



Doc. No. 78-1340-01

Installing Line Cards in the CDDI/FDDI Workgroup Concentrator

Product Numbers: WS-C1521=, WS-C1524=, WS-C1531=, and WS-C1533=

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. It occurs when electronic components are improperly handled and can result in complete or intermittent failures. Always follow ESD-prevention procedures when removing and replacing components. Ensure that the chassis is electrically connected to earth ground using an ESD mat or a ground wire. Wear an ESD wrist strap, ensuring that it makes good skin contact. Connect the clip to an unpainted chassis frame surface to safely channel unwanted ESD voltages to ground. To properly guard against ESD damage and shocks, the wrist strap and cord must operate effectively. If no wrist strap is available, ground yourself by touching the metal part of the chassis.



Caution For safety, periodically check the resistance value of the antistatic strap, which should be within the range of 1 and 10 mega ohms.

About this Publication

This publication includes the procedures required to install Copper Distributed Data Interface/multilevel transmission (CDDI/MLT-3) and Fiber Distributed Data Interface (FDDI) line cards in the Workgroup Concentrator models that use these cards. The equal sign (=) appended to the product numbers designates parts as *spares*. The line cards provide master (M) and slave (S) ports.

The following sections are included:

- Cabling Requirements
 - FDDI
 - CDDI
- Line Cards
 - Line Card Installation
 - Line Card Removal

Cabling Requirements

Following are the cabling requirements for the line cards.

FDDI

The multimode FDDI connectors on the concentrator accept 62.5/125-micron or 50/125-micron multimode fiber with standard FDDI media interface connectors (MICs). The single-mode connectors accept 8.7 to 10/125-micron single-mode fiber with standard FDDI ST-type connectors. Table 1 lists FDDI distance specifications and Figure 1 and Figure 2 illustrate single-mode and multimode connectors, respectively.

Table 1 FDDI Maximum Transmission Distances

| Transceiver Type | Maximum Distance Between Stations |
|------------------|-----------------------------------|
| Single-mode | 18.6 miles (up to 30 km) |
| Multimode | 1.2 miles (up to 2 km) |

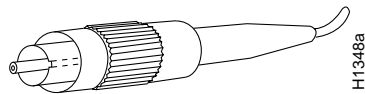


Figure 1 Single-Mode FDDI Interface Connector—ST Type

Warning Invisible laser radiation may be emitted from the aperture ports of the single-mode FDDI card when no cable is connected. *Avoid exposure and do not stare into open apertures.*

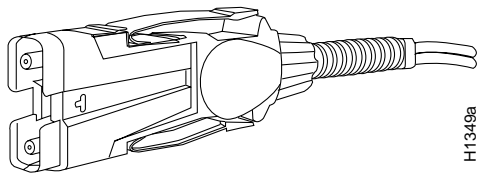


Figure 2 Multimode FDDI Interface Connector—MIC Type

CDDI

Check all existing cables for conformance with CDDI/MLT-3 distance requirements and . Following are cable and distance specifications:

- Data-grade unshielded twisted-pair (UTP)—Electronic Industries Association/Telecommunications Industries Association (EIA/TIA)-568 category 5, data-grade, modular cable is required for CDDI installations. The total length of data grade UTP cable from the switch to another switch, station, or CDDI concentrator must not exceed 330 feet (100.6 m), including patch cords and cross-connect jumpers. (See Figure 3.)
- Shielded twisted-pair (STP) wiring—You must use IBM Type 1 STP wiring for your CDDI installation. The total length of STP cable measured from the adapter or media access unit (MAU) to the switch must not exceed 330 feet (100.6 m). (See Figure 3.)

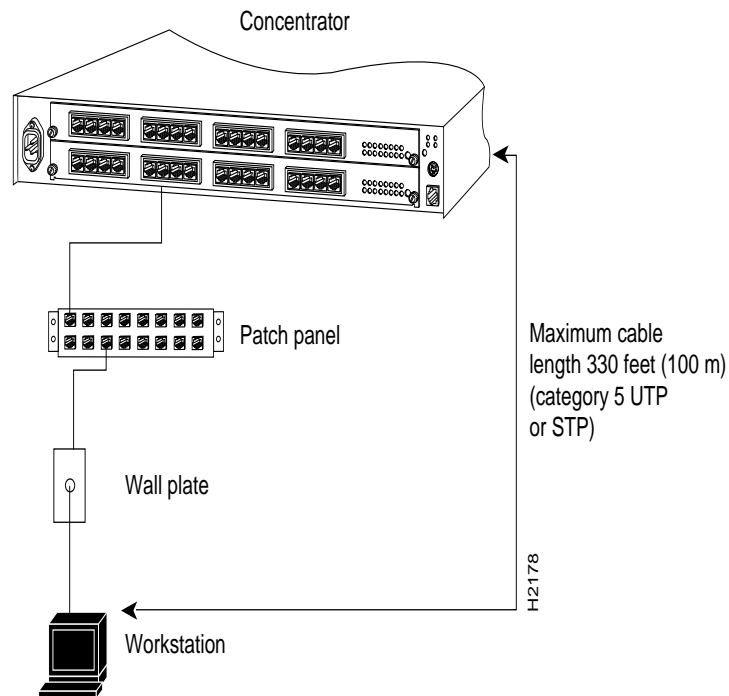


Figure 3 Category 5 UTP and STP Distance Requirement

Note You must use high-performance, category 5, data-grade, modular cross-connect cables for external CDDI connections.

When you plan your CDDI installation, remember the following:

- Use cross-connect (patch) panels that comply with the EIA/TIA 568B category 5 wiring standard.
- Do *not* use bridge taps.
- Do *not* use protection coils.
- Do *not* share services (such as voice and data on the same cable). CDDI uses two of the four pairs in the twisted-pair cable. The remaining two pairs cannot be used for other applications.
- Do *not* exceed maximum cable length for CDDI UTP and STP of 330 feet (100.6 m).

Figure 4 shows the pinout for the CDDI/MLT-3 concentrator and adapter ports for M and S ports.

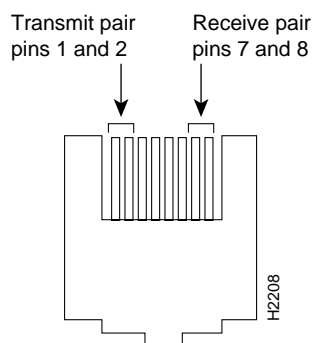


Figure 4 CDDI Concentrator Port Pin Arrangement

Following are pinouts and cabling requirements for CDDI UTP wiring. Table 2 lists the pinout used for the CDDI/MLT-3 transmit and receive pairs.

Table 2 CDDI/MLT-3 Pinout

| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| 1 | TX+ | 5 | – |
| 2 | TX– | 6 | – |
| 3 | – | 7 | RX+ |
| 4 | – | 8 | RX– |

The EIA/TIA 568B wiring scheme is recommended and is listed in Table 3.

Table 3 EIA/TIA-568B RJ-45 Wiring Scheme

| Pin | Pair | Color | Pin | Pair | Color |
|-----|------|--------------|-----|------|-------------|
| 1 | 2 | White/orange | 5 | 1 | White/blue |
| 2 | 2 | Orange | 6 | 3 | Green |
| 3 | 3 | White/green | 7 | 4 | White/brown |
| 4 | 1 | Blue | 8 | 4 | Brown |

Figure 5 shows examples of modular cross-connect cables used for CDDI/MLT-3 connections between various devices using the CDDI-FDDI translator.

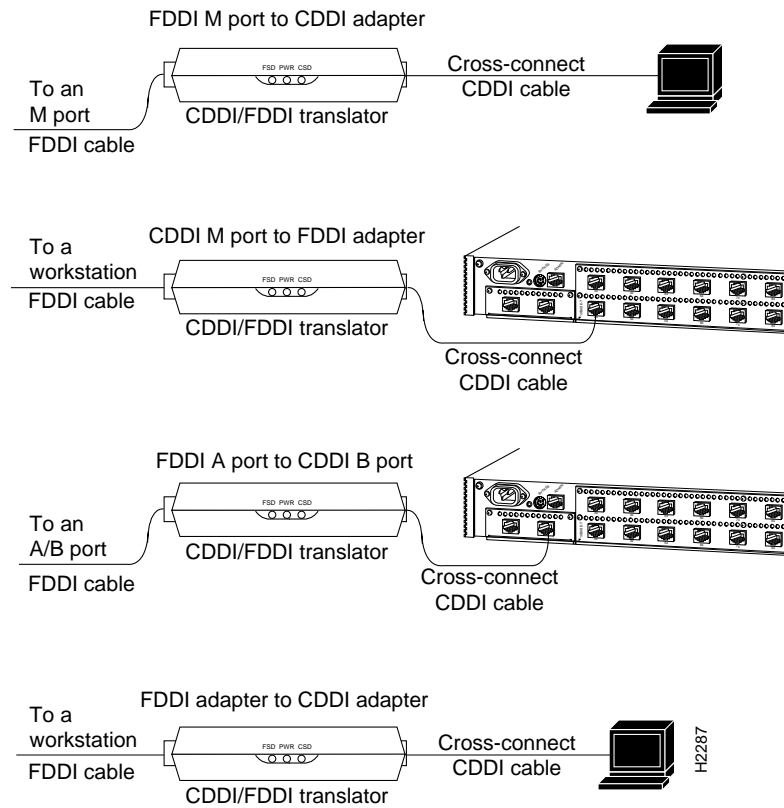


Figure 5 CDDI/MLT-3 Connections Using Cross-Connect Cable

Line Cards

The line cards are options that provide up to 16 CDDI/LT-3 or FDDI ports. The line cards support a single media access control (MAC), dual attachment station (DAS) with dual homing configuration for FDDI (can also be used as a single attachment station [SAS]). The line card slots also accept a CDDI/MLT-3 card for UTP and STP connections. The following procedures describe how to install and remove port and line cards.



Caution The concentrator must be turned off as you install and remove line cards, thereby disrupting the ring.

To add ports to the concentrator, use the optional line cards, which are shown in Figure 6. The following line-card models are available:

- WS-C1533—Eight-port CDDI/MLT-3 with category 5, UTP, modular RJ-45 connectors
- WS-C1531—Eight-port FDDI multimode fiber with FDDI MICs
- WS-C1521—Four-port FDDI multimode fiber with FDDI MICs
- WS-C1524—Four-port FDDI single-mode fiber with standard FDDI ST-type connectors

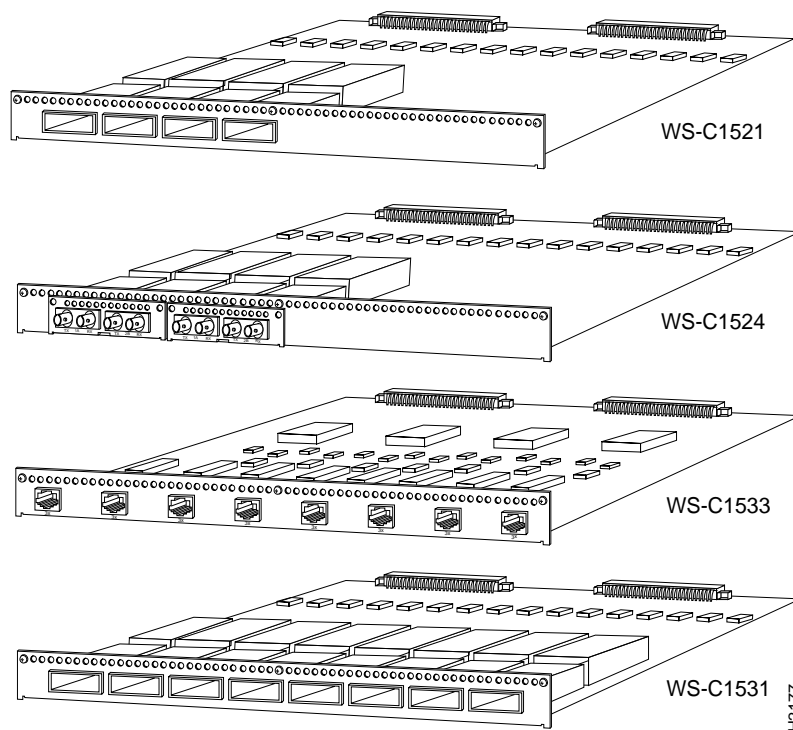


Figure 6 CDDI and FDDI Line Cards

Line Card Installation

Following is the procedure for installing a line card:

Step 1 Unplug the power cable but, to channel ESD voltages to ground, ground the chassis and attach an ESD-preventive wrist strap.



Caution To prevent damage, never install or remove a line card with power applied to the concentrator.

Step 2 Remove the three Phillips screws holding the blank plate to the concentrator.

Step 3 Slide the line card into the slot in the concentrator. (See Figure 7.) Make sure the edge of the circuit board is aligned in the plastic card guides in the concentrator.

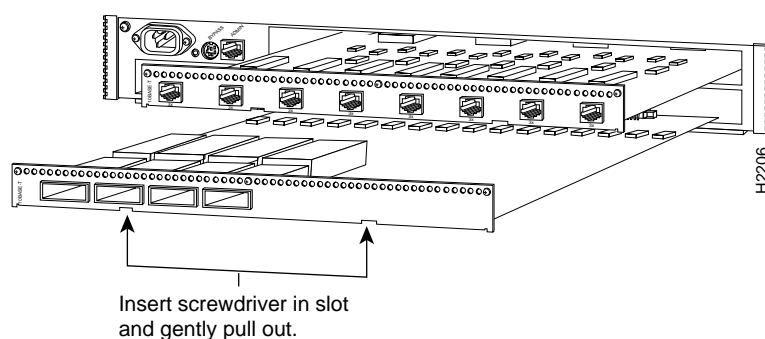


Figure 7 Installing or Removing Line Cards—WS-C1521 Shown

Step 4 Push the card into the slot until the face plate is flush and the edge connectors connect at the rear of the line card.

Step 5 Secure the card to the concentrator using the three Phillips screws supplied with the line card.

Step 6 Reinsert the power cable.

Line Card Removal

Following is the procedure for removing a line card:

Step 1 Unplug the power cable but, to channel ESD voltages to ground, ground the chassis and attach an ESD-preventive wrist strap.



Caution To prevent damage, never install or remove a line card with power applied to the concentrator.

Step 2 Remove the three screws holding the line card to the concentrator.

Step 3 Gently pry the line card out of the slot with a flat screwdriver. (See Figure 7.) After traveling approximately half an inch, the card will be free from the connector and will slide out easily.

Step 4 Place a blank plate over the opening in the concentrator and secure it with the three Phillips screws removed from the line card or refer to the section “Line Card Installation” to install a new line card.

Step 5 Reinsert the power cable.

Note For technical assistance, contact a service representative or the Cisco Technical Assistance Center (TAC) at 800 553-2447, 415 903-7209, or tac@cisco.com. For upgrade or product information, contact the Customer Response Center at 800 553-6387, 415 903-7208, or cs-rep@cisco.com.

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This document can be used in conjunction with the *CDDI/FDDI Workgroup Concentrator User Guide*, publication.

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