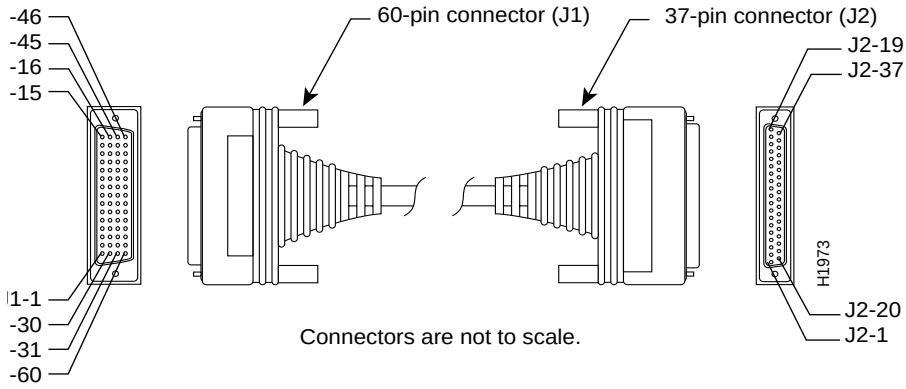


Table C-11 EIA/TIA-449 DTE Cable Pinouts (DB-60 to DB-37)

60 Pin	Signal	Description	Direction	37 Pin	Signal
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–
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–

Table C-11 EIA/TIA-449 DTE Cable Pinouts (DB-60 to DB-37) (Continued)

60 Pin	Signal	Description	Direction	37 Pin	Signal
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-12 EIA/TIA-449 DCE Cable Pinouts (DB-60 to DB-37)

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

Table C-12 EIA/TIA-449 DCE Cable Pinouts (DB-60 to DB-37) (Continued)

60 Pin	Signal	Description	Direction	37 Pin	Signal
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

Figure C-13 shows the V.35 cable assembly. Table C-13 lists the DTE pinouts. Table C-14 lists the DCE pinouts. Arrows indicate signal direction: a right arrow (—>) indicates DTE to DCE, and a left arrow (<—) indicates DCE to DTE.

Figure C-13 V.35 Cable Assembly

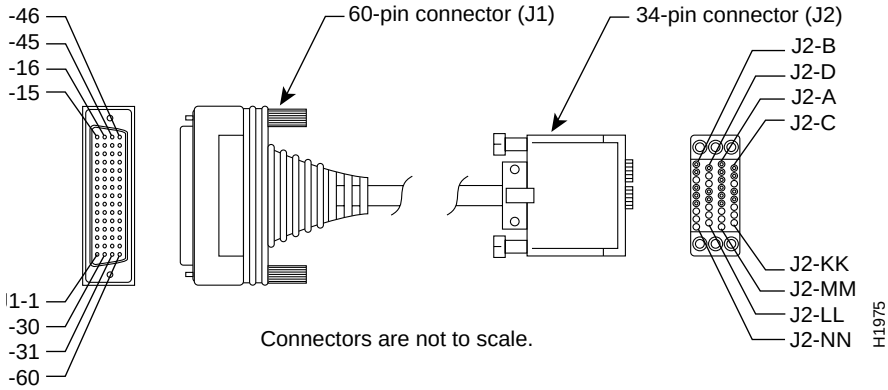


Table C-13 V.35 DTE Cable Pinouts (DB-60 to 34-Pin)

60 Pin	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-13 V.35 DTE Cable Pinouts (DB-60 to 34-Pin) (Continued)

60 Pin	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–

Table C-14 V.35 DCE Cable Pinouts (DB-60 to 34-Pin)

60 Pin	Signal	Description	Direction	34 Pin	Signal
J1-49	MODE_1	Shorting group	–	–	–
J1-48	GND				
J1-50	MODE_0	Shorting group	–	–	–
J1-51	GND				
J1-53	TxC/NIL	Shorting group	–	–	–
J1-54	RxC_TxCE				
J1-55	RxD/TxD				
J1-56	GND				

Table C-14 V.35 DCE Cable Pinouts (DB-60 to 34-Pin) (Continued)

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

X.21

Figure C-14 shows the X.21 cable assembly. Table C-15 lists the DTE pinouts. Table C-16 lists the DCE pinouts. Arrows indicate signal direction: a right arrow (—>) indicates DTE to DCE, and a left arrow (<—) indicates DCE to DTE.

Figure C-14 X.21 Cable Assembly

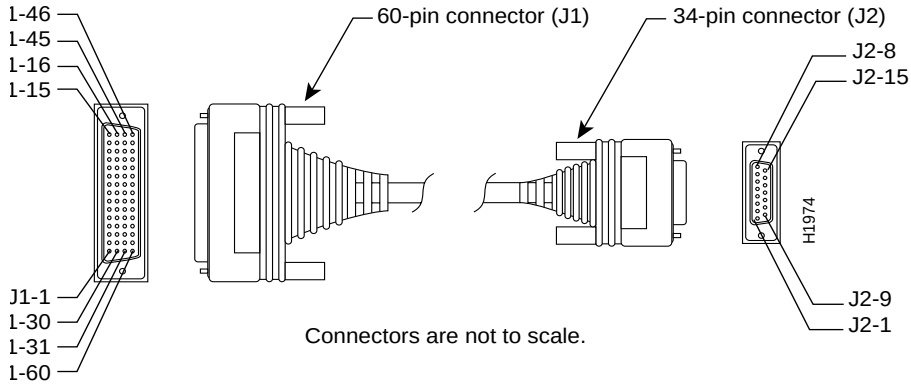


Table C-15 X.21 DTE Cable Pinouts (DB-60 to DB-15)

60 Pin	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–

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

60 Pin	Signal	Description	Direction	15 Pin	Signal
J1-28	RxD/TxD+	Twisted pair no. 6	<—	J2-4	Receive+
J1-27	RxD/TxD–		<—	J2-11	Receive–
J1-1	CTS/RTS+	Twisted pair no. 1	<—	J2-5	Indication+
J1-2	CTS/RTS–		<—	J2-12	Indication–
J1-26	RxC/TxCE+	Twisted pair no. 5	<—	J2-6	Timing+
J1-25	RxC/TxCE–		<—	J2-13	Timing–
J1-15	Control_GND	Twisted pair no. 4	–	J2-8	Control GND
Shield	–		–	Shield	–

Table C-16 X.21 DCE Cable Pinouts (DB-60 to DB-15)

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

Alarm Port Pinouts

Table C-17 lists the pinouts for the alarm port.

Table C-17 Alarm Port Pinouts

Pin	Description
1	Normally open
2	Common
3	Normally closed