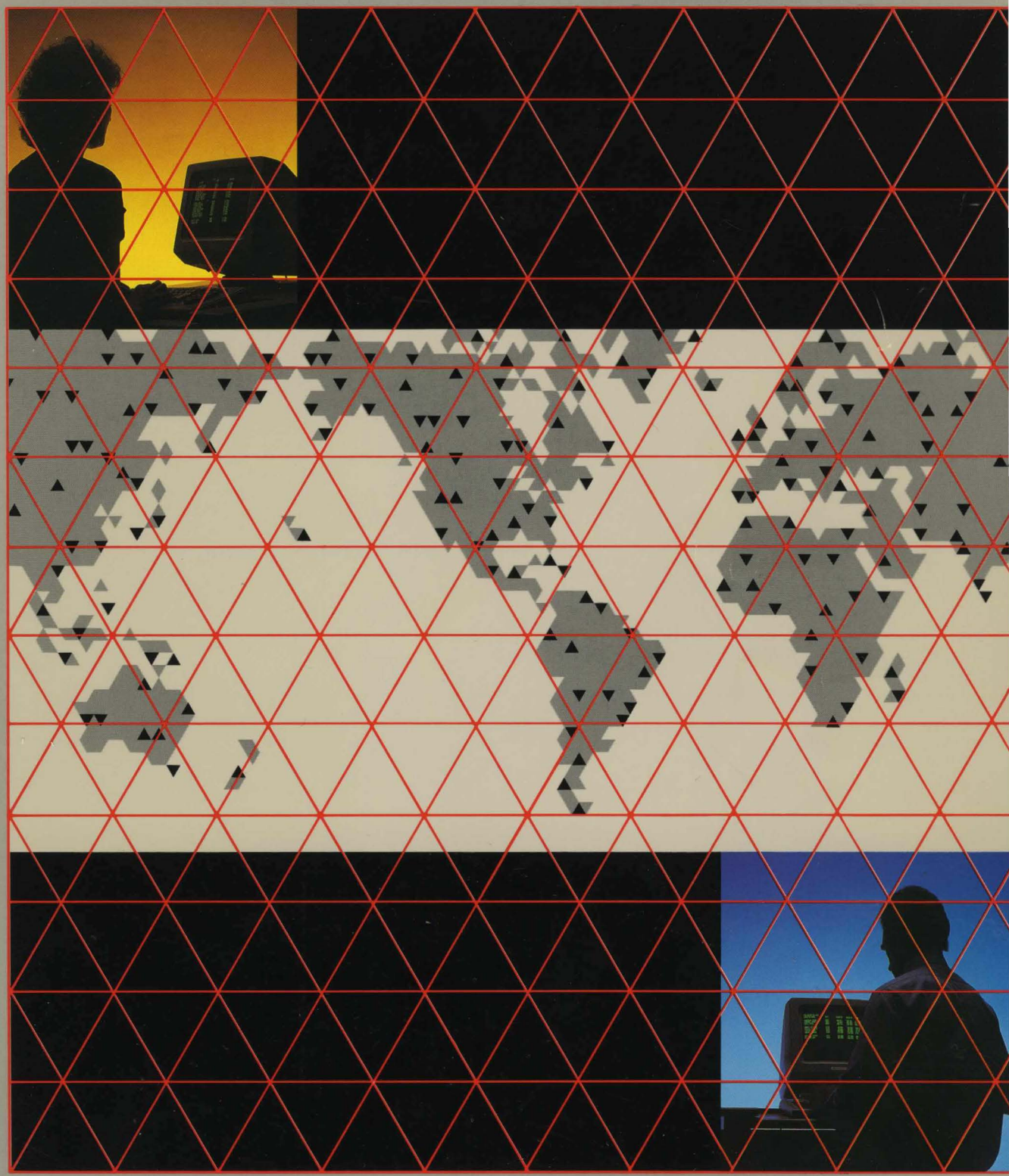
CDCNET Device Interface

Installation and Checkout Manual



60460580

CONTROL DATA

CDCNET Device Interface
Installation and Checkout Manual

This product is intended for use only as described in this document. Control Data cannot be responsible for the proper functioning of undescribed features and parameters.

Publication Number 60460580

Manual History

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A	1.0 / 647	December 1985
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E	1.3 / 700	April 1988

This manual is revision E, printed in April 1988. It reflects CDCNET version 1.3 at PSR level 700, for operation on NOS version 2.6.2 and NOS/VE version 1.3.1. This edition obsoletes all previous editions.

Changes reflected in this revision include the following:

- Added cabling information for converting a 255x to a CDCNET TDI/NDI (Appendix D)
- Removed the PTT Approval Data (Appendix C) for the RS-232-C LIM (DY229-B)
- Added LIM cable information and pin assignments (Appendix E)
- Added information on selecting the right LIM cable (Appendix C)

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About This Manual

This manual contains installation and checkout information for the following CONTROL DATA® Distributed Communications Network (CDCNET) products and associated I/O cables.

Equipment	Product	Description
DY225-A	2604-1	1024 K Byte System Main Memory Board (SMM)
DY226-A	2607-1	Mainframe Channel Interface Board (MCI)
DY227-A/B	2608-5	Ethernet[1] Serial Channel Interface Board (ESCI)
DY228-A	2609-1	Communications Interface Module (CIM)
DY229-A/B	2612-1	4-Port RS-232-C Line Interface Module (LIM)
DY230-A/B	2610-1	2-Port RS-449 Line Interface Module (LIM)
DY232-A	2605-1	128 K Byte Private Memory Module (PMM)
DY246-A	2613-1	Unit Record Interface (URI) Line Interface Module (LIM)
DY261-A	2617-1	2-Port V.35 Line Interface Module (LIM)
DY267-A	2618-1	8-Port RS-232-C Line Interface Module (LIM)
GH121-A/DY245-A	2601-2	Device Interface (DI), 240 V ac
GH120-B/DY245-A	2601-3	Device Interface (DI), 120 V ac (DY245-A Main Processor Board [MPB])
TN111-A	2630-1	Ethernet Transceiver
TN111-B	2630-3	802.3 Transceiver
TN113-A	2652-1	Maintenance Console Option (MCO)

1. Ethernet is a trademark of Xerox Corporation.

Audience

This manual is intended for individuals who install and check out CDCNET products, operate them, add options to them, and maintain them. In some cases, these individuals are CDCNET customers. In other cases, Control Data customer engineers or other maintenance personnel may perform these tasks.

It is assumed that some DI installers will have minimal technical training and experience in network products. Therefore, we've attempted to minimize technical descriptions and terms that are not necessary to perform DI installation tasks.

The DI installer is not required to use any special tools or test equipment. The tools that are needed are described at the beginning of chapter 1.

At some sites, the DI Installer function may be performed by people who have other network responsibilities, such as the network troubleshooter, network installer, or network operator. These tasks require additional information contained in other CDCNET manuals. References to these related manuals are included in this manual.

Organization

This manual describes the tasks performed by the typical DI installer, which include installing DI options; checking out the DI; and performing maintenance procedures, such as replacing logic boards and cables.

Chapter 1 contains procedures on how to install options, configure different DI variants, and run the DI self-test diagnostic.

Chapter 2 contains procedures on how to connect the DI to a network and how to check out the DI to ensure it is ready for network operation.

Chapter 3 contains the switch settings for the various CDCNET printers.

The appendixes include a glossary, an equipment number-to-product cross-reference, selecting the right LIM cable, converting a 255x cabling scheme to a CDCNET TDI/NDI cabling scheme, and LIM cable pin assignments.

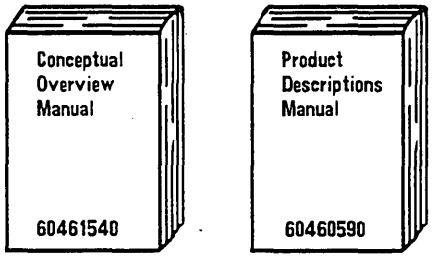
Conventions

The terms logic board, module, board, and card may be used interchangeably in this manual or other CDCNET manuals. These terms refer to printed circuit board assemblies, such as the main processor board, memory boards, line interface modules, and so on. The main backpanel and LIM backpanel are also printed circuit boards; however, they are referred to as backpanels rather than boards.

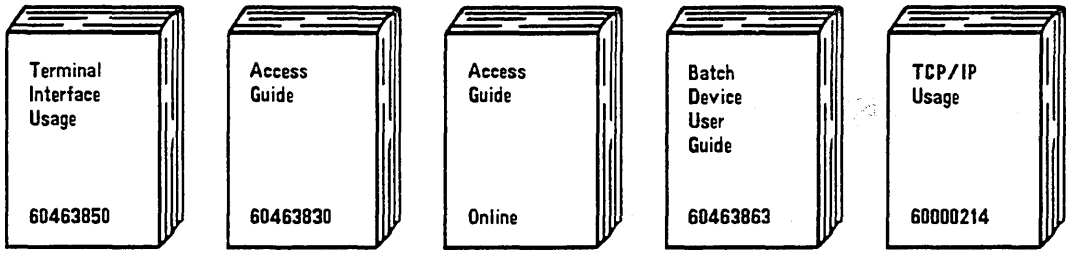
The terms Ethernet, IEEE 802.3 (Institute of Electrical and Electronic Engineers), and ISO/DIS 8802/3 ISO (International Standards Organization/Draft International Standards) are used interchangeably in this and other CDCNET manuals. Ethernet refers to network components that are compatible with the network standard developed by XEROX, INTEL, and DEC. IEEE 802.3 and ISO/DIS 8802.3 are the ANSI/IEEE (American National Standards Institute) and ISO/DIS adaptation of that standard. The term IEEE 802.3 is more precise; the term Ethernet is more commonly used in the industry. CDCNET components covered by these standards are compatible with both IEEE 802.3 and Ethernet V.2.

Related CDCNET Manuals

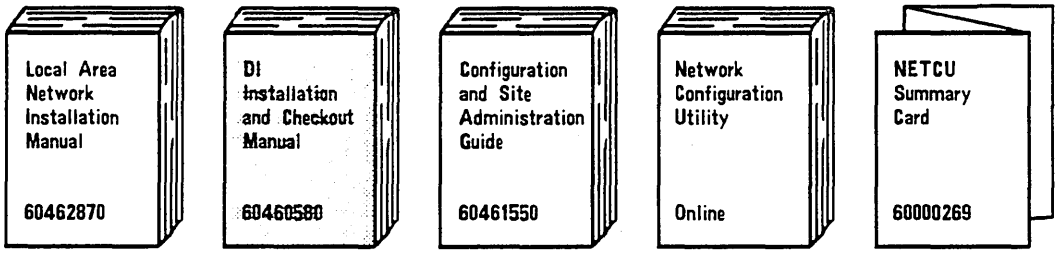
Background (access as needed):



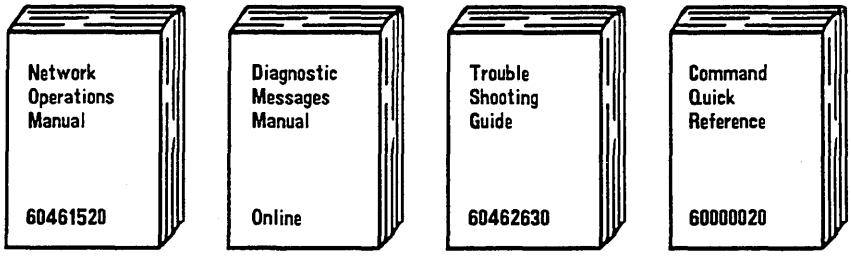
End User:



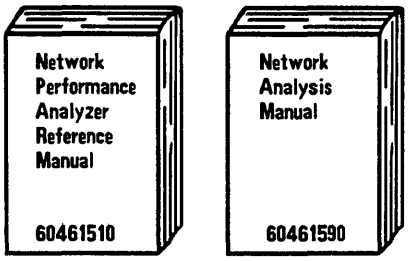
Installation and checkout manuals:



Operating and troubleshooting manuals:



Detailed Operations Information:



Additional Related Manuals

Other manuals that are necessary to maintain and understand CDCNET follow.

Manual	Publication Number
CDC ACLA Hardware Maintenance manual	74700900
CDC SCLA Hardware Maintenance manual	74700700
CDC Synchronous Bit Protocol Communications Line Adapter Hardware Maintenance manual	60470710

Additional Related Documents

The following documents provide additional information on local area networks:

- ANSI/IEEE Standard 802.3 and ISO/DIS Standard 8802/3 for Local Area Networks: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications. Available from ANSI, 1420 Broadway, New York, NY, 10018.
- CCITT V.35 Recommendations: An electrical standard established by the Consultative Committee of International Telephone and Telegraph (CCITT) for interconnection of equipment operating above 20 K bps. Available from National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA, 22161.
- CCITT V.24 Recommendations: A list of definitions for interchange circuits between data terminal and data circuit-terminating equipment. Available from National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA, 22161.
- EIA RS-232-C Standard: An electrical standard established by the Electrical and Electronic Industries Association (EIA) for the interconnection of equipment. Available from EIA, 2001 Eye Street NW, Washington, D.C., 20006.
- EIA RS-449 Standard: Defines general purpose 37-position and 9-position interfaces employing serial binary data interchange. Available from EIA, 2001 Eye Street NW, Washington, D.C., 20006.
- Ethernet Specification Version 2.0: A Local Area Network Data Link Layer and Physical Layer Specification. Available from ANSI, 1420 Broadway, New York, NY, 10018.

Ordering Manuals

Control Data manuals are available through Control Data Sales Offices or Control Data Corporation, Literature and Distribution Services, 308 North Dale Street, St. Paul, Minnesota 55103.

Submitting Comments

Control Data welcomes your comments about this manual. Your comments may include your opinion of the usefulness of this manual, your suggestions for specific improvements, and the reporting of any errors you have found.

You can submit your comments on the comment sheet on the last page of this manual. If the comment sheet has already been used, you can mail your comments on another sheet of paper to:

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St. Paul, Minnesota 55126-6198

You can also submit your comments through SOLVER, an online facility for reporting problems. To submit a documentation comment through SOLVER, do the following:

1. Report a new problem or change in existing PSR from the main SOLVER menu.
2. Respond to the prompts for site-specific information.
3. Write a comment about a manual from the new menu.
4. Respond to the prompts.

Please indicate whether you would like a written response.

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Device Interface Configuration and Checkout 1

Introduction

This chapter provides DI configuration and checkout procedures for the basic device interface (DI) and DI options. These procedures are performed by Control Data Engineering Services personnel or by customers trained by Control Data.

WARNING

The procedures in this manual were verified on the equipment under strictly controlled conditions. If you deviate from the procedures, you may injure yourself or damage the equipment.

Before You Start

Determine where you are going to do the DI configuration and checkout. If you are going to work on several DIs, consider doing the installation and checkout in one area then moving the DIs to the network locations. If you have only one or two DIs to assemble, you may want to unpack and assemble them near the permanent network location (computer room, office, etc.).

NOTE

The DI is classified as Category 2 Equipment, as defined in the American National Standards (ANSI) S1.29. This standard specifies that Category 2 Equipment is intended for installation in large offices or retail stores, including data processing systems (that are not in special computer rooms) serving several local or remote work stations. Therefore, the DI should not be installed in private offices or other small areas.

Make sure there is a table or workbench available on which to set the DI while you are working on it, and that there is an ac power receptacle within 8 feet.

NOTE

Two persons are required to move an assembled (all boards installed) DI. If one person must do the assembly, the cabinet must be positioned and assembled at the permanent network location (DI cabinet or equipment rack).

Required Tools

- A 3/16-inch Allen wrench for locking/unlocking the DI door.
- A Phillips screwdriver for installing connector plates on the back of the DI.
- A static-discharge wrist guard to prevent static electricity from damaging the logic boards.
- A ball-point pen, metal paper clip, or small tool for setting switches on the logic boards.
- Tie wraps for securing cables in the cabinet.
- A needle-nose pliers or similar tool for installing jumper straps on the RS-449 model A LIM boards.
- An RS-232-C ASCII terminal (optional) for entering the system identifier.

Unpacking the DI

The DI cabinet is shipped without logic boards and is packaged in a carton marked GH121 or GH120.

CAUTION

If a DI must be shipped to another site or building, be sure to remove all logic boards before shipping.

Each logic board (and associated cable, if required) is shipped in a separate package, as shown in figure 1-1. The equipment number of the assembly is listed on the outside of the package.

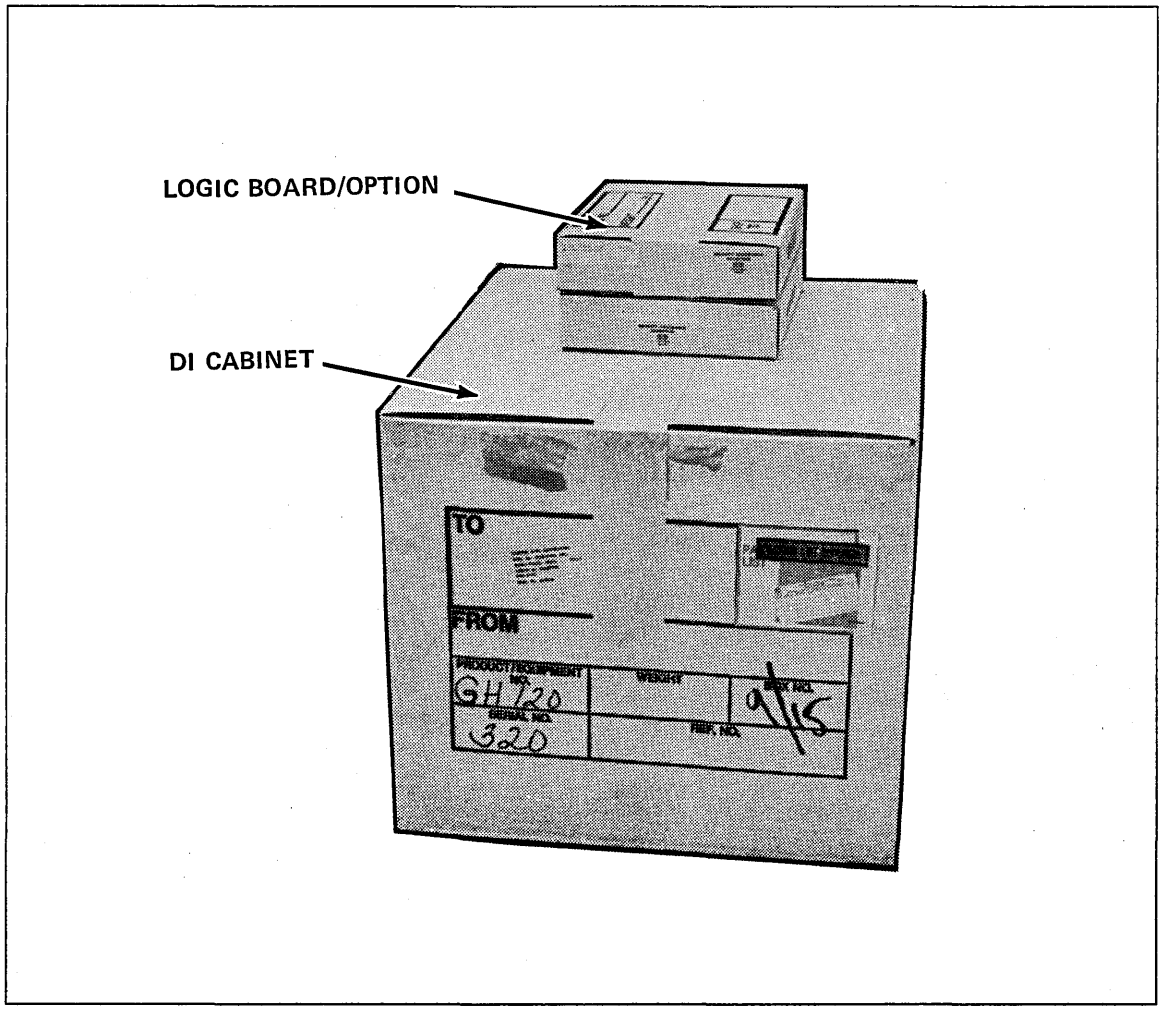

Figure 1-1. DI Cabinet and Options Shipping Cartons

Unpack the DI cabinet (figure 1-2) and check for obvious damage or loose mechanical connections. Report all damage by following the instructions on the shipping carton.

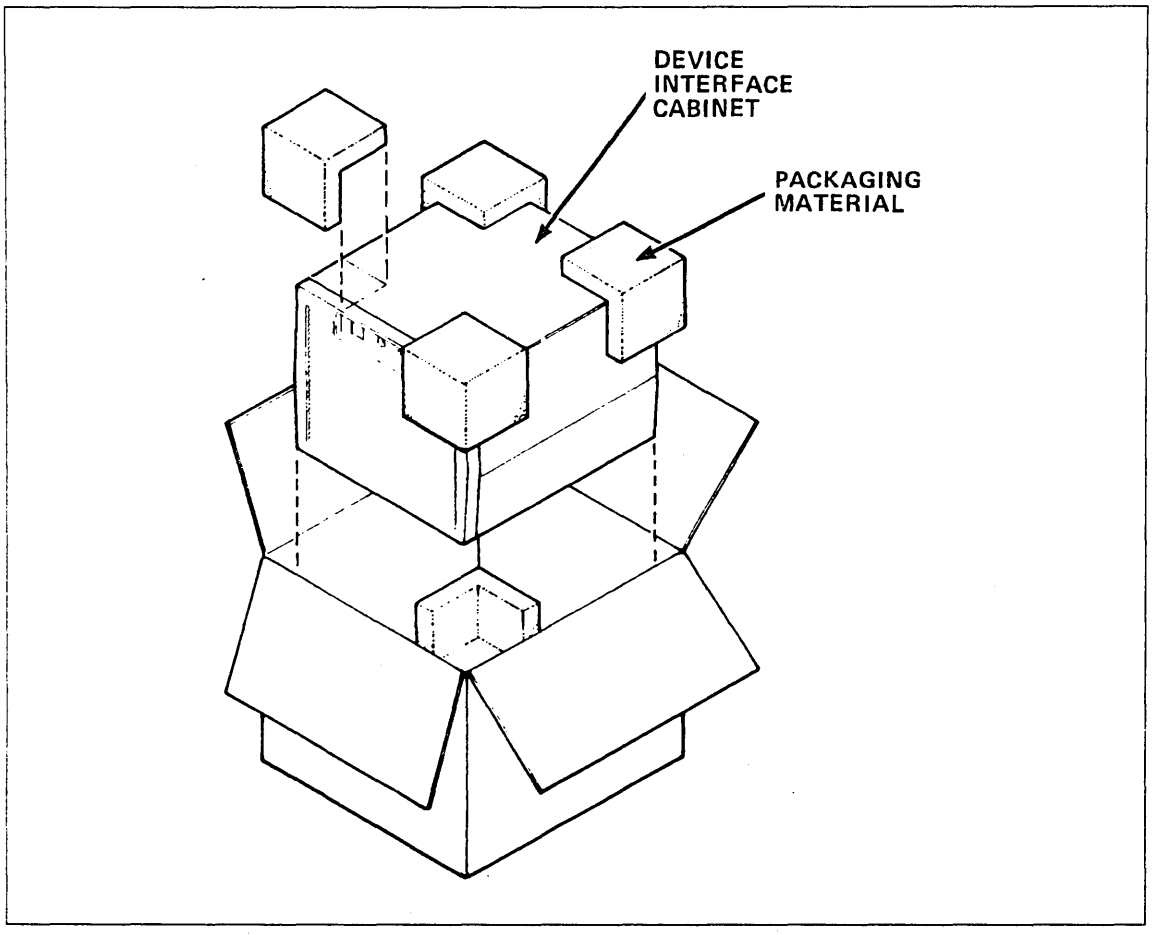

Figure 1-2. Unpacking the DI Cabinet

DI Cabinet Checkout Procedure

1. Verify that the DI equipment label (figure 1-3) on the back of the DI cabinet specifies the correct input power for your site: either 120 V ac or 240 V ac.

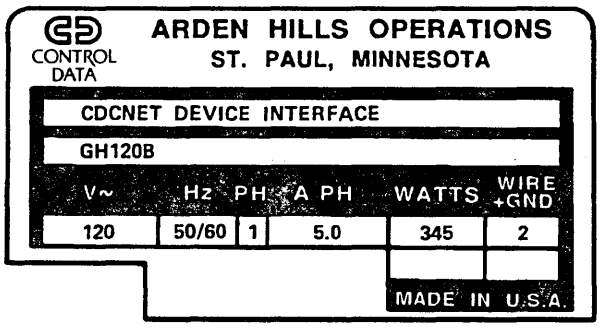

Figure 1-3. DI Equipment Label

2. Place the DI on a table or workbench. Position it so that you have access to both front and back.

3. Open the cabinet door. Use a 3/16-inch Allen wrench to turn the locking screw at the top-center of the door counterclockwise. Refer to figure 1-4.

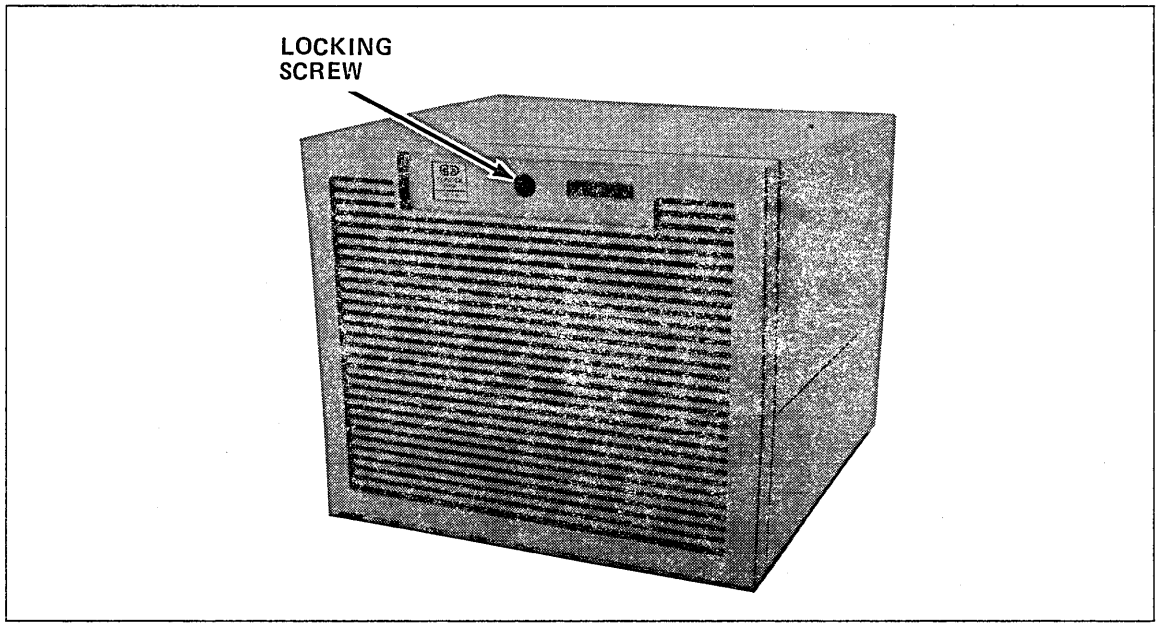

Figure 1-4. DI Cabinet Door Locking Screw

4. With the cabinet door open, refer to figure 1-5 to identify the major cabinet components that are referenced in the remainder of this chapter.

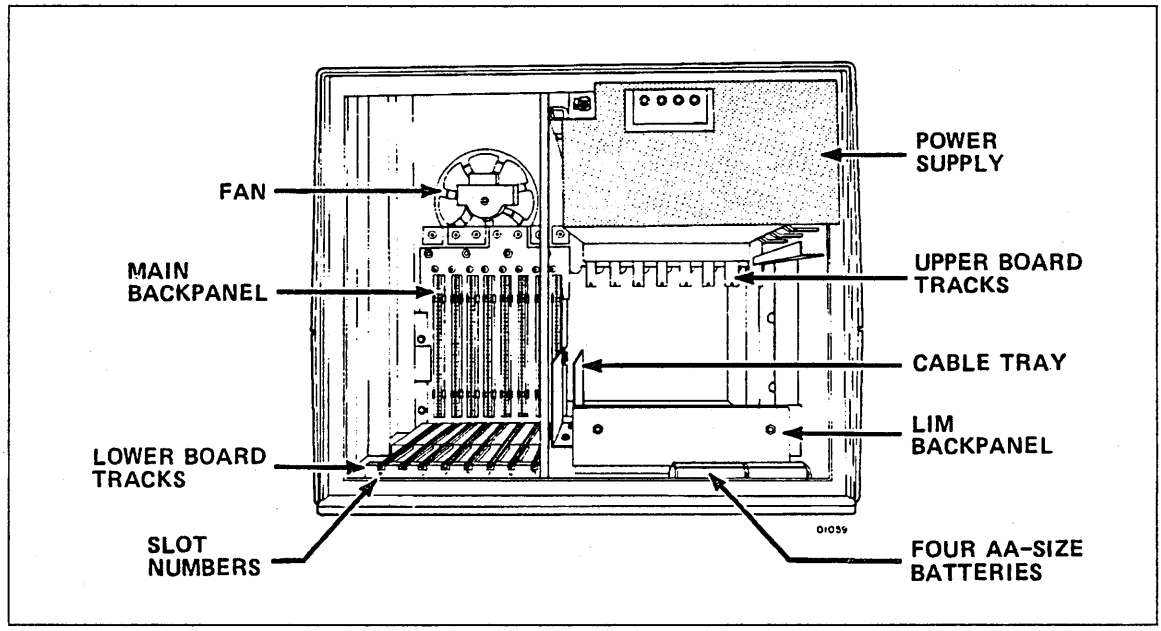

Figure 1-5. DI Cabinet Major Components - Front View

5. Check that the four AA batteries are installed on the battery holder; the location of the batteries is shown in figure 1-5. When batteries require replacement, use only alkaline type.

6. Refer to figure 1-6 to identify components on the back of the DI cabinet.

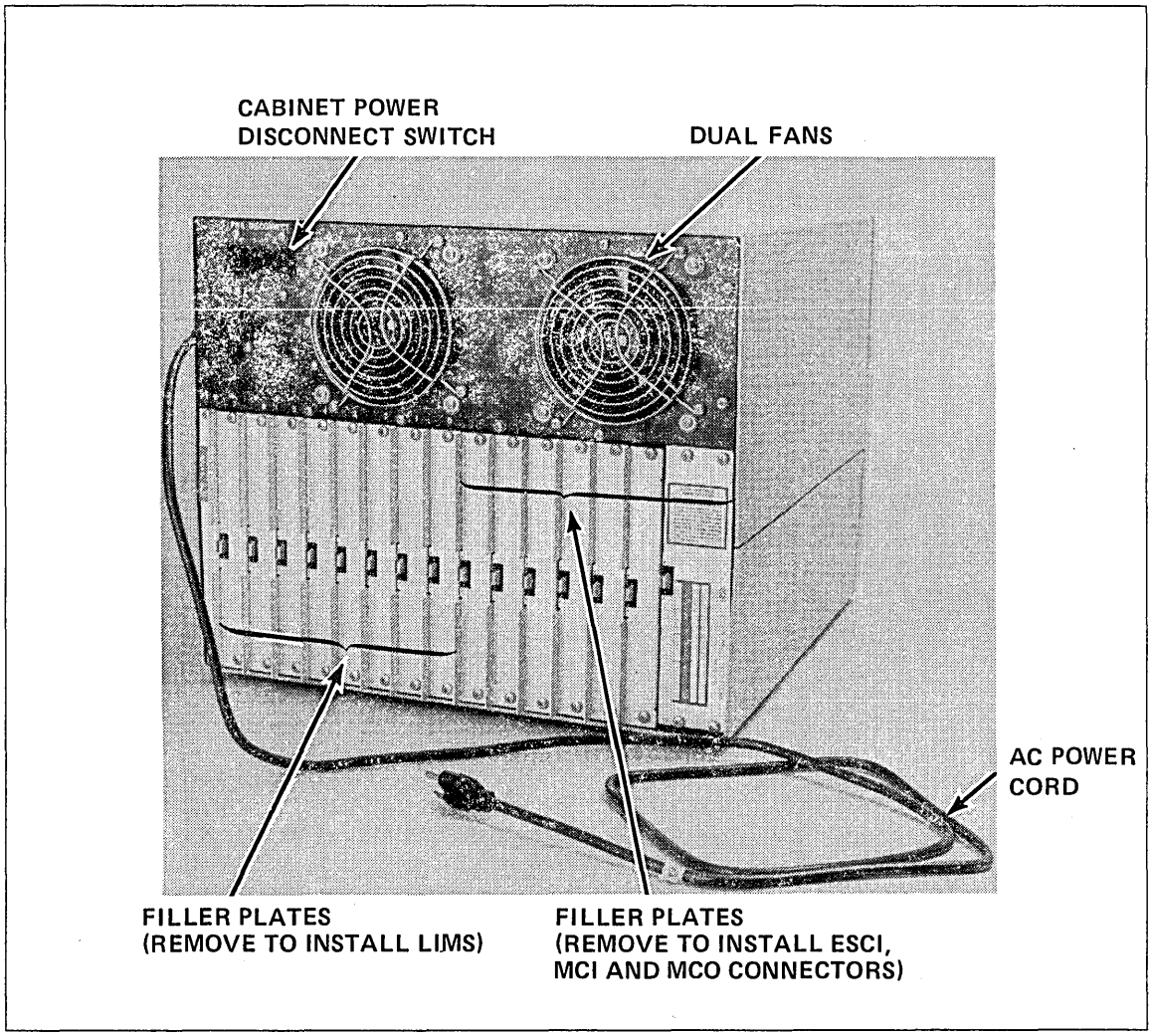

Figure 1-6. DI Cabinet Components - Back View

7. Connect the ac power cord that is packaged inside the DI cabinet.

   120 V cord, Control Data Part Number 15165432
   240 V cord, Control Data Part Number 15165427

   Plug one end of the power cord into the receptacle on the back of the DI, and the other end into an ac power receptacle.

8. Turn on DI power. The power switch/circuit breaker is labeled PWR DISCONNECT and is on the back of the cabinet, next to the ac power cord. Power is on when the switch is up (1) and off when the switch is down (0).

9. Refer to figure 1-7 and check the indicators on the front of the DI. The correct indications are as follows:

Indicator	Color	ON/OFF
BATT	YELLOW	OFF
ON	GREEN	ON
FAULT	RED	OFF
I/O	GREEN	OFF

If there are any other indications, turn off DI power immediately and consult the Troubleshooting Guide listed in About This Manual.

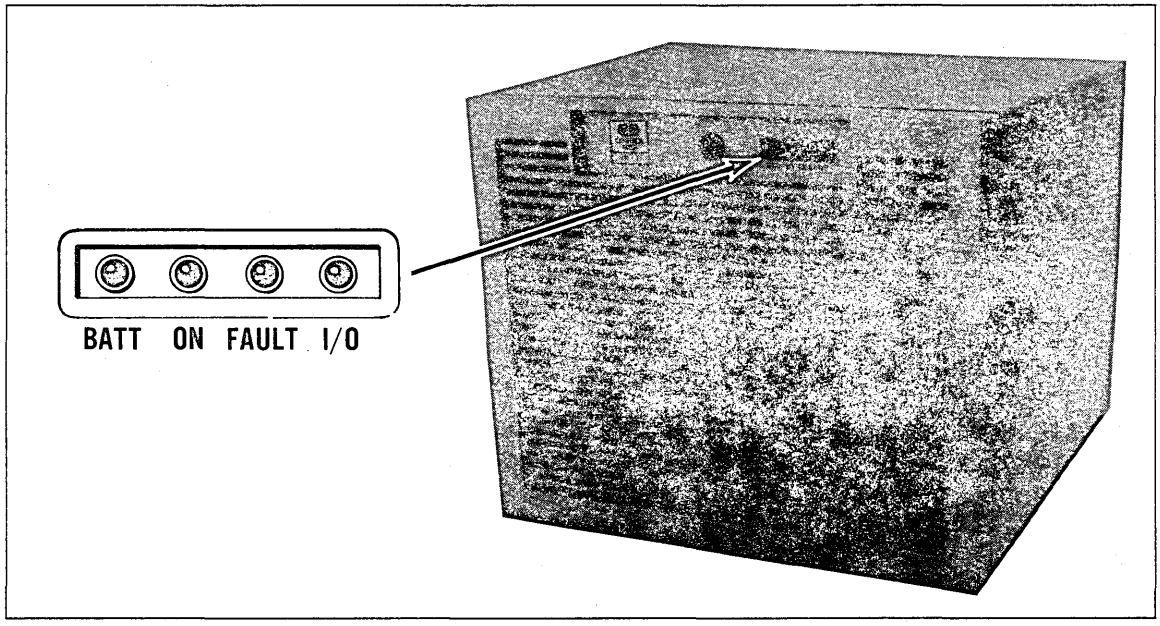

Figure 1-7. DI Cabinet Indicator Lights

10. If the ON indicator is not lit (no power) or the FAULT indicator is on (possible high cabinet temperature), turn off the DI and unplug the power cord. If your responsibilities include troubleshooting all DI failures, refer to the Troubleshooting Guide listed in About This Manual; if not, contact the individual responsible for network/DI maintenance.

11. Check that both fans on the back of the cabinet are operating. If fans are inoperable, refer to the Troubleshooting Guide (listed in About This Manual) or notify the individual responsible for network/DI maintenance.

Using the DI Installation Worksheet

Before you can install logic boards and cables, you must have all of the configuration details for each DI. This information is provided on the DI installation worksheet, supplied by the person responsible for network management, and includes type of boards, slot number, and switch settings.

The worksheet looks similar to the example in figure 1-8. Note that there is some configuration information, such as the DI serial number, that you, as the DI installer, must fill in.

CDCNET INSTALLATION WORKSHEET

CUSTOMER: DEMO CENTER

LOCATION/SITE: COMPUTER ROOM

*INSTALLED BY: JOHN SMITH, CDC ES *INSTALLATION DATE: 10/15/85

DI TYPE: MDI___ TDI___ NDI___ MTI_X_
*DI SERIAL NUMBER: S/N 987

*SYSTEM ID: 08-00-25-10-00-68-6A-88 MAINT. CONSOLE OPTION: YES X NO___

TRANSCEIVER: YES X NO___
TRANSCEIVER TYPE: CDC 2630-1, TN111-A

PRIMARY BOOT SOURCE: BOARD MCI SLOT 7

SECONDARY BOOT SOURCE: BOARD_____ SLOT_____

MCI CHANNEL PARITY: ENABLE: X DISABLE:____

MAIN BACKPANEL (LARGE BOARDS)

SLOT	BOARD	PRODUCT	EQUIPMENT	CABLE	DESC/DESTINATION
0	MPB	2601-3	GH120		120-V CAB & MPB
1	PMM	2605-1	DY232-A		128 K BYTE
2	SMM	2604-1	DY225-A		1024 K BYTE
3	EMPTY				
4	CIM	2609-1	DY228-A		Connects to LIMS 0,1,2
5	EMPTY				
6	EMPTY				
7	MCI	2607-1	DY226-A	65 FT CHAN	C170/907, CH 22

* To be completed by installer.

Figure 1-8. Sample DI Installation Worksheet

(Continued)

(Continued)

CDCNET INSTALLATION WORKSHEET

LIM BACKPANEL (SMALL BOARDS)

SLOT	BOARD	PRODUCT	EQUIP-MENT	PORT	ELECTRICAL INTERFACE	CONFIGURATION	CABLE	DESTINATION
0	RS-232-C	2612-1	DY229-B	0	RS-232-C		TN109-C	Terminal
				1	RS-232-C		TN109-B	Terminal
				2	RS-232-C		TN109-B	Terminal
				3				
1	RS-232-C	2612-1	DY229-B	0	RS-232-C		TN108-A	Modem
				1	RS-232-C		TN108-A	Modem
				2	RS-232-C		TN108-A	Modem
				3				
2	RS-232-C	2612-1	DY229-B	0	RS-232-C		TN109-C	Terminal
				1	RS-232-C		TN109-C	Terminal
				2	RS-232-C		TN109-B	Terminal
				3				
3	RS-449	2610-1	DY230-A	0	RS-422		TN101-A	Modem
				1				
				2				
				3				
4	RS-449	2610-1	DY230-B	0	RS-422		TN102-B	Terminal
				1	RS-423		TN102-C	Terminal
				2				
				3				
5				0				
				1				
				2				
				3				
6				0				
				1				
				2				
				3				
7				0				
				1				
				2				
				3				

Figure 1-8. Sample DI Installation Worksheet

The following text explains information on the sample worksheet. An asterisk (*) indicates information you must fill in.

CUSTOMER – Name of customer, corporation, division, etc.

LOCATION/SITE – "Location" can be computer room, lab, checkout area, office area, etc. "Site" may be applicable if there is more than one location at a customer building or complex.

*INSTALLED BY and INSTALLATION DATE – Fill in your name and the date of installation.

DI TYPE – One of the following should be checked: MDI (Mainframe Device Interface); TDI (Terminal Device Interface); NDI (Network Device Interface); MTI (Mainframe/Terminal Interface); or RTI (Remote Terminal Interface).

*DI SERIAL NUMBER – You must record the serial number from the identification tag on the back of the cabinet. Example: S/N987. (On some models, the serial number tag is on the plastic fold-out holder inside the door.)

*SYSTEM ID – You must record the 16-digit identifier located on a label in the plastic fold-out holder inside the DI door. Sample identifier: 08-00-25-10-00-68-6A-88.

MAINT. CONSOLE OPTION – Indicates whether or not the DI Maintenance Console Option (MCO) is to be installed.

TRANSCEIVER – A "Yes" means that a transceiver will have to be installed on the Ethernet cable. (In most cases, the transceivers are already installed as a part of site preparation.) If you have to install a Control Data transceiver, the procedure is in the Local Area Network Installation manual listed in About This Manual.

TRANSCEIVER TYPE – Must be Control Data 2630-1 or other IEEE 802.3 compatible transceivers. For installation of non-Control Data transceivers, follow the manufacturer's instructions.

PRIMARY BOOT SOURCE – The type and slot number of the primary board used to down-line load (boot) network software from the network host. This can be the mainframe channel interface (MCI) board, a communications interface module (CIM), or the Ethernet serial channel interface (ESCI) board. When you install this board, you will be told how to enable/disable the boot feature.

SECONDARY BOOT SOURCE (optional) – The type (MCI, CIM, or ESCI) and slot number of the secondary board used to down-line load (boot) network software from the network host. When you install this board, you will be told how to enable/disable the boot feature.

MCI CHANNEL PARITY – When you install the MCI board, you will have to enable or disable channel parity by setting a switch on the board.

MAIN BACKPANEL (LARGE BOARDS) – This table includes information about the logic boards to be installed in the main backpanel. It includes the following columns:

SLOT – The slot number (0 through 7) indicates the backpanel location for each board.

BOARD – The type of board to be installed in each slot. Examples: main processor board (MPB), private memory module (PMM), system main memory (SMM), communications interface module (CIM), and mainframe channel interface (MCI).

PRODUCT – Product number of each board.

EQUIPMENT – Equipment number of each board.

CABLE – Equipment number of the external cable connected to the board. (The MCI/Channel cables have an eight-digit part number but no equipment number.)

DESC/DESTINATION – The exact information may vary from site to site. It defines the destination of the PP cables (host and channel number) for MCI boards, and the transceiver cable (trunk number, transceiver number) for ESCI boards. Example: MCI Host S/N907, CH. 06; ESCI LAN-2, TX S/N204.

LIM BACKPANEL (SMALL BOARDS) – This part of the installation worksheet contains information you need to install the Line Interface Modules (LIMs).

SLOT – The slot number (0 through 7) indicates the location of each LIM in the LIM backpanel.

BOARD – Board type of the LIM. Example: RS-232-C or RS-449

PRODUCT – The product number of the LIM. Example: 2612-1

EQUIPMENT – Equipment number of the LIM. Example: DY229-B

PORT – The ELECTRICAL INTERFACE, CABLE, and DESTINATION columns contain information for each of the ports on the LIM.

ELECTRICAL INTERFACE – The type of electrical interface to which each LIM port should be configured.

CONFIGURATION – Contains information supplied by the Network Administrator. This column tells you if the clock is internal or external.

CABLE – The equipment number of the cable that connects each LIM port to another device.

DY229 (RS-232) LIMs use TN108, TN109, TN472, YA305, or YA306 cables. Four cables, in any combination, can be connected to each DY229 LIM. The A, B, or C suffix (such as TN108-B) indicates cable lengths of 10, 25, or 50 feet, respectively.

The TN108 cable connects the LIM to a modem or other data communication equipment (DCE). This cable has a 25-pin male connector to the user device.

The TN109 cable connects the LIM to a terminal or other data terminal equipment (DTE). This cable has a 25-pin female connector to the user device.

The TN472 cable connects the LIM to data terminal equipment (DTE) that uses the request-to-send (RTS) and clear-to-send (CTS) signals for hardware flow control. This cable has a 25-pin female connector to the user device.

The YA305 cable connects the LIM to a terminal or other data terminal equipment. This cable has a 25-pin male connector to the user device.

The YA306 cable connects the LIM to a DTE that uses the RTS and CTS signals for hardware flow control. This cable has a 25-pin male connector to the user device.

DY230 (RS-449) LIMs use TN101 or TN102 cables. Two cables can be connected to each DY230 LIM. The A, B, or C suffix to the cable equipment number (such as TN101-A) indicates cable lengths of 25, 50, or 190 feet, respectively.

The TN101 cable connects the LIM to a modem or other data communication equipment (DCE). This cable has a 37-pin male connector to the user device.

The TN102 cable connects the LIM to a terminal or other data terminal equipment (DTE). This cable has a 37-pin female connector to the user device.

The Unit Record Line Interface Module (URI) uses the TN484 and TN485 cables and a TN486 Winchester adapter cable. The A, B, and C suffix to the cable equipment number (such as TN484-A) indicates cable lengths of 25, 50, or 100 feet, respectively.

The TN484 cable connects the URI to Centronics printers. Current CDCNET printer support software does not use the Centronics interface.

The TN485 cable connects the URI to Data Products printers. This cable has a 50-pin male connector at the printer end.

The TN486 adapter cable mates with the 50-pin male connector on the Data Products LIM cable, providing a connection to printers requiring a 50-pin female Winchester connector.

The V.35 LIM uses the TN490, YA327, and YA326 cables. The A, B, and C suffix to the cable equipment number (such as TN490-A) indicates cable lengths of 10, 25, or 50 feet, respectively.

The TN490 connects a V.35 LIM to a modem/data set or other DCE device that requires a 34-pin male cable connector with 0.060-in diameter pins and single lead jackscrew connector locking mechanism.

The YA327 connects the LIM to a modem/data set or other DCE device that requires a 34-pin male cable connector with 0.040-in diameter pins and spring clip with guide arm connector locking mechanism.

The YA326 connects the LIM to a terminal or other DTE device that requires a 34-pin female cable connector with 0.060-in diameter pins used with single lead jackscrew connector locking mechanism.

DESTINATION – This column identifies the destination of the cable for each port. (The exact information needed to specify the destination will vary from site to site.)

After you have completed the DI installation and checkout, keep one copy of the worksheet with the DI and give another copy to the Network Administrator.

Maintenance Console Option (MCO)

Equipment Number: TN113-B

The maintenance console option (MCO) shown in figure 1-9 is an optional cable assembly that enables you to connect an ASCII terminal directly to the main processor board for certain maintenance activities.

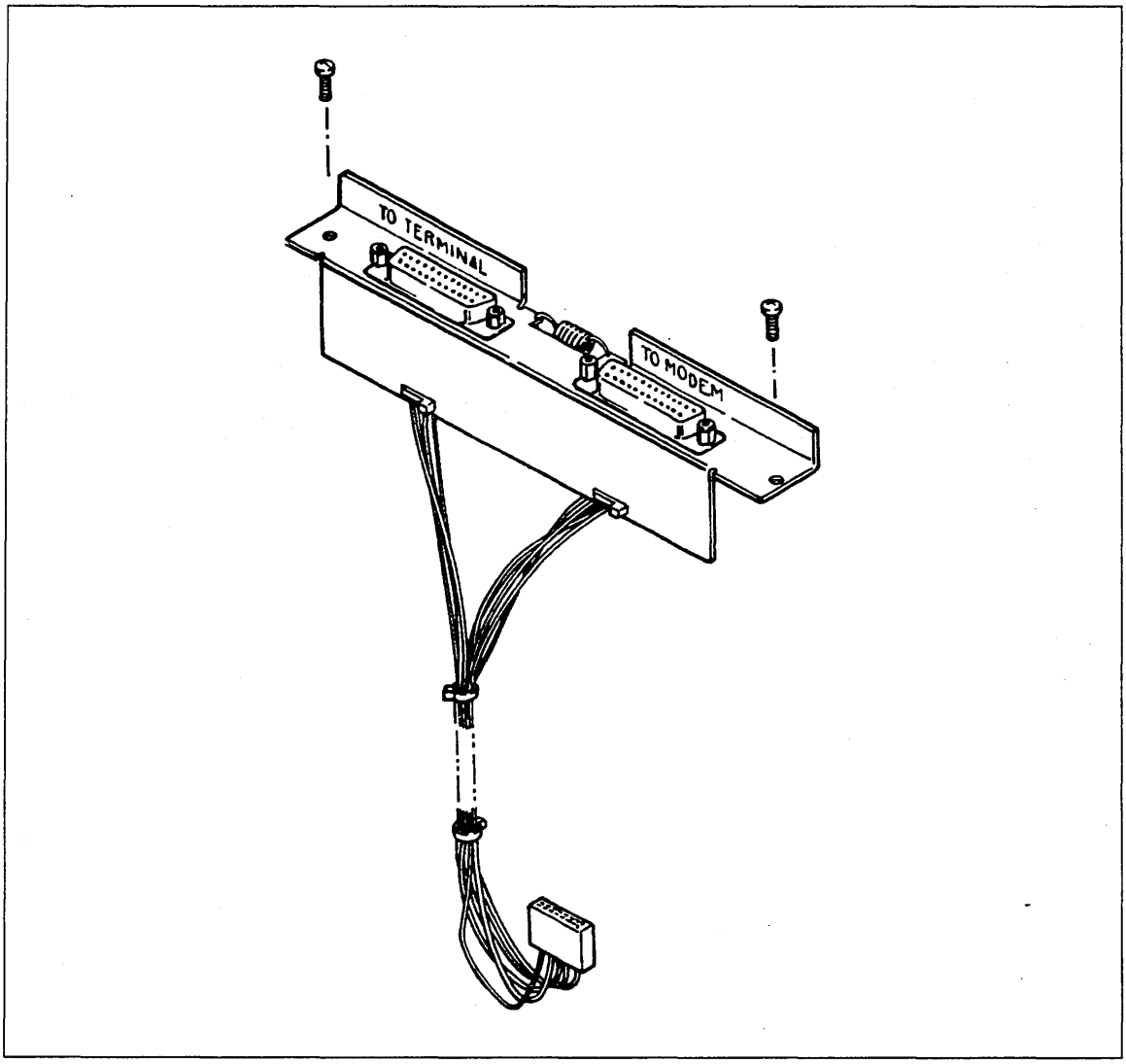

Figure 1-9. Maintenance Console Option (MCO)

Installation Procedure

1. Turn off DI power.

2. Refer to figure 1-10 and use a Phillips screwdriver to remove the two filler plates located on the far right at the back of the cabinet. Note that the rightmost plate is double width. Save the six screws for later use.

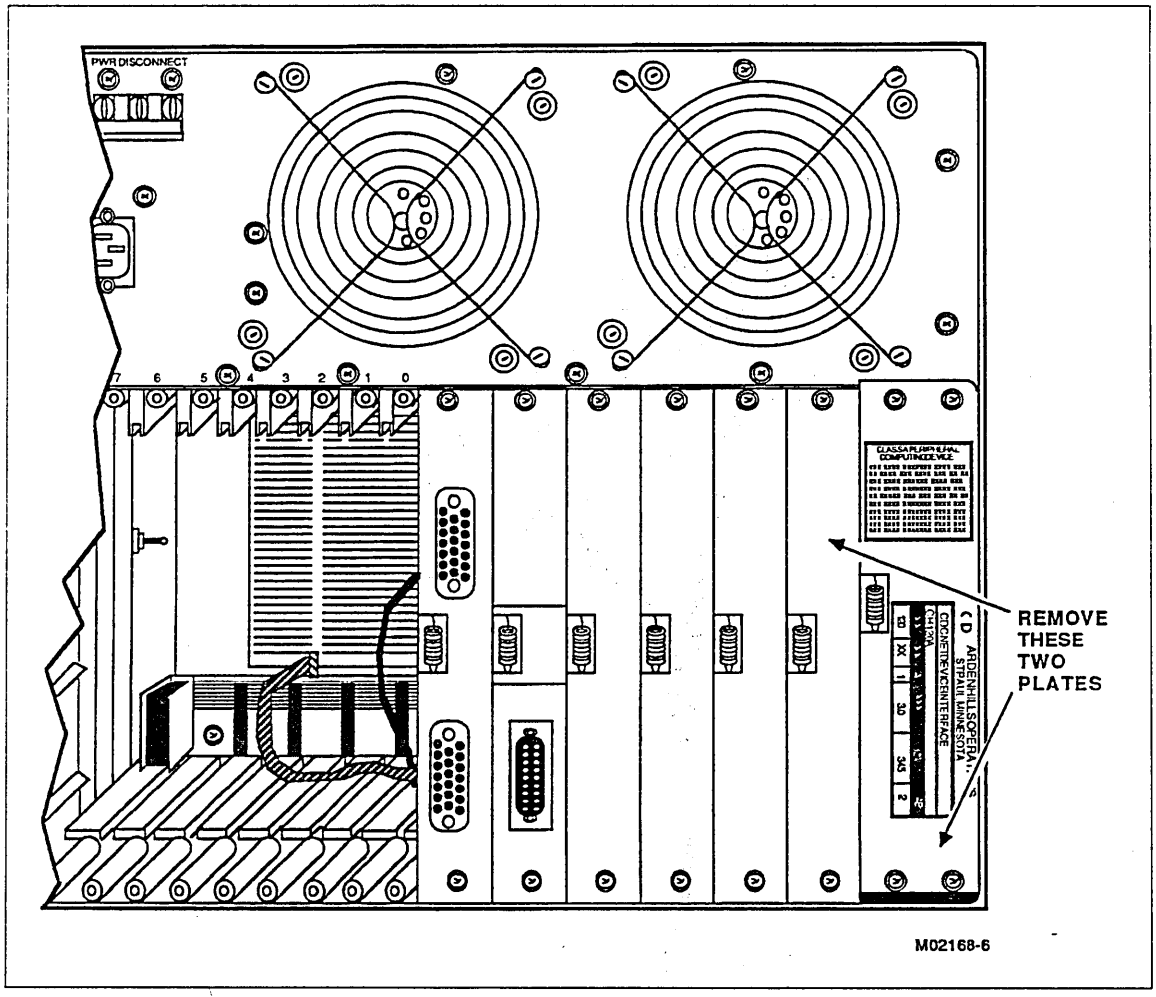

Figure 1-10. MCO Filler Plates

3. Refer to figure 1-11. Route the cable from the back of the cabinet through the rectangular opening in the backpanel exposed by removing the double-width plate.

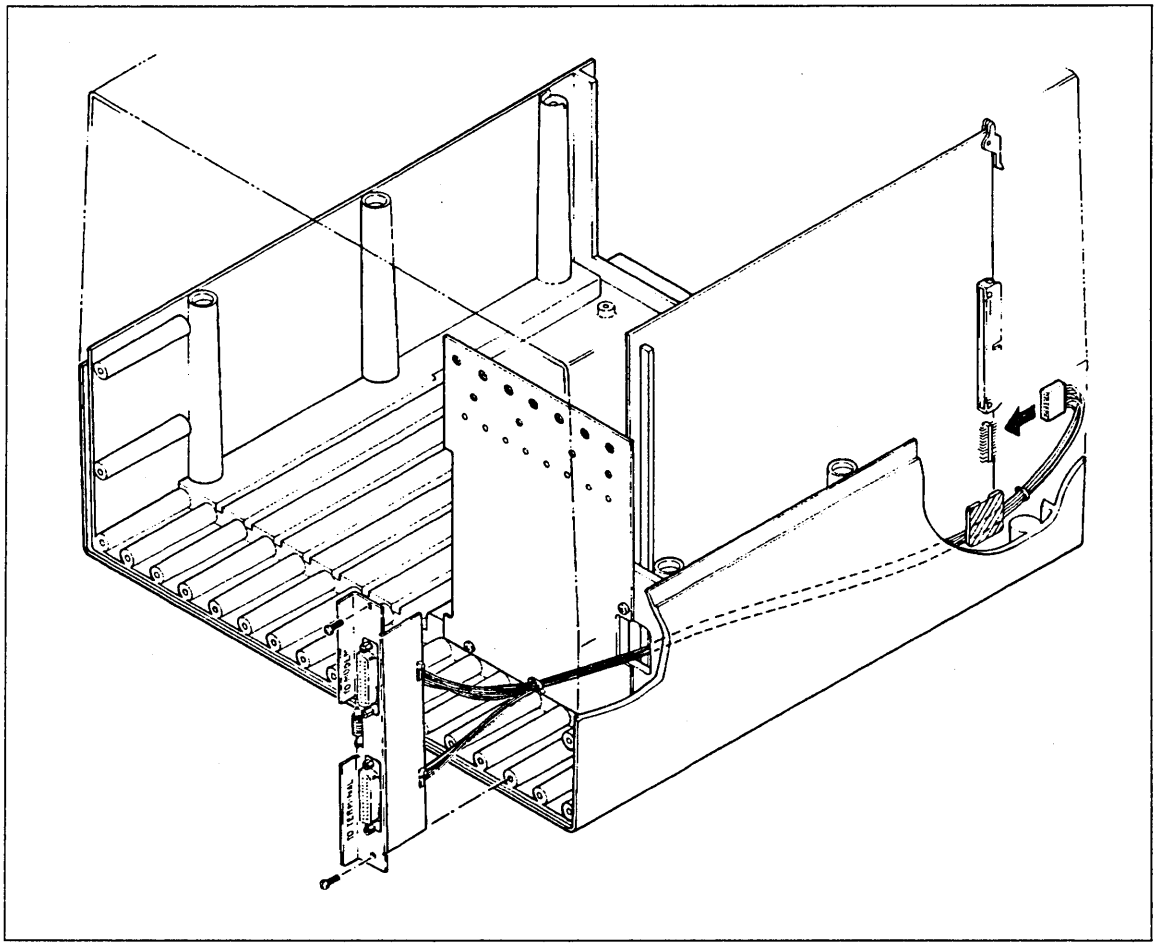

Figure 1-11. MCO Installation

4. Route the cable toward the front of the cabinet and use a tie wrap to attach it to the cable mount on the left front side of the cabinet. If the cable mount is not installed, refer to Field Change Order CA 46424.

5. Install the MCO connector plate in the location of the single-width plate which was removed in step 2. Note that the spring on the plate should be on the left.

6. Replace the double-width filler plate using the four screws removed in step 2. Figure 1-12 shows the MCO installed.

NOTE

When removing filler plates and installing connector plates on the back of the DI, make sure that all locations have either a filler plate or a connector plate. There should never be any open locations (this could cause radio-frequency interference [RFI]). Also, do not remove the springs on the filler or connector plates; they are electromagnetic filters.

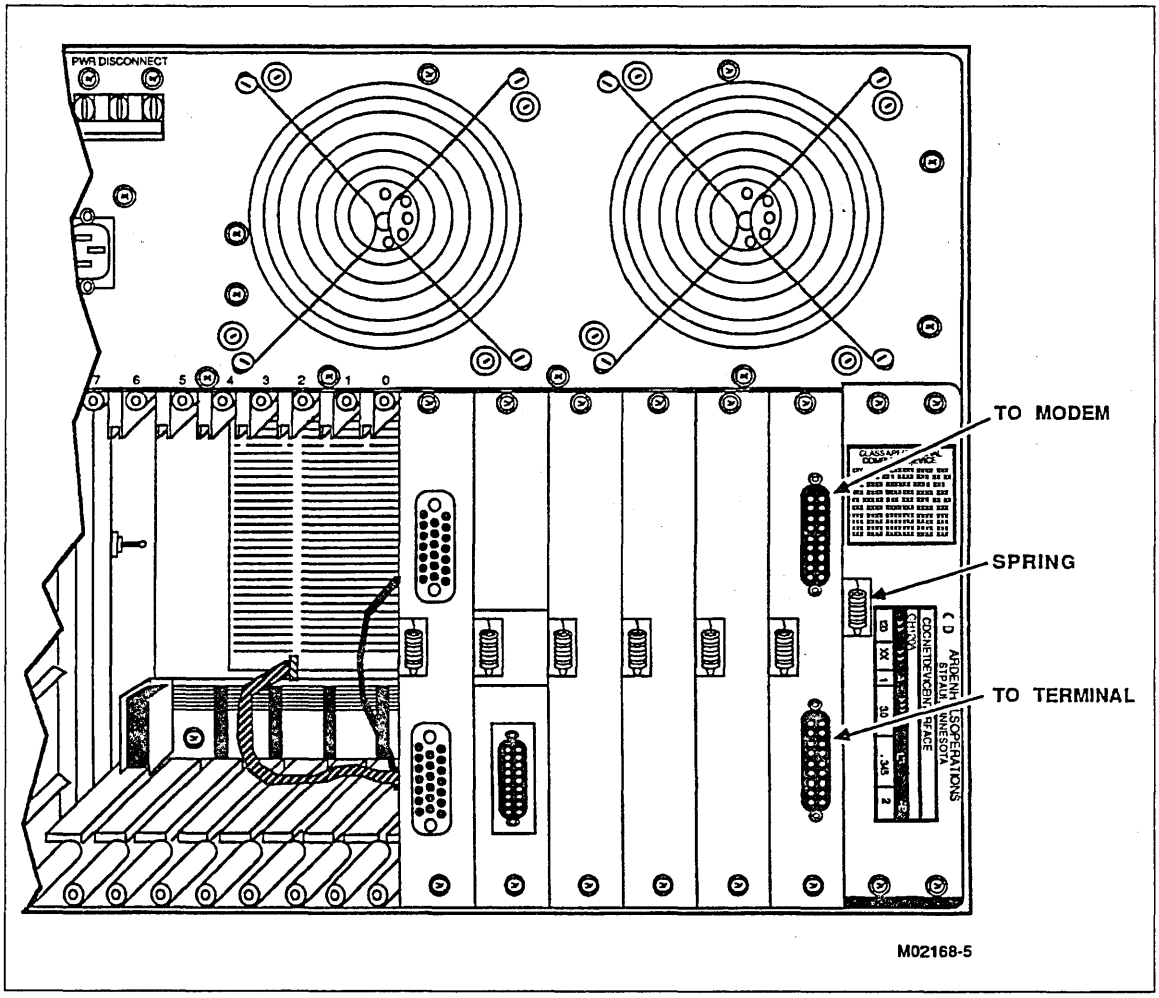

Figure 1-12. Installed MCO

Unpacking DI Logic Boards

Figure 1-13 shows typical packaging for all logic boards.

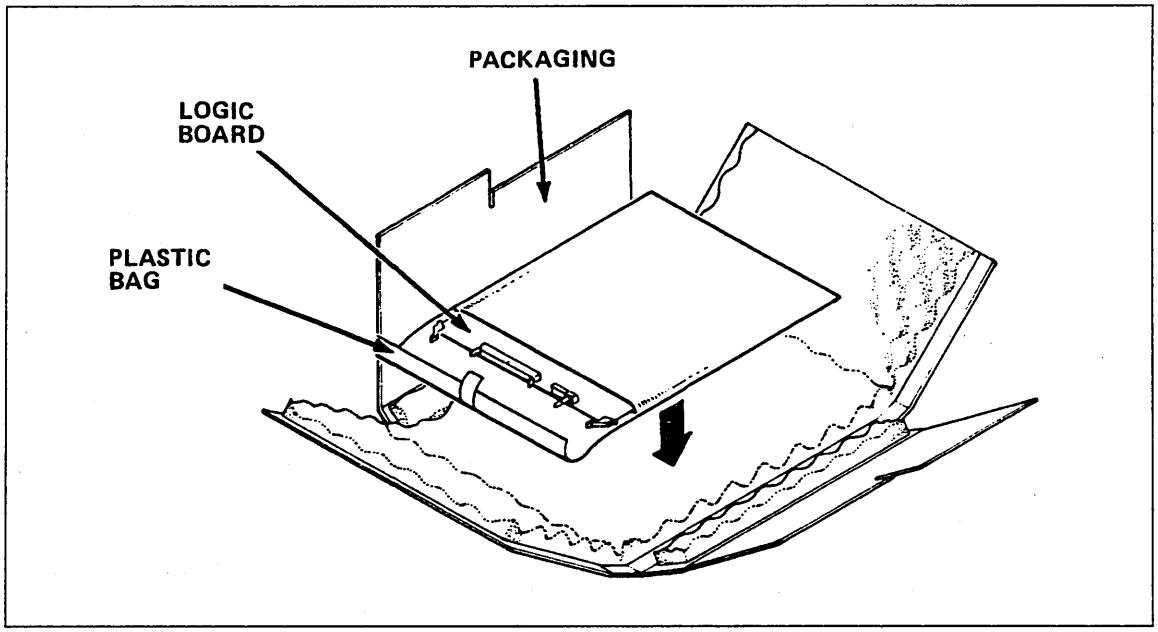

Figure 1-13. Logic Board Packaging

CAUTION

Static electricity can damage logic board circuits. Always wear a static discharge wrist strap when handling logic boards. Ground the wrist strap to the lug on the power supply as shown in figure 1-14. Do not handle the boards by the gold backpanel connectors. Always keep the boards in the electrostatic discharge (E.S.D.) bags when you are not handling them.

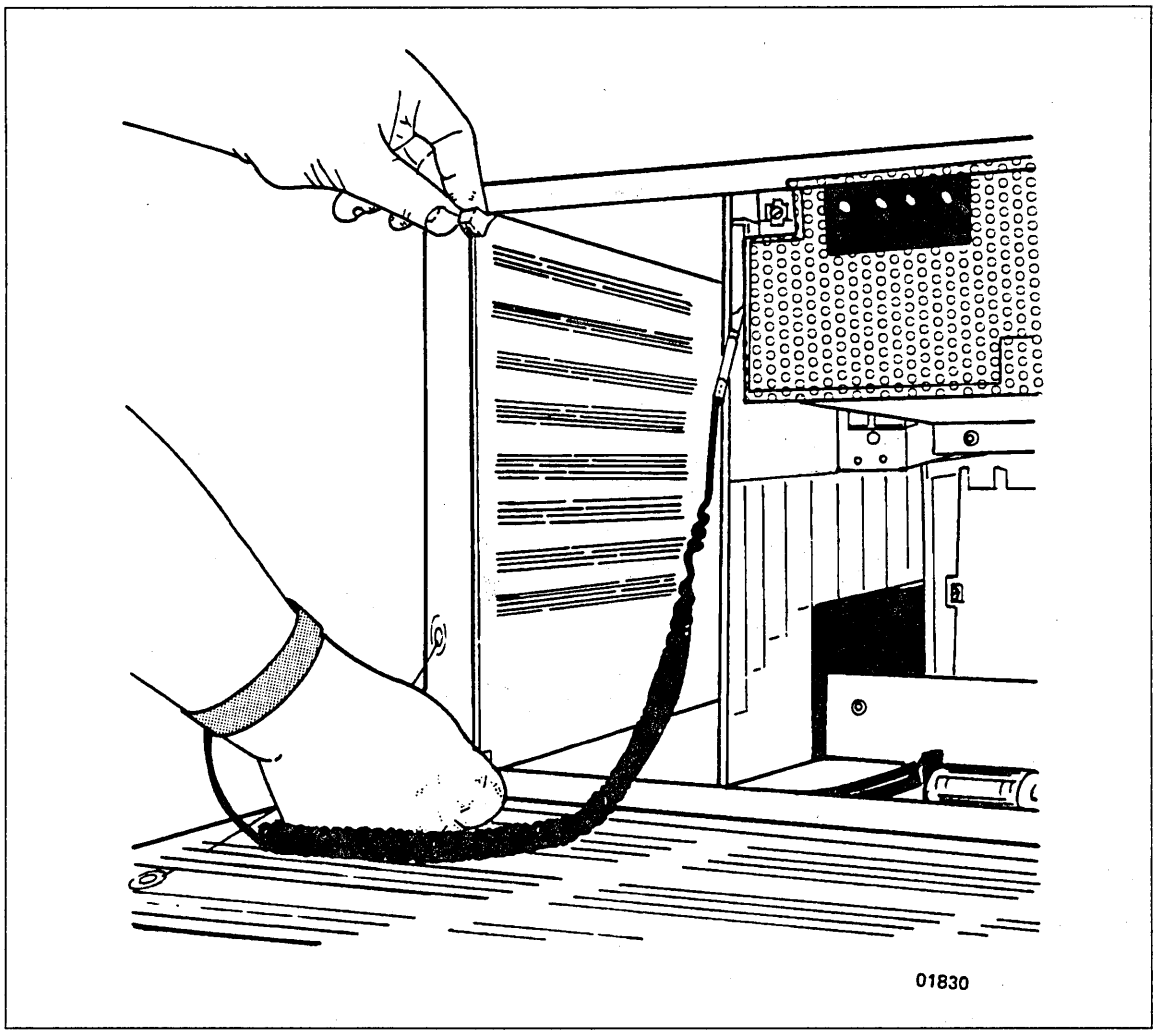

Figure 1-14. Using the Static Control Wrist Strap

NOTE

Install all logic boards with the component side on the left and make sure that the upper and lower edges of the board are guided into the upper and lower board tracks.

Main Processor Board (MPB) Installation Procedure

Equipment Number: DY245-A

1. Unpack the MPB (shown in figure 1-15), the equipment identification tag, and the FCO label. Attach the equipment identification tag and the FCO label to the plastic fold-out holder inside the DI cabinet door.

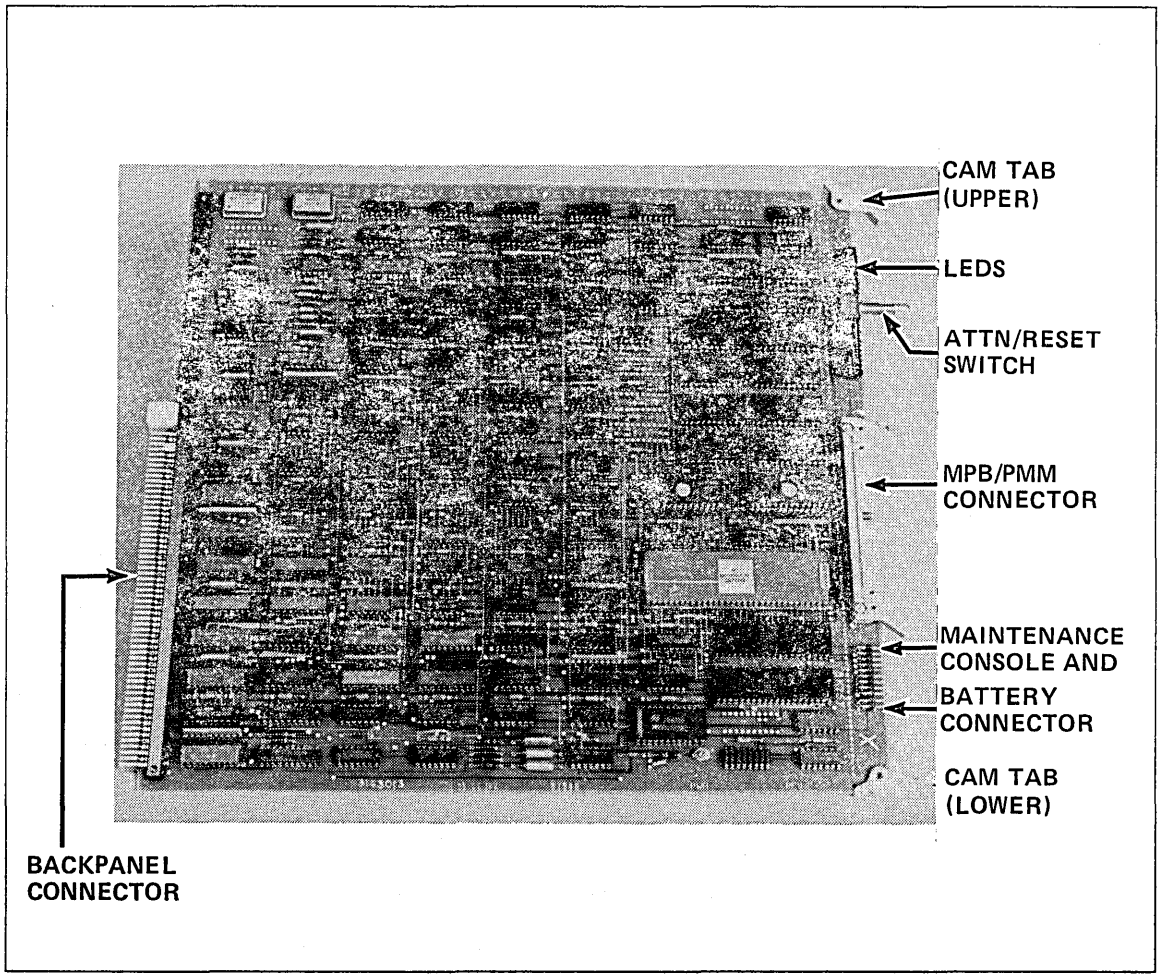

Figure 1-15. Main Processor Board (MPB)

2. If the DI power is on, turn it off.

CAUTION

Before you install the MPB, ensure that the battery and maintenance console cables are out of the way.

3. Slide the MPB into slot 0. Ensure that the cam tabs at the top and bottom of the board are pointing toward you. (Refer to the lower cam tab position in figure 1-15.) Ensure that the board is fully seated into the backpanel; then lock the board into place by pressing the top cam tab down and the bottom cam tab up.

4. Refer to figure 1-16 and route the battery cable behind the vertical support rod and to the left side of the cabinet.

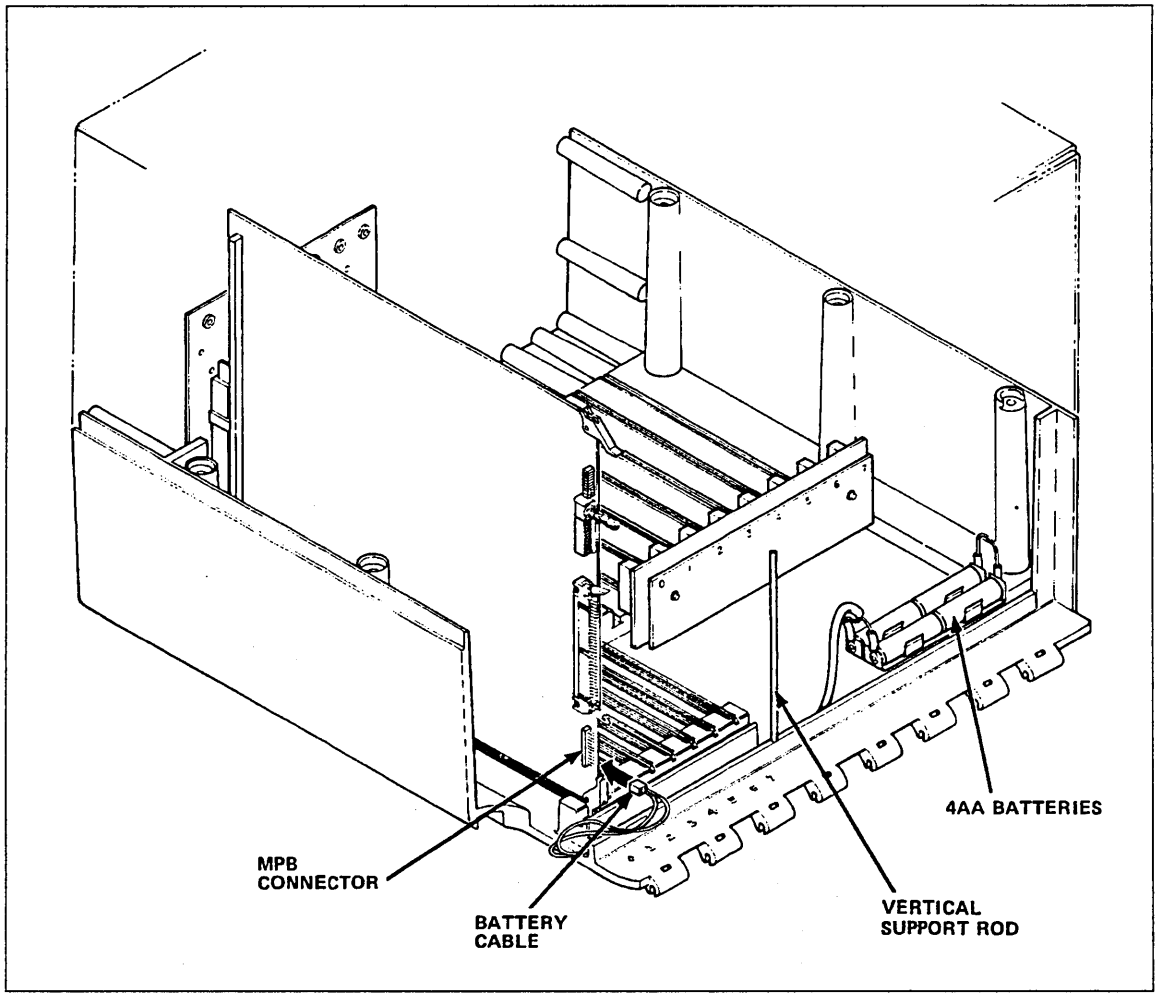

Figure 1-16. Connecting the Battery and MCO Cables

5. Connect the battery cable to the MPB. It plugs into the bottom pins of the connector on the lower front edge of the board. The connectors are keyed to fit correctly.

6. Turn on the DI power.

7. Check that the green power indicator on the MPB (shown in figure 1-17) is lit. (Ignore the other indicators for now.) If the power indicator is not lit, turn off the power and unplug the power cord. Refer to the power supply voltage checks in the Troubleshooting Guide (listed in About This Manual) or contact someone in network maintenance.

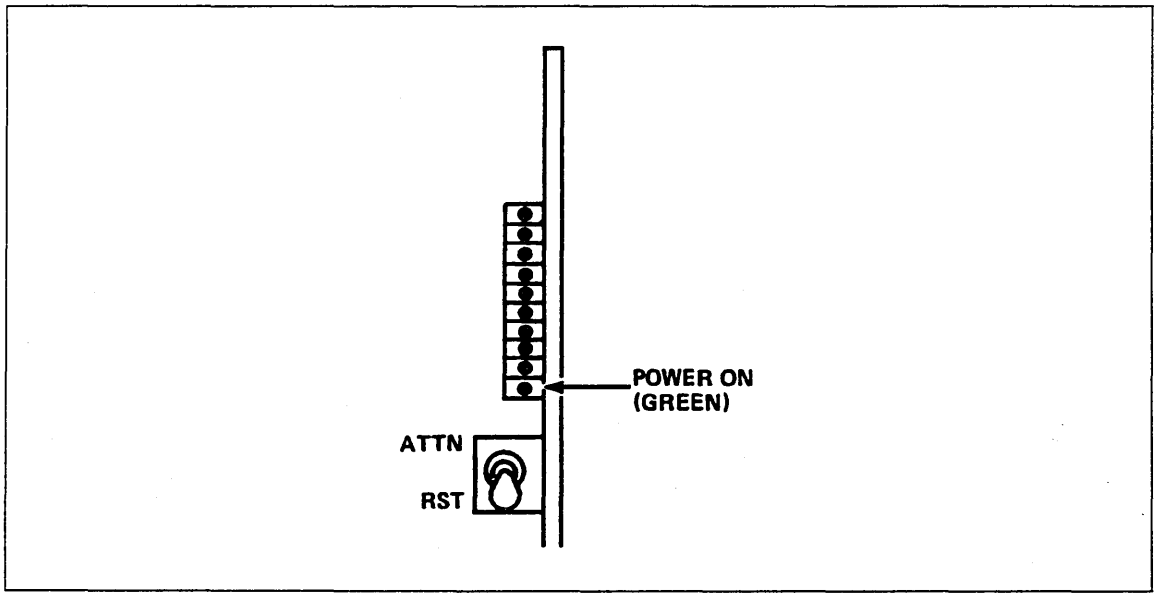

Figure 1-17. MPB Power Indicator

8. Check the BATT indicator on the top front of the cabinet. It should be off. If it is on, check the following:
   - The batteries are installed according to the diagram on the battery holder.
   - The battery cable is connected.
   - The batteries are fresh. (Try another set or use a battery checker.)
9. With the batteries connected and cabinet power still on, unplug the battery connector from the MPB board. The BATT indicator (shown in figure 1-18) should now light, indicating loss of battery power. If it does not light, refer to the Troubleshooting Guide listed in About This Manual.

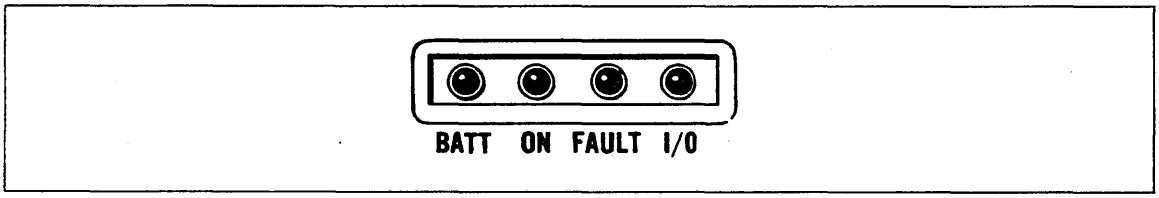

Figure 1-18. Cabinet BATT Indicator

10. Plug the battery cable back in and, if you installed the MCO, also plug it in. The MCO plugs into the pins directly above the battery connector and is keyed to fit correctly.

Entering the System Identifier

Each DI has a unique system identifier (also referred to as the Initialization System Identifier). Entering this identifier into the MPB is the next DI installation procedure. The identifier is printed on a label on the plastic fold-out holder inside the front door of the DI. It is 16 hexadecimal digits in length. An example of a system identifier is 08-00-25-10-00-68-6A-88.

NOTE

Before entering the system identifier, make sure that the batteries are installed and in good condition (the BATT indicator should be out when DI power is on). If ac power is lost and the batteries fail, or the battery cable is disconnected, the identifier will be lost and must be reentered.

Turning the DI power off will not erase the identifier as long as the batteries are good.

There are two ways to enter the system identifier. You can use a terminal if the DI has the MCO option, or you can use the configuration switches on the MPB. It is more convenient to use a terminal. If you have the MCO option, use the following procedure. If not, skip to the next procedure which describes how to use the switches.

Entering the System Identifier Using an ASCII Terminal

NOTE

The ASCII terminal may be a display type (CRT) or a printer type and must be capable of operating with the following communications characteristics:

RS-232-C Interface
Asynchronous Mode
7 bits with 1 stop bit
Even Parity
Baud Rate: 300, 1200, or 9600

You will also need a "null modem" cable to connect the terminal to the DI. The standard null modem cable assembly is Control Data Part Number 74875846. If you are not sure you have the right kind of cable (or terminal), ask the site manager or someone in network maintenance.

---

1. Refer to figure 1-19 and connect the "null modem" cable from the terminal to the MCO on the back of the DI. The cable connects to the top connector labeled "to modem." (The bottom connector labeled "to terminal" is not used at this time.)

   NOTE

   Step 1 assumes the DI has the MCO installed. If it does not, you should have a MCO in the Control Data maintenance kit. Refer to the Maintenance Console Option Installation procedure in this manual.

2. Turn on the DI and the terminal.

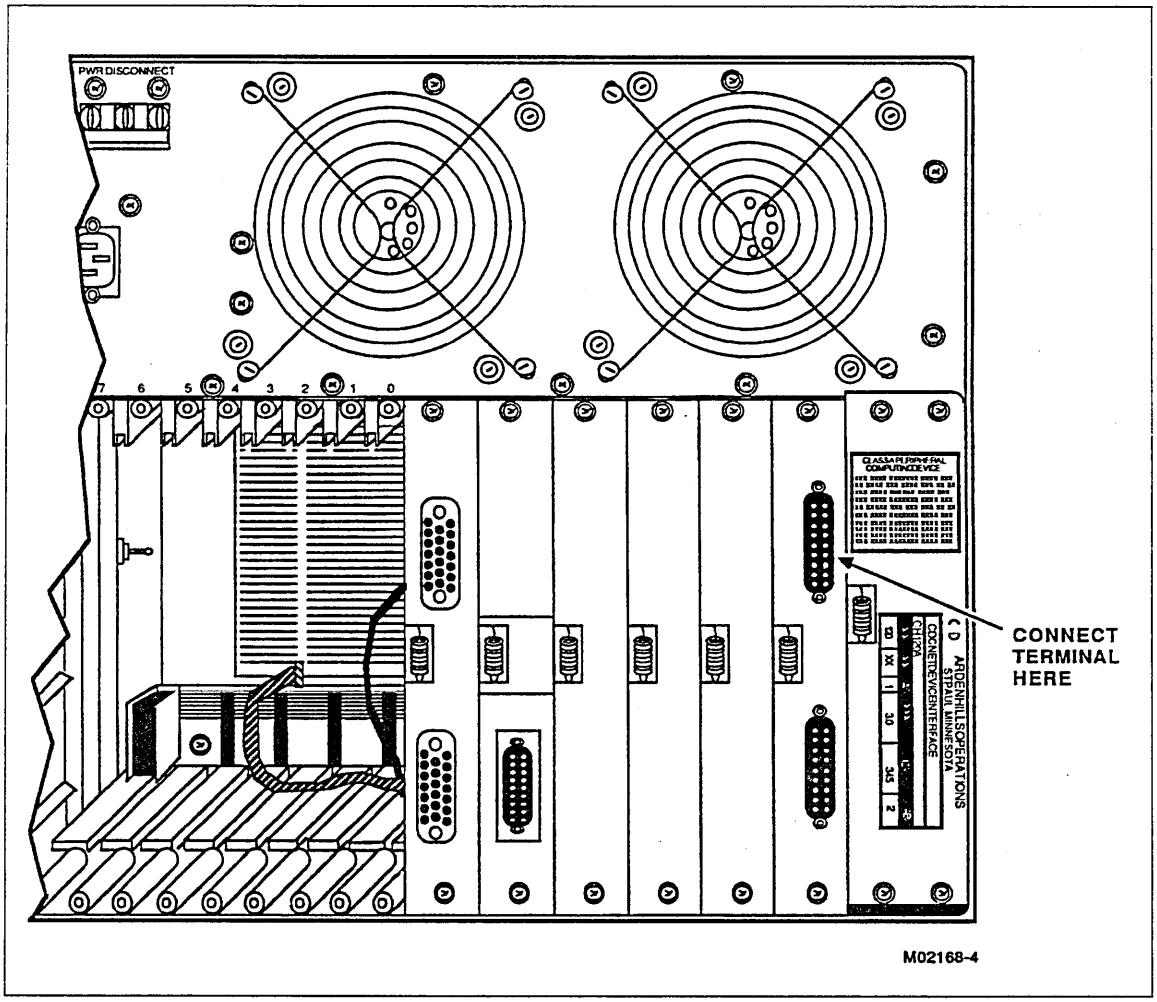

Figure 1-19. Connecting a Terminal to the MCO

NOTE

The following conventions apply to all configuration switches on the DI logic boards:

LEFT = OFF = "0"
RIGHT = ON = "1"

3. On the MPB, set configuration switch 10 (the top switch) to the right (on), and switch 9 and 6 through 1 to the left (off). This puts the DI in maintenance mode.

4. On the MPB, set configuration switches 8 and 7 to match the baud rate of the terminal as follows (R=right, L=left):

Baud Rate	300	1200	9600
Switch 8	R	L	R
Switch 7	R	R	L

5. Pull out and press down momentarily on the MPB ATTN/RST toggle switch to perform a manual reset.

Figure 1-20 shows the MPB switch settings.

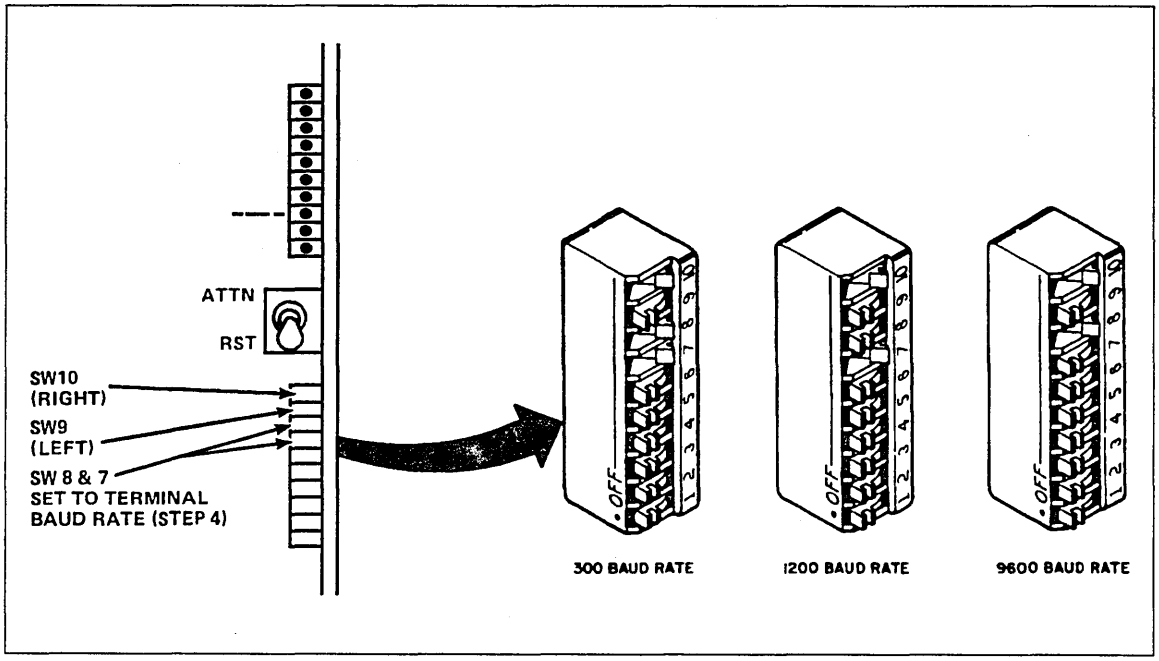

Figure 1-20. MPB Switch Settings

6. The following message appears on the terminal:

```
"DI MAINTENANCE MODE"

"Registers:  D0 = (xxxxxxxx)/D1 = (xxxxxxxx)"
```

(The D0/D1 values may be ignored.)

7. Because the system identifier has not yet been entered, the following message also appears:

```
CHECKSUM ERROR

Enter INITIALIZATION SYSTEM ID AT 8400

?
```

The "?" is a prompt indicating that the terminal is waiting for a command.

8. Type in the following, including spaces, on the terminal keyboard.

```
E 8400 nnnn nnnn nnnn nnnn (CR)
```

where,

E = Enter memory command

8400 = the starting memory address

n...n = the 16-digit system identifier

Remember, the spaces and carriage return (CR) are important.

NOTE

Although the identifier is shown on the label as pairs of digits separated by dashes, it is entered on the terminal as groups of four digits separated by spaces.

After you press the carriage return, the terminal displays:

```
E 8408 ?
```

Simply press the carriage return again and the identifier entry is complete.

9. Pull out and press down on the ATTN/RST switch to perform a manual reset. If the "CHECKSUM ERROR" message does not appear, the identifier was entered successfully.

   If "CHECKSUM ERROR" does appear, the identifier was entered unsuccessfully. You can check the contents of memory by using the "Display Memory" command as follows. Type:

   ```
   D 8400 10 (CR)
   ```

   where,

   D = Display Memory Contents

   8400 = the first address to be displayed

   10 = the number of words to be displayed

   Compare the identifier displayed on the terminal with the number on the label. If the identifier was entered incorrectly, reenter it (step 8). If it was entered correctly but the error message still appears, refer to the Troubleshooting Guide (listed in About This Manual) for further instructions.

After the identifier has been entered correctly, skip the next procedure on Entering the System Identifier manually and perform the procedure for setting the MPB switches.

NOTE

While the terminal is connected to the MPB, it may also display the following three messages:

```
REPLACE BATTERIES
```

If this message appears, replace the batteries before going further (the BATT indicator on the cabinet should also be on).

```
TEMP HIGH - TURN OFF DI
```

If this message appears, turn off the DI power immediately and do not proceed until the problem is fixed. Refer to the Troubleshooting Guide listed in About This Manual. The DI FAULT light also indicates HI cabinet temperature.

```
ILLEGAL COMMAND or  INPUT NOT HEX
```

Indicates that an error was made when typing in commands.

Entering the System Identifier Manually

If the MCO is not installed or a suitable terminal is not available, the system identifier may be entered manually using the configuration switches on the MPB.

1. On the MPB, set switch 10 to the right and switches 9 through 1 to the left. This puts the DI in Maintenance Mode.

2. Turn on DI power. All indicators come on for 1 second (see figure 1-21) and then indicator 5 (7 is the top indicator) flashes for about 10 seconds; disregard the other indicators.

3. Indicator 5 stops flashing and the yellow indicator (second from the bottom) stays on, meaning that the diagnostic test could not continue because of an invalid identifier. After a 10-second timeout, the test restarts. Continue with step 4 any time after indicator 5 stops flashing.

4. On the MPB, pull out and press down momentarily on the ATTN/RST switch. This resets the DI.

5. On reset, the DI reads out the current system identifier (which is whatever happens to be in memory at this time) and displays two digits (one byte) at a time on indicators 7 through 0. The indicators stay lit for about 5 seconds per byte and the yellow indicator flashes as each byte is read out. After about 40 seconds, the identifier readout completes and the yellow indicator remains on, indicating an invalid identifier. When this yellow indicator lights and stays on, you may start entering the correct identifier (steps 6 through 9). Do not try to enter the identifier until the yellow indicator stays on.

6. Use switches 8 through 1 (data bits 7 through 0) on the MPB to enter the identifier. Two digits are entered at a time. Switch 8 is the most significant bit; switch 1 is the least significant bit. Example: if the identifier is 08-00-25-10-00-68-6A-88, the first two digits (08) are entered on the switches by converting the digits to binary:

   0 hex = 0000 binary
   8 hex = 1000 binary

   In this example, switches 8 through 1 would be set to 00001000 (0 = left, and 1 = right.) The MPB indicators light for each switch turned on.

7. When switches 8 through 1 have been set to the first two digits, pull out the Attention/Reset (ATTN/RST) switch and toggle it up to enter the digits.

8. Continue entering the remaining digits, using the Attention switch to enter each pair.

9. After all 16 digits have been entered, set switches 9 through 1 off and leave switch 10 on. Then toggle the Attention/Reset switch down to the reset position. The system identifier you just entered will be read out.

   Each byte displays for about 5 seconds and as each new byte is displayed, the yellow indicator flashes.

   If the identifier was entered incorrectly, the yellow indicator remains on. If this happens, try entering the identifier again.

   If it fails again, try using another MPB. If the problem still exists, refer to the Troubleshooting Guide (listed in About This Manual) for further instructions.

10. To start running the onboard diagnostics after the identifier has been entered and verified, place switch 10 on the MPB to the left and turn the DI power off, then back on.

NOTE

If you know which digits are incorrect, you do not have to reenter the entire identifier, but you must start entering with the first pair of digits. For example, if the error is in the third pair, you would reenter only the first three pairs.

Setting the MPB Switches for Normal Operation

All MPB switches (shown in figure 1-21) are located on the front edge of the board. There is one toggle switch and 10 configuration switches.

Set the toggle switch (ATTN/RST) to the neutral position for normal operation. The toggle switch is spring-loaded to return to neutral and must be pulled out to be set to the ATTN (up) or RST (down) position.

CAUTION

Do not use a pencil to set the configuration switches; graphite can damage the switches. Instead, use a ball-point pen or small tool.

Set the configuration switches as follows:

Configuration Switches	Description
10 through 4	Left (off).
3 through 1	Refer to the installation worksheet to determine the slot number of the primary boot source. Set MPB switches 3, 2, and 1 equal to the slot number as shown in the table below. (L=left, R=right.) Figure 1-21 shows the location of the switches.

Boot Slot	3	4	5	6	7
Switch 3	L	R	R	R	R
Switch 2	R	L	L	R	R
Switch 1	R	L	R	L	R

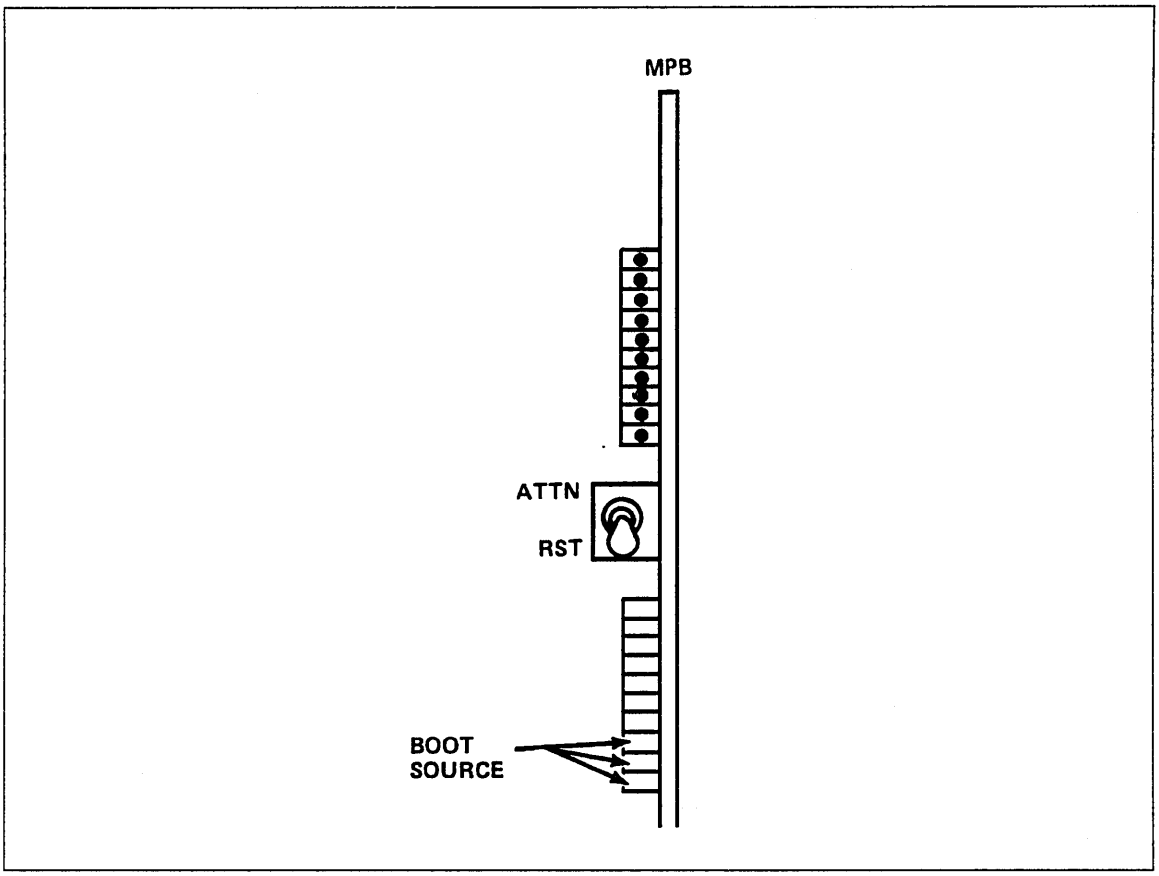

Figure 1-21. MPB Switches

Private Memory Module (PMM) Installation Procedure

Equipment Number: DY232-A

CAUTION

Static electricity can damage logic board circuits. Always wear a static discharge wrist strap when handling logic boards. Ground the wrist strap to the lug on the power supply as shown in figure 1-14. Do not handle the boards by the gold backpanel connectors. Always keep the boards in the electrostatic discharge (E.S.D.) bags when you are not handling them.

1. Unpack the PMM board and the MPB/PMM cable (shown in figure 1-22), the equipment identification tag, and the FCO label.

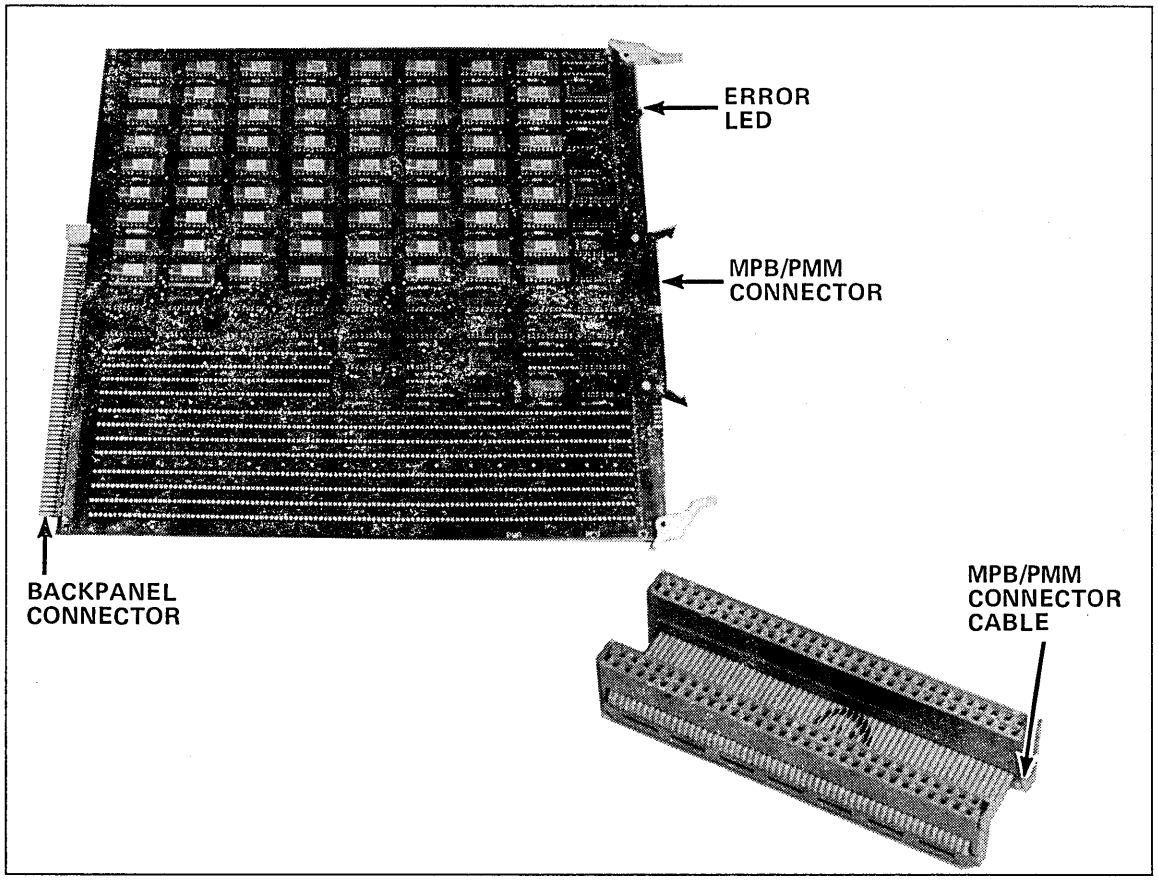

Figure 1-22. PMM Board and MPB/PMM Connector Cable

2. Attach the equipment identification tag and the FCO label to the plastic fold-out holder inside the DI door.

3. Turn off DI power.

4. Install the PMM into slot 1.

5. Connect the MPB/PMM cable to the connectors of the front edge of the PMM and MPB boards (as shown in figure 1-23). Install the cable so the edge with the red stripe is on top.

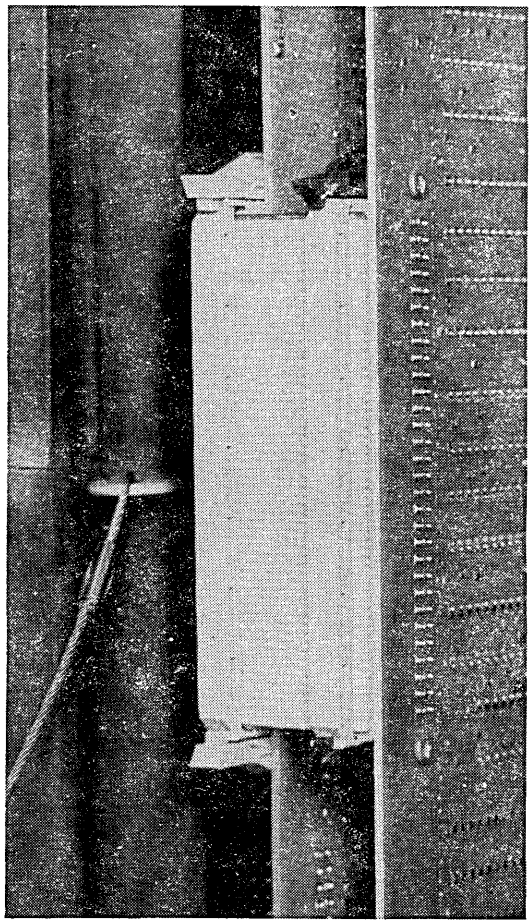

Figure 1-23. Installed MPB/PMM Connector Cable

System Main Memory (SMM) Installation Procedure

Equipment Number: DY225-A (1024 K)

CAUTION

Static electricity can damage logic board circuits. Always wear a static discharge wrist strap when handling logic boards. Ground the wrist strap to the lug on the power supply as shown in figure 1-14. Do not handle the boards by the gold backpanel connectors. Always keep the boards in the E.S.D. bags when you are not handling them.

1. Unpack the SMM board (shown in figure 1-24), the equipment identifier label, and the FCO label.
2. Attach the equipment label and the FCO label to the plastic fold-out holder inside the DI cabinet door.
3. Turn off DI power.
4. Refer to the installation worksheet for the SMM slot position(s) and install the SMM board(s). There are no cables to install on the SMM boards.
5. Pull out and press down on the ONLINE/OFFLINE toggle switch to put the board in the online mode.

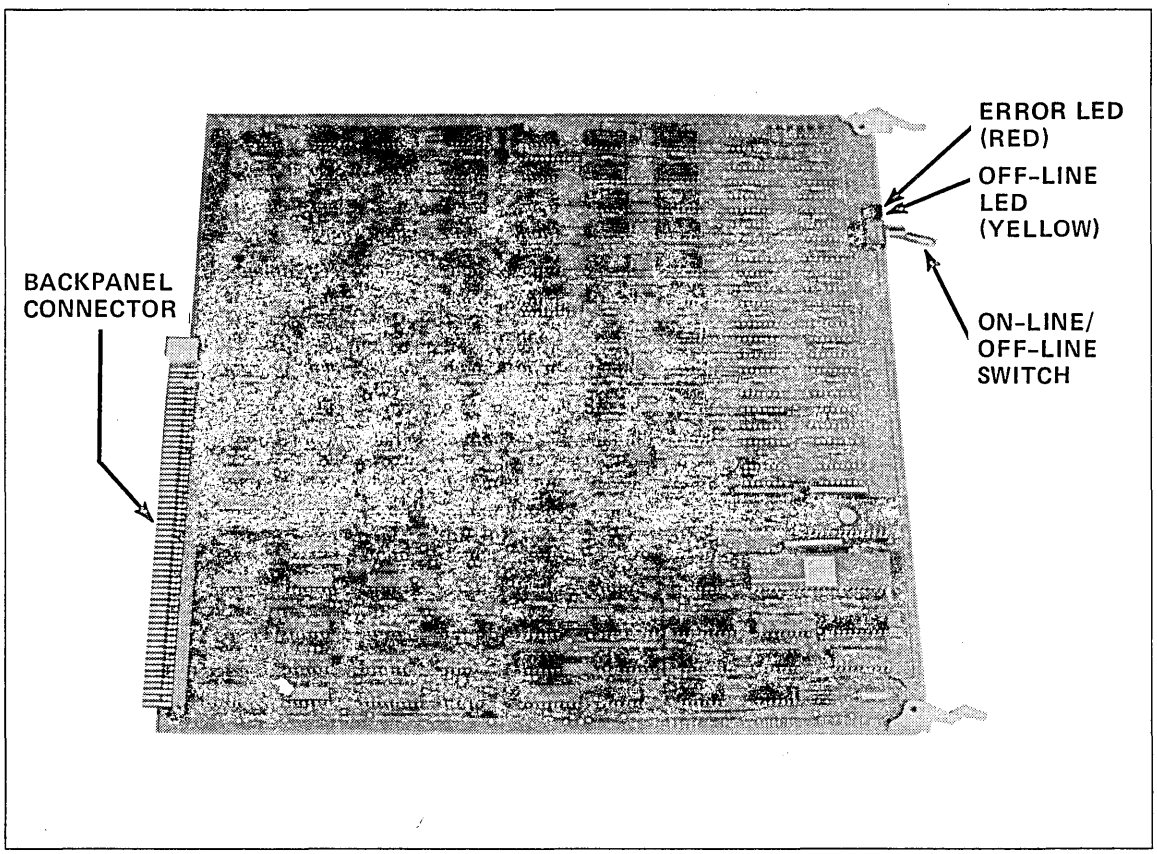

Figure 1-24. SMM Board

RS-232-C Line Interface Module (LIM) Configuration Procedure

Equipment Number: DY229-A or DY229-B

NOTE

Refer to the Product Descriptions manual for European Public Telephone and Telegraph (PTT) Qualification Data.

CAUTION

Static electricity can damage logic board circuits. Always wear a static discharge wrist strap when handling logic boards. Ground the wrist strap to the lug on the back of the cabinet as shown in figure 1-25. Do not handle the boards by the gold backpanel connectors. Always keep the boards in the E.S.D. bags when you are not handling them.

1. Refer to the installation worksheet for the number of DY229 LIMs to install and the slot number of each LIM.
2. Unpack the LIM boards (shown in figure 1-26), the equipment labels, and the FCO labels.
3. Attach the equipment labels and the FCO labels to the plastic fold-out holder inside the DI door.
4. If your LIM is a DY229-A, you must verify that there are jumper straps installed in the correct positions on the board. Refer to DY229-A LIM Configuration Procedure later in this chapter.

   If your LIM is a DY229-B, refer to DY229-B LIM Configuration Procedure later in this chapter.

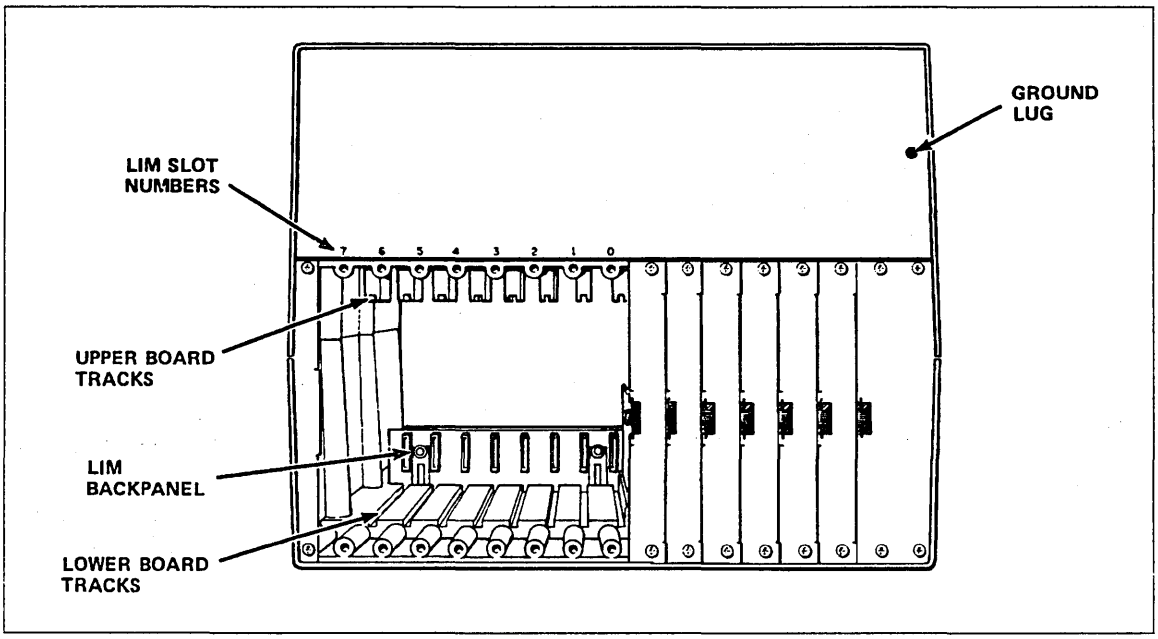

Figure 1-25. Backpanel Ground Lug

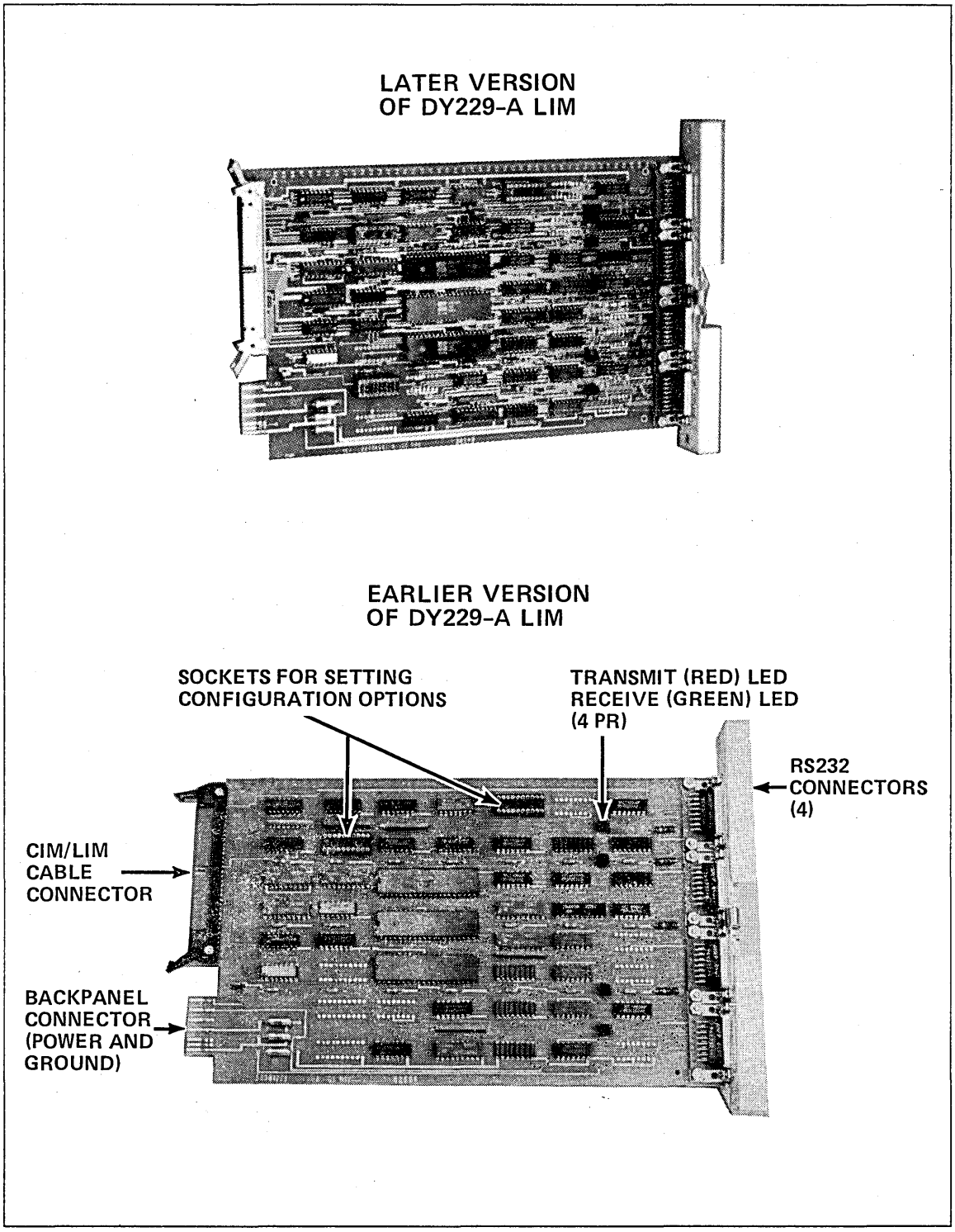

Figure 1-26. DY229-A LIM

DY229-A LIM Configuration Procedure

If you have several LIMs to install, do this configuration procedure for all of them first, and then install them. (Remember to keep the boards in the protective E.S.D. bags when not handling them.)

Use a needle-nose pliers or similar tool to install/remove jumper straps on the LIM board sockets at locations 19C7 and 55B1. Refer to figure 1-27.

Socket 19C7 – Positions 4, 6, and 8 must have straps installed. All other positions must be empty.

Socket 55B1 – There should be no straps in this socket.

Socket 19L6 – Spare straps (not on all boards).

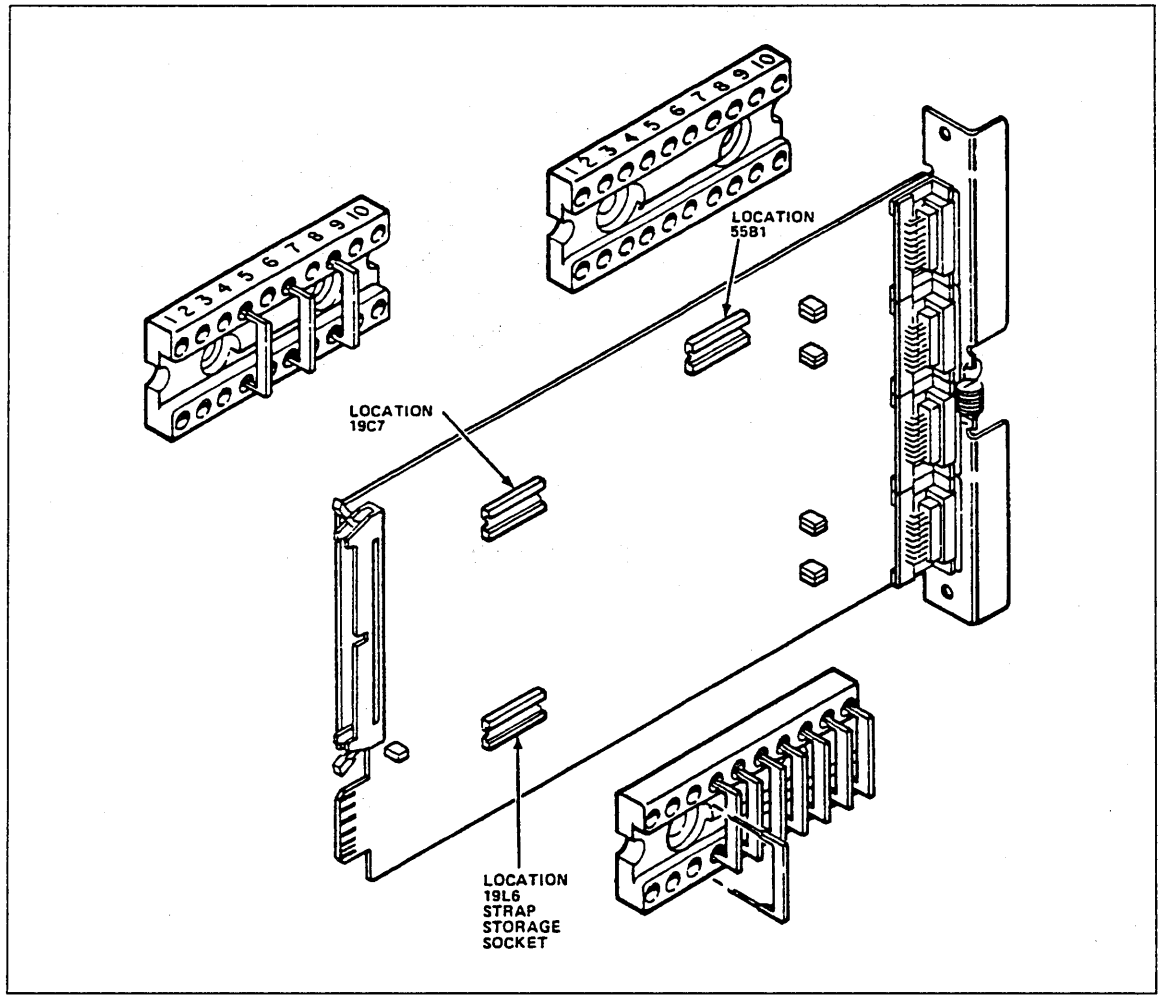

Figure 1-27. Configuring the DY229-A LIM

DY229-B LIM Configuration Procedure

The DY229-B LIM (shown in figure 1-28) does not require any jumper strap installation.

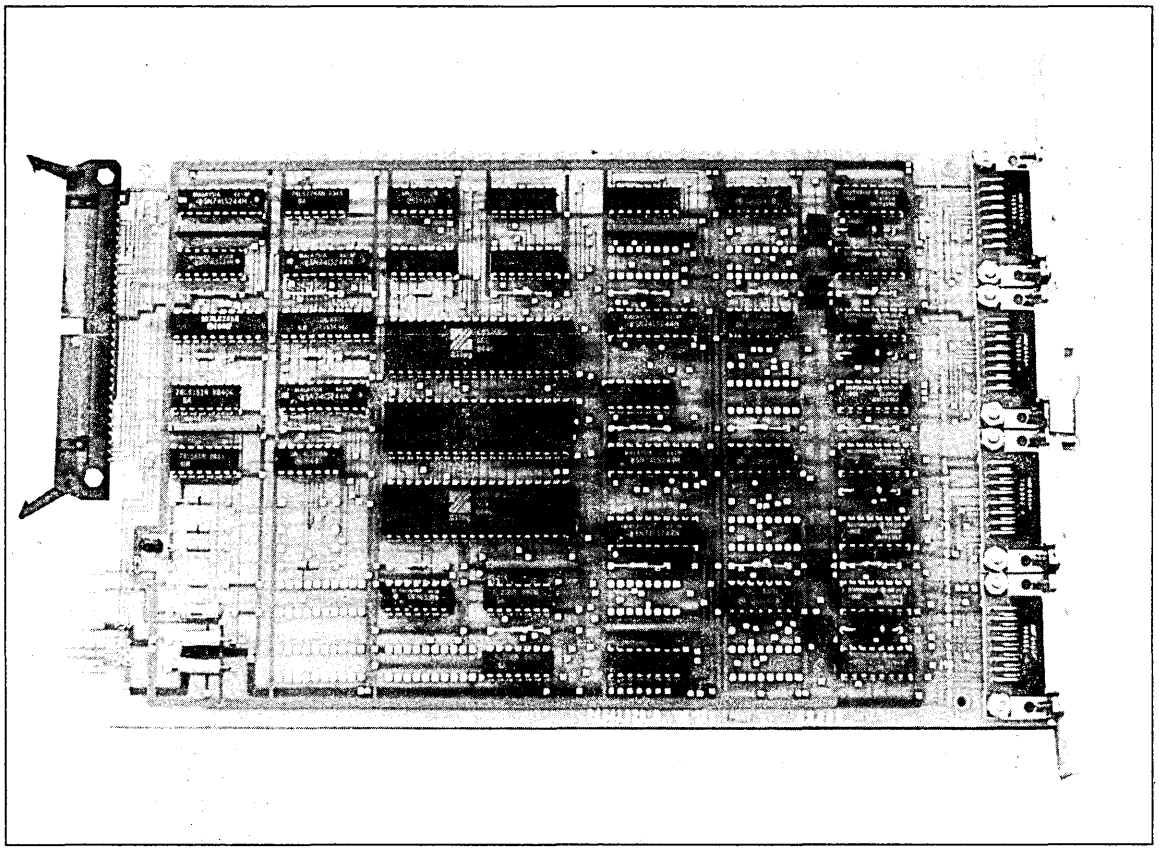

Figure 1-28. DY229-B LIM

RS-232-C 8-Port Line Interface Module (LIM) Configuration Procedure

Equipment Number: DY267-A

The 8-port LIM does not require any jumper strap installation.

NOTE

Refer to the Product Descriptions manual for European Public Telephone and Telegraph (PTT) Qualification Data.

CAUTION

Static electricity can damage the logic board circuits. Always wear a static discharge wrist strap when handling logic boards. Ground the wrist strap to the lug on the back of the cabinet as shown in figure 1-25. Do not handle the boards by the gold backpanel connectors. Always keep the boards in the E.S.D. bags when you are not handling them.

1. Refer to the installation worksheet for the number of DY267 LIMs to install and the slot number of each LIM.
2. Unpack the LIM boards (shown in figure 1-29), the equipment labels, and the FCO labels.
3. Attach the equipment labels and the FCO labels to the plastic fold-out holder inside the DI door.

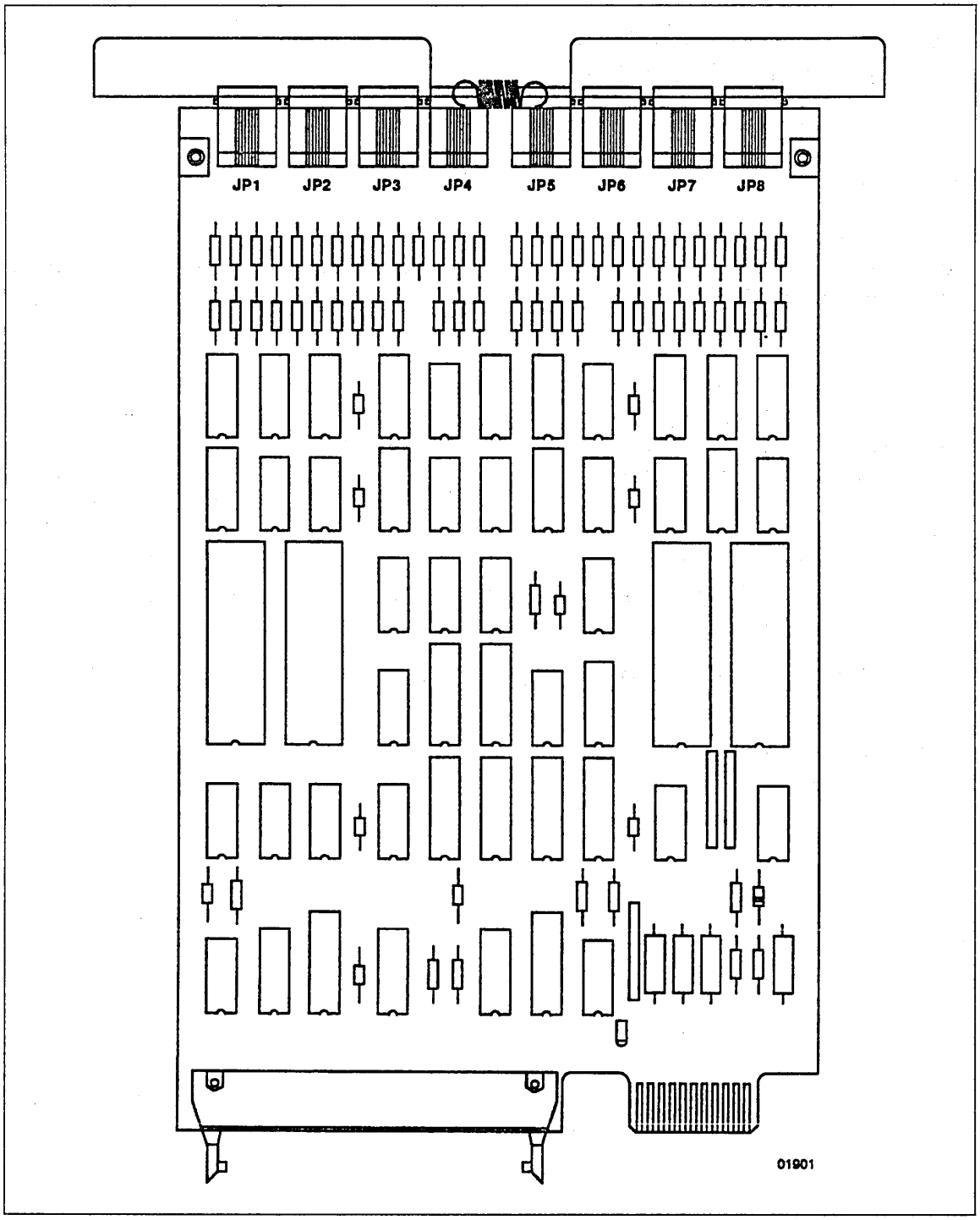

Figure 1-29. DY267-A LIM

RS-449 Line Interface Module (LIM) Configuration Procedure

Equipment Numbers: DY230-A or DY230-B

The RS-449 LIM is configured differently depending on whether it is a DY230-A or a DY230-B. The DY230-A is configured in the factory as an RS-422 interface. The DY230-B LIM can be configured as either an RS-422 or RS-423 interface.

CAUTION

Static electricity can damage logic board circuits. Always wear a static discharge wrist strap when handling logic boards. Ground the wrist strap to the lug on the back of the cabinet as shown in figure 1-25. Do not handle the boards by the gold backpanel connectors. Always keep the boards in the E.S.D. bags when you are not handling them.

1. Refer to the installation worksheet for the number of RS-449 LIMs to install and the slot number of each LIM.
2. Unpack the LIM boards, the equipment labels, and the FCO labels.
3. Attach the equipment labels and the FCO labels to the plastic fold-out holder inside the DI door.
4. Refer to the installation worksheet to determine the following configuration options for ports 0 and 1 on the DY230-A LIM.
   - Internal or External clock source – Selected via jumper straps on the board. See CONFIGURATION column on worksheet.
   - DTE or DCE – Determined by the external cable connected to the LIM. See CABLE and DESTINATION columns on worksheet and verify that you have the correct cable. DCE requires a TN101 cable (connects to a modem). DTE requires a TN102 cable (connects to a terminal).
5. Configure each DY230-A LIM port. Refer to the configuration procedure for RS-422 interface for detailed steps.
6. Install the LIM module per the installation procedure for LIMs described later in this chapter.

RS-422 Interface Using DY230-A LIM Configuration Procedure

The DY230-A LIM is configured in the factory as an RS-422 interface. Perform the following steps to configure the DY230-A LIM for RS-422 use. You select the internal or external clock as per the installation worksheet. Refer to figure 1-30 for a diagram of the board.

1. Install a strap at location 4 of D2 if Port 1 uses external clock. Remove strap if Port 1 uses internal clock.
2. Install strap at location 9 of D3 if Port 0 uses external clock. Remove strap if Port 0 uses internal clock.
3. Check the following jumpers to ensure that they are configured correctly. If they are not, use a needle-nose pliers or similar tool to install jumpers in sockets D1, D2, and D3.
   - D1 Install three straps at locations 1, 2, and 3.
   - D2 Install two straps at locations 5 and 6.
   - D3 There should be no straps in locations 1 through 8.

   CAUTION

   Exercise care when removing the jumper plugs, as they are fragile and can be easily damaged.

   Do not apply power with RS-422 and RS-423 line drivers installed at the same time, as hardware damage can occur. Only one integrated circuit type per port can be installed.

4. Ensure that there are no integrated circuits in locations 63E4 and 63J0. If there are, use an integrated-circuit removal tool or small flat screwdriver to remove them.
5. Ensure that there is a 26LS31 integrated circuit Control Data Part Number 15163320) at location 76F6 for Port 0 and/or 76G8 for Port 1.

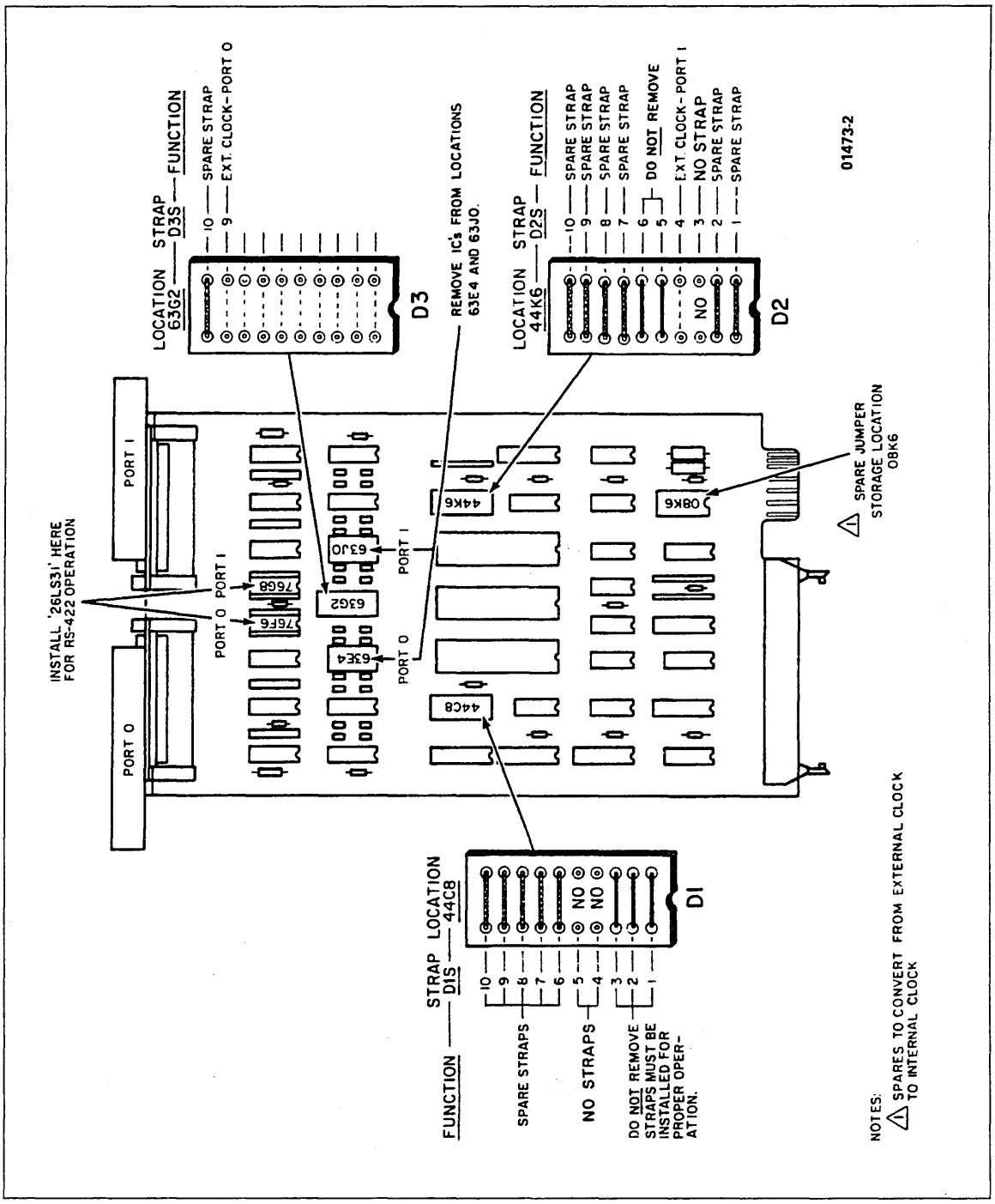

Figure 1-30. Jumper and IC Placement for DY230-A LIM

RS-422 or RS-423 Interface Using DY230-B LIM Configuration Procedure

Refer to figure 1-31 for a diagram of the DY230-B LIM board. The position of the jumper plugs determines whether the LIM is configured for high-speed operation (RS-422) or low-speed operation (RS-423).

CAUTION

Exercise care when removing the jumper plugs, as they are fragile and can be easily damaged.

For the RS-422, the jumper plug is positioned in the rightmost slot between the connector headers at position P1. For the RS-423, the jumper plug is positioned in the leftmost slot of P2.

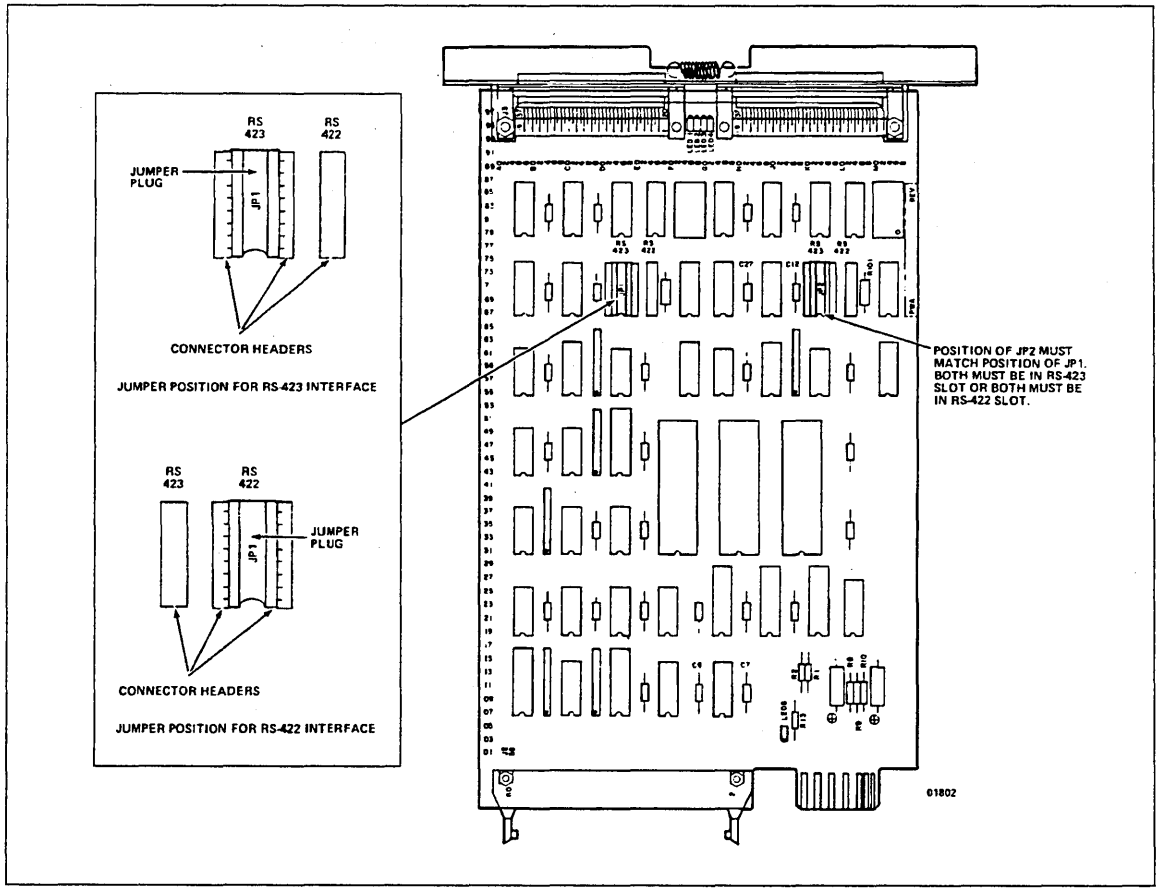

Figure 1-31. Jumper Placement for DY230-B LIM

Unit Record Line Interface Module (URI) Configuration Procedure

Equipment Number: DY246-A

CAUTION

Static electricity can damage logic board circuits. Always wear a static discharge wrist strap when handling logic boards. Ground the wrist strap to the lug on the back of the cabinet as shown in figure 1-25. Do not handle the boards by the gold backpanel connectors. Always keep the boards in the E.S.D. bags when you are not handling them.

1. Refer to the installation worksheet for the number of unit record interface modules (URIs) to install, and the slot number of each URI.
2. Unpack the URI boards (shown in figure 1-32), the equipment labels, and the FCO labels.

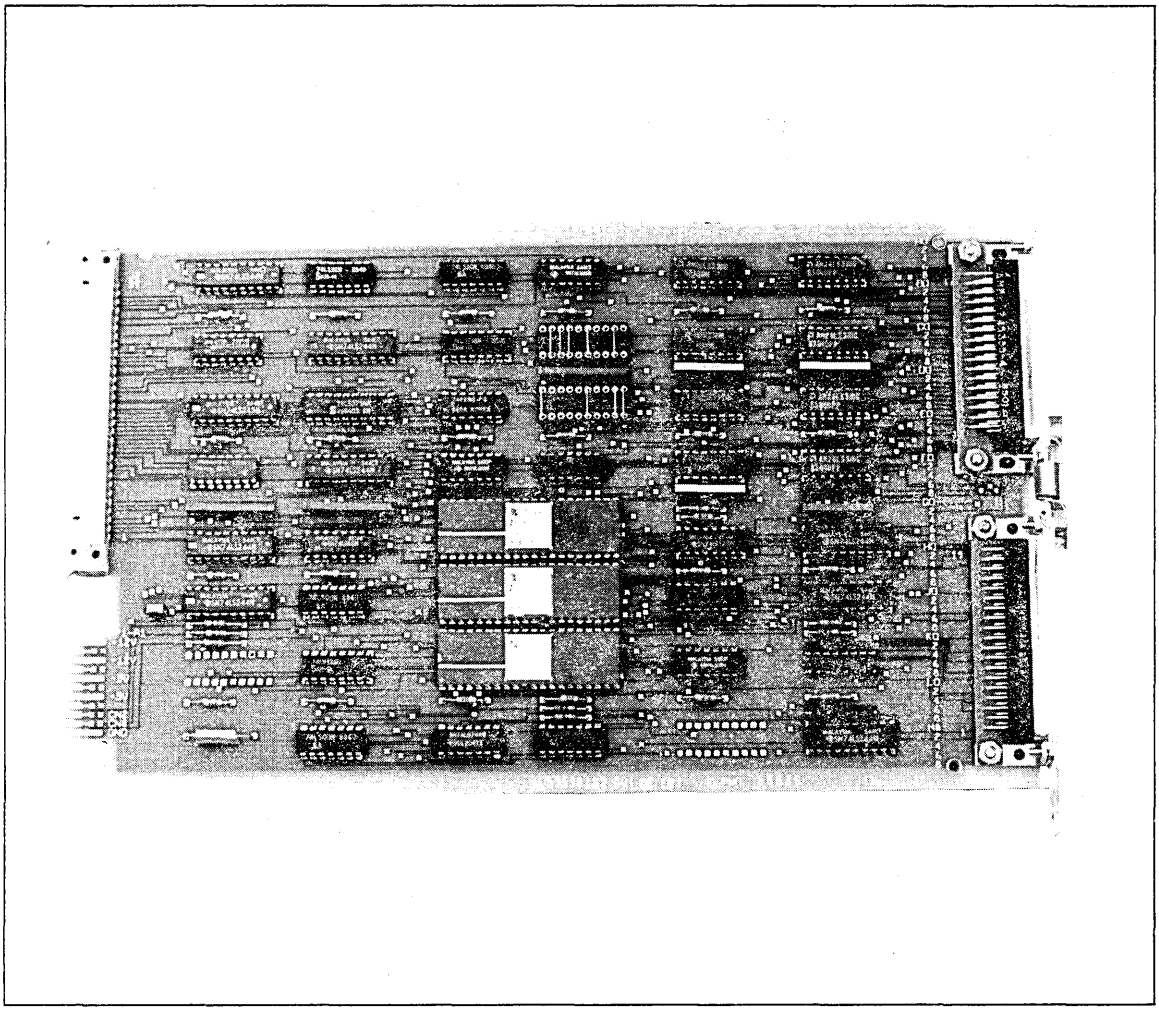

Figure 1-32. URI Board

3. Attach the equipment labels and the FCO labels to the plastic fold-out holder inside the DI door.

4. Use a needle-nose pliers or similar tool to install jumpers in socket 46E0. The URI can be configured to interface to eight different printer types by properly installing the three jumpers. The following table lists the pin assignments and their meanings. NO is a logical 1 and is not strapped (open); YES is a logical 0 and is strapped (closed). Refer to figure 1-33.

Pin Number	Description
1, 2, and 3	Printer identification code.
4	Parity generator/checker for LIM bus (8-bit odd parity).
5	Serial communications controller.
6	Selects odd parity.
7	Selects even parity.
8	Data Products long line interface.
9	Centronics TTL interface (not used at this time).
10	Parity generator for printer interface.

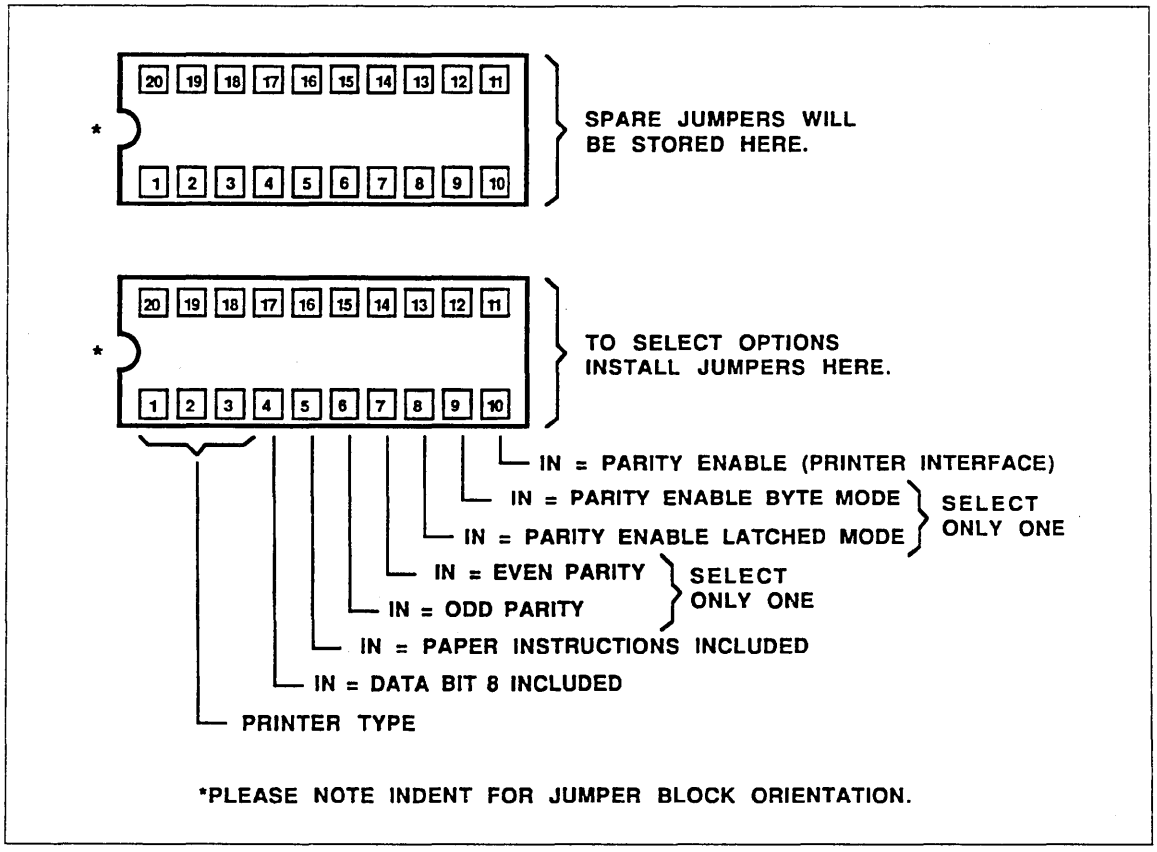

Figure 1-33. URI Board Jumper Selection

At present, the URI can be connected to only one type of printer, the CDC Model 585. The configuration for the Model 585 printer is shown in figure 1-34.

NOTE

Certain switches located on the printer must be set after the URI board(s) is configured and installed. Refer to the chapter 3 for the procedure to set these switches.

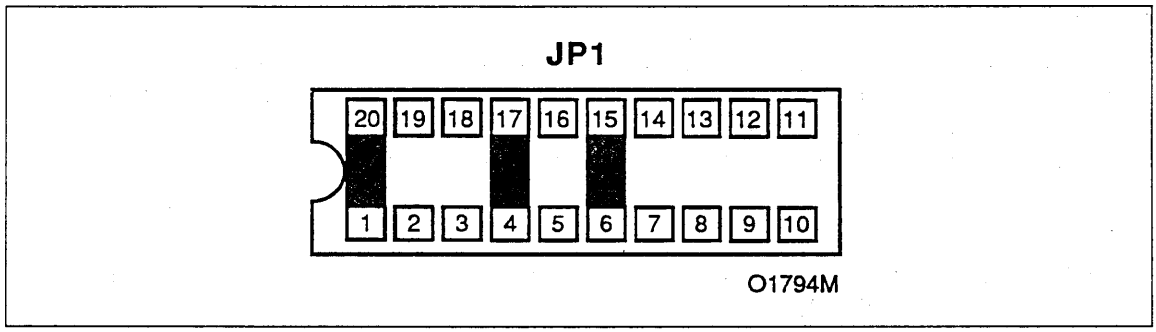

Figure 1-34. URI Configuration for 585 Printer

V.35 Line Interface Module (LIM) Configuration Procedure

Equipment Number: DY261-A

The V.35 LIM does not require any jumper strap options. The V.35 LIM connects to a modem/data set or other DCE device.

CAUTION

Static electricity can damage logic board circuits. Always wear a static discharge wrist strap when handling logic boards. Ground the wrist strap to the lug on the back of the cabinet as shown in figure 1-25. Do not handle the boards by the gold backpanel connectors. Always keep the boards in the E.S.D. bags when you are not handling them.

1. Refer to the installation worksheet for the number of V.35 LIMs to install and the slot number of each LIM.
2. Unpack the V.35 LIM boards (shown in figure 1-35), the equipment labels, and the FCO labels.
3. Attach the equipment labels and the FCO labels to the plastic fold-out holder inside the DI door.

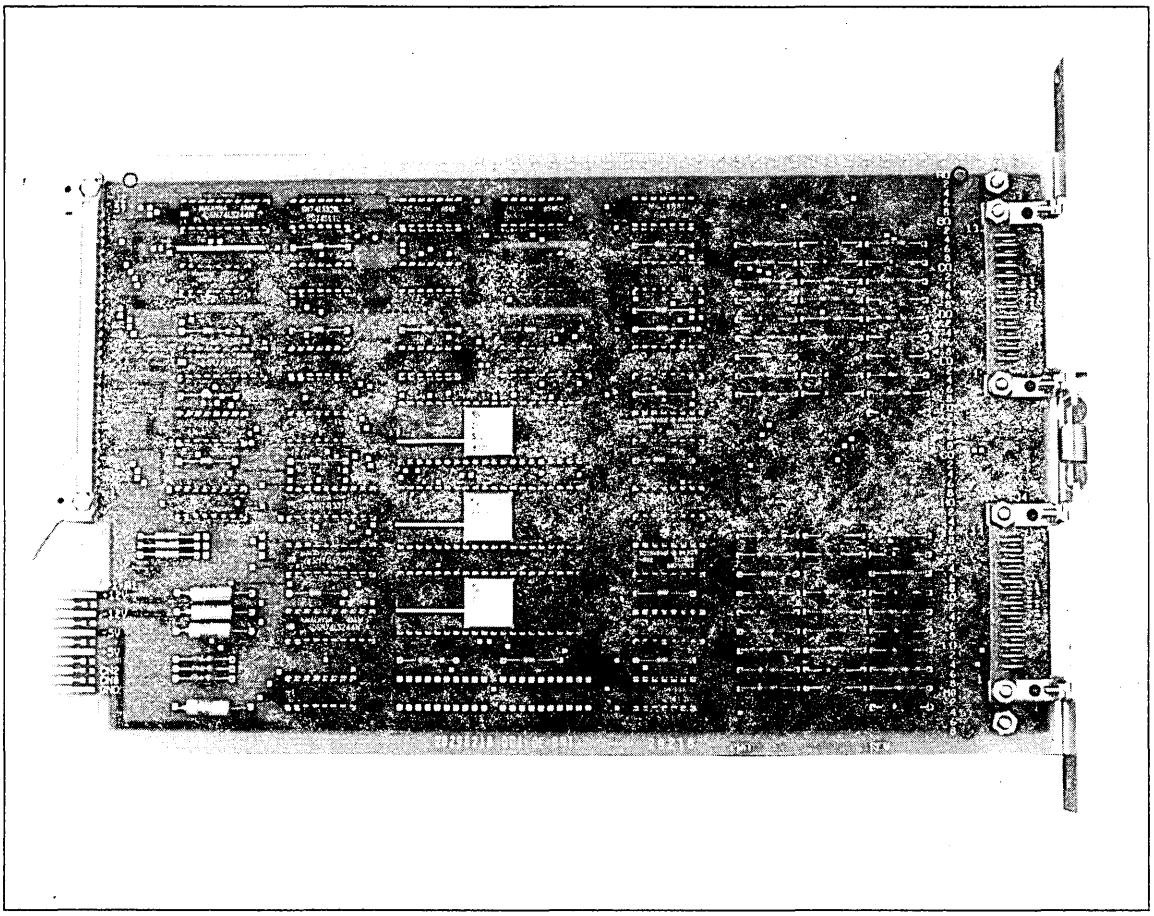

Figure 1-35. V.35 LIM Board

Line Interface Module (LIM) Installation Procedure

NOTE

All LIMs are installed from the back of the cabinet into the small backpanel.

Different LIMs can be intermixed in any order in a DI; however, the LIM in the lowest slot number has the highest priority to interrupt the CIM.

CAUTION

Static electricity can damage the board circuits. Always wear a static discharge wrist strap when handling logic boards. When installing LIMs, ground the wrist strap to the lug on the back of the cabinet (figure 1-36). Do not handle the boards by the gold backpanel connectors.

1. Turn off DI power.
2. Refer to the installation worksheet for slot number of LIMs and remove filler plate(s) from the back left of the cabinet. Refer to figure 1-36, which shows the LIM backpanel, for location.

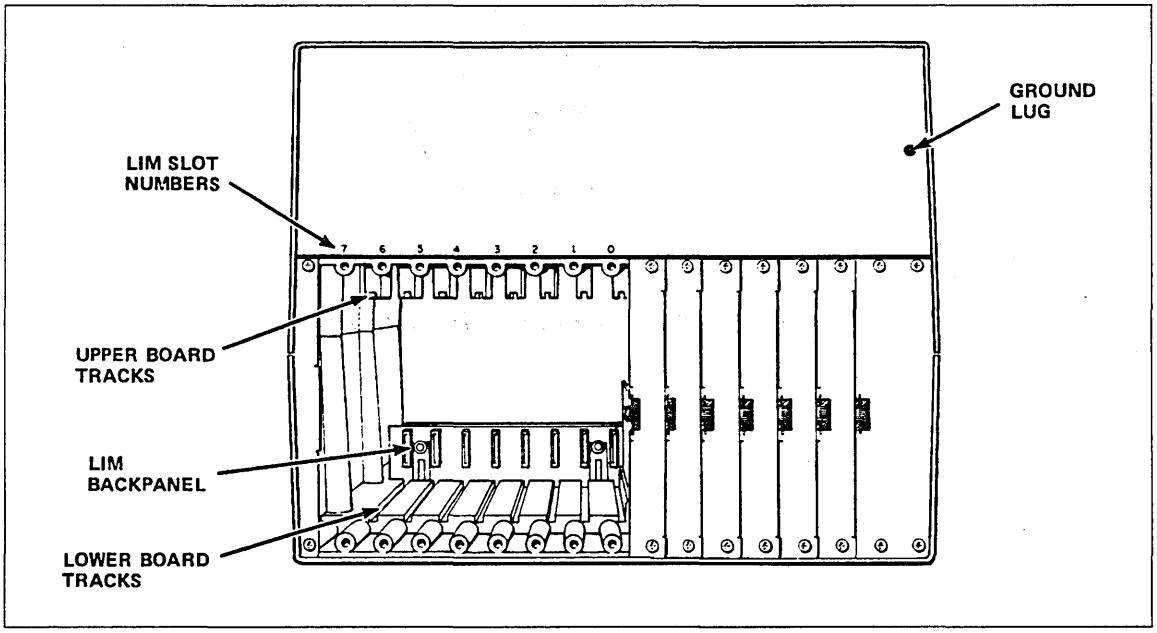

Figure 1-36. LIM Backpanel

3. Plug the board into the LIM backpanel and fasten it with the two screws removed from the filler plate. LIM installation is shown in figures 1-37 and 1-38.

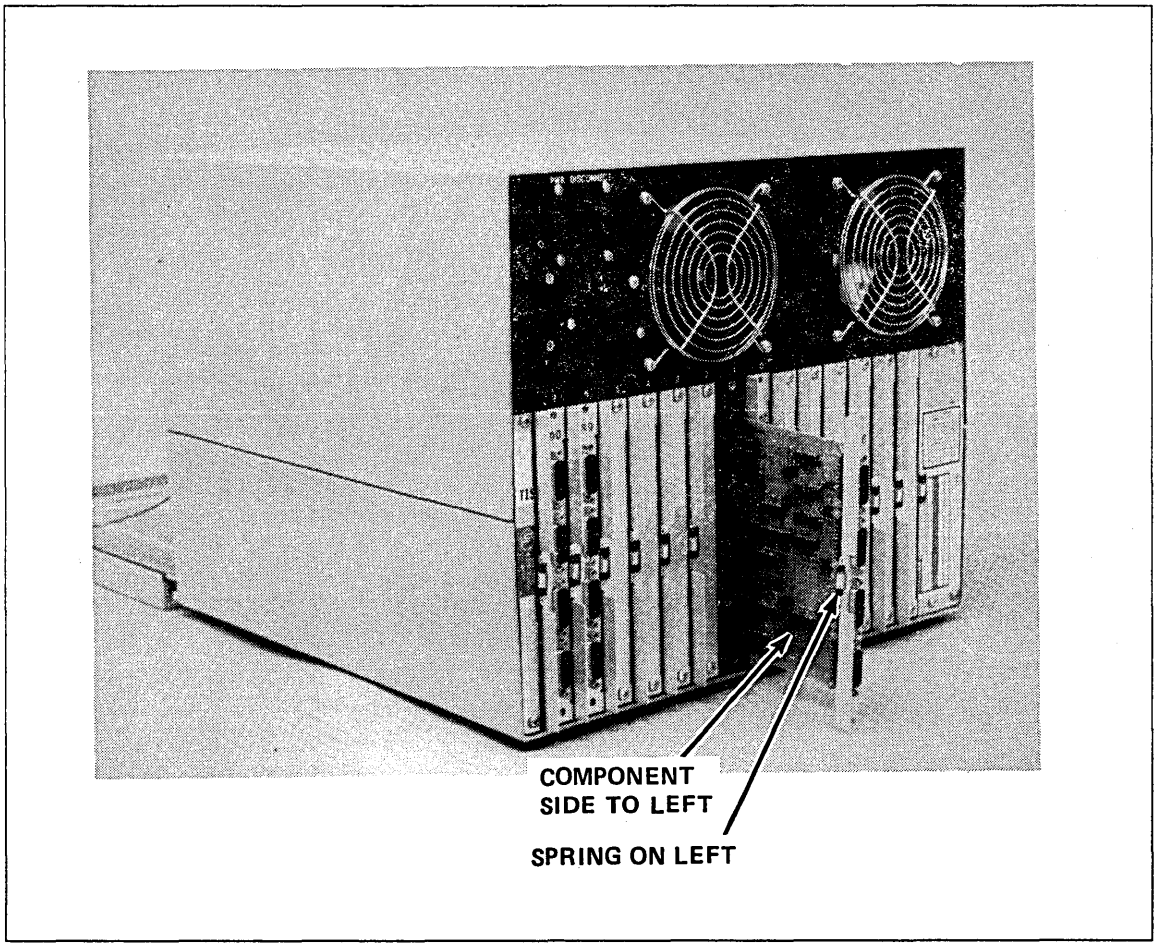

Figure 1-37. Installing LIM Boards

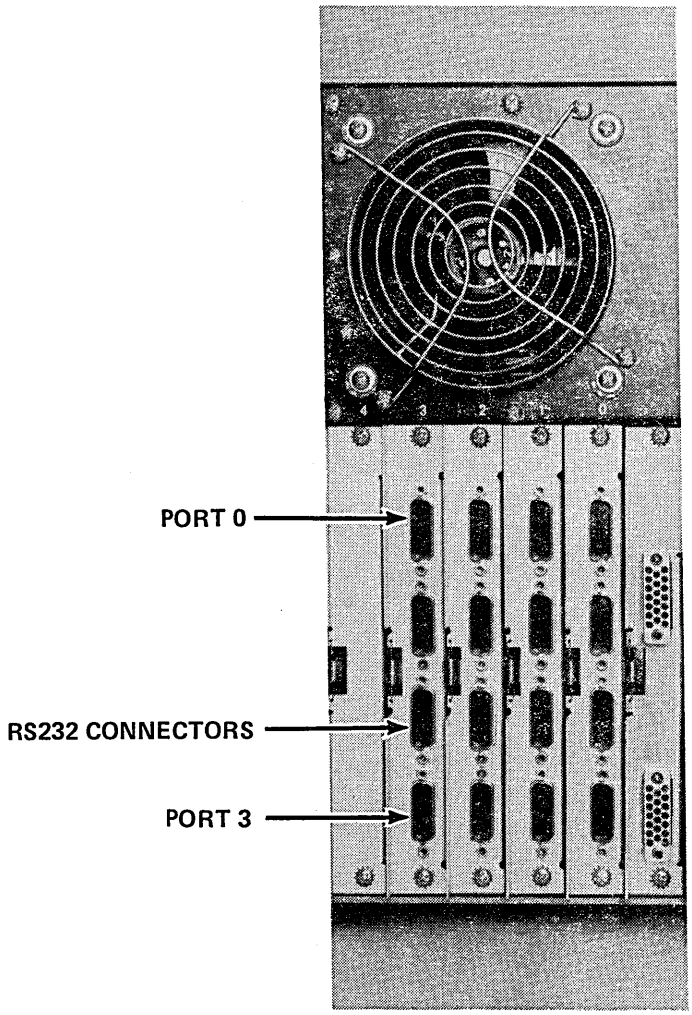

Figure 1-38. Installed LIM Connector Plates

The URI connector plate is shown in figure 1-39. There are two jacks on the connector plate. The top jack connects the URI board to Data Products printers; the remaining jack connects it to Centronics printers (not supported).

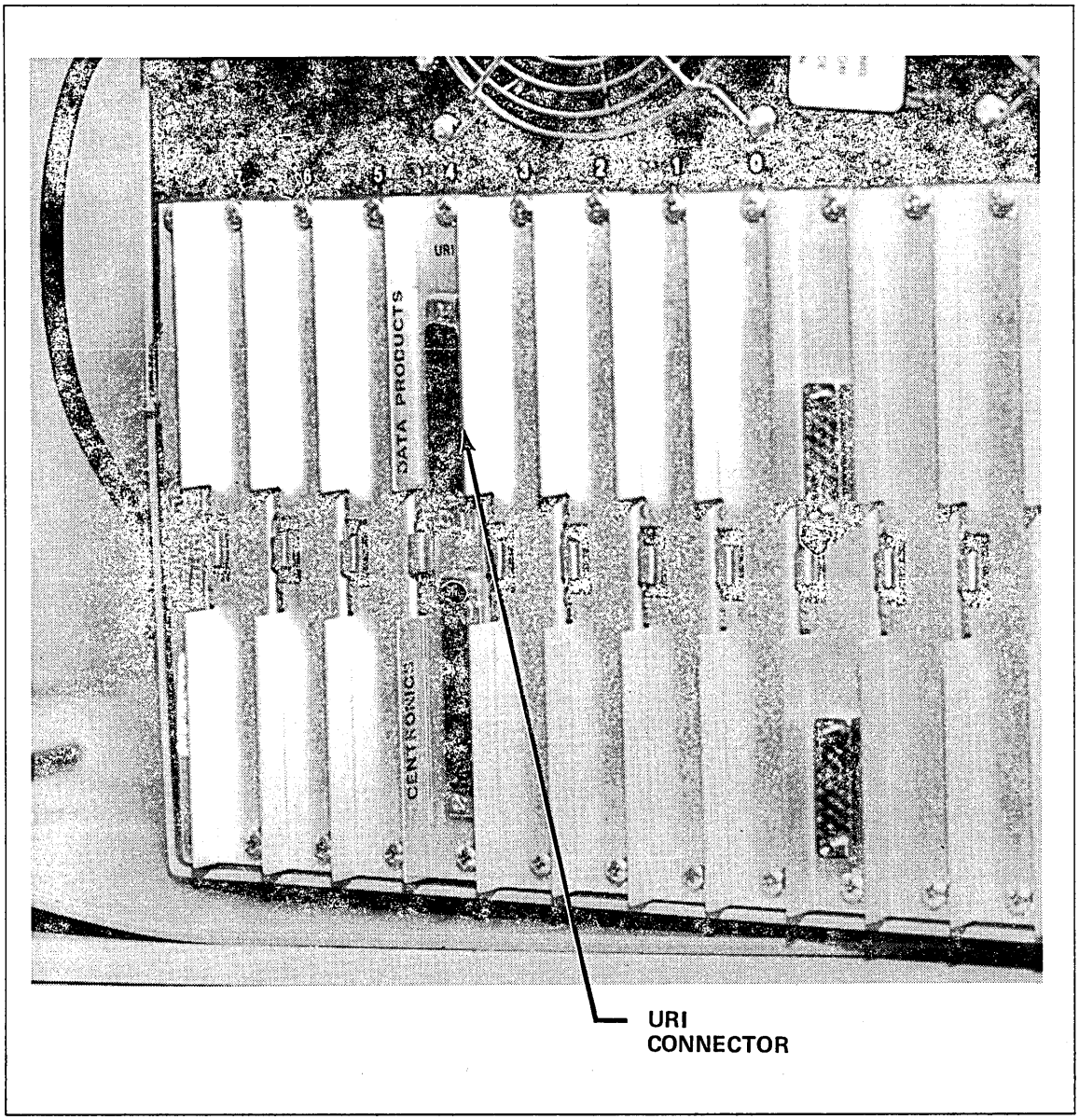

Figure 1-39. Installed URI Connector Plate

Communications Interface Module (CIM) Installation Procedure

Equipment Number: DY228-A

NOTE

If there are two or more CIMs to install, read through this procedure and the procedure "Installing Multiple CIM/LIM Cables," before starting the actual installation. You can install up to three CIM boards.

CAUTION

Static electricity can damage logic board circuits. Always wear a static discharge wrist strap when handling logic boards. Ground the wrist strap to the lug on the power supply as shown in figure 1-14. Do not handle the boards by the gold backpanel connectors. Always keep the boards in the E.S.D bags when you are not handling them.

1. Unpack the CIM board and the CIM/LIM cable assembly (shown in figure 1-40), the equipment label, and the FCO label.
2. Attach the equipment label and the FCO label to the plastic fold-out holder inside the DI door.
3. Power off the DI and install the CIM in the slot designated on the installation worksheet.

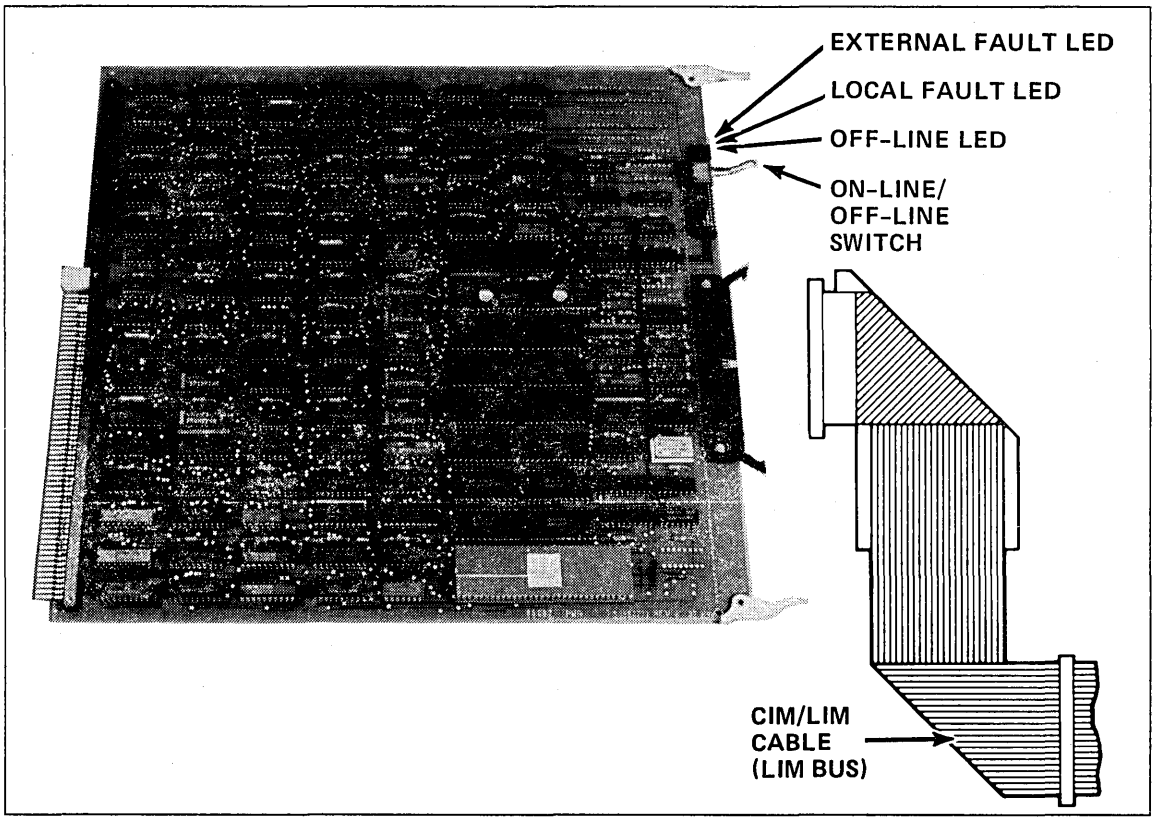

Figure 1-40. CIM Board and CIM/LIM Cable

CIM/LIM Cable Installation Procedure

Install the CIM/LIM cable assembly from the front of the cabinet. The cable has a single connector on one end that plugs into the CIM, and eight connectors on the other end that plug into one through eight LIMs.

1. Power off the DI and, holding the cable near the CIM connector, position the cable behind the vertical support rod in the front-center of the cabinet. The fiberglass support should be on the left, facing the CIM board. Refer to figure 1-41.

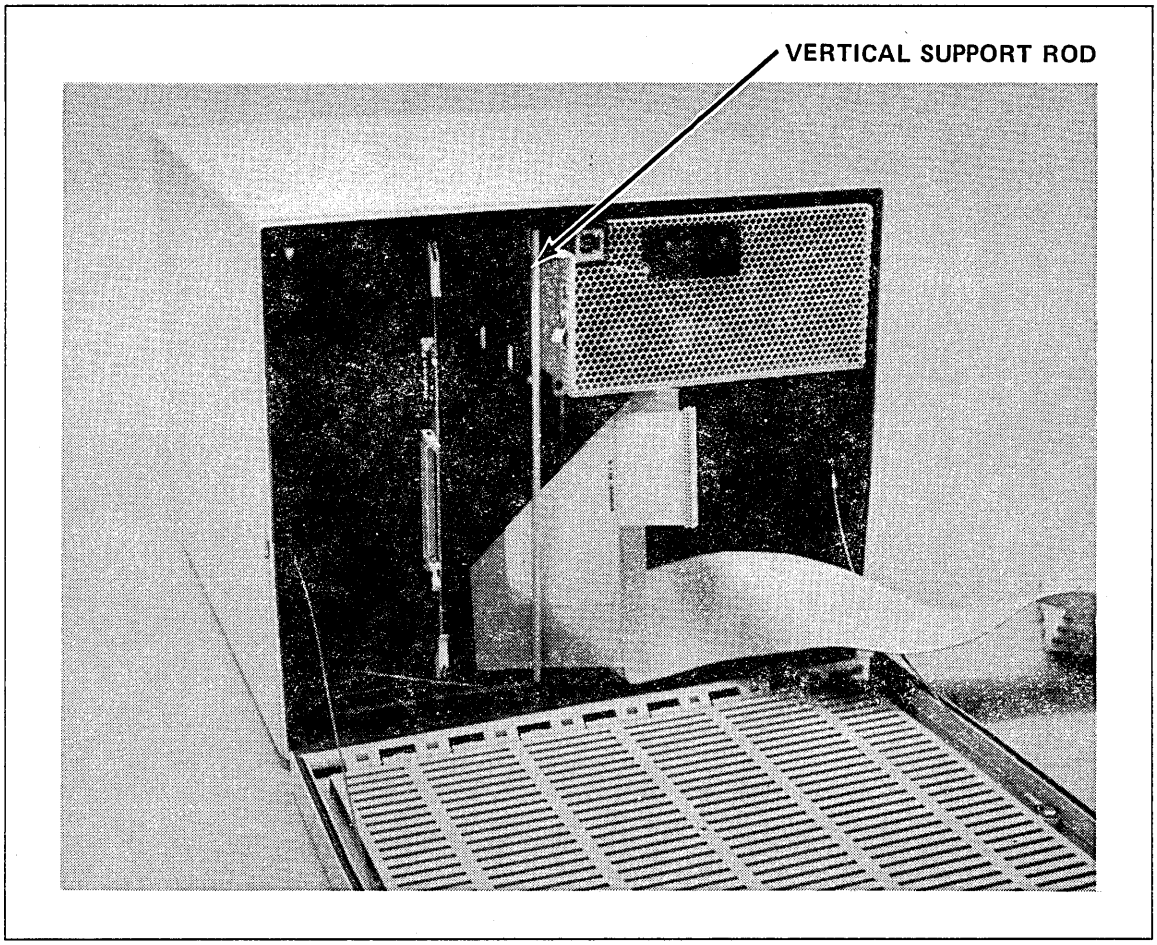

Figure 1-41. CIM/LIM Cable Installation Position

2. Lift up the lower board tracks to the right of the CIM and slide the cable under the tracks (see figure 1-42). For example, if the CIM is installed in slot 5, route the cable under tracks 6 and 7.

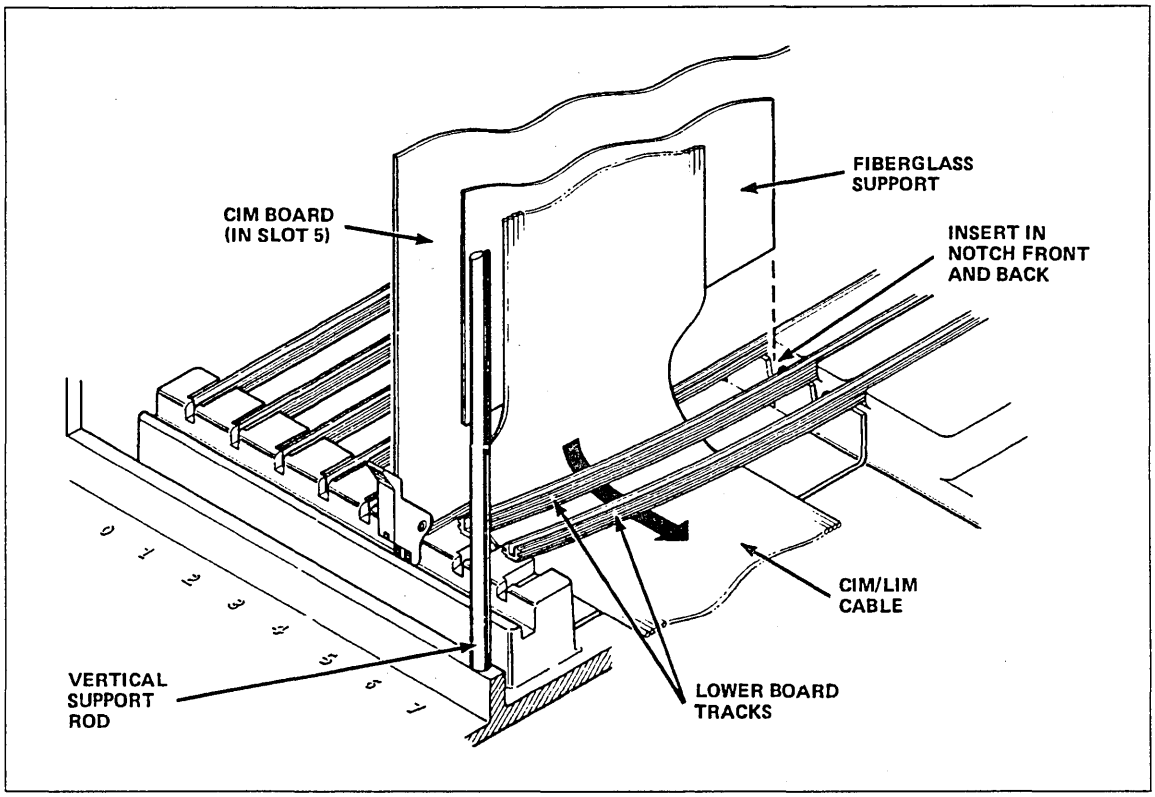

Figure 1-42. CIM/LIM Cable Routing

3. Insert the bottom edge of the fiberglass support into the notches to the right of the CIM's lower board track.

4. Plug the cable connector into the CIM receptacle with the red stripe on the edge of the cable on top. If the cable seems too high to plug into the board, recheck step 3. Ensure that the connector is fully seated.

5. Replace the lower board tracks removed in step 2.

6. Connect the cable to the LIMs, ensuring that the red stripe is on the bottom. (This is the only case where the red stripe should be on the bottom.) Ensure that the cable connectors are fully seated in the LIM.

7. Verify that the cable is installed as shown in figure 1-43.

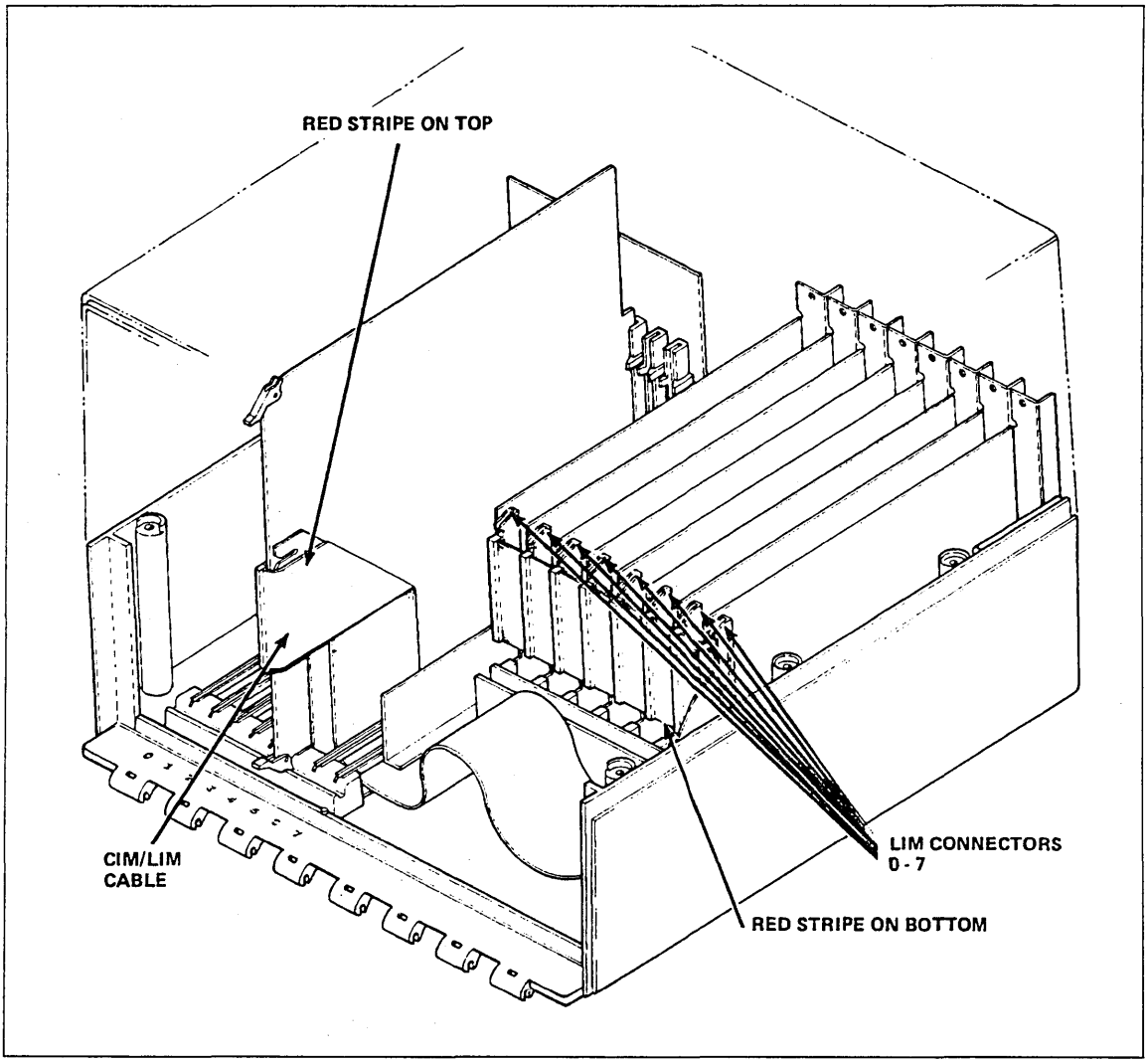

Figure 1-43. Installed CIM/LIM Cable

Multiple CIM/LIM Cables Installation Procedure

A CIM/LIM cable must be installed for each CIM board that has been installed. The procedure below describes how to cable the following theoretical CIM/LIM combination:

CIM in slot 4 to LIMs in slots 6,7
CIM in slot 5 to LIMs in slots 3,4
CIM in slot 6 to LIMs in slots 0,1

Refer to the installation worksheet for the actual CIM/LIM connections for each DI.

NOTE

All LIMs must be previously installed.

1. Install the first CIM in slot 4.
2. Position the cable from CIM 4 to the LIMs in slots 6 and 7. Fold the cable back so that the red stripe is on the bottom and the connector is facing the LIM receptacle. Plug connectors 6 and 7 into the LIMs, making sure they are fully seated. The end connector is 0. Fold the excess cable against the right side of the cabinet. Refer to figure 1-44.

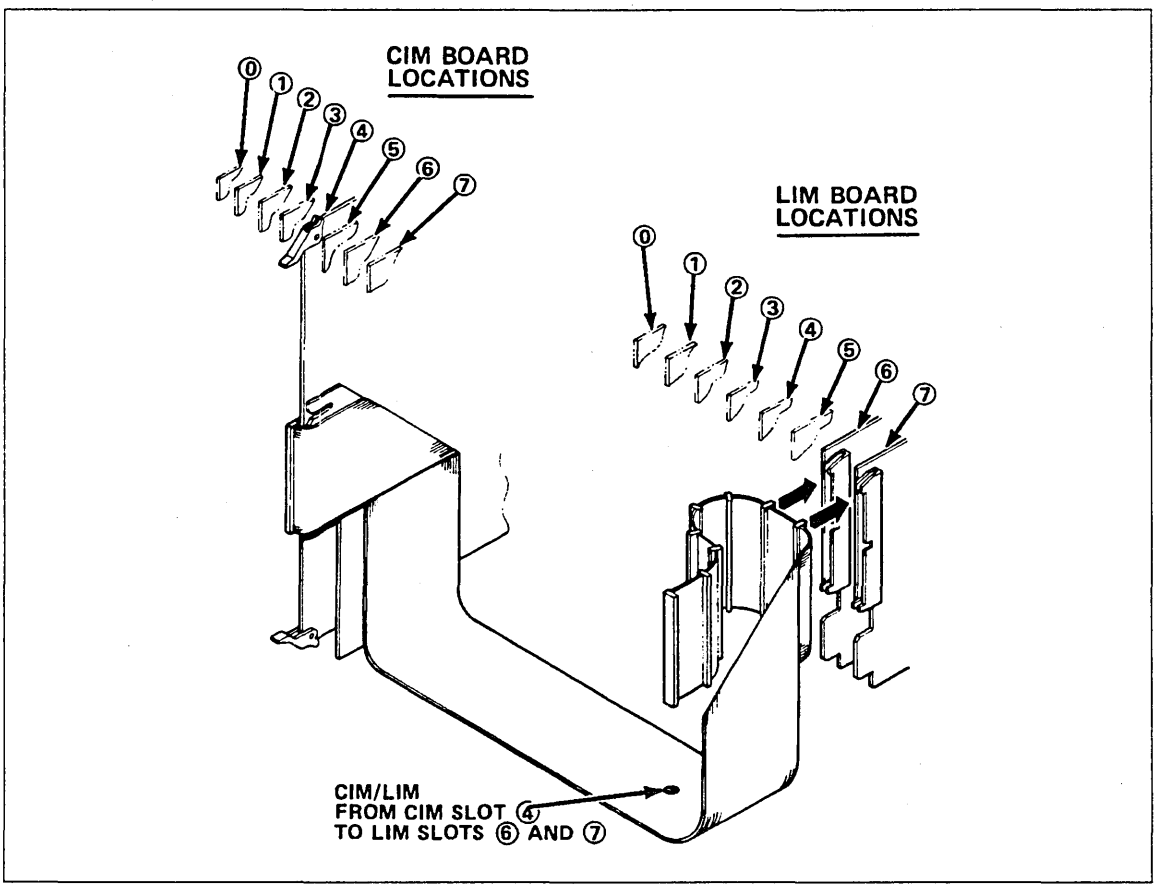

Figure 1-44. Installing First CIM/LIM Cable

3. Install the second CIM in slot 5.

4. Position the cable from CIM 5 to the LIMs in slots 3 and 4. Fold the cable back so that the red stripe is on the bottom and the connector is facing the LIM receptacle. Plug connectors 3 and 4 into the LIMs, making sure they are fully seated. The end connector is 0. Fold the excess cable against the right side of the cabinet. Refer to figure 1-45.

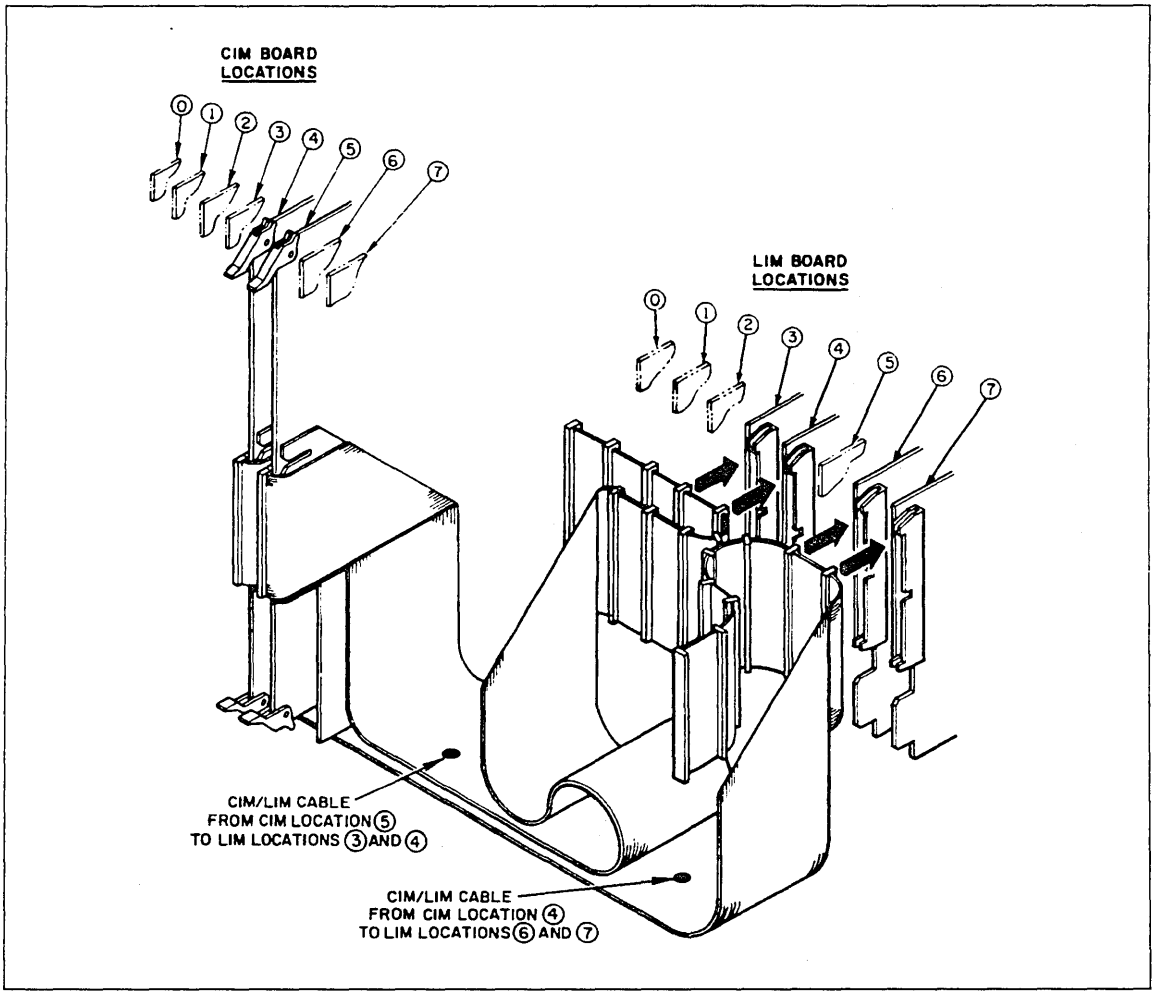

Figure 1-45. Installing Second CIM/LIM Cable

5. Repeat steps 3 and 4 for CIM 6, except that plug connectors 0 and 1 plug into LIMs 0 and 1.

Setting the CIM Switches

The CIM board has a set of ten configuration switches on the front edge of the board.

CAUTION

Do not use a pencil to set the configuration switches. Graphite can damage the switches. Instead, use a ball-point pen or small tool.

1. Refer to the installation worksheet to determine if the CIM is used as either a primary or secondary boot source. If the CIM is not used as a boot source, set all switches to the left (off) and proceed to step 5.

   If the CIM is used as a boot source, set switch 9 to the right (on) and proceed to step 2.

2. The trunk speed must be provided from an external clock source. The LIM and PORT number for the boot source are determined from the front CIM dip switches. These switches also determine the LIM number to use for a boot attempt if the primary source fails to establish a link. The remaining switches are defined as follows and are shown in figure 1-46:

Switch	Description
10	Left (off).
9	Right (on) if boot is enabled from CIM board.
8	Left (off).
7 6 5	LIM number (0 through 7) for secondary boot source (bit 5 is least significant bit).
4	PORT number (0 or 1) for primary and secondary boot source.
3 2 1	LIM number (0 through 7) for primary boot source (bit 1 is least significant bit).

NOTE

1. If the primary and secondary boot source LIMs are the same, the complement of bit 4 will be used as the port number for the secondary boot.

2. If the CIM is selected as a boot source, then E/FCO 17983 must be installed.

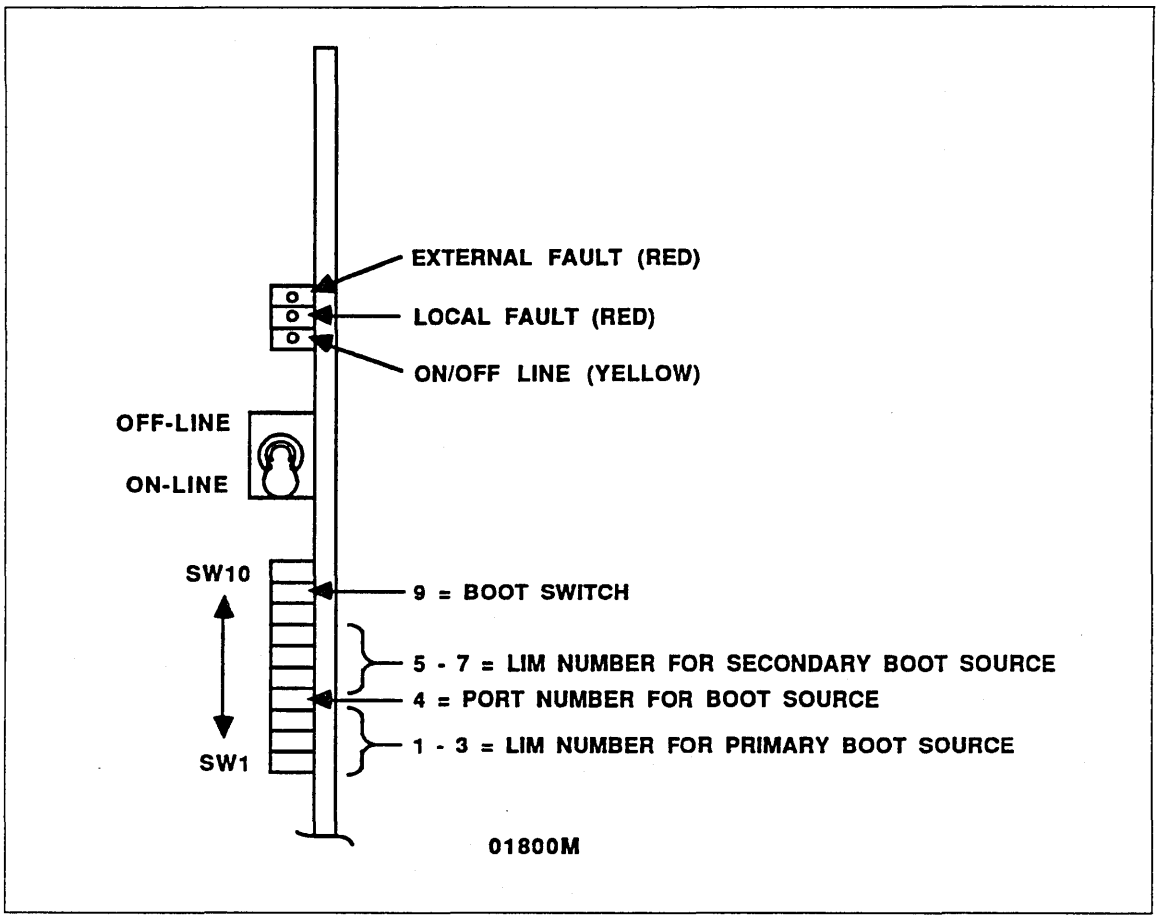

Figure 1-46. CIM Switches

3. If this board is designated as the primary boot source, enter the slot number on switches 3, 2, and 1 of the MPB board (the bottom three switches) as shown in the table below.

Slot Number	3	4	5	6	7
Switch 3	L	R	R	R	R
Switch 2	R	L	L	R	R
Switch 1	R	L	R	L	R

4. Set the ONLINE/OFFLINE toggle switch to ONLINE by pulling out and pressing down on the switch, (as shown in figure 1-46).

Ethernet Serial Communications Interface (ESCI) Installation Procedure

Equipment Number: DY227-A/B

You can install up to three ESCI boards. Perform the following steps for each ESCI board.

1. Unpack the ESCI boards and ESCI cable (shown in figures 1-47 and 1-48), the equipment label, and the FCO label.

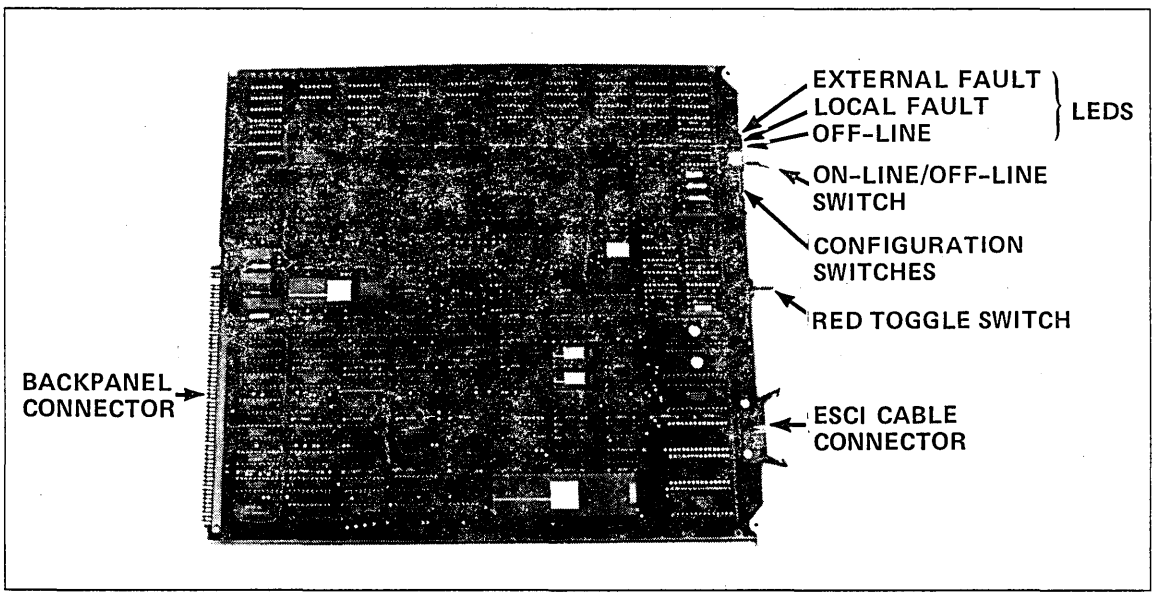

Figure 1-47. ESCI Board

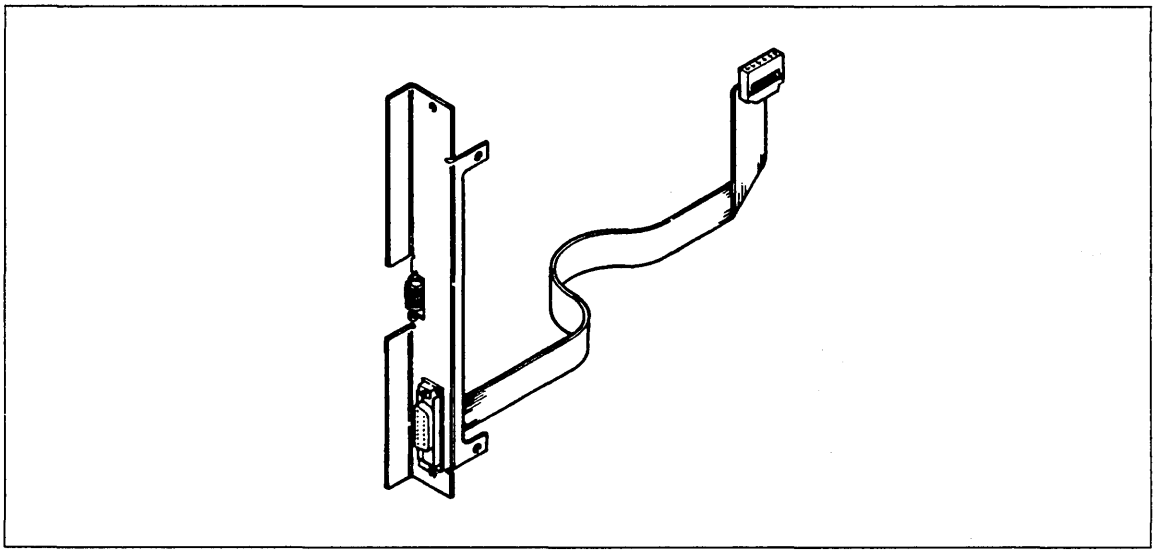

Figure 1-48. ESCI Cable Assembly

2. Attach the equipment label and the FCO label to the plastic fold-out holder inside the DI door.

3. Power off the DI and install the ESCI in the slot designated on the installation worksheet.

4. Remove a filler plate from the back of the cabinet (behind the ESCI board) and route the cable from the back of the cabinet, through the cable tray in the center of the cabinet. Refer to figure 1-49 for location of cable tray.

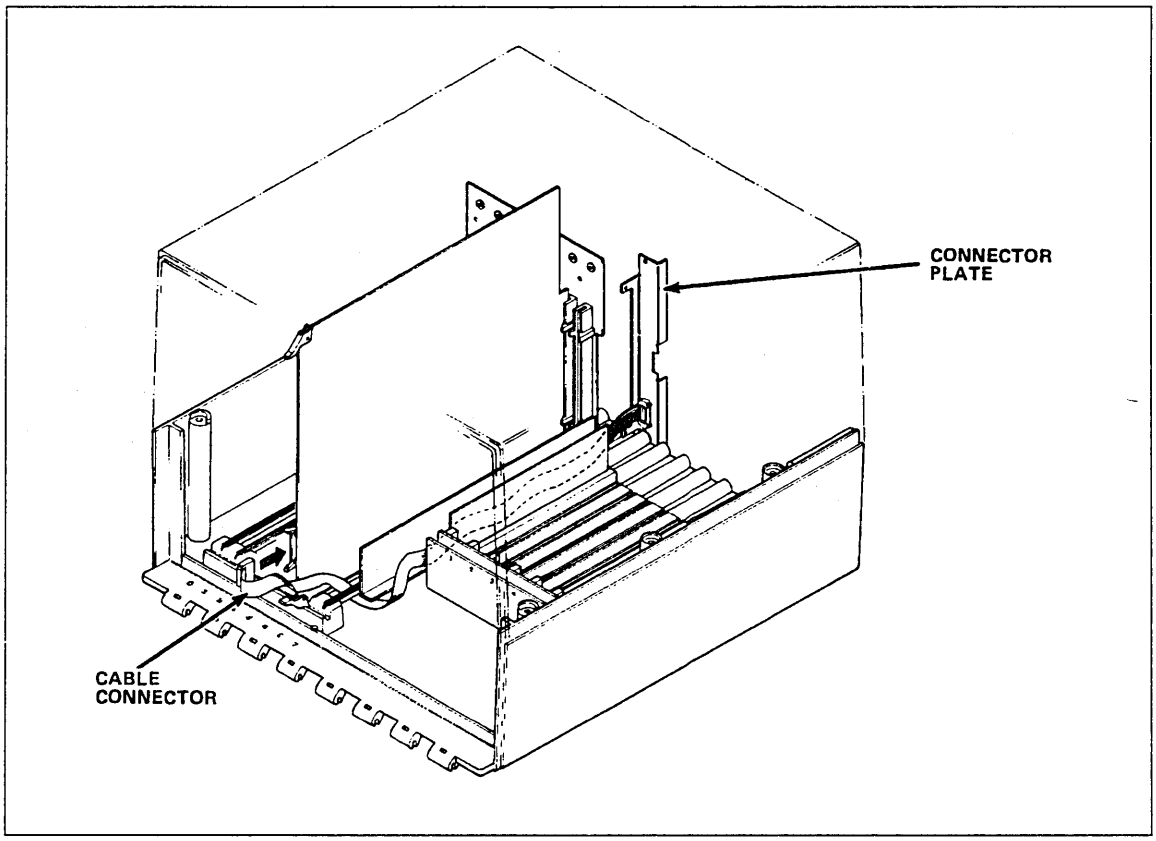

Figure 1-49. ESCI Cable Routing

5. Install the ESCI cable connector plate using the two screws removed from the filler plate.

6. Lift the lower board tracks to the right of the ESCI slot and route the cable under the tracks. If CIM/LIM cables are installed, the ESCI cable lies on top of them.

CAUTION

The ESCI plug is keyed to fit into the connector on the board only one way; however, with minimal effort, it is possible to insert some connectors upside-down. You must ensure that the plug is inserted into the connector properly, or fuses can be damaged.

7. Route the ESCI cable connector behind the vertical support rod and plug it into the ESCI board. You must ensure that the plug is properly connected by checking that the keys on the connector are aligned with the grooves on the plug, as is shown in figure 1-50. The red stripe on the cable must be on the top.

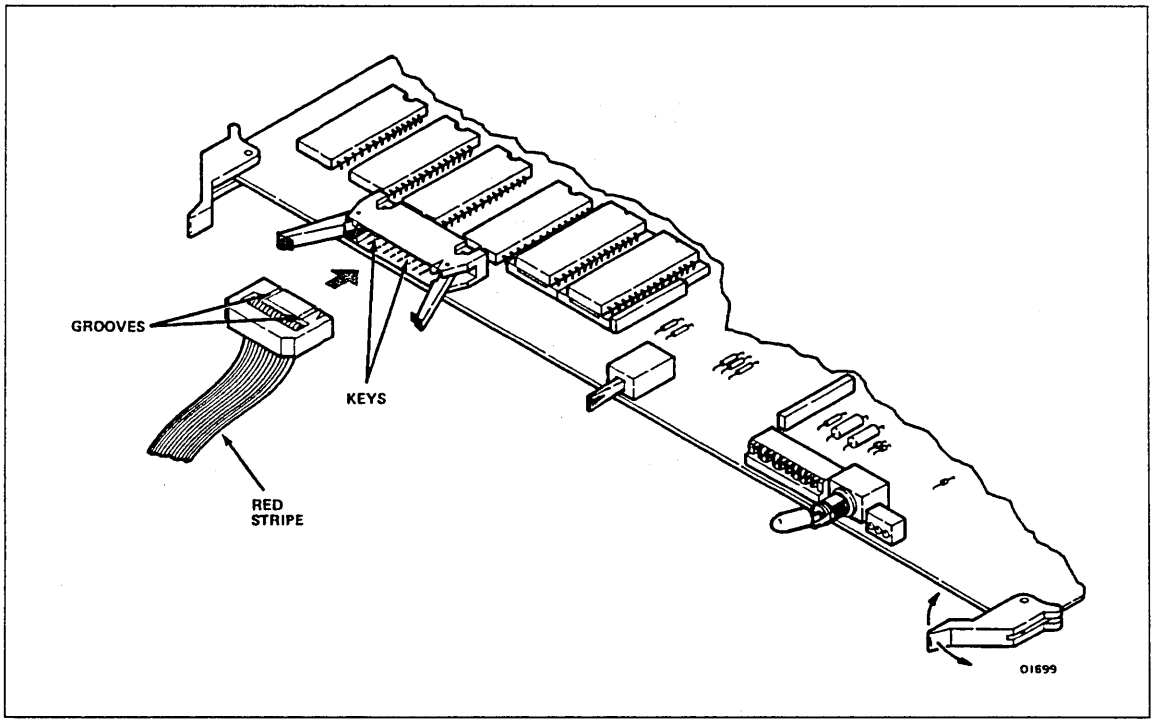

Figure 1-50. ESCI Connector Installation

Setting the ESCI Board Switches

The ESCI board has a set of ten configuration switches on the front edge of the board. The only switch used at this time is switch 9.

CAUTION

Do not use a pencil to set the configuration switches. Graphite can damage the switches. Instead, use a ball-point pen or small tool.

1. Set switch 10 and switches 1 through 8 left (off).
2. Refer to the installation worksheet to determine if the ESCI is used as a boot source. If it is used as a primary or a secondary boot source, set switch 9 to the right (on), and proceed to step 3.

   If the board is not to be used as a boot source, set switch 9 to left (off) and proceed to step 4.
3. If this board is designated as the primary boot source, enter the slot number on switches 3, 2, and 1 of the MPB board (the bottom three switches) as shown in the table below.

Slot Number	3	4	5	6	7
Switch 3	L	R	R	R	R
Switch 2	R	L	L	R	R
Switch 1	R	L	R	L	R

4. Set the ONLINE/OFFLINE toggle switch to ONLINE by pulling out and pressing down on the switch, (as shown in figure 1-51).
5. The red toggle switch in the center of the board is not used on current models and may be set in any position.

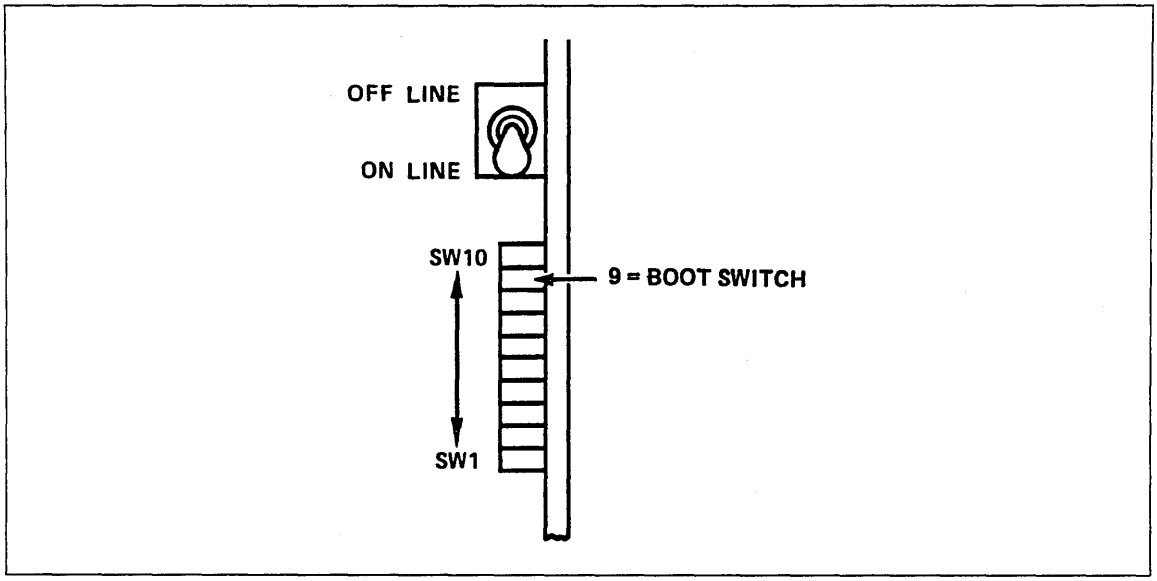

Figure 1-51. ESCI Configuration Switches

Mainframe Channel Interface (MCI) Installation Procedure

Equipment Number: DY226-A (Includes MCI board and cables)

You can install one or two MCI boards in the DI. Perform the following steps for each MCI board.

NOTE

If you are installing two MCI boards on a system using NOS, both boards can be connected to the same host.

If you are installing two MCI boards on a system using NOS/VE, each board must be connected to a different host.

If you are installing two MCI boards on a dual-state system, one board must be connected to the NOS host, while the other board must be connected to the NOS/VE host.

CAUTION

Static electricity can damage logic board circuits. Always wear a static discharge wrist strap when handling logic boards. Ground the wrist strap to the lug on the power supply as shown in figure 1-14. Do not handle the boards by the gold backpanel connectors. Always keep the boards in the E.S.D bags when you are not handling them.

1. Unpack the MCI board, MCI cable assembly, the two channel cables, the equipment label, and the FCO label. (The board and cables are shown in figures 1-52 and 1-53.)
2. Attach the equipment label and the FCO label to the plastic fold-out holder inside the DI door.

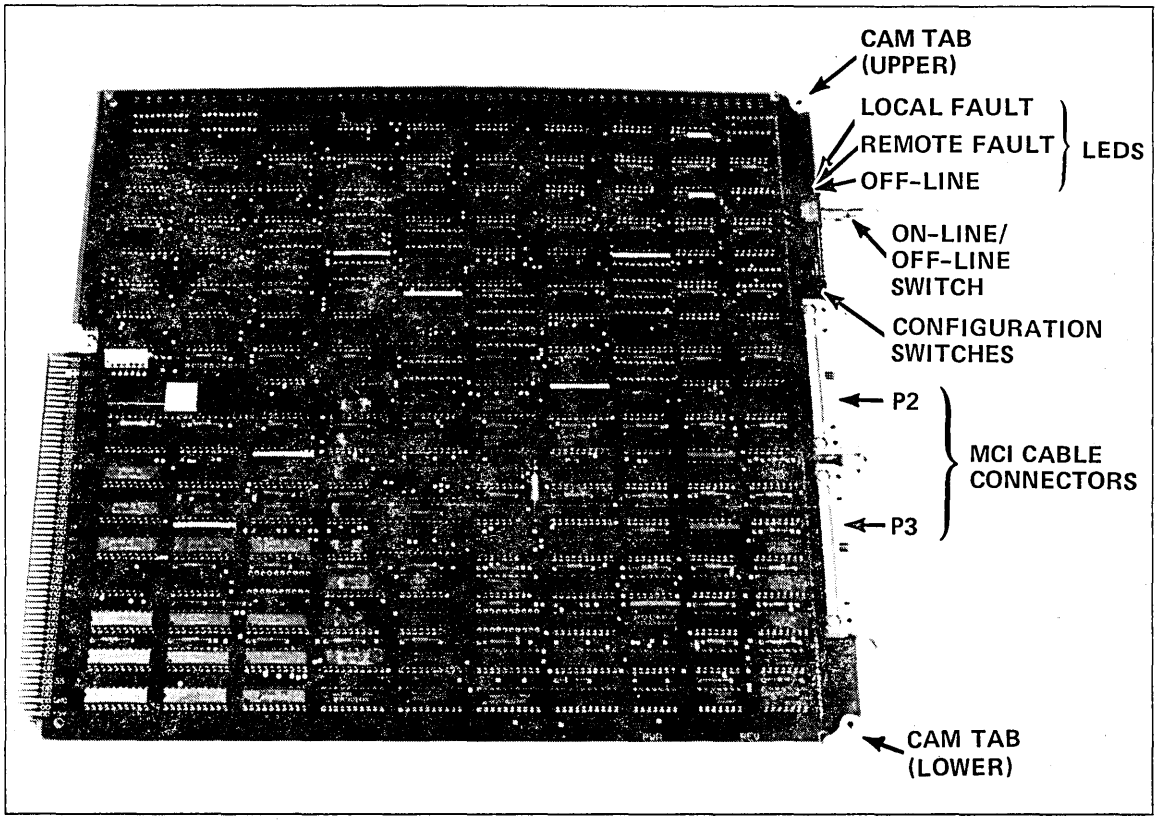

Figure 1-52. MCI Board

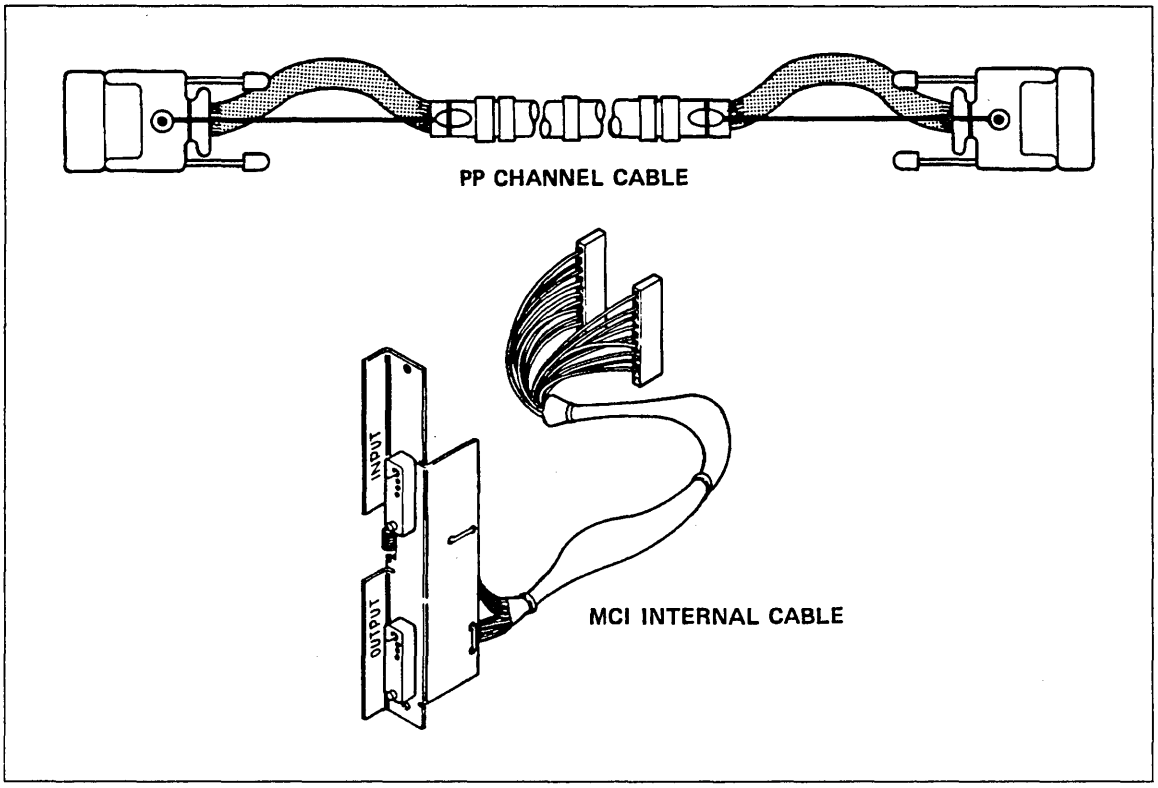

Figure 1-53. MCI Cables

CAUTION

If an ESCI cable has been installed, make sure it is in the cable tray and out of the way before you do step 3.

3. Install the MCI board into the backpanel in the slot number indicated on the installation worksheet.

4. Install the MCI cable (refer to figure 1-54). One end of the cable has two connectors that plug into the MCI board. The other end has a connector plate that is installed on the back of the cabinet.

CAUTION

The cable wires are very fragile. Never pull on them while installing or removing the connectors. If the cable is difficult to install, remove the MCI board and one or more filler plates. (Remember to replace them when you are finished.)

   a. Remove the filler plate directly behind the MCI board.

   b. Route the MCI cable from the back through the cable tray in the center of the cabinet.

   c. Install the connector plate in the back of the cabinet using the two screws removed from the filler plate.

   d. Route the cable around the front of the vertical support rod at the front of the cabinet.

   e. The plugs are labeled P02 and P03. Plug P02 into the top connector and P03 into the bottom connector.

NOTE

If the plugs are reversed, the DI will not be able to communicate with the mainframe.

   f. Attach the cable to the cable mount on the bottom of the power supply. If the hanger is not installed, refer to FCO CA 46424.

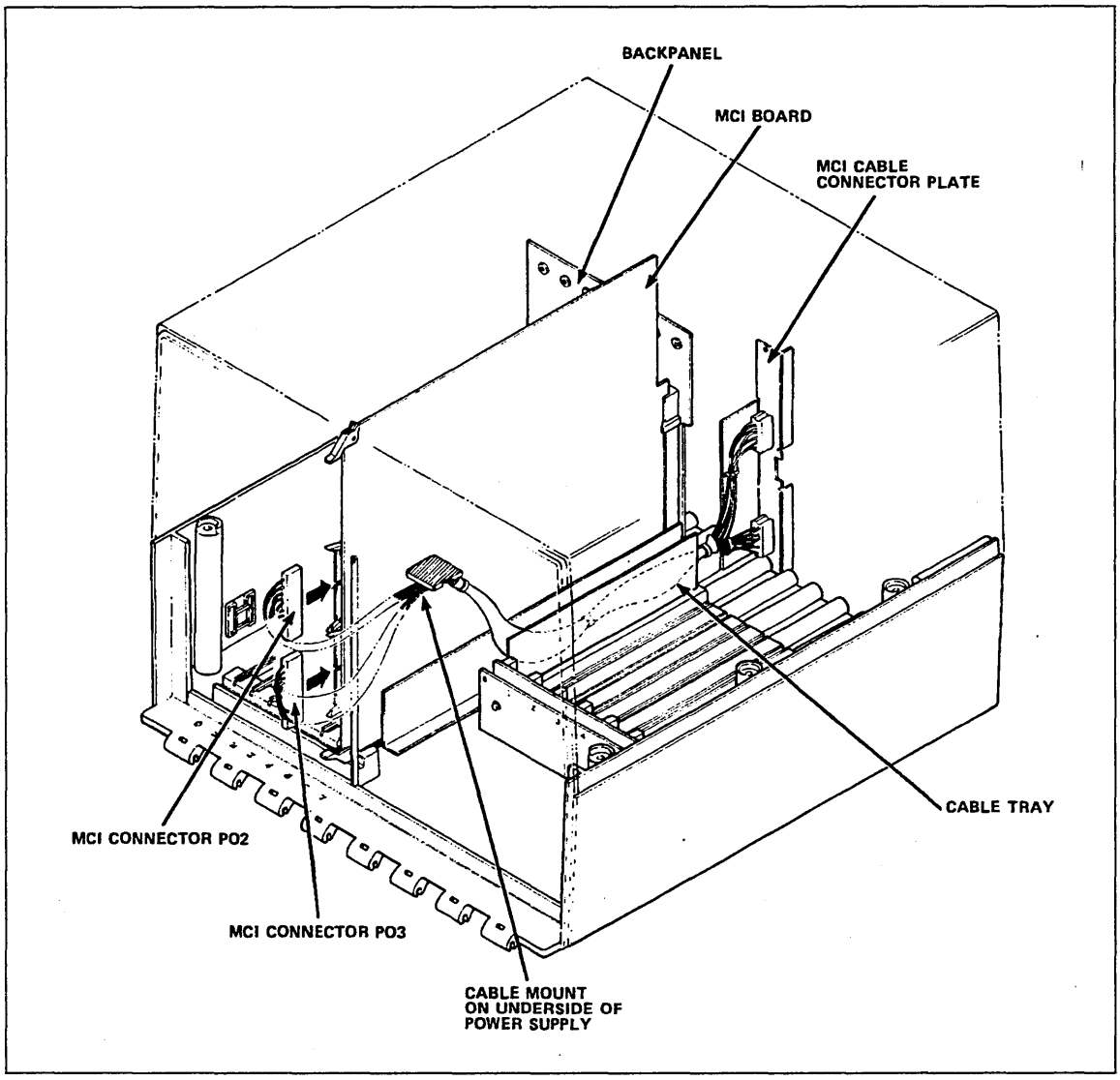

Figure 1-54. MCI Cable Installation

Setting the MCI Switches

The MCI has a set of ten configuration switches on the front edge of the board (as shown in figure 1-55.) The only switches used at this time are switches 9 and 10.

CAUTION

Do not use a pencil to set the configuration switches. Graphite can damage the switches. Instead, use a ball-point pen or small tool.

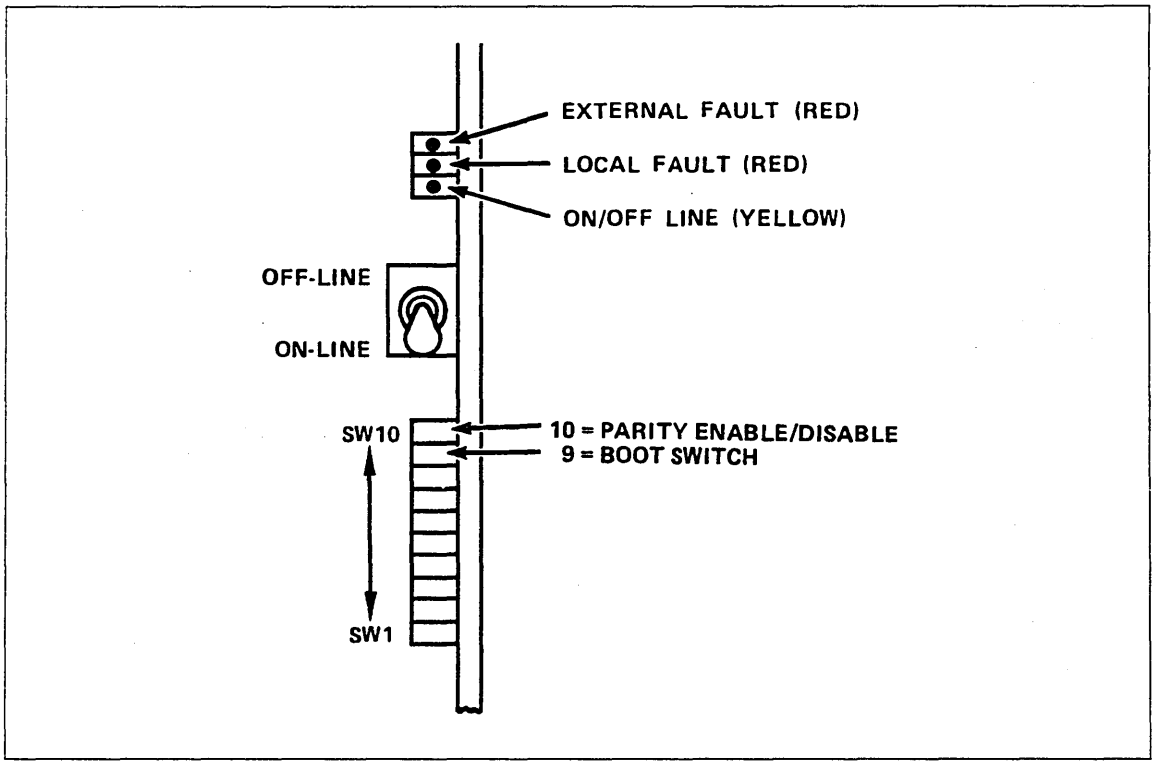

Figure 1-55. MCI Configuration Switches

1. Refer to the installation worksheet to determine if channel parity should be enabled or disabled. Set switch 10 to the right (on) to disable PP channel parity. Set switch 10 to the left (off) to enable parity.

2. Refer to the installation worksheet to determine if the MCI is used as a boot source. Set switch 9 to the right (on) to select the MCI as the boot source and proceed to step 3. Set switch 9 to the left (off) if the board is not to be used as a boot source, and proceed to step 4.

3. If this board is designated as the primary boot source, enter the slot number on switches 3, 2, and 1 of the MPB board (the bottom three switches) as shown below.

Slot Number	3	4	5	6	7
Switch 3	L	R	R	R	R
Switch 2	R	L	L	R	R
Switch 1	R	L	R	L	R

4. Set the ONLINE/OFFLINE toggle switch to ONLINE by pulling out and pressing down on the switch.

DI Offline Checkout

This procedure uses the onboard diagnostics to check out the DI before it is installed in the network. Additional information for using the onboard diagnostics and other troubleshooting tools may be found in the Troubleshooting Guide listed in About This Manual.

Before starting the offline checkout, verify that the following conditions have been met.

1. DI power/cooling fans check OK.
2. Boards and internal cables installed per worksheet.
3. MPB power indicator check OK.
4. System identifier entered and verified.
5. MCI not connected to channel.
6. ESCI not connected to transceiver.
7. LIMs not connected to terminals or modems.
8. Board switches set as follows:

MPB configuration switches:	10 through 4 – off (left) 3,2,1 – equal to slot number of primary boot board.
MPB ATTN/RST toggle switch:	Set to the middle position.
MCI, ESCI configuration switches:	1 through 8 – off 9 – off (Boot Switch) 10 – Parity (MCI only) (refer to worksheet)
CIM configuration switches:	10 – off (left) 9 – off (Boot source) 8 – off 5,6,7 – LIM number for secondary boot source. 4 – PORT number for primary and secondary boot source. 1,2,3 – LIM number for primary boot source.
SMM, MCI, ESCI, CIM toggle switch:	Down (online). No effect when DI is not connected to a network.

Test Description

The onboard diagnostic test starts running when the DI power is turned on and continues to run (if the DI is offline) until power is turned off or the test cannot continue. Therefore, you must monitor the indicators on the MPB to follow the progress of the test. It may be helpful to read through the following test summary before turning power on so you will know what to expect.

NOTE

The URI and 8-port LIM board fault indicators are not tested by the on-board diagnostics. Therefore, their fault indicators remain on at the completion of the diagnostics. The ESCI external fault indicator remains on if it is not connected to a transceiver cable. The MCI external fault indictor remains on if it is selected as the boot source.

When you are ready to start the test, turn on the DI power and watch the MPB indicators. The key indicators to watch are listed in the following sequence. All times are approximate; considerable variations may be expected.

1. Test Indicators – 1 second: Indicators on all boards come on. Replace board if indicator(s) do not light.

2. Test Timeout – 10 seconds: MPB indicator 5 (7 is the top indicator) flashes and then goes out. If it does not flash or does not go out, replace MPB. Whenever the MPB is replaced, the system identifier must be reentered.

3. Test MPB – 1 second: Indicators 2, 1, 0 flash and then go out. When an error occurs at this stage, the remainder of the test will abort and after a 10 second timeout, the test will restart (indicated by all indicators coming on).

   If this portion of the test fails and you have verified that the system identifier has been entered, replace the MPB.

4. PMM test – 13 seconds: Yellow indicator on MPB and the red cabinet FAULT indicator flash. PMM fault indicator goes out. Replace PMM if indicator does not go out.

5. SMM Test – (DY225) 96 seconds/SMM board (62 seconds if E/FCO 47972 is installed): Yellow indicators on MPB and SMM, and the red cabinet FAULT indicator flash. SMM fault indicator goes out. (SMM boards are checked sequentially in slot number order.) Replace SMM board if fault light does not go out.

6. Test MCI, ESCI, CIM, LIM – 1 second: All remaining indicators go out except the ESCI external fault (top indicator), 8-port LIM (S), URI fault, and the MCI if it is specified as the boot source.

   When the MCI is specified as the boot source, its lights go out initially, then come back on when it attempts to communicate over the channel. If the MCI is in slot number 7, the lights only go out for less than a second, so you must watch closely.

   Replace any board with fault light on. If more than one board has lights on, replace them in slot number order.

7. Initialize Software Download – 10 seconds: MPB indicators 6 and 3 should be on because DI cannot find a boot source. After 10 seconds, the test restarts at step 1, skips step 2 and continues through step 7.

For any failures not covered, refer to the Troubleshooting Guide listed in About This Manual.

Figure 1-56 gives a more complete description of all MPB indicators during a normal (no fault) test.

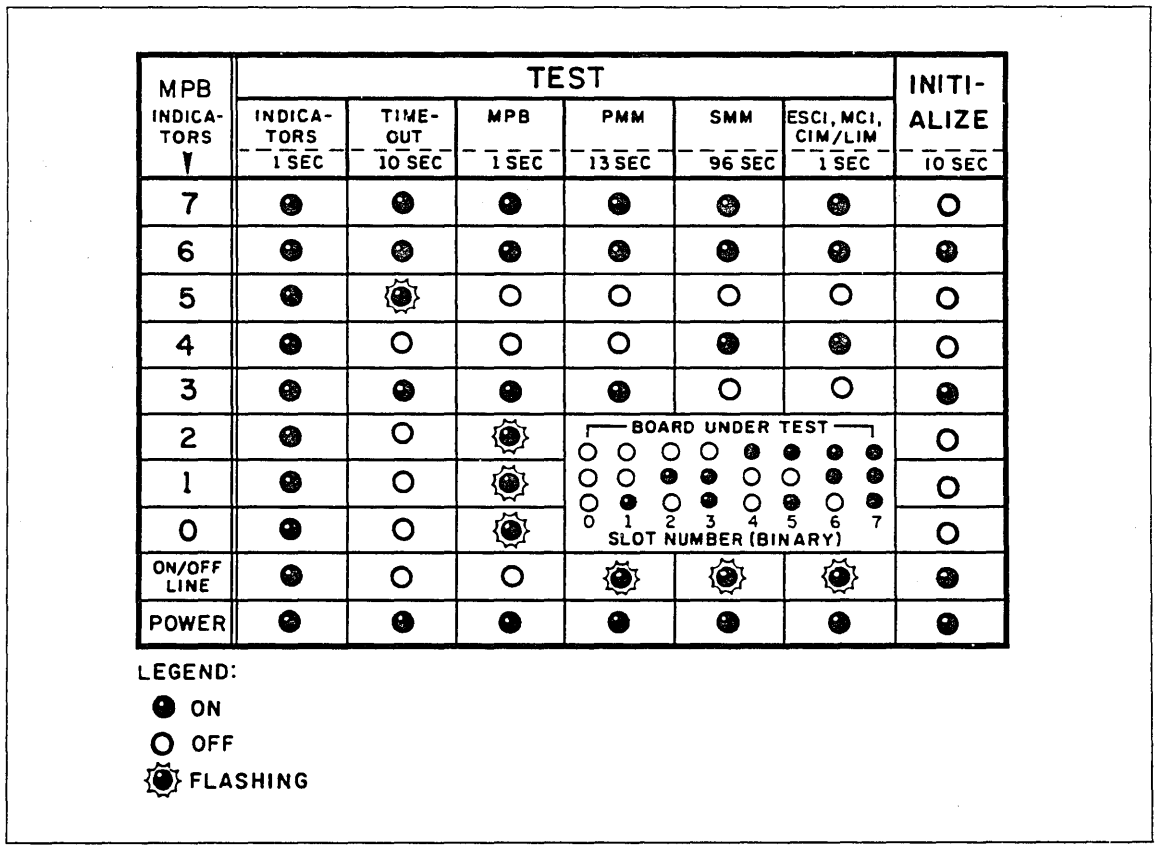

Figure 1-56. Onboard Test Sequence

Network Installation 2

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Network Installation 2

This chapter describes how to connect the DI to a network and how to check out the DI to ensure that it is ready for network operation. It is assumed that the DI has been configured and checked out offline as described in chapter 1.

Cabinet Installation

The DI cabinet may be placed on an equipment table or in an enclosure cabinet. There are two Control Data enclosure cabinets available (refer to figure 2-1):

1. GH487-A: DI enclosure table.
2. GH486-A/B: A 3-DI rack that includes power wiring and room for modems and a multiplexer. Model A is for 120-V applications and B is for 240-V applications. The 120-V cabinet requires a 20-A facility circuit breaker and a Hubbell 5632, or NEMA 5-20R, or equivalent wall socket. The 240-V cabinet requires a 16-A facility circuit breaker and a Siemens 5UB3-210 (Control Data part number 94260200) or equivalent 3-pole, 3-wire outlet.

There are no special installation instructions for these enclosure cabinets.

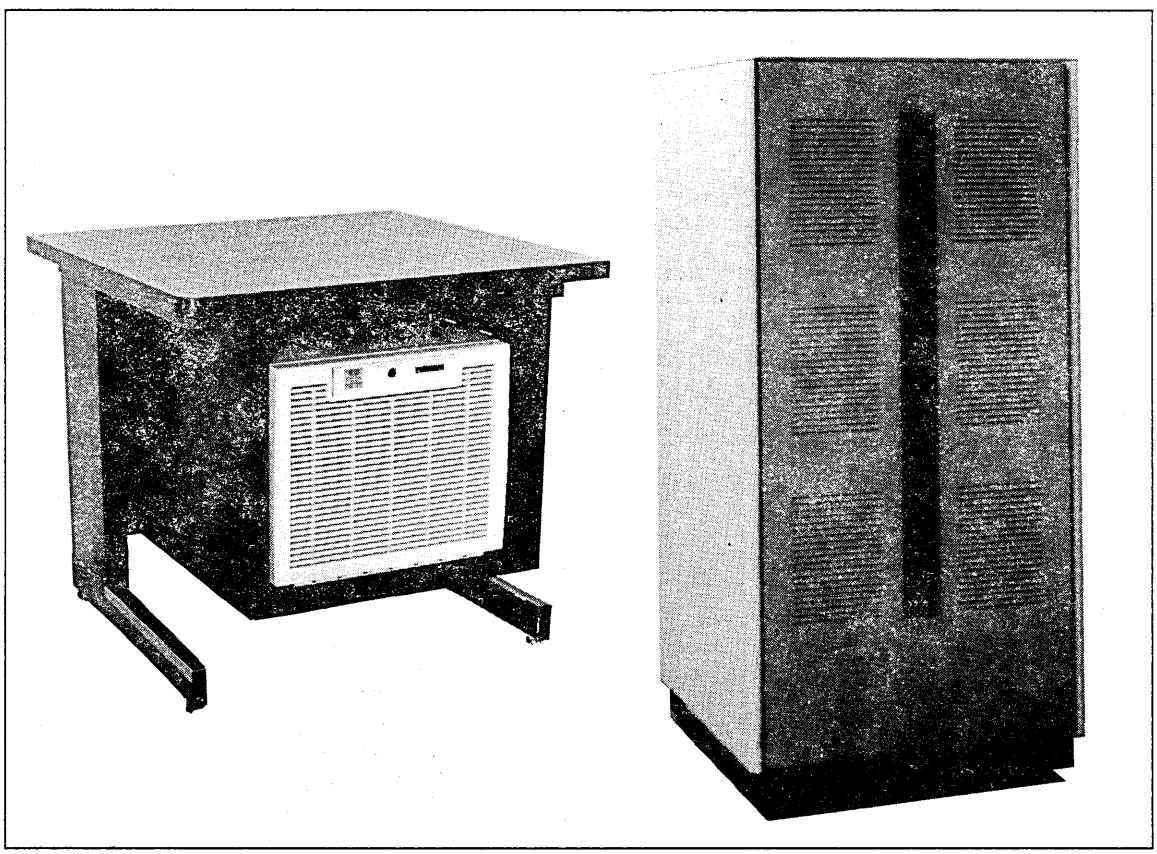


Figure 2-1. DI Enclosure Cabinets

DI Power Requirements

Facility electricians should be notified that the DIs use switching power supplies. A characteristic of this power supply is that the neutral current in the facility 3-phase line feeding the wall box may be as high as 1.73 times the line current. The facility 3-phase neutral line must be large enough to handle this current. When measuring the current on the 3-phase lines, a true RMS (Root Means Square) meter must be used because of the distorted current waveform.

Connecting the DI to the Network

The following procedures describe how to connect the DI external cables to the network equipment.

Installing Channel Cables

Equipment Number: None (supplied with the MCI equipment)

The channel cables are 19.8 m (65 ft) long and connect the host computer (CYBER 170 or CYBER 180) to the MCI board in the DI.

1. Refer to the installation worksheet for the cable destination. Consult with the network administrator regarding the location of the mainframe/channel and routing of all cables.
2. Tag the cables with destination information; for example, the mainframe serial number, the channel number, input or output, and the location of the mainframe.
3. Connect the cables to the DI. The INPUT cable is plugged into the top connector and the OUTPUT cable is plugged into the bottom connector (figure 2-2). (Input/Output is relative to the channel.) Tighten the connectors finger-tight or use a screwdriver.
4. Tag and connect the cables to the channel.

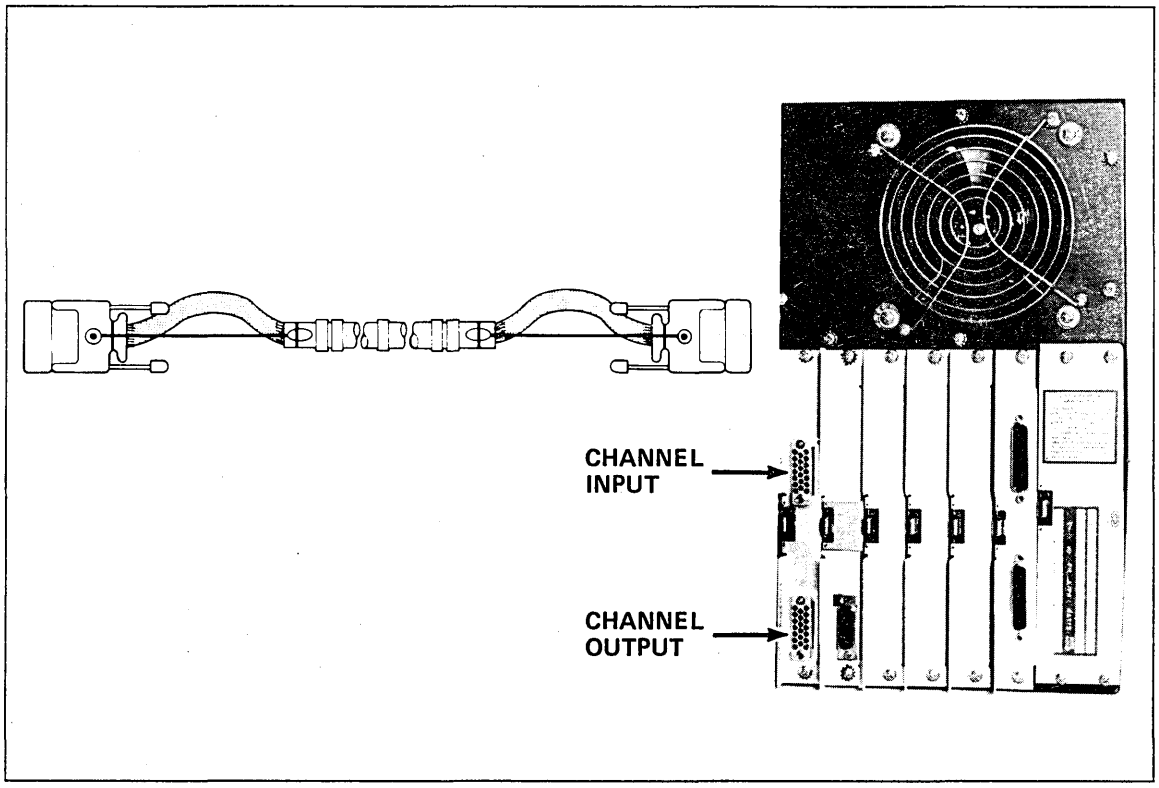


Figure 2-2. Channel Cable and MCI Connectors

Installing Transceiver Interface Cables

Equipment Numbers:
- YA328-A Teflon (recommended), 5 m (16.4 ft)
- YA328-B Teflon (recommended), 10 m (32.8 ft)
- YA328-C Teflon (recommended), 20 m (65.6 ft)
- YA328-D Teflon (recommended), 50 m (164.0 ft)
- YA329-A PVC (not flame-proof), 5 m (16.4 ft)
- YA329-B PVC (not flame-proof), 10 m (32.8 ft)
- YA329-C PVC (not flame-proof), 20 m (65.6 ft)
- YA329-D PVC (not flame-proof), 50 m (164.0 ft)

The transceiver interface cable (figure 2-3) connects the ESCI board on the DI to a transceiver located on the network trunk (coaxial cable), or externally to a multiplexer.

1. Refer to the installation worksheet for the cable number and destination. Consult with the network administrator regarding the location of the transceiver and routing of the cable.
2. Tag the cable with destination information; for example, the transceiver serial number, the trunk number and/or name, and the transceiver location.
3. Connect the cable to the DI. Lock the connector with the slide latch on the DI connector.
4. Tag and connect the cable to the transceiver.

NOTE

If your responsibilities include transceiver, multiplexer, repeater, or coaxial cable installation, refer to the CDCNET Local Area Network Installation manual listed in About This Manual.

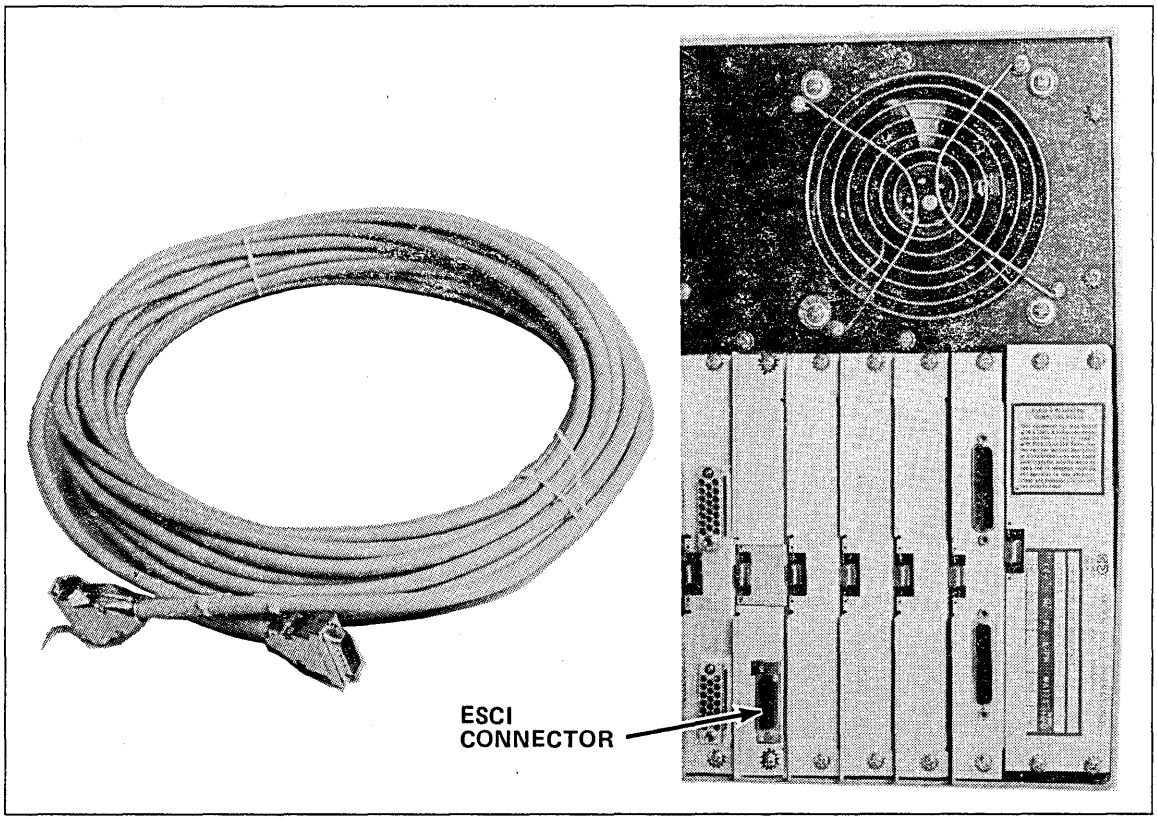


Figure 2-3. Installing Transceiver Interface Cables

Installing LIM Cables

There may be many LIM cables connected to a DI, so it is extremely important to tag each cable carefully with destination information. Include the equipment number of the cable, location, serial number, model number, and any information that may help identify both ends. Also, do not move cables from one port or LIM to another without permission from the network manager.

CAUTION

Make sure all cables connected to the DI are also connected to a terminal device on the other end. Unconnected cables may introduce software and diagnostic failures.

DY229 (RS-232-C) LIM

The DY229 (RS-232-C) LIM uses TN108, TN109, TN472, YA305, or YA306 cables. Four cables, in any combination, can be connected to each DY229 LIM. The A, B, or C suffix (such as TN108-B) indicates cable lengths of 3 m (10 ft), 7.6 m (25 ft), or 15.2 m (50 ft), respectively. The cable usage is shown in the following list.

- The TN108 cable connects the LIM to a modem or other data communication equipment (DCE). This cable has a 25-pin male connector to the user device.
- The TN109 cable connects the LIM to a terminal or other data terminal equipment (DTE). This cable has a 25-pin female connector to the user device.
- The TN472 cable connects the LIM to data terminal equipment (DTE) that uses the request-to-send (RTS) and clear-to-send (CTS) signals for EIA hardware flow control. This cable has a 25-pin female connector to the user device.
- The YA305 cable connects the LIM to a terminal or other data terminal equipment. This cable has a 25-pin male connector to the user device.
- The YA306 cable connects the LIM to a DTE that uses the RTS and CTS signals for hardware flow control. This cable has a 25-pin male connector to the user device.

To install the DY229 cables, perform the following steps:

1. Connect the cable(s) to the DI. 4-port LIM cables are shown in figure 2-4. Tighten the locking screws with a straight slot screwdriver.
2. Tag and connect the cables to the terminals, modems, and/or printers. Refer to the specific terminal or modem manual for instructions on connecting cables to terminals or modems. Refer to the Batch Device User Guide (listed in About This Manual) for instructions on connecting cables to the printers.

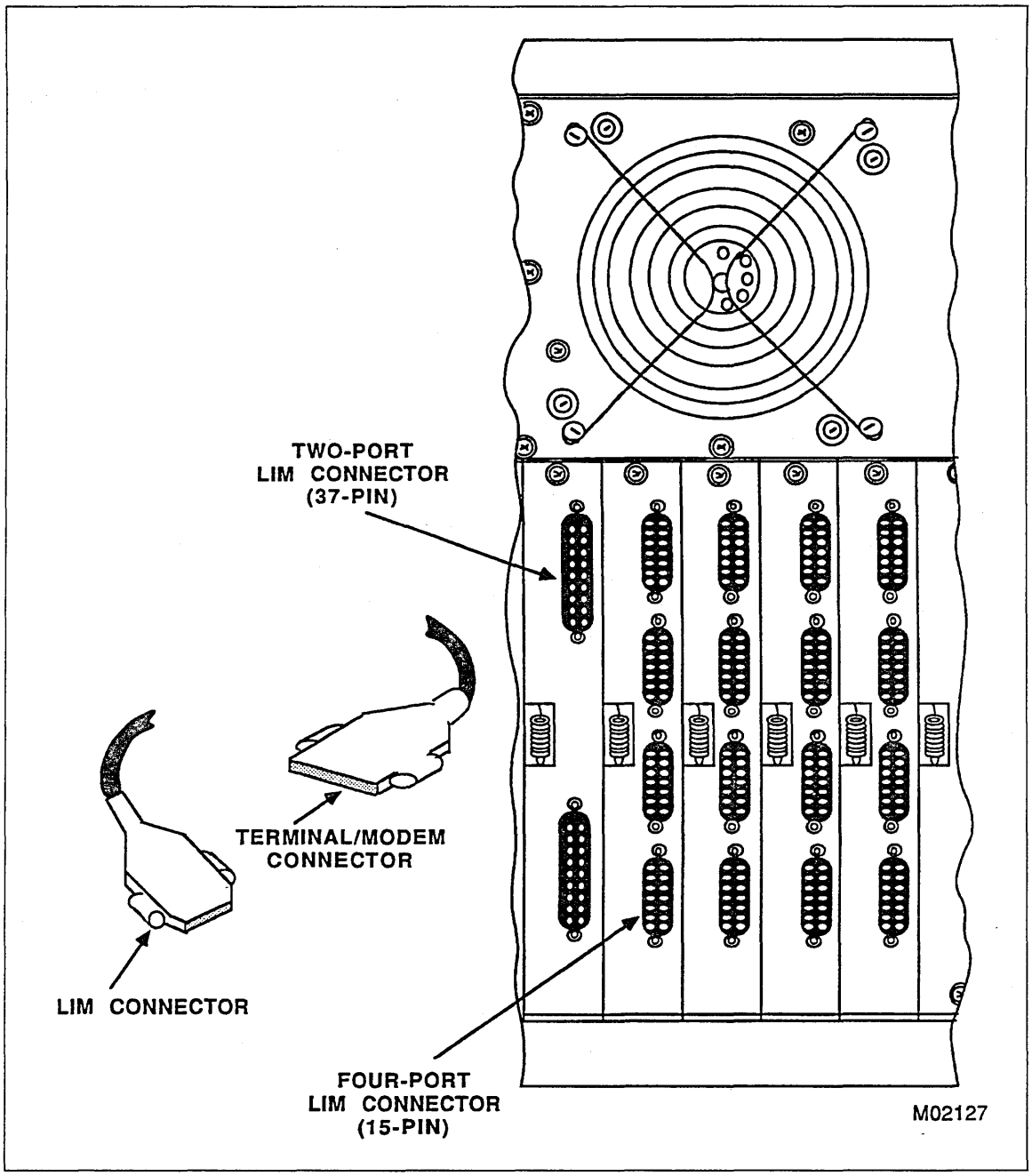


Figure 2-4. Installing 4-Port LIM Cables

DY230 (RS-449) LIM

The DY230 (RS-449) LIM uses TN101 or TN102 cables. Two cables can be connected to each DY230 LIM. The A, B, or C suffix to the cable equipment number (such as TN101-A) indicates cable lengths of 7.6 m (25 ft), 15.2 m (50 ft), or 57.0 m (190 ft), respectively. The cable usage is shown in the following list.

- The TN101 cable connects the LIM to a modem or other data communication equipment (DCE). This cable has a 37-pin male connector to the user device.
- The TN102 cable connects the LIM to a terminal or other data terminal equipment (DTE). This cable has a 37-pin female connector to the user device.

To install the DY230 cables, perform the following steps:

1. Connect the cable(s) to the DI. 2-port LIM cables are shown in figure 2-5. Tighten the locking screws with a straight slot screwdriver.
2. Tag and connect the cables to the terminals, modems, and/or printers. Refer to the specific terminal or modem manual for instructions on connecting cables to terminals or modems. Refer to the Batch Device User Guide (listed in About This Manual) for instructions on connecting cables to the printers.

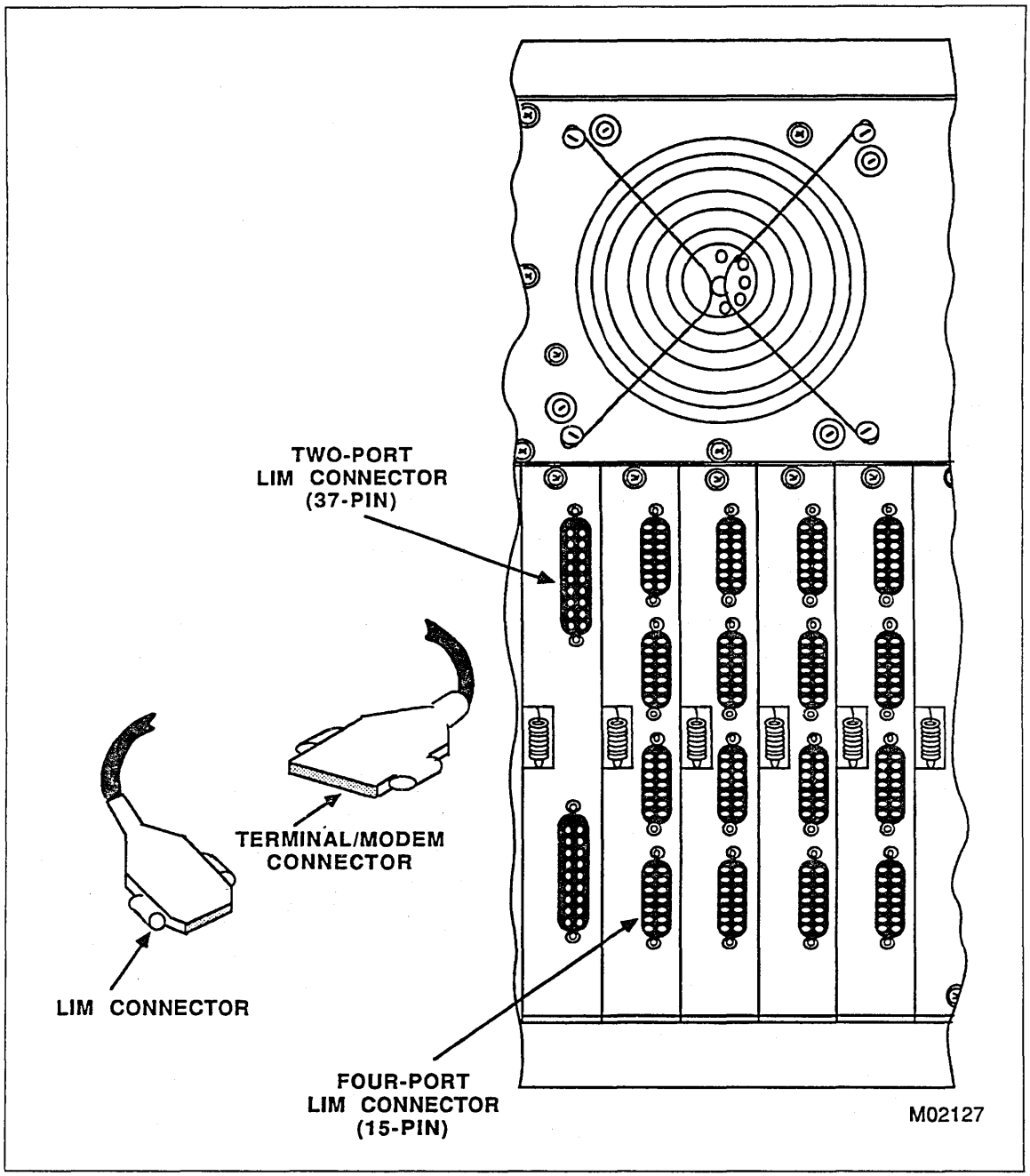


Figure 2-5. Installing 2-Port LIM Cables

DY246 (URI) LIM

The Unit Record Line Interface (URI) Module uses the TN484 and TN485 cables and a TN486 Winchester adapter cable. The A, B, and C suffixes to the cable equipment numbers (such as TN484-A) indicate cable lengths of 7.6 m (25 ft), 15.2 m (50 ft), and 30.4 m (100 ft), respectively. The cable usage is shown in the following list.

- The TN484 cable connects the URI to Centronics printers. Current CDCNET printer support software does not use the Centronics interface.
- The TN485 cable connects the URI to Data Products printers. This cable has a 50-pin male connector at the printer end.
- The TN486 adapter cable mates with the 50-pin male connector on the Data Products LIM cable, providing a connection to printers requiring a 50-pin female Winchester connector.

To install the DY246 cables, perform the following steps:

1. Connect the cable(s) to the DI. The URI cables are shown in figure 2-6. Tighten the locking screws with a straight slot screwdriver.
2. Tag and connect the cables to the printers. Refer to the Batch Device User Guide (listed in About This Manual) for instructions on connecting cables to the printers.

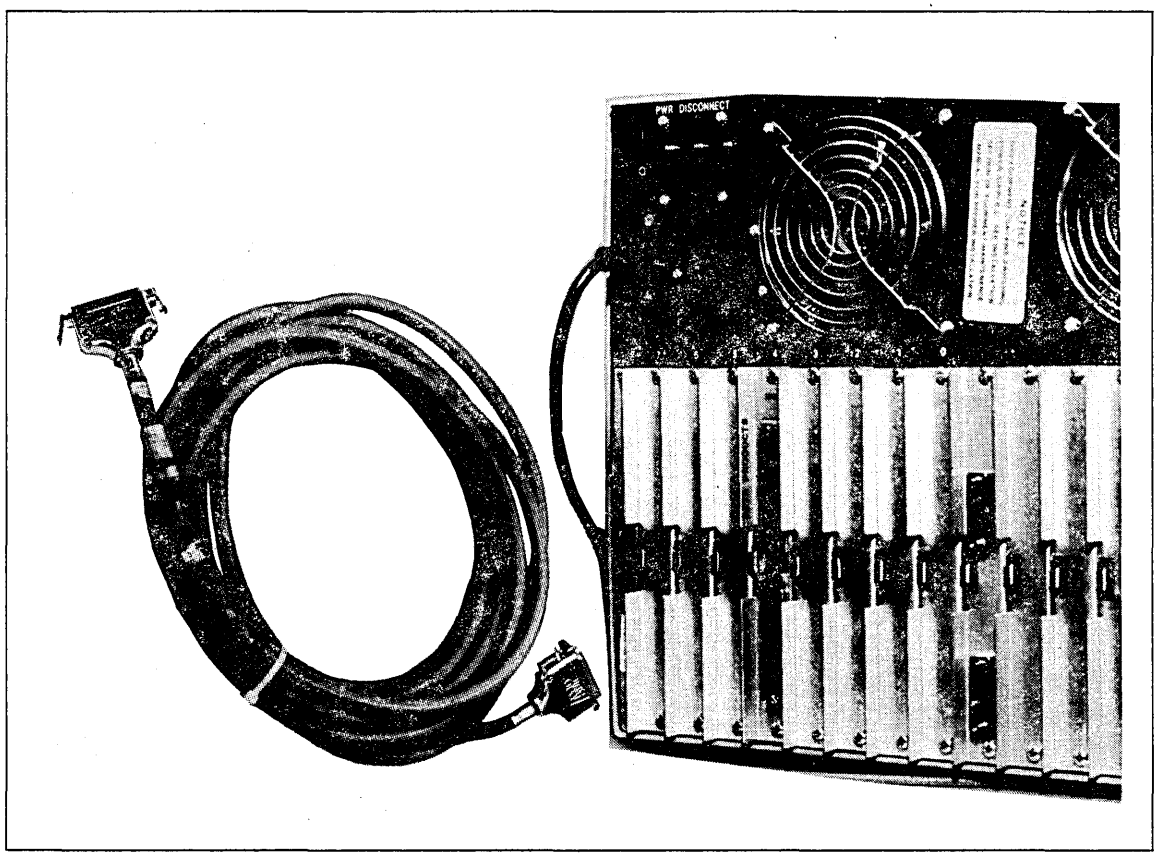


Figure 2-6. Installing URI Cables

DY261 (V.35) LIM

The V.35 LIM uses the TN490, YA327, and YA326 cables. The A, B, and C suffixes to the cable equipment numbers (such as TN490-A) indicate cable lengths of 3.1 m (10 ft), 7.6 m (25 ft), and 15.2 m (50 ft), respectively. The cable usage is shown in the following list.

- The TN490 connects a V.35 LIM to a modem/data set or other DCE device that requires a 34-pin male cable connector with 1.524 mm (0.060-in) diameter pins and single-lead jackscrew connector locking mechanism.
- The YA327 connects the LIM to a modem/data set or other DCE device that requires a 34-pin male cable connector with 1.016 mm (0.040-in) diameter pins and spring clip with guide arm connector locking mechanism.
- The YA326 connects the LIM to a terminal or other DTE device that requires a 34-pin female cable connector with 1.524 mm (0.060-in) diameter pins used with single-lead jackscrew connector locking mechanism.

To install the DY261 cables, perform the following steps:

1. Connect the cable(s) to the DI. The LIM cables are shown in figure 2-4. Tighten the locking screws with a straight slot screwdriver.
2. Tag and connect the cables to the terminals, modems, and/or printers. Refer to the specific terminal or modem manual for instructions on connecting cables to terminals or modems. Refer to the Batch Device User Guide (listed in About This Manual) for instructions on connecting cables to the printers.

DY267 (RS-232-C) 8-Port LIM

The DY267 LIM uses YA333 cables and YA324 modular adapters (figure 2-7). The A, B, C, and D suffixes to the cable equipment numbers (such as YA333-A) indicate cable lengths of 4.3 m (14 ft), 7.6 m (25 ft), 15.2 m (50 ft), and 60.8 m (200 ft), respectively. The A, B, C, D, and E suffixes to the modular adapters (such as YA324-A) indicate the different functions provided by each adapter as shown in the following list.

- The YA324-A connects the LIM to a modem/data set with a 25-pin male connector. It provides Data Carrier Detect (DCD) disconnect.
- The YA324-B connects the LIM to a modem/data set with a 25-pin male connector. It provides Data Set Ready (DSR) disconnect.
- The YA324-C connects the LIM to a modem/data set with a 25-pin male connector. It addresses the NON-DATA CALLER situation.
- The YA324-D connects the LIM to a terminal/DTE with a 25-pin female connector. It provides Request to Send (RTS)/Clear to Send (CTS) (hardware) low control.
- The YA324-E connects the LIM to a terminal/DTE with a 25-pin male connector. It provides Request to Send (RTS)/Clear to Send (CTS) (hardware) flow control.

To install the DY267 cables, perform the following steps:

1. Connect the cable(s) (figure 2-7) to one of the connectors on the LIM (figure 2-8).
2. Tag and connect the cables to the appropriate modular adapter (figure 2-7). Connect the modular adapter to the terminal device. Refer to the specific terminal device manual for instructions on connecting cables. Refer to the Batch Device User Guide (listed in About This Manual) for instructions on connecting cables to the printers.

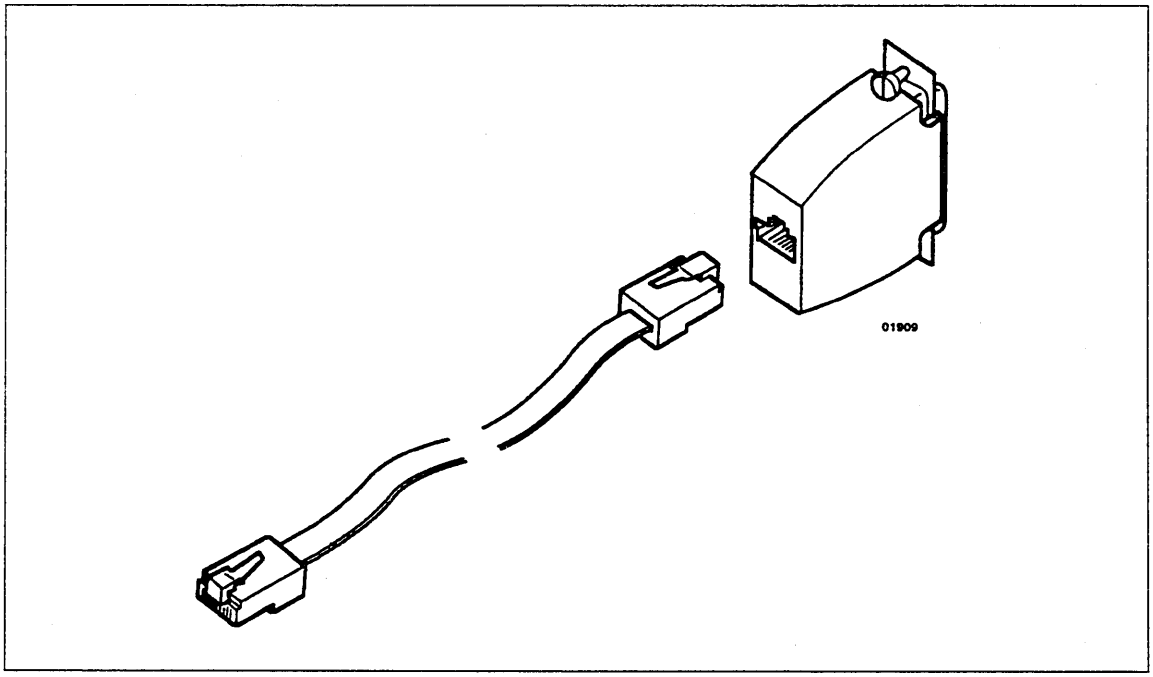


Figure 2-7. DY267 (8-Port) LIM Cables (YA333-x) and Modular Adapter (YA324-x)

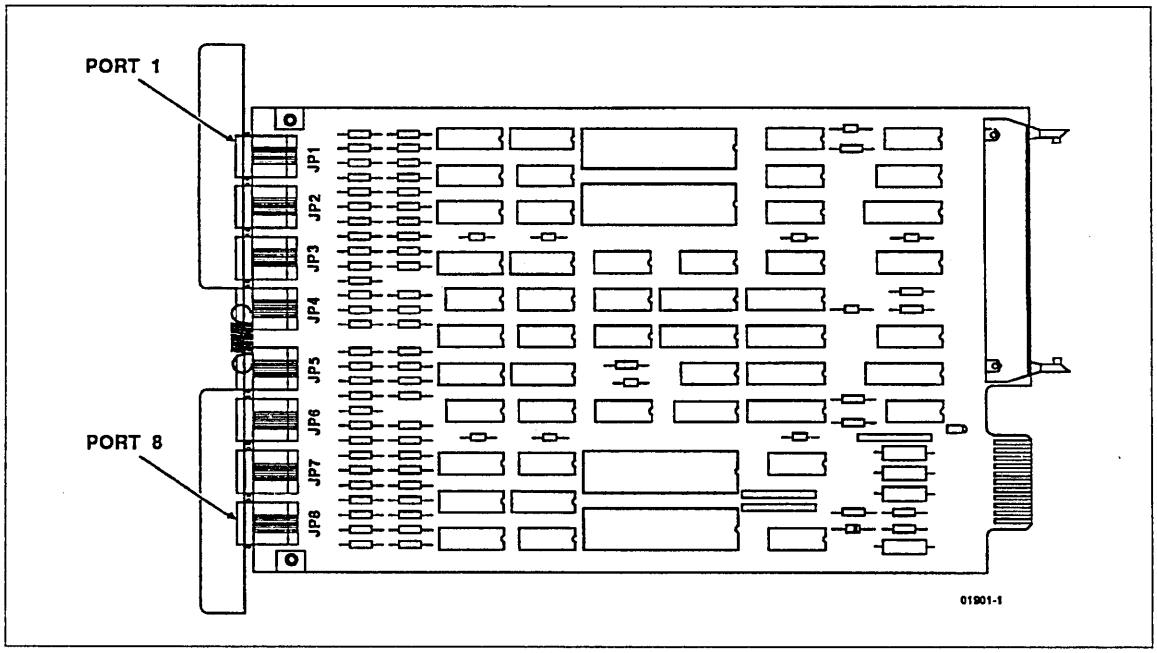


Figure 2-8. DY267 LIM Port Connectors

DI Online Checkout

Before the DI can be checked out online, the network (or host) operator must enter the DI identification and configuration into the network operating system. The procedures for doing this are included in the Configuration and Site Administration Guide listed in About This Manual. Also, the procedure for entering the system identifier is described in Entering the System Identifier in chapter 1.

After the DI information has been entered into the system, the online checkout may begin.

Online Test Description

This test runs the onboard diagnostics that were run in the offline checkout and, in addition:

- Checks the ESCI-to-transceiver circuit (turning off the ESCI external fault light).
- Verifies that the network software has been downloaded from the host.
- Verifies that the DI is ready for network operation.

Conditions:

- System Identifier entered and verified.
- MCI connected to channel.
- ESCI connected to transceiver.
- LIMs connected to terminals or modems.
- URIs connected to printers.
- Board switches set as follows:

MPB configuration switches:	10 through 4 off (left); 3, 2, 1 equal to slot number of primary boot board.
MPB ATTN/RST toggle switch:	Set to the middle position.
MCI, ESCI configuration switches:	1 through 8 off; 9 (boot) and 10 (MCI parity) set per installation worksheet.
CIM configuration switches:	10 – off (left) 9 – (boot source) set per installation worksheet. 8 – off 5,6,7 – LIM number for secondary boot source. 4 – PORT number for primary and secondary boot source. 1,2,3 – LIM number for primary boot source.
SMM, MCI, ESCI, CIM toggle switch:	Down (online).

Test Sequence

The online checkout test begins when the DI power is turned on. After the onboard diagnostics are successfully run, the DI initiates down-line loading of the network software from the network host. The MPB indicators must be monitored to follow the progress of the test. It may be helpful to read through the following test sequence summary before turning power on so you will know what to expect.

NOTE

All of the following times are approximate.

1. Test Indicators – 1 second: Indicators on all boards come on. Replace board if indicator(s) do not light.

2. Test Timeout – 10 seconds: MPB indicator 5 (7 is the top indicator) flashes for 10 seconds and then goes out. If it does not flash or does not go out, replace MPB. Whenever the MPB is replaced, the system identifier must be reentered.

3. Test MPB – 1 second: Indicators 2, 1, 0 flash and then go out. When an error occurs at this stage, the remainder of the test aborts and, after a 10-second timeout, the test restarts which is indicated by all indicators coming on. If this portion of the test fails, and you have verified that the System Identifier has been entered, replace the MPB.

4. PMM Test – 13 seconds: Yellow indicator on MPB and the red cabinet FAULT indicator flash. PMM fault indicator goes out. Replace PMM if indicator does not go out.

5. SMM Test – 96 seconds: Yellow indicators on MPB and SMM, and the red cabinet FAULT indicator flash. SMM fault indicator goes out (SMM boards are checked sequentially in slot number order). Replace SMM board if fault light does not go out.

6. Test MCI, ESCI, CIM, LIM – 1 second: All remaining indicators go out within 1 second. Replace any board with fault light on. If more than one board has lights on, replace them in slot number order.

   NOTE

   URIs and 8-port RS-232 LIMs are not tested by the onboard diagnostics. Therefore, it is normal for the URI and 8-port RS-232 error LEDs to remain on until the software is loaded. The online diagnostics for the 8-port LIMs and URIs are then automatically run. If software does not load, disregard all URI and 8-port error LEDs.

7. Initialize Software Loading – 1 through 2 minutes: Indicator 7 goes out and indicator 5 flashes whenever input is received from the host. The yellow indicator flashes one time per second. After all modules have been loaded, indicators 0 through 5 flash, indicating that module linking is in process.

8. Idle State – variable: If the system is busy or cannot continue the down-line loading at this time, the DI enters the idle state. Indicator 7 comes on and 6 goes out. The yellow indicator continues to flash.

9. Operational state: After the software has completed loading, indicators 7 and 6 both go out. Indicator 5 flashes whenever the DI is busy. All other MPB indicators in the DI should not light.

NOTE

The CDCNET cabinet FAULT light is not turned off by running the onboard diagnostics, but will be turned off when the CDCNET software is downloaded.

10. Inform the network operator that the online checkout is complete. The network operator should then run the online diagnostics tests and use the Troubleshooting Guide (listed in About This Manual) to isolate any problems.

Figure 2-9 shows the sequence and timing of all MPB indicators during a normal (no fault) test. (The first six steps are identical to the offline test sequence.)

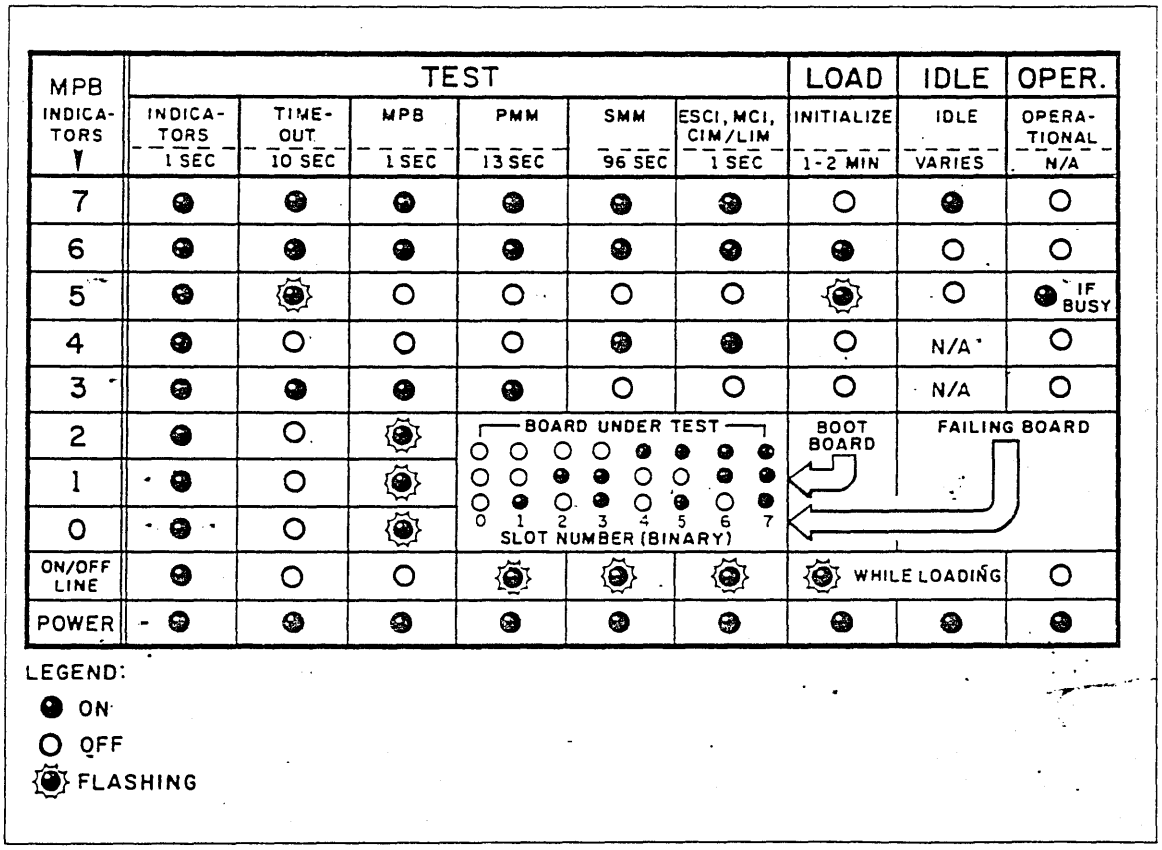


Figure 2-9. Online Test Sequence

Printer Switch Settings 3

CDC533/536 Asynchronous Line Printer 3-2

CDC585 Unit Record Interface (URI) Line Printer 3-4

CDC537 Synchronous Line Printer 3-5

Printer Switch Settings 3

This chapter contains the switch settings for the various printers that may be used in a CDCNET configuration. For more information on the switch settings, refer to your printer's manual(s).

At present, CDCNET supports the following printers:

- CDC533/536 asynchronous line printer
- CDC585 Unit Record Interface (URI) line printer
- CDC537 synchronous line printer

NOTE

To set the various attributes for your printer, use the CHANGE BATCH DEVICE ATTRIBUTES (CHABDA) command (refer to the Batch Device User Guide 60463863).

CDC533/536 Asynchronous Line Printer

The recommended switch settings for the CDC533/536 printer are shown in table 3-1. The main control panel options are shown in table 3-2.

Table 3-1. Recommended CDC533/536 Switch Settings

Switch Number	Switch Setting
Switches on the 1PC1 Board	
1	ON
2	ON
3	OFF
4	OFF
Switch Set SWN1 on the 1PC2 Board	
1	ON
2	ON
3	ON
4	ON
5	ON
6	ON
7	ON
8	ON
9	ON
Switch Set SWN2 on the 1PC2 Board	
1	ON
2	ON
3	OFF
Switch Set SWN3 on the 1PC2 Board	
1	OFF
2	ON
3	ON
4	ON
5	ON
6	ON
7	ON
8	OFF

Table 3-2. Main Control Panel Options

Option Number	Setting	Option Number	Setting
01	N/A (reserved)	27	N
02	N	28	Y
03	N	29	0
04	Y	30	N
05	N	31	N
06	Y	32	N
07	FF	33	96
08	FF	34	7
09	FF	35	1
10	Y	36	10
11	Y	37	10
12	Y	38	00
13	Y	39	00
14	Y	40	0
15	Y	41	N/A
16	N	42	N/A
17	N	43	N/A
18	N	44	N/A
19	N	45	Y
20	N	46	1
21	N	47	16
22	2	48	N/A (reserved)
23	N	49	N/A (reserved)
24	N	50	N/A (reserved)
25	Y	51	N/A (reserved)
26	N	52	N/A (reserved)

CDC585 Unit Record Interface (URI) Line Printer

The recommended switch settings for the CDC585 printer are shown in table 3-3.

Table 3-3. CDC585 Recommended Switch Settings

Switch Number	Switch Setting
Switch Set SW1	
1	OFF
2	ON
3	OFF
4	OFF
5	OFF
6	OFF
7	OFF
8	OFF
Switch Set SW2	
1	ON
2	OFF
3	ON
4	OFF
5	OFF
6	OFF
7	OFF
8	ON
Switch Set SW3	
1	OFF
2	ON
3	ON
4	OFF
5	OFF
6	ON
7	ON
8	ON
Switch Set SW4	
1	ON
2	ON
3	ON
4	OFF
5	OFF
6	ON
7	ON
8	ON
Switch Set SW5	
1	OFF
2	OFF
3	ON
4	OFF
5	ON
6	OFF
7	OFF
8	OFF

CDC537 Synchronous Line Printer

The recommended switch settings for the CDC537 printer are shown in table 3-4.

Table 3-4. CDC537 Recommended Switch Settings

Switch Number	Switch Setting	Recommended Switch Setting Action
SW1-1	ON	Step-Count Truncate
SW1-2	OFF	Initial Status is Stop after Power On
SW1-3	OFF	Print Only on Buffer Full Condition
SW1-4	OFF	Do not Convert to Uppercase
SW1-5	OFF	No Double LF
SW1-6	ON	Print on PF Command
SW1-7	OFF	Maximum of 8 Overprints
SW1-8	OFF	No Line-Feed on Carriage Return
SW2-1	OFF	Invalid Characters Printed as Spaces
SW2-2	ON	Invalid Function Code is Ignored
SW2-3	ON	DEL Code is Invalid
SW2-4	ON	VFU Skipover is Enabled
SW2-5	ON	Works with switches SW6 and SW7 to form a binary
SW2-6	ON	number which specifies the number of skipover lines.
SW2-7	OFF	SW5=ON, SW6=ON, and SW7=OFF specify Skipover = 3
SW2-8	OFF	DEL Code = DEL Control Code
SW3-1	OFF	Disable FLS Switch
SW3-2	OFF	Unused
SW3-3	OFF	Unused
SW3-4	OFF	Unused
SW3-5	OFF	Unused
SW3-6	OFF	Unused
SW3-7	OFF	Unused
SW3-8	ON	Select Only One "Zero" Character
SW4-1	ON	Enable 7 Data Bits
SW4-2	ON	Enable 1 Stop Bit
SW4-3	OFF	Tx Parity
SW4-4	OFF	Rx Parity
SW4-5	ON	Even Parity
SW4-6	OFF	Data Buffer = 4K Bytes
SW4-7	OFF	CAN Code Disabled
SW4-8	ON	No Modem - RTS Constantly On

(Continued)

Table 3-4. CDC537 Recommended Switch Settings *(Continued)*

Switch Number	Switch Setting	Recommended Switch Setting Action
SW5-1	OFF *	Used with SW5-3, SW5-4, and SW5-5 to Set BPS
SW5-2	Variable	Used with SW5-6 to Set Protocol
SW5-3	OFF *	Switches SW5-1, SW5-3, SW5-4, and SW5-5 Set BPS
SW5-4	ON *	
SW5-5	OFF *	SW5-1 SW5-3 SW5-4 SW5-5 BPS
		OFF, OFF, OFF, OFF = 19,200
		* OFF, OFF, ON, OFF = 9,600
		OFF, OFF, OFF, ON = 7,200
		OFF, OFF, ON, ON = 4,800
		ON, OFF, OFF, OFF = 3,600
		ON, OFF, ON, OFF = 2,400
		ON, OFF, OFF, ON = 2,000
		ON, OFF, ON, ON = 1,800
		OFF, ON, OFF, OFF = 1,200
		OFF, ON, ON, OFF = 600
		OFF, ON, OFF, ON = 300
SW5-6	Variable	Used with SW5-2 to Set Protocol
		SW5-2 SW5-6
		OFF, OFF SIMPLEX
		ON, OFF UNBLOCKED FULL DUPLEX
		OFF, ON BLOCKED FULL DUPLEX
SW5-7	OFF	Internal Clock Selection
SW5-8	OFF	Unused
SW6-1	OFF	Low Frequency
SW6-2	OFF	SCA Low
SW6-3	ON	CTS Disabled
SW6-4	ON	DCD Disabled
SW6-5	ON	DSR Disabled
SW6-6	OFF	DTR Only
SW6-7	OFF	Rx Clock Internal
SW6-8	OFF	Tx Clock Internal

Appendixes

Glossary A-1

Equipment/Product Cross-Reference B-1

Selecting the Right LIM Cable C-1

Converting a 255x Cabling Scheme to a CDCNET TDI/NDI Cabling Scheme . D-1

Cable Information and Pin Assignments E-1

Glossary A

A

Asynchronous Protocol

The communications protocol enabling the transmission of data as characters individually synchronized by start/stop bits.

B

Bell 113

A modem protocol similar to Bell 103.

Bell 212

A dual-mode modem protocol featuring full-duplex transmission at speeds up to 300 baud using the 103 protocol or up to 1200 baud using a phase-shifted carrier.

Bus

1. (ANDIPS) One or more conductors used for transmitting signals or power.
2. A hardware arrangement in which processors and storage components are attached to a shared transmission medium.

Byte

1. (ISO) A binary character string operated upon as a unit and usually shorter than a computer word.
2. (ISO) A group of contiguous bits. Unless prefixed (for example, a 6-bit byte), the term implies 8-bit groups. An 8-bit byte is sometimes called an octet. When used for encoding character data, a byte represents a single character.

C

Carrier Sense Multiple Access/Collision Detect (CSMA/CD)

A communications protocol that performs the following three functions:

1. Carrier sense enables a communications medium or communications processor to detect any traffic currently active in a network circuit.
2. Multiple access enables a communications medium or communications processor to send a message whenever it senses that the circuit is not busy.
3. Collision detect enables a communications medium or communications processor to sense when a collision occurs on a circuit between data transmitted from different sources. When a collision is detected, the data transmission stops, and the transmitting sources wait for a preset interval before beginning their transmissions again.

Catenet

Refer to Concatenated Network.

CCITT

Refer to Consultative Committee of International Telephone and Telegraph.

CDCNET

Refer to Control Data Distributed Communications Network.

Character

(ISO) A member of a set of elements upon which agreement has been reached, and that is used for the organization, control, or representation of information. Characters may be letters, digits, punctuation marks, or other symbols. A character can be a graphic character or a control character.

CIM

Refer to Communications Interface Module.

Coaxial Cable

A transmission cable that provides large bandwidth and high data/low error rates. This cable contains a central carrier wire surrounded by fine copper mesh and/or an aluminum sleeve.

Communication Line

A terminal line that establishes a complete communication circuit between a terminal or workstation and a CDCNET device interface.

Communications Interface Module (CIM)

The logic board within a CDCNET device interface that controls transmissions between the line interface module (LIM) bus and the internal system bus (ISB).

Concatenated Network (Catenet)

A communications network composed of more than one type of communications medium (more than one network solution); often established when it is necessary to interconnect a local area network (LAN) with other resources (for example, another local area network, or geographically remote computer-related resources). Also called a catenet.

Configuration

The process by which various computer-related resources are coordinated to function together. Under CDCNET, various types of configuration activities are performed.

1. Network configuration, whereby hosts, terminals, workstations, and unit record devices are interconnected into a network using CDCNET device interfaces and appropriate communications media.

2. Device interface hardware configurations, whereby decisions are made regarding which logic boards to install in a particular CDCNET device interface.

3. Device interface software configuration, whereby CYBER hosts decide which CDCNET software to down-line load into a specific CDCNET device interface.

4. Creation of device interface configuration files, whereby network administrators or communications consultants identify/describe the specific CDCNET device interfaces that reside in their networks and place this information in host-maintained permanent files.

See also Logical Configuration.

Consultative Committee of International Telephone and Telegraph (CCITT)

An organization chartered by the United Nations to develop and publish international standards for the communications industry.

Control Data Distributed Communications Network (CDCNET)

1. The collection of compatible hardware and software products offered by Control Data to interconnect computer resources into distributed communications networks.
2. A network that is interconnected by Control Data Network Architecture (CDNA)-compatible hardware and software products.

CSMA/CD

Refer to Carrier Sense Multiple Access/Collision Detect.

D

Data Terminal Equipment (DTE)

1. That part of a data station which serves as a data source, data sink, or both.
2. Data communications equipment that allows human interaction with the databases and operations of a network.

Default Parameter Settings

The command parameter values to be assumed when no alternate values are supplied by the user.

Device Interface (DI)

The communications processor that Control Data offers as its CDCNET hardware product. Also called a CDCNET device interface.

DI

Refer to Device Interface.

Diagnostic

1. Software and/or microcode that isolates failing hardware/software components within a CDCNET device interface.
2. A message indicating a malfunction within a CDCNET device interface or one of its related communications media.

DTE

Refer to Data Terminal Equipment.

Duplex

1. In data communication, pertains to an independent transmission that alternates one way at a time.
2. Refer to Full Duplex.

E

ESCI

Refer to Ethernet Serial Channel Interface.

Ethernet

A baseband local area network protocol developed by the Xerox Corporation. CDCNET supports an Ethernet-compatible network.

Ethernet Serial Channel Interface (ESCI)

The logic board within a CDCNET device interface that controls transmissions between an Ethernet transceiver and the internal system bus (ISB) of the device interface.

F

FDX

Refer to Full Duplex.

Firmware

Microcode that is contained in Read-only Memory (ROM). In the device interface, on-board diagnostics and bootstrap are examples of firmware.

Four-wire Circuit Transmission

A transmission arrangement in which two half duplex circuits (two wires each) are combined to make one full duplex circuit.

Full Duplex (FDX)

Simultaneous independent transmission in both directions. Also called Duplex. Contrast with Half Duplex.

H

Half Duplex (HDX)

In data communication, pertains to an independent transmission that alternates one way at a time. Contrast with Full Duplex.

HDLC

Refer to High-Level Data Link Control.

HDX

Refer to Half Duplex.

Hertz (Hz)

A unit of electrical frequency equal to one cycle per second.

High-Level Data Link Control (HDLC)

The International Standards Organization's (ISO) bit-oriented protocol for the data link layer of the Open Systems Interconnection (OSI) reference model.

Host

Refer to Host Computer.

Host Computer

A mainframe computer system, connected to a communications network, which provides primary services, such as database access, user application execution, or program compilation. For CDCNET, a host computer provides network support functions, including maintenance of device interface load files. Also called a host.

I

IEEE

Refer to Institute of Electrical and Electronics Engineers.

IEEE 802.3

A subset of IEEE 802 that defines line protocol and media access technology for local area networks that use a bus employing CSMA/CD.

Institute of Electrical and Electronics Engineers (IEEE)

The IEEE Computer Society promotes cooperation and exchange of technical information among its members. Through conferences, committee work, publications, and other information exchanges, the IEEE has established several data processing standards (for example, the IEEE standard 802).

Interface

A mechanism that enables the exchange of data between two dissimilar resources in a communications network.

Internal System Bus (ISB)

The circuit within a CDCNET device interface that relays signals between the logic boards of the device interface.

The circuit that relays signals between major device interface boards. It is composed of the internal control bus (ICB) and the internal transfer bus (ITB).

Internal Transfer Bus (ITB)

The part of the internal system bus (ISB) that relays general-purpose signals between the major device interface boards.

ISB

Refer to Internal System Bus.

ITB

Refer to Internal Transfer Bus.

L

LAN

Refer to Local Area Network.

LIM

Refer to Line Interface Module.

Line Interface Module (LIM)

A smaller logic board within a CDCNET device interface that enables the device interface to be attached to terminal, workstation, and unit record equipment lines.

Local Area Network (LAN)

A privately owned communications network that interconnects computer-related resources. Typically, the resources interconnected by this network are confined to a relatively concise geographic area, such as a single building.

Logic Board

A printed circuit board with data storage and/or processing components installed; sometimes called a board, card, or module.

M

Main Processor Board (MPB)

The logic board within a CDCNET device interface that provides the primary processing power for the device interface.

Mainframe Channel Interface (MCI)

An optional logic board within a CDCNET device interface that connects the device interface to a 12-bit CYBER host channel.

Mainframe Device Interface (MDI)

The standard CDCNET device interface variant that interconnects a 12-bit channel of host computers operating under NOS or NOS/VE with an Ethernet local area network.

Mainframe/Terminal Device Interface (MTI)

The standard CDCNET device interface variant that interconnects a 12-bit NOS and NOS/VE host computers with terminals, workstations, and unit record equipment without requiring a local area network.

Maintenance Console Option (MCO)

An optional CDCNET product that allows an RS-232-C ASCII terminal or modem to be connected directly to the main processor board (MPB) for test purposes.

Maintenance Host

In CDCNET, a NOS or NOS/VE host responsible for collection of all network errors and production of error analysis reports.

Maintenance Software

Software designed to perform system tests and diagnostics. All CDCNET maintenance software is onboard and online.

Mark

Presence of a signal. Equivalent to a binary one condition. CDCNET does not support mark parity processing (parity bit always set to one) for asynchronous terminals.

MCI

Refer to Mainframe Channel Interface.

MCO

Refer to Maintenance Console Option.

MDI

Refer to Mainframe Device Interface.

Modem Eliminator

A wiring device that replaces two modems. It connects equipment over a distance of up to several hundred feet. Also called a null modem.

Modulation

A message signal that is impressed on a carrier signal and transmitted at another signal frequency.

MPB

Refer to Main Processor Board.

MTI

Refer to Mainframe/Terminal Device Interface.

Multiplexer (MUX)

Equipment that enables a site to concentrate data transmission between multiple slower-speed devices (such as terminals and workstations) and a higher-speed channel. For example, a multiplexer can concentrate data being transmitted between multiple terminals and a host computer by using a local area network.

Multiplexing

1. (ISO) In data transmission, a function that permits two or more data sources to share a common transmission medium such that each data source has its own channel.
2. The division of a transmission facility into two or more channels.

MUX

Refer to Multiplexer.

N

NDI

Refer to Network Device Interface.

Network

An interconnected set of host computers, terminals, workstations, and unit record equipment. Refer also to Local Area Network and Concatenated Network.

Network Architecture

A set of functional layers in which each layer performs a specific set of functions and services; together, the layers interact to provide total, end-to-end network operation. Each layer uses a protocol and has its relationship with other layers defined.

Network Device Interface (NDI)

The standard CDCNET device interface variant that transfers data between networks (for example, between two local area networks; between a local area network and a communications line; or between a local area network and a public data network).

Network Operating System (NOS)

The operating system for CYBER 170 computer systems.

Network Operating System/Virtual Environment (NOS/VE)

The software that controls data processing and storage in CYBER 180 mainframes. CDCNET files stored and processed in CYBER 180 mainframes, such as configuration and boot files, network log files, and CDCNET host applications, are run under the Network Operating System/Virtual Environment.

Non-Data Caller

Any use of an input/output device that does not involve the transfer of data.

NOS

Refer to Network Operating System.

NOS/VE

Refer to Network Operating System/Virtual Environment.

O

Onboard

ROM-resident; for example, the self-test diagnostics in the device interface.

P

Packet

A group of binary digits, including data and control elements, switched and transmitted as a data unit by communications networks. The packet's data, control signals, and error-control information are arranged in a specific format. Different types of networks use different sizes of packets.

Packet-Switching

1. A data transmission process using addressed packets whereby a channel is occupied only for the duration of transmission of the packet.
2. The process by which data packets are placed on the channel and travel to the destination.
3. A method of transmitting messages through a communications network in which long messages are subdivided into short packets with a maximum length.

Parallel Transmission

A method of transmission in which each bit within a unit of information (usually a byte) is sent simultaneously on a single channel. Contrast with Serial Transmission.

S

SDLC

Refer to Synchronous Data Link.

Serial Port

An I/O port that transmits data out one bit at a time. Contrast with Parallel Port. RS-232-C is a common serial-signaling protocol.

Serial Transmission

1. The sequential transmission of the bits constituting an entity of data over a data circuit.
2. In data communication, transmission at successive intervals of signal elements constituting the same telegraph or data signal. The sequential elements may be transmitted with or without interruption, provided they are not transmitted simultaneously. For example, telegraph transmission by a time-divided channel.
3. A method of data transmission in which each bit of information is sent sequentially on a single channel. Contrast with Parallel Transmission.

SMM

Refer to System Main Memory.

Start Bit

In asynchronous transmission, the bit that synchronizes the receiver's. At least one start bit is sent to the receiver prior to the start of each character; the start bit always has a value of zero.

Stop Bit

In asynchronous transmission, the bit that ends a character's frame. One stop bit is sent to the receiver after the end of each character; the stop bit always has a value of one.

Switched Line

A communication line connected with one device interface, but able to be connected to any one of several terminals via a switching mechanism, such as a dialed telephone line. Contrast with Dedicated Line.

Sync Character

A character sent from a transmitting station for the purpose of synchronizing the clocks in the transmitting and receiving stations.

Synchronous Data Link Control (SDLC)

Bit-oriented data link control protocol developed by International Business Machines (IBM).

Synchronous Transmission

Transmission in which the data characters are transmitted at a fixed rate with the transmitter and receiver synchronized.

System Main Memory (SMM)

A device interface board with 1024K byte increments of dynamic RAM accessible by all interfaces and the resident main processor board (MPB).

T

TDI

Refer to Terminal Device Interface.

Terminal Device Interface (TDI)

The standard CDCNET device interface variant that interconnects terminals, workstations, and unit record devices with an Ethernet local area network.

Trunk

Medium through which data communications can occur.

U

Unit Record Device

A peripheral device (for example, a line printer, card reader, or card punch) whose unit of input/output corresponds to a logical record on a host computer.

Unit Record Interface (URI)

An interface board that provides for CDCNET attachment to peripheral devices. Refer to Unit Record Device.

URI

Refer to Unit Record Interface.

Equipment/Product Cross-Reference B

Table B-1 lists the internal equipment numbers, external product numbers, and product nomenclature for various CDCNET products grouped by function.

Table B-1. CDCNET Equipment/Product Cross-Reference by Function

Equipment Number	Product Number	Description
Basic DI		
GH120-B	2601-3	Device Interface (DI) cabinet, 60-Hz, 120-V ac (GH120A).
DY245-A		Master Processor Board (MPB) (DY245A).
GH121-A	2601-2	Device Interface (DI) cabinet, 50-Hz, 240-V ac (GH121A).
DY245-A		Master Processor Board (MPB) (DY245A).
Memory		
DY225-A	2604-1	System Main Memory Board (SMM), 1024 K bytes.
DY232-A	2605-1	Private Memory Module (PMM), 128 K bytes.
I/O Interfaces		
DY226-A	2607-1	Mainframe Channel Interface Board (MCI).
DY227-B	2608-5	Ethernet Serial Channel Interface Board (ESCI).
DY228-A	2609-1	Communications Interface Module (CIM).
Line Interface Modules		
DY229-A	2612-1	RS-232-C/V.24, 4-channel LIM.
DY229-B		RS-232-C/V.24, 4-channel LIM.
DY230-A	2610-1	RS-449, 2-port LIM.
DY230-B		RS-449, 2-port LIM.
DY246-A	2613-1	Unit Record Interface (URI), 1-port LIM.
DY261-A	2617-1	V.35, 2-port LIM.
DY267-A	2618-1	RS-232-C 8-port LIM.

(Continued)

Table B-1. CDCNET Equipment/Product Cross-Reference by Function *(Continued)*

Equipment Number	Product Number	Description
Ethernet Components		
TN111-A	2630-1	Ethernet transceiver.
TN111-B	2630-3	Ethernet 802.3 transceiver and tap.
TN112-C	2631-2	Ethernet 802.3 multiplexer, 120/240-V ac, 50/60-Hz.
TN114-B	2632-1	Ethernet 802.3 repeater, 120/240-V ac, 50/60-Hz.
YA300-A	2630-2	Ethernet transceiver tap block and plug kit.
YA301-A	2633-2	Ethernet terminator kit.
YA302-A	2633-1	Ethernet splice kit.
YA303-A	2635-23	23.4 m (76.8 ft) Ethernet coaxial cable, PVC, not flame-proof.
YA303-B	2635-70	70.2 m (230.3 ft), same as above.
YA303-C	2635-117	117.0 m (383.8 ft), same as above.
YA303-D	2635-500	500.0 m (1640.5 ft), same as above.
YA304-A	2634-23	Ethernet coaxial cable, Teflon (recommended), 23.4 m (76.8 ft).
YA304-B	2634-70	70.2 m (230.3 ft), same as above.
YA304-C	2634-117	117.0 m (383.8 ft), same as above.
YA304-D	2634-500	500.0 m (1640.5 ft), same as above.
Input/Output Cables		
TN101-A	2610-125	7.6 m (25 ft) RS-449 LIM to modem (DCE), 37-pin male plug to user device.
TN101-B	2610-150	15.2 m (50 ft), same as above.
TN101-C	2610-190	58.0 m (190 ft), same as above.
TN102-A	2610-525	7.6 m (25-ft) RS-449 LIM to terminal (DTE), 37-pin female plug to user device.
TN102-B	2610-550	15.2 m (50 ft), same as above.
TN102-C	2610-590	58.0 m (190 ft), same as above.
TN108-A	2612-110	3.0 m (10 ft) RS-232-C LIM to modem (DCE) cable, 25-pin male plug to user device.
TN108-B	2612-125	7.6 m (25 ft), same as above.
TN108-C	2612-150	15.2 m (50 ft), same as above.

(Continued)

Parity Check

An error detection method in which an extra bit is added to data to make the number of 1s in each grouping of bits either always odd (for odd parity), or always even (for even parity).

PDN

Refer to Public Data Network.

Phase 1QL

A part of the on-board self-test that is run without MPB intervention. For example, the MC68K test in a CIM.

Phase 2QL

The portion of a device test that follows phase 1 and requires MPB intervention. For example, a test of the CIM-SMM link.

PMM

Refer to Private Memory Module.

Point-to-Point Connection

A network configuration in which a connection is established between two device interfaces.

Private Memory Module (PMM)

An optional device interface board with 128K bytes of static RAM dedicated to the main processor board (MPB) for code execution.

Protocol

A set of conventions that must be followed to achieve complete communications between the computer-related resources in a network. A protocol can reflect the following:

1. A set of predefined coding sequences, such as the control byte envelopes added to (or removed from) data exchanged with a terminal.
2. A set of data addressing and division methods, such as the block mechanism used between a network application program and Network Access Method.
3. A set of procedures that control communications, such as the supervisory message sequences used between a network application program and Network Access Method.

Public Data Network (PDN)

A commercial packet-switching network that supports the communications interface described in CCITT protocol X.25.

Q

Quicklook

A process whereby maintenance software is selected to run in a minimum amount of time. This is usually done by varying parameters such as section selection.

R

Read-Only Memory (ROM)

A data storage device. Storage with contents that can be altered only under certain circumstances. Storage that cannot be written over. Also permanent storage.

Remote Terminal Interface (RTI)

The standard CDCNET device interface variant that functions as a remote line concentrator for RS-232-C lines.

A type of device interface that acts as a remote line concentrator for RS-232 lines. An RTI provides CDCNET access to remote terminal users by connecting a remote terminal device interface (TDI) to an Ethernet-connected network device interface (NDI) via one or more HDLC trunks. Services and interfaces to a user connected to an RTI are the same as those available via a TDI connected to Ethernet.

Reverse Channel

An answer-back channel provided during half-duplex operation. Allows the receiving modem to send low-speed acknowledgments to the transmitting modem without breaking the half-duplex mode. Also used to arrange the turnaround between modems so that one ceases transmitting and the other begins.

ROM

Refer to Read-Only Memory.

RS-232-C

An Electrical and Electronic Industries Association (EIA) standard that describes the interface between terminals or other Data Terminal Equipment (DTE) and modems or other Data Communications Equipment (DCE) employing a serial binary interchange.

RS-422/423

1. Electrical and Electronic Industries Association Level 1 standards for Data Terminal Equipment (DTE) that regulate the physical link between Data Communications Equipment (DCE).

2. Electrical and Electronic Industries Association standards designed to replace RS-232. RS-422 defines electrical characteristics of a balanced interface. RS-423 defines electrical characteristics of an unbalanced interface.

RS-449

1. A physical interface standard for data communications used with high speeds and long communication lines.

2. A newer standard than RS-232-C, also used for serial communications. Eventually meant to replace RS-232-C, but backward compatibility is specified in RS-449.

RTI

Refer to Remote Terminal Interface.

Table B-1. CDCNET Equipment/Product Cross-Reference by Function *(Continued)*

Equipment Number	Product Number	Description
Input/Output Cables (Continued)		
TN109-A	2612-510	3.0 m (10 ft) RS-232-C LIM to terminal (DTE) cable, 25-pin female plug to user device.
TN109-B	2612-525	7.6 m (25 ft), same as above.
TN109-C	2612-550	15.2 m (50 ft), same as above.
TN472-A	2612-610	3.0 m (10 ft) RS-232-C LIM to terminal (DTE) with flow control, 25-pin female plug to user device.
TN472-B	2612-625	7.6 m (25 ft), same as above.
TN472-C	2612-650	15.2 m (50 ft), same as above.
TN484-A	2613-125	7.6 m (25 ft) URI to Centronics cable, 36-pin male plug.
TN484-B	2613-150	15.2 m (50 ft), same as above.
TN485-A	2613-225	7.6 m (25 ft) URI to Data Products cable, 50-pin male plug.
TN485-B	2613-250	15.2 m (50 ft), same as above.
TN485-C	2613-299	30.4 m (100 ft), same as above.
TN486-A	2613-303	Winchester adapter cable, 0.91 m (3 ft).
TN490-A	2617-110	3.0 m (10 ft) V.35 LIM to modem (DCE) cable, 34-pin male plug to user device. Plug has 1.524-mm (0.060-in) diameter pins and single-lead, jackscrew connector locking mechanism.
TN490-B	2617-125	7.6 m (25 ft), same as above.
TN490-B	2617-150	15.2 m (50 ft), same as above.
YA305-A	2612-710	3.0 m (10 ft) RS-232-C LIM to terminal (DTE) cable, 25-pin male plug to user device.
YA305-B	2612-725	7.6 m (25 ft), same as above.
YA305-C	2612-750	15.2 m (50 ft), same as above.
YA306-A	2612-810	3.0 m (10 ft) RS-232-C LIM to terminal (DTE) with flow control, 25-pin male plug to user device.
YA306-B	2612-825	7.6 m (25 ft), same as above.
YA306-C	2612-850	15.2 m (50 ft), same as above.
YA326-A	2617-510	3.0 m (10 ft) V.35 LIM to terminal (DTE) cable, 34-pin female plug to user devices. Plug is for 1.524-mm (0.060-in) diameter pins.
YA326-B	2617-525	7.6 m (25 ft), same as above.
YA326-C	2617-550	15.2 m (50 ft), same as above.

(Continued)

Table B-1. CDCNET Equipment/Product Cross-Reference by Function *(Continued)*

Equipment Number	Product Number	Description
Input/Output Cables (Continued)		
YA327-A	2617-210	3.0 m (10 ft) V.35 LIM to modem (DCE) cable, 34-pin male plug to user devices. Plug has 1.016-mm (0.040-in) diameter pins and spring clip with guide pin connector locking mechanism.
YA327-B	2617-225	7.6 m (25 ft), same as above.
YA327-C	2617-250	15.2 m (50 ft), same as above.
YA328-A	2608-216	5 m (16.4 ft) 802.3 Transceiver interface cable, Teflon (recommended).
YA328-B	2608-233	10 m (32.8 ft), same as above.
YA328-C	2608-265	20 m (65.6 ft), same as above.
YA328-D	2608-200	50 m (164.0 ft), same as above.
YA329-A	2608-116	5 m (16.4 ft) 802.3 Transceiver interface cable, PVC (not flame-proof).
YA329-B	2608-133	10 m (32.8 ft), same as above.
YA329-C	2608-165	20 m (65.6 ft), same as above.
YA329-D	2608-100	50 m (164.0 ft), same as above.
YA333-A	2618-114	4.3 m (14 ft) RS-232-C unshielded, zero-degree, phased RJ-45 cable.
YA333-B	2618-125	7.6 m (25 ft), same as above.
YA333-C	2618-150	15.2 m (50 ft), same as above.
YA333-D	2618-200	60.8 m (200 ft), same as above.
YA333-E	2618-214	4.3 m (14 ft) RS-232-C shielded, zero-degree, phased RJ-45 cable.
YA333-F	2618-225	7.6 m (25 ft), same as above.
YA333-G	2618-250	15.2 m (50 ft), same as above.
YA333-H	2618-400	60.8 m (200 ft), same as above.
YA324-A	2816-11	Modular adapter with 25-pin male and DCD disconnect for RS-232-C RJ-45 cables.
YA324-B	2816-21	Modular adapter with 25-pin male and DSR disconnect for RS-232-C RJ-45 cables.
YA324-C	2816-31	Modular adapter with 25-pin male and DCD monitor for RS-232-C RJ-45 cables.
YA324-D	2816-50	Modular adapter with 25-pin female and RTS/CTS flow control for RS-232-C RJ-45 cables.
YA324-E	2816-51	Modular adapter with 25-pin male and RTS/CTS flow control for RS-232-C RJ-45 cables.

(Continued)

Table B-1. CDCNET Equipment/Product Cross-Reference by Function *(Continued)*

Equipment Number	Product Number	Description
Configured DIs		
Multiple	2620-210	Mainframe/Terminal DI (MTI), 1-Mbyte, 120-V ac, 60-Hz.
Multiple	2620-211	Mainframe/Terminal DI (MTI), 1-Mbyte, 240-V ac, 50-Hz.
Multiple	2621-200	Mainframe DI (MDI), NOS/VE, 1-Mbyte, 120-V ac, 60-Hz.
Multiple	2621-201	Mainframe DI (MDI), NOS/VE, 1-Mbyte, 240-V ac, 50-Hz.
Multiple	2621-210	Mainframe DI (MDI), NOS, 1-Mbyte, 120-V ac, 60-Hz.
Multiple	2621-211	Mainframe DI (MDI), NOS, 1-Mbyte, 240-V ac, 50-Hz.
Multiple	2622-200	Terminal DI (TDI), 1-Mbyte, 120-V ac, 60-Hz.
Multiple	2622-201	Terminal DI (TDI), 1-Mbyte, 240-V ac, 50-Hz.
Multiple	2623-200	Network DI (NDI), X.25 PDN or trunk, 120-V ac, 60-Hz.
Multiple	2623-201	Network DI (NDI), X.25 PDN or trunk, 240-V ac, 50-Hz.
Multiple	2624-200	Remote Terminal DI (RTI), 120-V ac, 60-Hz.
Multiple	2624-201	Remote Terminal DI (RTI), 240-V ac, 50-Hz.
Multiple	2625-200	MTI to MDI/TDI Conversion Kit, 120-V ac, 60-Hz.
Multiple	2625-201	MTI to MDI/TDI Conversion Kit, 240-V ac, 50-Hz.
Multiple	2699-1	16-LIM System, 120-V ac, 60-Hz.
Multiple	2699-2	16-LIM System, 240-V ac, 50-Hz.
Miscellaneous		
GH486-A	2650-1	3-DI cabinet, 120-V ac, 60-Hz.
GH486-B	2650-2	3-DI cabinet, 240-V ac, 50-Hz.
GH487-A	2651-1	Single DI Enclosure Table.
TN113-B	2652-1	Maintenance Console Option (MCO).
TN499-A	2653-1	CDCNET Maintenance Kit.

Table B-2 lists the internal equipment numbers, external product numbers, and product nomenclature for various CDCNET products sorted by product number.

Table B-2. CDCNET Equipment/Product Cross-Reference

Equipment Number	Product Number	Description
DY225-A	2604-1	System Main Memory Board (SMM), 1024-K bytes.
DY226-A	2607-1	Mainframe Channel Interface Board (MCI).
DY227-B	2608-5	Ethernet Serial Channel Interface Board (ESCI).
DY228-A	2609-1	Communications Interface Module (CIM).
DY229-A	2612-1	RS-232-C/V.24, 4-channel LIM.
DY229-B		RS-232-C/V.24, 4-channel LIM.
DY230-A	2610-1	RS-449, 2-port LIM.
DY230-B		RS-449, 2-port LIM.
DY232-A	2605-1	Private Memory Module (PMM), 128-K bytes.
DY246-A	2613-1	Unit Record Interface (URI), 1-port LIM.
DY261-A	2617-1	V.35, 2-port LIM.
GH120-B	2601-3	Device Interface (DI) cabinet, 60-Hz, 120-V ac (GH120A).
DY245-A		Master Processor Board (MPB) (DY245A).
GH121-A	2601-2	Device Interface (DI) cabinet, 50-Hz, 240-V ac (GH121A).
DY245-A		Master Processor Board (MPB) (DY245A).
GH486-A	2650-1	3-DI cabinet, 120-V ac, 60-Hz.
GH486-B	2650-2	3-DI cabinet, 240-V ac, 50-Hz.
GH487-A	2651-1	Single DI Enclosure Table.
TN101-A	2610-125	7.6 m (25 ft) RS-449 LIM to modem (DCE), 37-pin male plug to user device.
TN101-B	2610-150	15.2 m (50 ft), same as above.
TN101-C	2610-190	58.0 m (190 ft), same as above.
TN102-A	2610-525	7.6 m (25 ft) RS-449 LIM to terminal (DTE), 37-pin female plug to user device.
TN102-B	2610-550	15.2 m (50 ft), same as above.
TN102-C	2610-590	58.0 m (190 ft), same as above.
TN108-A	2612-110	3.0 m (10 ft) RS-232-C LIM to modem (DCE) cable, 25-pin male plug to user device.
TN108-B	2612-125	7.6 m (25 ft), same as above.
TN108-C	2612-150	15.2 m (50 ft), same as above.

(Continued)

Table B-2. CDCNET Equipment/Product Cross-Reference *(Continued)*

Equipment Number	Product Number	Description
TN109-A	2612-510	3.0 m (10 ft) RS-232-C LIM to terminal (DTE) cable, 25-pin female plug to user device.
TN109-B	2612-525	7.6 m (25 ft), same as above.
TN109-C	2612-550	15.2 m (50 ft), same as above.
TN111-A	2630-1	Ethernet transceiver.
TN111-B	2630-3	Ethernet 802.3 transceiver and tap.
TN112-C	2631-2	Ethernet 802.3 multiplexer, 120/240 V ac, 50/60-Hz.
TN113-B	2652-1	Maintenance Console Option (MCO).
TN114-B	2632-1	Ethernet 802.3 repeater, 120/240-V ac, 50/60-Hz.
TN472-A	2612-610	3.0 m (10 ft) RS-232-C LIM to terminal (DTE) with flow control, 25-pin female plug to user device.
TN472-B	2612-625	7.6 m (25 ft), same as above.
TN472-C	2612-650	15.2 m (50 ft), same as above.
TN484-A	2613-125	7.6 m (25 ft) URI to Centronics cable, 36-pin male plug.
TN484-B	2613-150	15.2 m (50 ft), same as above.
TN485-A	2613-225	7.6 m (25 ft) URI to Data Products cable, 50-pin male plug.
TN485-B	2613-250	15.2 m (50 ft), same as above.
TN485-C	2613-299	30.4 m (100 ft), same as above.
TN486-A	2613-303	Winchester adapter cable, 0.91 m (3 ft).
TN490-A	2617-110	3.0 m (10 ft) V.35 LIM to modem (DCE) cable, 34-pin male plug to user device. Plug has 1.524-mm (0.060-in) diameter pins and single-lead, jackscrew connector locking mechanism.
TN490-B	2617-125	7.6 m (25 ft), same as above.
TN490-B	2617-150	15.2 m (50 ft), same as above.
TN499-A	2653-1	CDCNET Maintenance Kit.
YA300-A	2630-2	Ethernet transceiver tap block and plug kit.
YA301-A	2633-2	Ethernet terminator kit.
YA302-A	2633-1	Ethernet splice kit.
YA303-A	2635-23	23.4 m (76.8 ft) Ethernet coaxial cable, PVC, not flame-proof.
YA303-B	2635-70	70.2 m (230.3 ft), same as above.
YA303-C	2635-117	117.0 m (383.8 ft), same as above.
YA303-D	2635-500	500.0 m (1640.5 ft), same as above.

(Continued)

Table B-2. CDCNET Equipment/Product Cross-Reference *(Continued)*

Equipment Number	Product Number	Description
YA304-A	2634-23	Ethernet coaxial cable, Teflon (recommended), 23.4 m (76.8 ft).
YA304-B	2634-70	70.2 m (230.3 ft), same as above.
YA304-C	2634-117	117.0 m (383.8 ft), same as above.
YA304-D	2634-500	500.0 m (1640.5 ft), same as above.
YA305-A	2612-710	3.0 m (10 ft) RS-232-C LIM to terminal (DTE) cable, 25-pin male plug to user device.
YA305-B	2612-725	7.6 m (25 ft), same as above.
YA305-C	2612-750	15.2 m (50 ft), same as above.
YA306-A	2612-810	3.0 m (10 ft) RS-232-C LIM to terminal (DTE) with flow control, 25-pin male plug to user device.
YA306-B	2612-825	7.6 m (25 ft), same as above.
YA306-C	2612-850	15.2 m (50 ft), same as above.
YA326-A	2617-510	3.0 m (10 ft) V.35 LIM to terminal (DTE) cable, 34-pin female plug to user devices. Plug is for 1.524-mm (0.060-in) diameter pins.
YA326-B	2617-525	7.6 m (25 ft), same as above.
YA326-C	2617-550	15.2 m (50 ft), same as above.
YA327-A	2617-210	3.0 m (10 ft) V.35 LIM to modem (DCE) cable, 34-pin male plug to user devices. Plug has 1.016-mm (0.040-in) diameter pins and spring clip with guide pin connector locking mechanism.
YA327-B	2617-225	7.6 m (25 ft), same as above.
YA327-C	2617-250	15.2 m (50 ft), same as above.
YA328-A	2608-216	5 m (16.4 ft) 802.3 Transceiver interface cable, Teflon (recommended).
YA328-B	2608-233	10 m (32.8 ft), same as above.
YA328-C	2608-265	20 m (65.6 ft), same as above.
YA328-D	2608-200	50 m (164.0 ft), same as above.
YA329-A	2608-116	5 m (16.4 ft) 802.3 Transceiver interface cable, PVC (not flame-proof).
YA329-B	2608-133	10 m (32.8 ft), same as above.
YA329-C	2608-165	20 m (65.6 ft), same as above.
YA329-D	2608-100	50 m (164.0 ft), same as above.

(Continued)

Table B-2. CDCNET Equipment/Product Cross-Reference *(Continued)*

Equipment Number	Product Number	Description
Multiple	2620-210	Mainframe/Terminal DI (MTI), 1 Mbyte, 120-V ac, 60-Hz.
Multiple	2620-211	Mainframe/Terminal DI (MTI), 1 Mbyte, 240-V ac, 50-Hz.
Multiple	2621-200	Mainframe DI (MDI), NOS/VE, 1 Mbyte, 120-V ac, 60-Hz.
Multiple	2621-201	Mainframe DI (MDI), NOS/VE, 1 Mbyte, 240-V ac, 50-Hz.
Multiple	2621-210	Mainframe DI (MDI), NOS, 1 Mbyte, 120-V ac, 60-Hz.
Multiple	2621-211	Mainframe DI (MDI), NOS, 1 Mbyte, 240-V ac, 50-Hz.
Multiple	2622-200	Terminal DI (TDI), 1 Mbyte, 120-V ac, 60-Hz.
Multiple	2622-201	Terminal DI (TDI), 1 Mbyte, 240-V ac, 50-Hz.
Multiple	2623-200	Network DI (NDI), X.25 PDN or trunk, 120-V ac, 60-Hz.
Multiple	2623-201	Network DI (NDI), X.25 PDN or trunk, 240-V ac, 50-Hz.
Multiple	2624-200	Remote Terminal DI (RTI), 120-V ac, 60-Hz.
Multiple	2624-201	Remote Terminal DI (RTI), 240-V ac, 50-Hz.
Multiple	2625-200	MTI to MDI/TDI Conversion Kit, 120-V ac, 60-Hz.
Multiple	2625-201	MTI to MDI/TDI Conversion Kit, 240-V ac, 50-Hz.
Multiple	2699-1	16-LIM System, 120-V ac, 60-Hz.
Multiple	2699-2	16-LIM System, 240-V ac, 50-Hz.

Selecting the Right LIM Cable C

Table C-1 shows LIM connectability for Data Terminal Equipment (DTE) configurations in general. All specified asynchronous connectivity options are usable with Interactive Terminal Passthrough.

Table C-1. LIM Connectability for DTE Configurations in General

Terminal Equipment/Situation	LIM Type	LIM Product Number	Cable and Adapter Product Numbers[1]
DTE with male connector using hardware flow control, and RS-232-C as the electrical interface.	4-Port RS-232-C	2612-1	2612-6xx
	8-Port RS-232-C	2618-1	2618-1xx 2618-50
DTE with male connector using software flow control, and RS-232-C or CCITT V.24 as the electrical interface.	4-Port RS-232-C	2612-1	2612-5xx
	8-Port RS-232-C	2618-1	2618-1xx 2618-50
DTE with female connector using hardware flow control, and RS-232-C or CCITT V.24 as the electrical interface.	4-Port RS-232-C	2612-1	2612-8xx
	8-Port RS-232-C	2618-1	2618-1xx 2618-51
DTE with female connector using software flow control, and RS-232-C or CCITT V.24 as the electrical interface.	4-Port RS-232-C	2612-1	2612-7xx
	8-Port RS-232-C	2618-1	2618-1xx 2618-51
IBM 3270 controller support. Synchronous or Asynchronous without hardware flow control.	4-Port RS-232-C	2612-1	2612-5xx
	8-Port RS-232-C	2618-1	2618-1xx 2618-50

1. xx roughly indicates the cable lengths in feet. Refer to the product list in appendix B for specific product numbers and lengths.

(Continued)

Table C-1. LIM Connectability for DTE Configurations in General *(Continued)*

Terminal Equipment/Situation	LIM Type	LIM Product Number	Cable and Adapter Product Numbers[1]
IBM 3270 controller support. Asynchronous only with hardware flow control.	4-Port RS-232-C	2612-1	2612-6xx
	8-Port RS-232-C	2618-1	2618-1xx 2618-50
Printer (DTE) with Centronics interface.	URI	2613-1	2613-1xx
Printer (DTE) with Data Products long-line interface.	URI	2613-1	2613-2xx[2]
DTE with male connector using RS-449, RS-422/V.11, or RS-423/V.10 as the electrical interface.	RS-449	2610-1	2610-5xx
DTE with male connector having 0.060-in diameter pins, and using CCITT or AT&T V.35 as the electrical interface.	V.35	2617-1	2617-5xx

1. xx roughly indicates the cable lengths in feet. Refer to the product list in appendix B for specific product numbers and lengths.

2. Some connections may require the URI adapter cable (2613-303).

Table C-2 shows LIM connectability for general Data Communications Equipment (DCE) configurations. All DCE equipment is assumed to have female connectors. No accommodation has been made for DCE equipment with male connectors. All specified asynchronous connectivity options are usable with Interactive Terminal Passthrough.

Table C-2. LIM Connectability for DCE Configurations in General

Terminal Equipment/Situation	LIM Type	LIM Product Number	Cable and Adapter Product Numbers[1]
DCE with female connector using DCE flow control and DCD disconnect, and using RS-232-C or CCITT V.24 as the electrical interface.	4-Port RS-232-C	2612-1	2612-1xx
	8-Port RS-232-C	2618-1	2618-1xx 2618-11
DCE with female connector using DCE flow control and DSR disconnect, and using RS-232-C or CCITT V.24 as the electrical interface.	4-Port RS-232-C	2612-1	2612-1xx
	8-Port RS-232-C	2618-1	2618-1xx 2618-21
DCE with female connector using DCE flow control and Non-Data Caller, and using RS-232-C or CCITT V.24 as the electrical interface.	4-Port RS-232-C	2612-1	2612-1xx
	8-Port RS-232-C	2618-1	2618-1xx 2618-31
DCE with female connector using DCE flow control, DCD disconnect, and modem Make-Busy, and using RS-232-C or CCITT V.24 as the electrical interface.	8-Port RS-232-C	2618-1	2618-1xx 2618-11
DCE with female connector using DCE flow control, DSR disconnect, and modem Make-Busy, and using RS-232-C or CCITT V.24 as the electrical interface.	8-Port RS-232-C	2618-1	2618-1xx 2618-21

1. xx roughly indicates the cable lengths in feet. Refer to the product list in appendix B for specific product numbers and lengths.

(Continued)

Table C-2. LIM Connectability for DCE Configurations in General *(Continued)*

Terminal Equipment/Situation	LIM Type	LIM Product Number	Cable and Adapter Product Numbers[1]
DCE with female connector using DCE flow control, Non-Data Caller, and modem Make-Busy, and using RS-232-C or CCITT V.24 as the electrical interface.	8-Port RS-232-C	2618-1	2618-1xx 2618-31
DCE with female connector using RS-449, RS-422/V.11, or RS-423/ V.10 as the electrical interface.	RS-449	2610-1	2610-1xx
DCE with female connector for 0.060-in diameter pins, with single lead jackscrew connector locking mechanism, and using CCITT or AT&T V.35 as the electrical interface.	V.35	2617-1	2617-1xx
DCE with female connector for 0.040-in diameter pins, with spring clip and guide pin connector locking mechanism, and using CCITT or AT&T V.35 as the electrical interface.	V.35	2617-1	2617-2xx

1. xx roughly indicates the cable lengths in feet. Refer to the product list in appendix B for specific product numbers and lengths.

Table C-3 shows LIM connectability for specific DTE configurations. All specified asynchronous connectivity options are usable with Interactive Terminal Passthrough.

Table C-3. LIM Connectability for Specific DTE Configurations

Terminal Equipment/Situation	LIM Type	LIM Product Number	Cable and Adapter Product Numbers[1]
Control Data 790 Digital Equipment Corporation Decwriter I/II (male connector option) Digital Equipment Corporation VT-100 Hazeltine Corporation 2000 PC Compatible (Zenith Eelectronics Corporation Z-150) Tektronix, Inc. 4014, 4109, 4114, 4115 Teletype Corporation M43 Zenith Electronics Corporation Z-19, Z-29, Z-150	4-Port RS-232-C 8-Port RS-232-C	2612-1 2618-1	2612-6xx 2618-1xx 2618-50
Control Data CYBER 120 (HASP), BARR, HASP, PC Products	4-Port RS-232-C	2612-1	2612-5xx
Control Data 533-1, 536-1, 713-10 721, 722-30, 751, 752, 753, IST II Digital Equipment Corporation Decwriter I/II (female connector option) Hazeltine Corporation Esprint II	4-Port RS-232-C 8-Port RS-232-C	2612-1 2618-1	2612-8xx 2618-1xx 2618-51
Control Data CYBER 18-xx (HASP), Control Data 537 Printer	4-Port RS-232-C	2612-1	2612-7xx
IBM 3274 controller support. Synchronous or asynchronous without hardware flow control.	4-Port RS-232-C 8-Port RS-232-C	2612-1 2618-1	2612-5xx, 2618-1xx 2618-50
IBM 3274 controller support. Asynchronous only with hardware flow control.	4-Port RS-232-C 8-Port RS-232-C	2612-1 2618-1	2612-6xx 2618-1xx 2618-50

1. xx roughly indicates the cable lengths in feet. Refer to the product list in appendix B for specific product numbers and lengths.

(Continued)

Table C-3. LIM Connectability for Specific DTE Configurations *(Continued)*

Terminal Equipment/Situation	LIM Type	LIM Product Number	Cable and Adapter Product Numbers[1]
Centronics 353 printer with long-line interface.	URI	2613-1	2613-1xx
Control Data 585 printer, Centronics PB1600 printer with Data Products long-line interface.	URI	2613-1	2613-2xx[2]

1. xx roughly indicates the cable lengths in feet. Refer to the product list in appendix B for specific product numbers and lengths.

2. Some connections may require the URI adapter cable (2613-303).

Table C-4 shows LIM connectability for specific DCE configurations. All DCE equipment is assumed to have female connectors. No accommodation has been made for DCE equipment with male connectors. All specified asynchronous connectivity options are usable with Interactive Terminal Passthrough.

Table C-4. LIM Connectability for Specific DCE Configurations

Terminal Equipment/Situation	LIM Type	LIM Product Number	Cable and Adapter Product Numbers[1]
Bell 103J, 113C, 113D, 212A, 201C-LID	4-Port RS-232-C	2612-1	2612-1xx
	8-Port RS-232-C	2618-1	2618-1xx 2618-11
European Public Telephone and Telegraph (PTT) modems in which the Non-Data Caller is not a problem.	4-Port RS-232-C	2612-1	2612-1xx
	8-Port RS-232-C	2618-1	2618-1xx 2618-21
European Public Telephone and Telegraph (PTT) modems in which the Non-Data Caller is a problem.	4-Port RS-232-C	2612-1	2612-1xx
	8-Port RS-232-C	2618-1	2618-1xx 2618-31
Avanti Communications Corp. 2200 and 2300 LADDs	RS-449	2610-1	2610-1xx
Gandalf Data Inc. LDS-260 Bell 303, 306 CCITT modems in Australia, England and Japan	V.35	2617-1	2617-1xx
CCITT modems in France and Switzerland	V.35	2617-1	2617-2xx

1. xx roughly indicates the cable lengths in feet. Refer to the product list in appendix B for specific product numbers and lengths.

Converting a 255x Cabling Scheme to a CDCNET TDI/NDI Cabling Scheme D

This appendix describes how to convert from a 255x cabling scheme to a CDCNET TDI/NDI cabling scheme without removing existing 255x cables. This includes the cabling scheme for the following six major 255x cable types most commonly used in 255x installations (refer to the Control Data ACLA Hardware Maintenance manual, publication number 74700900, Control Data SCLA Hardware Maintenance manual, publication number 74700700, and Control Data Synchronous Bit Protocol Communications Line Adapter Hardware Maintenance manual, publication number 60470710):

- 10400-1 - ACLA to DCE Connection with Make Busy option (103/113/212)
- 10400-2 - ACLA to DTE Connection (null-modem cable)
- 10400-3 - ACLA to DCE Connection with Originate Mode option (202)
- DU184-A/B or DU138-A with XA129-A/YA224-A - Bell Type 209 support
- DU185-A or DU138 with XA132-A/YA227-A - Synchronous DTE Connection
- DU193-A/B or DU140 with XA137/YA232-A - V.35 Connection

NOTE

The first three items describe the ACLA. The second three items describe the SCLA. The DU192-A/B or DU139-A with XA136-A/YA231-A cable is not discussed since it is used to connect a SCLA to Bell 301/303 equipment; this equipment is not supported by CDCNET.

The cables are further defined later in this appendix.

How to Convert a 255x to a TDI/NDI

Figure D-1 shows three configurations which are labled in the figure as 1, 2, and 3. The configuration labled 1, shows the current cabling scheme for a C225x. The configuration labled 3, shows the way the cabling scheme looks after the conversion is made. The configuration labled 2, shows the CABLE DEMARCATION POINT. This is the point at which any connecting device must see the proper interface. For example, if the ACLA/SCLA CABLE shown in figure D-1 is a 10400-2, any device connecting to that point must be capable of driving DTE-type equipment; the ACLA is such a device. In other words, the device which connects to that demarcation point will see a DTE at the other end. Therefore, the device connecting to the demarcation point must emulate a DCE.

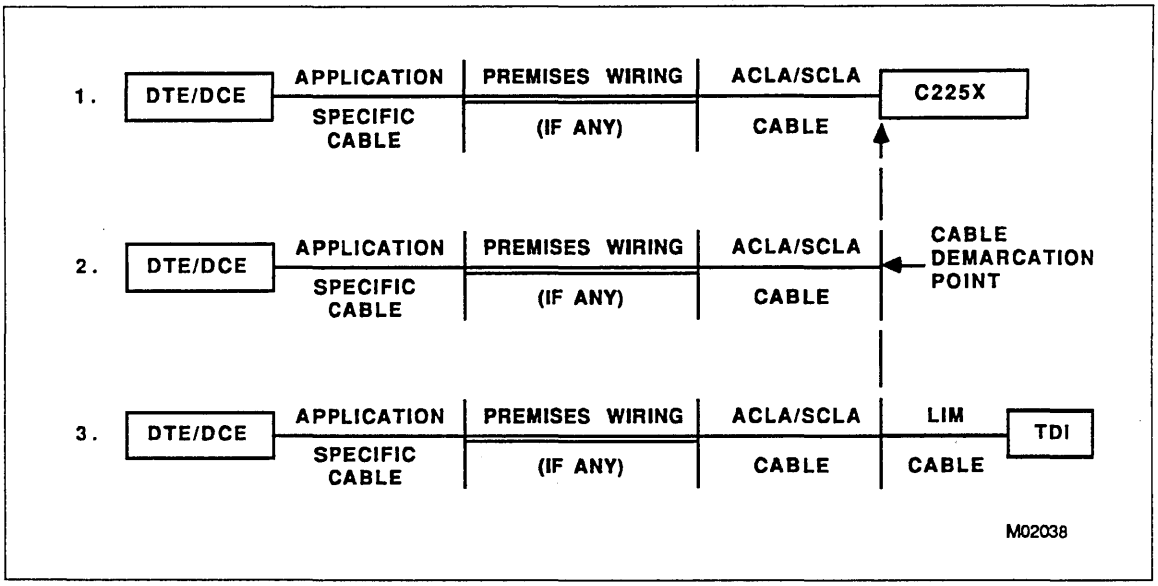


Figure D-1. 255x Cabling Scheme

To convert the 255x cabling scheme to a TDI/NDI cabling scheme, use the following step-by-step procedure.

Step 1

Read the specifications (listed later in this appendix) for each conversion cable to determine which one to use.

NOTE

The user must ensure that the additional CDCNET cable does not introduce a total cable length between LIM and DCE/DTE which exceeds the maximum recommended cable length for RS-232-C and the respective LIM (refer to the Product Descriptions manual, listed in About This Manual, for the cable lengths).

Step 2

Disconnect the ACLA/SCLA cable from the CLA port on the 255x (figure D-1).

Step 3

Connect the male connector of the conversion cable to the female connector on the ACLA/SCLA cable (figure D-1).

NOTE

The ACLA/SCLA cable has a female connector on the CABLE DEMARCATION POINT side (figure D-1) to permit connection to the male connector mounted on the ACLA/SCLA modules. The CDCNET cables described in this appendix are the correct gender to mate to the ACLA/SCLA cable. The CDCNET cables are shipped with locking screws and posts to permit mechanical locking of these cables to the 255x cables.

Step 4

Check the type of LIM board being used in the TDI/NDI. If it is an 8-port LIM, go to step 5. If it is a 4-port LIM board, go to step 6.

NOTE

If the connection involves a V.35 interface, then a new and separate cable must be installed between the CDCNET V.35 LIM and the specific V.35 DCE/DTE (figure D-1).

Step 5, 8-Port LIMS Only

Connect the other end of the conversion cable to a YA324-x (the -x indicates a cable length designator) modular adapter (figure D-2). Connect the modular adapter to the 8-port LIM YA333-x RJ-45 connector/cable (figure D-2). Connect the remaining end of the 8-port LIM cable to the LIM board (figure D-3).

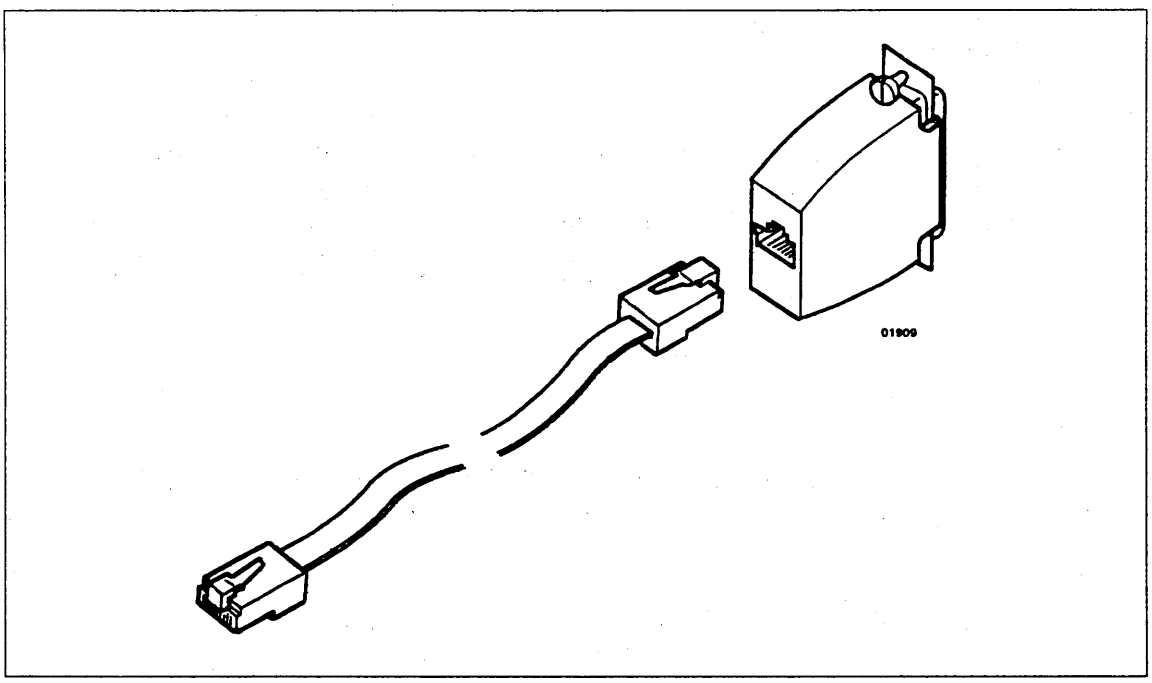


Figure D-2. 8-Port Cable (YA333-x) and Modular Adapter (YA324-x)

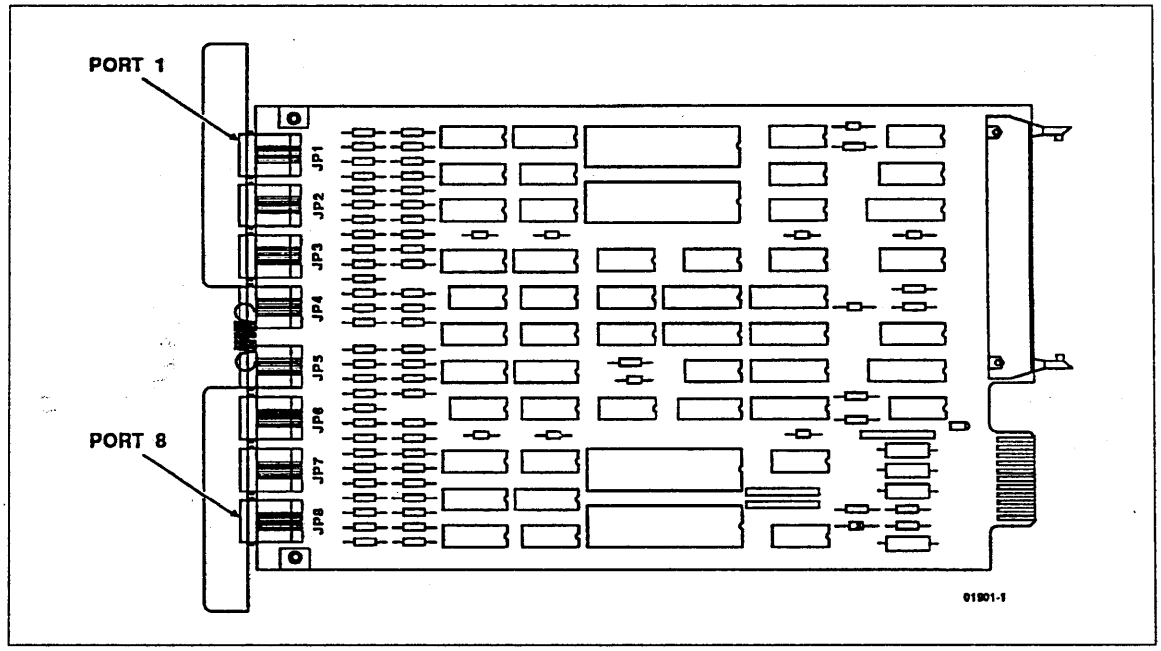


Figure D-3. 8-Port LIM

Step 6, 4-port LIMS Only

Connect the remaining end of the 4-port LIM cable to the LIM board (figure D-4).

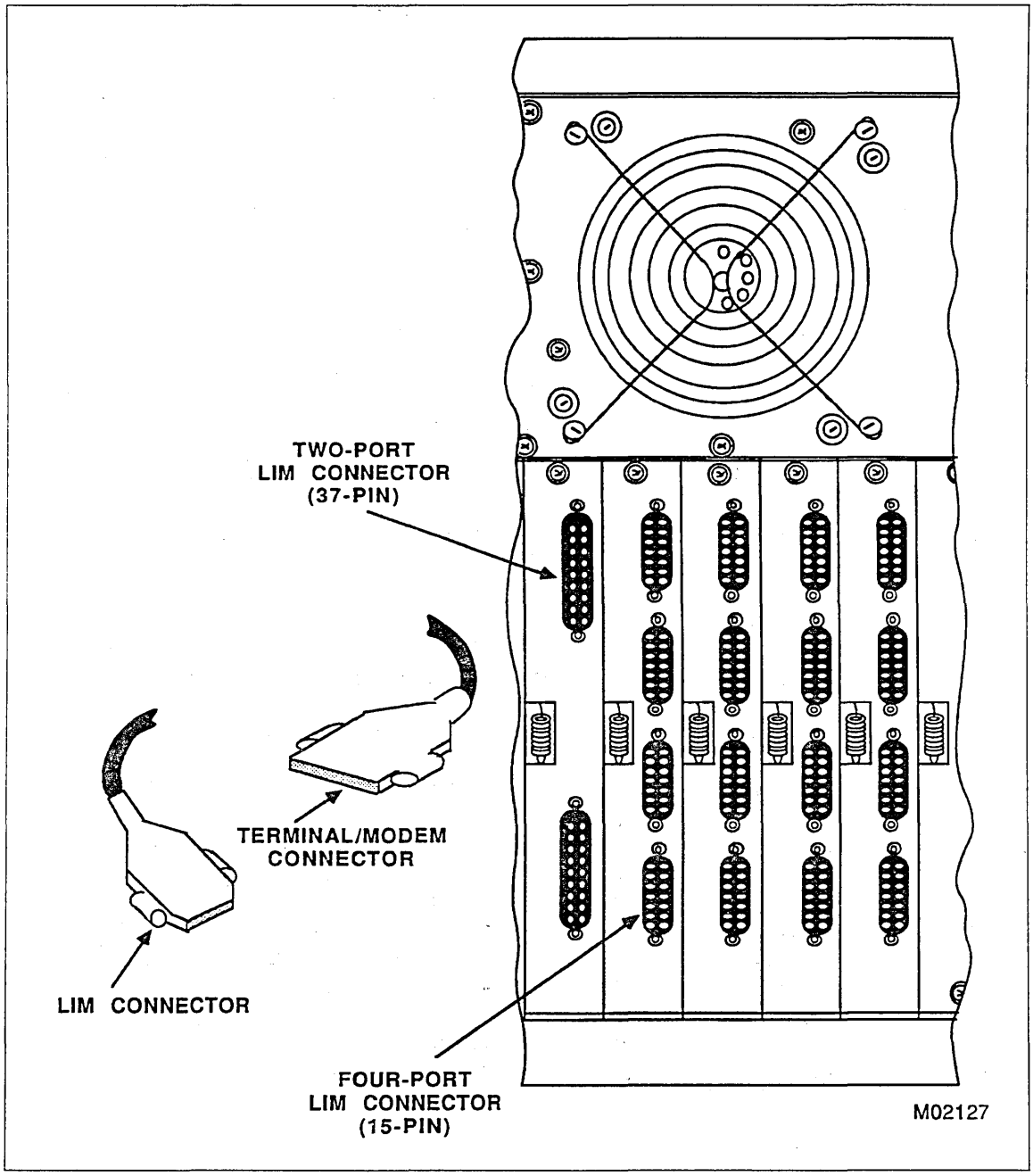


Figure D-4. 4-Port LIM Connectors

10400-1 Cable

The 10400-1 cable (table D-1) is used to connect the ACLA to the Bell Type 103/113/212 modems (DCE). The ACLA supports the Terminal Busy (CN) signal which is not supported by the 4-port LIM (DY229-B); it is only supported by the 8-port LIM (DY267-A). Therefore, if the DCE connected to the 10400-1 supports and requires the Terminal Busy signal, then the 10400-1 must only connect to an 8-port LIM.

If the DCE does not support and/or require Terminal Busy, then the 4-port LIM can be used. The 4-port LIM can be used to replace an ACLA that is using Terminal Busy by disabling the Terminal Busy function at the DCE modem. For example, on a Bell 212A modem this is option CN and TM assignments (see PTT Approval Data appendix in this manual).

Neither the 4-port LIM nor the 8-port LIM support the Ring Indicator (RI) circuit (CE) of the RS-232-C interface.

Refer to the LIM/Cable Connectability Matrix in the CDCNET Product Descriptions manual for other possible equipment options.

Table D-1. 10400-1 Cable

<-- PREMISES WIRING OR DCE/DTE | CABLE DEMARCATION POINT | V | CDCNET TDI/NDI LIM -->

ACLA/SCLA CABLE			LIM CABLE -- LIM			
10400-1			YA324-C (2618-31) -- 8-PORT LIM DY267			
DCE PIN	DESCRIPTION	DEMARC PIN	DEMARC PIN		DESCRIPTION	SIG. FLOW
1	PROT. GND	1	1	(NC)	---	
2	TX DATA	2	2		TX DATA	<------
3	RX DATA	3	3		RX DATA	------>
4	RTS	4	4		RTS	<------
5	CTS	5	5	(NC)	---	
6	DSR	6	6		DSR	------>
7	SIG. GND	7	7		SIG. GND	<----->
8	DCD	8	8		DCD	------>
20	DTR	20	20		DTR	<------
22	RI	22	22	(NC)	---	
25	TERM. BUSY	25	25		CN	<------

10400-2 Cable

The 10400-2 cable (tables D-2 and D-3) is used to connect an asynchronous terminal (DTE) to the ACLA.

NOTE

Due to the 10400-2 construction (RTS/CTS connected together), DTE Hardware Flow Control cannot be supported from the TDI/NDI. If this option is required, review Interconnecting DIs and Terminal Devices and appendix C in the CDCNET Product Descriptions manual for connectivity options.

Table D-2. 10400-2 Cable (4-Port LIM)

<--- PREMISES WIRING OR DCE/DTE | CABLE DEMARCATION POINT (V) | CDCNET TDI/NDI LIM --->

ACLA/SCLA CABLE			LIM CABLE -- LIM		
10400-2			TN108 (2612-1XX) -- 4-PORT LIM DY229B		
DTE PIN	DESCRIPTION	DEMARC PIN	DEMARC PIN	DESCRIPTION	SIG. FLOW
1	PROT. GND	1	1	PROT. GND	<----->
3	TX DATA	2	2	TX DATA	<------
2	RX DATA	3	3	RX DATA	------>
8	<----------	4	4	RTS	<------
	RTS&CTS	|-> 5	5	CTS	------>
20	DTR -> DSR	6	6	DSR	------>
7	SIG. GND	7	7	SIG. GND	<----->
4&5	-<------ RTS&CTS -------->	8	8	DCD	------>
6	DSR <- DTR	20	20	DTR	<------

Table D-3. 10400-2 Cable (8-Port LIM)

10400-2			YA324-C (2618-31) -- 8-PORT LIM DY267		
DTE PIN	DESCRIPTION	DEMARC PIN	DEMARC PIN	DESCRIPTION	SIG. FLOW
1	PROT. GND	1	1 (NC)	-------	
3	TX DATA	2	2	TX DATA	<------
2	RX DATA	3	3	RX DATA	------>
8	<----------	4	4	RTS	<------
	RTS&CTS	|-> 5	5 (NC)	-------	
20	DTR -> DSR	6	6	DSR	------>
7	SIG. GND	7	7	SIG. GND	<----->
4&5	-<------ RTS&CTS -------->	8	8	DCD	------>
6	DSR <- DTR	20	20	DTR	<------
---	---------- (NC)	25	25	CN	<------

10400-3 Cable

The 10400-3 cable (table D-4) is intended for use with a DCE that supports either SRTS or Originate Mode. CDCNET does not support DCEs which require/offer the SRTS/Originate Mode options. Therefore, if the equipment connected to the 10400-3 requires SRTS/Originate Mode support, it cannot be connected to a LIM.

Table D-4. 10400-3 Cable

<-- PREMISES WIRING OR DCE/DTE	CABLE DEMARCATION POINT	CDCNET TDI/NDI LIM -->
	V	
ACLA/SCLA CABLE		LIM CABLE -- LIM
10400-3		TN108 (2612-1XX) -- 4-PORT LIM DY229B
		YA324-C (2618-31) -- 8-PORT LIM DY267

DU184-A/B or DU138-A with XA129-A/YA224-A Cable

This cable (table D-5) is intended for use with a DCE that supports a Quality Monitor, New Sync, and/or Signal Quality Detector signal at the interface. These options are typically associated with Bell Type 209 Data Set (DCE). CDCNET does not support DCEs which require/offer these particular options. Therefore, if the equipment connected to the XA129-A/YA224-A cable requires support of these options, then they cannot be connected to a LIM.

NOTE

Although the CLA hardware permits connection to the SRTS, SDCD, Originate Mode, Quality Monitor, New Sync, and/or Signal Quality Monitor DCE signals, the 255x CCP software does not support them. They, and their associated equipment, are documented for customer convenience only.

Table D-5. DU184-A/B or DU138-A with XA129-A/YA224-A Cable

ACLA/SCLA CABLE	LIM CABLE -- LIM
DU184-A/B or DU138-A w/ XA129A/YA224-A	TN108 (2612-1XX) -- 4-PORT LIM DY229B
	YA324-C (2618-31) -- 8-PORT LIM DY267

DU185-A or DU138 with XA132-A/YA227-A Cable

The XA132-A/YA227-A cable (table D-6) is used to connect the specified SCLA to a synchronous terminal (DTE). An example would be a HASP terminal or a workstation not requiring a bit rate in excess of 9.6 K bps. This type of connection does not supply a clocking signal to the SCLA.

NOTE

This conversion process assumes that the DTE at the other end of this cable is a device supported on CDCNET.

NOTE

The 8-port LIM can only be used for asynchronous connections. Therefore, the synchronous equipment (DCEs/DTEs) connected to the above SCLA must use the 4-port LIM.

Table D-6. DU185-A or DU138 with XA132-A/YA227-A Cable

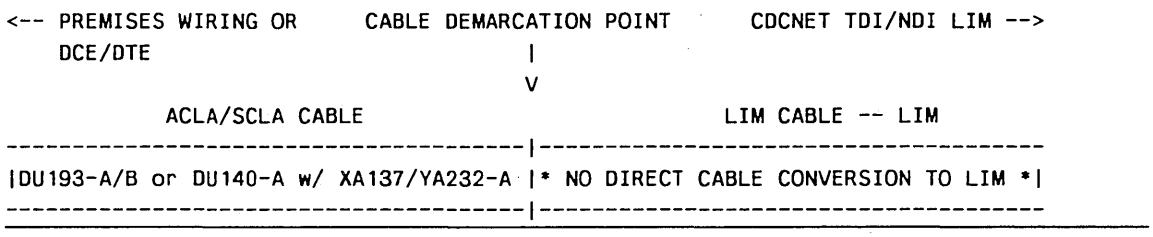
```
<-- PREMISES WIRING OR      CABLE DEMARCATION POINT      CDCNET TDI/NDI LIM -->
    DCE/DTE                          |
                                     V
            ACLA/SCLA CABLE                          LIM CABLE -- LIM
-----------------------------------|-------------------------------------
|DU185-A/B or DU138-A w/ XA132-A/YA227A|TN108 (2612-1XX) -- 4-PORT LIM DY229B|
|-----------------------------------|-------------------------------------|
|DTE PIN      DESCRIPTION    DEMARC PIN|DEMARC PIN    DESCRIPTION   SIG. FLOW|
|-----------------------------------|-------------------------------------|
|  1           PROT. GND          1   |     1          PROT. GND     <-----> |
|  3            TX DATA           2   |     2           TX DATA      <------ |
|  2            RX DATA           3   |     3           RX DATA      ------> |
|  8 <-------------------------   4   |     4             RTS        <------ |
|               RTS&CTS       |-> 5   |     5             CTS        ------> |
|  20          DTR -> DSR         6   |     6             DSR        ------> |
|  7            SIG. GND          7   |     7           SIG. GND     <-----> |
|  4&5 -<------ RTS&CTS --------> 8   |     8             DCD        ------> |
|  15 --+--------------------+-- 15   |     15      TX CLK. (DB)     ------> |
|  17 --|    RX CLK. (DD)    |-- 17   |     17      RX CLK. (DD)     ------> |
|  6           DSR <- DTR     |  20   |     20           DTR         <------ |
|  24  (NC)  EXT. CLK.(DA)    --- 24   |     24      EXT. CLK. (DA)   <------ |
```

DU193-A/B or DU140 with XA137/YA232-A Cable

The XA137/YA232-A cable (table D-7) establishes a connection to a DCE with a CCITT V.35 interface. This SCLA cable incorporates an ISO 2593-1973 34-pin connector at the DCE end, and a 25-pin male connector at the DEMARC end. A similar arrangement exists with the CDCNET TN490 cable. The TN490 connects a DCE to the V.35 LIM via an ISO 2573-1973 34-pin connector at the DCE end and a 25-pin connector at the LIM end. Due to these cabling schemes, direct cable/equipment conversion from the 255x to CDCNET cannot be accomplished due to connector incompatabilities. For this reason, it is recommended that a direct cable run be installed between the V.35 LIM and the V.35 DCE/DTE.

Refer to the CDCNET Product Descriptions manual for available options and supported equipment.

Table D-7. DU193-A/B or DU140 with XA137/YA232-A Cable



Cable Information and Pin Assignments E

This appendix provides information about the cables you use to connect your terminal devices to the DI Line Interface Modules (LIMs). There are various Control Data standard types of cables that cover the majority of devices. However, in some cases, adapters and/or special wiring might be required. The following information will help you determine if the standard cables will work on your equipment or if special cables/adapters are required. The information is presented in the following order:

- CDCNET 4-Port RS-232-C LIM cable information including:

  RS-232-C signals supported

  RS-232-C signal/pin definitions for CDCNET cables

- CDCNET 8-Port RS-232 Asynchronous LIM cable information including:

  RS-232-C signals supported

  RS-232-C signal/pin definitions for CDCNET cables

- CDCNET RS-449 LIM cable information including:

  RS-449 signals supported

  RS-449 signal/pin definitions for CDCNET cables

- CDCNET URI LIM cable information including:

  Centronics signals supported

  Data Products signals supported

  Signal/pin definitions for CDCNET cables

- CDCNET V.35 LIM cable information including:

  V.35 signals supported

  V.35 signal/pin definitions for CDCNET cables

4-Port RS-232-C LIM Cable Information

There are five standard types of CDCNET 4-Port RS-232-C cables that cover the following applications:

Product Number	Equipment Number	Description
2612-1xx	TN108	Connects one port of the 4-Port RS-232-C LIM to all modems/data sets and most other data circuit-terminating equipment (DCE) devices requiring a male cable connector.
2612-5xx	TN109	Connects one port of the 4-Port RS-232-C LIM to most terminals and other data terminal equipment (DTE) devices requiring a female cable connector.
2612-6xx	TN472	Connects one port of the 4-Port RS-232-C LIM to DTEs that use hardware flow control and require a female cable connector.
2612-7xx	YA305	Connects one port of the 4-Port RS-232-C LIM to terminals and other DTE devices requiring a male cable connector.
2612-8xx	YA306	Connects one port of the 4-Port RS-232-C LIM to DTEs that use hardware flow control and require a male cable connector.

NOTE

Hardware flow control uses the Request-to-Send and Clear-to-Send (RTS/CTS) signals to electrically control the flow of data.

RS-232-C CCITT Signals Supported

The following RS-232-C signals are supported by the 4-Port RS-232-C LIM:

Outputs		Inputs	
TxD	Transmit Data	RxD	Receive Data
TxC[1]	Transmit Clock	RxC[1]	Receive Clock
RTS	Request To Send	TxCE[1]	Transmit Clock (external)
DTR	Data Terminal Ready	CTS	Clear To Send
		DCD	Data Carrier Detect
		DSR	Data Set Ready
		RI[2]	Ring Indicator

1. Used for synchronous operation only.
2. Wired but not supported by modem cable.

Pin Assignments for the 4-Port RS-232-C LIM 15-Pin Connector

This information is necessary only if you want to build or modify your own cable and plug it directly into the LIM. Refer to figure E-1 for pin locations on the LIM connector, type DB15-P.

In/Out	CCITT	Signal	Pin	Signal	CCITT	In/Out
Ground	102	SG--------	8			
			15 -------	CTS	106	In
Out	113	TxC-------	7			
			14 -------	RI	125	In
In	115	RxC-------	6			
			13 -------	TxCE	114	In
In	109	DCD-------	5			
			12--------	(*)		
In	104	RxD-------	4			
			11--------	DSR	107	In
Out	108/2	DTR-------	3			
			10--------	RTS	105	Out
Out	103	TxD-------	2			
			9--------	(*)		
Shield	101	FG--------	1			

NOTES:

*Reserved, do not use.

Nominal signal voltages are:

Output: +10 V = ON = Space = "0"
-10 V = OFF = Mark = "1"
Maximum voltage is ±15 V

Input: More positive than +3 V = ON = Space = "0"
More negative than -3 V = OFF = Mark = "1"

Unconnected inputs are interpreted as OFF.

Figure E-1. 4-Port RS-232-C LIM Connector

LIM-to-Modem (DCE) Pin Assignments (RS-232-C)

The 2612-1xx is a standard RS-232-C modem cable with a 25-pin male plug on the modem end. Pin assignments are shown in figure E-2.

LIM Plug 15-Pin (P1)				User Plug 25-Pin (P2)		
In/Out	Signal	Pin (P1)		Pin (P2)	Signal	In/Out
Shield	FG	1	----------	1	FG	Shield
Out	TxD	2	----------	2	TxD	In
In	RxD	4	----------	3	RxD	Out
Out	RTS	10	----------	4	RTS	In
In	CTS	15	----------	5	CTS	Out
In	DSR	11	----------	6	DSR	Out
Gnd	SG	8	----------	7	SG	Gnd
In	DCD	5	----------	8	DCD	Out
Reserved		9		9	Reserved	
Reserved		12		10	Reserved	
				11	Spare	
				12	SDCD	Out
				13	SCTS	Out
				14	STxD	In
In	TxCE	13	----------	15	TxCE	Out
				16	SRxD	Out
In	RxC	6	----------	17	RxC	Out
				18	Spare	
				19	SRTS	In
Out	DTR	3	----------	20	DTR	In
				21	SQ	Out
In	RI	14	----------	22	RI	Out
				23	SRS	In/Out
Out	TxC	7	----------	24	TxC	In
				25	Spare	

Figure E-2. 2612-1xx Cable Pin Assignments

LIM-to-Terminal (DTE) Pin Assignments (RS-232-C)

These null modem cables, 2612-5xx and 2612-7xx, connect to a DTE device. The 2612-5xx has a 25-pin female plug on the user end and the 2612-7xx has a 25-pin male plug on the user end. A null modem cable must be used because the LIM and terminal are both DTEs. If two DTEs are connected with a standard cable, they both use the same pins for outputs and inputs. For example, they both try to use pin 2 to transmit data and pin 3 to receive data. A null modem cable internally reverses the transmit/receive pins (and some others). Pin assignments for the 25-pin plug are shown in figure E-3.

LIM Plug 15-Pin (P1)					User Plug 25-Pin (P2)		
In/Out	Signal	Pin (P1)			Pin (P2)	Signal	In/Out
Shield	FG	1	----------		1	FG	Shield
In	RxD	4	----------		2	TxD	Out
Out	TxD	2	----------		3	RxD	In
Out	RTS	10	Tied to 15	Tied to 5	4	RTS	Out
In	DCD	5	----------		5	CTS	In
Out	DTR	3	----------		6	DSR	In
Gnd	SG	8	----------		7	SG	Gnd
In	CTS	15	----------		8	DCD	In
Reserved		9			9	Reserved	
Reserved		12			10	Reserved	
					11	Spare	
					12	SDCD	In
					13	SCTS	In
					14	STxD	Out
In	TxCE	13	Tied to 6	Tied to 17	15	TxCE	In
					16	SRxD	In
Out	TxC	7	----------		17	RxC	In
					18	Spare	
					19	SRTS	Out
In	DSR	11	----------		20	DTR	Out
					21	SQ	In
In	RI	14			22	RI	In
					23	SRS	In/Out
In	RxC	6	----------		24	TxC	Out
					25	Spare	

Figure E-3. 2612-5xx Cable Pin Assignments

LIM-to-Terminal with Hardware Flow-Control Pin Assignments (RS-232-C)

The 2612-6xx and 2612-8xx are null modem cables similar to the 2612-5xx and 2612-7xx, but with added hardware flow-control wiring. The 2612-6xx cable has a 25-pin female plug on the user end that connects to a DTE device, and the 2612-8xx has a male plug for this purpose. Pin assignments for the 25-pin plug are shown in figure E-4.

LIM Plug 15-Pin (P1)				User Plug 25-Pin (P2)		
In/Out	Signal	Pin (P1)		Pin (P2)	Signal	In/Out
Shield	FG	1	----------	1	FG	Shield
In	RxD	4	----------	2	TxD	Out
Out	TxD	2	----------	3	RxD	In
In	CTS	15	----------	4	RTS	Out
Out	RTS	10	----------	5	CTS	In
In	DSR	11	Tied to 5 Tied to 8	6	DSR	In
Gnd	SG	8	----------	7	SG	Gnd
Out	DTR	3	----------	8	DCD	In
Reserved		9		9	Reserved	
Reserved		12		10	Reserved	
				11	Spare	
				12	SDCD	In
				13	SCTS	In
				14	STxD	Out
In	TxCE	13	Tied to 6 Tied to 17	15	TxCE	In
				16	SRxD	In
Out	TxC	7	----------	17	RxC	In
				18	Spare	
				19	SRTS	Out
In	DCD	5	----------	20	DTR	Out
				21	SQ	In
In	RI	14		22	RI	Out
				23	SRS	In/Out
In	RxC	6	----------	24	TxC	Out
				25	Spare	

Figure E-4. 2612-6xx Cable Pin Assignments

8-Port RS-232 Asynchronous LIM Cable Information

There are two standard types of cable (shielded and unshielded) and five types of adapters that cover the following applications:

Product Number	Equipment Number	Description
2618-1xx, 2xx, 4xx	YA333	Connects one port of an 8-Port RS-232-C asynchronous LIM directly to a DTE or DCE device, which is equipped with a connector adapter, or connects to an interconnecting RJ45-compatible wall plate. It can also connect a DTE or DCE device, which is equipped with a connector adapter, to an interconnecting RJ45-compatible wall plate.
2618-1xx, 2xx, 4xx 2618-11	YA333 YA324-A	Connect one port of the 8-Port RS-232-C Asynchronous LIM to modems/data sets and other DCE devices that require a male connector and that use DCE flow control and DCD disconnect.
2618-1xx, 2xx, 4xx 2618-21	YA333 YA324-B	Connect one port of the 8-Port RS-232-C Asynchronous LIM to modems/data sets and other DCE devices that require a male connector and that use DCE flow control and DSR disconnect.
2618-1xx, 2xx, 4xx 2618-31	YA333 YA324-C	Connect one port of the 8-Port RS-232-C Asynchronous LIM to modems/data sets and other DCE devices that require a mode connector and that use both DCD and DSR disconnect.
2618-1xx, 2xx, 4xx 2618-50	YA333 YA324-D	Connect one port of the 8-Port RS-232-C LIM to DTEs that use hardware or software flow control and require a female cable connector.
2618-1xx, 2xx, 4xx 2618-51	YA333 YA324-E	Connect one port of the 8-Port RS-232-C LIM to DTEs that use hardware or software flow control and require a male cable connector.

Shielded cables (Product Numbers 2618-214, -225, -250, and 400) are required for VDE applications.

RS-232-C Signals Supported

The following RS-232-C signals are supported by the 8-Port RS-232 Asynchronous LIM:

Outputs		Inputs	
TxD	Transmit Data	RxD	Receive Data
DTR	Data Terminal Ready	DCD	Data Carrier Detect
CN	Make Busy		
RTS	Request To Send/Make Busy	CTS	Clear To Send

NOTE

This signal is either RTS or Make Busy depending on the cable and software.

Pin Assignments for LIM RJ45 Modular Connector

This information is necessary only if you want to build or modify your own cable and plug it directly into the 8-Port RS-232-C Asynchronous LIM. Refer to figures E-5 and E-6 for pin locations on the LIM connector.

In/Out	Signal	Name	Pin
--	FG	Frame Ground	S1 *
Out	CN	Make Busy	1
In	DCD	Data Carrier Detect	2
Out	DTR	Data Terminal Ready	3
--	SG	Signal Ground	4
In	RxD	Received Data	5
Out	TxD	Transmit Data	6
Out	RTS	Request to Send	7
In	CTS	Clear to Send	8

* No connection on unshielded cables.

Figure E-5. RJ45 Modular Connector Pin Assignments

CAUTION

Pin damage to the FG pin may occur when using non-Control Data cables.

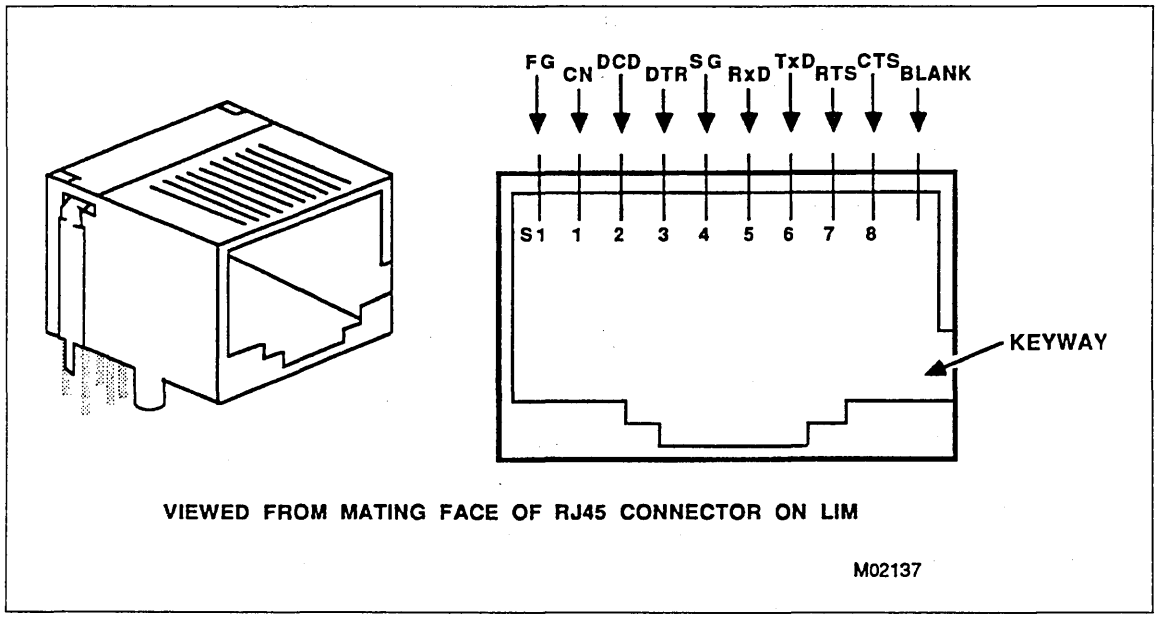


Figure E-6. RJ45 Pin Configuration

LIM-to-Modem (DCE) Pin Assignments (RS-232-C Asynchronous)

The 2618-11, -21 and -31 connector adapters for use with DCE devices have an 8-pin plug (which is equivalent to the LIM plug) on one end, and a 25-pin plug on the other. Adapter pin assignments are shown in figures E-7, E-8, and E-9.

LIM Plug 8-Pin (P1)			User Plug 25-Pin (P2)		
In/Out	Signal	Pin (P1)	Pin (P2)	Signal	In/Out
Out	CN	1	25	CN	IN
In	DCD	2	8	DCD	Out
Out	DTR	3	20	DTR	In
Gnd	SG	4	7	SG	Gnd
In	RxD	5	3	RxD	Out
Out	TxD	6	2	TxD	In
Out	RTS	7	4	RTS	In
In	CTS	8	5	CTS	Out

Figure E-7. 2618-11 Connector Adapter Pin Assignments

LIM Plug 8-Pin (P1)			User Plug 25-Pin (P2)		
In/Out	Signal	Pin (P1)	Pin (P2)	Signal	In/Out
Out	CN	1 ------------------	25	CN	In
In	DCD	2 ------------------	6	DSR	Out
Out	DTR	3 ------------------	20	DTR	In
Gnd	SG	4 ------------------	7	SG	Gnd
In	RxD	5 ------------------	3	RxD	Out
Out	TxD	6 ------------------	2	TxD	In
Out	RTS	7 ------------------	4	RTS	In
In	CTS	8 ------------------	5	CTS	Out

Figure E-8. 2618-21 Connector Adapter Pin Assignments

LIM Plug 8-Pin (P1)			User Plug 25-Pin (P2)		
In/Out	Signal	Pin (P1)	Pin (P2)	Signal	In/Out
Out	CN	1 ------------------	25	CN	In
In	DCD	2 ------------------	6	DSR	Out
Out	DTR	3 ------------------	20	DTR	In
Gnd	SG	4 ------------------	7	SG	Gnd
In	RxD	5 ------------------	3	RxD	Out
Out	TxD	6 ------------------	2	TxD	In
Out	RTS	7 ------------------	4	RTS	In
In	CTS	8 ------------------	8	DCD	Out

Figure E-9. 2618-31 Connector Adapter Pin Assignments

LIM-to-Terminal (DTE) Pin Assignments (RS-232-C Asynchronous)

The 2618-50 and 2618-51 connector adapters for use with DTE devices have an 8-pin plug (which is equivalent to the LIM plug) on one end, and a 25-pin plug on the other. Adapter pin assignments are shown in figure E-10.

LIM Plug 8-Pin (P1)			User Plug 25-Pin (P2)		
In/Out	Signal	Pin (P1)	Pin (P2)	Signal	In/Out
Out	CN	1	N/C		
In	DCD	2 ------------------	20	DTR	Out
Out	DTR	3 ------------------	6	DSR	In
Gnd	SG	4 ------------------	7	SG	Gnd
In	RxD	5 ------------------	2	TxD	Out
Out	TxD	6 ------------------	3	RxD	In
Out	RTS	7 ------------------	5	CTS	In
In	CTS	8 ------------------	4	RTS	Out
		Tied to 6	8	DCD	Out

Figure E-10. 2618-5x Connector Adapter Pin Assignments

RS-449 LIM Cable Information

There are two standard CDCNET cables for RS-449 operation.

Product Number	Equipment Number	Description
2610-1xx	TN101	Connects an RS-449 LIM to a modem/data set or other DCE device.
2610-5xx	TN102	Connects an RS-449 LIM to a terminal or other DTE device.

RS-449 Signals Supported

The following RS-449 signals are supported by the 2-port RS-449 LIM:

Outputs		Inputs	
SD[3]	Send Data	RD[3]	Receive Data
TT[3]	Terminal Timing	RT[3]	Receive Timing
RS[3]	Request To Send	ST[3]	Send Timing
TR[3]	Terminal Ready	CS[3]	Clear to Send
IS	In Service	RR[3]	Receiver Ready
NS	New Signal	DM[3]	Data Mode
SF/SR	Sel Freq/Sig Rate	IC	Incoming Call
LL	Local Loopback	SQ	Signal Quality
RL	Remote Loopback	SI	Signal Rate Indicator
SS	Select Standby	TM	Test Mode
SC	Send Common	SB	Standby Indicator
RC	Receive Common		

3. Differential signals.

LIM-to-Modem (DCE) Pin Assignments (RS-449)

The 2610-1xx cable is a standard RS-449 modem cable with a 37-pin male plug on the modem end. Pin assignments are shown in figure E-11.

LIM Plug In/Out	LIM Plug Signal	Pin (P1)	Pin (P2)	Modem Plug Signal	Modem Plug In/Out
Shield		1	1		Shield
In	SI	2	2	SI	Out
Spare		3	3	Spare	
Out	+SD	4	4	+SD	In
In	+ST	5	5	+ST	Out
In	+RD	6	6	+RD	Out
Out	+RS	7	7	+RS	In
In	+RT	8	8	+RT	Out
In	+CS	9	9	+CS	Out
Out	LL	10	10	LL	In
In	+DM	11	11	+DM	Out
Out	+TR	12	12	+TR	In
In	+RR	13	13	+RR	Out
Out	RL	14	14	RL	In
In	IC	15	15	IC	Out
Out	SF/SR	16	16	SF/SR	In
Out	+TT	17	17	+TT	In
In	TM	18	18	TM	Out
Gnd	SG	19	19	SG	Gnd
In	RC	20	20	RC	Out
Spare		21	21	Spare	
Out	-SD	22	22	-SD	In
In	-ST	23	23	-ST	Out
In	-RD	24	24	-RD	Out
Out	-RS	25	25	-RS	In
In	-RT	26	26	-RT	Out
In	-CS	27	27	-CS	Out
Out	IS	28	28	IS	In
In	-DM	29	29	-DM	Out
Out	-TR	30	30	-TR	In
In	-RR	31	31	-RR	Out
Out	SS	32	32	SS	In
In	SQ	33	33	SQ	Out
Out	NS	34	34	NS	In
Out	-TT	35	35	-TT	In
In	SB	36	36	SB	Out
Out	SC	37	37	SC	In

Figure E-11. 2610-1xx Cable Pin Assignments

LIM-to-Terminal (DTE) Pin Assignments (RS-449)

The 2610-5xx cable is a standard RS-449 terminal cable with a 37-pin female plug on the modem end. Pin assignments are shown in figure E-12.

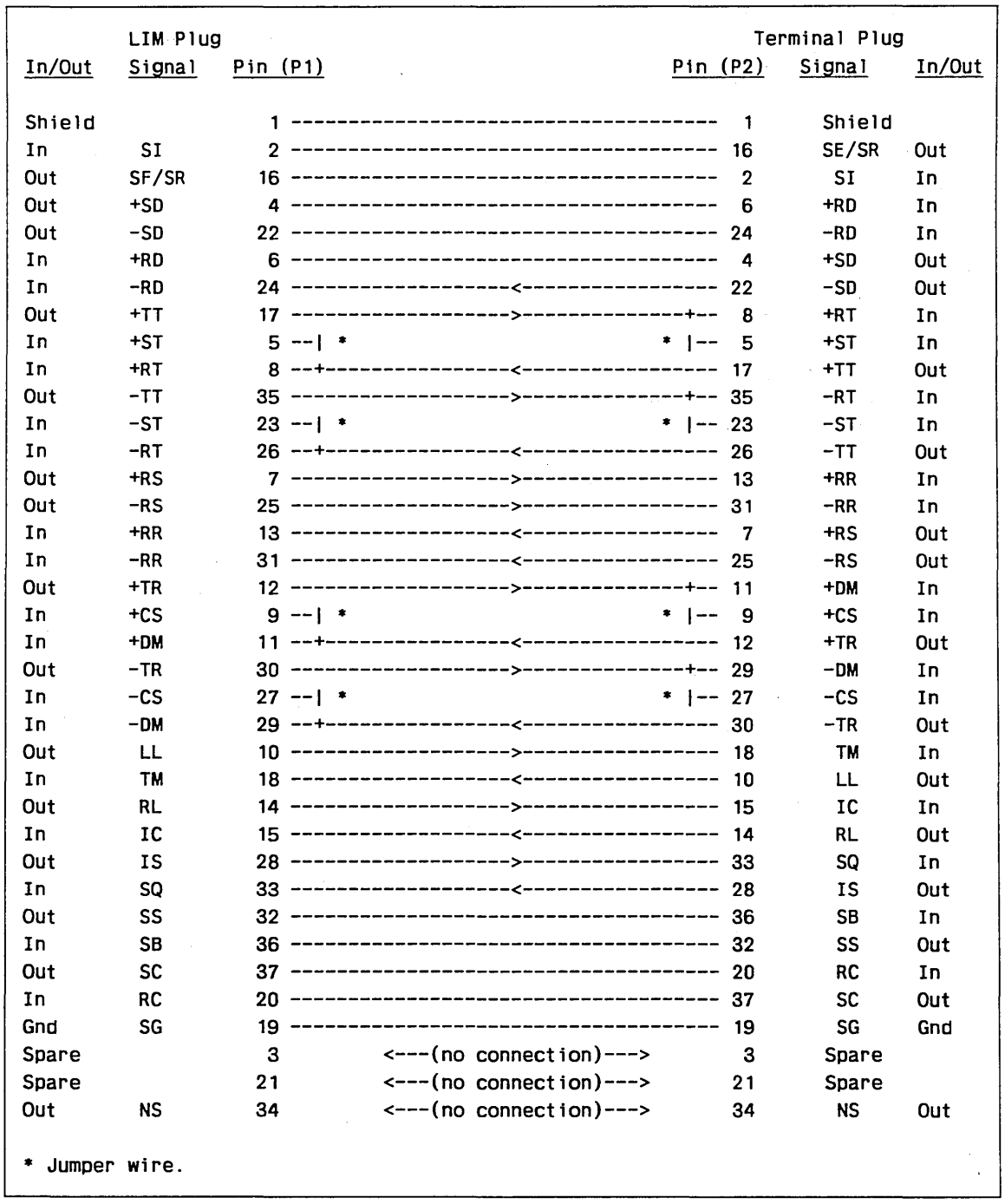


Figure E-12. 2610-5xx Cable Pin Assignments

URI LIM Cable Information

There are two standard cables and an adapter cable for URI applications.

Product Number	Equipment Number	Description
2613-1xx	TN484	URI to Centronics cable.
2613-2xx	TN485	URI to Data Products cable.
2613-3xx	TN486	Winchester adapter cable.

Centronics Signals Supported

The following Centronics signals are supported at the Centronics port of the URI LIM:

Outputs		Inputs	
PAR	Parity	PAR	Parity
DB1-DB8	Data bits 1-8	+5	+5 V OK
STR	Strobe	LD	Light Detect
IP	Input Prime	CP	Compressed Pitch
		PO	Paper Out
		BUSY	Busy
		125KHZ	125 KHz OK
		FLT	Fault
		SEL	Select
		ACKIN	Acknowledge Input

Current CDCNET printer support software does not use the Centronics interface.

Data Products Signals Supported

The following Data Products signals are supported at the Data Products port of the URI LIM:

Outputs		Inputs	
PAR	Parity	PAR	Parity
DB1 - DB8	Data bits 1 through 8	PE	Parity Error
PI	Paper Instruction	CP	Compressed Pitch
BCLR	Buffer Clear	T0	Band Ident 0
STR	Strobe	T1	Band Ident 1
		EFU	VFU Verify
		PM	Paper Moving
		VR	VFU Ready
		TOF	Top-of-Forms
		BOF	Bottom-of-Forms
		+5	+5 V OK
		GND	Ground
		IV	Interface Verify
		RDY	Ready
		OL	On Line
		DMD	Demand

URI LIM-to-Centronics Equipment Pin Assignments

The 2613-1xx cable is a standard Centronics printer cable with a 36-pin male plug on the printer end. Pin assignments are shown in figure E-13.

LIM Centronics Plug 37-pin (P1)				User Plug 36-pin (P2)		
In/Out	Signal	Pin (P1)		Pin (P2)	Signal	In/Out
In	SEL	13	----------	13	SEL	Out
		14	----------	14		
In	ACKIN	10	----------	10	ACKIN	Out
		29	----------	28		
Out	STR	1	----------	1	STR	In
		20	----------	19		
Out	DB1	2	----------	2	DB1	In
		21	----------	20		
Out	DB2	3	----------	3	DB2	In
		22	----------	21		
Out	DB3	4	----------	4	DB3	In
		23	----------	22		
Out	DB4	5	----------	5	DB4	In
		24	----------	23		
Out	DB5	6	----------	6	DB5	In
		25	----------	24		
Out	DB6	7	----------	7	DB6	In
		26	----------	25		
Out	DB7	8	----------	8	DB7	In
		27	----------	26		
Out	DB8	9	----------	9	DB8	In
		28	----------	27		
In	125KHZ	15	----------	15	125KHZ	Out
		16	----------	16		
In/Out	PAR/LD	34	----------	33	PAR/LD	In/Out
		35	----------	34		
Out	IP	32	----------	31	IP	In
		31	----------	30		
In	+5	18	----------	18	+5	Out
In	GND	17	----------	17	GND	Out
In	BUSY	11	----------	11	BUSY	Out
		30	----------	29		
In	CP	36	----------	35	CP	Out
		37	----------	36		
In	PO	12	----------	12	PO	Out
In	FLT	33	----------	32	FLT	Out

Figure E-13. 2613-1xx Cable Pin Assignments

URI LIM-to-Data Products Equipment Pin Assignments

The 2613-2xx cable is a standard Data Products printer cable with a 50-pin male plug on the printer end. Pin assignments are shown in figure E-14.

LIM Data Products Plug 50-pin (P1)				User Plug 50-pin (P2)		
In/Out	Signal	Pin (P1)		Pin (P2)	Signal	In/Out
In	RDY	22	----------	22	RDY	Out
		6	----------	6		
In	OL	21	----------	21	OL	Out
		5	----------	5		
In	DMD	23	----------	23	DMD	Out
		7	----------	7		
Out	STR	38	----------	38	STR	In
		37	----------	37		
Out	DB1	19	----------	19	DB1	In
		3	----------	3		
Out	DB2	20	----------	20	DB2	In
		4	----------	4		
Out	DB3	1	----------	1	DB3	In
		2	----------	2		
Out	DB4	41	----------	41	DB4	In
		40	----------	40		
Out	DB5	34	----------	34	DB5	In
		18	----------	18		
Out	DB6	43	----------	43	DB6	In
		42	----------	42		
Out	DB7	36	----------	36	DB7	In
		35	----------	35		
Out	DB8	28	----------	28	DB8	In
		44	----------	44		
In	IV	46	----------	46	IV	Out
		45	----------	45		
In	TOF	24	----------	24	TOF	Out
		8	----------	8		
In	BOF	25	----------	25	BOF	Out
		9	----------	9		
In	EFU	47	----------	47	EFU	Out
		33	----------	33		
In	T0	50	----------	50	T0	Out
		32	----------	32		
In	T1	49	----------	49	T1	Out
		16	----------	16		
In/Out	PAR	29	----------	29	PAR	In/Out
		13	----------	13		
Out	BCLR	31	----------	31	BCLR	In
		15	----------	15		
In	+5	12	----------	12	+5	Out
In	GND	39	----------	39	GND	Out

Figure E-14. 2613-2xx Cable Pin Assignments

(Continued)

(Continued)

LIM Data In/Out	Products Signal	Plug 50-pin (P1) Pin (P1)		User Plug 50-pin (P2) Pin (P2)	Signal	In/Out
In	PM/VR	48	----------	48	PM/VR	Out
		17	----------	17		
In	PM/VR	26	----------	26	PM/VR	Out
		10	----------	10		
In	PE	27	----------	27	PE	Out
		11	----------	11		
Out	PI	30	----------	30	PI	In
		14	----------	14		

Figure E-14. 2613-2xx Cable Pin Assignments

Winchester Adapter Cable Pin Assignments

The 2613-303 cable is a standard Data Products to Winchester adapter cable with a 50-pin D-subminiature female plug on one end and a 50-pin Winchester female plug on the printer end. Pin assignments are shown in figure E-15.

Data Products Plug 50-pin (P1)				User Plug 50-pin Winchester (P2)		
In/Out	Signal	Pin (P1)		Pin (P2)	Signal	In/Out
In	RDY	22	----------	CC	RDY	Out
		6	----------	EE		
In	OL	21	----------	y	OL	Out
		5	----------	AA		
In	DMD	23	----------	E	DMD	Out
		7	----------	C		
Out	STR	38	----------	j	STR	In
		37	----------	m		
Out	DB1	19	----------	B	DB1	In
		3	----------	D		
Out	DB2	20	----------	F	DB2	In
		4	----------	J		
Out	DB3	1	----------	L	DB3	In
		2	----------	N		
Out	DB4	41	----------	R	DB4	In
		40	----------	T		
Out	DB5	34	----------	V	DB5	In
		18	----------	X		
Out	DB6	43	----------	Z	DB6	In
		42	----------	b		
Out	DB7	36	----------	n	DB7	In
		35	----------	k		
Out	DB8	28	----------	u	DB8	In
		44	----------	w		
In	IV	46	----------	v	IV	Out
		45	----------	x		
In	TOF	24	----------	S	TOF	Out
		8	----------	U		
In	BOF	25	----------	M	BOF	Out
		9	----------	P		
In	EFU	47	----------	e	EFU	Out
		33	----------	h		
In	T0	50	----------	d	T0	Out
		32	----------	f		
In	T1	49	----------	a	T1	Out
		16	----------	c		
In/Out	PAR	29	----------	z	PAR	In/Out
		13	----------	BB		

Figure E-15. 2613-303 Winchester Adapter Cable Pin Assignments
(Continued)

(Continued)

Data Products Plug 50-pin (P1)				User Plug 50-pin Winchester (P2)		
In/Out	Signal	Pin (P1)		Pin (P2)	Signal	In/Out
Out	BCLR	31	----------	A	BCLR	In
		15	----------	H		
In	+5	12	----------	HH	+5	Out
In	GND	39				
In	PM/VR	48	----------	FF	PM/VR	Out
		17	----------	DD		
In	PM/VR	26	----------	W	PM/VR	Out
		10	----------	Y		
In	PE	27	----------	r	PE	Out
		11	----------	t		
Out	PI	30	----------	p	PI	In
		14	----------	s		

Figure E-15. 2613-303 Winchester Adapter Cable Pin Assignments

V.35 LIM Cable Information

There is one standard CDCNET cable for V.35 operation.

Product Number	Equipment Number	Description
2617-1xx	TN490	Connects a V.35 LIM to a modem/data set or other DCE device that require a 34-pin male cable connector with 0.060-in diameter pins and single lead jackscrew connector locking mechanism.
2617-2xx	YA327	Connects the LIM to modem/data set or other DCE devices that require a 34-pin male cable connector with 0.040-in diameter pins and spring clip with guide arm connector locking mechanism.
2617-5xx	YA326	Connects the LIM to a terminal or other DTE devices that require a 34-pin female cable connector for 0.060-in diameter pins used with single lead jackscrew connector locking mechanism.

The 2617-1xx cable converts the 25-pin subminiature D-type male connector on the LIM to the V.35 standard 34-pin rectangular male connector (ISO 2593) with jack screws.

V.35 Signals Supported

The following RS-232-C signals are supported by the V.35 LIM:

Outputs		Inputs	
TxD	Transmit Data	RxD	Receive Data
TxC	Transmit Clock	RxC	Receive Clock
RTS	Request To Send	TxCE	Transmit Clock (external)
DTR	Data Terminal Ready	CTS	Clear To Send
		DCD	Data Carrier Detect
		DSR	Data Set Ready
		RI[5]	Ring Indicator

Pin Assignments for the V.35 LIM 25-Pin Connector

This information is necessary only if you want to build or modify your own cable and plug it directly into the LIM. Refer to figure E-16 for pin locations on the LIM connector, type DB25-P.

In/Out	CCITT	Signal	J3/J4 Pin	Signal	CCITT	In/Out
In	115	RxC(B)----	13			
			25 ---			
In	114	TxCE(B)---	12			
			24 -------	TxC(A)	113	Out
		---	11			
			23 ---			
		---	10			
			22 -------	RI (*)	125	In
		---	9			
			21 ---			
In	109 (*)	DCD-------	8			
			20 -------	DTR (*)	108/2	Out
Ground	102	SG--------	7			
			19 -------	TxC(B)	113	Out
In	107 (*)	DSR-------	6			
			18 ---			
In	106 (*)	CTS-------	5			
			17 -------	RxC(A)	115	In
Out	105 (*)	RTS-------	4			
			16 -------	RxD(B)	104	In
In	104	RxD(A)----	3			
			15 -------	TxCE(A)	114	In
Out	103	TxD(A)----	2			
			14 -------	TxD(B)	103	Out
Shield	101	FG--------	1			

NOTES:

Viewed from mating face of 25-pin subminiature D male connector mounted on a V.35 LIM circuit board.

Pins with no signal names are unused (not connected).

Signals with (A) or (B) suffix are balanced differential pairs.

* Indicates standard bipolar RS-232 signal level:

Output: +10 V = ON = Space = "0"
-10 V = OFF = Mark = "1"
Maximum voltage is 15 V

Figure E-16. V.35 LIM Connector

V.35 LIM-to-Modem (DCE) Pin Assignments

The 2617-1xx and 2xx are standard modem cables with a 34-pin male plug on the modem end. Pin assignments are shown in figure E-17.

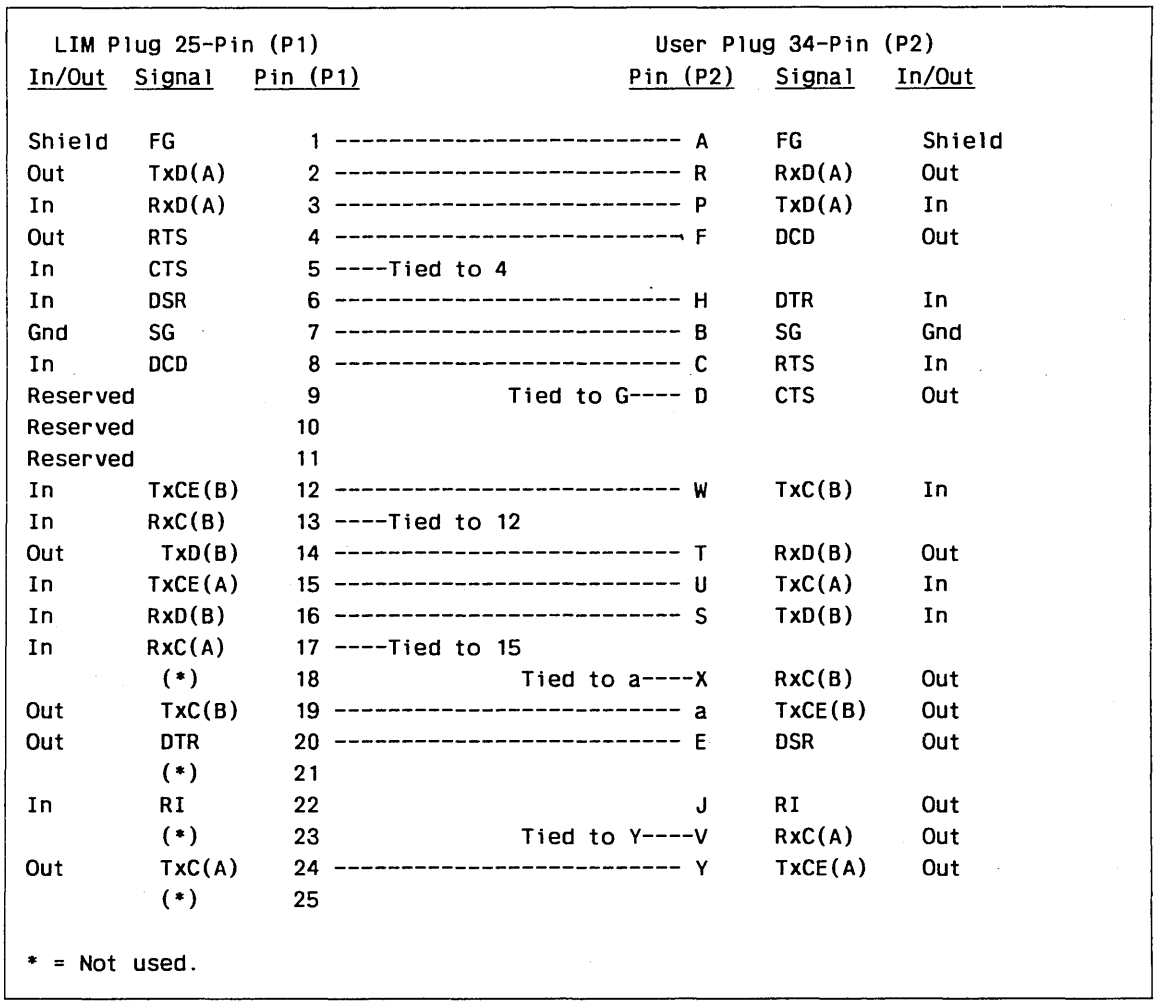
LIM Plug 25-Pin (P1)				User Plug 34-Pin (P2)		
In/Out	Signal	Pin (P1)		Pin (P2)	Signal	In/Out
Shield	FG	1	----------	A	FG	Shield
Out	TxD(A)	2	----------	P	TxD(A)	In
In	RxD(A)	3	----------	R	RxD(A)	Out
Out	RTS	4	----------	C	RTS	In
In	CTS	5	----------	D	CTS	Out
In	DSR	6	----------	E	DSR	Out
Gnd	SG	7	----------	B	SG	Gnd
In	DCD	8	----------	F	DCD	Out
Reserved		9	----------	f		
Reserved		10	----------	g		
Reserved		11				
In	TxCE(B)	12	----------	a	TxCE(B)	Out
In	RxC(B)	13	----------	X	RxC(B)	Out
Out	TxD(B)	14	----------	S	TxD(B)	In
In	TxCE(A)	15	----------	Y	TxCE(A)	Out
In	RxD(B)	16	----------	T	RxD(B)	Out
In	RxC(A)	17	----------	V	RxC(A)	Out
	(*)	18				
Out	TxC(B)	19	----------	W	TxC(B)	In
Out	DTR	20	----------	H	DTR	In
	(*)	21				
In	RI	22	----------	J	RI	Out
	(*)	23				
Out	TxC(A)	24	----------	U	TxC(A)	In
	(*)	25				

* = Not used.

Figure E-17. 2617-1xx and 2xx Cable Pin Assignments

V.35 LIM-to-Terminal (DTE) Pin Assignments

The 2617-5xx are standard modem cables with a 34-pin female plug on the terminal end. Pin assignments are shown in figure E-18



LIM Plug 25-Pin (P1)				User Plug 34-Pin (P2)		
In/Out	Signal	Pin (P1)		Pin (P2)	Signal	In/Out
Shield	FG	1	----------	A	FG	Shield
Out	TxD(A)	2	----------	R	RxD(A)	Out
In	RxD(A)	3	----------	P	TxD(A)	In
Out	RTS	4	----------¬	F	DCD	Out
In	CTS	5	----Tied to 4			
In	DSR	6	----------	H	DTR	In
Gnd	SG	7	----------	B	SG	Gnd
In	DCD	8	----------	C	RTS	In
Reserved		9	Tied to G----	D	CTS	Out
Reserved		10				
Reserved		11				
In	TxCE(B)	12	----------	W	TxC(B)	In
In	RxC(B)	13	----Tied to 12			
Out	TxD(B)	14	----------	T	RxD(B)	Out
In	TxCE(A)	15	----------	U	TxC(A)	In
In	RxD(B)	16	----------	S	TxD(B)	In
In	RxC(A)	17	----Tied to 15			
	(*)	18	Tied to a----X		RxC(B)	Out
Out	TxC(B)	19	----------	a	TxCE(B)	Out
Out	DTR	20	----------	E	DSR	Out
	(*)	21				
In	RI	22		J	RI	Out
	(*)	23	Tied to Y----V		RxC(A)	Out
Out	TxC(A)	24	----------	Y	TxCE(A)	Out
	(*)	25				

* = Not used.

Figure E-18. 2617-5xx Cable Pin Assignments

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