Cables

This appendix lists cables that have been tested and verified for use with the Catalyst 3000. It also includes minimum pin-out information, if you use a cable that is not listed, you must verify that the cables used in your installation are wired correctly.

Note Incorrectly wired cabling is the most common cause of problems for LAN communications. Working with a qualified LAN cable installer is recommended.

The Stack Port cable is a proprietary cable. It is similar, but not equivalent to a SCSI cable. It is available in one meter lengths only.

This appendix covers the following topics:

- UTP -Unshielded Twisted-pair Cable and Connector Pin-outs and signal listing

  — 10Base-T

  — 100Base-TX Expansion Module

- AUI-Attachment Unit Interface (AUI Cable) pin-outs and signal listing

- Standard EIA(RS)-232 Cables

- Console Connector and Cable Pin-outs and listing

# Twisted-pair Cable and Connector Pin-outs

10Base-T

10Base-T ports 1 through 15 on the Catalyst 3000 are always MDI-X, and port 16 can be set to MDI-X or MDI. Cabling these ports to different types of equipment will require a straight-through or a crossover cable.

- *Straight-through cable*: MDI-X port connected to MDI port, use a straight-through connecting cable.

- *Crossover cable*: MDI-X port connected to another MDI-X port, or MDI port connected to another MDI port, use a crossover connecting cable. Connections requiring a crossover cable are discussed in the next section.

Straight-through Cable

A "straight-through" cable is used when connecting two ports that are *not* set to the same MDI mode or *not* set to the same MDI-X mode. 10Base-T ports 1 through 15 on the Catalyst 3000 are always MDI-X, and port 16 can be set to MDI-X. When connecting these MDI-X ports to ports that are MDI, such as PCs or servers, use a straight-through cable. A straight-through cable has each internal twisted pair of wires connected to the same pin number at each end. The twisted-pair wires must be twisted throughout the entire length of the cable. The wiring sequence must conform to AT&T 258A (not USOC). Figure A-1 shows the wiring diagram for a straight-through cable, and Table A-1, "10Base-T Cable Pin-Out" is a listing of the signals used on each pin.

Figure A-1   Straight-through Cable Pin-out
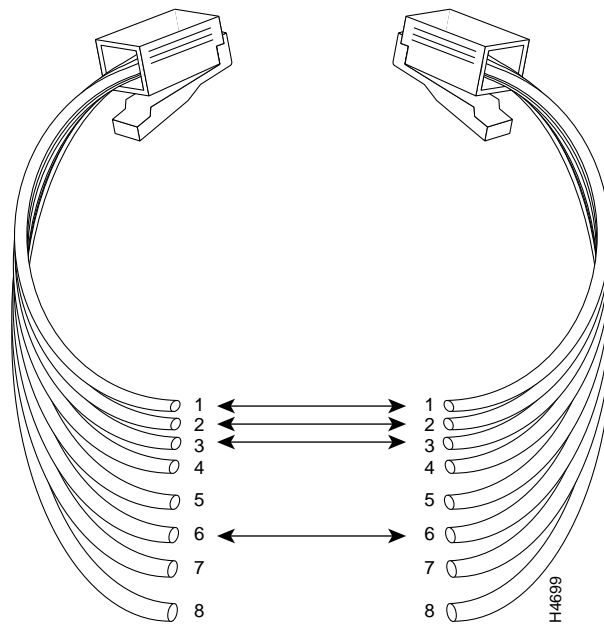
Pins 1 and 2 *must* be a twisted pair.

Pins 3 and 6 *must* be a twisted pair.

Pins 4, 5, 7, and 8 are not used in this application, although they may be wired in the cable.

The following table lists the pin numbers and their respective signal names for a 10Base-T straight-through cable.

Table A-1   **10Base-T Cable Pin-out**

| Pin	Signal	Note
1	TX+	
2	TX-	Pins 4, 5, 7, and 8
3	RX+	are not used.
6	RX-	

Crossover Cable

For cabling between two switches, the transmit and receive pairs must be reversed. You can do this in one of two ways:

1 Use a straight cable with one switch port set to MDI and the other set to MDI-X.

2 Use a crossover cable with both switch ports set to MDI or both ports set to MDI-X.

Figure A-2 shows the wiring diagram for a crossover cable.

Figure A-2   Crossover Cable Pin-out
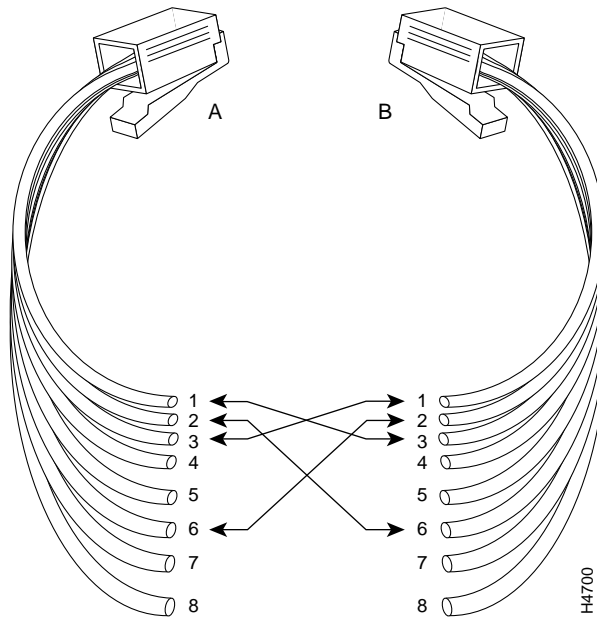
Pins 1 and 2 at A, *must* be a twisted pair wired through to pins 3 and 6, respectively, at B.

Pins 3 and 6 at A, *must* be a twisted pair wired through to pins 1 and 2, respectively, at B.

Pins 4, 5, 7, and 8 are not used in this application, although they may be wired in the cable.

A short crossover cable can be used to adapt a straight-through twisted-pair cable for "cascading" switches through the twisted-pair ports.

100Base-TX Expansion Module

The 100Base-TX expansion module network port is always MDI-X. Cabling to different types of equipment will require a straight-through or a crossover cable.

- *Straight-through cable*: If the other unit is MDI, such as a server, use a straight-through connecting cable.

- *Crossover cable*: If the module is cabled to a unit that is also MDI-X, such as another Catalyst 3000, use a crossover connecting cable.

Note   The 100Base-TX cable pin-out is the same as the 10Base-T cable pin-out. Use the 10Base-T cable information in the previous section for referencing 100Base-TX cables, whether straight or crossover.

Note   The only difference between 10Base-T and 100Base-TX cables, is that 10Base-T is a Category **3** cable, and 100Base-TX is a Category **5** cable. (Category 5 cable is usually a little heavier or stiffer than category 3 cable. Also check if the type of cable is imprinted on the cable jacket.)

AUI Cable

Table A-2   AUI Cable Pin-outs

Transceiver end 15-pin Female	Switch end 15-pin Male	Signal
2	2	Control In circuit A
3	3	Data Out circuit A
4	4	Data In circuit Shield (common drain)
5	5	Data In circuit A
6	6	Voltage common
9	9	Control In circuit B
10	10	Data Out circuit B
12	12	Data In circuit B
13	13	Voltage plus (+12 @ 500ma)

For this connection, you can use:

- meter thin AUI extension, pin 4 not connected

- 48 meter thick AUI cables

- meter thin AUI cable, pin 4 not connected

Some longer cables may have all 15 pins wired. See the IEEE 802.3 standards document for definitions of the pins not shown here.

Standard EIA(RS)-232 Cables

Table A-3   EIA-232 Cable Description

Cable Function	Port Type on Terminal, PC, or Modem	Standard Cable or Cable Solution
Connecting a terminal or PC to the console port with an EIA(RS)-232-C	25-pin female	Attach a null modem adapter‡ (Tandy Null Modem Adapter No. 26-1496 has been tested) to the console port. Then attach a straight-through modem cable to the null modem adapter.
	9-pin male	Use a Black Box PC/AT Serial Printer Cable (EVENBPC has been tested). OR: Attach a null modem adapter to the console port. Then attach a modem cable (EVENBMC and Cablex PC have been tested) to the null modem adapter.
Connecting a modem to the console port	25-pin female or male port	Straight-through EIA-232-C modem cable (standard cable)

* For these cables, the signals DTR (pin 20) and RTS (pin 4) must be on, or high, on your terminal or in your terminal emulation program.

‡ The required minimum pin-out is provided in the section "Console Connector and Cable Pin-Outs."

Console Connector and Cable Pin-outs

The Catalyst 3000 has a DB-9 console port that automatically detects baud rate. The default is 9600 baud; other supported baud rates are 1200, 2400, 4800, and 19200.

Terminal

For a terminal connection, you use a null-modem cable or a straight cable with a null modem adapter attached.

Modem

For a modem connection, you can use a standard modem (straight) cable.

Console Pin Assignments

The following table and two figures detail pin assignment information for the cables you can use on the console port of the Catalyst 3000.

Table A-4　　　**Pin-out for the Console Port Connector**

Pin	Function
1	DCD
2	RXD
3	TXD
4	DTR
5	SIG GND
6	DSR
7	RTS
8	CTS
9	RI

The following figures, (Figure A-3 and Figure A-4) detail pin assignment information for the cables you can use on the console port of the Catalyst 3000.

Figure A-3   RS-232-C Null Modem Cable (for Terminal/PC with 25-pin Connector)

```
        DB-9F                      DB-25
      Catalyst 3000            Terminal or PC

                             ┌──── 5 CTS
       DCD 1 ◄───────────────┘──── 4 RTS
       RXD 2 ◄──────────────── 2 TXD
       TXD 3 ───────────────► 3 RXD
       DTR 4 ───────────────► 6 DSR
   SIG GND 5 ──────────────── 7 SIG GND
       DSR 6 ◄──────────────── 20 DTR
       RTS 7 ───────────────► 8 DCD
       CTS 8 ───────────┘
        RI 9 ──────────────── 9 RI
```
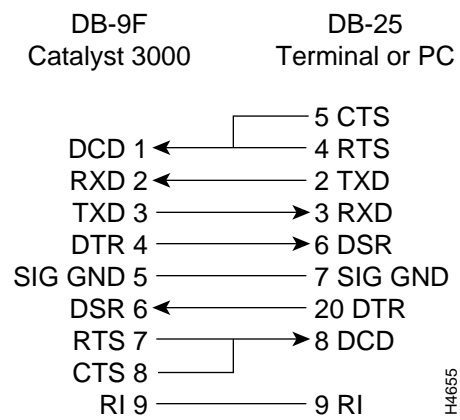
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Figure A-4   RS-232-C Null Modem Cable (for Terminal/PC with 9-pin Connector)

```
        DB-9F                      DB-9
      Catalyst 3000            Terminal or PC

                             ┌──── 8 CTS
       DCD 1 ◄───────────────┘──── 7 RTS
       RXD 2 ◄──────────────── 3 TXD
       TXD 3 ───────────────► 2 RXD
       DTR 4 ───────────────► 6 DSR
   SIG GND 5 ──────────────── 5 SIG GND
       DSR 6 ◄──────────────── 4 DTR
       RTS 7 ───────────────► 1 DCD
       CTS 8 ───────────┘
        RI 9 ──────────────── 9 RI
```

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