Lucent Technologies
Bell Labs Innovations

DEFINITY®

Enterpise Communications Server

Release 6
Installation and Test for Compact Modular Cabinets

Notice

Every effort was made to ensure that the information in this book was complete and accurate at the time of printing. However, information is subject to change.

Your Responsibility for Your System's Security

Toll fraud is the unauthorized use of your telecommunications system by an unauthorized party, for example, persons other than your company's employees, agents, subcontractors, or persons working on your company's behalf. Note that there may be a risk of toll fraud associated with your telecommunications system and, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

You and your system manager are responsible for the security of your system, such as programming and configuring your equipment to prevent unauthorized use. The system manager is also responsible for reading all installation, instruction, and system administration documents provided with this product in order to fully understand the features that can introduce risk of toll fraud and the steps that can be taken to reduce that risk. Lucent Technologies does not warrant that this product is immune from or will prevent unauthorized use of common-carrier telecommunication services or facilities accessed through or connected to it. Lucent Technologies will not be responsible for any charges that result from such unauthorized use.

Lucent Technologies Fraud Intervention

If you *suspect that you are being victimized* by toll fraud and you need technical support or assistance, call Technical Service Center Toll Fraud Intervention Hotline at 1 800 643-2353.

Federal Communications Commission Statement

Part 15: Class B Statement. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving television or radio antenna where this may be done safely.
- To the extent possible, relocate the receiver with respect to the telephone equipment.
- Where the telephone equipment requires ac power, plug the telephone into a different ac outlet so that the telephone equipment and receiver are on different branch circuits.

Part 68: Network Registration Number. This equipment is registered with the FCC in accordance with Part 68 of the FCC Rules. It is identified by FCC registration number AS593M-11185-MF-E.

Part 68: Answer-Supervision Signaling. Allowing this equipment to be operated in a manner that does not provide proper answer-supervision signaling is in violation of Part 68 rules. This equipment returns answer-supervision signals to the public switched network when:

- Answered by the called station
- Answered by the attendant
- Routed to a recorded announcement that can be administered by the CPE user

This equipment returns answer-supervision signals on all DID calls forwarded back to the public switched telephone network. Permissible exceptions are:

- A call is unanswered
- A busy tone is received
- A reorder tone is received

Trademarks

DEFINITY is a registered trademark of Lucent Technologies in the U.S. and throughout the world.

AUDIX is a registered trademark of Lucent Technologies.

Ordering Information

Call: Lucent Technologies Publications Center

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P.O. Box 4100

Crawfordsville, IN 47933

Order: Document No. 555-230-128

Comcode 108042102

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For additional documents, refer to the section entitled, "Related Documents" in "About This Book."

You can be placed on a Standing Order list for this and other documents you may need. Standing Order will enable you to automatically receive updated versions of individual documents or document sets, billed to account information that you provide. For more information on Standing Orders, or to be put on a list to receive future issues of this document, please contact the Lucent Technologies Publications Center.

Warranty

Lucent Technologies provides a limited warranty on this product. Refer to the "Limited use Software License Agreement" card provided with your package.

European Union Declaration of Conformity

Lucent Technologies Business Communications Systems declares that XXX equipment specified in this document conforms to the referenced European Union (EU) Directives and Harmonized Standards listed below:

EMC Directive   89/336/EEC

Low Voltage Directive   73/23/EEC

The "CE" mark affixed to the equipment means that it conforms to the above Directives.

Disclaimer

Intellectual property related to this product and registered to AT&T Corporation has been transferred to Lucent Technologies Incorporated.

Any references within this text to American Telephone and Telegraph Corporation or AT&T should be interpreted as references to Lucent Technologies Incorporated. The exception is cross references to books published prior to December 31, 1996, which retain their original AT&T titles.

Heritage

Lucent Technologies - formed as a result of AT&T's planned restructuring - designs, builds, and delivers a wide range of public and private networks, communication systems and software, consumer and business telephone systems, and microelectronics components. The world-renowned Bell Laboratories is the research and development arm for the company.

Acknowledgment

This document was prepared by the Product Documentation Development group, Lucent Technologies, Denver, CO and Columbus, OH.

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About This Book

This document provides procedures to install a DEFINITY® Enterprise Communications Server Release 6csi using the Compact Modular Cabinet.

This document is intended for use by trained installation technicians.

Conventions Used in This Book

- Information you type is shown as: **save translation**

- Information displayed on the management terminal is shown as: `login`

- Keyboard keys are shown as: Enter.

- Circuit pack codes (such as TN798 or TN2182B) are shown with the minimum acceptable alphabetic suffix (like the "B" in the code TN2182B).

  Generally, an alphabetic suffix higher than that shown is also acceptable. However, not every vintage of either the minimum suffix or a higher suffix code is necessarily acceptable.

  $\Longrightarrow$ **NOTE:**
  Refer to *Technical Monthly: Reference Guide for Circuit Pack Vintages and Change Notices* for current information about usable vintages of specific circuit pack codes (including the suffix).

The following conventions describe the systems referred to in this document.

- The word *system* is a general term encompassing Release 6 and includes references to the DEFINITY Enterprise Communications Server

- Systems in this book are called Release 6, Release 6 CMC, and R6csi

- Information in this book is applicable for Release 6 unless otherwise specified

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- DEFINITY Enterprise Communications Server is abbreviated as DEFINITY ECS

- Physical dimensions in this book are in inches followed by metric centimeters (cm) in parentheses. Wire gauge measurements are in AWG followed by the cross-sectional area in squared millimeters (mm^2) in parentheses

Related Documents

As supplemental information, you may need the following documents when installing a DEFINITY ECS Release 6 system:

- *GBCS Products Security Handbook*, 555-025-600

- *DEFINITY Enterprise Communications Server Release 6 Installation for Adjuncts and Peripherals*, 555-230-125

- *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description*, 555-230-522

- *DEFINITY Enterprise Communications Server Release 6 Maintenance for R6 CMC*, 555-230-129

- *DEFINITY Enterprise Communications Server Release 6 System Description Pocket Reference*, 555-230-211

- *DEFINITY Communications System and System 75 and System 85 Terminals and Adjuncts*, 555-015-201

- *DEFINITY Communications System Generic 2 to DEFINITY Enterprise Communications Server Release 6 Transition Reference*

- *Switch Administration for DEFINITY AUDIX*, 585-300-509

In addition to this book, other description, installation and test, maintenance, and administration books are available.

How to Order Documentation

A complete list of DEFINITY books is available in the *Business Communications System Publications Catalog*, 555-000-010.

You can order this document and any other DEFINITY documentation directly from the Lucent Technologies Business Communications System Publications Fulfillment Center at 1-317-361-5353 or toll free at 1-800-457-1235.

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How to Comment on This Book

Lucent Technologies welcomes your feedback. Please fill out the reader comment card at the front of this book and return it. Your comments are of great value and help us to improve our documentation.

If the reader comment card is missing, fax your comments to 1-303-538-1741 or to your Lucent Technologies representative, and mention this document's name and number, *DEFINITY Enterprise Communication Server Release 6 Installation and Test for Compact Modular Cabinets*, 555-230-128.

Where to Call for Technical Support

	Telephone Number
Streamlined Implementation (for missing equipment)	1-800-772-5409
Technical Service Center (INADS Database Administration)	1-800-248-1111
Asia/Pacific Regional Support Center	65-872-8686
Western Europe/South Africa/Middle East	441-252-391-889
Eastern/Central Europe	361-270-5160
Latin/Central America & Caribbean - ITAC	303-538-4666

Security Issues

To ensure the greatest security possible for customers, Lucent Technologies offers services that can reduce toll-fraud liabilities. Contact your Lucent Technologies representative for more security information.

Login security is an attribute of the DEFINITY ECS software. Existing passwords expire 24 hours after installation.

Administration

Use the management terminal to administer the system. Enter commands at the terminal to access and display screens (forms). Use the forms to list data and to add, change, and remove system and telephone features.

System administration is detailed in *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description.*

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Trademarks

This document contains references to the following Lucent Technologies trademarked products:

- ACCUNET®
- AUDIX®
- Callmaster®
- CallVisor®
- CONVERSANT®
- DEFINITY®
- FORUM™
- MEGACOM®
- TRANSTALK™

The following products are trademarked by their appropriate vendor:

- LINX™ is a trademark of Illinois Tool Works, Incorporated
- Shockwatch® is a registered trademark of Media Recovery, Incorporated
- Styrofoam® is a registered trademark of Styrofoam Corporation
- Tiltwatch® is a registered trademark of Media Recovery, Incorporated

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Standards Compliance

The equipment presented in this document complies with the following standards (as appropriate):

- ITU-T (Formerly CCITT)

- ECMA

- ETSI

- IPNS

- DPNSS

- National ISDN-1

- National ISDN-2

- ISO-9000

- ANSI

- FCC Part 15 and Part 68

- EN55022

- EN50081

- EN50082

- CISPR22

- Australia AS3548 (AS/NZ3548)

- Australia AS3260

- IEC 825

- IEC 950

- UL 1459

- UL 1950

- CSA C222 Number 225

- TS001

Contact your Lucent Technologies representative for more information.

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Electromagnetic Compatibility Standards

This product complies with and conforms to the following standards:

- Limits and Methods of Measurements of Radio Interference Characteristics of Information Technology Equipment, EN55022 (CISPR22), 1993

- EN50082-1, European Generic Immunity Standard

- FCC Part 15

- Australia AS3548

> ### ➡ NOTE:
> The system conforms to Class A (industrial) equipment. Voice terminals meet Class B requirements.

- Electrostatic Discharge (ESD) IEC 1000-4-2

- Radiated radio frequency field IEC 1000-4-3

- Electrical Fast Transient IEC 1000-4-4

- Lightning effects IEC 1000-4-5

- Conducted radio frequency IEC 1000-4-6

- Mains frequency magnetic field IEC 1000-4-8

- Low frequency mains disturbance

The system conforms to the following standards:

- Electromagnetic compatibility General Immunity Standard, part 1; residential, commercial, light industry, EN50082-1, CENELEC, 1991

- Issue 1 (1984) and Issue 2 (1992), Electrostatic discharge immunity requirements (EN55024, Part 2) IEC 1000-4-2

- Radiated radio frequency field immunity requirements IEC 1000-4-3

- Electrical fast transient/burst immunity requirements IEC 1000-4-4

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European Union Standards

Lucent Technologies Business Communications Systems (BCS) declares that the DEFINITY equipment specified in this document bearing the "CE" mark conforms to the European Union Electromagnetic Compatibility Directives.

The "CE" (Conformité Europeénne) mark indicates conformance to the European Union Electromagnetic Compatibility Directive (89/336/EEC), Low Voltage Directive (73/23/EEC), Telecommunication Terminal Equipment (TTE) Directive (91/263/EEC), i-CTR3 Basic Rate Interface (BRI), and i-CTR4 Primary Rate Interface (PRI) as applicable.

The "CE" mark is applied to the following Release 6 products:

- Global AC-powered Multi-Carrier Cabinet (MCC)

- DC-powered Multi-Carrier Cabinet (MCC) with 25 Hz ring generator

- AC-powered Enhanced Single-Carrier Cabinet (ESCC) with 25 Hz ring generator

- AC-powered Compact Single-Carrier Cabinet (CSCC) with 25 Hz ring generator

- Enhanced DC power system

- AC-powered Compact Modular Cabinet (CMC) with 25 Hz ring generator

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Federal Communications Commission Statement

Part 68: Statement

Part 68: Answer-Supervision Signaling. Allowing this equipment to be operated in a manner that does not provide proper answer-supervision signaling is in violation of Part 68 rules. This equipment returns answer-supervision signals to the public switched network when:

- Answered by the called station

- Answered by the attendant

- Routed to a recorded announcement that can be administered by the CPE user

This equipment returns answer-supervision signals on all DID calls forwarded back to the public switched telephone network. Permissible exceptions are:

- A call is unanswered

- A busy tone is received

- A reorder tone is received

Lucent Technologies attests that this registered equipment is capable of providing users access to interstate providers of operator services through the use of access codes. Modification of this equipment by call aggregators to block access dialing codes is a violation of the Telephone Operator Consumers Act of 1990.

This equipment complies with Part 68 of the FCC Rules. A label is provided on this equipment that contains, among other information, the FCC registration number and ringer equivalence number (REN) for this equipment. If requested, this information must be provided to the telephone company.

The REN is used to determine the quantity of devices which may be connected to the telephone line. Excessive RENs on the telephone line may result in devices not ringing in response to an incoming call. In most, but not all areas, the sum of RENs should not exceed 5.0. To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.

⇒ NOTE:
REN is not required for some types of analog or digital facilities.

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Means of Connection

Connection of this equipment to the telephone network is shown in the following table.

Manufacturer's Port Identifier	FIC Code	SOC/REN/ A.S. Code	Network Jacks
Off/On Premises Station	OL13C	9.0F	RJ2GX, RJ21X, RJ11C
DID Trunk	02RV2-T	0.0B	RJ2GX, RJ21X
CO Trunk	02GS2	0.3A	RJ21X
CO Trunk	02LS2	0.3A	RJ21X
Tie Trunk	TL31M	9.0F	RJ2GX
1.544 Digital Interface	04DU9-B,C	6.0P	RJ48C, RJ48M
1.544 Digital Interface	04DU9-BN,KN	6.0P	RJ48C, RJ48M
120A2 Channel Service Unit	04DU9-DN	6.0P	RJ48C

If the terminal equipment (DEFINITY® System) causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with this equipment, for repair or warranty information, please contact the Technical Service Center at 1-800-242-2121. For assistance outside of the United States, refer to ''Where to Call for Technical Support''. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

It is recommended that repairs be performed by Lucent Technologies certified technicians.

The equipment cannot be used on public coin phone service provided by the telephone company. Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

This equipment, if it uses a telephone receiver, is hearing aid compatible.

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Install and Cable the Cabinets

1

Check Customer's Order

Check the customer's order and the shipping packing lists to confirm that all equipment is present. If any equipment is missing, report this to your Lucent Technologies representative. Check the system adjuncts for damage and report all damage according to local shipping instructions.

Correcting Shipping Errors

1. Red-tag all defective equipment and over-shipped equipment and return according to the nearest Material Stocking Location (MSL) instructions.

2. Direct all short-shipped reports to the nearest MSL. Contact the appropriate location for specific instructions. For Streamlined Implementation in the United States, call 1-800-772-5409.

Unpack and Inspect

READ THIS FIRST !

1. Use Figure 1-1 to verify the equipment received. Actual equipment may vary in appearance and may ship in separate packages.

2. Refer to Figure 1-1 while installing the system.

3. Equipment comcodes are listed in Table 2-7 on page 2-12.

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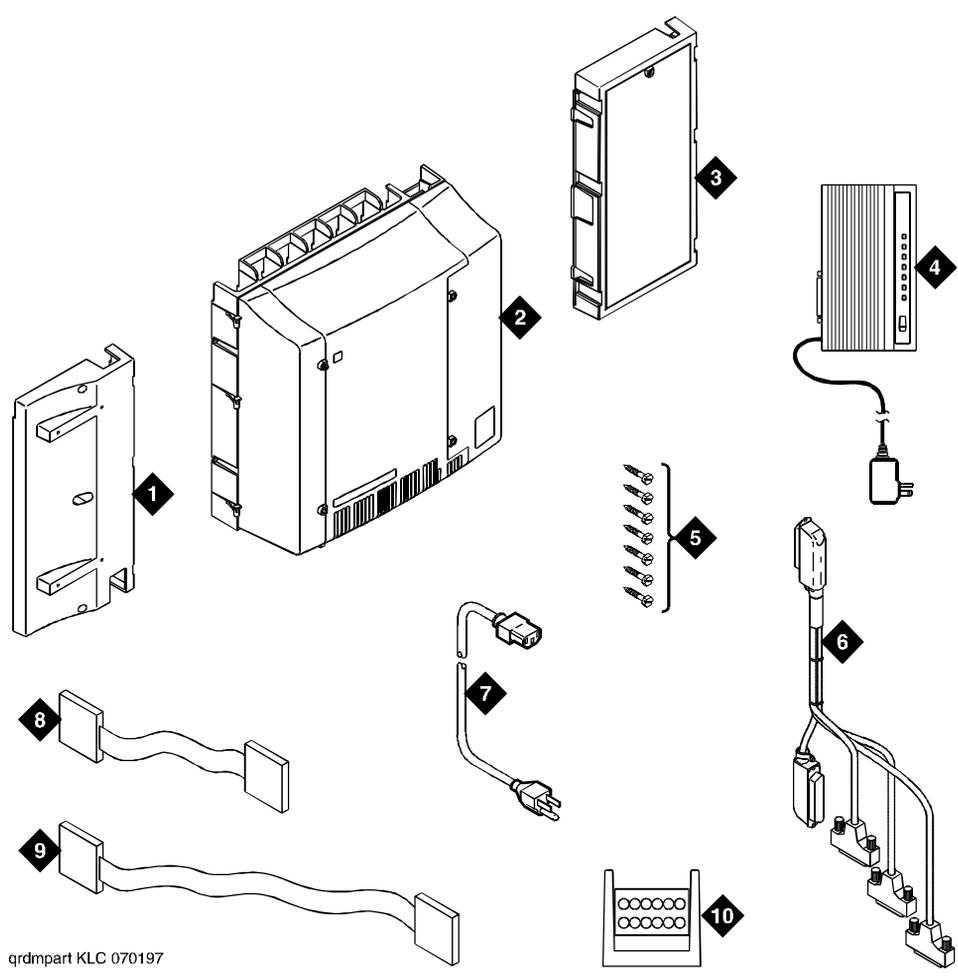
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Figure Notes

1. Left Panel (acts as floor mount pedestal and as a wall-mount template)

2. CMC Cabinet

3. Right Panel

4. U.S. Robotics External Modem (not shipped with all systems)

5. #12x1-inch Shoulder Screws

6. Processor Interface Cable

7. AC Power Cord (NEMA 5-15P or IEC 320)

8. Vertical TDM/LAN Bus Cable (not shipped with all systems)

9. Horizontal TDM/LAN Bus Cable (not shipped with all systems)

10. Single-point Ground Block (not shipped with all systems)

Figure 1-1.   Equipment Packed with the CMC Cabinet

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Install the System Cabinets

Figure 1-2 shows a typical wall-mounted unit. The figure shows the CMC cabinet hardware and how the equipment appears when installed on a wall.

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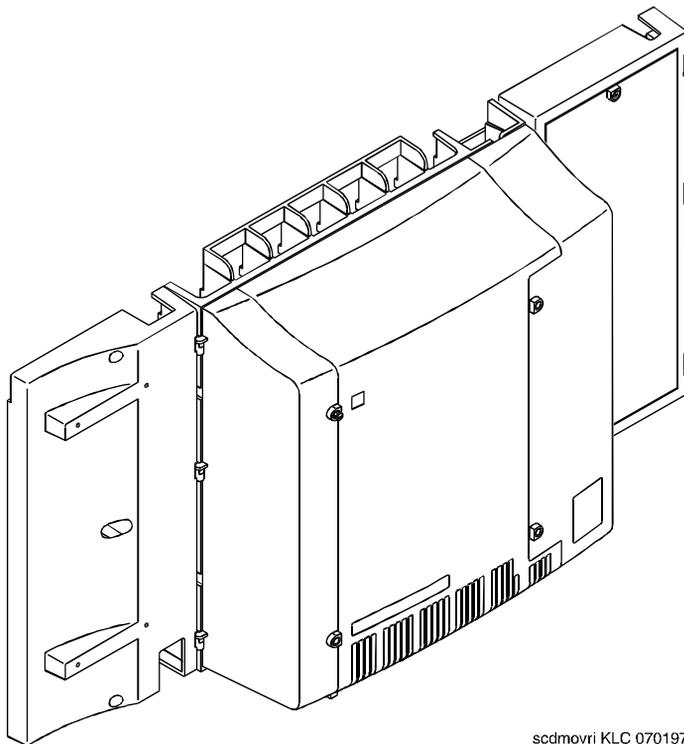
Figure 1-2. Typical CMC Cabinet with Left and Right Panels

1. Before mounting the cabinets, remove the cabinet doors by opening them and lifting them straight up and off of the hinge pins.

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Set the Carrier Address ID — All Cabinets
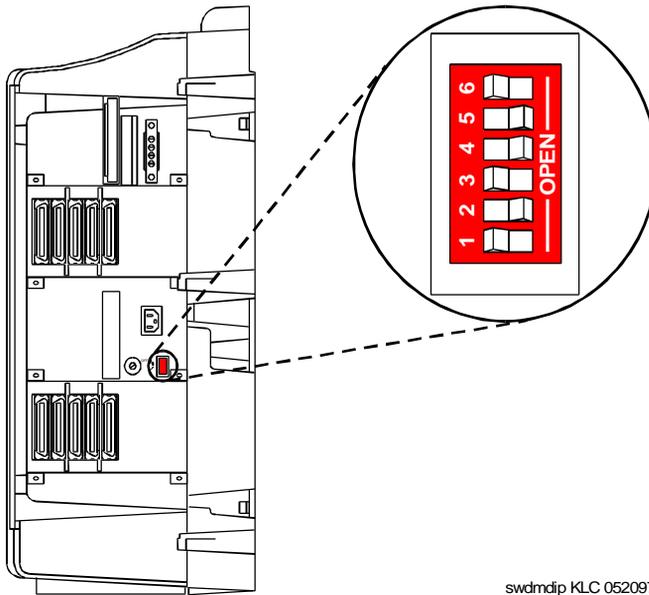
swdmdip KLC 052097

Figure 1-3. Setting Carrier Address ID (Right Side)

1. Use Table 1-1 to set the address ID of *each* carrier.

Table 1-1. Carrier Position Address ID

Carrier Position	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	Switch 6
A (Control)	open	closed	open	closed	closed	open
B (Port)	closed	open	closed	closed	open	open
C (Port)	closed	open	open	open	open	open

2. For floor mounting instructions, proceed to ''Floor-Mount the Cabinets'' on page 1-5.

3. For wall mounting instructions, proceed to ''Wall-Mount the Cabinets'' on page 1-6.

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Floor-Mount the Cabinets

⚠ CAUTION:

A fully loaded system weighs 50 lbs (22.7 kg). Use lifting precautions. If the doors, power unit, and circuit packs are removed, the unit weighs only 29 lbs (13.1 kg).

The cabinet dimensions (with floor pedestal) are 28.5 in. (72.4 cm) high, 24.5 in. (62.2 cm) wide, ans 12 in. (30.5 cm) deep. Maintain a service clearance of 12 in. (30.5 cm) on the left, right, and front of the cabinet.

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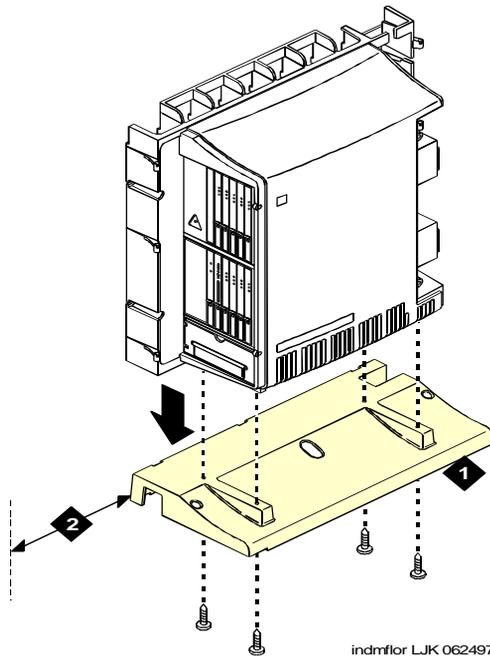
Figure Notes

1. Left Panel (floor-mount pedestal)

2. 12 inches (30.5 cm) minimum from nearest object (required to service the circuit packs)

Figure 1-4.   Typical Floor Mount Installation

1. Place the cabinet in the desired location.

2. Proceed to .

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Wall-Mount the Cabinets

⚠ CAUTION:

A fully loaded system weighs 50 lbs (22.7 kg). Use lifting precautions. If the doors, power unit, and circuit packs are removed, the unit weighs only 29 lbs (13.1 kg).

Install Plywood Backing onto Wall

If the 3/4-inch (2 cm) plywood backing is already mounted to the wall, proceed to .

➡ NOTE:

The plywood and the hardware to mount the plywood are installer-provided.

Single-Cabinet Installation

1. Install a 3/4-inch (2 cm) thick sheet of 2 x 4-foot (0.6 x 1.2 m) plywood horizontally onto the wall. See .

   The top of the plywood must be at least 54 inches (137 cm) from the floor.

2 or 3 Vertically Mounted Cabinets

1. Install a 3/4-inch (2 cm) thick sheet of 4 x 8-foot (1.2 x 2.4 m) plywood vertically onto the wall. See .

2 Cabinets Vertically Mounted and 1 Cabinet Horizontally Mounted

1. Install a 3/4-inch (2 cm) thick sheet of 4 x 8-foot (1.2 x 2.4 m) plywood vertically onto the wall. See .

2. Install a 3/4-inch (2 cm) thick sheet of 2 x 4-foot (0.6 x 1.2 m) sheet of plywood horizontally onto the wall. Position the plywood to the right of the first sheet, across from Cabinet A.

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Install Cabinet A — Wall-Mount

Figure 1-5 shows the left panel used as a template to install Cabinet A.
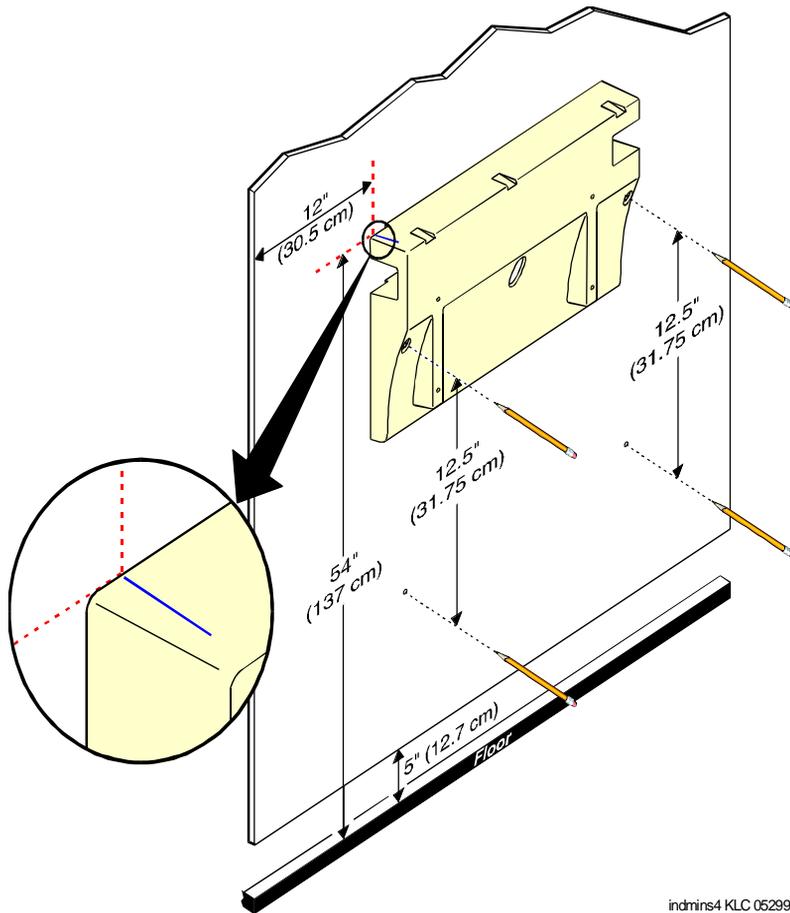
Figure 1-5.   Left Panel Used as Mounting Template

1. Measure 54 inches (137 cm) up from the floor and 12 inches (30.5 cm) in from the left. See Figure 1-5. Mark the point where the 2 lines intersect. This represents the top of the cabinet.

2. Set the left panel on the wall so that the line on the top of the left panel aligns with the intersected marks. Be sure that the left panel is level.

3. Mark the mounting holes and remove the template from the wall.

4. Measure 12.5 inches (31.75 cm) straight down from both holes and mark the bottom mounting holes.

5. Drill 1/8-inch (0.3 cm) pilot holes in all 4 mounting hole locations.

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6. Thread the #12 x 1-inch shoulder screws into the top holes and into the bottom left hole. Allow the screws to extend about 1/4-inch (1.3 cm) from the wall.

7. Set the cabinet onto the wall and align the keyhole slot on the right side with the shoulder screw. See Figure 1-6. Slide the cabinet to the left to hold it in place. Tighten the screws securely.

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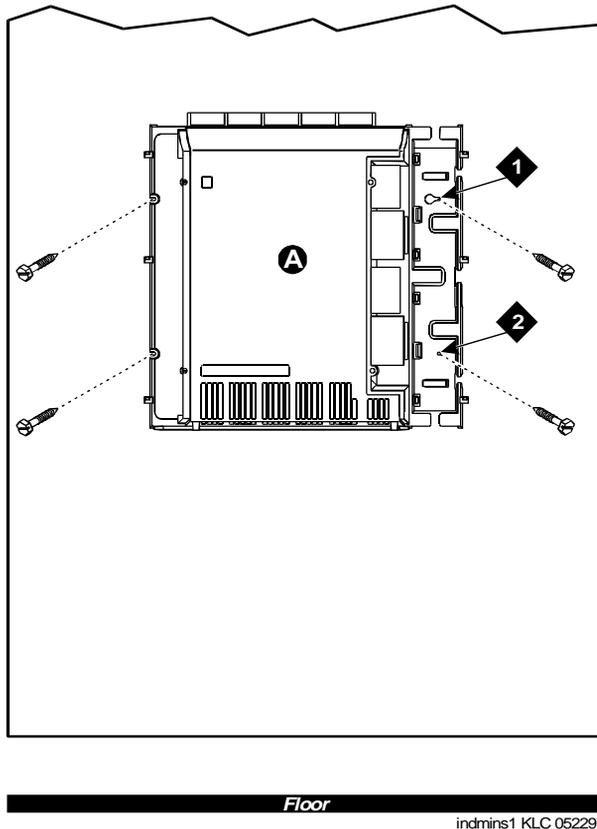
Figure Notes

1. Keyhole Slot

2. #12 x 1-inch Safety Screw

Figure 1-6. Typical Wall-Mount Installation

8. Thread the #12 x 1-inch safety screw into the bottom right hole and tighten.

9. If only 1 cabinet is installed, proceed to ''Install Left and Right Panels — Wall-Mount'' on page 1-11.

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Install 2 or 3 Vertically Mounted Cabinets

➡ **NOTE:**
Refer to *"Install Cabinet A — Wall-Mount" on page 1-7* to use the left panel as a template. The bottom cabinet must be at least 5 inches (12.7 cm) from the floor.

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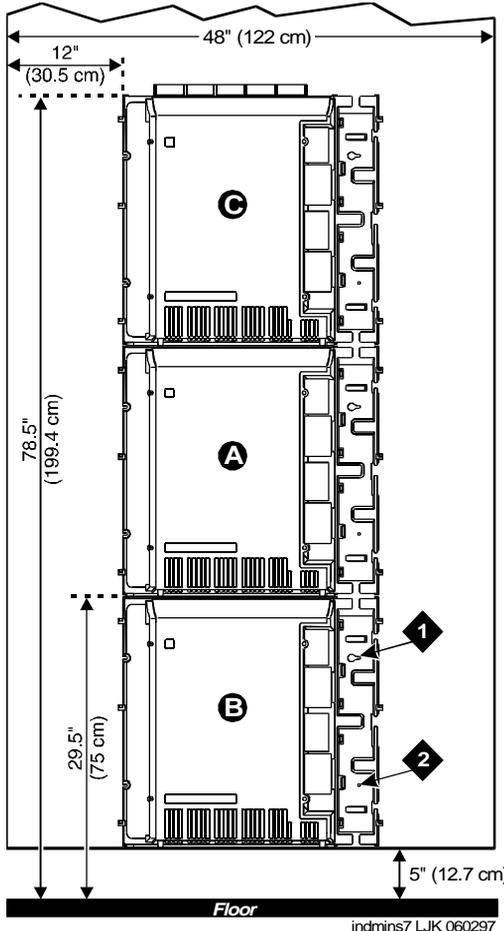
Figure Notes

1. Keyhole Slot

2. #12 x 1-inch Safety Screw

Figure 1-7. Typical Multi-Cabinet Installation

1. Make the measurements as shown in Figure 1-7 and install each cabinet.

2. Securely tighten the shoulder screws and safety screws.

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Install 2 Cabinets Vertically and 1 Cabinet Horizontally

➡ **NOTE:**
   Refer to *"Install Cabinet A — Wall-Mount" on page 1-7* to use the left panel as a template. The bottom cabinet must be at least 5 inches (12.7 cm) from the floor.

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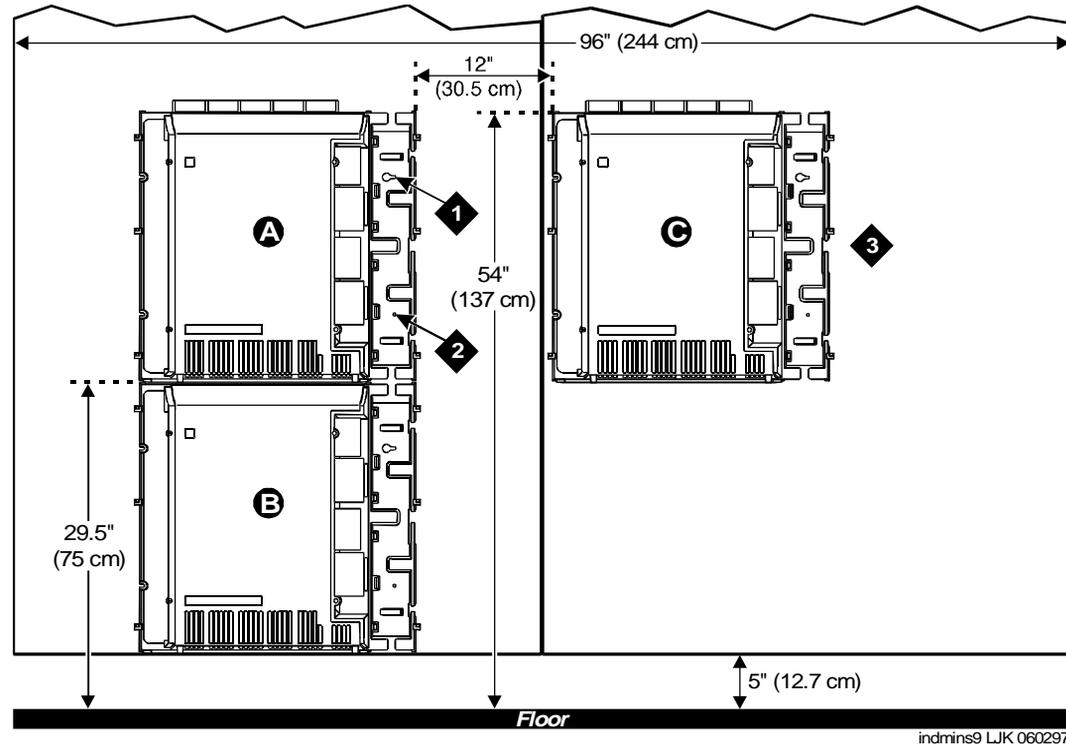
Figure Notes

1. Keyhole Slot   3. Second Sheet of Plywood
2. #12 x 1-inch Safety Screw

Figure 1-8.   Typical 3-Cabinet Installation

1. Make the measurements as shown in Figure 1-8 and install each cabinet.
2. Securely tighten the shoulder screws and safety screws.

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Install the System Cabinets *Page 1-11*

Install Left and Right Panels — Wall-Mount

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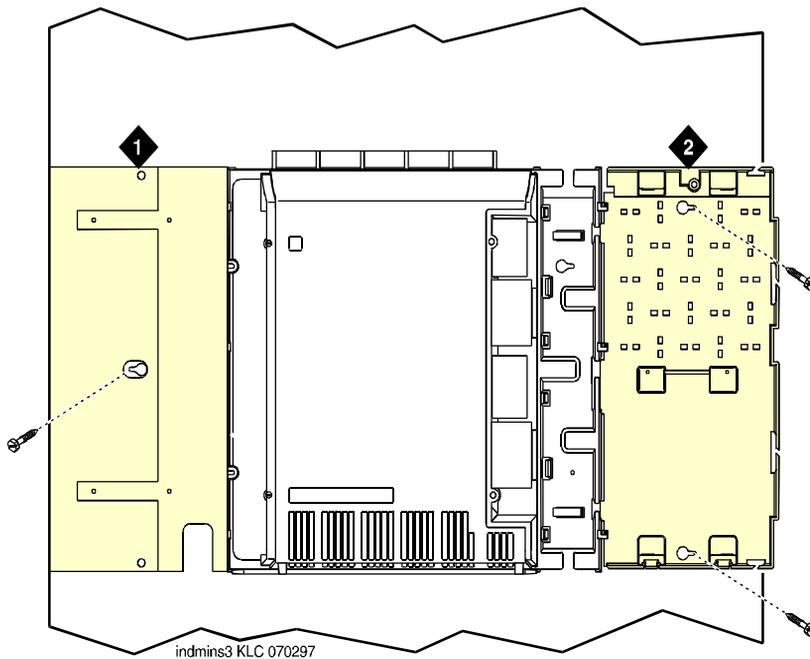
Figure Notes

1. Left Panel

2. Right Panel

Figure 1-9.   Left and Right Panel Installation

1. Align the cutouts in the left panel with the cabinet hinges.

2. Mark the mounting holes. See Figure 1-9.

3. Drill a 1/8-inch (0.3 cm) pilot hole into the wall and secure the panel with the #12 x 1-inch shoulder screw.

4. Align the cutouts in the right panel with the right edge of the cable trough.

5. Repeat Steps 2 and 3, using two #12 x 1-inch shoulder screws.

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Cable the System

Install Processor Interface Cable — Cabinet A Only

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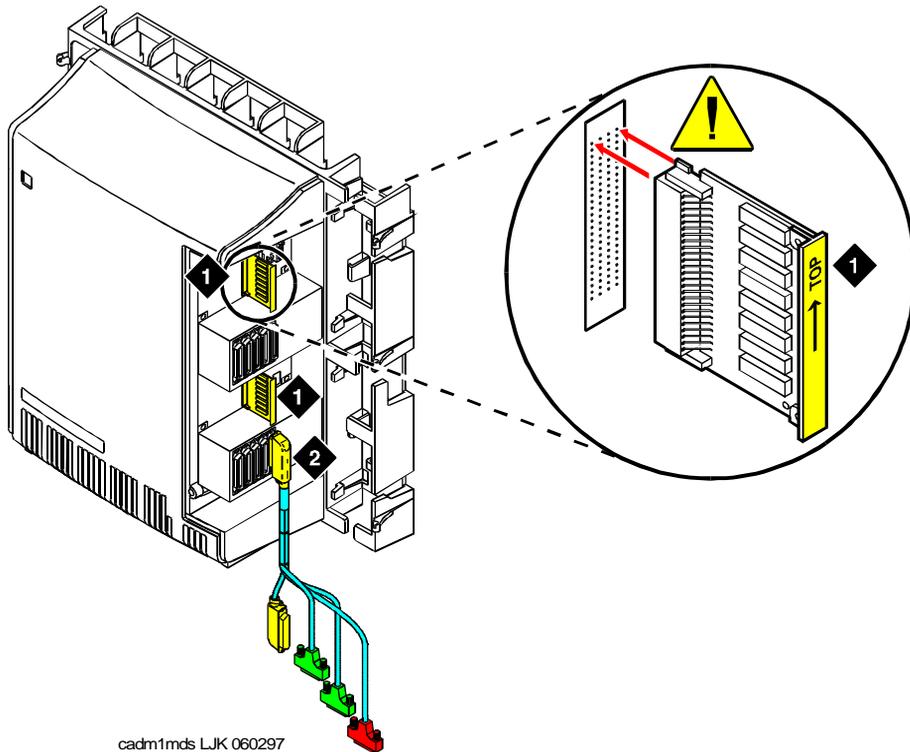
Figure Notes

1. TDM/LAN Bus Terminator   2. Processor Interface Cable (Cabinet A Only)

Figure 1-10.   System Cable Connections

1. Connect the Processor Interface Cable to slot 1. See Figure 1-10.

2. If there is only 1 system cabinet, install the TDM/LAN bus terminators.

3. If there is only 1 cabinet, proceed to ''Install Main Distribution Frame and External Modem'' on page 1-21.

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Cable the Multi-Cabinet System — Wall-Mount

Vertically Mounted System

1. Route the TDM/LAN bus cables through the cable trough.
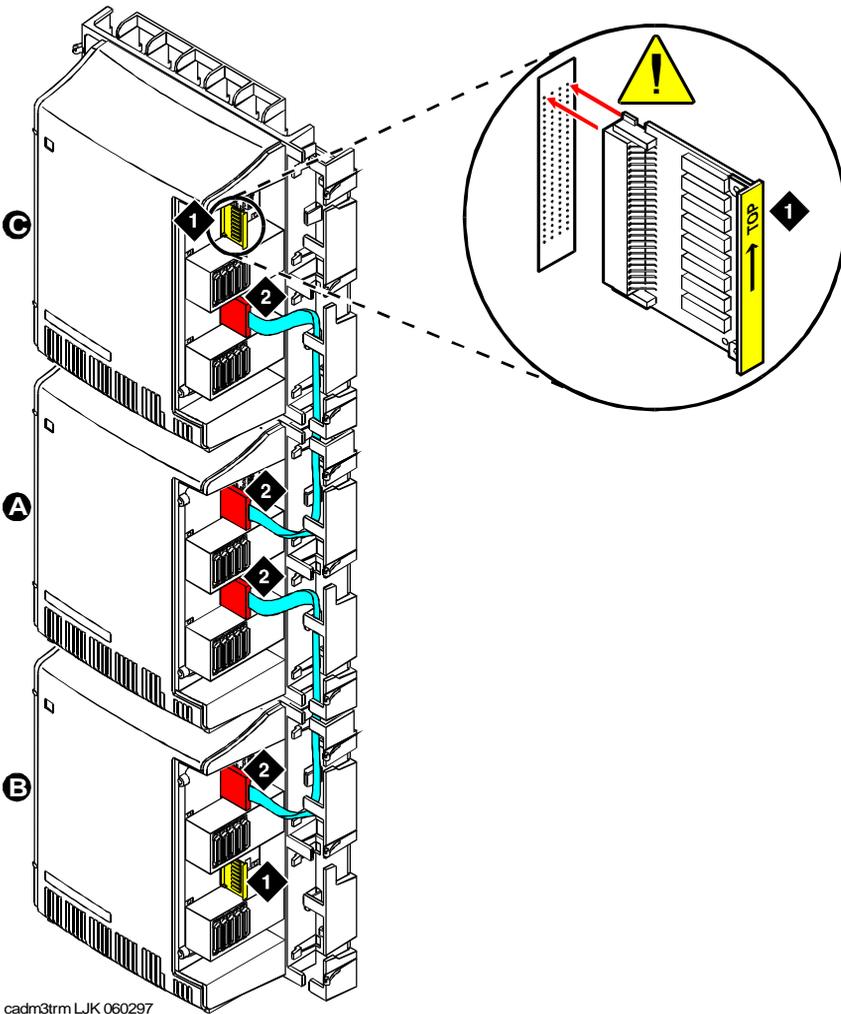
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Figure Notes

1. TDM/LAN Bus Terminator (at each end of the TDM/LAN bus)

2. Vertical TDM/LAN Bus Cable (List 8)

Figure 1-11.   TDM/LAN Bus Cables and Terminators

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　Cable the System　　　　　　　　　　　　　　　　　　　　　　　　　*Page 1-14*

Vertically and Horizontally Mounted System

Only 1 horizontal TDM/LAN Bus cable is allowed per system. See Figure 1-12.

1. Route the TDM/LAN bus cables through the cable trough.
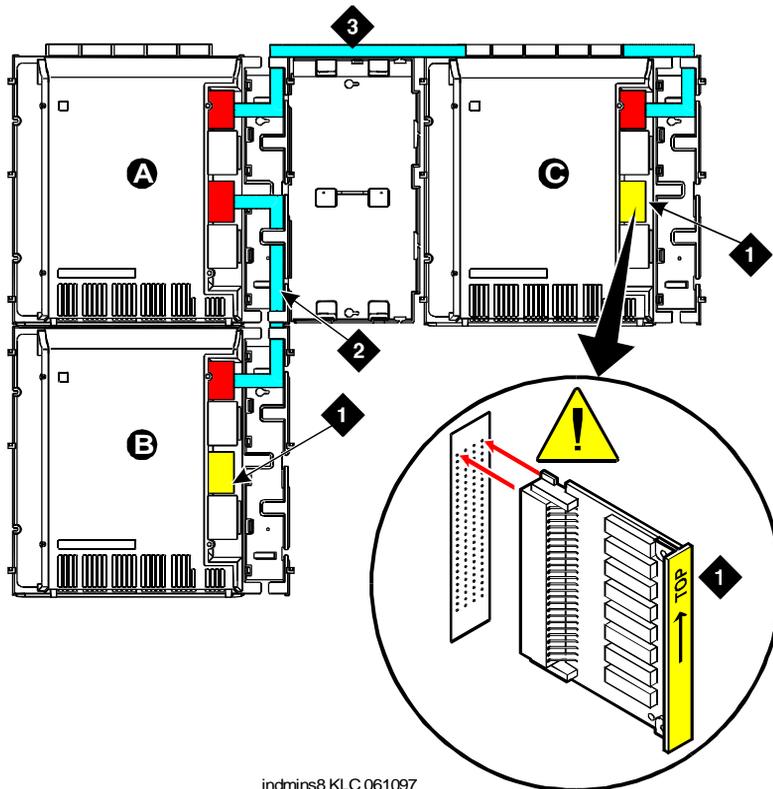
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Figure Notes

1. TDM/LAN Bus Terminator (at each end of the TDM/LAN bus)

2. Vertical TDM/LAN Bus Cable (List 8)

3. Horizontal TDM/LAN Bus Cable (List 9)

Figure 1-12.　System Cable Connections

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AC Power and Ground

⚠ **CAUTION:**
The AC power circuit must be dedicated to the system. The circuit must not be shared with other equipment and must not be controlled by a wall switch. The AC receptacle must not be located under the Main Distribution Frame and must be easily accessible.

⚠ **CAUTION:**
Removing the 650A Power Unit does not remove AC power from the cabinet. To remove AC power, pull the AC power cord from the AC appliance inlet.

⚠ **CAUTION:**
System grounding must comply with the general rules for grounding provided in Article 250 of the National Electrical Code (NEC), National Fire Protection Agency (NFPA) 70, or the applicable electric code in the country of installation.

⚠ **CAUTION:**
AC mains wiring and testing must be performed by a qualified electrician and must conform to Article 250 of the National Electrical Code (NEC), National Fire Protection Agency (NFPA) 70, or the applicable electric code in the country of installation.

Check AC Power

The CMC uses an auto-ranging 85 to 264 VAC power supply. The AC power source can be a single-phase of 120 VAC with neutral (100 VAC for Japan) with 15 Amp circuit breaker, or a single-phase of 220 or 240 VAC (200 VAC for Japan) with 10 Amp circuit breaker.

Before powering up the system, check the AC power in the equipment room using a KS-20599 digital voltmeter (DVM) (or equivalent).

1. Set the DVM to a voltage range that allows proper measurement of the AC line voltage.

2. Measure the voltage between the hot and neutral side of the receptacle. The neutral wire is white, the hot wire is black.

3. Depending on the AC power source, verify that the meter reads 90 to 132 VAC or 180 to 264 VAC. If not, have a qualified electrician correct the problem.

4. Measure the voltage between the neutral and ground side of the receptacle. The ground wire is green.

5. Verify that the meter reads 0 VAC. If not, have a qualified electrician correct the problem.

6. When finished, set the AC mains circuit breakers to OFF.

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Approved Grounds

An approved ground is the closest acceptable medium for grounding the building entrance protector, entrance cable shield, or single-point ground of electronic telephony equipment. If more than 1 type of approved ground is available on the premises, the grounds must be bonded together as required in Section 250-81 of the National Electrical Code.

Grounded Building Steel — The metal frame of the building where it is effectively grounded by 1 of the following grounds: acceptable metallic water pipe, concrete encased ground, or a ground ring.

Acceptable Water Pipe — A metal underground water pipe, at least 1/2-inch (1.3 cm) in diameter, in direct contact with the earth for at least 10 feet (3 m). The pipe must be electrically continuous (or made electrically continuous by bonding around insulated joints, plastic pipe, or plastic water meters) to the point where the protector ground wire connects. A metallic underground water pipe must be supplemented by the metal frame of the building, a concrete-encased ground, or a ground ring. If these grounds are not available, the water pipe ground can be supplemented by 1 of the following types of grounds:

- Other local metal underground systems or structures — Local underground structures such as tanks and piping systems

- Rod and pipe electrodes — A 5/8-inch (1.6 cm) solid rod or 3/4-inch (2 cm) conduit or pipe electrode driven to a minimum depth of 8 feet (2.4 m)

- Plate electrodes — Must have a minimum of 2 square feet (0.185 square m) of metallic surface exposed to the exterior soil

Concrete Encased Ground — An electrode encased by at least 2 inches (5.1 cm) of concrete and located within and near the bottom of a concrete foundation or footing in direct contact with the earth. The electrode must be at least 20 feet (6.1 m) of 1 or more steel reinforcing bars or rods 1/2-inch (1.3 cm) in diameter, or at least 20 feet (6.1 m) of bare, solid copper, 4 AWG (26 mm^2) wire.

Ground Ring — A buried ground that encircles a building or structure at a depth of at least 2.5 feet (0.76 m) below the earth's surface. The ground ring must be at least 20 feet (6.1 m) of 2 AWG (35 mm^2), bare, copper wire.

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APPROVED FLOOR GROUNDS

> ⚠ **CAUTION:**
> *If the approved ground is inside a dedicated equipment room, then these connections must be made by a qualified electrician.*

Floor grounds are those grounds on each floor of a high-rise building that are suitable for connection to the ground terminal in the riser closet and to the cabinet equipment single-point ground terminal. Approved floor grounds may include:

■ Building steel

■ The grounding conductor for the secondary side of the power transformer feeding the floor

■ Metallic water pipes

■ Power-feed metallic conduit supplying panel boards on the floor

■ A grounding point specifically provided in the building for the purpose

Uninterruptible Power Supply

An optional UPS (Uninterruptible Power Supply) may be used for power holdover. The type of UPS depends on the holdover requirements. Holdover times vary from less than 10 minutes to up to 8 hours. Contact your Lucent Technologies representative for more information.

The UPS must provide surge protection for all connected cabinets.

1. Connect the UPS to an electrical outlet capable of handling the power requirements of all connected cabinets.

2. Be sure that Cabinet A (control carrier) is connected to an "unswitched" or "always on" electrical outlet on the UPS.

650A Power Unit

The latch on the front of each power unit acts as the DC power switch for each cabinet. Engaging the latch (fully seating the power unit into the cabinet) activates cabinet power.

> ⚠ **CAUTION:**
> *The latch only removes DC power from the cabinet, not AC power. To remove AC power, pull the AC power cord from the appliance inlet.*

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Connect Cabinet Grounds and Other Grounds

The following additional grounding requirements must be met:

- The approved ground wire must be green (or green with yellow stripe), 6 AWG (#40) (16 mm^2), copper, stranded wire

- Bond all approved grounds at the single-point ground to form a single grounding electrode system
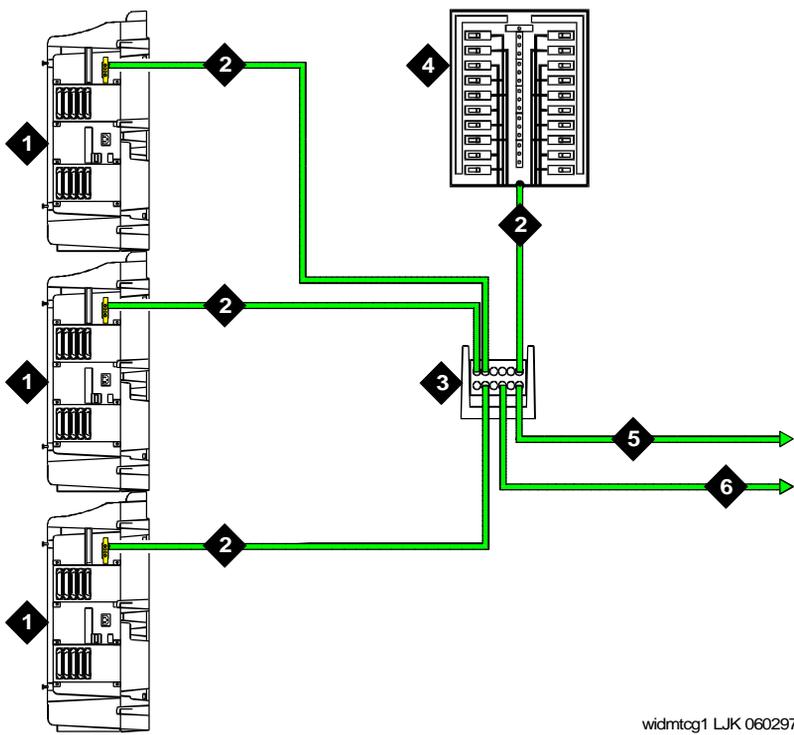
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Figure Notes

1. CMC Cabinet

2. 6 AWG (#40) (16 mm^2) CABINET GROUND Wire

3. Single-Point Ground Block (used with 2 or more cabinets only)

4. AC Load Center Single-Point Ground

5. 10 AWG (#25) (6 mm^2) Wire to Coupled Bonding Conductor (CBC)

6. 6 AWG (#40) (16 mm^2) Ground Wire to optional AC power distribution unit

Figure 1-13. **Typical Cabinet Grounding**

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Single-Cabinet Installation

1. Connect a 6 AWG (#40) (16 mm^2) CABINET GROUND wire to the cabinet ground block on the right side of the system cabinet. See Figure 1-13.

2. Route the ground wire through the cable trough and to the AC load center single-point ground and connect.

3. If a power distribution unit is used, connect a 6 AWG (#40) (16 mm^2) ground wire between the AC load center single-point ground and the power distribution unit ground lug.

4. Connect a 10 AWG (#25) (6 mm^2) wire to the single-point ground block.

5. Route the wire to the Coupled Bonding Conductor (CBC). The wire is attached later in this chapter.

Multi-Cabinet Installation

1. Mount the single-point ground block to any surface between the cabinets and the AC load center single-point ground. A nonmetallic surface is preferred but not required.

2. Connect 6 AWG (#40) (16 mm^2) CABINET GROUND wires to the cabinet ground block on each cabinet in the system. See Figure 1-13.

3. Route the ground wires through the cable trough on each cabinet, to the single-point ground block, and connect.

4. Connect a 6 AWG (#40) (16 mm^2) CABINET GROUND wire to the single-point ground block.

5. Route the ground wire to the AC load center single-point ground and connect.

6. If a power distribution unit is used, connect a 6 AWG (#40) (16 mm^2) ground wire to an available terminal on the single-point ground block. Connect the wire to the power distribution unit ground lug. See Figure 1-14.

7. Connect a 10 AWG (#25) (6 mm^2) wire to the single-point ground block.

8. Route the wire to the Coupled Bonding Conductor (CBC). The wire is attached later in this chapter.

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Connect and Route Cabinet AC Power Cords

The AC power cords may connect to a properly rated power distribution unit, individual AC power receptacles, or to a UPS. Figure 1-14 shows the routing for 2 cabinets. Additional cabinets route in similar fashion.

1. Connect Cabinet A to an "unswitched" or "always on" electrical outlet.

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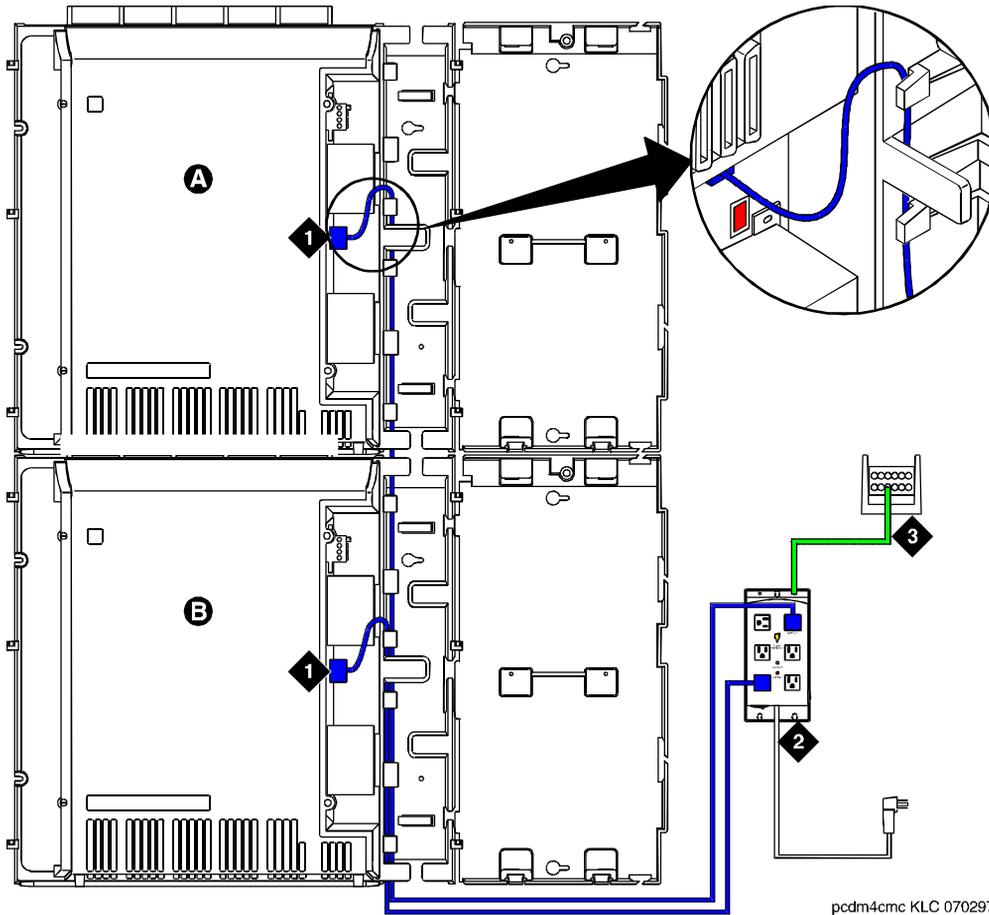
Figure Notes

1. Cabinet AC Power Cord

2. Surge-protected AC Power Distribution Unit (120 VAC systems) (optional)

3. 6 AWG (#40) (16 mm^2) Ground Wire (from AC mains or single-point ground block)

Figure 1-14.   **Routing AC Power Cords to a Power Distribution Unit**

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Install Main Distribution Frame and External Modem

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Install Main Distribution Frame and External Modem

Install the MDF

The MDF represents the purple, trunk/auxiliary field. Refer to Figure 1-17 on page 1-26.

1. Mount the optional MDF to the right panel. See Figure 1-15. The MDF may be mounted at the top of the right panel, if desired.

2. Connect 25-pair cable number "1" to the 25-pair connector on the Processor Interface Cable. This is the AUX connector.

Install the External Modem

The U.S. Robotics Model 839 external modem is the recommended external modem. Release 6 CMC systems operate with this modem set to the factory default settings.

➡ NOTE:
You may use a locally obtained, type-approved external modem (33.6 bps and V.34 protocol). Contact your Lucent Technologies representative for more information.

1. Use installer-provided hardware to mount the modem inside the right panel. See Figure 1-15.

2. Route the MODEM cable (P2) from the Processor Interface Cable through the cable trough and to the modem.

3. Connect the cable to the modem. Refer to ''Processor Interface Cable Pinout'' on page 2-16 for the pinout of the modem cable.

4. Plug the modem power cord into an electrical outlet and turn on the modem. Power may be obtained from a UPS or from a power distribution unit with surge protection.

5. Modem setup and administration is performed later in this chapter.

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Cable the MDF and Modem
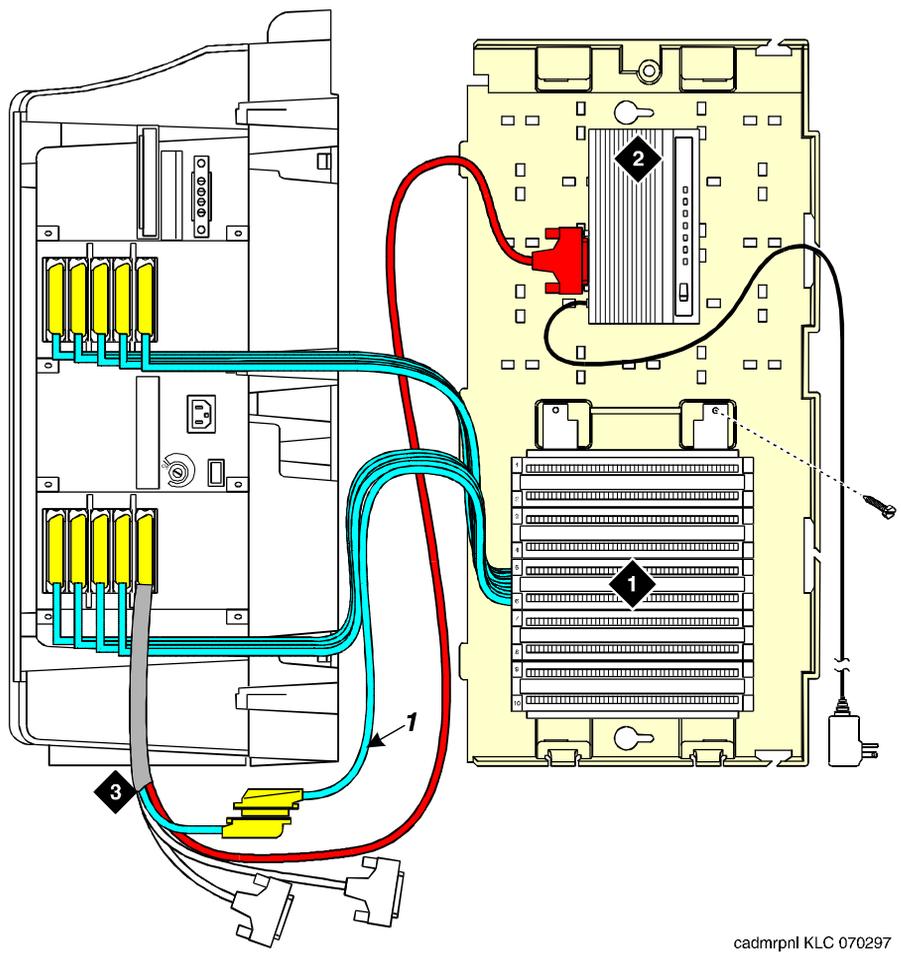
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Figure Notes

1. Main Distribution Frame (MDF)

2. External Modem

3. Processor Interface Cable
   (connect P2 to modem)

Figure 1-15.   Typical MDF and Modem Cable Routing

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Install Equipment Room Hardware

Refer to *DEFINITY Communications System Generic 1 and Generic 3 Main Distribution Field Design*, 555-230-630, for more information.

Cross-Connect the Cabinets to the MDF

shows an example of cables connecting cabinets and satellite closets to the MDF. The figure shows the cross-connects for 1 station circuit.

1. Cross-connect the ports on the trunk and line circuit packs to the MDF as required.

Circuit Pack Installation

> ⚠ **CAUTION:**
> *When handling circuit packs or any components of a DEFINITY System, always wear an authorized wrist ground strap. Connect the strap to the ground connector provided on the system cabinet.*

Unlike previous releases of DEFINITY, the circuit packs slots in the CMC are not purple or white. This is because all of the circuit pack slots in the CMC are "universal slots." That is, any slot can contain any type of *port* circuit pack.

Circuit Pack Slot Loading

Port circuit pack loading evenly distributes port circuit packs throughout a multi-cabinet port network. In general, load the circuit packs so that the number in each cabinet is about equal and the trunks and lines are evenly distributed among the cabinets.

1. Install the TN798 Processor circuit pack in slot 1 of the control carrier (Cabinet A)

2. Install the TN2182 Tone-Clock circuit pack in slot 2 of the control carrier

Load all port circuit packs starting with Cabinet A first, Cabinet B next, and so forth. Return to Cabinet A and repeat.

3. A TN744D Call Classifier/Tone Detector circuit pack may be required in systems with heavy traffic. Install the TN744D into any port slot. Slot 1 of Cabinet B is preferred.

4. Load trunk circuit packs from the lower left to the lower right (slots 1 to 5).

5. Load line circuit packs from the upper left to the upper right (slots 6 to 10).

6. Be sure that all circuit packs are fully inserted in the proper slots.

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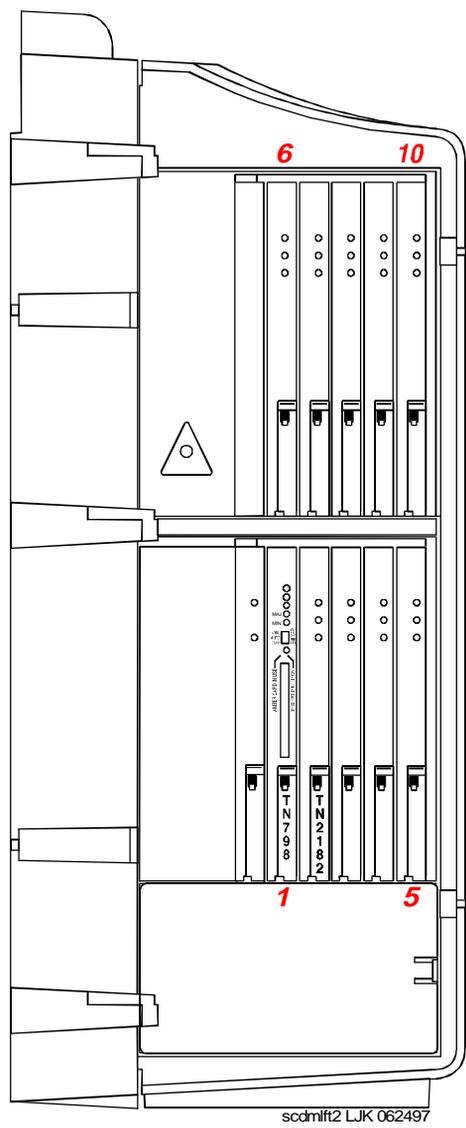
Figure 1-16.   Control Carrier Slot Layout

1. Figure 1-16 shows the slot layout of the control carrier (Cabinet A).

2. See Table 1-2 for the recommended circuit pack layout for the control carrier and the port carriers.

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Table 1-2.   Circuit Pack Installation Order (Loading)

Function	Apparatus Code	Load From	Notes
Processor	TN798	Slot 1 in Cabinet A	
Tone Clock	TN2182B	Slot 2 in Cabinet A	
Call Classifier/ Tone Detector	TN744D	Slot 1 of Cabinet B	If slot is not available, load in first available slot from slot 1
DEFINITY AUDIX	ED-1E546 (TN566/TN567)	Slots 6-9	Requires 4 slots with overlap into area to the left of slot 6. In any other position, 5 slots are required.
Announcement	TN750C	Lower Left	
Speech Synthesizer	TN725B	Lower Left	
DS1/E1, ISDN PRI	TN464F, TN767E	Lower Left	Maximum of 8 ISDN-PRI. Total number of ISDN-PRI plus number of ISDN-BRI circuit packs must not exceed 8
ISDN-BRI Trunk	TN2185	Lower Left	Maximum of 4
CO Trunk	TN747B, TN465C, TN2199, TN2147C, TN2138, TN438B	Lower Left	
DID Trunk	TN753, TN2139, TN2146, TN436B, TN459B	Lower Left	
Tie Trunk	TN760C, TN458, TN497, TN2140B	Lower Left	
Auxiliary Trunk	TN763B	Lower Left	
Modem Pool	TN758	Lower Left	
Data Line	TN726	Upper Left	
Digital Line	TN754C, TN2181, TN2224, TN2214	Upper Left	
Analog Line	TN746B, TN2135, TN467, TN2144, TN2149, TN2180, TN2183, TN2215, TN468B	Upper Left	
Hybrid Line	TN762B	Upper Left	
MET Line	TN735	Upper Left	
Radio Controller	TN789	Upper Left	
ISDN-BRI 4-Wire S/T-NT Line (A-Law)	TN556C	Upper Left	
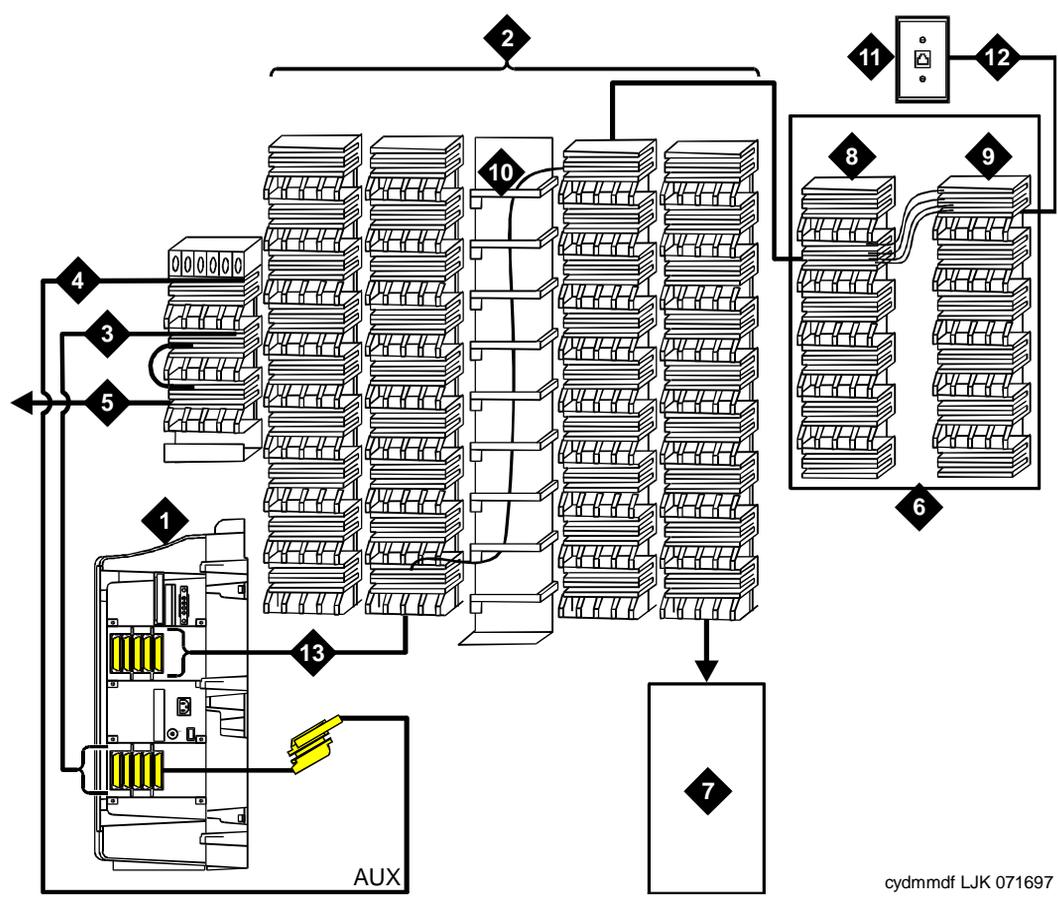
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Figure Notes

1. CMC Cabinet
2. Main Distribution Frame (MDF)
3. Port Field (Purple Field)
4. Station Field (White Field)
5. Trunk/Auxiliary Field
6. Purple Field (To Trunk Circuit Packs)
7. Yellow Field (To AUX Connector J1)
8. Green Field (25-pair Cable to Network Interface)
9. Satellite Closet
10. Auxiliary Cabinet (Yellow Field)
11. White Field
12. Blue Field
13. Cross-Connect Jumpers
14. 103A or Modular Wall Jack
15. 4-Pair Line Cord
16. To Line Circuit Packs

Figure 1-17. Example MDF Connections

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Install Coupled Bonding Conductor

Maintain a minimum of 12 inches (30.5 cm) spacing between the Coupled Bonding Conductor (CBC) and other power and ground leads.

1. Route the 10 AWG (#25) (6 mm^2) CBC ground wire from the AC mains or single-point ground block, along the 25-pair cables, and to the CBC ground block on the MDF.

2. Connect the CBC ground wire to the CBC ground block on the MDF.

3. Tie wrap the CBC ground wire to the 25-pair cables.

Install Sneak Fuse Panels

Sneak current protection is required between the incoming RJ21X or RJ2GX network interface and the system for both trunk and off-premise circuit packs. The model 507B sneak current fuse panel, or equivalent, is recommended for sneak current protection. See Figure 1-18.

Sneak
Current
Protector

507B

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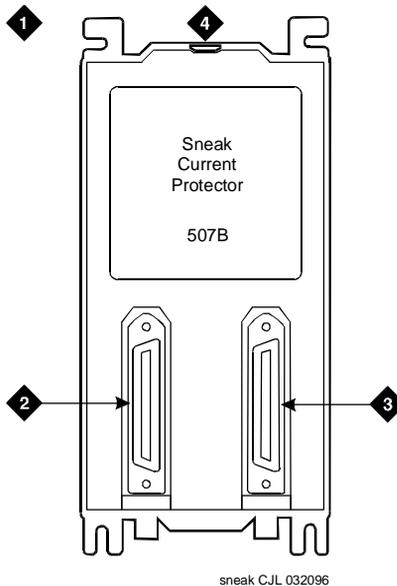
Figure Notes

1. Sneak Current Protector (PEC 63210)

2. 25-Pair Male Connector (In)

3. 25-Pair Female Connector (Out)

4. 220029 Fuses (Inside Panel). Use a Small Screwdriver to Pry Top Cover Off

Figure 1-18.   **Model 507B Sneak Fuse Panel**

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Approximately 8 inches (20 cm) of horizontal wall space is required for each column of sneak fuse panels. Connector cables connect the network interface to the sneak fuse panel. Also, use 157B connecting blocks equipped with SCP-110 protectors for sneak current protection.

➡ NOTE:

Sneak current protectors with a rating of 350 mA at 600 Volts must be UL listed for United States installations and CSA certified for Canadian installations. The panel contains two 25-pair connectors, fuse removal tool, and fifty 220029 Sneak Fuses (and 2 spares). Use the SCP-110 protectors with 110-type hardware and on the 507B Sneak Fuse Panel. The SCP-110 Protectors can be ordered separately and installed on the 157B connecting block. Fifty protectors are required per block.

1. Install the 507B near the network interface or MDF with locally-obtained #12 x 3/4-inch screws (or equivalent).

2. Secure the B25A cables to the panel with the captive screw on the connector and a supplied cable tie.

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Table 1-3 is a pinout of the cable wiring and associated fuse numbers.

Table 1-**3.   Sneak Fuse Connector Pinout**

Connector Pin Numbers	Pair/Fuse Number
26/1	1
27/2	2
28/3	3
29/4	4
30/5	5
31/6	6
32/7	7
33/8	8
34/9	9
35/10	10
36/11	11
37/12	12
38/13	13
39/14	14
40/15	15
41/16	16
42/17	17
43/18	18
44/19	19
45/20	20
46/21	21
47/22	22
48/23	23
49/34	24
50/25	25

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Label the Main Distribution Frame

Figure 1-19 shows the graphic symbols used on labels for the system, cross-connections, information outlets, and cables. The labels are color-coded to identify system wiring:

- Green — To Central Office (CO)

- Purple — To system ports

- Yellow — To auxiliary equipment and miscellaneous system leads

- Blue — To information outlets

- White — From MDF to satellite locations (3-pair)
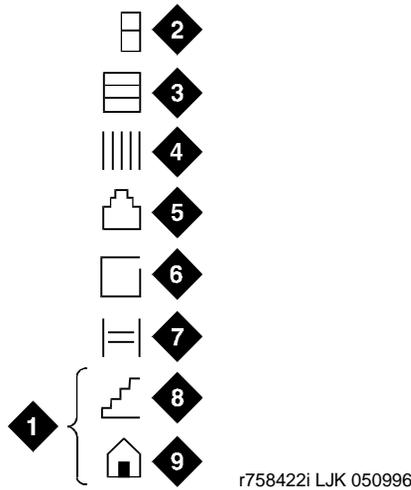
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Figure Notes

1. Write Floor or Building Identification on Label as Required

2. Cabinet

3. Carrier

4. Slot

5. Information Outlet

6. Site/Satellite Closet

7. Tie Circuit

8. Floor

9. Building

Figure 1-19. Label Graphic Symbols and Nomenclature

1. Label the cables as required using the supplied labels. Label code number 220A (comcode 103970000) contains all required labels.

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Install and Set Up the Management Terminal

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Install and Set Up the Management Terminal

To prevent unnecessary trouble tickets, do not enable the system alarms (Alarm Origination feature) before completing all installation and administration procedures.

1. Remove and retain the installation and usage instructions from the carton. These instructions are needed to set up the terminal after installation.

2. Locate the management terminal within 50 feet (15.2 m) of the system. It may be necessary to reduce the maximum distance limitation if higher gauge wire is used or if the capacitive load on the line is increased.

3. Connect the supplied 25-pin DTE management terminal cable (H600-426) into the TERM connector (J3) on the Processor Interface Cable. See Table 2-9 on page 2-16 for the pinout of the connector.

4. Connect an optional printer to either the management terminal (using the supplied adapter cable) or to the DCE connector (J2) on the Processor Interface Cable. See Table 2-9 on page 2-16 for the pinout of the DCE connector.

Install a 715 BCS Terminal

1. Plug the keyboard cable into the 6-pin mini-DIN jack on the rear of the terminal. See Callout 2 in Figure 1-20.

2. Plug the supplied 25-pin DTE cable into the P2 port (center connector) on the rear of the terminal.

Install a 715 BCS Terminal (2900/715)

1. Plug the keyboard cable into the 6-pin RJ-11 jack on the left side of the terminal. An adapter cable is available to convert a 6-pin mini DIN jack to an RJ-11 jack to allow a 715 BCS keyboard to be used.

2. Plug the 25-pin DTE cable into the P2 port (right side connector). See Callout 4 in Figure 1-20.

Install a 715 BCS-2 Terminal

1. Plug the keyboard cable into the modular keyboard jack on the rear of the terminal. See Callout 5 in Figure 1-20. This is a unique cable and must only connect to the 715 BCS-2.

2. Plug the supplied 25-pin DTE cable (H600-426) into the COM1 port (right side connector).

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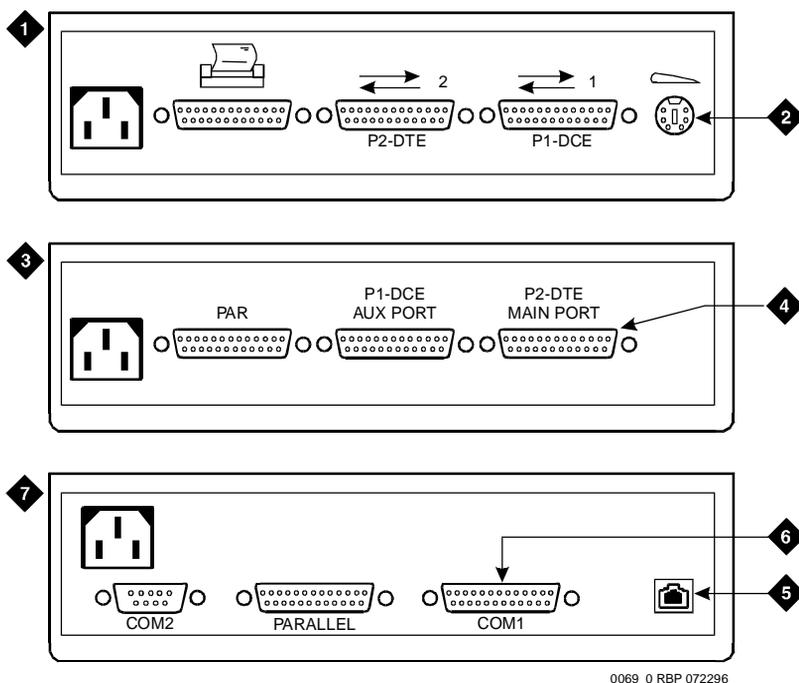
0069_0 RBP 072296

Figure Notes

1. Rear Panel of 715 BCS Terminal

2. 6-Pin Mini DIN Connector

3. Rear Panel of 2900/715 BCS Terminal

4. P2-DTE Port

5. Modular Keyboard Jack

6. COM 1 Port

7. Rear Panel of 715 BCS-2 Terminal

Figure 1-20.   Rear Panels on Management Terminals

3. Plug the supplied 9-pin DTE to 25-pin DCE adapter cable into the COM2 port (even if it is not used at the time of installation). This cable can be used for the printer connection.

4. Set the terminal power switch to the ON position.

Set Up the Management Terminal

Each type of management terminal requires a different setup procedure. The 715 BCS-2 terminals are designed to operate in their default configuration.

1. For the 715 BCS-2 terminals, refer to *715GBCS-2 Terminal User's Guide and Service Manual*, 555-230-876, packed with the management terminal.

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Remotely Connect Terminal

cydf050 KLC 050797
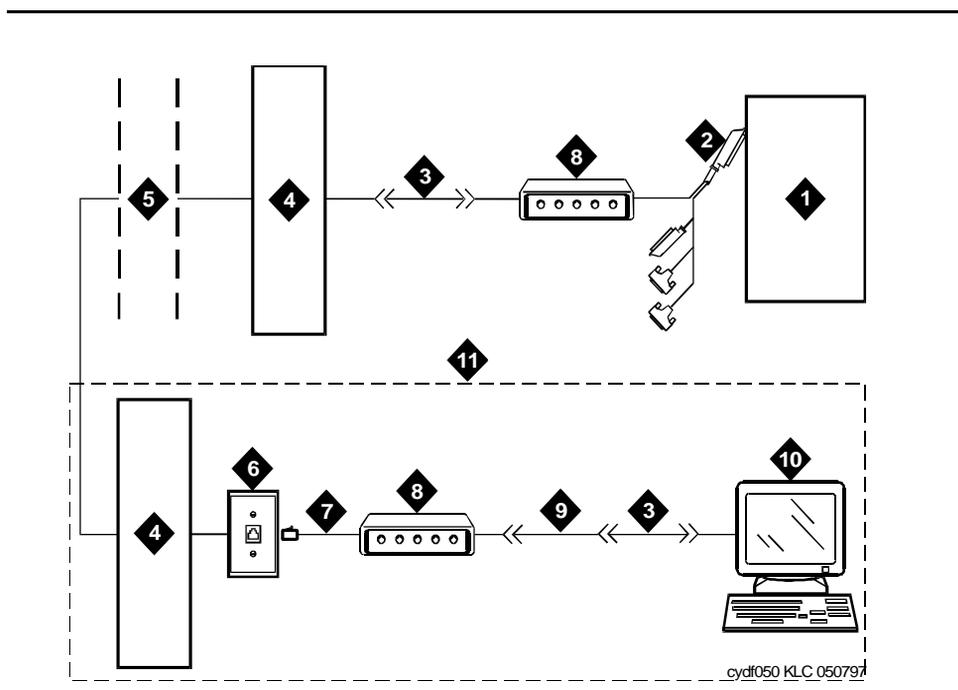
Figure Notes

1. Compact Modular Cabinet

2. Modem Connector (P2) on Processor Interface Cable

3. Connect to Network Jack on Modem

4. Main Distribution Frame (MDF)

5. Public Switched Telephone Network (PSTN)

6. 103A or Modular Wall Jack

7. Line Cord

8. External Modem

9. DB9 to DB25 Converter (ED3-1-70, G115) (optional) to connect to PC

10. Remote Management Terminal or PC

11. Remote Location

Figure 1-21.   Typical Connections to Remote Devices

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Set Ringing Option

evdmring LJK 062497
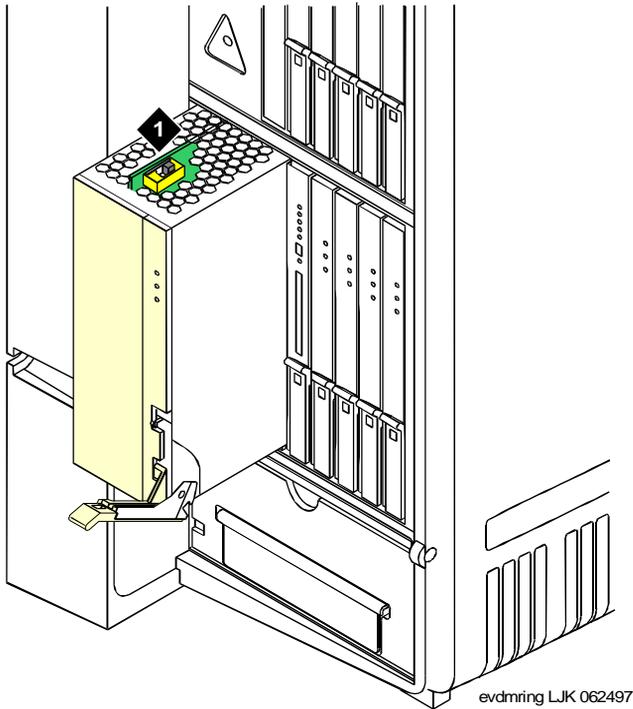
Figure Notes

1. Ringing Option Switch

Figure 1-22.   Ringing Option Selection

1. Pull the power unit from the left side of each cabinet.

2. Check the ringing option for the country of installation (20 Hz, 25 Hz, or 50 Hz). See Figure 1-22.

3. To change the setting, set the slide switch to the proper setting. Refer to the label on the side of the power unit.

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Activate and Administer the System

⇒ NOTE:
> The Release 6 CMC is a PPN cabinet only. Cabinet A is the control carrier and Cabinets B, C, and D are port carriers.

Power Up System

Single Cabinet Installations

1. Insert the translation card into the slot in the TN798 Processor circuit pack.

2. Be sure that the 650A Power Unit and the fan assembly are fully seated in the cabinet.

3. Set the circuit breaker at the AC load center to ON. This starts the system initialization process. In about 2 minutes, verify the screen displays:
   `Login:`

Multi-Cabinet Installations

1. Insert the translation card into the slot in the TN798 Processor circuit pack.

2. Be sure that the fan assemblies are fully seated in the cabinets.

⇒ NOTE:
> Power up the port carriers first and the control carrier last.

3. Set the appropriate circuit breakers at the AC load center to ON. This starts the system initialization process. in about 2 minutes, verify the screen displays: `Login:`

Administer the System — Preliminary Only

Refer to *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description.*

Log into the System

1. Verify the screen displays: `Login:`

2. Type **craft** and press Enter.

3. Type **crftpw** and press Enter. The password does not display as it is typed. The screen displays the system software version and the terminal types.

   `Terminal Type (513, 715, 4410, 4425, VT220): [513]`

4. Enter the type of management terminal (such as 715) and press Enter.

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Check System Status

The system status may suggest problem areas. Specific tests provide more detailed diagnostic information. Refer to *DEFINITY Enterprise Communications Server Release 6 Maintenance for Compact Modular Cabinets*.

1. Type **status system all-cabinets** and press Enter.

2. Verify the screen displays a service state of `in` for all appropriate areas.

Change Customer Options

Refer to *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description* to view a sample screen.

The following features are part of the basic software package and do not require activation. They default to **y** (yes) on the Optional Features form.

- ARS/AAR Partitioning

- Emergency Access to Attendant

- Hospitality (Basic)

- Service Observing

⇒ **NOTE:**
An **init** login is required to change customer options. Contact your regional CSA (Customer Software Administrator) to perform this function.

1. Enter **change system-parameters customer-options** and press Enter.

2. Using the customer order, enable the optional features purchased by the customer (as shown by PEC codes on the customer order).

3. Press Enter when finished to submit the form.

4. Logoff and then log back in to affect the customer option changes.

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Set Country Options

Some country options need to be set to turn off the red alarm LEDs.

1. Enter **change system-parameters country options** and press Enter. A screen similar to Screen 1-1 displays on the terminal. The cursor is set on the `Companding Mode` field.

```
change system-parameters country-options                    Page   1 of  21   SPE A
                        SYSTEM PARAMETERS COUNTRY-OPTIONS

            Companding Mode: Mu-Law           Base Tone Generator Set: 1
        440Hz PBX-dial Tone? n                440Hz Secondary-dial Tone? n
          Digital Loss Plan: 1
      Analog Ringing Cadence: 1      Set Layer 1 timer T1 to 30 seconds? n
   Analog Line Transmission: 1     Enhanced 84xx Display Character Set? n


TONE DETECTION PARAMETERS
        Tone Detection Mode: 6
          Interdigit Pause: short
```

Screen 1-1.   Typical System Parameters Country-Options Screen

2. The default (United States) companding mode is mu-Law. If the country uses A-Law companding, type A-Law. Press Enter when finished.

    ➡ **NOTE:**
    Other items eventually need to be entered on this screen, but this is all that is needed to turn the red alarm LEDs off.

3. Set the country codes as needed in the following fields. Refer to Table 1-4 for the country codes. The United States country code (1) is shown in the example above.

    ■ `Digital Loss Plan:`

    ■ `Analog Ringing Cadence:`

    ■ `Analog Line Transmission:`

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Table 1-4. Country Codes

Country	Code	Country	Code
USA	1	France	12
Australia	2	Germany	13
Japan	3	Czechoslovakia	14
Italy	4	Russia	15
The Netherlands	5	Argentina	16
Singapore	6	Greece	17
Mexico	7	China	18
Belgium	8	Hong Kong	19
Saudi Arabia	9	Thailand	20
United Kingdom	10	Macedonia	21
Spain	11		

4. If all red LEDs remain on, reseat any *port* circuit packs displaying red LEDs.

5. If the red LEDs remain on, refer to *DEFINITY Enterprise Communications Server Release 6 Maintenance for Compact Modular Cabinets.*

> **NOTE:**
> Ignore the red LED on any TN767 or TN464 DS1 circuit pack until after it is administered. Refer to Chapter 2, "Installation Completion and Cable Pinouts" to set the switches on these circuit packs.

> **NOTE:**
> Alarms appear in the Alarm Log when power is applied to the system before all equipment connecting to port circuit packs is installed. Some alarms are logged when power is applied, but resolve quickly. If no equipment is connected to the port circuit packs, alarms associated with these ports can take up to 4 hours to log, but clear automatically after all equipment is installed and operating correctly.

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Change Craft Password

The password for the craft login *must* be changed by the installing technician to prevent unauthorized administration changes.

> ⚠ **CAUTION:**
> *After the password is changed, the new password must be safeguarded so no unauthorized administration changes can be made. This password MUST NOT BE REVEALED to the customer or to any unauthorized person.*

1. Login as **craft** and enter **change password craft**. Press Enter. See Screen 1-2. The cursor is positioned on `Password for Login Making Change:`

```
change password craft                                Page   1 of   1    SPE A
                          PASSWORD ADMINISTRATION

    Password of Login Making Change: _____


    LOGIN BEING CHANGED
                       Login Name: craft

    LOGIN'S PASSWORD INFORMATION
                  Login's Password: _____
            Reenter Login's Password: _____
```

Screen 1-2.   Typical Change Password Screen

2. Type the password for the craft login (assigned as *crftpw* when the system is shipped) and press Enter. The cursor is positioned on `Login's Password`: field.

3. Enter the new password (obtained from the regional CSA). Valid passwords consist of a combination of 4 to 11 alpha or numeric characters. Use at least 1 letter and 1 number. Press Enter.

4. The cursor is positioned on `Reenter Login's Password`: field. Type the new password again and press Enter.

5. Verify that the screen displays:

   `command successfully completed`

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Set Date and Time

1. Enter **set time** and press Enter.

2. Verify that the screen displays the Date and Time screen. See Screen 1-3. The cursor is positioned on the `Day of the Week:` field.

```
set time                                         Page   1 of   1   SPE A
                           DATE AND TIME

        DATE

              Day of the Week: Monday_____     Month: March_____
              Day of the Month: 10               Year: 1997_____

        TIME

                      Hour: 9_             Second: 25
                    Minute: 13

     WARNING: Changing the date or time will impact BCMS, CDR and MEASUREMENTS
```
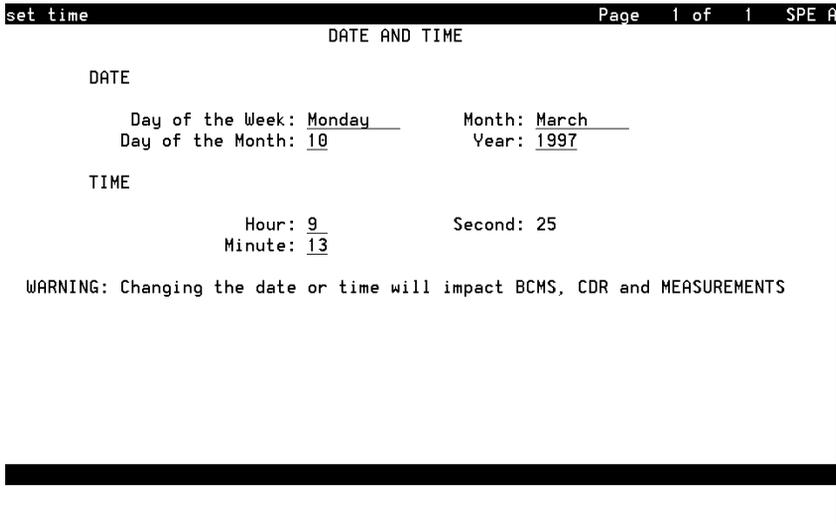
Screen 1-3.   Typical Date and Time Screen

3. Type the day of the week in English (Sunday through Saturday). See Table 1-5 for English day of the week names.

Table 1-5.   English Day of the Week Names

Day Number	Day Name
1	Sunday
2	Monday
3	Tuesday
4	Wednesday
5	Thursday
6	Friday
7	Saturday

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4. Press Tab to move to next field. The cursor is positioned on the Month: field. Type the current month in English (January through December). See Table 1-6 for English month names. After the month is entered, press Tab to move to next field.

Table 1-6. English Month Names

Month Number	Month Name
1	January
2	February
3	March
4	April
5	May
6	June
7	July
8	August
9	September
10	October
11	November
12	December

5. The cursor is positioned on the Day of the Month: field. Type the day of month (1 through 31) and press Tab to move to the next field.

6. The cursor is positioned on the Year: field. Type the current year and press Tab to move to the next field.

7. The cursor is positioned on the Hour: field. Type the current hour for a 24-hour clock. Press Tab to move to the next field.

8. The cursor is positioned on the Minute: field. Type current minute (0 through 59). Seconds cannot be set.

9. Press Enter when the information is correct.

10. Type **display time** and press Enter to verify date/time data.

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Circuit Pack Administration

After the equipment is installed (including circuit packs), the circuit packs must be administered. Refer to *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description*, for more information.

The following describes general administration information:

- Use the Circuit Packs form to administer circuit packs to carrier slots. The circuit packs must be installed (or assigned using the Circuit Packs form) before administering voice terminals, attendant consoles, or trunks.

- Each page of the form represents 1 carrier in the cabinet shown on the command line. For Release 6 CMC, all carriers and slots appear even if they are not included in the hardware.

- It is not necessary to fill in the Circuit Packs form if the circuit packs are installed at the time of administration.

- Refer to *DEFINITY Communications System Generic 3 Planning and Configuration*, 555-230-601, for more information about circuit pack administration and port assignment records (the DS1 circuit pack and translation are covered in Chapter 2 and Chapter 3).

- For initial installation, assign circuit packs to slots using the hardware configuration layout record from the factory or Customer Services Organization. Do not arbitrarily assign circuit packs to slots.

- When a circuit pack in a slot differs from what has been administered on the form, a "#" displays between the "Sfx" and "Name" fields.

Set System Maintenance Parameters

⚠ CAUTION:
To prevent unnecessary trouble tickets, do not enable the system alarms (Alarm Origination feature) until all installation and administration procedures are completed.

1. Enter **change system-parameters maintenance** and press Enter.

2. Enter the alarm notification and scheduled maintenance information into each field on Page 1 of the form.

3. Enter the appropriate information on Page 2 of the form.

4. Page 3 of the form is administered later in this book.

5. Press Enter when finished.

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Administer the Attendant Console

If no attendant console is installed, proceed to <u>"Save Translations"</u>.

1. Enter **display system-parameters country-options** and press Enter to verify the system's companding mode for its local stations is set to the desired value (usually, A-Law for Europe and mu-Law for North America and Japan).

2. If necessary, enter **change terminal-parameters 603/302B1** to change the default system-level parameters and audio levels for these terminals.

   ### ⮕ NOTE:
   For information about changing the default parameters and audio levels, refer to *DEFINITY Application Notes* available through the International Technical Assistance Center (ITAC).

3. Administer other forms listed under "Attendant Console" in *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description*.

Save Translations

1. Enter **save translation** and press Enter. This copies the current system translations onto the translation card and takes about 10 minutes.

2. Remove the original translation card and replace with the backup card.

3. Repeat Step 1 for the backup translation card.

4. Remove the backup card and replace with the original translation card.

5. Label the backup card with the date and time of the backup and store in a secure place.

Add Translations

1. Refer to *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description,* to add new terminals.

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　　Install and Wire Telephones and Other Equipment　　　　　　　　**Page 1-44**

Install and Wire Telephones and Other Equipment

The wiring procedures are the same for most of the DEFINITY System telephones and other equipment.

This chapter provides wiring examples of these similar installation procedures. These are examples only and actual wiring procedures may vary at each site.

The system can connect to all DTE terminals. The system can have RS-232 (or EIA-232) or DCP interfaces.

All wiring pinouts for port circuit packs are in the tables at the end of this chapter.

Telephone Connection Examples

The 302C1 Attendant Console describes a typical telephone connection. This information is typical of the 603E, 84xx (4-wire), and 94xx telephones.

The attendant console always requires auxiliary (adjunct) power (-48 VDC). Power connects to the console through Pins 7 and 8 of the information outlet. See Figure 1-24. Only 1 console can be powered by the system through the AUX connector. The primary console should be powered from the system so it has the same power failure backup as the system.

The maximum cabling distance for the console powered from the cabinet is 350 feet (100 meters) using 24 AWG (#5) (0.26 mm^2) wire.

The general steps to connect a telephone are:

1. Choose a device to connect such as a 302C1 Attendant Console.

2. Choose the port circuit pack and its carrier and slot number, such as TN754B, Cabinet 1, Carrier A, Slot 06.

3. Choose a port circuit on the port circuit pack, such as Port 05.

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302cwire RBP 040596
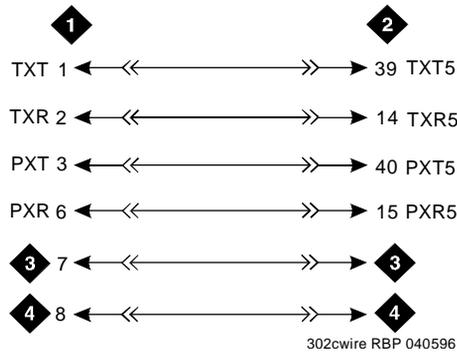
Figure Notes

1. 302C1 Attendant Console

2. TN754B Digital Line Circuit Pack (Position 1A06)

3. -48 VDC From Adjunct Power

4. Ground From Adjunct Power

Figure 1-23.   302C1 to TN754B Wiring

4. Install cross-connect jumpers to wire the terminal to the port circuit pack. See Figure 1-23. This pinout is for the TN754B Digital Line circuit pack.

5. For terminals needing adjunct power, wire -48 VDC and ground to appropriate pins on the terminal. See Figure 1-24.

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Connect Adjunct Power

The 400B2 adapter is convenient for connecting local -48 VDC power to a modular plug. See Figure 1-24.

r749428 KLC 060396
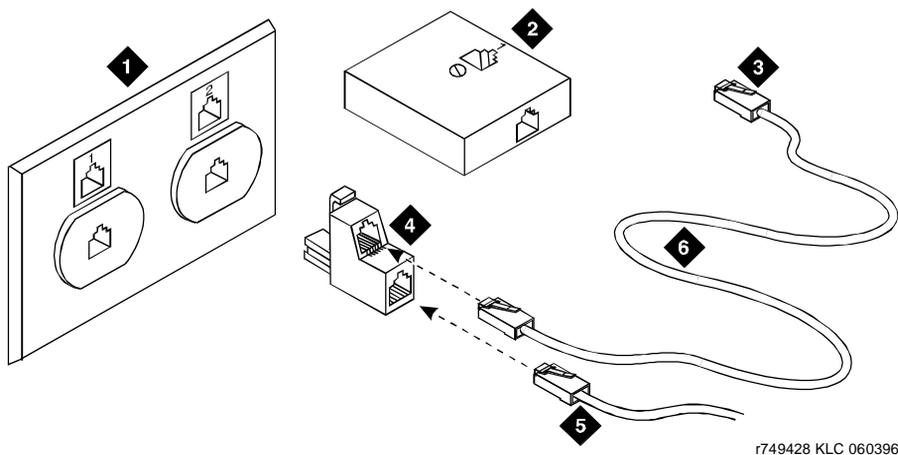
Figure Notes

1. Flush-Mounted Information Outlet
2. Surface-Mounted Information Outlet
3. To Individual Power Unit (Such as 1151A or 1151A2)
4. 400B2 Adapter
5. To Telephone
6. Destination Service Access Point (DSAP) Power Cord

Figure 1-24. 400B2 Adapter Connecting to a Modular Plug

Adjunct power can be provided from the equipment room or equipment closet with 1145B power unit. The AUX connector (J1) on the processor interface cable can provide power for 1 attendant console. See Table 2-9 on page 2-16.

Adjunct power can be provided locally at the telephone or console by the 1151A or 1151A2 Power Supply.

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Analog Station or 2-Wire Digital Station
Example

This example is typical of the 2-wire digital stations (603E, 84xx, 94xx, 302C1), 2-wire analog stations (500, 2500, 71xx), analog Central Office (CO) trunks, Direct Inward Dial (DID) trunks, and external alarms. See Figure 1-25.

```
        ❶                      ❷
   T  2 ◄── ≪───────────≫──► 28 T3

   R  3 ◄── ≪───────────≫──► 03 R3
                        2500wire RBP 040596
```

Figure Notes

1. 2500-Type Analog Station

2. TN2183 Analog Line Circuit Pack, Position 1C01

Figure 1-25.   2500-Type Analog Telephone Wiring

1. Choose a peripheral to connect (such as a 2-wire digital station).

2. Choose the port circuit pack to use and its carrier and slot number. For example, TN2183 Analog Line, Cabinet 1, Carrier C, Slot 1.

3. Choose a port circuit on the port circuit pack, for example port 3.

4. Install cross-connect jumpers to connect the pins from the 2-wire digital station to the appropriate pins on the port circuit pack.

5. Administer using *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description*.

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Analog Tie Trunk Example

This example shows how to connect analog tie trunk wiring from one DEFINITY System to another DEFINITY System.


```
        ❶                           ❷

T1  26 ◄───≪─────────╲  ╱─────≫──►  29  T2

R1   1 ◄───≪──────────╲╱──────≫──►   4  R2

T11 27 ◄───≪──────────╱╲──────≫──►  30  T12

R11  2 ◄───≪─────────╱  ╲─────≫──►   5  R12

E1  28 ◄───≪────────╲  ╱──────≫──►  31  E2

M1   3 ◄───≪─────────╲╱───────≫──►   6  M2

              tie_wire RBP 040596
```
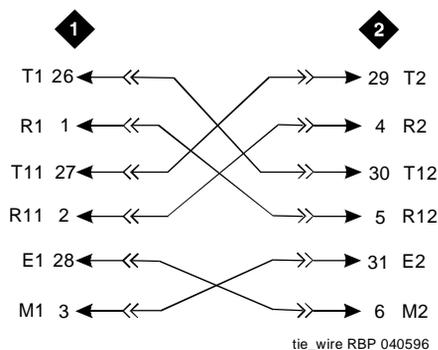
Figure Notes

1. External Trunk or Adapter   2. TN760 Tie Trunk Circuit Pack (Position 1A05)

Figure 1-26.   Analog Tie Trunk Wiring

1. Before installing the TN760 Tie Trunk circuit pack, set the option switches as described in Chapter 2, ''Installation Completion and Cable Pinouts''.

2. Install cross-connect jumpers to connect the pins from the TN760 to the appropriate leads on the external tie trunk. Names of the tie trunk leads must be determined from the manufacturer or supplier of the external trunk circuit. The example in Figure 1-26 shows a DEFINITY System tie trunk connected to a DEFINITY System tie trunk.

3. Administer on the Trunk Group Screen of the management terminal. See *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description*, for more details.

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Digital Tie Trunk Example

This example shows how to connect digital tie trunk wiring from one DEFINITY System to another DEFINITY System. See Figure 1-27.

Figure Notes

1. External Trunk

2. TN464F DS1 Interface Circuit Pack, Position 1C06

3. LO
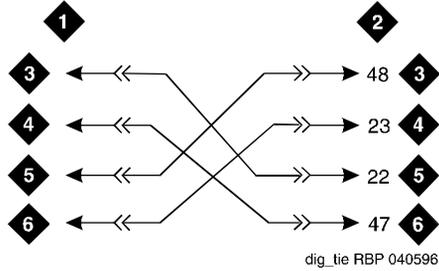
4. LO (Balanced Output Pair)

5. L**I**

6. L**I** (Balanced Input Pair)

Figure 1-27.   Digital Tie Trunk Wiring

1. Before installing the TN464F DS1 DS1 Interface circuit pack, set the option switches according to Chapter 2, "Installation Completion and Cable Pinouts".

2. Install cross-connect jumpers to connect the pins from the digital trunk circuit pack to appropriate pins on the manufacturer's or supplier's external digital trunk.

3. Administer the TN464F on the DS1 and Trunk Group Screens of the management terminal. See *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description*, for more details.

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DS1 Tie Trunk Example

Digital Signal Level 1 (DS1) tie trunks provide a 1.544 Mbps (T1) or 2.048 Mbps (E1) digital data service between 2 collocated systems or between the system and a data network. The following cables can be used:

- **C6C connector cable** –– 50-foot (15.2 m) shielded cable with a 50-pin male connector on 1 end and a 15-pin male connector on the other end. Use to connect a DS1 tie trunk circuit pack to a Channel Service Unit.

- **C6D connector cable** –– 50-foot (15.2 m) shielded cable with a 50-pin male connector on each end. Use to connect a DS1 tie trunks in collocated cabinets.

- **C6E connector cable** –– 100-foot (30.5 m) shielded cable with a 50-pin male connector on 1 end and a 50-pin female connector on the other end. Use as an "extension" cable between the DS1 tie trunk circuit pack and other connector cables.

- **C6F connector cable** –– 50-foot (15.2 m) shielded cable with a 50-pin male connector on 1 end and a 3 inch (7.62 cm) stub on the other end. Use to connect the DS1 tie trunk circuit pack to channel multiplexers requiring hardwired connections. See Table 1-7 for a pinout.

Table 1-7. Pinout of C6F Cable

Wire Color	Lead Designation	Pin Number
White/Green	LI (High Side)	47
Green	LI	22
White/Brown	LO	48
Brown	LO (High Side)	23
White/Slate	LBACK2	49
Slate	LBACK1	24

Collocated DS1 Tie Trunks

Two DS1 tie trunk circuit packs can be in collocated systems. A TN722B DS1 Tie Trunk circuit pack in 1 system can connect to a TN722B in another system. Use a C6D cable if the distance is less than 50 feet (15.24 m). If the distance is greater than 50 feet (15.24 m), use a C6E cable.

> **NOTE:**
> The maximum distance between cabinets is 1310 feet (399.3 m).

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DS1 Tie Trunks Using T1 Channel Service Unit

Figure 1-28 shows a DS1 tie trunk connected to an external T1 Channel Service Unit (CSU). A 120A2 enhanced Integrated Channel Service Unit (ICSU) can be used in place of a T1 external CSU. The CSU or ICSU interfaces the DS1 tie trunks with the 1.544 Mbps digital facility. Contact your Lucent Technologies representative for maximum cabling distances.
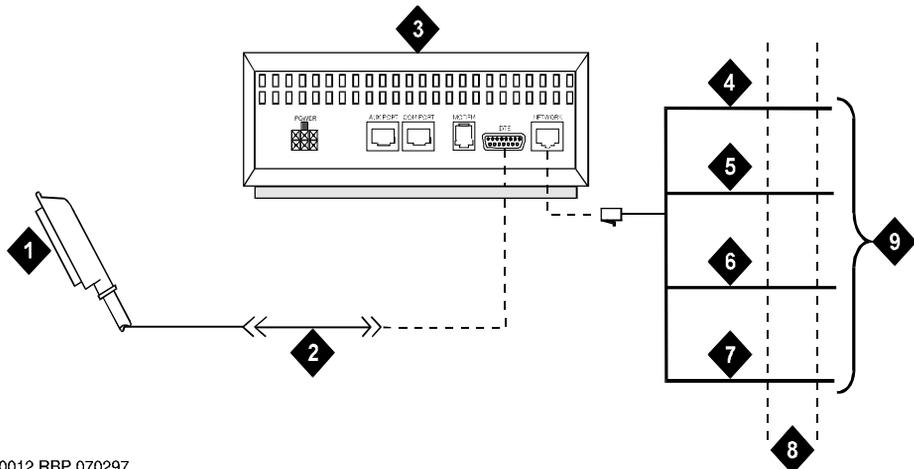
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Figure Notes

1. To TN464F or TN767E DS1 Tie Trunk Circuit Pack

2. C6C Cable (For Distances Over 50 Feet (15.24 m), use C6E Cable(s))

3. T1 External CSU or 120A2 ICSU

4. Tip (T)

5. Ring (R)

6. Tip 1(T1)

7. Ring1 (R1)

8. 1.544 Mbps Digital Service Interface

9. To T1 Carrier

Figure 1-28. Typical Connections to Channel Service Unit

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3-Pair and 4-Pair Modularity

Figure 1-29 shows 3-pair and 4-pair modularity from the port circuit pack to the voice or data terminal. Most terminals connect to an information outlet (modular jack) installed at the work location.
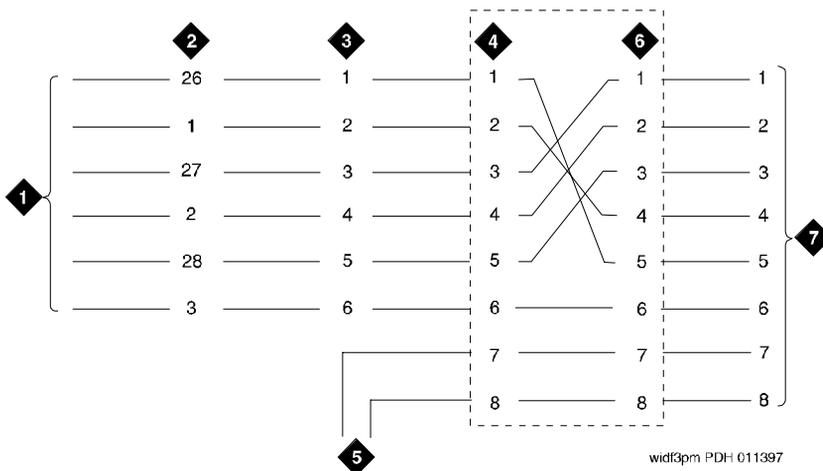
Figure Notes

1. Port Circuit Pack

2. 25-Pair Connector Pins (3-Pair Modularity)

3. MDF Pins (3-Pair Modularity)

4. Input to Information Outlet (4-Pair Modularity)

5. Adjunct Power

6. Output From Information Outlet (4-Pair Modularity)

7. Voice or Data Terminal Pins

Figure 1-29.   3-Pair and 4-Pair Modularity

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Adjunct Power Connections

Figure 1-30 shows typical connection locations for adjunct power.
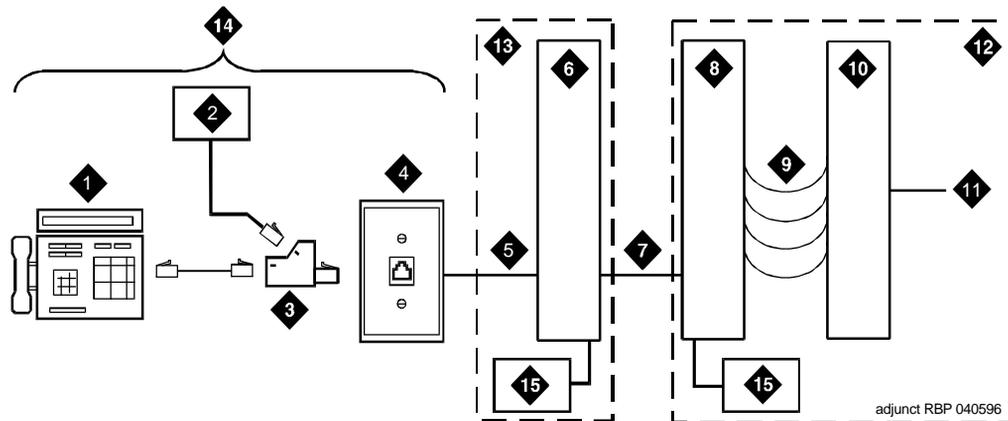
Figure Notes

1. Typical Display Telephone

2. Individual Power Supply (Such as 1151A)

3. 400B2 Adapter

4. Information Outlet (Modular Jack)

5. 4-Pair D-Inside Wire (DIW) Cable

6. Satellite Site or Adapter Location

7. 25-Pair D-Inside Wire (DIW) Cable

8. Station Side of MDF

9. 100P6A Patch Cord or Jumpers

10. System Side of MDF

11. 25-Pair Cable to System Cabinet (Analog Line Circuit Pack)

12. Equipment Room

13. Satellite Location

14. Work Location

15. Bulk Power Supply (Such as 1145B)

Figure 1-30.   Example Adjunct Power Connections

For Figure 1-30, the following examples are used:

   a. If 25 telephones connect to the system and all 25 telephones need adjunct power, install a bulk power supply in the equipment room.

   b. If only 10 of the telephones need adjunct power, install a bulk power supply at the satellite location.

   c. If only 1 telephone needs adjunct power, install the individual power supply at the work location.

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Local and Phantom Power

A console's maximum distance from the system is limited. The maximum distance for a 302C1 console is shown in Table 1-8.

Table 1-8. Attendant Console Cabling Distances

Enhanced Attendant Console (302C1)	24 AWG Wire (0.26 mm2)		26 AWG Wire (0.14 mm^2)	
	Feet	Meters	Feet	Meters
With Selector Console				
Phantom powered	800	244	500	152
Locally powered	5000	1524	3400	1037
Without Selector Console				
Phantom powered	1400	427	900	274
Locally powered	5000	1524	3400	1037

Auxiliary Power

The nonessential functions of an attendant console and its optional 26A1 or 24A1 selector console derive power from an auxiliary power source. Only 1 console can derive auxiliary power from the system and through the auxiliary cable located in the trunk/auxiliary field. Provide auxiliary power for an attendant console through this cable so the console remains fully operational during short power outages.

An attendant console can also derive auxiliary power from:

- Individual 1151A or 1151A2 power supply
- MSP-1 power supply
- 258A-type adapters
- Bulk power supplies such as the 1145A1

A console's maximum distance from its auxiliary power source is:

- 800 feet (244 m) for a 302A1
- 350 feet (107 m) for a 301B1 and 302C1

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Install Attendant Console — Optional

1. Position the attendant console in the desired location and connect the modular cord to the information outlet.

2. Install labels per the Attendant Console form and Display Module form assignments.

3. Install a TN754B Digital Line circuit pack in the assigned carrier slot (if required).

4. Administer the Attendant Console forms in *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description*.

Hard-Wire Bridging

> ⚠ **CAUTION:**
> *Bridging or paralleling these endpoints can cause electrical damage to the consoles or cause the circuit pack to remove power from the consoles.*

Analog type hard-wire bridging is not allowed for 4-wire (only) DCP endpoints. This is because hard-wire bridging provides no way of combining the digital output of 2 bridged DCP sets. Also, a bridged endpoint causes the added load to degrade the DCP signal.

Dual Wiring of 2-Wire and 4-Wire Endpoints

Do not simultaneously wire a 2-wire and 4-wire endpoint to the same equipment location in an MDF, even though they connect to different colored wire pairs. The system uses separate circuit packs to interface 2- and 4-wire endpoints, and none are capable of interfacing both.

Install 26B1 Selector Console — Optional

1. Connect the supplied 3-foot (0.9 m) D8AC cable to the modular jack on the bottom of the 26B1 Selector Console.

2. Route the cable to the attendant console and connect to the DXS/BLF jack.

3. Attach labels according to the Attendant Console form.

4. Administer the console using *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description*.

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Connect External Alarms and Auxiliary Connections

Alarm Input

Alarms can be generated on adjunct equipment, sent to the DEFINITY System, and recorded and reported as "external alarms." A typical major alarm *input* is from a UPS.

1. Connect 1 major and 1 minor alarm *input* pair to the trunk/auxiliary field from the AUX connector (J1 on Processor Interface Cable). See Table 1-9.

Table 1-9.   **Alarm Inputs at AUX Connector**

Color	AUX Connector
Black-Blue	AP1 (Pin 26) Major Alarm Input
Blue-Black	Ground (Pin 1)
Brown-Yellow	AP2 (Pin 27) Minor Alarm Input
Yellow-Brown	Ground (Pin 2)

Alarm Output

The system provides a relay contact that can operate a customer-provided alarm, such as a light or bell. The circuitry and power source are customer-provided. The alarm device must not exceed a rating of more than 30 VAC RMS or 60 VDC at 0.75 Amps.

1. Connect an external alarm *output* through pins 48 and 23 of the AUX connector. See Table 1-10.

2. Note which device connects to which alarm and give this information to your Lucent Technologies representative for troubleshooting purposes.

Table 1-10.   **Alarm Output at AUX Connector**

Color	AUX Connector
Violet-Green	EXTALMA (Pin 48) Alarm Output
Green-Violet	EXTALMB (Pin 23) (Ground) Alarm Output

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Emergency Transfer and Auxiliary Power

Connect emergency transfer power and auxiliary power as shown in Table 1-11. Auxiliary power includes power to an attendant console or adjunct device.

Table 1-11.   Emergency Transfer and Auxiliary Power

Color	AUX Connector
Black-Green	XFER48 (Emergency Transfer) (Pin 36)
Green-Black	Ground (Pin 11)
Black-Slate	ACC48A (Adjunct -48 VDC) (Pin 19)
Slate-Black	Ground (Pin 44)

Telephone Pin Designations

Table 1-12 provides port circuit pack and telephone pin designations.

Table 1-12.   Port Circuit Pack and Telephone Pin Designations

Pin on Modular Plug	4-wire; 302C1, 8400-Series, 603E, 9403, 9434	2-wire; 302C1, 8400-Series, 603E, 9403, 9410, 9434	8510T BRI (with adjunct speaker phone)	Analog Station, Modem	Z3A1 & Z3A2 ADU, Data Module
1	TXT				TXT
2	TXR			T	TXR
3	PXT		TXT	R	PXT
4		T	PXR		
5		R	PXT	No connection 4-pin modular jack	
6	PXR		TXR		PXR
7	-48VDC	(-48VDC)	(-48VDC)		
8	GRD	GRD	GRD		
circuit pack	TN754 4-wire digital (8 port)	TN2181 2-wire digital (16 port) TN2224 2-wire digital (24 port)	TN2185 4-wire BRI Trunk Side	TN2183 Analog line (16 port)	TN726 Data Line

PX	PBX transmit	T	Tip (A)
TX	Terminal transmit	R	Ring(B)

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Install Off-Premises Station Wiring

The cabling outside the building for off-premises stations is provided by the local telephone company. These stations can appear on any of the RJ21X network interfaces provided for the CO trunks.

⚠ CAUTION:
Use only an FCC-approved (or equivalent) analog type telephone (such as a 2500-type) as an off-premises station. The TN746B and TN2183 Analog Line circuit packs can be connected to off-premises stations.

1. Install an A25D cable between the RJ21X network interface and a sneak fuse panel.

2. At the MDF, connect jumper wires between 1 row/connecting block in the green field and up to 3 rows/connecting blocks in the purple field to concentrate the analog line pairs.

3. Connect an A25D cable between the sneak fuse panel and the terminal block connector associated with the green row in Step 2.

4. Install a green label on the terminal block to identify the remote location.

5. Administer per *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description.*

Install Off-Premises or Out-of-Building Stations

Out-of-building campus stations are those telephones not physically located in the same building as the equipment room but are located on the same property.

Analog Off-Premises Stations

Figure 1-31 shows the connections for 1 to 8 off-premises analog telephones. Only analog telephones connected to TN742, TN746B, TN2183, or TN769 Analog Line circuit packs can be installed out-of-building.

The maximum distance from the system cabinet to the out-of-building voice terminal is 6000 feet (1828.8 meters) using 24 AWG (#5) (0.26 mm^2) wire.

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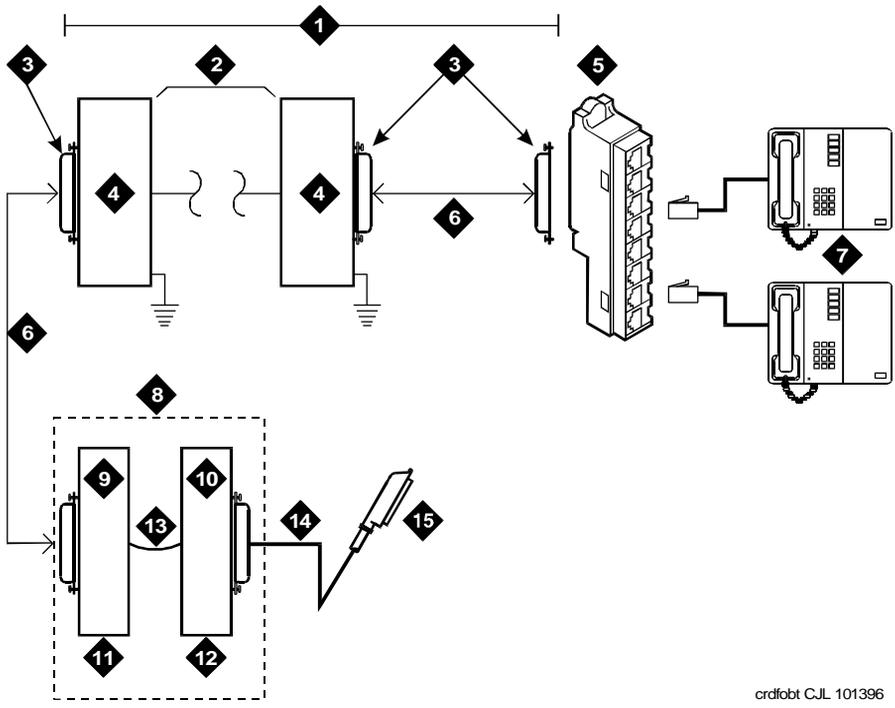
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Figure Notes

1. Locally Engineered Cables
2. Out-of-Building Wiring
3. 25-Pair Connector
4. Multi-Pair Protector Units (primary protectors with heat coils or equivalent with sneak current protection)
5. 356A Adapter
6. B25A Cable
7. Out-Of-Building Analog Telephones

8. Part of MDF
9. Station Side
10. System Side
11. White Field
12. Purple Field
13. Cross-Connect Jumpers
14. Tip and Ring Wires
15. To Analog Line Circuit Pack (TN2183, TN769, TN742, or TN746B)

Figure 1-31.   Connections for 1 to 8 Out-of-Building Analog Telephones

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Figure 1-32 shows the connections for up to 24 off-premises analog telephones. Concentrations of analog line pairs are used at both buildings to minimize the off-premises wiring required. At the MDF, jumpers must be connected between 1 row/connecting block in the white field and up to 3 rows/connecting blocks in the purple field. At the station location, a WP-90929, List 1 Concentrator Cable is used. There are 8 station appearances on each of the 3 fingers of the concentrator cable.
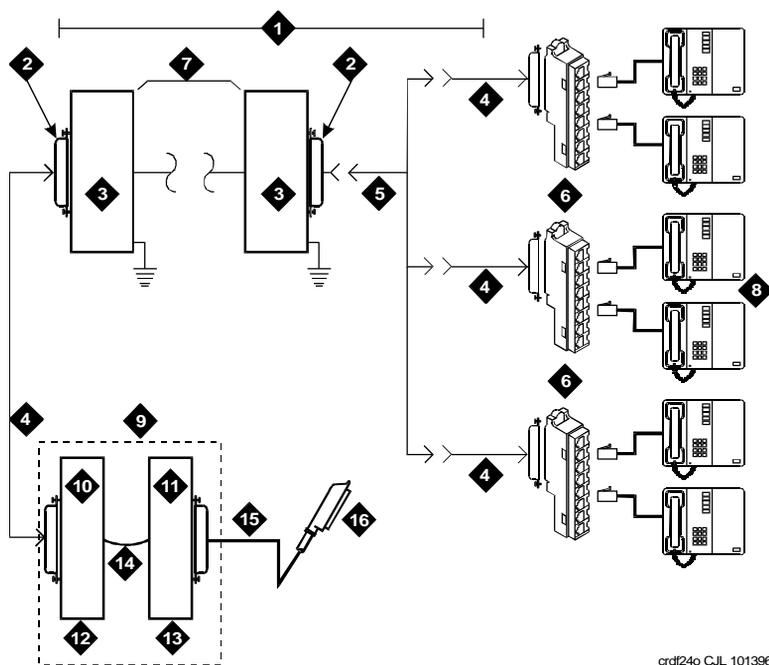
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Figure Notes

1. Locally Engineered Cables

2. 25-Pair Connector

3. Multi-Pair Protector Units (primary protectors with heat coils or equivalent with sneak current protection)

4. B25A Cable (Male to Male)

5. Concentrator Cable (WP90929 List 1)

6. 356A Adapter

7. Out-of-Building Wiring

8. Out-Of-Building Analog Telephones

9. Part of MDF

10. Station Side

11. System Side

12. White Field

13. Purple Field

14. Cross-Connect Jumpers

15. Tip and Ring Wires

16. To TN2183, TN769, TN742, or TN746B Analog Line Circuit Pack

Figure 1-32.　Connections to 24 Out-of-Building Telephones

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Circuit Protectors

Carbon block, or equivalent protection is required at both building entrances. Also sneak current protection is required. Protection can be provided by a 4-type protector or a 3-type protector plus a separate sneak current protector. The 4-type protector is equipped with a heat coil.

The 4-type protector is the preferred device. For installations not using primary protection, 4-type protectors should always be used. When the 3-type protector is already installed, a separate sneak current protector is required. The multi-pair protector units and the off-premises cabling must be locally engineered. Connectorized multi-pair protector units (female 25-pair connector) are recommended. Table 1-13 shows the recommended protectors.

Table 1-13.   Analog Line Circuit Protectors

Protectors		
Primary[1]	**Primary (with heat coil)**	**Sneak Current Protectors[1]**
3B1A (carbon)	4B1C (carbon)	220029 Fuse
3B1E-W (wide gap gas tube)	4B1E-W (wide gap gas tube)	SCP-1
3C1S (solid state)	4C1S (solid state)	

1. The 3-type protectors should only be used if they are already part of the existing protection system. A sneak current protector is always required when a 3-type primary protector is used.

The maximum range of out-of-building analog telephones (500-, 2500-, or 7100-types) connected to an analog line circuit pack should be such that the maximum loop resistance does not exceed 1300 Ohms.

The following voice terminals *cannot* be installed in an exposed environment:

- 7300-type voice terminals connected to TN762 Hybrid Line circuit packs

- Multi-button Electronic Telephone (MET) sets connected to TN735 MET Line circuit packs

- Analog telephones connected to TN746 Analog Line circuit packs

Refer to Table 2-7 on page 2-12 for circuit protector ordering information (comcodes).

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Digital Out-of-Building Telephones

Protection is required at both building entrances for digital out-of-building voice terminals. There are 2 different types of protectors that can be used to protect digital voice terminals and digital line circuit packs. The 2 protectors to use are the 4C3S-75 Enhanced protector and the ITW Linx Enhanced Protector. These units provide primary and sneak current protection. The 4C3S-75 is equipped with a heat coil for sneak current protection. The ITW Linx is equipped with replaceable fuses for sneak current protection.

The 4C3S-75 is only used with Vintage 14 or newer TN754 circuit packs. The 4C3S-75 can be used on all vintages of the TN754B circuit packs. The ITW Linx may be used on all vintages of the TN754 circuit packs. Table 1-14 lists the approved protectors.

> ⮕ **NOTE:**
> The TN2181 16 Port 2-Wire Digital Line circuit pack may not be approved for some out-of-building uses. Contact your Lucent Technologies representative for more information.

Table 1-14.   Digital Voice Circuit Protectors

Circuit Pack	Enhanced Primary Protector (With Sneak Current Protection)
TN754 V13 or earlier	ITW Linx Only
TN754 V14 or later	4C3S-75 or ITW Linx
TN754B all vintages	4C3S-75 or ITW Linx

When possible, all new and reused wiring installations should use blocks that accept the standard 5-pin plug-in 4C3S-75 protector. However, this may not be cost-effective in some cases. For these installations, the ITW Linx protector may be installed. An example of this is where screw-type carbon block protectors (or other non plug-compatible types) are in place and it is too costly to re-terminate the outside plant cable on a 5-pin mounting block for only a few out-of-building terminals.

The ITW Linx Enhanced Protector may be installed in series with existing primary protection. Note the 4C3S-75 protector cannot be installed in series with other types of primary protection. It must be installed as the only protection on the line entering the building. For the 4C3S-75 protector, various 25-, 50-, and 100-pair protector panels are equipped with 110-type connecting blocks and/or RJ21X connectors. The ITW Linx Enhanced Protector mounts directly on connecting blocks and requires a separate ground bar.

The maximum range for out-of-building digital voice terminals is 3400 feet (1036 m) when using 24 AWG (#5) (0.26 mm^2) wire and 2200 feet (670 m) when using 26 AWG (#4) (0.14 mm^2) wire. The range can extend to 5000 feet (1524 m)

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using 24 AWG (#5) (0.26 mm^2) wire or 4000 feet (1219 m) using 26 AWG (#4) (0.14 mm^2) wire with the use of a data link protector. The protector is an isolating transformer used to remove phantom power on the system side and re-introduce it on the terminal side.

When a protector is used, the voice terminal must be locally powered by an external power supply or through the AC power cord provided with some of the 7400-type voice terminals. The protector is installed on the equipment side of the protection in both buildings.

Refer to Table 2-7 on page 2-12 for circuit protector and data link protector comcodes.

Install Emergency Transfer Unit and Associated Telephones

Emergency transfer capability is provided by an 808A Emergency Transfer Panel (or equivalent) mounted next to the trunk/auxiliary field. See Figure 1-33. Also refer to Table 2-9 on page 2-16 for the pinout of the AUX (J1) connector.

Use analog telephones for emergency transfer. The 500-and 2500-type telephones can also be used as normal extensions. Emergency transfer capability may be provided on analog Central Office (CO) and Wide Area Telecommunications Service (WATS) trunks.

The transfer panel provides emergency trunk bypass or power-fail transfer for up to 5 incoming CO trunk loops to 5 selected station sets. The 808A equipment's Ringer Equivalency Number (REN) is 1.0 Amp.

At the MDF, the unit is controlled by a connection to a yellow terminal row/connecting block in the trunk/auxiliary field. The unit is controlled by -48 VDC from the EM TRANS RELAY PWR terminals.

Install the Emergency Transfer Panel

The 808A Emergency Transfer Panel is used as a typical installation example.

1. Install the 808A on any mounting frame in either a vertical or horizontal position. The housing has ears for screw-mounting and cutouts for snap-mounting the unit in an 89-type mounting bracket.

   $\Longrightarrow$ **NOTE:**
   Install the panel so it can be accessed only by authorized personnel. The location must meet standard environmental considerations such as temperature, humidity, and so forth.

2. Verify dial tone is present at each trunk circuit.

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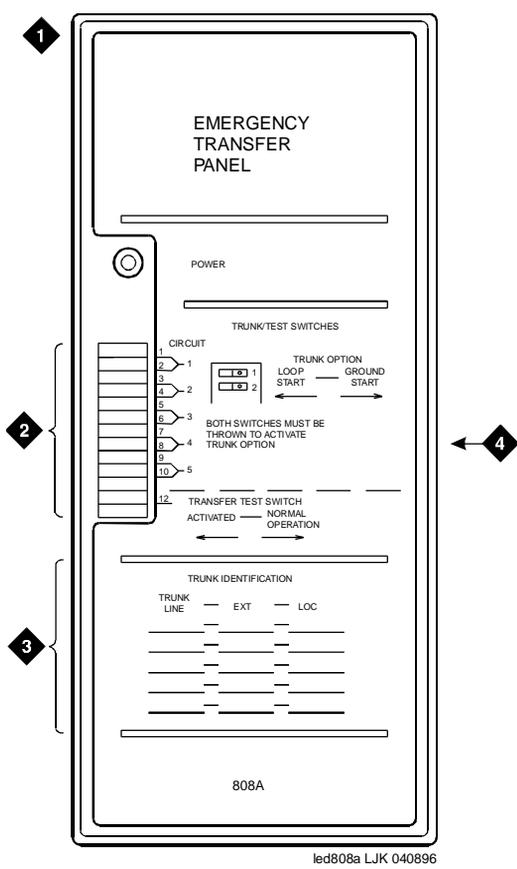
Figure Notes

1. 808A Emergency Transfer Panel
2. Circuit Start Selection Switches
3. Trunk Identification Label
4. 25-Pair Male Connector

Figure 1-33.   808A Emergency Transfer Panel

3. Locate the circuit start selection switches. See Figure 1-33. These are the first 10 two-position switches on the left side of the 808A. The switches set each of the 5 incoming trunk lines to either loop start or ground start. Two switches are used for each of the 5 circuits; switches 1 and 2 are used for circuit 1, switches 3 and 4 are used for circuit 2, and so forth. See Table 1-15.

For loop start, set the switches to the **left**. For ground start, set the switches to the **right.**

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Table 1-15. Trunk/Test Switches

Switch Number	Circuit Number
1	1
2	1
3	2
4	2
5	3
6	3
7	4
8	4
9	5
10	5
11	Not Used
12	Test Switch

4. Connect a 25-pair cable between the male RJ21 25-pair connector on the 808A and the yellow field on the MDF. Table 1-16 shows the pinouts.

5. Make cross-connections for each emergency trunk/emergency station pair. See Figure 1-34 and Figure 1-35.

6. On the trunk identification label at the bottom of the panel, record the trunk line, extension, and location for each circuit.

7. To each voice terminal designated as an emergency terminal, attach a label identifying it as such. The labels are provided with the unit.

8. Check the system for normal operation as follows:

   a. Place the test switch (switch 12) in NORMAL OPERATION.

   b. Ensure the power supply is providing -48 VDC at 80 mA maximum. The power LED should be ON.

   c. Check wiring connections.

   d. Verify there is dial tone on all emergency transfer sets.

9. Replace the panel if the above conditions are not met.

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Table 1-16. Pin Assignments for 25-Pair Connector on 808A

Pin	Color	Designation	Connector/Description
26	W-BL	TTC1	Tip-PBX Trunk Circuit 1
1	BL-W	RTC1	Ring-PBX Trunk Circuit 1
27	W-O	TTK1	Tip-CO Trunk Circuit 1
2	O-W	RTK1	Ring-CO Trunk Circuit 1
28	W-G	TLC1	Tip-PBX Line Port 1
3	G-W	RLC1	Ring-PBX Line Port 1
29	W-BR	TST1	Tip-Emergency Terminal 1
4	BR-W	RST1	Ring-Emergency Terminal 1
30	W-S	TTC2	Tip-PBX Trunk Circuit 2
5	S-W	RTC2	Ring-PBX Trunk Circuit 2
31	R-BL	TTK2	Tip-CO Trunk Circuit 2
6	BL-R	RTK2	Ring-CO Trunk Circuit 2
32	R-O	TLC2	Tip-PBX Line Port 2
7	O-R	RLC2	Ring-PBX Line Port 2
33	R-G	TST2	Tip-Emergency Terminal 2
8	G-R	RST2	Ring-Emergency Terminal 2
34	R-BR	TTC3	Tip-PBX Trunk Circuit 3
9	BR-R	RTC3	Ring-PBX Trunk Circuit 3
35	R-S	TTK3	Tip-CO Trunk Circuit 3
10	S-R	RTK3	Ring-CO Line Port 3
36	BK-BL	TLC3	Tip-PBX Line Port 3
11	BL-BK	RLC3	Ring-PBX Line Port 3
37	BK-O	TST3	Tip-Emergency Terminal 3
12	O-BK	RST3	Ring-Emergency Terminal 3
38	BK-G	TTC4	Tip-PBX Trunk Circuit 4
13	G-BK	RTC4	Ring-PBX Trunk Circuit 4
39	BK-BR	TTK4	Tip-CO Trunk Circuit 4
14	BR-BK	RTK4	Ring-CO Trunk Circuit 4
40	BK-S	TLC4	Tip-PBX Line Port 4

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Table 1-16. Pin Assignments for 25-Pair Connector on 808A — *Continued*

Pin	Color	Designation	Connector/Description
15	S-BK	RLC4	Ring-PBX Line Port 4
41	Y-BL	TST4	Tip-Emergency Terminal 4
16	BL-Y	RST4	Ring-Emergency Terminal 4
42	Y-O	TTC5	Tip-PBX Trunk Circuit 5
17	O-Y	RTC5	Ring-PBX Trunk Circuit 5
43	Y-G	TTK5	Tip-CO Trunk Circuit 5
18	G-Y	RTK5	Ring-CO Trunk Circuit 5
44	Y-BR	TLC5	Tip-PBX Line Port 5
19	BR-Y	RLC5	Ring-PBX Line Port 5
45	Y-S	TST5	Tip-Emergency Terminal 5
20	S-Y	RST5	Ring-Emergency Terminal 5
46	V-BL	COM1	Common 1 Relay Contact
21	BL-V	NO1	Normally Open 1 Contact
47	V-O	NC2	Normally Closed 2 Contact
22	O-V	NC1	Normally Closed 1 Contact
48	V-G	COM2	Common 2 Relay Contact
23	G-V	NO2	Normally Open 2 Contact
49	V-BR		
24	BR-V		
50	V-S	GRD	Ground From PBX
25	S-V	-48PX	-48V from Alarm Panel (AUX Cable)

10. Check the system for emergency transfer operation as follows:

    a. Place the test switch (switch 12) in the ACTIVATED position.

    b. The power LED should be OFF.

    c. Verify there is dial tone on all emergency transfer sets.

11. Replace the panel if all of the above conditions are not met.

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12. Connect the 808A to the MDF with a B25A or A25B cable. Figure 1-34 shows the connections at the trunk/auxiliary field for a telephone used only for emergency transfer.

r758580b MMR 042996

Figure Notes

1. To Network Interface Circuitry
2. To TN747B (or Equivalent) CO Trunk Circuit Pack
3. To Blue or White Station Distribution Field
4. To Power Transfer Unit
5. To Control Carrier AUX Connector

Figure 1-34.   Connections for Telephone Used for Emergency Transfer

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Figure 1-35 shows the connections at the trunk/auxiliary field for a telephone used for emergency transfer and as a normal extension.
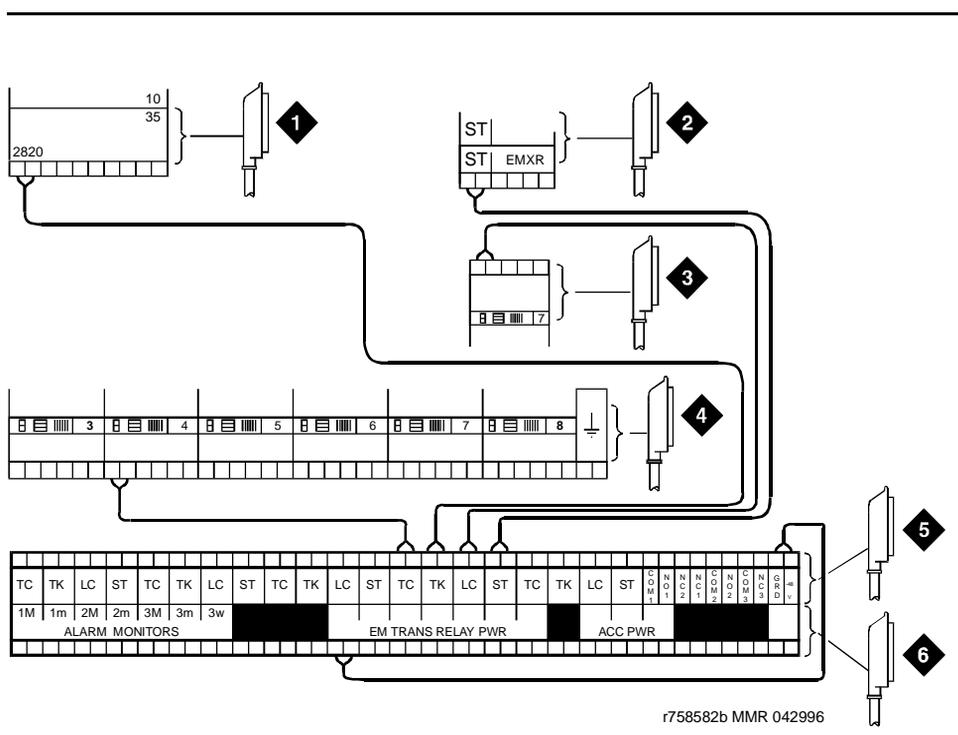
r758582b MMR 042996

Figure Notes

1. To Network Interface Facility

2. To Blue or White Station Field

3. To TN2183 (or Equivalent) Analog Line Circuit Pack

4. To TN747B (or Equivalent) CO Trunk Circuit Pack

5. To Power Transfer Unit

6. To Control Carrier AUX Connector

Figure 1-35. **Connections for Telephone Used for Emergency Transfer and as Normal Extension**

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Install Telephone for Power Transfer Unit

Trunk/Auxiliary Field: Telephone Used Only for Emergency Transfer

1. Connect a pair of wires between the -48V and GRD terminals on the yellow emergency transfer row/connecting block and the EM TRANS RELAY PWR terminal. See Figure 1-34.

2. Connect CO trunk leads from the purple field to the TC terminals on the yellow emergency transfer row/connecting block for each trunk.

3. Connect CO trunk leads from the green field to the TK terminals on the yellow emergency transfer row/connecting block for each trunk.

4. Connect the ST leads on the yellow emergency transfer row/connecting block for each emergency transfer telephone to the ST terminal appearance in the yellow trunk/auxiliary field. The ST terminal leads should be terminated on the following pairs: 1, 4, 7, 10, 13, 16, 19, or 22 (the first pair of any 3-pair group).

5. Connect the ST leads from the terminal in Step 4 to the assigned terminal in the blue or white station distribution field.

Trunk/Auxiliary Field: Telephone Used for Emergency Transfer and as Normal Extension

1. Connect a pair of wires between the -48V and GRD terminals on the yellow emergency transfer row/connecting block to the EM TRANS RELAY PWR terminal. See Figure 1-35.

2. Connect CO trunk leads from the purple field to the TC terminals on the yellow emergency transfer row/connecting block for each trunk.

3. Connect CO trunk leads from the green field to the TK terminals on the yellow emergency transfer row/connecting block for each trunk.

4. Connect telephone leads from the purple analog line board row/connecting block to the LC terminals on the yellow emergency transfer row/connecting block for each telephone.

5. Connect ST leads on the yellow emergency transfer row/connecting block for each emergency transfer telephone to the ST terminal appearance in the purple trunk/auxiliary field.

6. Connect the ST leads from the terminal in Step 5 to the assigned terminal in the blue or white station distribution field.

Telephone Installation

1. Connect the telephone to the information outlet.

2. Install patch cords/jumper wires between the system side and the station side of the station distribution field on the MDF.

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Connect Modem to Telephone Network

1. Cross-connect the network jack on the modem to the network interface (via a 103A or modular wall jack). See Table 1-17 for the pinout.

Table 1-17.   Pinout of Network Jack

Pin Number	Signal
1	Unused
2	Tip
3	Ring
4	Unused
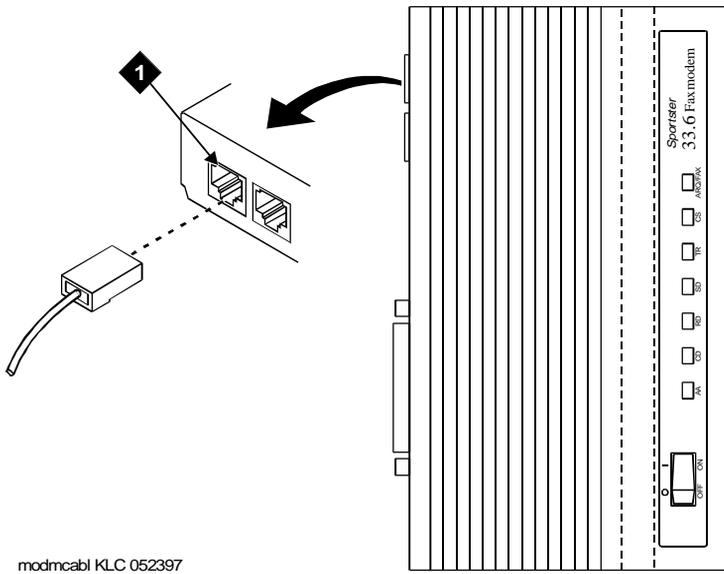
modmcabl KLC 052397

Figure 1-36.   Network Jack on U.S. Robotics Modem

Figure Notes

1. Pin 1 of Network Jack

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External Modem Option Settings

The U.S. Robotics Model 839 external modem is the recommended external modem for Release 6 CMC. A locally obtained, type-approved external modem may be used. Contact your Lucent Technologies representative for information.

1. If a non-U.S Robotics Model 839 modem is installed, refer to the setup instructions provided with that modem. Refer to Table 1-19 while setting up the modem. Go to Step 4 to complete the modem administration.

2. If no modem is installed, or if a U.S Robotics Model 839 modem is installed, perform the following.

3. Use Table 1-18 to set the 8 option switches on the U.S. Robotics modem.

Table 1-18.   **U.S. Robotics Model 839 External Modem Switch Settings**

Switch	Setting	Function
1	OFF (Up)	DTR (Data Terminal Ready) override
2	OFF (Up)	Verbal result codes (text-formatted feedback characters such as "connected" or "no carrier")
3	ON (Down)	Enable result codes
4	OFF (Up)	Displays keyboard commands (local echo)
5	ON (Down)	Auto answer (modem answers on present number of rings)
6	OFF (Up)	CD (Carrier Detect) override (modem sends CD signal on connect, drops CD on disconnect)
7	OFF (Up)	Power-on and ATZ reset software defaults (loads Y or Y1 configuration from NVRAM)
8	ON (Down)	AT (Attention) command set recognition (enables recognition, smart mode)

4. At the management terminal, enter **change system-parameters maintenance** and press Enter. Scroll to page 3 of the form.

5. Set the `Modem Connection:` field to **external** if a modem is installed. Set the field to **none** if no modem is installed. This field must be administered or alarms will be generated.

> **NOTE:**
> The `Modem Connection:` field cannot be set to **none** if Alarm Origination is activated.

6. Set the `Data Bits:` field to **8** (default).

7. Set the `Parity:` field to **none** (default).

8. Set the remaining modem fields as shown in Table 1-19.

9. Press Enter when the modem fields are properly administered.

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Table 1-19.   **Release 6 CMC Modem Fields**

Field	Description
Modem Connection	Default is **none** for Release 6 CMC. Set to **external** if a modem is used.
Modem Name	This field is 20 characters long and permits alphanumeric characters to provide a unique qualifier for a given modem (such as **USRobotics839**).
RTS/CTS Enabled	Informs modem that communication with the data source UART is driven with RTS/CTS flow control. The default 6-character field name is **&H1** (default) for Release 6csi. Set the field name to \Q3 for Intel modems. This field is not case-sensitive.
Asynchronous Data Mode	Configures modem as an asynchronous device. This 8-character field name has a default value of **&M0** (default) for Release 6csi. Set the field to &M0&Q0 for Intel modems. This field is not case-sensitive.
DTE Auto-Data Speed	Adjusts the speed of the data source (DTE) UART to the outgoing (modem-to-modem) data rate. At maximum, this speed is 9600 baud. It is not desirable to have the serial data fill the modem buffer faster than the outgoing data rate, since data compression is disabled. The field name has a 6-character blank default value. The Paradyne products use S90=1 to enable this functionality while the Intel product uses \J1 to enable similar functionality. This field is not case-sensitive.
Disable Data Compression	Turns off the default data compression algorithms used by most modems. The field has a blank field of 6 characters as default. The AT commands that control this are supported by similar commands; however, these commands do not operate in the same manner. The Intel modems require H0%C0 to disable V.42bis & MNP Class 5 data compression algorithms. The Paradyne products only use %C0 to disable both algorithms. This field is not case-sensitive.
Enable Error Control	Turns on the V.42 LAPM and MNP error control protocols. The field has a blank default of 6 characters. The Paradyne products use the command \N5 to enable V.42/MNP/Buffer error control while the Intel product uses \N3 to provide similar functionality.
Misc. Init. Param	This field has a 20-character blank default and supports any initialization parameters not already specified. The AT commands specified in this field are always the last initialization parameters to be sent to the external modem. This field is not case-sensitive.
Auto-Answer Ring Number	This field controls the number of rings required before the modem answers an incoming call. This field should be set to SO=10.

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Table 1-19.   Release 6 CMC Modem Fields — *Continued*

Field	Description
Dial Type	This field controls the type of interregister signaling used between the modem and the CO. This 3-character field is denoted by "T" for tone dialing (default) and "P" for pulse dialing. This field depends on type of line (tone or pulse) to the modem.
Adjustable Make/Break Ratio	This field controls the make/break ratios of pulses and DTMF dialing. Most modems have support for different make/ break options for pulse dialing only. Paradyne, Intel, and U.S. Robotics use the default **&P0** to select a ratio of 39% make and 61% break for communication for the United States and Canada. The option &P1 sets a ratio of 33% make and 67% break for the United Kingdom and Hong Kong. This is a 5-character blank field (default) and is not case-sensitive.
Dial Command	This field has a default of "D" in a 3-character field. This field denotes the standard dialing command of the modem and is not case-sensitive.
No Answer Time-Out	Most modems provide a timer that abandons any outbound data call after a predetermined interval. This is a non-administrable parameter.

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　　Perform System Administration　　　　　　　　　　　　　　　　　　Page 2-1

Installation Completion and Cable Pinouts

2

Perform System Administration

1. Administer the system by adding the customer data to match the wiring, telephones, and other equipment. See *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description*.

2. Return to this section when finished.

> **NOTE:**
> Some of the interface units used between the system and other types of equipment require specific configuration settings and administration for each application. Refer to the user's guide for each equipment type for information on how to locate and set the configuration and option switches.

> **NOTE:**
> Refer to *DEFINITY Enterprise Communications Server Release 6 Installation for Adjuncts and Peripherals,* for data module and other peripheral installation and configuration requirements.

Resolve Alarms

1. Examine the alarm log. Resolve any alarms using *DEFINITY Enterprise Communications Server Release 6 Maintenance for Compact Modular Cabinets.*

2. Refer to ''Power Supply LED Indications'' on page 2-4 if power supply faults are suspected.

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Perform System Administration

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Enable Alarm Origination to INADS

No External Modem Installed (or No Alarm Origination to INADS)

1. Enter **change system-parameters maintenance** and press Enter.

2. Enter **n** in the *Alarm Origination Activated to OSS Numbers* field and press Enter.

3. For some software releases, enable *Cleared Alarm Notification* and *Restart Notification* before the submitting the form.

External Modem Installed

1. Enter **change system-parameters maintenance** and press Enter.

2. Enter **y** in the *Alarm Origination Activated to OSS Numbers* field and press Enter.

3. For some software releases, enable *Cleared Alarm Notification* and *Restart Notification* before the submitting the form.

4. Be sure the system is part of the INADS database by calling the INADS Database Administrator at the Technical Service Center (TSC). Verify that INADS can dial into the system and that the system can dial out to INADS.

   As part of the system registration process, the INADS Database Administrator enables Alarm Origination and customer options.

5. Log off and log back in.

Place a Test Call

1. From any telephone connected to a digital line circuit pack, call any nearby telephone connected to an analog line circuit pack.

2. Verify that the dial tone, ringing pattern, and talk path are acceptable.

3. Place a call through the Central Office (outside call) to any nearby telephone. Verify that the dial tone, ringing pattern, and talk path are acceptable.

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Set Neon Voltage — Ring Ping

Page 2-3

Set Neon Voltage — Ring Ping

> **NOTE:**
> If the ringing option is set to 50 Hz, neon voltage is not available. If 25 Hz is selected, the maximum voltage is 120 volts. Refer to "Set Ringing Option" on page 1-34.

> **NOTE:**
> Set the control to OFF if there are no *neon* message waiting lamps or if LED message lamps are used. See Figure 2-1.
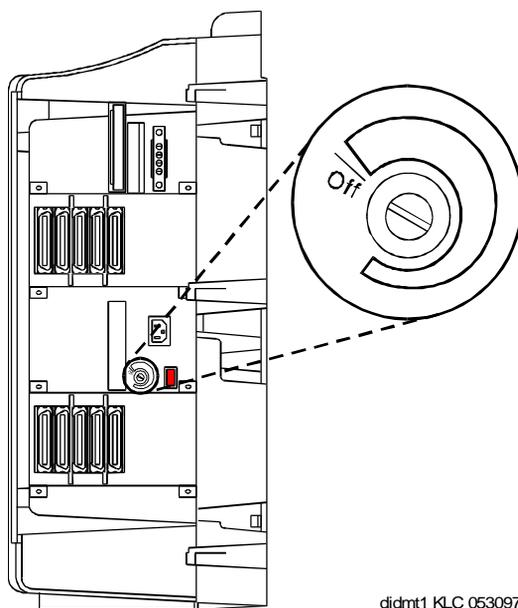
didmt1 KLC 053097

Figure 2-1.   Setting the Neon Voltage

1. Call a telephone with a neon message indicator and leave a message.

2. Check for "ring ping" (single ring pulse) each time the lamp flashes (approximately every 3 seconds).

3. Adjust the control clockwise in small increments until the ring ping stops. Be sure that the message lamp still lights when the adjustment is finished.

4. Enter **logoff** and press Enter to prevent unauthorized changes to data.

5. Set the left and right doors onto the hinge pins and close the doors. The doors must be closed to prevent EMI emissions. Tighten the door screws.

6. Set the bottom of the cover panel onto the right panel, with the screw latch to the top. Push the top of the panel into place and secure.

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2 Installation Completion and Cable Pinouts
Power Supply LED Indications

Page 2-4

Power Supply LED Indications

It is not possible to view the alarm log to determine which power unit in a multi-cabinet system is defective. Use the LEDs on the front of each power unit to determine its state.

Table 2-1 shows the LED and alarm conditions. Ring voltage and neon bus output do not activate alarm status.

Table 2-1. LED and Alarm Conditions

Condition	LED Status	Alarm State	Fan Alarm
Normal	Red off Yellow on	open	high
No Input Power	Red off Yellow off	closed	open
Any DC Output not Present	Red on Yellow off	closed	no state
Fan Alarm	Red on Yellow off	closed	low

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TN760D Tie Trunk Option Settings Page 2-5

TN760D Tie Trunk Option Settings

The TN760D Tie Trunk circuit pack interfaces between 4 tie trunks and the TDM bus. Two tip and ring pairs form a 4-wire analog transmission line. An E and M pair are DC signaling leads used for call setup. The E-lead receives signals from the tie trunk and the M-lead transmits signals to the tie trunk.

To choose the preferred signaling format (Table 2-2 and Table 2-3), set the switches on the TN760D and administer the port using Figure 2-2 and Table 2-4.
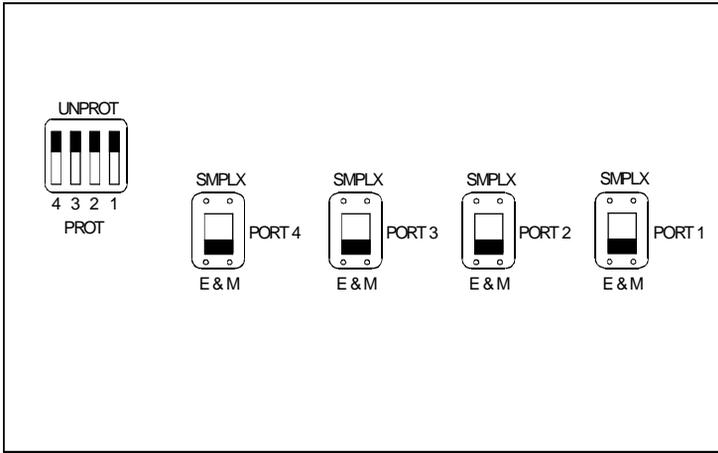
Table 2-2.   Signaling Formats for TN760D

Mode	Type
E & M	Type I Standard (unprotected)
E & M	Type I Compatible (unprotected)
Protected	Type I Compatible, Type I Standard
Simplex	Type V
E & M	Type V
E & M	Type V Revised

Table 2-3.   Signaling Type Summary

Signaling Type	Transmit (M-Lead)		Receive (E-Lead)	
	On-Hook	**Off-Hook**	**On-Hook**	**Off-Hook**
Type I Standard	ground	battery	open[1]/battery	ground
Type I Compatible	open[1]/battery	ground	ground	open[1]/battery
Type V	open[1]/battery	ground	open	ground
Type V Reversed	ground	open	ground	open

1.   An open circuit is preferred instead of battery voltage.

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TN760D Tie Trunk Option Settings   Page 2-6

Figure 2-2.   TN760D Tie Trunk Circuit Pack (Component Side)

Table 2-4.   TN760D Option Switch Settings and Administration

Installation Situation		Preferred Signaling Format		E&M/SMPLX Switch	Prot/Unprot Switch	Administered Port
Circumstance	To	System	Far-End			
Co-Located	DEFINITY	E&M Type 1 Compatible	E&M Type 1 Standard	E&M	Unprotected	Type 1 Compatible
Inter-Building	DEFINITY	Protected Type 1 Compatible	Protected Type 1 Standard Plus Protection Unit	E&M	Protected	Type 1 Compatible
Co-Located	Net Integrated	E&M Type 1 Standard	Any PBX	E&M	Unprotected	Type 1

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TN464E/F Option Settings Page 2-7

TN464E/F Option Settings

The TN464E/F DS1/E1 Interface - T1/E1 circuit pack interfaces between a 24- or 32-channel Central Office/ISDN or tie trunk and the TDM bus.

Set the switches on the circuit pack to select bit rate and impedance match. See Table 2-5 and Figure 2-3.

Table 2-5.   Option Switch Settings on TN464E/F

120 Ohms	Twisted pair
75 Ohms	Coaxial requiring 888B adapter
32 Channel	2.048 Mbps
24 Channel	1.544 Mbps
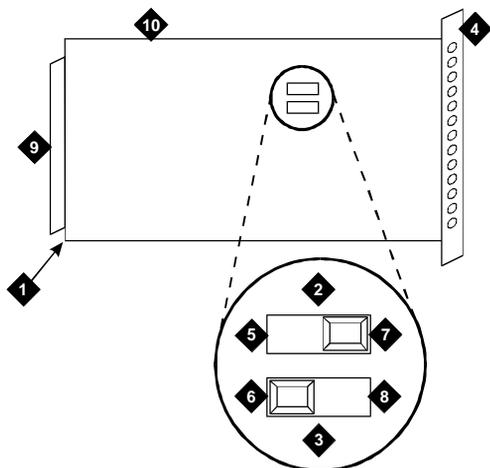
Figure Notes

1. Backplane Connectors
2. 24/32 Channel Selector
3. 75/120 Ohm Selector
4. Faceplate
5. 32 Channel

6. 120 Ohm (shown selected)
7. 24 Channel (shown selected)
8. 75 Ohm
9. Connector
10. TN464E/F

Figure 2-3.   TN464E/F Option Settings

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2 Installation Completion and Cable Pinouts
Allowable Circuit Packs for CMC

Page 2-8

Allowable Circuit Packs for CMC

Table 2-6 lists the circuit packs that can and cannot be used with Release 6.1.

Table 2-6.   Circuit Packs and Circuit Modules

Apparatus Code	Name	Allowable
650A	AC Power Unit	Yes
982LS	Current Limiter	No
CFY1B	Current Limiter	No
CPP1	Memory Expansion	No
ED-1E546 (TN566) (TN567)	DEFINITY AUDIX R3 System	Yes
ED-1E546 (TN2208) (TN2170)	CallVisor ASAI over the DEFINITY (LAN) Gateway R1	No
J58890M-1 (TN800)	CallVisor over the DEFINITY LAN Gateway R2	Yes
TN417	Auxiliary Trunk	Yes
TN419B	Tone-Clock	No
TN420B/C	Tone Detector	No
TN429B	Direct Inward/Outward Dialing (DIOD) Trunk	Yes
TN433	Speech Synthesizer	Yes
TN436B	Direct Inward Dialing Trunk	Yes
TN437	Tie Trunk	Yes
TN438B	Central Office Trunk	Yes
TN439	Tie Trunk	Yes
TN447	Central Office Trunk	Yes
TN457	Speech Synthesizer	Yes
TN458	Tie Trunk	Yes
TN459B	Direct Inward Dialing Trunk	Yes
TN464C/D/E/F	DS1 Interface - T1, 24 Channel - E1, 32 Channel	Yes
TN465B/C	Central Office Trunk	Yes

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Allowable Circuit Packs for CMC Page 2-9

Table 2-6. Circuit Packs and Circuit Modules — *Continued*

Apparatus Code	Name	Allowable
TN467	Analog Line	Yes
TN468B	Analog Line	Yes
TN479	Analog Line	Yes
TN497	Tie Trunk	Yes
TN553	Packet Data Line	No
TN556C	ISDN-BRI 4-Wire S/T-NT Line (A-Law)	Yes
TN570B/C	Expansion Interface	No
TN572	Switch Node Clock	No
TN573B	Switch Node Interface	No
TN574	DS1 Converter - T1, 24 Channel	No
TN577	Packet Gateway	No
TN722B	DS1 Tie Trunk	Yes
TN725B	Speech Synthesizer	Yes
TN726B	Data Line	Yes
TN735	MET Line	Yes
TN742	Analog Line	Yes
TN744B	Call Classifier	Yes
TN744C/D	Call Classifier - Detector	Yes
TN746B	Analog Line	Yes
TN747B	Central Office Trunk	Yes
TN748B/C/D	Tone Detector	No
TN750B/C	Announcement	Yes
TN753	Direct Inward Dialing Trunk	Yes
TN754B	Digital Line 4-Wire DCP	Yes
TN755B	Neon Power Unit	No
TN756	Tone Detector	No
TN758	Pooled Modem	Yes
TN760B/C/D	Tie Trunk	Yes

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    Allowable Circuit Packs for CMC   *Page 2-10*

Table 2-6.   **Circuit Packs and Circuit Modules** *— Continued*

Apparatus Code	Name	Allowable
TN762B	Hybrid Line	Yes
TN763B/C/D	Auxiliary Trunk	Yes
TN765	Processor Interface	No
TN767B/C/D/E	DS1 Interface - T1, 24 Channel	Yes
TN768	Tone-Clock	No
TN769	Analog Line	Yes
TN771D	Maintenance/Test	No
TN772	Duplication Interface	No
TN773	Processor	No
TN775B	Maintenance	No
TN776	Expansion Interface	No
TN777B	Network Control	No
TN778	Packet Control	No
TN780	Tone-Clock	No
TN786	Processor	No
TN786B	Processor	No
TN787F/G	Multimedia Interface	No
TN788B	Multimedia Voice Conditioner	No
TN789	Radio Controller	Yes
TN790	Processor	No
TN793	Analog Line, 24-Port, 2-Wire	Yes
TN796B	Processor	No
TN798	Processor	Yes
TN1648	System Access/Maintenance	No
TN1650B	Memory	No
TN1654	DS1 Converter - T1, 24 Channel/E1, 32 Channel	No
TN1655	Packet Interface	No
TN1656	Tape Drive	No

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Allowable Circuit Packs for CMC

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Table 2-6. Circuit Packs and Circuit Modules — *Continued*

Apparatus Code	Name	Allowable
TN1657	Disk Drive	No
TN2135	Analog Line	Yes
TN2136	Digital Line 2-Wire DCP	Yes
TN2138	Central Office Trunk	Yes
TN2139	Direct Inward Dialing Trunk	Yes
TN2140B	Tie Trunk	Yes
TN2144	Analog Line	Yes
TN2146	Direct Inward Dialing Trunk	Yes
TN2147C	Central Office Trunk	Yes
TN2149	Analog Line	Yes
TN2180	Analog Line	Yes
TN2181	Digital Line 2-Wire DCP	Yes
TN2182B	Tone-Clock -Tone Detector and Call Classifier	Yes
TN2183	Analog Line	Yes
TN2184	DIOD Trunk	Yes
TN2185	ISDN-BRI 4-Wire S Interface (Trunk Side)	Yes
TN2198	ISDN-BRI 2-Wire U Interface	No
TN2199	Central Office Trunk	Yes
TN2202	Ring Generator	No
TN2224	Digital Line, 24-Port, 2-Wire DCP	Yes
TN2238	ATM Trunk Interface	Yes

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Comcodes for CMC

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Comcodes for CMC

Table 2-7 lists the comcodes for equipment used with the CMC.

Table 2-7. Comcodes for Release 6.1 CMC

Comcode	Description
847951662	Left Panel
847951670	Right Panel
847960002	Processor Interface Cable
407633999	U.S. Robotics Model 839 External Modem
105631527	TDM/LAN Bus Terminator (AHF110)
- - - - - - - - -	Vertical TDM/LAN Bus Cable (WP-91716 List 8)
- - - - - - - - -	Horizontal TDM/LAN Bus Cable (WP-91716 List 9)
407780501	Single-Point Ground Block
847987187	CMC 110 Cross-Connect Assembly (Main Distribution Frame)
407676691	120 VAC Power Distribution Unit (145D 6-AC)
847951605	Fan Assembly
407745009	Fan Air Filter
405362641	120 VAC Power Cable
106278062	Apparatus Blank (Circuit Pack Blank) (158P)
106606536	Integrated Channel Service Unit (ICSU) (120A2)
107988867	DS1 Loopback Jack (T1 Only) (700A)
107152969	75 Ohm DS1 Coaxial Adapter (888B)
403613003	157B Connecting Block
406948976	6SCP-110 Protector
107435091	507B Sneak Current Fuse Panel
407216316	220029 Sneak Current Fuse
403613003	157B Connecting Block
103970000	Main Distribution Frame Label (Code 220A)
847489895 or 847489903	6-pin mini DIN to RJ-11 jack to allow 715 BCS keyboard on 2900/715 Terminal
407536531	9-pin DTE to 25-pin DCE Adapter Cable for a 715 BCS-2 Terminal

Continued on next page

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Comcodes for CMC

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Table 2-7.   Comcodes for Release 6.1 CMC — *Continued*

Comcode	Description
104307327	C6C cable — 50-foot (15.2 m) shielded DS1 cable with 50-pin male to 15-pin male
104307376	C6D cable — 50-foot (15.2 m) shielded DS1 cable with 50-pin male on each end
104307434	C6E cable — 100-foot (30.5 m) shielded DS1 cable with a 50-pin male to 50-pin female
104307475	C6F cable — 50-foot (15.2 m) shielded DS1 cable with 50-pin male to 3 inch (7.62 cm) stub
102381779	3B1A Carbon Block
104410147	3B1E-W Wide Gap Gas Tube
105514756	3C1S Solid State
102904893	4B1C Carbon Block with Heat Coil
104401856	4B1E-W Wide Gap Gas Tube w/Heat Coil
104386545	4C1S Solid State with Heat Coil
406948976	SCP-110 Sneak Current Protector
407216316	220029 Fuse Sneak Current Protector
105581086	4C3S-75 Solid State with Heat Coil
406144907	ITW LINX Gas Tube, Avalanche Suppress
901007120	ITW Linx Ground Bar (used with above)
406304816	ITW Linx Replacement Fuse
103972758	Data Link Protector (1 circuit)
103972733	Data Link Protector (8 circuits)
407063478	Electrostatic Discharge (ESD) Wrist Strap
107731853	Single-Mode Fiber Optic Transceiver (300A)
106455348	Multi-Mode Fiber Optic Transceiver (9823A)
106455363	Multi-Mode Fiber Optic Transceiver (9823B)
407439975	Multi-mode Fiber Interconnect Cable (20 Feet (6.1 m)
407598325	Single-mode Fiber Interconnect Cable (20 Feet (6.1 m)
105357727	Single-mode Fiber Optic Patch Cord (2 Feet (0.6 m)
106060718	Single-mode 5dB Attenuator
106060734	Single-mode 10dB Attenuator

Connector and Cable Diagrams — Pinout Charts

See Table 2-8 for typical lead designations. The circuit packs and auxiliary equipment are classified as shown in the following tables.

Table 2-8. Lead and Color Designations

Cross-Connect Pin	Color	Amphenol Pin	Backplane Pin
1	W-BL	26	102
2	BL-W	01	002
3	W-O	27	103
4	O-W	02	003
5	W-G	28	104
6	G-W	03	004
7	W-BR	29	105
8	BR-W	04	005
9	W-SL	30	106
10	SL-W	05	006
11	R-BL	31	107
12	BL-R	06	007
13	R-O	32	108
14	O-R	07	008
15	R-G	33	109
16	G-R	08	009
17	R-BR	34	110
18	BR-R	09	010
19	R-SL	35	111
20	SL-R	10	011
21	BK-BL	36	112
22	BL-BK	11	012
23	BK-O	37	113
24	O-BK	12	013

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Table 2-8.   Lead and Color Designations — *Continued*

Cross-Connect Pin	Color	Amphenol Pin	Backplane Pin
25	BK-G	38	302
26	G-BK	13	202
27	BK-BR	39	303
28	BR-BK	14	203
29	BK-SL	40	304
30	SL-BK	15	204
31	Y-BL	41	305
32	BL-Y	16	205
33	Y-O	42	306
34	O-Y	17	206
35	Y-G	43	307
36	G-Y	18	207
37	Y-BR	44	308
38	BR-Y	19	208
39	Y-SL	45	309
40	SL-Y	20	209
41	V-BL	46	310
42	BL-V	21	210
43	V-O	47	311
44	O-V	22	211
45	V-G	48	312
46	G-V	23	212
47	V-BR	49	313
48	BR-V	24	213
49	V-SL	50	300
50	SL-V	25	200

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Processor Interface Cable Pinout

Table 2-9 shows the pinout for the Processor Interface Cable

Table 2-9. Processor Interface Cable Pinout

Signal Name	Processor (P1) (Amphenol Connector)	AUX (J1)	TERM (J3)	DCE (J2)	Modem (P2)
ACC48A	40	19			
AP (alarm in)	2	26			
AP2 (alarm in)	27	27			
EXTALMA	5	48			
EXTALMB	30	23			
XFER48	38	36			
MOD-CTS	21				5
MOD-DCD	46				8
MOD-DSR	8				6
MOD-DTR	7				20
MOD-GRD	20				1 & 7
MOD-RTS	34				4
MOD-RXD	33				3
MOD-TXD	45				2
TERM-CTS	9		5		
TERM-DTR	47		20		
TERM-GRD	35		1 & 7		
TERM-RXD	10		3		
TERM-TXD	22		2		
CDR-CTS	49			5	
CDR-DCD	24			8	
CDR-DSR	12			6	
CDR-DTR	37			20	
CDR-GRD	23			1 & 7	
CDR-RXD	36		3	3	
CDR-TXD	48		2	2	
GRD	25, 50	1-7, 11-17, 44-46	1, 7	1, 7	1, 7

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Table 2-10.   Port Circuit Pack Lead Designations

Cross-Connect Pin	TN742/B TN747B TN753 TN769 TN2147 TN465	TN754 TN726	TN760/B TN760C TN760D	TN762/B	TN763 TN763B TN763C	TN735	TN767B TN464E	TN746/B TN2183	TN2224
1	T.1		T.1	T.1	T.1	T.1	C_5	T.1	T.1
2	R.1		R.1	R.1	R.1	R.1		R.1	R.1
3		TXT.1	T1.1	TXT.1	SZ.1	BT.1	C_ENAB	T.2	T.2
4		TXR.1	R1.1	TXR.1	SZ1.1	BR.1		R.2	R.2
5		PXT.1	E.1	PXT.1	S.1	LT.1	C_SYNC*	T.3	T.3
6		PXR.1	M.1	PXR.1	S1.1	LR.1		R.3	R.3
7	T.2		T.2	T.2	T.2	T.2	C2D-DATA	T.4	T.4
8	R.2		R.2	R.2	R.2	R.2	RDATA*	R.4	R.4
9		TXT.2	T1.2	TXT.2	SZ.2	BT.2	TDATA*		T.5
10		TXR.2	R1.2	TXR.2	SZ1.2	BR.2	TRSYSNC		R.5
11		PXT.2	E.2	PXT.2	S.2	LT.2	GRD		T.6
12		PXR.2	M.2	PXR.2	S1.2	LR.2	SCLK*		R.6
13	T.3		T.3	T.3	T.3	T.3			T.7
14	R.3		R.3	R.3	R.3	R.3			R.7
15		TXT.3	T1.3	TXT.3	SZ.3	BT.3			T.8
16		TXR.3	R1.3	TXR.3	SZ1.3	BR.3	PAHER*		R.8
17		PXT.3	E.3	PXT.3	S.3	LT.3		T.5	T.9
18		PXR.3	M.3	PXR.3	S1.3	LR.3	C_48V	R.5	R.9
19	T.4		T.4	T.4	T.4	T.4		T.6	T.10
20	R.4		R.4	R.4	R.4	R.4		R.6	R.10
21		TXT.4	T1.4	TXT.4	SZ.4	BT.4	C_P2SCLK	T.7	T.11
22		TXR.4	R1.4	TXR.4	SZ1.4	BR.4	LI (RX)	R.7	R.11
23		PXT.4	E.4	PXT.4	S.4	LT.4	LO* (TX)	T.8	T.12
24		PXR.4	M.4	PX4.4	S1.4	LR.4	LBACK1	R.8	R.12
25	T.5		T.5	T.5	T.5	T.5	GND	T.9	T.13
26	R.5		R.5	R.5	R.5	R.5	C_5V	R.9	R.13
27		TXT.5	T1.5	TXT.5	SZ.5	BT.5		T.10	T.14
28		TXR.5	R1.5	TXR.5	SZ1.5	BR.5		R.10	R.14
29		PXT.5	E.5	PXT.5	S.5	LT.5		T.11	T.15
30		PXR.5	M.5	PXR.5	S1.5	LR.5	C_RST	R.11	R.15
31	T.6		T.6	T.6	T.6	T.6		T.12	T.16
32	R.6		R.6	R.6	R.6	R.6		R.12	R.16
33		TXT.6	T1.6	TXT.6	SZ.6	BT.6	RDATA		T.17
34		TXR.6	R1.6	TXR.6	SZ1.6	BR.6	TDATA		R.17
35		PXT.6	E.6	PXT.6	S.6	LT.6	TRSYNC		T.18
36		PXR.6	M.6	PXR.6	S1.6	LR.6	GRD		R.18
37	T.7		T.7	T.7	T.7	T.7	SCLK		T.19
38	R.7		R.7	R.7	R.7	R.7			R.19
39		TXT.7	T1.7	TXT.7	SZ.7	BT.7			T.20
40		TXR.7	R1.7	TXR.7	SZ1.7	BR.7			R.20

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Table 2-10. Port Circuit Pack Lead Designations — *Continued*

Cross-Connect Pin	TN742/B TN747B TN753 TN769 TN2147 TN465	TN754 TN726	TN760/B TN760C TN760D	TN762/B	TN763 TN763B TN763C	TN735	TN767B TN464E	TN746/B TN2183	TN2224
41		PXT.7	E.7	PXT.7	S.7	LT.7	GRD	T.13	T.21
42		PXR.7	M.7	PXR.7	S1.7	LR.7		R.13	R.21
43	T.8		T.8	T.8	T.8	T.8	C_PRES*	T.14	T.22
44	R.8		R.8	R.8	R.8	R.8		R.14	R.22
45		TXT.8	T1.8	TXT.8	SZ.8	BT.8		T.15	T.23
46		TXR.8	R1.8	TXR.8	SZ1.8	BR.8	DC2_DATA	R.15	R.23
47		PXT.8	E.8	PXT.8	S.8	LT.8	LI* (RX)	T.16	T.24
48		PXR.8	M.8	PXR.8	S1.8	LR.8	LO (TX)	R.16	R.24
49	GRD	GRD	GRD	GRD	GRD	GRD	LBACK2	GRD	GRD
50	GRD	GRD	GRD	GRD	GRD	GRD	GRD	GRD	GRD

* Denotes high side of line.

Table 2-11. DS1 Interface Cable H600-307 (and C6C)

50-Pin			15-Pin		
Pin	Color	Designation	Pin	Color	Designation
02	W-BL				
03	BL-W				
47	W-G	LI (High)	11	W-G	LI (High)
22	G-W	LI	03	G-W	LI
48	W-BR	LO	09	W-BR	LO
23	BR-W	LO (High)	01	\BR	LO (High)
49	W-SL	LOOP2	06	W-SL	LOOP2
24	SL-W	LOOP1	05	SL-W	LOOP1

All other pins are empty.

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Table 2-12 shows the pinouts for the TN2185 ISDN-BRI 4-wire S Interface.

Table 2-12. TN2185 ISDNBRI — 4-Wire S Interface Pinout

Port	Signal	Cross-Connect Pin	Color	Amphenol Pin	Backplane Pin
1	TXR.1	1	W-BL	26	102
	TXT.1	2	BL-W	01	002
	PXT.1	3	W-O	27	103
	PXR.1	4	O-W	02	003
2	TXR.2	5	W-G	28	104
	TXT.2	6	G-W	03	004
	PXT.2	7	W-BR	29	105
	PXR.2	8	BR-W	04	005
3	TXR.3	9	W-SL	30	106
	TXT.3	10	SL-W	05	006
	PXT.3	11	R-BL	31	107
	PXR.3	12	BL-R	06	007
4	TXR.4	13	R-O	32	108
	TXT.4	14	O-R	07	008
	PXT.4	15	R-G	33	109
	PXR.4	16	G-R	08	009
5	TXR.5	17	R-BR	34	110
	TXT.5	18	BR-R	09	010
	PXT.5	19	R-SL	35	111
	PXR.5	20	SL-R	10	011
6	TXR.6	21	BK-BL	36	112
	TXT.6	22	BL-BK	11	012
	PXT.6	23	BK-O	37	113
	PXR.6	24	O-BK	12	013
7	TXR.7	25	BK-G	38	302
	TXT.7	26	G-BK	13	202
	PXT.7	27	BK-BR	39	303
	PXR.7	28	BR-BK	14	203
8	TXR.8	29	BK-SL	40	304
	TXT.8	30	SL-BK	15	204
	PXT.8	31	Y-BL	41	305
	PXR.8	32	BL-Y	16	205

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Table 2-13. Circuit Pack and Auxiliary Equipment Classifications

Analog Line (8)	2-Wire Digital & Analog Line (16)	Data Line & Digital Line 4-Wire	Digital Line 2-Wire 24 Ports	Hybrid Line	MET Line	AUX Trunk	Central Office Trunk	Central Office Trunk 3-Wire	DID/DIOD Trunk	Tie Trunk	DS1 Tie Trunk	Four Port DIOD
TN467	TN2149	TN726B	TN2224	TN762	TN735	TN417	TN429	TN2199	TN429	TN478	TN483	TN2184
TN432	TN2135	TN754B		TN762B		TN763	TN493		TN2139	TN458	TN722	
TN431	TN468B	TN564B				TN763D	TN422		TN459B	TN449	TN767	
TN411B	TN448	TN413					TN421		TN436B	TN760D	TN722B	
TN742	TN746						TN438B		TN753	TN760C	TN464F	
TN769	TN746B						TN447		TN2146	TN434		
	TN2181						TN465C		TN414	TN415		
	TN2183						TN747B					
							TN2138					
							TN2147C					
							TN2148					

1. DID means Direct Inward Dialing

2. DIOD means Direct Inward Outward Dialing

3. MET means Multibutton Electronic Telephone

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Table 2-14. Circuit Pack and Auxiliary Equipment Leads (Pinout Charts)

Color	Connector Pin Numbers	Analog Line 8 ports	2-Wire Digital Line and Analog Line 16 ports	Data Line and Digital Line 4-wire	Digital Line 2-Wire 24 Ports	Hybrid Line	MET Line	AUX Trunk	CO Trk.	CO Trunk 3-wire	DID/DIOD Trunk	Tie Trk.	DS1 Tie Trunk	ISDN BRI Line 4-wire	ISDN BRI Line 2-wire	Packet Data Line	Four Port DIOD
W-BL	26	T1	T1		T1	V1T1	T1	T1	T1	A1	T1	T1		PXR1	T1	TXT1	T1
BL-W	01	R1	R1		R1	V1R1	R1	R1	R1	B1	R1	R1		PXT1	R1	TXR1	R1
W-O	27		T2	TXT1	T2	CT1	TXT1	SZ1				T11		TXT1	T2	PXT1	
O-W	02		R2	TXR1	R2	CR1	TXR1	SZ11				R11		TXR1	R2	PXR1	
W-G	28		T3	PXT1	T3	P-1	PXT1	S1		C1	T2	E1		PXR2	T3	TXT2	T2
G-W	03		R3	PXR1	R3	P+1	PXR1	S11			R2	M1		PXT2	R3	TXR2	R2
W-BR	29	T2	T4		T4	V1T2	T2	T2	T2	A2		T2		TXT2	T4	PXT2	
BR-W	04	R2	R4		R4	V1R2	R2	R2	R2	B2		R2		TXR2	R4	PXR2	
W-S	30			TXT2	T5	CT2	TXT2	SZ2				T12		PXR3	T5	TXT3	
S-W	05			TXR2	R5	CR2	TXR2	SZ12				R12		PXT3	R5	TXR3	
R-BL	31			PXT2	T6	P-2	PXT2	S2				E2		TXT3	T6	PXT3	
BL-R	06			PXR2	R6	P+2	PXR2	S12		C2		M2		TXR3	R6	PXR3	
R-O	32	T3			T7	V1T3	T3	T3	T3	A3	T3	T3		PXR4	T7	TXT4	T3
O-R	07	R3			R7	V1R3	R3	R3	R3	B3	R3	R3		PXT4	R7	TXR4	R3
R-G	33			TXT3	T8	CT3	TXT3	SZ3				T13		TXT4	T8	PXT4	
G-R	08			TXR3	R8	CR3	TXR3	SZ13				R13		TXR4	R8	PXR4	
R-BR	34		T5	PXT3	T9	P-3	PXT3	S3				E3		PXR5	T9	TXT5	
BR-R	09		R5	PXR3	R9	P+3	PXR3	S13		C3		M3		PXT5	R9	TXR5	
R-S	35	T4	T6		T10	V1T4	T4	T4	T4	A4	T4	T4		TXT5	T10	PXT5	T4
S-R	10	R4	R6		R10	V1R4	R4	R4	R4	B4	R4	R4		TXR5	R10	PXR5	R4
BK-BL	36		T7	TXT4	T11	CT4	TXT4	SZ4				T14		PXR6	T11	TXT6	
BL-BK	11		R7	TXR4	R11	CR4	TXR4	SZ14				R14		PXT6	R11	TXR6	
BK-O	37		T8	PXT4	T12	P-4	PXT4	S4				E4		TXT6	T12	PXT6	

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Table 2-14. Circuit Pack and Auxiliary Equipment Leads (Pinout Charts)

Color	Connector Pin Numbers	Analog Line 8 ports	2-Wire Digital Line and Analog Line 16 ports	Data Line and Digital Line 4-wire	Digital Line 2-Wire 24 Ports	Hybrid Line	MET Line	AUX Trunk	CO Trk.	CO Trunk 3-wire	DID/ DIOD Trunk	Tie Trk.	DS1 Tie Trunk	ISDN BRI Line 4-wire	ISDN BRI Line 2-wire	Packet Data Line	Four Port DIOD
O-BK	12		R8	PXR4	R12	P+4	PXR4	S14				M4		TXR6	R12	PXR6	
BK-G	38	T5	T9		T13	V1T5			T5		T5			PXR7		TXT7	
G-BK	13	R5	R9		R13	V1R5			R5		R5			PXT7		TXR7	
BK-BR	39		T10	TXT5	T14	CT4								TXT7		PXT7	
BR-BK	14		R10	TXR5	R14	CR4								TXR7		PXR7	
BK-S	40		T11	PXT5	T15	P-5								PXR8		TXT8	
S-BK	15		R11	PXR5	R15	P+5								PXT8		TXR8	
Y-BL	41	T6	T12		T16	V1T6			T6		T6			TXT8		PXT8	
BL-Y	16	R6	R12		R16	V1R6			R6		R6			TXR8		PXR8	
Y-O	42			TXT6	T17	CT6								PXR9		TXT9	
O-Y	17			TXR6	R17	CR6								PXT9		TXR9	
Y-G	43			PXT6	T18	P-6								TXT9		PXT9	
G-Y	18			PXR6	R18	P+6								TXR9		PXR9	
Y-BR	44	T7			T19	V1T7			T7		T7			PXR10		TXT10	
BR-Y	19	R7			R19	V1R7			R7		R7			PXT10		TXR10	
Y-S	45		T13	TXT7	T20	CT7								TXT10		PXT10	
S-Y	20		R13	TXR7	R20	CR7								TXR10		PXR10	
V-BL	46		T14	PXT7	T21	P-7								PXR11		TXT11	
BL-V	21		R14	PXR7	R21	P+7								PXT11		TXR11	
V-O	47	T8	T15		T22	V1T8			T8		T8		LI*	TXT11		PXT11	
O-V	22	R8	R15		R22	V1R8			R8		R8		LI	TXR11		PXR11	
V-G	48			TXT8	T23	CT8							LO	PXR12		TXT12	
G-V	23			TXR8	R23	CR8							LO*	PXT12		TXR12	

Table 2-14. Circuit Pack and Auxiliary Equipment Leads (Pinout Charts)

Color	Connector Pin Numbers	Analog Line 8 ports	2-Wire Digital Line and Analog Line 16 ports	Data Line and Digital Line 4-wire	Digital Line 2-Wire 24 Ports	Hybrid Line	MET Line	AUX Trunk	CO Trk.	CO Trunk 3-wire	DID/ DIOD Trunk	Tie Trk.	DS1 Tie Trunk	ISDN BRI Line 4-wire	ISDN BRI Line 2-wire	Packet Data Line	Four Port DIOD
V-BR	49		T16	PXT8	T24	P-8							LBACK2	TXT12		PXT12	
BR-V	24		R16	PXR8	R24	P+8							LBACK1	TXR12		PXR12	
V-S	50																
S-V	25																

†The wire colors in this chart apply only to B25A and A25B cables. H600-307 cable colors are not shown.

The following abbreviations apply for all circuit packs unless otherwise noted:

T,R   PBX transmit voice   T Tip (A) Green
T1,R1 PBX receive voice   R Ring (B) Red
M   PBX transmit signal   S Sleeve
E   PBX receive signal   PX PBX transmit
TX   Terminal transmit
LI, LI* Digital Trunk IN   LO, LO* Digital Trunk OUT

The following wire colors apply in the above chart:
    W White   S   Slate (Grey)
    BL Blue   R   Red
    O Orange   BK   Black
    G Green   Y   Yellow
    BR Brown   V   Violet

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