Lucent Technologies
Bell Labs Innovations

DEFINITY
Enterprise Communications Server
Release 5

Installation for Adjuncts and Peripherals

555-230-125
Comcode 107959124
Issue 1
April 1997

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 A Statement. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. 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. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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-13283-MF-E. Refer to "Federal Communications Commission Statement" in "About This Book" for more information regarding Part 68.

Canadian Department of Communications (DOC) Interference Information
This digital apparatus does not exceed the Class A limits for radio noise emissions set out in the radio interference regulations of the Canadian Department of Communications.

Le Présent Appareil Nomérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A préscrites dans le reglement sur le brouillage radioélectrique édicté par le ministére des Communications du Canada.

Trademarks
See the preface of this document.

Ordering Information
Call: Lucent Technologies Publications Center
Voice 1 800 457-1235 International Voice 317 361-5353
Fax 1 800 457-1764 International Fax 317 361-5355
Write: Lucent Technologies Publications Center
P.O. Box 4100
Crawfordsville, IN 47933
Order: Document No. 555-230-125
Comcode 107959124
Issue 1, April 1997
For additional documents, refer to the section in "About This Document" entitled "Related Documents."

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, contact the Lucent Technologies Publications Center.

European Union Declaration of Conformity
The "CE" mark affixed to the DEFINITY® equipment described in this book indicates that the equipment conforms to the following European Union (EU) Directives:

- Electromagnetic Compatibility (89/336/EEC)
- Low Voltage (73/23/EEC)
- Telecommunications Terminal Equipment (TTE) i-CTR3 BRI and i-CTR4 PRI

For more information on standards compliance, contact your local distributor.

Comments
To comment on this document, return the comment card at the front of the document.

Acknowledgment
This document was prepared by Product Documentation Development, Lucent Technologies, Denver, CO.

Contents

About This Book vii

- Related Documents viii
- How to Order Documentation viii
- How to Comment on This Document ix
- Trademarks ix
- Standards Compliance x
- LASER Product xi
- Electromagnetic Compatibility Standards xi
  - European Union Standards xii
- Where to Call for Technical Support xiii
- Anti-Static Protection xiii
- Security Issues xiii
- Federal Communications Commission Statement xiv
  - Part 68: Statement xiv

1 Install Adjunct and Peripheral Equipment 1-1

- Install Auxiliary Equipment 1-1
  - Console and DCP Terminal Power Supplies 1-1
  - External Equipment 1-3
- External Ringing 1-5
- Queue Warning Indicator 1-5
- 1145B Power Supply 1-6
  - Wall-Mounting Plates 1-7
  - Mount the 1146B Power Distribution Unit 1-9
  - Battery Mounting/Wiring 1-9
  - Install the Expanded Power Distribution Unit 1-10
  - Power Up and Test 1-12
  - Wire the 1146B Power Distribution Unit 1-13
  - Reset LEDs on Power Distribution Unit 1-14
- 1151A and 1151A2 Power Supplies 1-16
  - Important Safety Instructions 1-16
  - The 1151A and 1151A2 Power Supplies 1-17

Contents

Connect the 1151A or 1151A2 Power Supplies 1-18

- 909A/B Universal Coupler 1-19
- Loudspeaker Paging and Music-on-Hold 1-22

Loudspeaker Paging without Paging Adapter 1-22

Loudspeaker Paging Access (Without Universal Coupler) 1-24

Loudspeaker Paging with Universal Coupler 1-24

- PagePac Paging System 1-26

PagePac 20 1-26

PagePac VS 1-28

PagePac 50/100/200 1-29

- Music-on-Hold, Dial Dictation, or Recorded Announcement Access 1-30

Registered Music Source 1-31

Non-Registered Music Source 1-31

- Malicious Call Trace 1-34
- Asynchronous Data Units 1-36

Asynchronous Data Units 1-36

- Data Modules 1-37

7400A/B/C/D and 8400B Plus Data Modules 1-37

Install Data Modules Into Data Mounting 1-42

- Data Module Equipment Connections 1-44

7400B Data Module 1-44

7500B Data Module 1-46

8400B Plus Data Module 1-47

- DEFINITY AUDIX R3 and LAN Gateway System 1-48

Single-Carrier Cabinet 1-48

Multi-Carrier Cabinet 1-50

Single-Carrier and Multi-Carrier Installation 1-52

Install the Terminal(s) 1-53

- PRI Converters (SCC) 1-64

PRI to DASS and PRI to DPNSS Converters 1-64

PRI to BRI Converter 1-65

- PRI Converters (MCC) 1-66

PRI to DASS and PRI to DPNSS Converters 1-66

Contents

- PRI to BRI Converter 1-67
- ■ ExpressRoute 1000 Data Module 1-68
- ■ DEFINITY DCP Extender (Stand Alone) 1-69
- ■ DEFINITY DCP Extender (Rack Mount) 1-72
- ■ Call Management System 1-73
- ■ Distributed Communications System 1-74
- ■ Property Management System Interface 1-75
  - Printers and Terminals 1-76
- ■ Call Detail Recording Unit Interface 1-77
  - Cabling to Call Detail Recording Output Device 1-78
- ■ Wideband Endpoints 1-80
  - Non-Signaling Configuration 1-80
  - Signaling Configuration 1-81
- ■ PassageWay Adapter 1-83
- ■ PC Console 1-84
  - PC Console (United States) 1-84
  - PC Console (Non-United States) 1-85
- ■ Integrated Channel Service Unit Module 1-86
  - Install the 120A CSU Module 1-86
  - Install the 120A Module 1-89
- ■ CONVERSANT System 1-91
- ■ Two-Wire DCP Endpoint 1-92
  - Two-Wire Voice Terminals 1-92
  - Two-Wire Voice and Data Terminals 1-93
- ■ Busy Tone Disconnect 1-94
- ■ External Modem 1-95
- ■ T1 ATM Interface 1-96
- ■ ESPA Radio Paging 1-97
- ■ 3150 Channel Service Unit 1-98
- ■ DS1 CPE Loopback Jack (T1 Only) 1-101
  - Loopback Jack Installation 1-101
  - Administration 1-102
  - DS1 Span Test 1-102
  - Loopback Jack Fault Isolation Procedures 1-105
  - Configurations Without a Smart Jack 1-110

Contents

Configurations Using Fiber Multiplexers 1-113
Operating Characteristics 1-113
- Multimedia Call Handling (MMCH) Endpoints 1-114
  - Connect the Endpoints 1-114
  - Administer the System 1-114
  - Setup and Test the MMCH Installation 1-115
- Connect Stratum 3 Clock 1-122
  - Set Clock Options 1-122
  - Cabling the Stratum 3 Clock 1-123
  - Stratum 3 Clock Wiring Installation Procedure 1-125
- DEFINITY Wireless Business System 1-128
- Cellular Business System 1-128
- Forum PCM 1-128
- Connector and Cable Diagrams (Pinout Charts) 1-129

2 Setting Options 2-1
- Data Module Option Settings 2-1
  - DCS Switch Settings 2-1
- 7400D Data Module Option Settings 2-3
  - Set 7400D Options 2-4
  - Modem Pooling (Combined) Option Settings 2-4
  - 7400A and 7400B Option Settings 2-5
- External Modem Option Settings 2-7
- Printer Option Settings 2-10
- Call Detail Recording Option Settings 2-13
- AUDIX Interface Option Settings 2-15
- TN760D Tie Trunk Option Settings 2-16
- TN464E/F Option Settings 2-19
- 212-Type Modem Switch Settings 2-20

IN Index IN-1

About This Book

This document provides procedures and information for installing adjunct and peripheral equipment. This document emphasizes Release 5 and later systems.

This document covers information related to DEFINITY ECS Release 5, and includes all incremental releases up to and including Release 5.4. For details about changes for Release 5.4, refer to *DEFINITY Enterprise Communications Server Release 5.4.0, Change Description*.

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

- The term *Release 5* is a general term encompassing all Release 5 and later systems.
- The word *system*, is a general term encompassing Release 5 and includes references to the DEFINITY Enterprise Communications Server
- DEFINITY Systems are called: Release 5; Release 5vs; Release 5si, and Release 5r
- All occurrences of Release 5si, and Release 5si + memory are called Release 5si unless a specific configuration is required to differentiate between product offerings
- Information in this document is applicable for G3V4 through Release 5, unless otherwise specified
- DEFINITY Enterprise Communications Server is abbreviated DEFINITY ECS
- All physical dimensions in this book are in English (Foot Pound Second) (FPS) followed by metric (Centimeter Grams Second) (CGS) in parenthesis. Wire gauge measurements are in AWG followed by the diameter in millimeters in parenthesis.

Related Documents

The following documents are useful for system-related information:

- *DEFINITY Enterprise Communications Server Release 5 System Description Pocket Reference*, 555-230-207
- *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r,* 555-230-122
- *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5vs/si,* 555-230-123
- *AT&T Network and Data Connectivity Reference*, 555-025-201
- *BCS Products Security Handbook*, 555-025-600
- *DEFINITY Wireless Business System Users Guide,* 555-232-105
- *DEFINITY Wireless Business System Installation and Test Guide,* 555-232-102
- *DEFINITY Wireless Business Systems System Interface*, 555-232-108
- *DEFINITY Enterprise Communications Server Release 5 Installation and Test for Multi-Carrier Cabinets,* 555-230-112
- *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description,* 555-230-522
- *DEFINITY Enterprise Communications Server Release 5 Upgrades and Additions for R5vs/si,* 555-230-120
- *DEFINITY Enterprise Communications Server Release 5 Upgrades and Additions for R5r,* 555-230-121
- *Forum Personal Communications Manager Release 1.1 Support Guide,* 585-232-101
- *Personal Communicator - 2055 User Guide*, 585-232-702SPL
- *Getting Started with Forum Manager*, 585-232-501

How to Order Documentation

In addition to this book, other description, installation and test, maintenance, and administration documents are available. A complete list of DEFINITY documents is in the *Business Communications System Publications Catalog*, 555-000-010.

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

How to Comment on This Document

Lucent Technologies welcomes your feedback. Please fill out the reader comment card at the front of this manual and return it. Your comments are of great value and help 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 5 Installation for Adjuncts and Peripherals*, 555-230-125.

Trademarks

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

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

The following products are trademarked by their appropriate vendor:

- Audichron® is a registered trademark of Audichron Company
- LINX™ is a trademark of Illinois Tool Works, Inc.
- Music Mate® is a registered trademark of Harris Corporation
- PagePac® is a registered trademark of Harris Corporation, Dracon Division
- PORTA™ Systems is a trademark of PORTA Systems Corporation
- 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
- Zone Mate® is a registered trademark of Harris Corporation

Standards Compliance

The equipment in this document complies with the following (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
- UL1459
- UL 1950
- CSA C222 Number 225
- TS001

LASER Product

The DEFINITY ECS may contain a Class 1 LASER device if single-mode fiber optic cable is connected to a remote Expansion Port Network (EPN). The LASER device operates within the following parameters:

Power Output: -5 dBm
Wavelength: 1310 nm
Mode Field Diameter: 8.8 microns
CLASS 1 LASER PRODUCT
IEC 825 1993

CAUTION:
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Contact your Lucent Technologies representative for more information.

Electromagnetic Compatibility Standards

This product complies with and conforms to the following:

- Limits and Methods of Measurements of Radio Interference Characteristics of Information Technology Equipment, EN55022 (CISPR22), 1993
- EN50082-1, European Generic Immunity Standard
- FCC Parts 15 and 68
- 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:

- 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

European Union Standards

Lucent Technologies Business Communications Systems 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) and Telecommunication Terminal Equipment (TTE) Directive (91/263/EEC) and with i-CTR3 Basic Rate Interface (BRI) and i-CTR4 Primary Rate Interface (PRI) as applicable. The “CE” mark is applied to the following Release 5 products:

- Global AC powered Multi-Carrier Cabinet (MCC)
- DC powered Multi-Carrier Cabinet (MCC) with 25 Hz ring generator
- AC powered Single-Carrier Cabinet (SCC) with 25 Hz ring generator
- AC powered Compact Single-Carrier Cabinet (CSCC) with 25 Hz ring generator
- Enhanced DC Power System

Where to Call for Technical Support

Use the following telephone numbers for the region in which the system is being installed:

Region	Phone Number
Streamlined Implementation (for missing equipment)	1-800-772-5409
USA/Canada Technical Service Center	1-800-248-1234
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
Business Communications Europe	441-252-391-789
Eastern/Central Europe	361-270-5160
Latin/Central America & Caribbean - ITAC	1-303-538-4666
DEFINITY Helpline	1-800-225-7585
Lucent Technologies Toll Fraud Intervention	1-800-643-2353
Lucent Technologies Technical Service Center	1-800-242-2121
Lucent Technologies Corporate Security	1-800-822-9009

Anti-Static Protection

CAUTION:
When handling circuit packs or any components of a DEFINITY System, always wear an authorized wrist ground strap. Connect the strap to an approved ground such as an unpainted metal surface on the DEFINITY System.

Security Issues

To ensure the customer of the greatest security possible, 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 Enterprise Communications Server (ECS) software. Advise customers that their existing passwords expire 24 hours after the upgrade. Also explain that the new passwords must conform to strict requirements.

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

This 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. On the rear of this equipment is a label 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.

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 1-800-248-1234. 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.

Install Adjunct and Peripheral Equipment

1

The wiring procedures are similar for most DEFINITY peripheral and adjunct equipment. This section provides wiring examples of these similar procedures. These are examples only and actual wiring procedures may vary at each site.

Install Auxiliary Equipment

Console and DCP Terminal Power Supplies

Local and Phantom Power

A 302C1 console's maximum distance from the system is shown in Table 1-1.

Table 1-1. Attendant Console Cabling Distances

Enhanced Attendant Console (302C1)	24 AWG Wire (0.5106 mm)		26 AWG Wire (0.4049 mm)	
	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, its optional 26A1 or 24A1 selector console, and DCP terminals derive their power from an auxiliary power source. One console can connect to Release 5vs and three consoles can connect to each cabinet stack or Release 5r. Each cabinet can derive auxiliary power from the system and through the auxiliary cable located in the trunk/auxiliary field. Auxiliary power for a primary attendant console should be provided 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 adapter
- Bulk power supply 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

External Equipment

The following external equipment represents some of the items that can connect to the DEFINITY ECS System. Contact your Lucent Technologies representative for more information about connecting additional equipment.

Queue Warning Indicator

CONVERSANT® Voice Information System

PC Console

External Ringing

The system provides access to a relay contact to operate a customer-provided ringing device. The circuitry and power source are customer-provided.

Asynchronous Data Units

— Property Management System (PMS)

— Call Detail Recording (CDR) equipment

Data Modules

Data Modules provide an interface to:

— AUDIX

— Call Management System (CMS)

— Distributed Communications System (DCS)

— Property Management System (PMS)

— Customer-provided terminals and computers

— Call Detailed Recording (CDR)

909A/B Universal Coupler

The universal coupler is used when equipment is not FCC-registered (or equivalent):

- Music-On-Hold
- Deluxe Queuing
- Loudspeaker Paging Access
- Recorded Telephone Dictation Trunk
- Recorded Announcement Systems
- AUX Trunk Paging (with or without background music)
- Malicious Call Trace (MCT)

Model 15A Announcement System

The 15A system is FCC-registered and does not require a voice coupler. See the following PEC codes:

PEC 63240	1 chassis and 1 BLD1 circuit pack
PEC 63241	1 BLD1 circuit pack
PEC 63242	1 chassis and 1 BLD2 circuit pack
PEC 63243	1 BLD2 circuit pack
PEC 63246	1 remote record module

PagePac Paging System

Three models are available:

- PagePac 20
- PagePac VS
- PagePac 50/100/200

External Ringing

Connections for external ringing are at an information outlet. The system side of the MDF is connected to a TN2183 (or equivalent) Analog Line circuit pack.

NOTE:
A maximum of three devices can be connected to one analog line circuit pack port.

1. Wire the ringing device to the information outlet.
2. Administer per *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

Queue Warning Indicator

The connections for the queue warning indicator are the same as external ringing. An AC indicator (lamp) such as a 21C49 can be used in a Uniform Call Distribution/Direct Departmental Calling (UCD/DDC) queue.

The lamp is connected to an information outlet. The system side of the MDF is connected to an analog line circuit pack located in a port carrier.

1. Wire the queue warning indicator to the information outlet.
2. Administer per *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

1145B Power Supply

The 1145B closet power arrangement provides an uninterruptible -48 VDC power source with battery and 1145B distribution unit for ISDN/DCP, terminal equipment, adjuncts, and other customer-supplied equipment. During AC power interruptions, batteries automatically provide power to the load.

A manual switch on the distribution unit allows the user to redirect reserve power to outputs 1 through 32 so all outputs are provided battery reserve power.

NOTE:
The switch must be set to the 1-32 position.

The 1145B/1146B is a -48V power supply with 200 Watts total output. Each output circuit is current limited by a thermistor that limits the maximum output to 12 Watts. Each 1145B output has an LED to indicate the status of the thermistor. If the LED is on, the thermistor has a short on that power pair.

Not all outputs can simultaneously provide 12 Watts. The average power per output cannot exceed 6.25 Watts (200/32 = 6.25). The 1145B is designed to power one ISDN terminal or DCP adjunct per output. The maximum number of terminals or adjuncts is 32. The 1145B is required for installations outside the United States.

Auxiliary power (local or bulk) is always required for the following:

- Attendant Console 302C1
- Any 8520 terminal
- Any 7500- or 8500-series terminal with an asynchronous data module
- Any 7500-series terminal whether in passive bus, or point to point (one per BRI port)
- Any 8510 terminal in passive bus or with an asynchronous data module (unless the 8510 will not be used to support data or video)
- PassageWay adapter interface
- Any 8400-series terminal
- Any 7400-series terminal

Figure 1-1 shows how the standard power supply and wall-mounting plates fit together. Figure 1-2 shows the expanded power supply components (power distribution unit and “T” cable).

Wall-Mounting Plates

The top plate is used for mounting the back-up battery. The bottom plate is used to mount the power supply and distribution units. The plates can be rack-mounted using standard rack-mounting brackets.

1. Locate one plate directly below the other one such that the AC power cord (6.5 feet or 2 meters) reaches the electrical outlet from a power supply mounted on the bottom plate. Both plates should be located so the raised letters are right side up.

   NOTE:
   A maximum of four power supplies can be powered from one dedicated 110 VAC, 20 Amp (or 230 VAC, 15 Amp) feeder. Use only unswitched receptacles (receptacles not connected to a wall switch).

2. Secure the wall mounting plates to a standard 3/4 inch (2 cm) thick plywood mounting board. Each mounting plate comes with four #10 x 1/2-inch wood screws.
3. The 1145B Power Supply is snap-fit onto the bottom wall mounting plate without tools.
4. An installer-provided insulated ground wire, 16 AWG (#12) (1.2 mm) or greater, is required to connect the power supply frame ground lug to an approved ground. The frame ground screw is located next to the AC receptacle, to the left of the unit.
5. Mark the Unit Number and Connectivity information on the front label next to the LEDs.

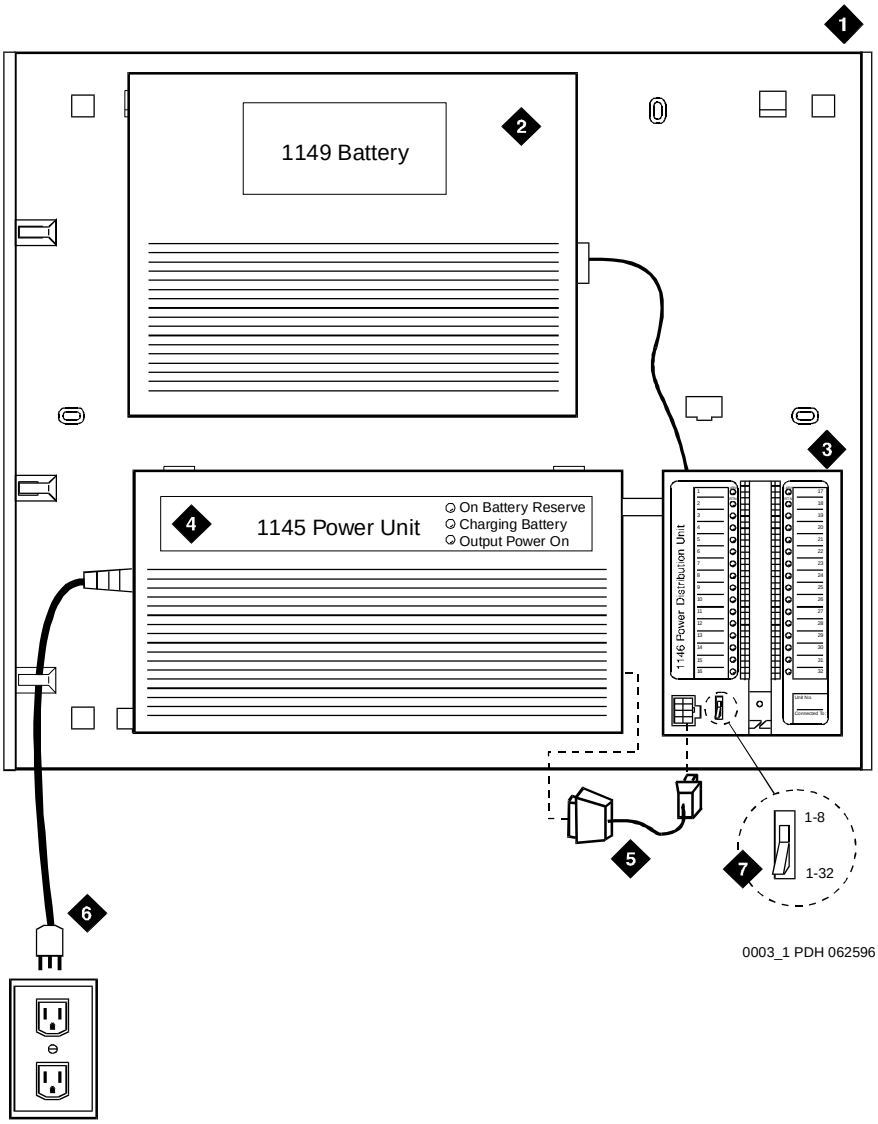

Figure Notes

1. Wall Mounting Plate
2. Battery (1149B Shown)
3. 1146B Power Distribution Unit
4. 1145B Power Unit
5. Power Cable
6. Unswitched Outlet (120 VAC, 20 Amp or 230 VAC, 15 Amp)
7. Battery Backup Switch Setting

Figure 1-1. 1145B/1146B Mounting Arrangement

Mount the 1146B Power Distribution Unit

1. Insert and securely tighten the two supplied #8-32 x 1/2-inch shoulder screws (they have an unthreaded section at the top) into the top holes designated for 1146B Power Distribution Unit on the bottom plate. Mount the unit on these two shoulder screws, using the key holes on the back of the unit.
2. Secure the unit by inserting the #8-32 x 1 inch screw through the bottom of the unit (just above the wire clips) into the plate and tighten.
3. Set the battery back-up switch option to the 1-32 (down) position to provide battery back-up to all outputs.
4. Connect the power distribution unit to the power supply with the power cable. Refer to the power supply's right-hand label to locate the output power connection.

Battery Mounting/Wiring

Three types of back-up batteries are used; the 1148B, the 1149B, and the 1147B. Table 1-2 provides the rating and PEC code of each battery.

Table 1-2. Back-Up Battery PEC Codes

Battery	Rating	PEC Code
1148B	2.5 Amp Hour (AH)	24700
1149B	5 Amp Hour (AH)	24701
1147B	8 Amp Hour (AH)	24703

1. Insert (do not tighten) two #10-32 x 1/2-inch shoulder screws into the top designated battery holes on the wall mounting plate.
2. Place the keyhole slots in the battery bracket on these two screws. The battery cord exits from the right of the bracket. Make sure the label on the battery is visible. Tighten the screws securely.
3. Plug the battery cord into the power supply's right rear receptacle. The rear receptacle is indicated on the right label.

Install the Expanded Power Distribution Unit

A second power distribution unit can be installed to provide power to additional 8400-series and 8500-series terminals.

⚠ CAUTION:
Total power cannot exceed 200 Watts. The maximum ISDN terminal mixture is twenty four 7500-series and twenty four 8500-series terminals.

The maximum DCP terminal mixture is twenty four 7400-series and twenty four 8400-series or sixty four 8400-series terminals.

The following items are supplied with each expanded power distribution unit kit:

a. One 1146B Power Distribution Unit (comcode 107250995)

b. One “T” Cable (comcode 847529872)

c. Two #8-32 x 1/2-inch Shoulder Screws

d. One #8-32 x 1 inch Screw

e. One Spacer Bracket (comcode 847554441)

Refer to Figure 1-2 while installing the power distribution unit:

1. Set the spacer bracket onto the mounting plate and secure with the #8-32 x 1/2-inch shoulder screws. The spacer bracket is not shown in the figure but is installed behind the top power distribution unit.
2. Slide the keyhole slots in the power distribution unit over the shoulder screws.
3. Insert the #8-32 x 1 inch screw through the distribution unit, through the spacer bracket, and into the plate. The mounting hole is located just above the wire clip. Tighten the screw securely.
4. Set the battery back-up switch to the 1-32 (down) position.
5. Power-down the 1145B unit as described on the label on the side of the unit.
6. Remove the output power cable between the 1145B and the 1146B units. The cable will not be reused.
7. Connect the P1 connector end of the “T” cable to the bottom power distribution unit. Connect the P2 connector to the top distribution unit. Connect the P3 connector to the 1145B.
8. Power-up the 1145B as described on the label on the side of the unit.

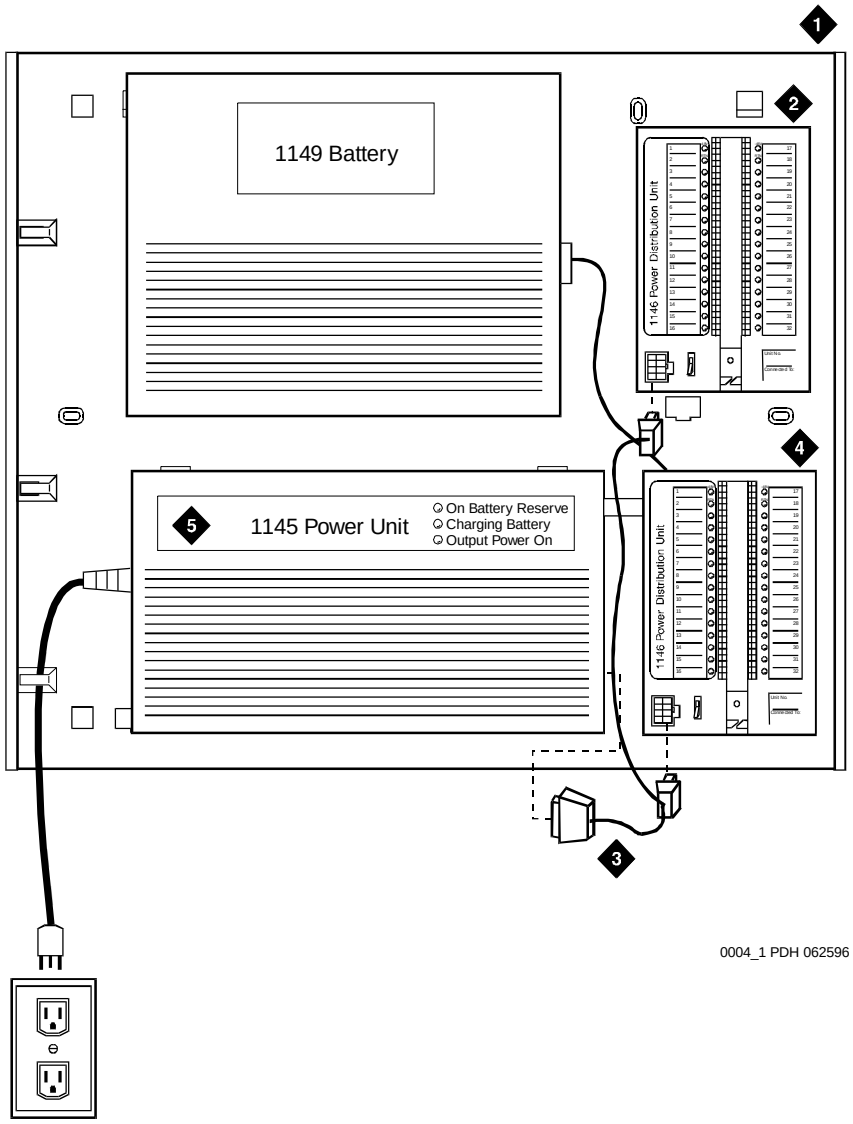

Figure Notes

1. Wall-Mounting Plate
2. Optional 1146B Power Distribution Unit
3. “T” Cable (H600-347-G7)
4. Standard 1146B Power Distribution Unit
5. 1145B Power Unit

Figure 1-2. Expanded Power Distribution Unit

Power Up and Test

The following table describes the meaning of the power supply LEDs when lit.

LED Color	Meaning
Green	Power Supply is providing power
Yellow	Battery is charging
Red	Power Supply is on battery reserve

1. Connect the AC power cord to the power supply and route the cord to an appropriate AC outlet using the clips provided on the unit.

   NOTE:
   A maximum of four power supplies can be powered from one dedicated 110 VAC, 20 Amp feeder. Use only unswitched receptacles.

2. Plug the cord into the outlet. This powers up the power supply.
3. Check AC operation of the 1145B Power Supply by monitoring the LEDs:

   PASS: Green and yellow LEDs at front of the unit should be lit together. Green means the power supply is providing power. Yellow means the battery is being charged. After the battery reaches full charge (maximum of 20 hours), the yellow LED should go out.

   FAIL: If either green or yellow LED is not lit after powering up, check the connections. Test the AC outlet. If power is available and the AC power cord and connections are good, replace the power unit.

4. Disconnect the AC plug on the power supply, this activates the DC supply.
5. Check DC (battery back-up) operation of the 1145B Power Supply by monitoring the LEDs:

   PASS: The red and green LEDs should be lit together. Red means the power supply is on battery back-up.

   FAIL: If either green or red LED is not lit after disconnecting AC power, check the connections. If the connections are good, replace the power unit or batteries.

6. Reconnect AC power to the power supply.

Wire the 1146B Power Distribution Unit

Wire endpoints to the 1146B while power from the 1145B is on. A red LED lights if its associated circuit is connected to shorted wiring or to a shorted terminal.

1. Install cross-connect jumpers (the label shows polarity) to Pins 7 and 8 of the appropriate information outlet. Route the wires through the clip provided on the unit. If a red LED is on, see *Reset LEDs on Power Distribution Unit*. See Figure 1-3.
2. Mark lead destinations on the label next to each connector. Also mark the unit number and connectivity information on the label.

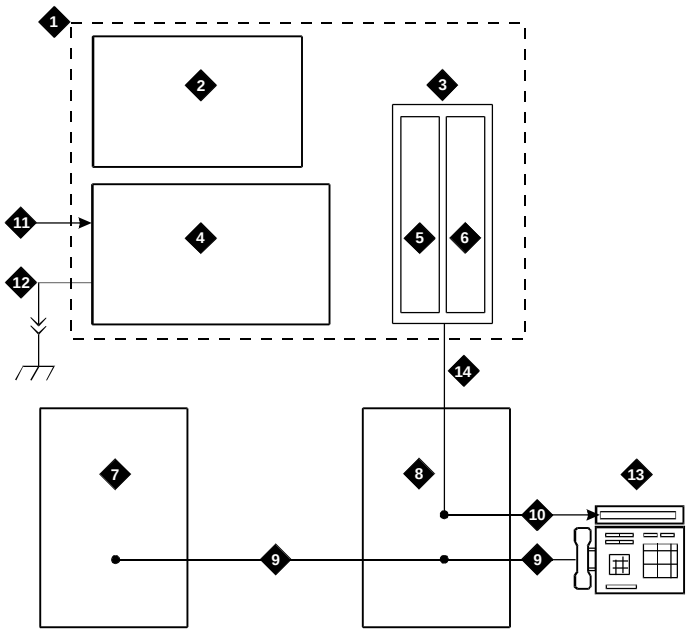

Figure Notes

1. Power Supply Kit
2. 2.5, 5.0, or 8.0 Amp Hour Battery
3. 1146B Distribution Unit
4. 1145B Power Supply
5. Circuits 1-16
6. Circuits 17-32
7. Port Circuit
8. Main Distribution Frame
9. Modular Cord
10. Pins 7 and 8 (Display Terminal Power)
11. AC Input
12. Installer-Provided Ground Wire
13. ISDN/ Display System Protocol Terminal
14. Circuits 1-32

Figure 1-3. Typical Wiring to a Terminal

Reset LEDs on Power Distribution Unit

A red LED next to any of the 32 power output connectors indicates a short circuit in the building wiring or the terminal equipment. To reset the LED:

1. Disconnect the terminal equipment from the wall jack.
2. If the LED goes off, the terminal equipment is faulty and must be replaced. If the LED is still lit, find and repair the short circuit in the building wiring.
3. Reconnect the terminal equipment to the wall jack and re-test terminal equipment operation.

WARNING:
Important safety instructions follow.

When operating this equipment, basic safety precautions must be followed to reduce the risk of fire, electric shock and personal injury, including the following:

- *Read and understand all instructions.*
- *Do not attach the power supply cord to building surfaces.*
- *For continued back-up protection and battery reliability, replace batteries every four years.*
- *Follow all warnings and instructions marked on the products.*
- *Clean products only with a dry rag.*
- *Do not use this product near water.*
- *For mounting security, follow all installation instructions when mounting product.*
- *Openings on top and bottom of power unit are provided for ventilation. Do not block or cover these openings. Do not exceed recommended environmental temperatures.*
- *Operate these products only from the type of power source indicated on the product labels.*
- *The power unit is equipped with a three wire grounding type plug; a plug having a third (grounding) pin. This plug will only fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace the outlet. Do not defeat the safety purpose of the grounding type plug.*
- *Do not allow anything to rest on or spill into the products.*
- *To reduce risk of fire and electrical shock, do not overload power outlets.*
- *Never push objects of any kind through the power supply or distribution unit slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electrical shock.*

- *To reduce risk of electric shock, do not disassemble these products. Return them for repair when needed. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock when the products are subsequently used.*
- *Power down the power unit (see label on power unit on how to do this) and refer servicing under the following conditions:*
  - *— If liquid has been spilled into any of the products*
  - *— If any of the products have been exposed to water*
  - *— If any of the products do not operate normally*
  - *— If any of the products have been dropped or damaged*
  - *— If any of the products exhibits a change in performance*
- *Do not attempt to recharge batteries on your own. The batteries may leak corrosive electrolyte or explode. The 1145B power unit recharges the batteries safely.*
- *Remove the batteries if the power unit will not be used for a long period of time (several months or more) since during this time the battery may leak.*
- *Discard discharged batteries as soon as possible. Discharged batteries are more likely to leak.*
- *Do not store batteries in high temperature areas. Batteries stored in a cold environment should be protected from condensation during storage and warming. Batteries should be stabilized at room temperature prior to use after cold storage. Do not install batteries if the manufacturing date on the label indicates that the batteries are more than six months old.*

1151A and 1151A2 Power Supplies

The 1151A and 1151A2 Power Supplies comply with the UL Standard UL 1459, second edition. Safety instructions follow the table of certifications.

Complies	UL 1459
Certified	CSA 22.2
Approved	EN6950
Approved	CE

Important Safety Instructions

Please read the following helpful tips. Retain these tips for later use.

When using this power supply, the following safety precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons.

- Read and understand all instructions.
- Follow all warnings and instructions marked on this power supply.
- This product can be hazardous if immersed in water. To avoid the possibility of electrical shock, do not use it near water.
- To reduce the risk of electric shock, do not disassemble this product except to replace battery.
- This product should be operated only from the type of AC power source indicated on the label. If you are not sure of the type of AC power being provided, contact a qualified service person.
- Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
- Do not overload wall outlets and extension cords as this can result in the risk of line or electric shock.
- Disconnect the cords on this product and refer servicing to qualified service personnel under the following conditions:
  - — When the power supply cord or plug is damaged or frayed.
  - — If liquid has been spilled into the product.
  - — If the product has been exposed to rain or water.
  - — If the product was dropped or the housing has been damaged.
  - — If the product exhibits a distinct change in performance.
  - — If the product does not operate normally by following the operating instructions.

The 1151A and 1151A2 Power Supplies

The 1151A and 1151A2 Power Supplies can be used to supply local power to ISDN-T 65xx, 75xx, 84xx, and 85xx series voice terminals connected to a system and to the DCP 7444 voice terminal or 302C Attendant Console that need auxiliary power for its display. The unit can supply power to adjunct equipment such as S201A and CS201A speakerphones or a 500A Headset Adapter attached to any currently manufactured analog, DCP, or ISDN-T voice terminal equipped with an adjunct jack.

CAUTION:
*The power supply can be used **only** with telecommunications equipment, indoors, and in a controlled environment.*

The power supply has a single output of -48 VDC, 0.4 Amps, and can operate from either a 120 VAC 60 Hz power source (105 to 129 VAC) or a 220/230/240 VAC 50 Hz power source (198 to 264 VAC). Input voltage selection is automatic. The output capacity is 19.2 Watts.

The power supply can be placed on a flat surface such as a desk. For wall-mounting, keyhole slots are provided on the bottom of the chassis.

CAUTION:
Do not locate the unit within six inches (15.25 cm) of the floor.

Connect the 1151A or 1151A2 Power Supplies

The 1151A is a standard (no battery backup) power supply unit. The 1151A2 is a battery backup version of the 1151A. Either power supply can support one telephone with or without an adjunct. The maximum loop range is 250 feet (76 meters). Two modular jacks are used. Power is provided on the PHONE jack, pins 7 and 8 (- and +, respectively).

The PHONE and LINE jacks are 8-pin female non-keyed 657-type jacks that can accept D4, D6, and D8 modular plug cables. Figure 1-4 shows a 1151A Power Supply. The 1151A2 looks similar.

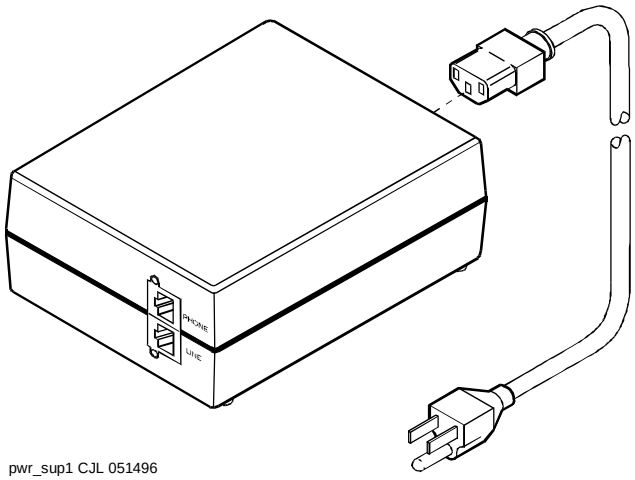

Figure 1-4. Typical 1151A Power Supply — Front

909A/B Universal Coupler

Figure 1-5 shows a typical 909A/B Universal Coupler. If the music source is FCC-registered (or equivalent) the 909A/B is not required. For installation and switch setting information, refer to *909A/909B Universal Coupler Installation Instructions*, (comcode 847369030).

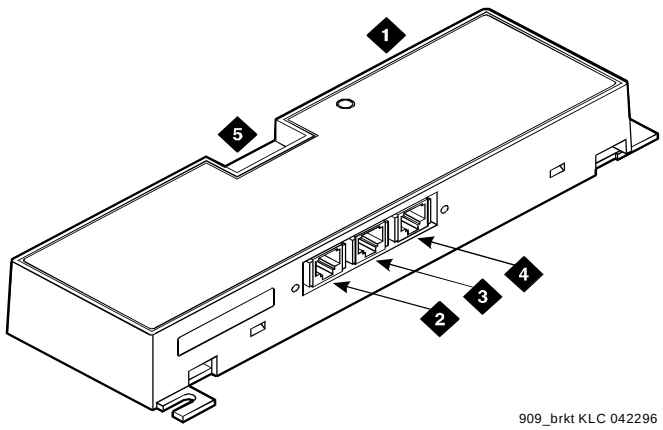

Figure Notes

1. 909A/B Universal Coupler
2. J1 8-Pin Modular Jack
3. J2 8-Pin Modular Jack
4. J3 6-Pin Modular Jack
5. DIP Switch Location

Figure 1-5. Typical 909A/B Universal Coupler

The 909A is the DC version of the coupler and -48 VDC power is supplied from cabinet power. The 909B is the AC powered version and power is supplied from a separate power supply (such as the KS-22911L2).

The DIP switches on the unit set:

- Protection/Paging selection — For AUX trunk paging and Malicious Call Trace, set to C2. Set the switch to C1 for all other applications.
- Output attenuation (-9 or -15 dBm) — Setting depends on output level of music source.
- Output impedance (8, 1.5k, and 50k Ohms) —This switch only requires setting if the Protection/Paging switch is set to C2 and the coupler is supplying background music to a customer-supplied paging amplifier.

The pinouts for J1, J2, and J3 are provided in Table 1-3, Table 1-4, and Table 1-5. Refer to these tables when connecting music or paging equipment.

Table 1-3. J1 Pin Assignments (System Connections)

Pin	Color	Designation	Description
1	White-Orange	—	Not Used
2	Orange	PG2/BZ2	Seizure control lead, connected to -48 VDC from the system or from the 909A/B when the Protection/Paging switch is set to C2, or to -48 VDC on the 909A/B when Protection/Paging switch is set to C1
3	White-Green	PG1/BZ1	Seizure control lead, connected to SZ lead from the AUX trunk when the Protection/Paging switch is set to C2, or to -48 VDC on the 909A/B when the Protection/Paging switch is set to C1
4	Blue	R	Ring lead
5	White-Blue	T	Tip lead
6	Green	BSY2/BY2	Busy/Busy-Out lead, connected to S1 lead from the AUX trunk
7	White-Brown	BSY1/BY1	Busy/Busy-Out lead, connected to S lead from the AUX trunk
8	Brown	—	Not Used

Table 1-4. J2 Pin Assignments (Accessory Connections)

Pin	Color	Designation	Description
1	White-Orange	CMS1/M1	Customer-supplied music source
2	Orange	CMS2/M2	Customer-supplied music source
3	White-Green	COS1	Remote Busy-Out control contact closure from music source
4	Blue	CR	Customer Ring lead
5	White-Blue	CT	Customer Tip lead
6	Green	COS2	Remote Busy-Out control contact closure from music source
7	White-Brown	CBS1/C1	Seizure indication provided to music source
8	Brown	CBS2/C2	Seizure indication provided to music source

CAUTION:
Damage to the 909A/B may occur if the cable is plugged into J3 ***before*** *all cross-connects are completed.*

Table 1-5. J3 Pin Assignments (Power Connections)

Pin	Color	Designation	Description
1, 3, 4, & 6	—	—	Not Used
2	Black	GRD	-48 RET or ground lead from system or from positive lead of power supply
5	Yellow	-48 VDC	-48 VDC from system or from negative lead of power supply

Figure 1-6 shows the physical locations of the pins for J1, J2, and J3.

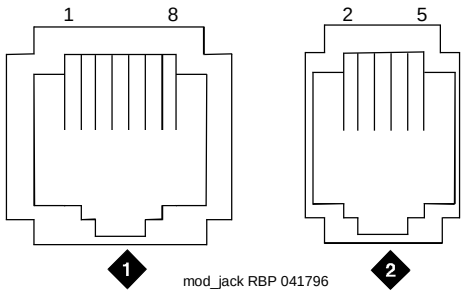

Figure Notes

1. J1 and J2 8-Pin Modular Jacks
2. J3 6-Pin Modular Jack

Figure 1-6. Typical Modular Jack Pinout

Loudspeaker Paging and Music-on-Hold

The Loudspeaker Paging feature provides a connection from a TN763B/C/D Auxiliary Trunk circuit pack (or equivalent) to a customer-supplied paging amplifier. The Music-on-Hold feature provides a connection from a TN2183 Analog Line circuit pack (or equivalent) or auxiliary trunk circuit pack to a customer-supplied music source.

Loudspeaker Paging without Paging Adapter

Figure 1-7 shows the connections for the Loudspeaker Paging feature. These connections are used when the loudspeaker interface equipment is not located in the equipment room. If the equipment is located in the equipment room, the information outlet is not required. The connections shown are for one zone.

Figure 1-7 shows connections from the music source to the loudspeaker system through a paging amplifier. The figure also shows connections to the loudspeaker system through a 909A/B coupler. A wiring block must be locally engineered.

NOTE:
If the loudspeaker paging system provides a talk-back microphone at the speakers, the microphone must be FCC approved (or equivalent) or a 909A/B Universal Coupler is required.

Refer to the tables at the end of this chapter for pinouts of the auxiliary trunk circuit pack.

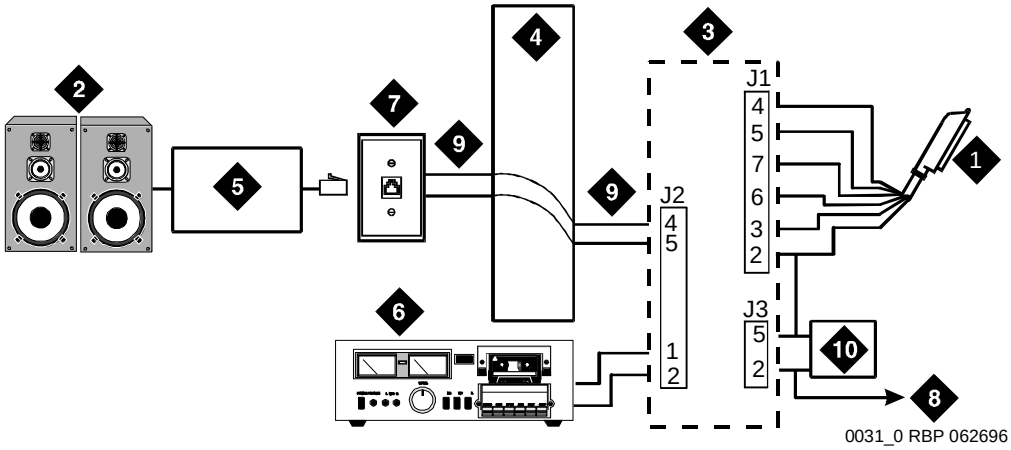

Figure Notes

1. 25-Pair Cable to TN763B/C/D Auxiliary Trunk Circuit Pack (SZ1 Connects to GRD on Key 10)
2. Loudspeaker System
3. 909A/B Universal Coupler (If Required)
4. Part of Main Distribution Frame (MDF)Circuits 1-16
5. Paging Amplifier
6. Music Source for Background Music Over Loudspeakers
7. 103A or Modular Wall Jack
8. To SZ1 on TN763 Connector
9. Tip and Ring Wires
10. -48 VDC Power Supply for 909B

Figure 1-7. Connections for Loudspeaker Paging

Loudspeaker Paging Access (Without Universal Coupler)

1. Determine port assignment of paging zone(s) from Loudspeaker Paging Form.
2. At the MDF, locate the connecting block and terminals assigned to the selected port.
3. On the locally engineered wiring block, place a strap between terminals S and SZ. Place a strap between terminals S1 and SZ1.
4. Install patch cord/jumper wires at the MDF.
5. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the paging amplifier (to the loudspeaker system).
6. Install loudspeaker equipment per the manufacturer's instructions.
7. Administer per *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

Loudspeaker Paging with Universal Coupler

Access to loudspeaker paging is provided by an information outlet. The system side of the MDF is connected to a 909A/B Universal Coupler. Provisions must be made for obtaining the DC power required by the 909A/B Coupler. An 1151A, 1151A2, or other approved -48V power supply can be used.

Six leads (T, R, SZ, SZ1, S, and S1) connect the adapter to an auxiliary trunk circuit pack located in a port carrier.

1. Determine port assignment of paging zone(s) from Loudspeaker Paging Form.
2. Identify carrier slot and label both ends of an A25D (male to male) cable.
3. Connect a cable from the 909A/B to the system side of the MDF. A wiring block must be locally engineered.
4. Refer to Table 1-3, Table 1-4 and Table 1-5 to make connections from the 909A/B Universal Coupler to the wiring blocks.

CAUTION:
Damage to the 909A/B may occur if the cable is plugged into J3 ***before*** *all cross-connects are completed.*

5. On the 909A/B Universal Coupler:
   - Connect seizure control voltage of from -9 to -60 Volts to the PG2/BZ2 connection (pin 2 of J1). Switching voltage to the PG2/BZ2 connection can be from the 909's -48 Volt supply.
   - Connect a -48 VDC power source to the -48 and GRD terminals on the 909A/B.
6. Install patch cord/jumper wires at the MDF.
7. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the loudspeaker system.
8. Install loudspeaker equipment per the manufacturer's instructions.
9. Connect an approved -48 VDC power source to the **-48** and **GRD** terminals (pins 5 and 2, respectively, of J3).
10. Administer per *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

PagePac Paging System

PagePac 20

The PagePac 20 is a 20 watt amplifier that can be used alone or with a Zone-Mate 9 or 39 to provide multiple paging zones. If the PagePac 20 is used alone, a 909A/B Universal Coupler is required. See Figure 1-8.

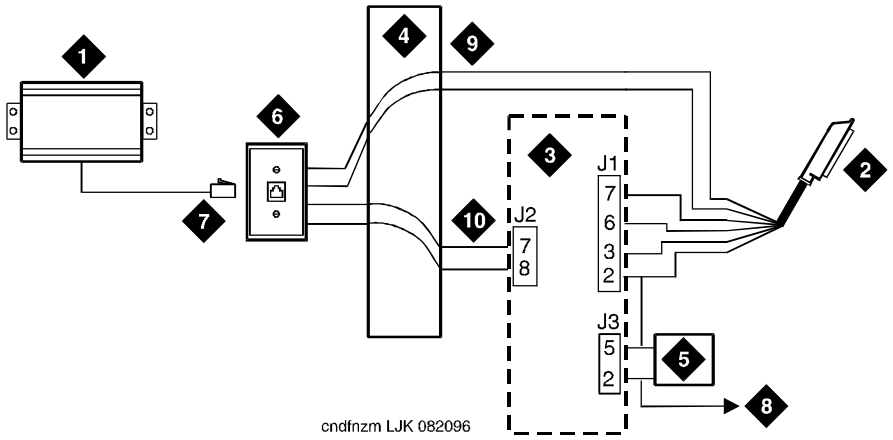

Figure Notes

1. PagePac 20 PowerMate
2. 25-Pair Cable to TN763 Auxiliary Trunk Circuit Pack (T, R, S, S1, SZ, SZ1)
3. Universal Coupler
4. Part of Main Distribution Frame (MDF)
5. Power Supply for Universal Coupler
6. 103A or Modular Wall Jack
7. 4-Pair Modular Cord
8. To SZ1 on TN763 Connector
9. Tip and Ring Wires
10. CBS1/C1 and CBS2/C2

Figure 1-8. Connections for PagePac 20 Without Zone-Mate

- A wiring block must be locally engineered if a 909A/B is used.

Figure 1-9 shows a PagePac 20 with a Zone-Mate 9 or 39 incorporated into the PagePac 20. The 909A/B is not required when a Zone-Mate is installed.

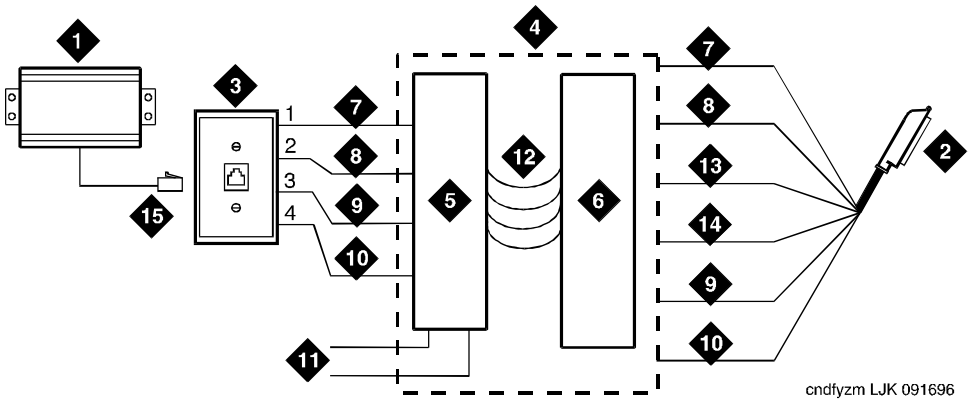

Figure Notes

1. PagePac 20 PowerMate (With Zone- Mate 9 or 39)
2. B25A 25-Pair Cable to TN763B/C/D Auxiliary Trunk Circuit Pack
3. 103A or Modular Wall Jack
4. Part of Main Distribution Frame (MDF)
5. Station Side (Yellow Field)
6. System Side (Purple Field)
7. Tip (Green)
8. Ring (Red)
9. S
10. S1
11. SZ and SZ1 Are Not Used on Station Side
12. 110P6A Patch Cord or Jumpers
13. SZ
14. SZ1
15. 4-Pair Modular Cord

Figure 1-9. Connections for PagePac 20 With Zone-Mate

- A wiring block must be locally engineered.

PagePac VS

The PagePac VS is a 35 watt amplifier that provides up to three paging zones. The PagePac VS does not require a 909A/B Universal Coupler. See Figure 1-10.

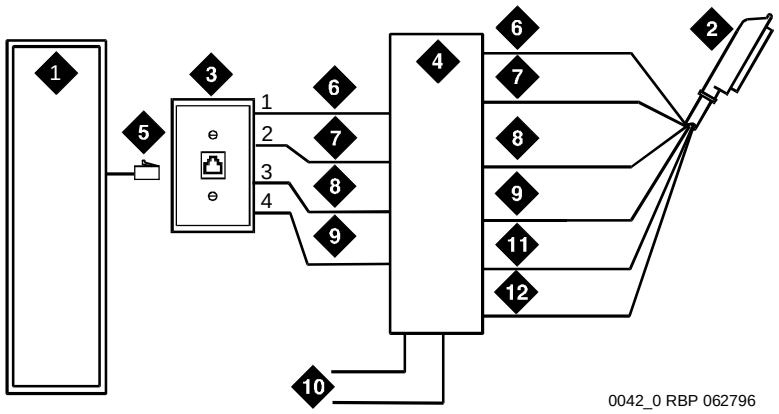

Figure Notes

1. PagePac VS
2. 25-Pair Cable to Auxiliary Trunk Circuit Pack
3. 103A or Modular Wall Jack
4. Part of Main Distribution Frame (MDF)
5. 4-Pair Modular Cord
6. Tip (Green)
7. Ring (Red)
8. S (C Connection on Key 1)
9. S1 (NO Connection on Key 1)
10. SZ and SZ1 Are Not Used on Key 1
11. SZ
12. SZ1

Figure 1-10. Connections for PagePac VS

- If a Universal Interface Card (UIC) is not provided on the PagePac VS, all connections are made to TB2.
- If a DB9 connector is used to connect to a Personal Computer (PC), use an ED3P001-70 G115 cable to convert DB9 to DB25.

PagePac 50/100/200

The 50/100/200 PagePac paging system can be wall-mounted. The unit provides three output wattages: 50, 100 and 200. See Figure 1-11. If the PagePac 50/100/200 Amplicenter is used alone, a 909A/B Universal Coupler is required.

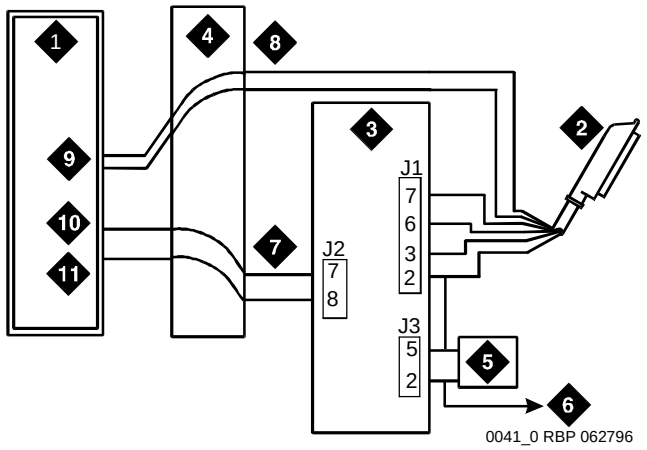

Figure Notes

1. PagePac 50/100/200 System
2. 25-Pair Cable to Auxiliary Trunk Circuit Pack (T, R, S, S1, Sz, SZ1)
3. 909A/B Universal Coupler
4. Part of Main Distribution Frame (MDF)
5. Power Supply for Universal Coupler
6. To SZ1 on TN763 Connector
7. CBS1/C1 and CBS2/C2
8. Tip and Ring Wires
9. Page In Connections
10. Music/Page Connection
11. Signal Ground Connection

Figure 1-11. Connections for PagePac 50/100/200 System

- A wiring block must be locally engineered.

Music-on-Hold, Dial Dictation, or Recorded Announcement Access

Figure 1-12 shows the connections for music-on-hold, dial dictation, or recorded announcement features when the music source is Federal Communications Commission (FCC) registered (or equivalent). Figure 1-13 on page 1-32 shows the connections when the music source is not FCC-registered (or equivalent).

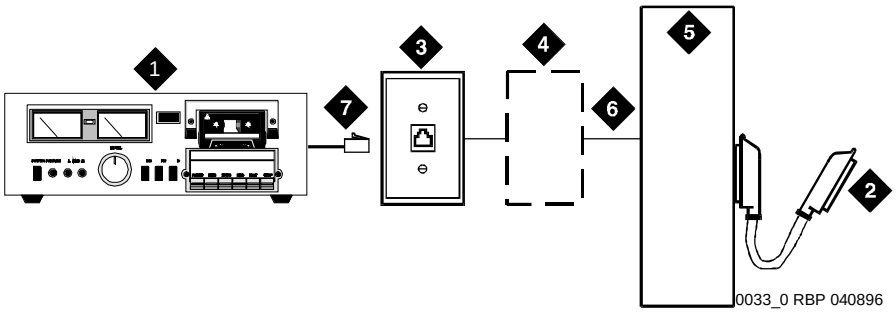

Figure Notes

1. Music Source
2. A25D 25-Pair Cable (Male-to-Male) to Auxiliary Trunk Circuit Pack
3. 103A or Modular Wall Jack
4. 122A Music Adapter (If Required) (Primarily France)
5. Part of Main Distribution Frame (MDF)
6. Tip (Green) and Ring (Red)
7. 4-Pair Modular Cord

Figure 1-12. Typical Registered Equipment Connections (Auxiliary Access)

1. If the music source is registered, the system side of the MDF connects directly to the system.
2. If the music source is not registered, the system side of the MDF connects to a 909A/B Universal Coupler.

NOTE:
Use the following connection instructions when the music source is not located in the equipment room. If the music source is located in the equipment room, do not route the connections through the information outlet.

Registered Music Source

Refer to Figure 1-12 to install a registered music source.

1. Determine feature port assignment from Feature-Related System Parameters Form.
2. Install music source per the manufacturer's instructions.
3. Install patch cord/jumper wires at the MDF.
4. Administer per *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

Non-Registered Music Source

Refer to Figure 1-13 to install a non-registered music source.

1. Determine feature port assignment from Feature-Related System Parameters Form.
2. Install the music source per the manufacturer's instructions.
3. Connect a cable from the assigned port carrier slot to J1 on the 909A/B. A wiring block must be locally engineered.
4. At the 909A/B Universal Coupler:
   - Connect the T-lead at pin 5 and the R-lead at pin 4 of J1 on the 909A/B to the corresponding leads from the TN2183
   - Connect the CT-lead at pin 5 and the CR-lead at pin 4 of J2 on the 909A/B to the Main Distribution Frame (MDF)
   - Install patch cord/jumper wires at the MDF to connect Tip and Ring to the information outlet at the music source
   - Set the Protection/Paging Switch to C1
5. Connect a modular cord from the information outlet to the music source.
6. Connect -48V to pin 5 and -48V RET to pin 2 of J3 on the 909A/B. The power source may be an 1151A, 1151A2, or other approved power supply.
7. Administer per *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

Figure 1-13 shows a system connecting to a non-registered customer-supplied music source via auxiliary access.

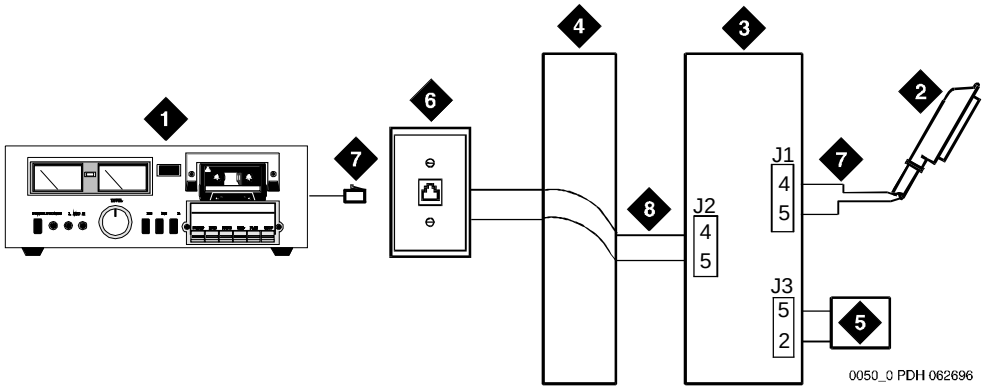

Figure Notes

1. Customer-Supplied Music Source
2. A25D 25-Pair Cable (Male-to-Male) to Auxiliary Trunk Circuit Pack
3. 909A/B Universal Coupler
4. Part of Main Distribution Frame (MDF)
5. Power Supply for Universal Coupler
6. 103A or Modular Wall Jack
7. 4-Pair Modular Cord
8. Tip and Ring Wires

Figure 1-13. Typical Non-Registered Equipment Connections (Auxiliary Access)

- A wiring block must be locally engineered.

Figure 1-14 shows a system connecting to a non-registered customer-supplied music source via an analog line.

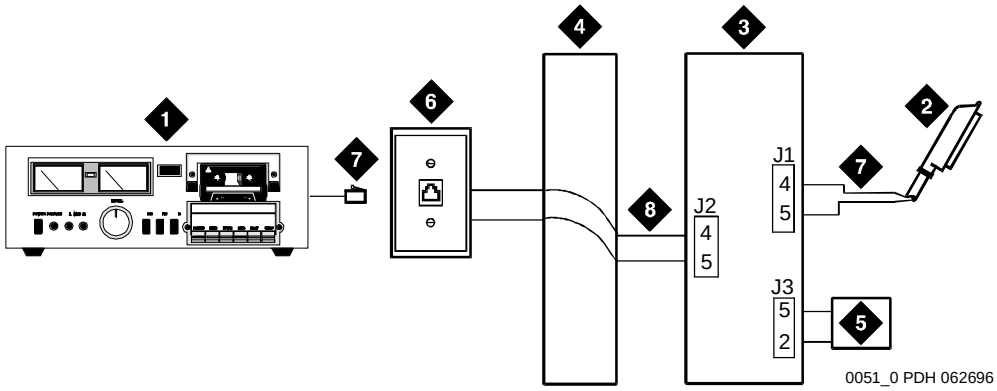

Figure Notes

1. Customer-Supplied Music Source
2. 25-Pair Cable to Analog Line Circuit Pack
3. 909A/B Universal Coupler
4. Part of Main Distribution Frame (MDF)
5. Power Supply for Universal Coupler
6. 103A or Modular Wall Jack
7. 4-Pair Modular Cord
8. Tip and Ring Wires

Figure 1-14. Connections to Non-Registered Music-on-Hold via Analog Line

- A wiring block must be locally engineered.

Malicious Call Trace

The malicious call trace voice recorder connects directly to the Tip and Ring connections of a TN763/D Auxiliary Trunk circuit pack. See Figure 1-15. The 909A/B Universal Coupler provides seizure control to the recorder.

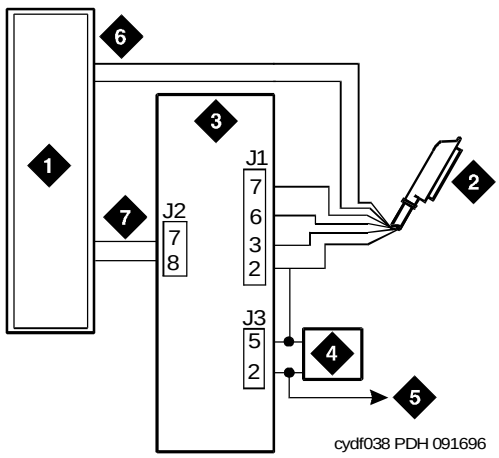

Figure Notes

1. Malicious Call Trace Voice Recorder
2. 25-Pair Cable (T, R, S, S1, Sz, SZ1) to TN763/D Auxiliary Trunk Circuit Pack
3. 909A/B Universal Coupler
4. Power Supply for Universal Coupler
5. To SZ1 on TN763 Connector
6. Tip and Ring Wires
7. CBS1/C1 and CBS2/C2

Figure 1-15. Malicious Call Trace

- A wiring block must be locally engineered.
- The 909A ships with one DW4B-DE cable and two DW8B-SE cables.
- The 909B ships with one KS-22911L2 Power Supply, one DW4B-DE cable, and two DW8B-SE cables.

1. Determine the port assignment of the recorder from the Malicious Call Tracing Form.
2. Install the 909A/B Universal Coupler on a vertical surface.

3. Connect the SZ, SZ1, S, and S1 leads from the 909A/B to an auxiliary trunk circuit pack.
    a. Tip and Ring connect from the voice recorder to the auxiliary trunk circuit pack (J1 on the 909A/B).
    b. CBS1/C1 and CBS2/C2 connect from the voice recorder to J2 on the 909A/B.
4. On the 909A/B Universal Coupler:
    a. Connect seizure control voltage of from -9 to -60 Volts to the PG2/BZ2 connection (pin 2 of J1). Switching voltage to the PG2/BZ2 connection can be from the 909A/B -48 VDC supply.
    b. Connect SZ1 to the ground lead of the DC power source used for PG2/BZ2.
    c. Set S1 to the “C2” position. Set S2 position 6 to “OPEN”.
    d. Connect an approved -48 VDC power source to the **-48** and **GRD** terminals (pins 5 and 2, respectively, of J3 on the 909A/B).
5. Administer per *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

Asynchronous Data Units

Figure 1-16 shows a typical Z3A2 ADU assembly (without a cable). The addition of the male to female EIA-232 cable makes the assembly a Z3A1. The addition of a female to female EIA-232 cable makes the assembly a Z3A4.

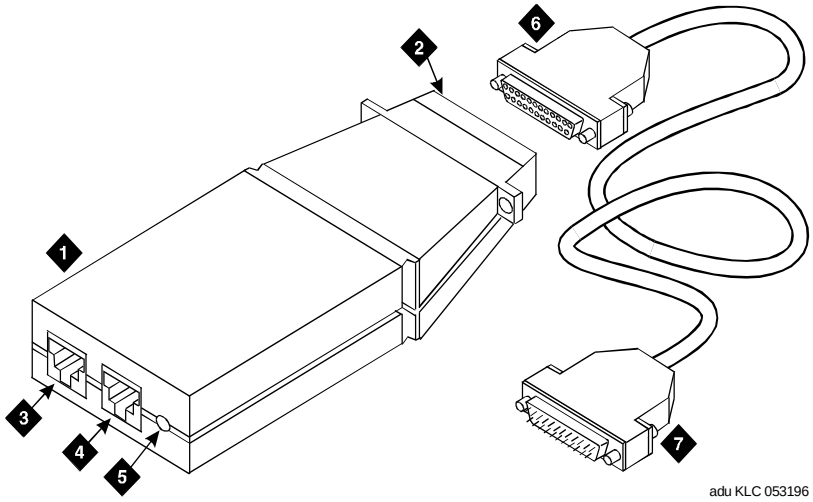

Figure Notes

1. Z3A2 Asynchronous Data Unit (ADU)
2. 25-Pin Male D-Connector (EIA-232-D) to DTE Equipment
3. Wall Jack Connector (To Data Line Circuit Pack (TN726) and Analog Line Circuit Pack (TN2183) or Equivalent)
4. Telephone Jack (To Analog Telephone)
5. Originate/Disconnect Jack
6. Female Connector on EIA-232-D Cable
7. Male Connector

Figure 1-16. Z3A2 Asynchronous Data Unit (ADU)

Refer to the tables at the end of this chapter for the pinouts of the data line circuit pack (TN726) and TN2183 Analog Line circuit pack (or equivalent) in the cabinet.

Data Modules

7400A/B/C/D and 8400B Plus Data Modules

The interface between the system and many types of data equipment is provided by a data module connected to a digital line circuit pack (such as a TN754B). The following types of equipment can be connected by a data module:

- AUDIX Adjunct
- AUDIX Terminal
- Call Management System (CMS)
- Distributed Communications System (DCS)
- Property Management System (PMS)
- System Printer or Journal Printer
- Customer-supplied terminals and host computers
- Call Detail Recording (CDR) devices

Data Module Types

Figure 1-17 shows the front and rear of a 7400A Asynchronous Data Module. This unit is used for connecting data processing or DCE equipment (such as modem pooling) to the system. The 7400A does not provide voice functions. The options for the 7400A are set from the front panel interface. Refer to *7400A Data Module User's Manual*, 555-020-706, for procedures.

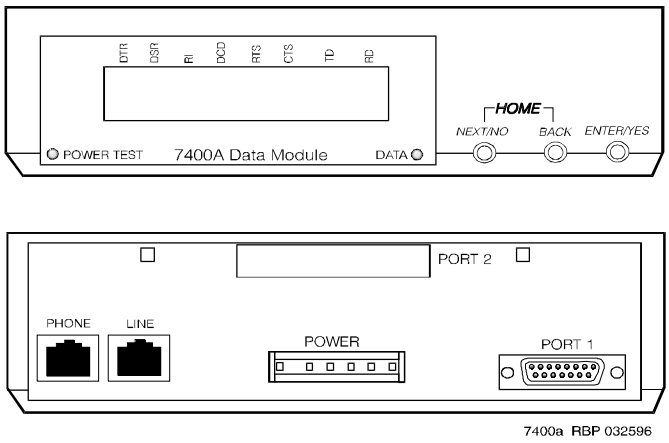

Figure 1-17. 7400A Data Module

Figure 1-18 shows the front and rear of a 7400B Asynchronous Data Module. An EIA-232-D standard interface connects voice terminals and 602A1 CallMaster voice terminals to the 7400B. A standard DCP interface connects the 7400B to the system. Refer to *AT&T 7400B Data Module User's Guide*, 555-020-707, *before* installing the unit.

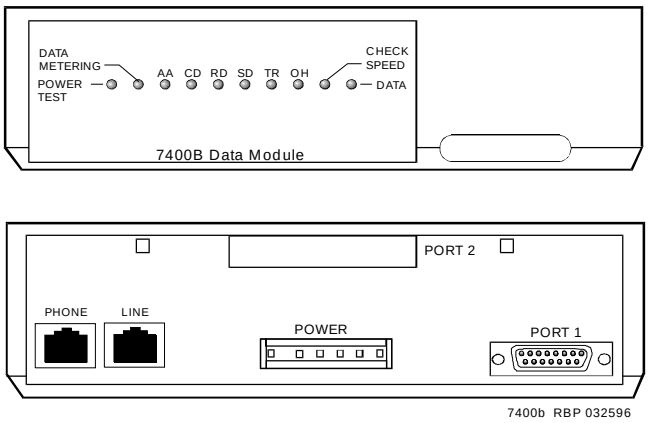

Figure 1-18. 7400B Data Module

Figure 1-19 shows the front and rear of a 7400C Synchronous Data Module. Use the 7400C for video conferencing, Group 4 FAX, and LAN interconnect. The options for the 7400C are set from the front panel interface. Refer to *DEFINITY Communications System High Speed Link User's Guide*, 555-020-711, for procedures.

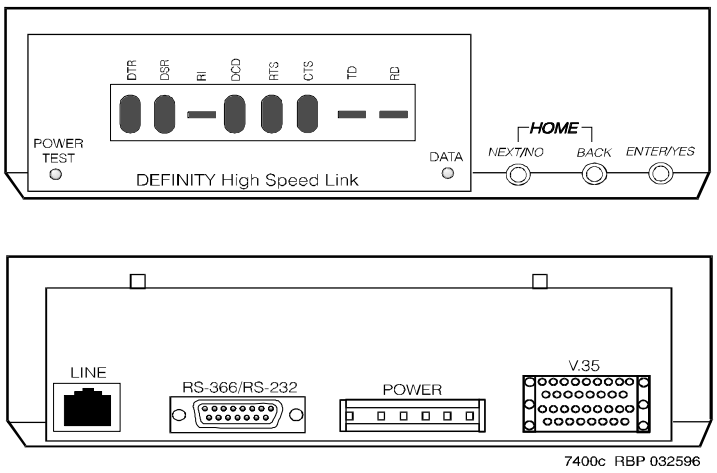

Figure 1-19. 7400C Data Module (High Speed Link)

Figure 1-20 shows the front and rear of a 7400D Synchronous Data Module. 7400D is a full duplex 4-wire unit for the DCP environment. The 7400D can be used in DEFINITY AUDIX, Call Management System (CMS), and Distributed Communications System (DCS) low speed synchronous data applications. The options for the 7400D are set from the front panel interface. Refer to *AT&T 7400D Data Module User's Guide*, 555-020-712, for procedures.

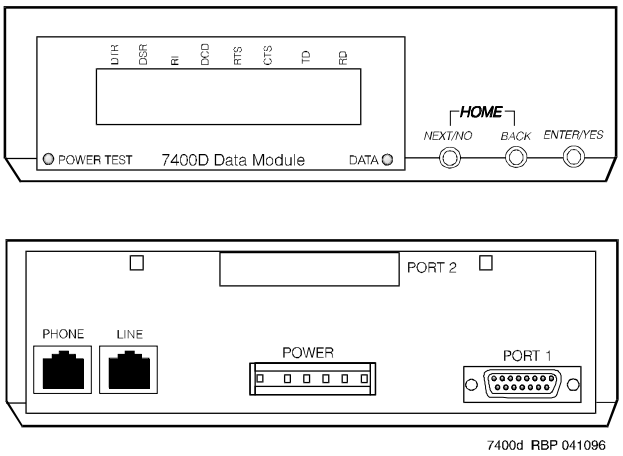

Figure 1-20. 7400D Data Module

Figure 1-21 shows the rear of a 8400B Plus Asynchronous Data Module. The unit provides integrated voice and data communications over standard twisted-pair wiring. The unit can emulate a Hayes-compatible interface for standard Personal Computer (PC) communication. The options for the 8400B Plus are set from the rear panel interface. Refer to *DEFINITY Communications System User's Guide*, 555-020-709, for procedures.

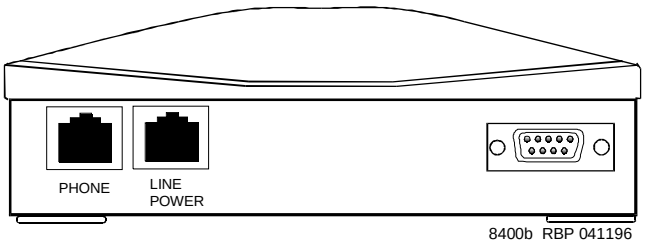

Figure 1-21. 8400B Plus Data Module

Figure 1-22 shows the front and rear of a 7500B ISDN Data Module. The unit is intended for connecting DTE and DCE equipment to the ISDN network. The 7500 supports EIA-232C and V.35 interfaces and RS-366 Automatic Calling Unit. The 7500 has no voice functions.

The options for the 7500 are set from the front panel interface. Refer to *Integrated Services Digital Network (ISDN) 7500B Data Module User's Manual*, 555-021-717, for detailed procedures.

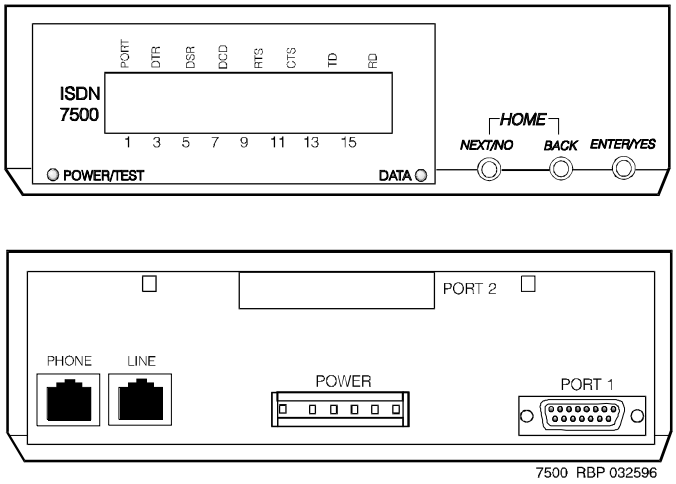

Figure 1-22. 7500B ISDN Data Module

Mode Selection

The data modules can be set for either DCE or DTE mode by changing the position of the Electronic Industries Association (EIA) connector board inside each unit. See Figure 1-23.

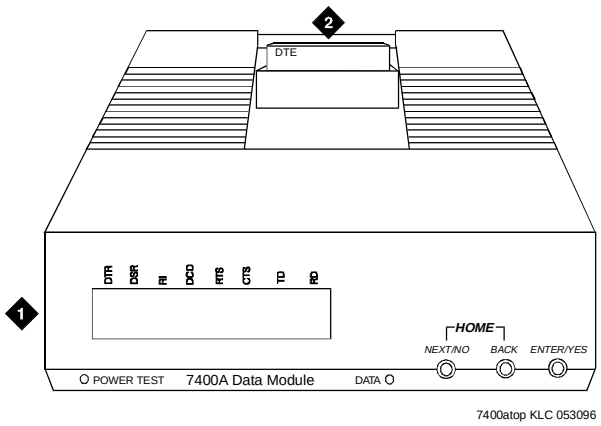

Figure Notes:

1. Data Module (7400A Shown)
2. EIA Connector Board (Shown in “DTE” Mode)

Figure 1-23. Data Module Mode Selector

The units are factory-set to “DCE.” To change the mode:

1. Insert the tip of a pen into one of the small holes on the rear of the unit, near the label. Do not use a pencil.
2. Push the tab inward while pulling up on that side of the top cover. Repeat for the opposite side.
3. Remove the top cover. Check the position of the EIA connector board mounted vertically in the unit. If the “DTE” is facing the front, the unit is operating in DTE mode. If the “DCE” is facing the front, the unit is operating in DCE mode.
4. To change the mode, remove the board by grasping it and pulling it gently upward. Position the board so the desired mode is facing the front of the data module.
5. Press the board gently back into the holder.
6. Place the top cover back onto the unit and snap it into place.

Install Data Modules Into Data Mounting

Up to eight data modules can be mounted in a Z77A Data Mounting. See Figure 1-24. To install the data modules, perform the following:

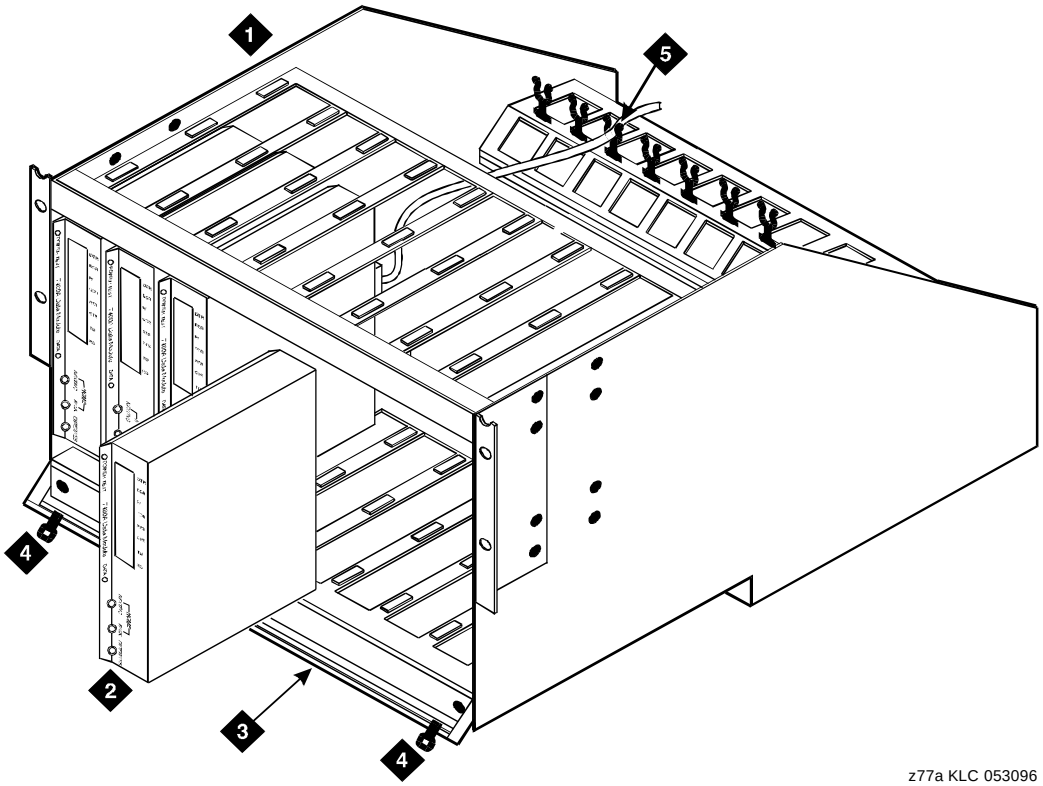

Figure Notes

3. Z77A Data Mounting
4. Data Module (7400A Shown)
5. Retaining Bar
6. Retaining Bar Plunger
7. Twist-Lock Cable Retainers

Figure 1-24. Z77A Data Mounting

1. From the Data Module Form, determine the port assignment of each data module. Set the operating mode of each unit to either “DTE” or DCE.”
2. At the front of the data mounting, pull out the left and right plungers holding the horizontal retaining bar. Pull the retaining bar out and down.
3. Connect the supplied RS-232 cable to the 25-pin connector on the rear of the data module.

4. Route the cable through the data mounting and through the twist-lock cable retainer on the top of the data mounting. The cable is attached to DTE or DCE (Key 6 in Figure 1-25 on page 1-45).
5. Insert the data module vertically into the data mounting. Be sure the display is to the top of the data mounting.
6. Repeat Steps 2 through 5 for each data module.
7. Return the horizontal retaining bar to its original position to secure the data modules inside the data mounting.

A data module must be connected to data equipment by an A25D/B25A cable and through the MDF to a digital line circuit pack (such as a TN754B). The following sections detail these connections.

Data Module Equipment Connections

CAUTION:
In DC-powered cabinet installations, a 105C Isolator adapter is required when connecting equipment to a data module.

7400B Data Module

Typical connections between a 7400B Data Module and the associated host computer Call Management System (CMS) interface are shown in Figure 1-25.

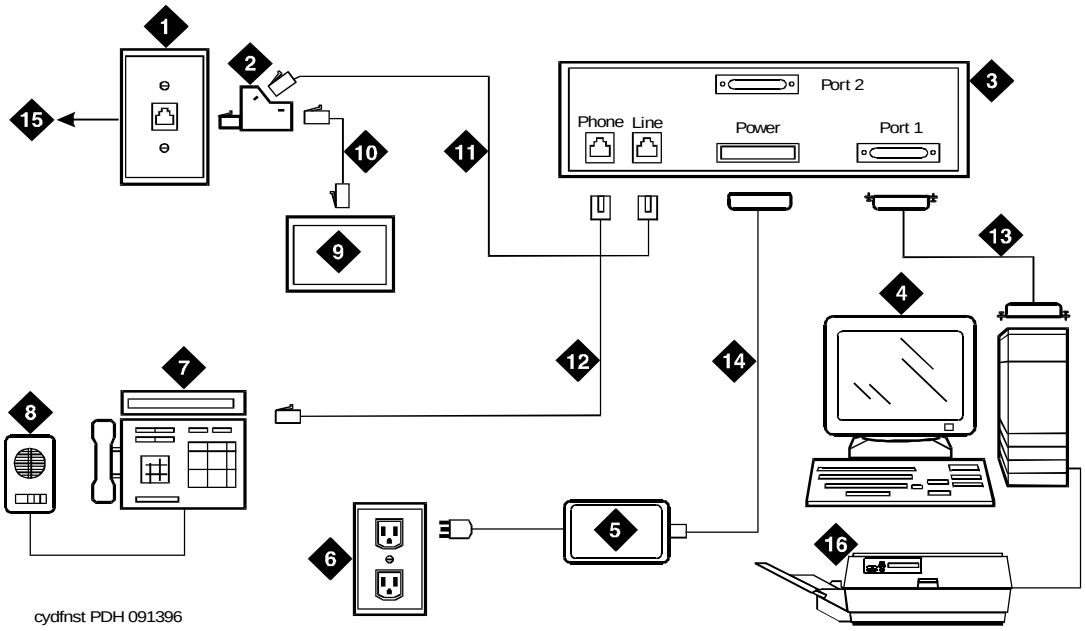

Figure Notes

1. 103A or Modular Wall Jack
2. 400B2 Adapter
3. Rear of Data Module (7400B Shown)
4. Host Computer
5. Data Module Power Supply
6. Electrical Outlet
7. Display Telephone
8. S101A Speakerphone
9. Auxiliary Power Supply for Telephone and Speakerphone
10. D6AP Cord
11. D8W Cord
12. Line to Display Telephone (D8W Cord)
13. Electronic Industries Association (EIA) Cable
14. Power Cable (From Data Module Power Supply)
15. To MDF and Digital Line Circuit Pack in System Cabinet
16. Printer

Figure 1-25. Typical Connections to a 7400B Data Module

7500B Data Module

Typical connections between a 7500B Data Module and the associated equipment interface are shown in Figure 1-26.

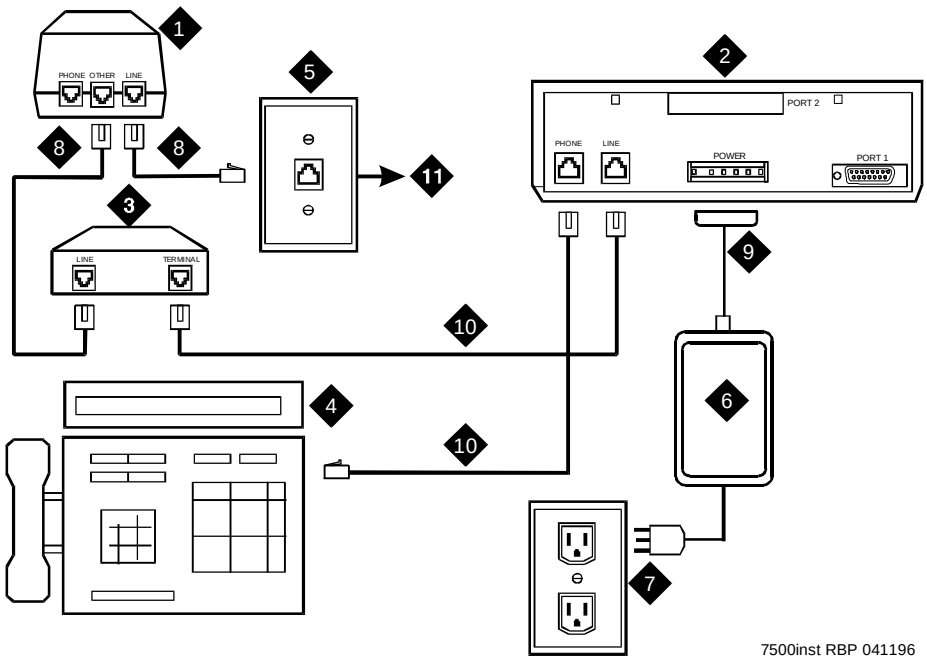

Figure Notes

1. MSP-1 Power Supply (or Equivalent)
2. Rear of Data Module (7500B Shown)
3. NT1 Network Interface
4. ISDN Display Telephone
5. 103A or Modular Wall Jack
6. Data Module Power Supply
7. Electrical Outlet
8. D6AP Cord
9. Power Cable (From Data Module Power Supply)
10. D8W Cord
11. To BRI Line Circuit Pack in System Cabinet via MDF

Figure 1-26. Typical Connections to a 7500B Data Module

8400B Plus Data Module

Typical connections between a 8400B Plus Data Module and the associated equipment are shown in Figure 1-27.

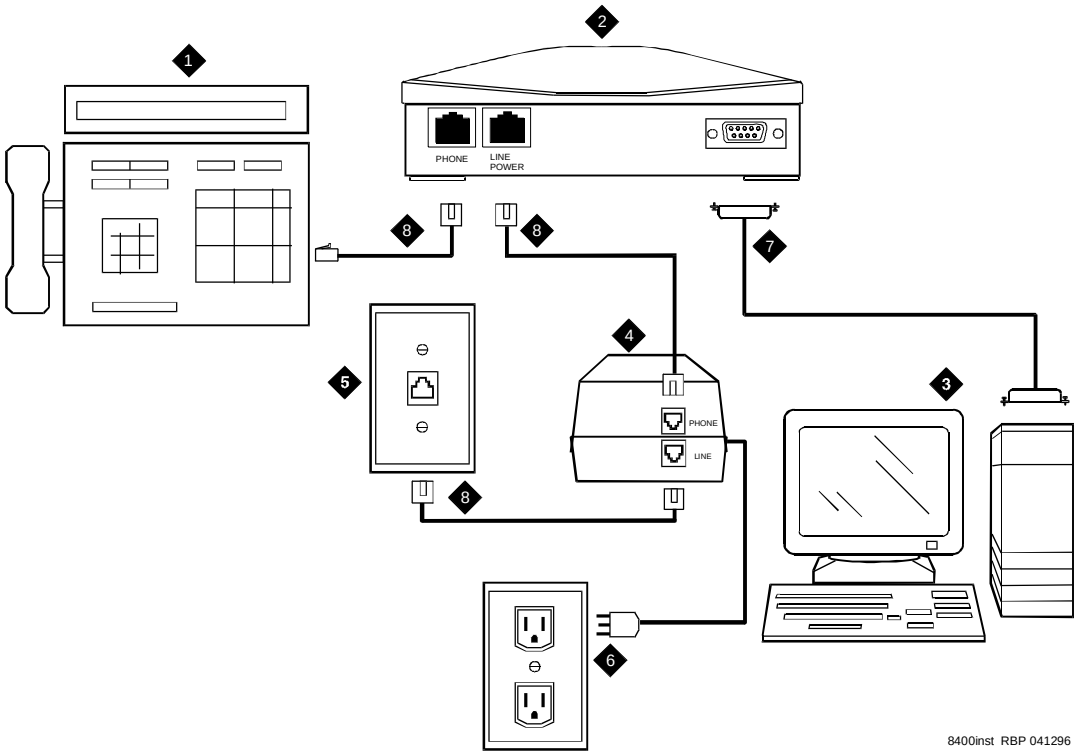

Figure Notes

1. Display Telephone
2. Rear of 8400B Plus Data Module
3. Host Computer
4. 1151A or 1151A2 Power Supply (or Equivalent)
5. 103A or Modular Wall Jack
6. Electrical Outlet
7. EIA-232-D Cable (Use M9/F25 Adapter if Required)
8. D8W Cord

Figure 1-27. Typical Connections to a 8400B Plus Data Module

DEFINITY AUDIX R3 and LAN Gateway System

Single-Carrier Cabinet

The DEFINITY Audio Information Exchange (AUDIX) R3 System or the DEFINITY LAN Gateway installs in five adjacent purple slots; preferably, the five rightmost slots in a Single-Carrier Cabinet. See Figure 1-28.

NOTE:
The DEFINITY LAN Gateway can be installed in any G3V2 and later system (except G3vs) with packet bus.

CAUTION:
Do not power up the DEFINITY AUDIX System until the installation is complete. Refer to DEFINITY AUDIX Installation and Upgrade, 585-300-111.

1. It is not necessary to power down a system before installing a DEFINITY LAN Gateway.

   CAUTION:
   Although the LAN Gateway can be installed in a live system, be careful to protect the LAN Gateway. When the assembly is inserted, it will automatically power up (including the disk), run diagnostics, and boot. Therefore, to avoid a LAN Gateway disk crash, never remove the assembly and never power down the DEFINITY System without first shutting down the LAN Gateway assembly and allowing the disk to completely spin down.

   NOTE:
   The system treats a DEFINITY LAN Gateway assembly as a TN754B Digital Line circuit pack connecting to up to eight 7405D display voice terminals. These emulated stations (serving as ports) are assigned as members of a hunt group that reside in a coverage path. This coverage path is used by every station that covers to LAN Gateway.

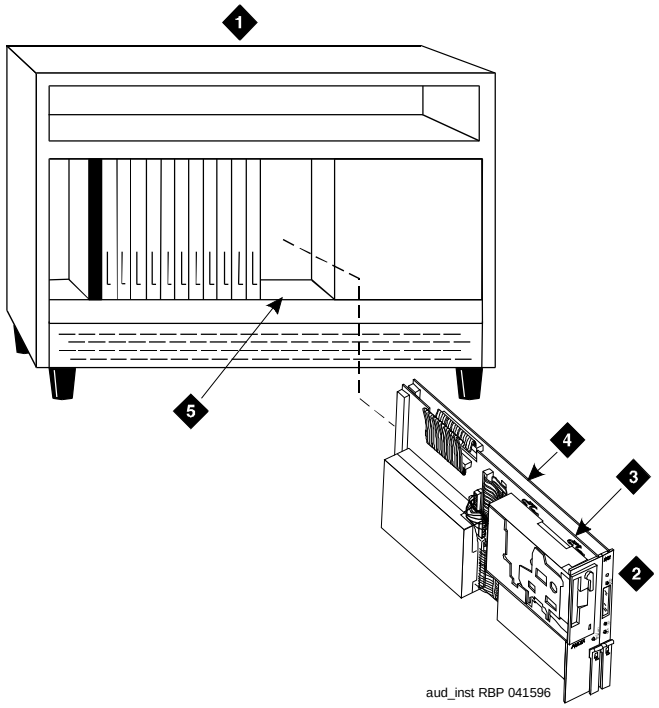

Figure Notes

1. System Cabinet
2. DEFINITY AUDIX R3 or LAN Gateway System
3. Alarm Circuit Pack
4. Multi-Function Circuit Pack
5. Five Adjacent Slots in Cabinet

Figure 1-28. Typical DEFINITY AUDIX or LAN Gateway Installation

Multi-Carrier Cabinet

CAUTION:
Never locate a DEFINITY LAN Gateway in port carrier "C" of a multi-carrier cabinet. Never locate a DEFINITY LAN Gateway either in port slots "01" to "03" of an expansion control cabinet or in "01" to "04" of a port cabinet.

1. If necessary, to provide five adjacent purple port slots in a desirable location, relocate and retranslate port circuit packs. See Figure 1-29.
2. It is not necessary to power down a system before installing a DEFINITY LAN Gateway.

CAUTION:
Although the LAN Gateway can be installed in a live system, be careful to protect the LAN Gateway. When the assembly is inserted, it will automatically power up (including the disk), run diagnostics, and boot. Therefore, to avoid a LAN Gateway disk crash, never remove the assembly and never power down the DEFINITY System without first shutting down the LAN Gateway assembly and allowing the disk to completely spin down.

NOTE:
The system treats a DEFINITY LAN Gateway assembly as a TN754B Digital Line circuit pack connected to up to eight 7405D display voice terminals. These emulated stations (serving as ports) are assigned as members of a hunt group that reside in a coverage path. Then, this coverage path is used by every station that covers to LAN Gateway.

CAUTION:
Do not power up the DEFINITY AUDIX System until the installation and cabling is completed.

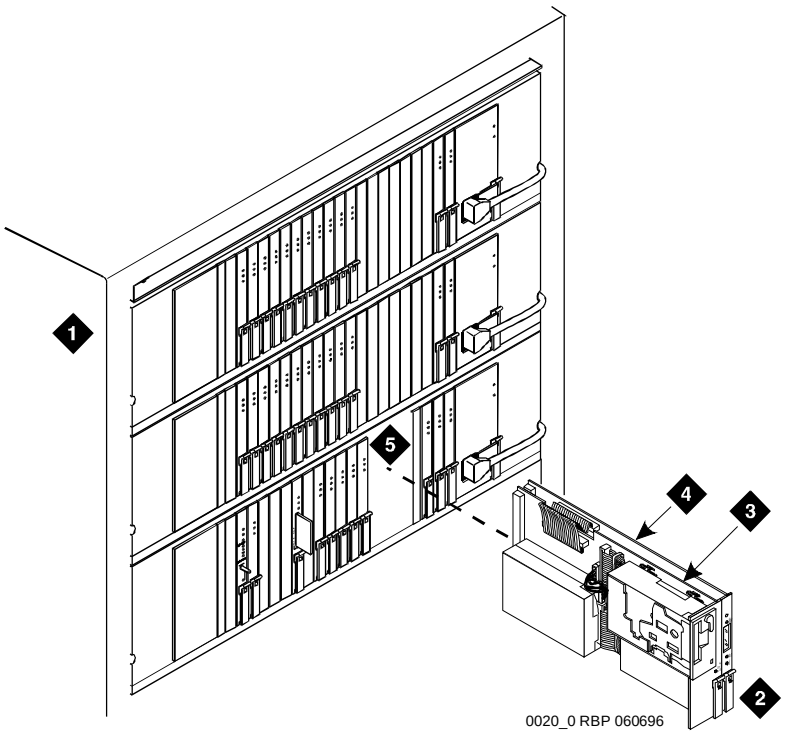

Figure Notes

1. System Cabinet
2. DEFINITY AUDIX R3 or LAN Gateway
3. Alarm Circuit Pack
4. Multi-Function Circuit Pack
5. Five Adjacent Slots in Carrier

Figure 1-29. Typical DEFINITY AUDIX/LAN Gateway Installation

Single-Carrier and Multi-Carrier Installation

Connect Alarm Origination Cable

The alarm cable connects to the MDF and cross-connects to the customer-supplied alarm equipment. See Figure 1-30 and Table 1-6.

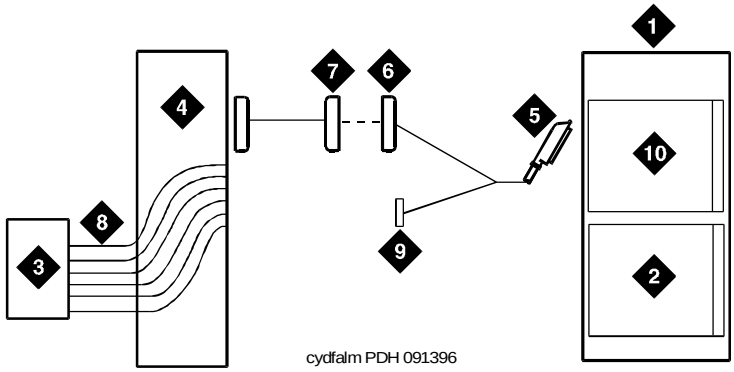

Figure Notes

1. System Cabinet
2. Alarm Circuit Pack (Part of AUDIX or LAN Gateway)
3. Customer-Supplied Alarm Equipment
4. Part of Main Distribution Frame (MDF)
5. ALB Y Cable
6. Female “ALARM” Connector on ALB Y Cable
7. Male Connector on Group 300 Cable
8. Cross-Connections to Alarm Equipment
9. Unused RS-232 Connector
10. Multi-Function Circuit Pack (Part of AUDIX or LAN Gateway)

Figure 1-30. Connecting the Alarm Origination Cable

1. Connect the ALB Y cable to the connector associated with the alarm circuit pack on the AUDIX System on the rear of the system cabinet.
2. Attach the male Amphenol connector on a Group 300 cable to the female Amphenol connector labeled **ALARM** on the ALB Y-cable.
3. Connect the opposite end of the Group 300 cable to the MDF.

NOTE:
Do not connect the RS-232 connector on the ALB Y cable. The standard alarm origination circuit uses an on-board modem that is internally wired to the connector on the ALB Y cable.

4. Perform the cross-connects for the alarm origination connection as described on the service order. Also see Table 1-6.

Table 1-6. Alarm Origination Pinouts (ALB Y Cable)

Pin Number	Definition
26	Tip (white/blue)
1	Ring (blue/white)
44	Minor RTN (Return) (yellow/brown)
19	Minor (brown/yellow)
47	Major RTN (Return) (violet/orange)
22	Major (orange/violet)

Install the Terminal(s)

Two terminals may be installed, a local maintenance terminal and an administration terminal. The local maintenance terminal is optional but the administration terminal is required. The local maintenance terminal can only be connected via a direct cable connection. However, there are four ways to connect the administration terminal.

1. Via a direct connection
2. Via modems
3. Via Asynchronous Data Units (ADU)
4. Via data modules

See the *DEFINITY AUDIX System Description*, 585-300-205, for a list of the supported terminals and modems. The connectivity for all supported terminals is similar.

If connecting a G3-MA as the administration terminal, see *DEFINITY Communications System Generic 3 Management Applications Station Provisioning*, 555-229-201, for installation instructions.

NOTE:
The AUDIX or LAN Gateway is DTE equipment, the DEFINITY System is DCE equipment. A null modem cable may be required to complete the DTE/DCE pair when connecting the G3-MA.

Install a Directly-Connected Terminal

Figure 1-31 shows typical connections for a local maintenance terminal. Figure 1-32 shows typical connections for a local administration terminal. Refer to the documentation shipped with the terminal to connect the keyboard, terminal power, and to set up the terminal after installation.

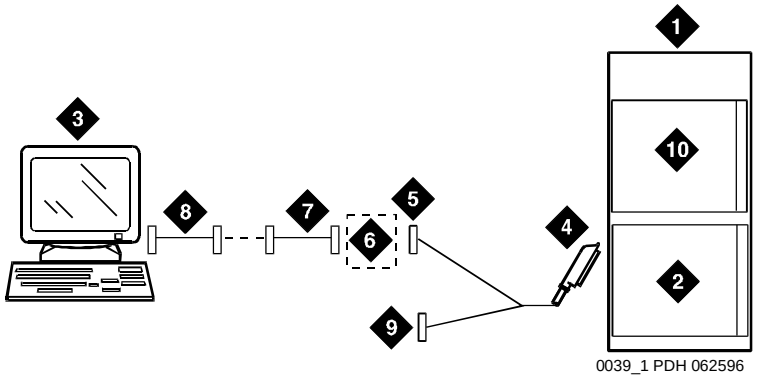

Figure Notes

1. System Cabinet
2. Multi-Function Circuit Pack (Part of AUDIX or LAN Gateway)
3. Maintenance Terminal
4. MFB Y Cable
5. "PORT A" Connector on MFB Y Cable
6. 116A Isolator (DC Powered Systems Only)
7. Group 311 Cable
8. Null Modem Cable (If Required)
9. Unused RS-232 Connector
10. Alarm Circuit Pack (Part of AUDIX or LAN Gateway)

Figure 1-31. Typical Local Maintenance Terminal Connections

1. Connect the MFB Y cable to the appropriate connector on the rear of the system cabinet.
2. Attach one end of a Group 311 cable (supplied with the DEFINITY AUDIX or LAN Gateway PEC) to the RS-232 connector labeled **PORT A** on the MFB Y cable. If a 116A isolator is used, attach the isolator to the RS-232 connector on the MFB Y cable and attach the Group 311 cable to the isolator.
3. Attach the opposite end of the Group 311 cable to the **DCE** connector on the rear of the terminal. If a null modem cable is required, attach the Group 311 cable to the null modem cable. Connect the opposite end of the null modem cable to the **DCE** connector on the rear of the terminal.

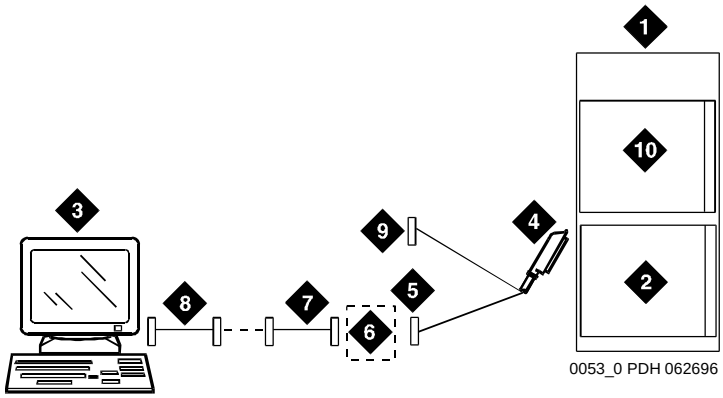

Figure Notes

1. System Cabinet
2. Multi-Function Circuit Pack (Part of AUDIX or LAN Gateway)
3. Administration Terminal
4. MFB Y Cable
5. “PORT B” Connector on MFB Y Cable
6. 116A Isolator (DC Powered Systems Only)
7. Group 311 Cable
8. Null Modem Cable (If Required)
9. Unused RS-232 Connector
10. Alarm Circuit Pack (Part of AUDIX or LAN Gateway)

Figure 1-32. Typical Local Administration Terminal Connections

1. Connect the MFB Y cable to the appropriate connector on the rear of the system cabinet.
2. Attach one end of a Group 311 cable (supplied with the DEFINITY AUDIX or LAN Gateway PEC) to the RS-232 connector labeled **PORT B** on the MFB Y cable. If a 116A isolator is used, attach the isolator to the RS-232 connector on the MFB Y cable and attach the Group 311 cable to the isolator.
3. Attach the opposite end of the Group 311 cable to the **DCE** connector on the rear of the terminal. If a null modem cable is required, attach the Group 311 cable to the null modem cable. Connect the opposite end of the null modem cable to an RS-232 serial port connector on the rear of the terminal.

Testing the Connection

1. Plug the power cord on the terminal into a wall outlet.
2. Power on the terminal.
3. Set the terminal options. See *DEFINITY AUDIX Installation*, 585-300-111, for a complete list of option settings for all supported terminal.

   NOTE:
   When installing a serial printer, set the options on the printer as described in the manual supplied with the printer then set the corresponding options on the terminal to match.

   If the terminal is installed correctly (and the DEFINITY AUDIX or LAN Gateway is in either *ADX*, *OAM*, *OS* or *AINIT* state), the screen displays the `login` prompt.

   If the terminal does not display the `login` prompt, write down the state displayed, then see the troubleshooting procedures for terminal connections in *DEFINITY AUDIX System Maintenance*, 585-300-110.

Connect the Administration Terminal via Modems

Be sure the modems are on the list of supported peripherals. Refer to the *DEFINITY AUDIX System Description*, 585-300-205.

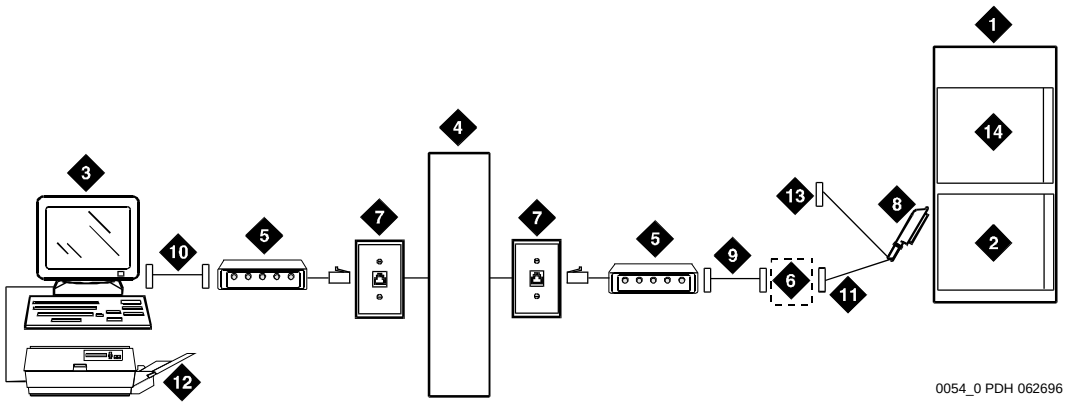

Figure Notes:

1. System Cabinet
2. Multi-Function Circuit Pack (Part of AUDIX or LAN Gateway)
3. Administration Terminal
4. Public Switched Telephone Network
5. Modem
6. 116A Isolator (DC Powered Systems Only)
7. 103A or Modular Wall Jack
8. MFB Y Cable
9. Group 311 Cable
10. Null Modem Cable (If Required)
11. “PORT B” Connector on MFB Y Cable
12. Terminal Printer (Optional)
13. Unused RS-232 Connector
14. Alarm Circuit Pack (Part of AUDIX or LAN Gateway)

Figure 1-33. Typical Administration Terminal Connections via Modems

1. Connect the MFB Y cable to the appropriate connector on the rear of the system cabinet. See Figure 1-33.
2. Attach one end of a Group 311 cable (supplied with the DEFINITY AUDIX or LAN Gateway) to the RS-232 connector labeled **PORT B** on the MFB Y cable. If a 116A isolator is used, attach the isolator to the RS-232 connector on the MFB Y cable and attach the Group 311 cable to the isolator.
3. Attach the opposite end of the Group 311 cable to the female 25-pin connector on the modem.

4. Attach the connector on one end of a modular cord to the modem. Attach the other connector to the modular wall jack (information outlet).
5. Connect the second modem to the wall jack at the terminal site.
6. Connect a null modem cable (if required) from the modem to the terminal.
7. Connect the printer to the terminal (if required). See "Printers and Terminals."

   NOTE:
   When installing a serial printer, set the options on the printer as described in the manual supplied with the printer then set the corresponding options on the terminal to match.

8. Set the terminal and modem options. See *DEFINITY AUDIX Installation*, 585-300-111, for a complete list of option settings for all supported terminals and modems.
9. At the terminal, enter `AT`.
10. If the modem is installed correctly, it responds with `OK` (on the terminal screen).
11. Enter `ATDT` and the telephone number of the modem connected to **PORT B** (listed on the Installing the Terminals worksheet).

    If the terminal is installed correctly (and the DEFINITY AUDIX or LAN Gateway is in either *ADX*, *OAM*, *OS* or *AINIT* state), the screen displays the `login` prompt.

    If the terminal does not display the `login` prompt, write down the state displayed, then see the troubleshooting procedures for terminal connections in *DEFINITY AUDIX System Maintenance*, 585-300-110.

Connect the Administration Terminal via Asynchronous Data Units

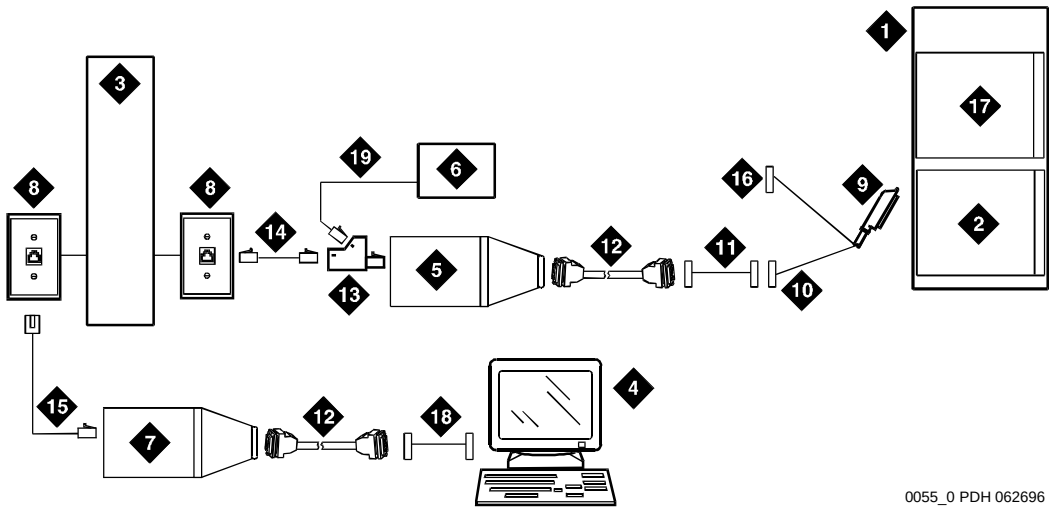

Figure Notes

1. System Cabinet
2. Multi-Function Circuit Pack (Part of AUDIX or LAN Gateway)
3. Part of Main Distribution Frame (MDF)
4. Administration Terminal
5. Z3A2 ADU
6. ADU Power Supply
7. Z3A1 ADU
8. 103A or Modular Wall Jack
9. MFB Y Cable
10. “PORT B” Connector on MFB Y Cable
11. Group 311 Cable
12. 25-Pin EIA-232-D Connector
13. 400B2 Adapter
14. D8W Cord
15. D8AM Crossover Cord
16. Unused RS-232 Connector
17. Alarm Circuit Pack (Part of AUDIX or LAN Gateway)
18. Null Modem Cable
19. D6AP Cord

Figure 1-34. Typical Administration Terminal Connections through ADUs

1. Connect the MFB Y cable to the appropriate connector on the rear of the system cabinet. See Figure 1-34.
2. Attach one end of a Group 311 cable (supplied with the DEFINITY AUDIX or LAN Gateway PEC) to the RS-232 connector labeled **PORT B** on the MFB Y cable.

3. Attach the opposite end of the Group 311 cable to the 25-pin female connector on the end of the Z3A2 ADU.
4. Plug the male end of a 400B2 or 248B adapter into the **Wall Jack** connector on the Z3A2 ADU.
5. Plug the 2012D ADU Power Supply into the 400B2 or 248B adapter.
6. Connect a D8W cord into the remaining female connector on the adapter.
7. Plug the opposite end of the D8W cable into an information outlet (modular wall jack).
8. At the MDF, cross-connect the four wires to the modular wall jack at the administration terminal location.
9. At the administration terminal location, connect the D8AM crossover cord to the modular wall jack.
10. Connect the opposite end of the D8AM cord to the **Wall Jack** connector on the Z3A1 ADU.
11. Attach the male 25-pin RS-232 connector on the Z3A1 ADU to the null modem cable.
12. Connect the opposite end of the null modem cable to the serial RS-232 port on the terminal (**DTE**).
13. Set the terminal options. See *DEFINITY AUDIX Installation*, 585-300-111, for a complete list of option settings for all supported terminals.
14. If the terminal is installed correctly (and the DEFINITY AUDIX or LAN Gateway is in one of the *ADX*, *OAM*, *OS* or *AINIT* state), the screen displays the `login` prompt.

    If the terminal does not display the `login` prompt, write down the state displayed, then see the troubleshooting procedures for terminal connections in *DEFINITY AUDIX System Maintenance*, 585-300-110.

Connect the Administration Terminal via Data Modules

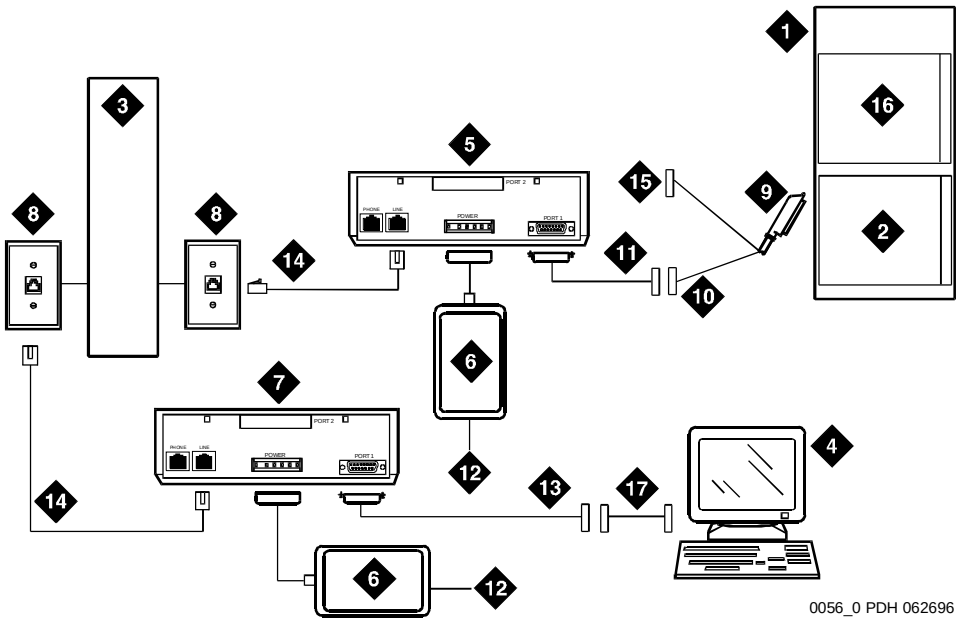

Figure Notes

1. System Cabinet
2. Multi-Function Circuit Pack (Part of AUDIX or LAN Gateway)
3. Part of Main Distribution Frame (MDF)
4. Administration Terminal
5. 7400A Data Module
6. Data Module Power Supply
7. 7400B Data Module
8. 103A or Modular Wall Jack
9. MFB Y Cable
10. "PORT B" Connector on MFB Y Cable
11. Group 311 Cable
12. To AC Electrical Outlet
13. 25-Pin RS-232 Connector
14. D8W Cord
15. Unused RS-232 Connector
16. Alarm Circuit Pack (Part of AUDIX or LAN Gateway)
17. Null Modem Cable

Figure 1-35. Typical Administration Terminal Connections Using Data Modules

NOTE:
Two data modules can be used in this configuration. The DEFINITY AUDIX or LAN Gateway side of the configuration requires the 7400A. A second 7400A can be used and is connected the same as a 7400B. Set the options as described in *7400A Data Module User's Manual*, 555-020-706.

1. Make sure the EIA connector board (located inside the data module) is set to DCE (factory default). If not, unplug the card and turn it around to the DCE setting (see "Mode Selection" on page 5-84 for details).
2. Connect the MFB Y cable to the appropriate connector on the rear of the system cabinet.
3. Attach one end of a Group 311 cable (supplied with the DEFINITY AUDIX or LAN Gateway) to the RS-232 connector labeled **PORT B** on the MFB Y cable.
4. Attach the opposite end of the Group 311 cable to the 25-pin female connector on the rear of the 7400A Data Module.
5. Plug one end of the D8W 4-pair modular cord (supplied with the data module) into the **LINE** connector on the 7400A data module. Plug the other end into an information outlet (modular wall jack).
6. At the MDF, cross-connect the wires to the modular wall jack at the administration terminal location.
7. Plug a D8W 4-pair modular cord into the wall jack at the administration terminal location. Plug the opposite end of the cord into the **LINE** connector on the 7400B (or second 7400A) data module.
8. Attach a 25-pin RS-232 cable to the null modem cable. Attach the opposite end of the null modem cable to the serial RS-232 port (**DTE**) on the terminal.
9. Plug the 4-pin connector on the end of each data module power supply into the **POWER** connector on each data module.
10. Set the options and interface baud rate on the 7400A data module. Refer to *7400A Data Module User's Manual*, 555-020-706. Set the options and interface baud rate on the 7400B data module. Refer to *AT&T 7400B Data Module User's Guide*, 555-020-707.
11. Check the dip switches inside the front panel. If a telephone is not connected with the data module, set the first dip switch (1) to the ON position. If a telephone is connected, set all dip switches OFF.
12. Set the terminal options. See *DEFINITY AUDIX Installation*, 585-300-111, for a complete list of option settings for all supported terminals.

    When installing a serial printer, set the options on the printer as described in the manual supplied with the printer then set the corresponding options on the terminal to match.

13. At the terminal, enter `AT.` If the 7400B data module is connected correctly, it responds with `OK` (written on the terminal screen).
14. Enter `ATDT` and the telephone number of the 7400A data module connected to the DEFINITY AUDIX or LAN Gateway (refer to the "Installing the Terminals" worksheet for this number).
15. After a connect interval, if the terminal and 7400 data modules are installed correctly (and the DEFINITY AUDIX or LAN Gateway is in either *ADX*, *OAM*, *OS* or *AINIT* state), the screen displays the `login` prompt.
16. If the terminal does not display the `login` prompt, write down the state displayed, then see the troubleshooting procedures for terminal connections in *DEFINITY AUDIX System Maintenance*, 585-300-110.

Install the Printer (Optional)

This task is required only if the customer requested a printer on the DEFINITY AUDIX or LAN Gateway administration terminal. See Figure 1-33. The following instructions are typical for most installations. The instructions supplied with the printer should be followed.

1. Unpack and set up the printer according to the instructions supplied with the printer.
2. Be sure the printer has paper, the ribbon is properly installed, and the cover is closed.
3. Connect the printer to the administration terminal.
4. Connect one end of the printer cable to either the serial or parallel port on the terminal (depending on the type of terminal and printer). Secure the connector with the captive screws.

   NOTE:
   If a serial printer is connected to the DTE connector on the terminal, a null modem cable must be connected between the printer and the terminal.

5. Connect the opposite end of the printer cable to the matching port (serial or parallel) on the printer.
6. Set the options on the printer. See *DEFINITY AUDIX Installation*, 585-300-111, for a complete list of option settings for all supported printers.

   NOTE:
   When installing a serial printer, set the options on the printer as described in the manual supplied with the printer then set the corresponding options on the terminal to match.

PRI Converters (SCC)

PRI to DASS and PRI to DPNSS Converters

Figure 1-36 shows typical connections from the TNCCSC-1 PRI to DASS Converter or the TNCCSC-2 PRI to DPNSS Converters to the coaxial facility.

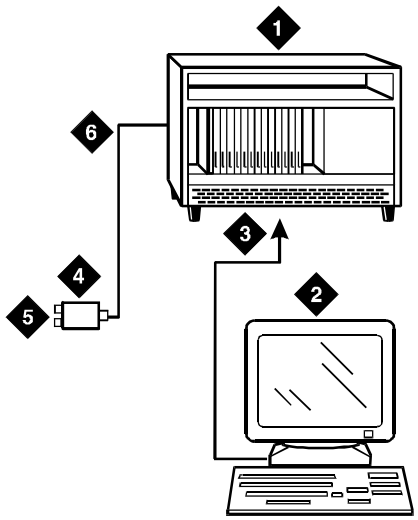

Figure Notes:

1. To TN464F DS1 Circuit Pack and either a TNCSCC-1 PRI to DASS Converter or a TNCSCC-2 PRI to DPNSS Converter Circuit Pack
2. Administration Terminal
3. RS-232 Cable to Front of PRI Converter Circuit Pack
4. 888B Coaxial Converter
5. Coaxial Connection to 2 MB per Second Facility
6. Coaxial Cable from PRI Converter Circuit Pack to Coaxial Converter

Figure 1-36. Typical DASS or DPNSS Converter Cabling

1. Plug the administration terminal into the RS-232 connector on the front of the PRI Converter circuit pack.
2. Connect the “Y” coaxial cable from the TN464F to the PRI converter circuit pack.
3. Connect the opposite end of the “Y” cable to the 888B coaxial converter.

PRI to BRI Converter

Figure 1-37 shows typical connections from the TNPRI/BRI converter to the coaxial facility.

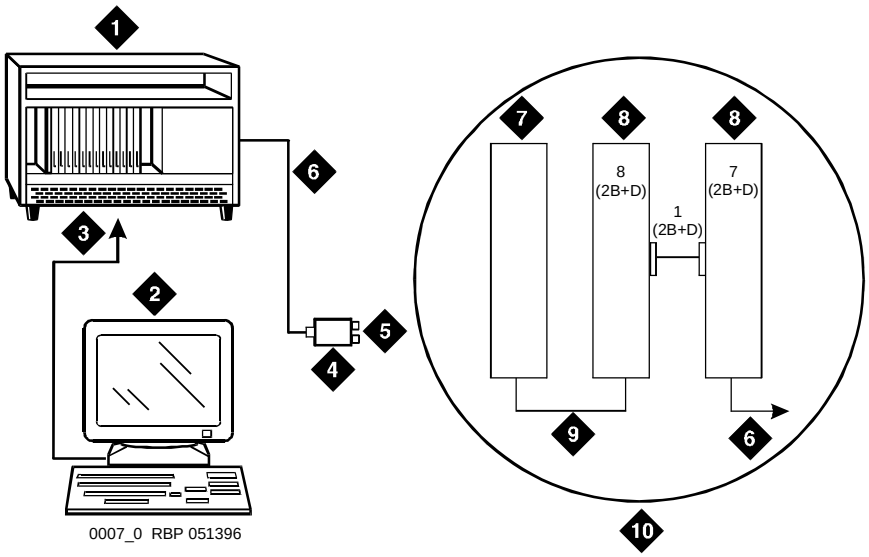

Figure Notes:

1. To TN464F DS1 Circuit Pack and TNPRI/BRI Converter Circuit Pack
2. Administration Terminal
3. RS-232 Cable to Front of Converter Circuit Pack
4. 888B Coaxial Converter
5. Coaxial Connection to 2 MB per Second Facility
6. Coaxial Cable from PRI Converter Circuit Pack to Coaxial Converter
7. TN464F Circuit Pack
8. TNPRI/BRI Converter Circuit Pack
9. Jumper Coaxial Cable
10. Inset Showing Connections on Rear of Carrier

Figure 1-37. Typical PRI to BRI Converter Cabling

NOTE:
The inset shows details of the cable connections between the circuit packs.

1. Connect the administration terminal to the RS-232 connector on the front of the PRI Converter circuit pack.

PRI Converters (MCC)

PRI to DASS and PRI to DPNSS Converters

Figure 1-36 shows typical connections from the TNCCSC-1 PRI to DASS Converter or the TNCCSC-2 PRI to DPNSS Converters to the coaxial facility.

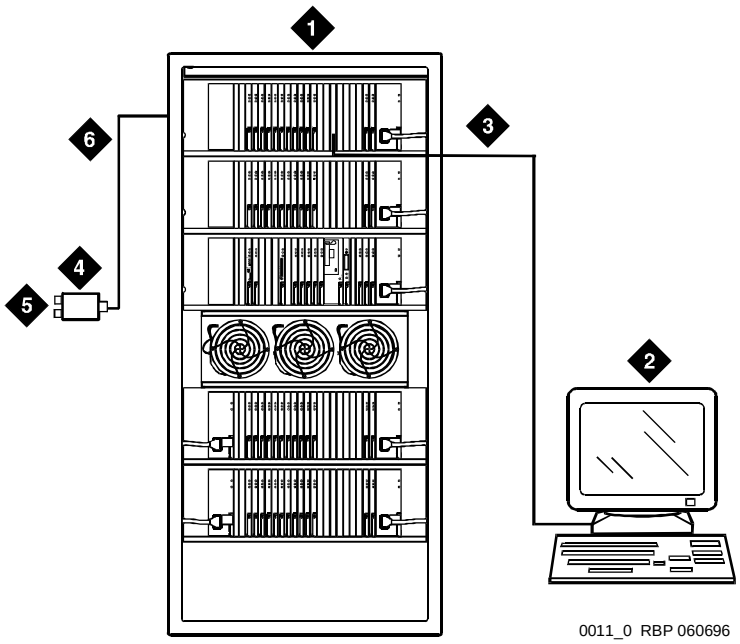

Figure Notes

1. To TN464F DS1 Circuit Pack and either a TNCSCC-1 PRI to DASS Converter or a TNCSCC-2 PRI to DPNSS Converter Circuit Pack
2. Administration Terminal
3. RS-232 Cable to Front of PRI Converter Circuit Pack
4. 888B 75 Ohm Coaxial Converter
5. Coaxial Connection To 2 MB per Second Facility
6. Coaxial Cable from PRI Converter Circuit Pack to Coaxial Converter

Figure 1-38. Typical DASS or DPNSS Converter Cabling

1. Connect the administration terminal to the RS-232 connector on the front of the PRI Converter circuit pack.

PRI to BRI Converter

Figure 1-37 shows typical connections from the TNPRI/BRI converter to the coaxial facility. The administration terminal is connected to the RS-232 connector on the front of the PRI Converter circuit pack.

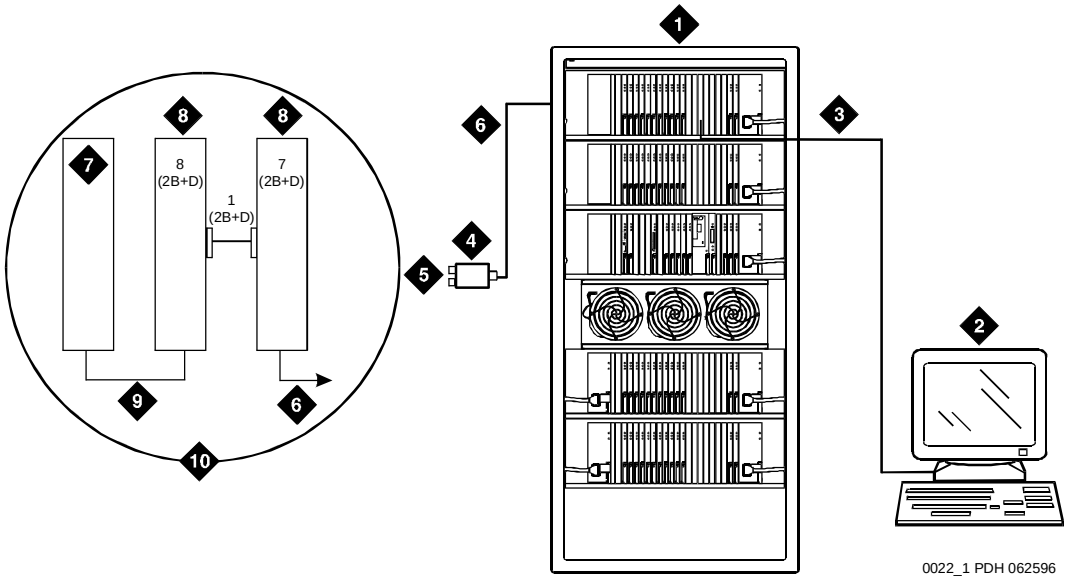

Figure Notes

1. TN464F DS1 Circuit Pack and TNPRI/BRI Converter Circuit Pack
2. Administration Terminal
3. RS-232 Cable to Front of Converter Circuit Pack
4. 888B 75 Ohm Coaxial Converter
5. Coaxial Connection to 2 Mbps Facility
6. Coaxial Cable from PRI Converter Circuit Pack to Coaxial Converter
7. TN464F Circuit Pack
8. TNPRI/BRI Converter Circuit Pack
9. Jumper Coaxial Cable
10. Inset Showing Connections on Rear of Carrier

Figure 1-39. Typical PRI to BRI Converter Cabling

NOTE:
The inset shows details of the cable connections between the circuit packs.

ExpressRoute 1000 Data Module

The ExpressRoute 1000 data module can be used in place of the 8400B data module. For BRI connections, the TN556B is used. For DCP connections, the TN2198 or the TN2224 is used. Figure 1-40 shows typical connections.

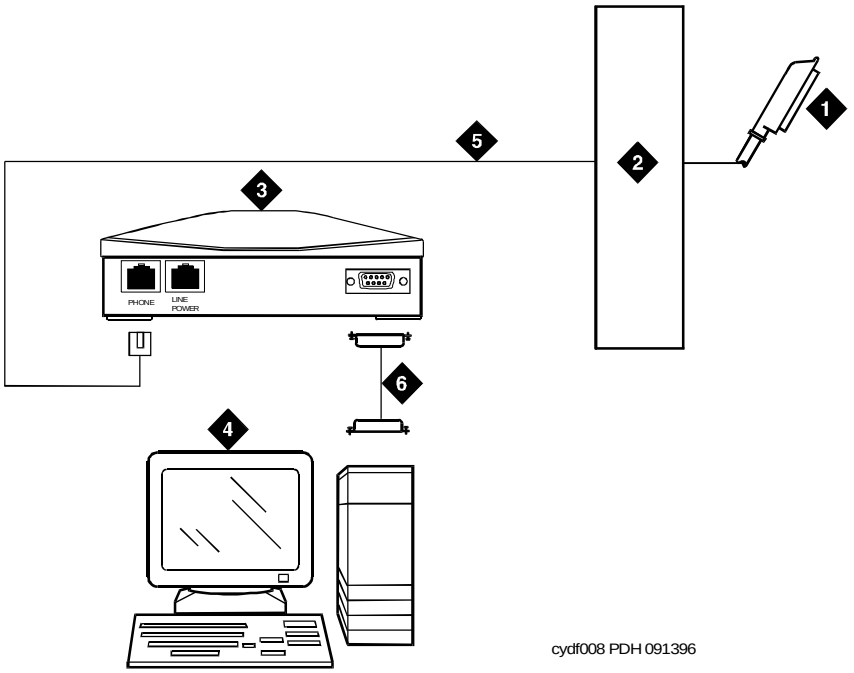

Figure Notes

1. To TN565B BRI Circuit Pack; or TN2181 or TN2224 Circuit Pack
2. Part of Main Distribution Frame (MDF)
3. ExpressRoute 1000 Data Module
4. Administration Terminal
5. Modular Line Cord
6. M25B (25-Pin RS-232) Cable

Figure 1-40. Typical ExpressRoute 1000 Data Module Connections

CAUTION:
In DC-powered cabinet installations, a 105C Isolator adapter is required when connecting equipment to a data module.

DEFINITY DCP Extender (Stand Alone)

Figure 1-41 shows a typical connection from either a TN2181 Digital Line 2-Wire DCP or a TN2224 Digital Line 24-port 2-Wire DCP circuit pack, through two DCP extender devices. The second extender installs at the work location. Refer to Table 1-7 for the pinout of the 25-pair cable. Refer to *DEFINITY Extender Switch Module System Administrator's Guide,* 555-230-532, for more information.

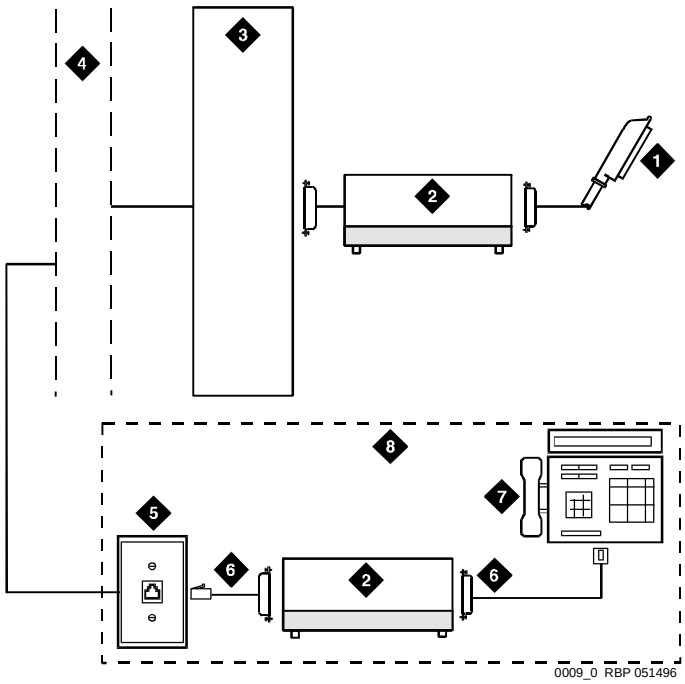

Figure Notes

1. To TN2181 or TN2224 Circuit Pack
2. DEFINITY DCP Extender
3. Part of Main Distribution Frame (MDF)
4. Public Switched Telephone Network (PSTN)
5. Wall Jack
6. Modular Line Cord
7. DCP Telephone (Such as 603E, 8410D, or 8434)
8. Work Location

Figure 1-41. Typical DEFINITY DCP Extender Connections

Table 1-7. DCP Extender 25-Pair Cable Pinout

Cross-Connect Pin	Wire 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
25	BK-G	38	302
26	G-BK	13	202
27	BK-BR	39	303
28	BR-BK	14	203

Continued on next page

Table 1-7. DCP Extender 25-Pair Cable Pinout — *Continued*

Cross-Connect Pin	Wire Color	Amphenol Pin	Backplane Pin
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

DEFINITY DCP Extender (Rack Mount)

Figure 1-42 shows a typical rack mount (multi-mount) DCP Extender. Connections from either a TN2181 Digital Line 2-Wire DCP circuit pack or a TN2224 Digital Line 24-port 2-Wire DCP circuit pack, are made through two DCP extender devices. The stand alone extender installs at the work location. To install the stand-alone unit, refer to the installation instructions earlier in this chapter. Refer to Table 1-7 for the pinout of the 25-pair cable on the rear of the rack mount. Refer to *DEFINITY Extender Switch Module System Administrator's Guide,* 555-230-532, for more information.

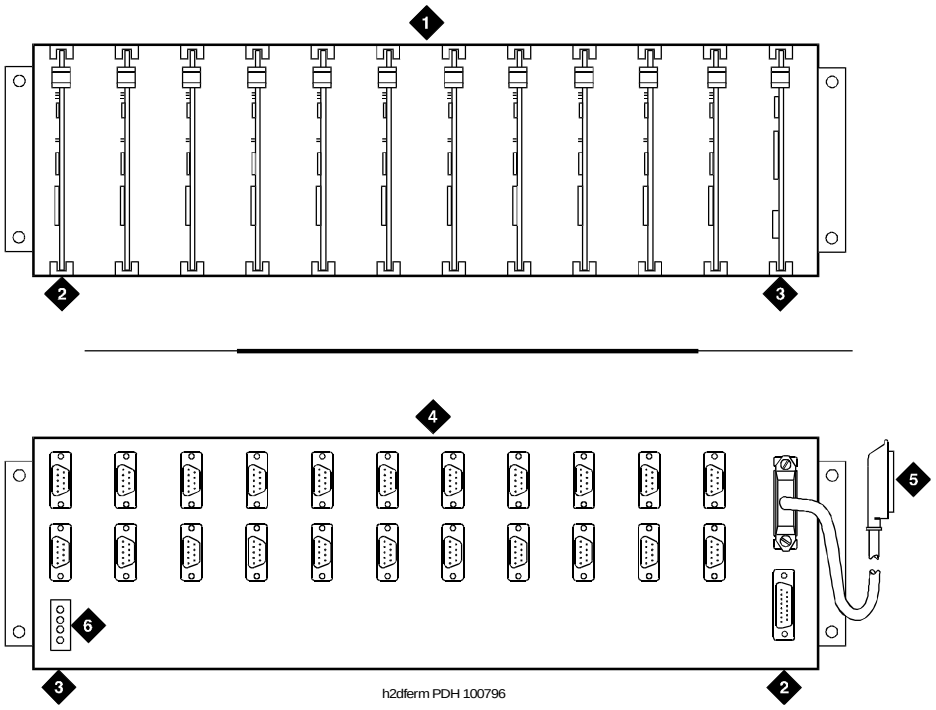

Figure Notes

1. Front of Rack Mount Assembly
2. First Circuit Pack in Slot 1 ("A")
3. Slot 12 ("L")
4. Rear of Rack Mount Assembly
5. 25-Pair Connector to TN2181 or TN2224 Circuit Pack
6. Power Connector

Figure 1-42. Typical DEFINITY DCP Extender Connections

Call Management System

The interface between the system and the Call Management System (CMS) is through data modules. The DEFINITY Systems use the TN765 Processor Interface circuit pack as the required control circuit pack.

A typical CMS connection using mode conversion is shown in Figure 1-43.

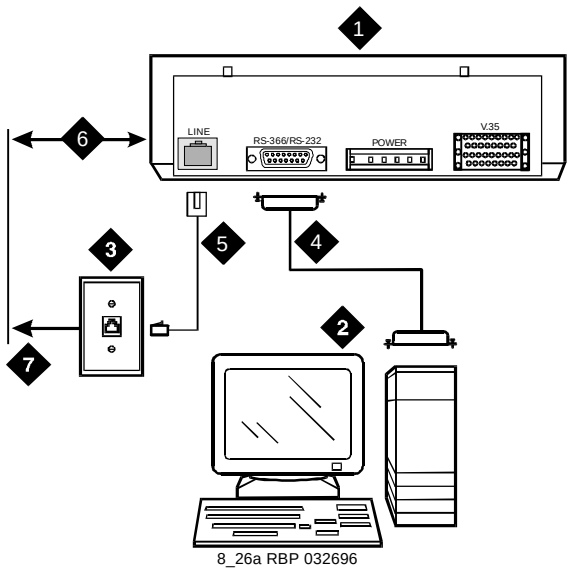

Figure Notes

1. Data Module (7400C Shown)
2. CMS AG 6386 Personal Computer (PC)
3. 103A or Modular Wall Jack
4. M25B Cable (25-Pin RS-232) (50 Feet, 15.24 m) Maximum
5. D8W-87 Cable
6. 5000 Feet (1524 Meters) Maximum
7. To TN754 Digital Line 4-Wire Circuit Pack Using B25A Cable (Male-to- Female) via MDF

Figure 1-43. Typical Call Management System Connections

Distributed Communications System

A typical connection between two cabinets can be through Distributed Communication System (DCS) links. The link to the system can be direct connection or via modems. Figure 1-44 shows modem connections.

The system uses the TN765 Processor Interface as the control circuit pack. The TN765 provides a single EIA port that allows access to one data link. Connections to the system vary depending on the distance between systems and the type of system being connected.

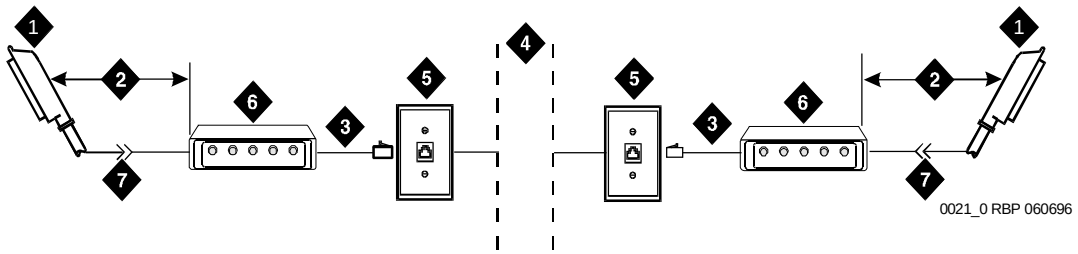

Figure Notes

1. To TN765 Processor Interface Circuit Pack to Processor Interface Circuit Pack via PI Connector on Rear of Control Carrier
2. 25 Feet (7.62 m) Maximum
3. Modular Cord
4. Public Switched Telephone Network (PSTN)
5. 103A or Modular Wall Jack
6. Modem
7. M25B 25-Pair RS-232 Cable

Figure 1-44. Typical DCS Link — System to System

Property Management System Interface

The interface between the system and the Property Management System (PMS) can be through data modules. See the section for installing data modules. See Figure 1-45.

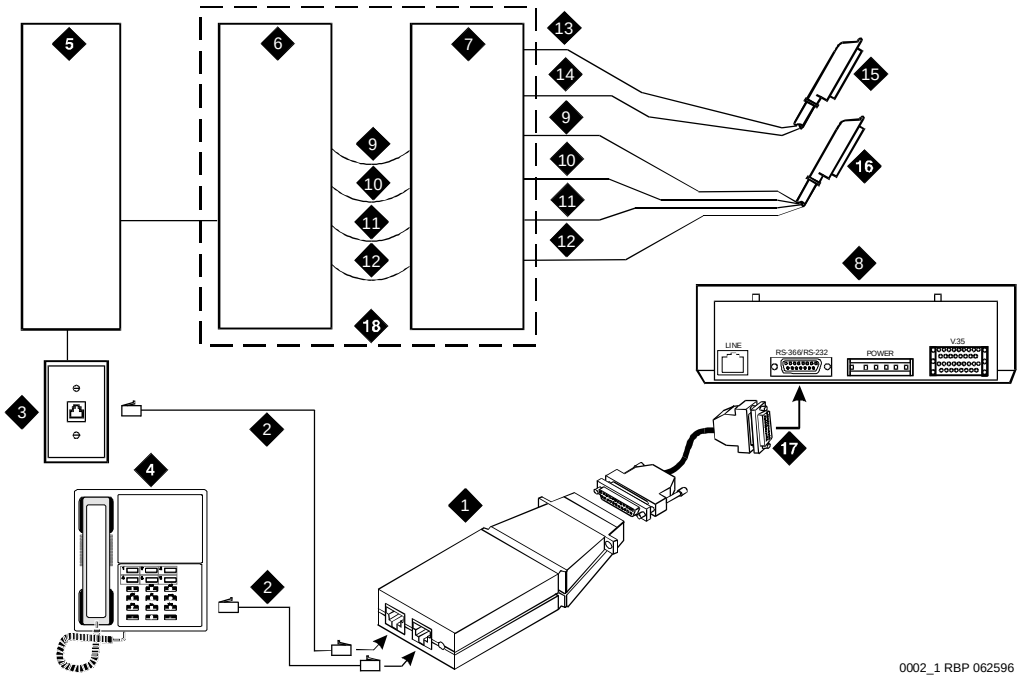

Figure Notes

1. Z3A1 or Z3A2 ADU
2. 4-Pair Line Cord
3. 103A or Modular Wall Jack
4. Analog Telephone
5. Satellite Site or Adapter Location
6. Station Side (Blue or White Field)
7. System Side (Purple Field)
8. Data Module (7400C Shown)
9. TXT
10. TXR
11. PXT
12. PXR
13. Tip
14. Ring
15. To TN746 Analog Line Circuit Pack
16. To TN726B Data Line Circuit Pack
17. 25-Pin EIA-232-D Connector (Male)
18. Part of Main Distribution Frame (MDF)

Figure 1-45. Connections to Asynchronous Data Unit

Refer to the vendor's documentation for connecting the data module to the PMS. The option switches on the data module should be set according to the requirements for the PMS.

The data unit can also be remotely or locally powered using a 2012D transformer equipped with a 248B adapter.

Printers and Terminals

Printers

A journal printer can be used with the PMS. The connections for the printer are the same as for the host computer Call Management System (CMS). See Figure 1-43 on page 1-73.

Refer to the vendor's documentation for connecting the data module to the printer. The option switches on the data module are to be set according to the requirements for the printer.

The PMS interface and the journal printers can also be installed using ADUs. The connections are the same as for a customer-provided data terminal. Equipment connections can be through a modem or through a data module.

Terminals

The interface between the system and the customer's data terminals and host computer can be through data modules.

Asynchronous data terminals can also be connected through a Z3A ADU to a data line circuit pack. Normally, the data unit is powered from the connected data terminal. The data unit can also be remotely or locally powered using a 2012D transformer with a 248B adapter. Data units connected to receive-only printers require external power.

For more information, refer to the *Z3A Asynchronous Data Unit Product Manual*, 461-120-005. To install a terminal, perform the following:

1. Determine data unit or data module port assignment from Data Module Form.
2. Make the MDF and closet/satellite connections from the data unit port assignment to the information outlet.
3. Connect the information outlet to the ADU or data module.
4. Connect the RS-232 plug on the ADU or data module to the data terminal.

Call Detail Recording Unit Interface

The interface between the system and Call Detail Recording (CDR) output devices can be through a data module or a 212-type modem. The connection between the system and the modem is the same as for external ringing. When a modem is used, an external pooled modem must be provided. One of the pooled modem's conversion resources is dedicated to the CDR output device.

Connections between the system and an ADU or data module are the same as for remote administration devices such as a management terminal.

Administer the system as described in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

A data line circuit pack may also be used. If so, data modules are not required for DTE equipment. Connections to the CDR output device is the same as a customer-provided data terminal. The CDR output device can be connected directly to the **DCE** connector on the rear of the Control Carrier. This connection is made using an M25B (RS-232) cable. A data module or ADU is required.

Figure 1-46 on page 1-78 shows four types of connections to the output device. The following connections are shown:

1. Connection from digital line circuit pack, through a 7400C Data Module, and to the output device using an M25B 25-pin RS-232 cable.
2. Connection from a digital line circuit pack, through a 7400C Data Module, and to the output device using two M25B 25-pin RS-232 cables and an M10M null modem cable.
3. Connection from an analog line circuit pack, through a 212-type modem, and to the output device using two M25B 25-pin RS-232 cables and an M10M null modem cable. This option requires a pooled modem.
4. Direct connection from the **DCE** connector on the rear of the Control Carrier to the output device using an M25B 25-pin RS-232 cable. For DC powered systems, a 116A Isolator (comcode 106005242) is required and is connected in series with the output device.

Cabling to Call Detail Recording Output Device

Figure 1-46 shows the cabling to connect a printer, a TELESEER unit, or customer-supplied DTE equipment. If installing a TELESEER unit, connect the M25B cable to the P1 connector.

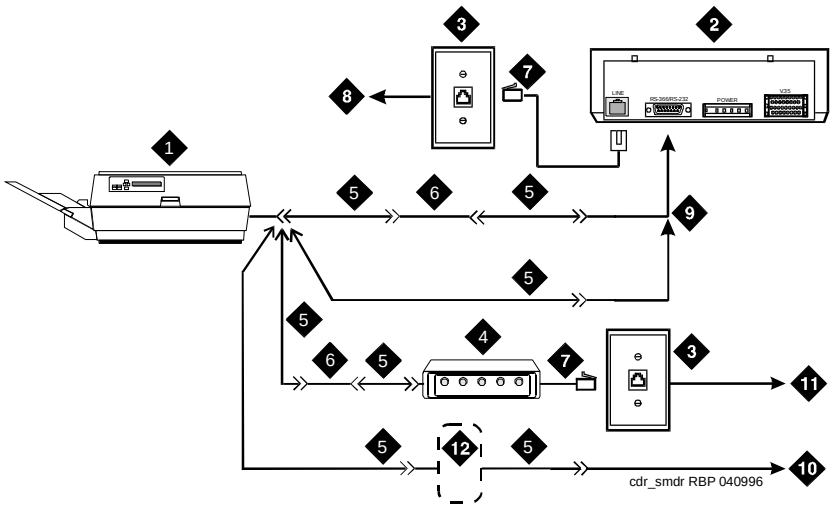

Figure Notes

1. Printer, 94A Local Storage Unit (LSU), Customer-Supplied DTE Equipment, or TELESEER Unit
2. Data Module (7400C Shown)
3. 103A or Modular Wall Jack
4. 212-Type Modem
5. M25B Cable (25-Pin RS-232)
6. M10M Null Modem Cable
7. 4-Pair Modular Cord
8. To TN754/B Digital Line Circuit Pack
9. To 25-Pair Connector on Data Module
10. To DCE Connector on Control Carrier
11. To TN746 Analog Line Circuit Pack
12. 116A Isolator (DC Powered Systems Only)

Figure 1-46. Call Detail Recording Cabling

CAUTION:
All peripherals connecting to a DC-powered system through the Asynchronous EIA RS-232 interface on the control carrier require an EIA 116A Isolator (comcode 106005242). Plug the 116A Isolator into the RS-232 interface connector. The cable from the peripheral equipment then plugs into the 116A.

Figure 1-47 shows the connections to a remote host connected by an analog line.

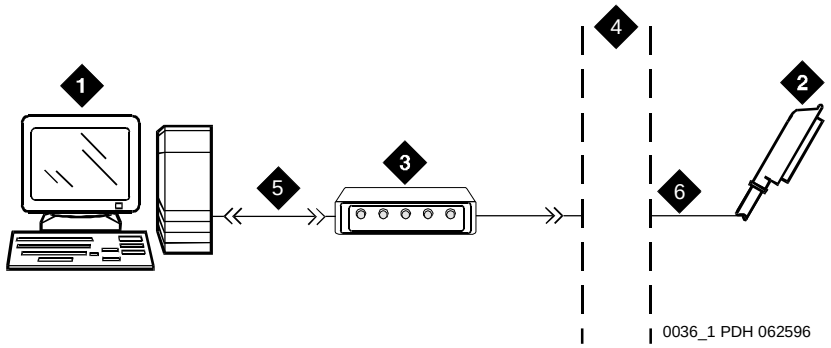

Figure Notes

1. Host Computer
2. To Analog Line or Central Office Trunk Circuit Pack
3. Modem or Data Service Unit (DSU)
4. Public Switched Telephone Network (PSTN)
5. M25B Cable (25-Pin RS-232)
6. 25-Pair Cable to Network Interface via the Main Distribution Frame (MDF)

Figure 1-47. Call Detail Recording Cabling to Remote Host (Analog Line)

Wideband Endpoints

Wideband endpoints include video equipment or bridge/routers for LANs. Use the running list that accompanies the system to make cable connections.

Non-Signaling Configuration

A non-signaling connection to a wideband endpoint may connect to a Channel Service Unit (CSU). If *not* using a CSU, the distance between the system and the endpoint is limited to a few hundred feet. See Figure 1-48. The maximum distance depends on the type of cable and type of endpoint.

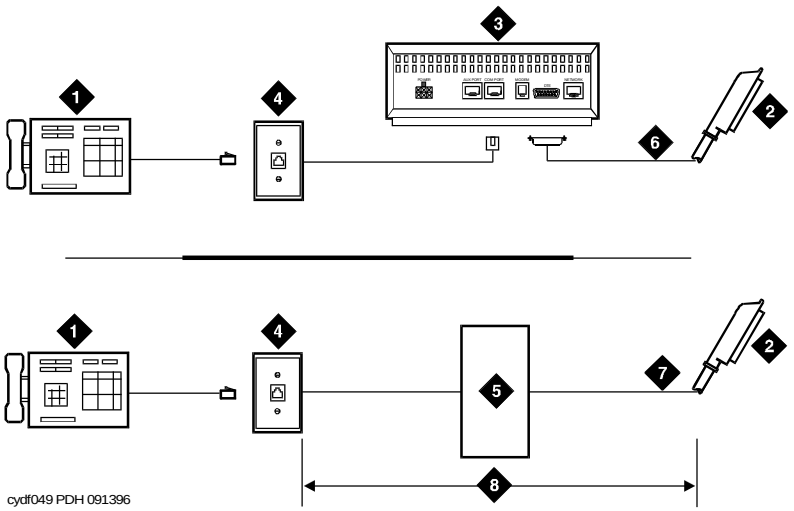

Figure Notes:

1. Wideband Endpoint (Wire Per Manufacturer)
2. To TN464F DS1/E1 Circuit Pack (TN464C or Later Can be Used)
3. Channel Service Unit (CSU) (3150 Shown)
4. 103A or Modular Wall Jack
5. Part of Main Distribution Frame (MDF)
6. H600-307 Cable (To DTE Connector on Channel Service Unit)
7. A25D 25-Pair Cable (Male-to-Male)
8. Distance Limit Depends on Cable Type and Endpoint Type. See Text.

Figure 1-48. Typical Non-Signaling Wideband Configuration

If using a CSU, the distance between connections may be up to 1300 feet (396.2 m). The maximum distance to the endpoint depends on the type of cable and the specifications of the endpoint.

Signaling Configuration

A signaling connection from the system to a wideband endpoint passes through a bandwidth controller. The distance between the system and the bandwidth controller depends on the type of cable and controller. Figure 1-49 shows connections with and without a CSU.

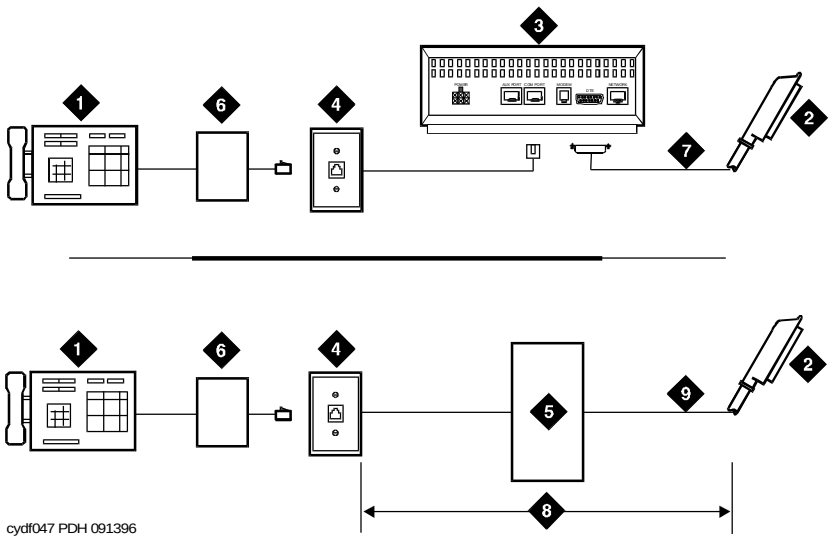

Figure Notes

1. Wideband Endpoint (Wire Per Manufacturer)
2. To TN464F DS1/E1 Circuit Pack
3. Optional Channel Service Unit (CSU) (3150 Shown)
4. 103A or Modular Wall Jack
5. Part of Main Distribution Frame (MDF)
6. Bandwidth Controller
7. H600-307 Cable (To DTE Connector on Channel Service Unit)
8. Distance Limit Depends on Cable Type and Bandwidth Controller Type
9. A25D 25-Pair Cable (Male-to-Male)

Figure 1-49. Typical Signaling Wideband Configuration

The bandwidth controller connects directly to the wideband endpoint. The controller typically installs near the endpoint where they directly connect (usually within a few feet of each other).

1. For non-CSU installations, cross the transmit and receive lines so a transmit signal from the TN464F connects to the receive connection on the bandwidth controller and a transmit signal from the bandwidth controller connects to the receive connection on the TN464F.
2. For CSU installations, cross the transmit and receive lines between the CSU and the bandwidth controller.

Figure 1-50 shows a remote port module. In this configuration, there can be considerable distance between the bandwidth controller and the wideband endpoint. The maximum distance between elements depends on the quality of the cables and on the specifications of the wideband equipment.

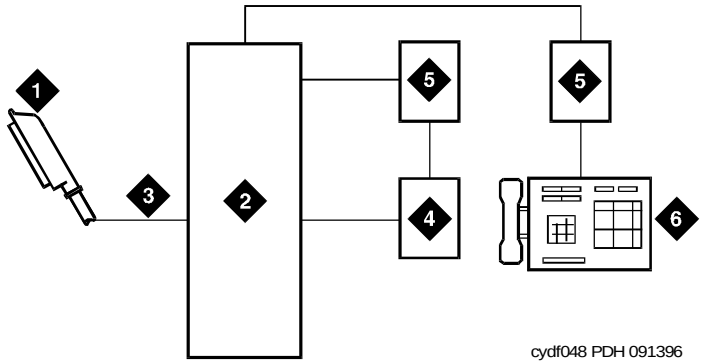

Figure Notes

1. To TN464F DS1/E1 Circuit Pack
2. Part of Main Distribution Frame (MDF)
3. H600-307 Cable
4. Bandwidth Controller
5. Remote Port Module
6. Wideband Endpoint (Wire Per Manufacturer)

Figure 1-50. Typical Signaling Wideband Configuration with Remote Port Module

1. For non-CSU installations, cross the transmit and receive lines so a transmit signal from the TN464F connects to the receive connection on the bandwidth controller and a transmit signal from the bandwidth controller connects to the receive connection on the TN464F.
2. For CSU installations, cross the transmit and receive lines between the CSU and the bandwidth controller.

PassageWay Adapter

The PassageWay adapter makes it possible to connect a Mu-Law digital telephone and a PC through a single four-wire DCP digital port to the system. See Figure 1-51. The adapter requires one Watt at about -48 VDC, from a bulk or individual power supply.

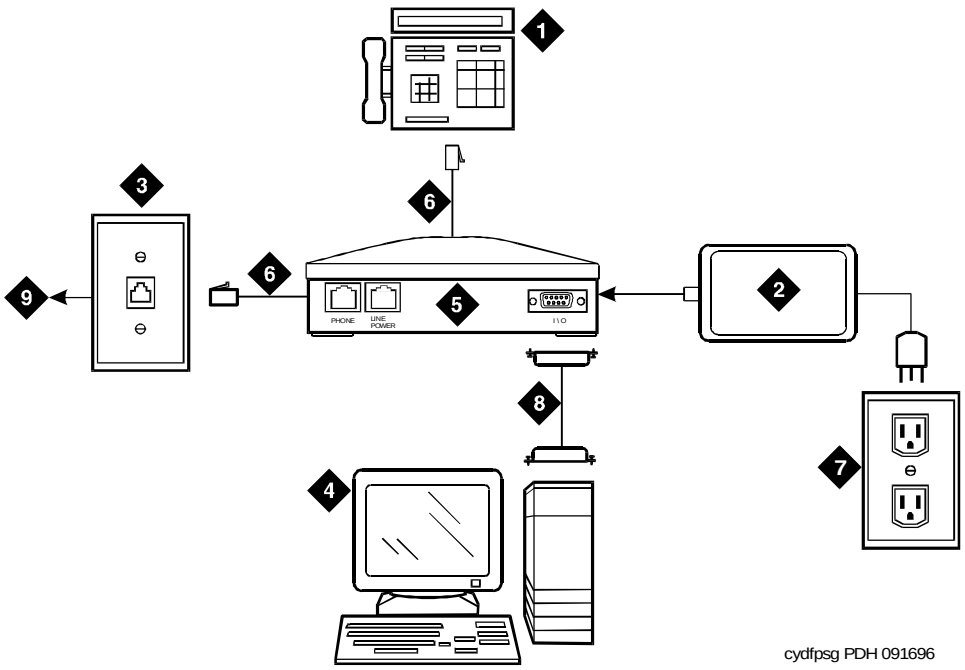

Figure Notes

1. Digital Telephone (Such as a CallMaster)
2. Individual Power Supply for PassageWay Adapter
3. 103A or Modular Wall Jack
4. Host Computer (Serial I/O Connection
5.)PassageWay Adapter
6. 4-Pair Modular Cord
7. Electrical Outlet for Power Supply
8. 25-Pair Cable from PC to Serial I/O Jack
9. To TN754B, TN2181, or TN2224 Digital Line Circuit Pack

Figure 1-51. Typical Connections Through PassageWay

PC Console

PC Console (United States)

Figure 1-52 shows a PassageWay adapter providing an interface between a Personal Computer (PC) and a DCP voice terminal (8403 or 8411).

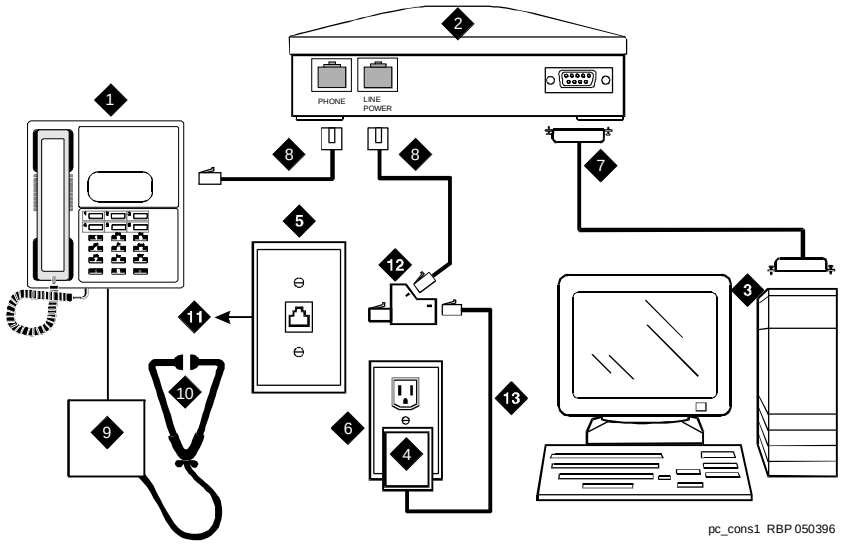

Figure Notes

1. DCP Telephone (Such as 8403 or 8411)
2. PassageWay Adapter
3. Host Computer (Serial I/O Connection)
4. KS-22911 Power Supply for PassageWay Adapter
5. 103A or Modular Wall Jack
6. Electrical Outlet for Power Supply
7. 25-Pair Cable
8. D8W 4-Pair Modular Cord
9. Optional 500A Adapter
10. Optional Headset
11. To TN754B, TN2181, or TN2224 Digital Line Circuit Pack
12. 400B2 Adapter
13. D6AP Cable

Figure 1-52. Typical PC Console Connections (United States)

The analog jack on the rear of the DCP voice terminal is inoperable when PC Console is used.

PC Console (Non-United States)

Figure 1-53 shows a PassageWay adapter providing an interface between a PC and a DCP voice terminal (8403 or 8411).

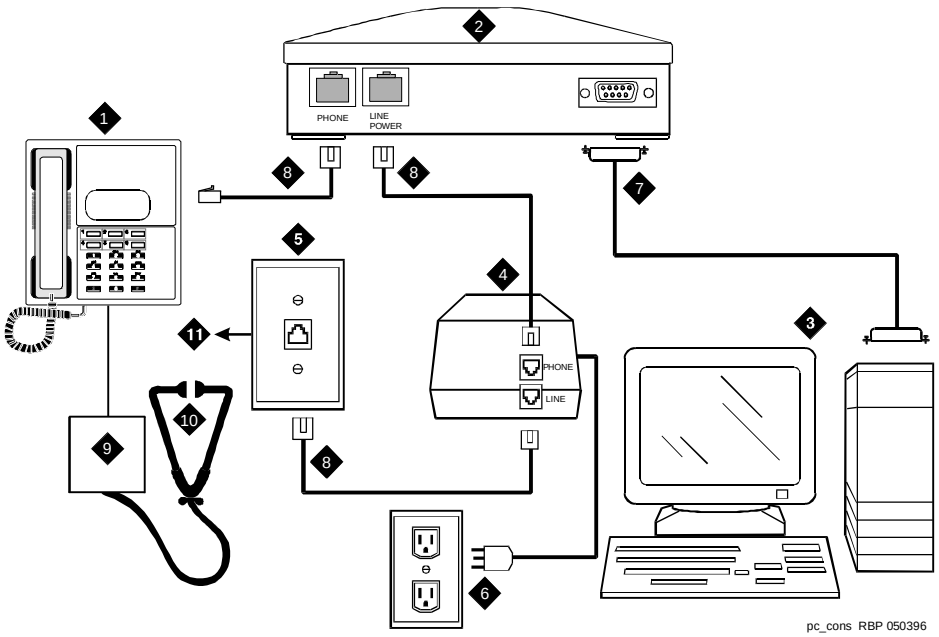

Figure Notes

1. DCP Telephone (Such as 8403 or 8411)
2. PassageWay Adapter
3. Host Computer (Serial I/O Connection)
4. 1151A or 1151A2 Power Supply for PassageWay Adapter
5. 103A or Modular Wall Jack
6. Electrical Outlet for Power Supply
7. 25-Pair Cable
8. D8W 4-Pair Modular Cord
9. Optional 500A Adapter
10. Optional Headset
11. To TN754B, TN2181, or TN2224 Digital Line Circuit Pack

Figure 1-53. Typical PC Console Connections (Non-United States)

The analog jack on the rear of the DCP voice terminal is inoperable when PC Console is used.

Integrated Channel Service Unit Module

The Integrated Channel Service Unit (ICSU) is a combination of a 120A CSU module integrated with either a TN464F or TN767E (or later suffixes) DS1 circuit pack.

NOTE:
Throughout this document, the designation TN464F means any TN464F or later suffix. Similarly, TN767E means any TN767E or later suffix.

Install the 120A CSU Module

Refer to Figure 1-54 when installing the 120A module. Installation instructions follow the figure and table. Table 1-8 describes the components shipped with the 120A module.

Table 1-8. 120A Module Parts List

Part	Notes
120A CSU Module	
Cable H600-383	4-Pair Modular Cord Group 2, 50-Foot (15.2 m) cable (standard)
Cord DW8A-DE	4-Pair Modular Cord to Alarm Contacts

NOTE:
The basic ICSU requires a TN464E or TN767D or later suffix. The Enhanced Integrated Channel Service Unit requires a TN464F or TN767E or later suffix.

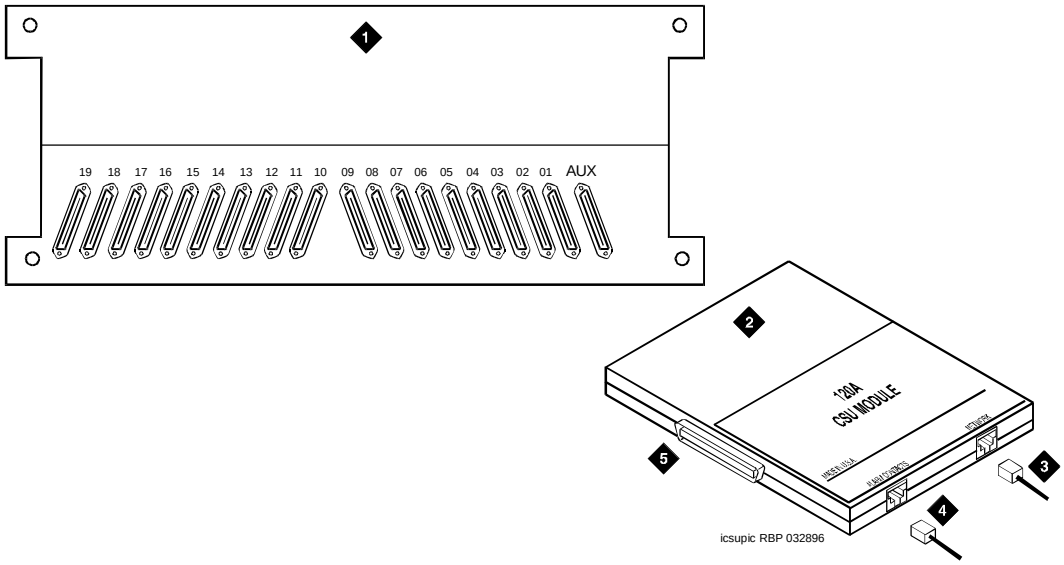

Figure Notes

1. Rear of Carrier Containing DS1 Circuit Pack
2. 120A Channel Service Unit (CSU)
3. 4-Pair Cord to Network Interface (H600-383)
4. DW8A-DE 4-Pair Cord to Alarm Contacts (Optional)
5. To 25-Pair Connector on Rear of Carrier Containing DS1 Circuit Pack

Figure 1-54. 120A Channel Service Unit Module

Table 1-9 provides the H600-383 cable pinouts. Table 1-10 provides the cable lengths for each cable group number.

Table 1-9. H600-383 Cable Pin Assignments

Pin	Color	Channel Service Unit Designation	Network Designation	Function
1	BK	Line in 0	R1	RCV
2	Y	Line in 1	T1	
3	Shield			
4	R	Line out 0	R	XMT
5	G	Line out 1	T	
6	Shield			
7				Not Assigned
8				Not Assigned

Table 1-10. H600-383 Cable Lengths by Group Number

Group	Length	Group	Length
1	25 Feet (7.6 m)	5	125 Feet (38.1 m)
2	50 Feet (15.2 m)	6	200 Feet (61 m)
3	75 Feet (22.9 m)	7	400 Feet (122 m)
4	100 Feet (30.5 m)	8	650 Feet (198.1 m)

Install the 120A Module

CAUTION:
Before installing the 120A, observe the following cautions:

- *Do not plug the 120A into any circuit pack other than a TN464F or TN767E or later release/vintage. Be sure the DS1 circuit pack is set for 24 channel operation (1.544 Mbps). The 120A does not operate with the 32 channel interface. This option is set both in administration and by a switch on the circuit pack.*
- *The connector terminals on the 120A can be damaged by static discharge. Wear an anti-static wrist strap.*
- *Do not touch the external alarm cable when it is connected to the 120A. A solid state relay in the 120A might be damaged by static discharge. Wear an anti-static wrist strap.*
- *Do not connect the 120A to any interface other than a network smart jack.*

NOTE:
If installing more than one 120A in a Release 5vs system, all the DS1 circuit packs should be located either in slots 1 through 4 or in slots 5 through 10 but not in both. This reduces cable congestion on the rear of the system. Placing DS1 circuit packs in both slot ranges causes 120A modules to be in close proximity on the backplane and requires the 120A module-to-network interface cable to be bent at a sharp angle. This configuration will work but should be avoided.

CAUTION:
Always wear an anti-static wrist strap when installing a 120A module.

1. Make sure the DS1 circuit pack is unplugged from the slot.
2. Install a 4C retainer in the 50-pin plug associated with the DS1 circuit pack slot.
3. Plug the 120A's 25-pair connector directly into the plug associated with the DS1 circuit pack slot. Secure the 4C retainer around the 120A.
4. Attach the supplied H600-383 cable to the 120A and to the network smart jack. This cable is directional. To determine the end that connects to the 120A, perform a continuity test between pins 3 and 6. The end with this continuity is the 120A end. The shield is grounded only at the 120A end. Use the cable provided. If cabling other than that provided with the 120A is used, observe the following guidelines:

- Use 24 gauge wire providing individually shielded, twisted pairs for transmit and receive signals. The cable is used between the network interface and the 120A. The shields of this cable should be grounded only at the 120A end to avoid ground loops.
- Cabling between the network interface and 120A can have no bridge taps.
- If using standard house riser cable for connections between the network interface and the 120A, a 100-pair separation should be maintained between the receive and transmit twisted pairs.
- If using standard house riser cable for connections between the network interface and the 120A, cross connects to 110-type cross connect blocks must be limited to a maximum of 2.
- Never use quad cable (untwisted two pair telephone cable) in a DS1 line.
- Avoid mixing wires of different gauges in a DS1 line.

5. If using external alarm equipment, attach the supplied DW8 cable to the 120A and the external equipment. The maximum length of this cable depends on the specifications of the alarm equipment.
6. If a TN464F is used, make sure the circuit pack is set for 24 channel operation. Set the switch on the circuit pack as shown in Figure 2-1.
7. Set the line compensation value for 0-133 feet. This is the distance between the DS1 circuit pack and the 120A module. This is set from the system administration terminal, in the DS1 circuit pack form in the field “line compensation.”
8. Insert the DS1 circuit pack into the slot.

   NOTE:
   Removing and reinserting the DS1 circuit pack automatically resets the 120A. To completely test the 120A, the DS1 circuit pack must be inserted *after* the 120A is installed. Always reinsert the DS1 circuit pack to completely test the 120A.

9. Independent of the host system, the DS1 circuit pack initializes and tests the 120A. Initialization and testing is complete when the green LED goes off. The DS1 circuit pack indicates the status of the circuit pack and 120A.
10. The red LED must be off after the test. This indicates a working DS1 circuit pack and 120A combination.

    If the circuits do not pass the above test, troubleshoot the 120A as instructed in *Integrated CSU Module Installation and Operation,* 555-230-193.

CONVERSANT System

Figure 1-55 shows a typical CONVERSANT® System connecting to a 3150 Channel Service Unit (CSU). All CONVERSANT Systems connect similarly. The MAP/40 installs inside a PC. For installation information, refer to *MAP/40 Voice Processing Hardware Installation,* 585-310-150, or *MAP/100 Voice Processing Hardware Installation*, 585-310-148, or *MAP/100C Voice Processing Hardware Installation*, 585-350-108. Locate the CONVERSANT System within 75 feet (22.86 m) of the CSU.

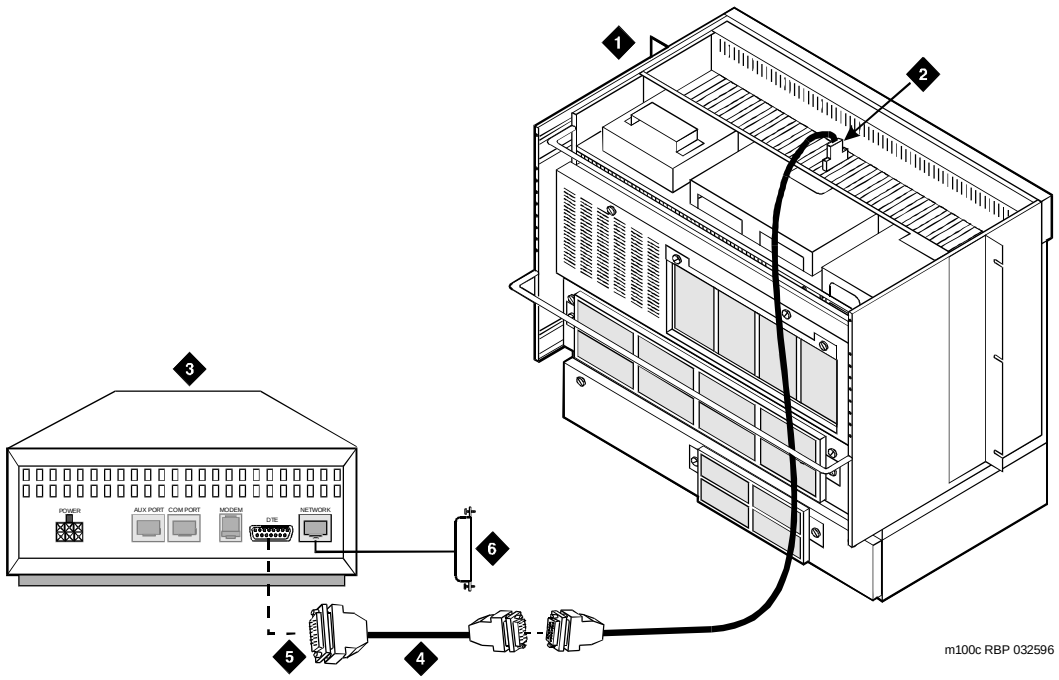

Figure Notes

1. MAP/100C Cabinet
2. T1 Extension Cable (ED5P208-30, G1) from T1 Interface Board (Slot 12)
3. 3150 Channel Service Unit (CSU)
4. Adapter Cable (comcode 107063711)
5. To 15-Pin DTE Connector on CSU
6. To DS1 Circuit Pack in DEFINITY System (TN767E or Later)

Figure 1-55. Typical Connections for CONVERSANT

Two-Wire DCP Endpoint

Wire the Tip and Ring connections of two-wire DCP endpoints to a TN2224 Digital Line 2-Wire circuit pack (or equivalent) similar to the two-wire analog endpoints for a TN746B Analog Line circuit pack.

NOTE:
The TN2224 supports two-wire DCP sets only (not four-wire).

Two-Wire Voice Terminals

CAUTION:
*Except for auxiliary power, if necessary (per Table 1-11), these should be the **only** connections to the modular wall jack. Do not bridge or parallel these telephones.*

Table 1-11. DCP Information Outlet Pinout

Pin Number	Function	Pin Number	Function
1	4-wire output from terminal	5	2-wire Ring
2	4-wire output from terminal	6	4-wire input from system
3	4-wire input from system	7	Auxiliary power -48 VDC
4	2-wire Tip	8	Auxiliary power GRD

Two-Wire Voice and Data Terminals

Figure 1-56 shows a workstation connecting to a data adapter. The line side of the adapter connects to the TN2181 Digital Line 2-Wire circuit pack via the MDF (to the system cabinet).

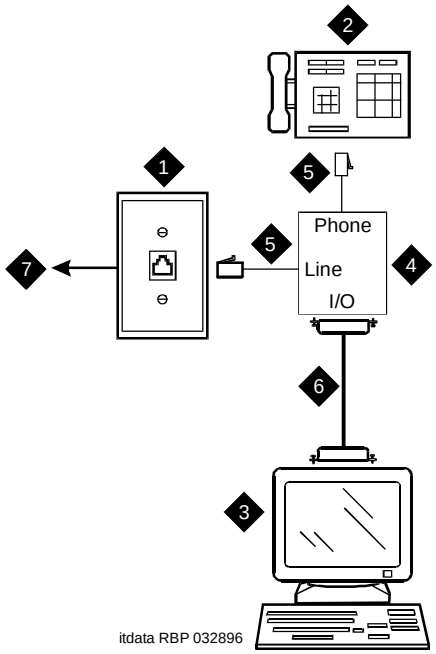

Figure Notes

1. 103A or Modular Wall Jack
2. 2-Wire Endpoint
3. Data Terminal (Serial Data)
4. Data Adapter (Such as Italtel)
5. 4-Wire Modular Cord
6. 25-Pair Cable
7. To TN2181 Digital Line Circuit Pack

Figure 1-56. Typical Connections to a Two-Wire DCP Workstation

Wire the circuit pack to the MDF with a 25-pair cable:

1. Wire to the data adapter per local standards.
2. Wire the data terminal and telephone as instructed in the document accompanying the data adapter.

Busy Tone Disconnect

The Busy Tone Disconnect external adjunct provides a method to detect disconnect of incoming calls connected via loop start 2-wire analog trunks. These 2-wire trunks are used in some countries outside the United States where the Public Switched Telephone Network (PSTN) sends tones in the voice band instead of line disconnect to indicate caller-disconnect. Figure 1-57 shows typical connections.

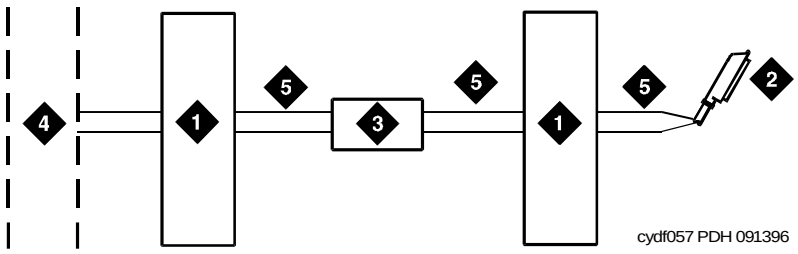

Figure Notes

1. Part of Main Distribution Frame (MDF)
2. To Loop Start Central Office Trunk Circuit Pack Such as TN465B or TN747B
3. Busy Tone Disconnect Device
4. Public Switched Telephone Network (PSTN) Central Office Trunk
5. Tip and Ring Wires

Figure 1-57. Typical Cabling for Busy Tone Disconnect

External Modem

Figure 1-58 shows a typical connection from the TN790 Processor circuit pack to a recommended COMSPHERE external modem. A customer-supplied, type-approved modem may be used in place of the COMSPHERE modem. Contact your Lucent Technologies representative for specifications.

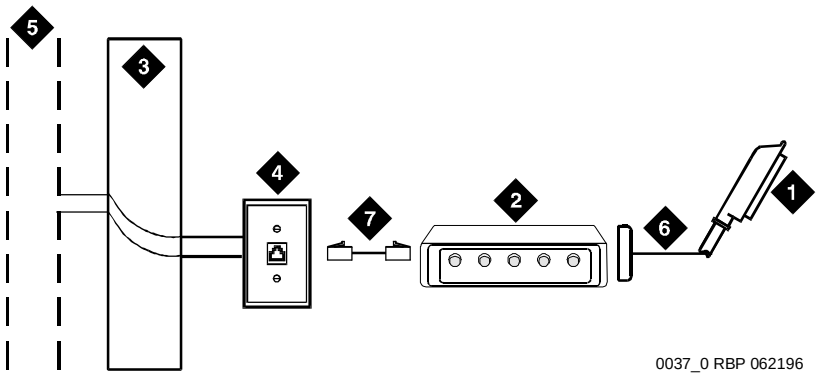

Figure Notes

1. To DCE Connector on Cabinet
2. External Modem
3. Part of Main Distribution Frame (MDF)
4. 103A or Modular Wall Jack
5. Public Switched Telephone Network (PSTN)
6. M25B Cable (25-Pin RS-232) (50 Feet, 15.24 m Maximum). May Require an Adapter
7. Modular Line Cord to DTE Connector on Modem

Figure 1-58. Typical External Modem Connections

1. Connect the RS-232 (or EIA-232) cable to the DCE connector on the rear of the Control Carrier.
2. Connect the opposite end of the cable to the modem. An adapter may be required.
3. Connect the modem to the network interface via the MDF.
4. Refer to Chapter 2, "Setting Options" to set the modem options.

   NOTE:
   The Release 5 and later systems are designed to operate with the COMSPHERE modems set to the factory default settings.

5. Set the `Modem Connection` field to **External**, on page 3 of the Maintenance-Related System Parameters form

T1 ATM Interface

Figure 1-59 shows a typical connection from a TN464F or TN767E DS1 circuit pack to a T1 Asynchronous Transfer Mode (ATM) interface.

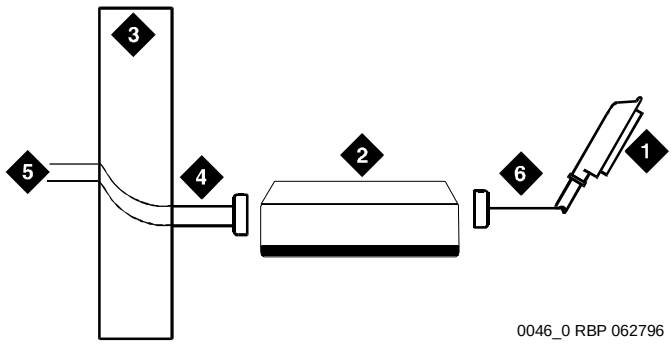

Figure Notes

1. To TN464F or TN767E DS1 Circuit Pack
2. T1 ATM Interface Device
3. Part of Main Distribution Frame (MDF)
4. 9-Pin Cable to Main Distribution Frame
5. To T1 Network
6. 25-Pair to 9-Pin Cable (To T1 NETWORK Connector on T1 ATM Device). May Require an Adapter

Figure 1-59. Typical T1 ATM Interface Connections

ESPA Radio Paging

Figure 1-60 shows typical connections to European Standard Paging Access (ESPA) equipment.

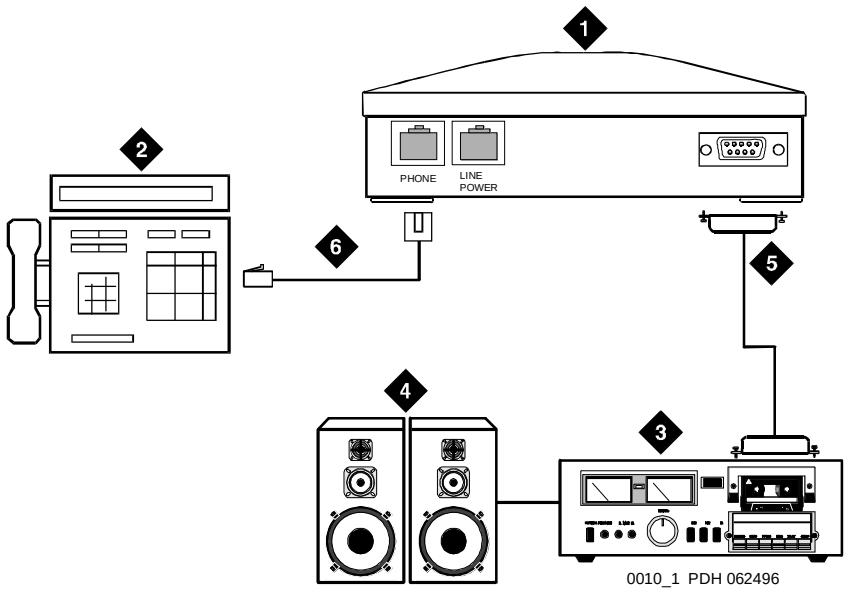

Figure Notes

1. PassageWay Interface
2. DCP Telephone (Such as 8410 or 8434)
3. ESPA Radio Paging Equipment
4. Paging Loudspeakers
5. RS-232 Connector
6. Modular Line Cord

Figure 1-60. Typical ESPA Radio Paging Connections

Connect the LINE jack on the PassageWay Interface to a TN754B Digital Line 4-Wire DCP circuit pack via the MDF.

3150 Channel Service Unit

During the following installation, be sure to label all cables. Figure 1-61 shows a typical connection from the H600-348 Quad Cable to the CSU, through the H600-307 Network Cable, and to the network interface through the Smart Jacks.

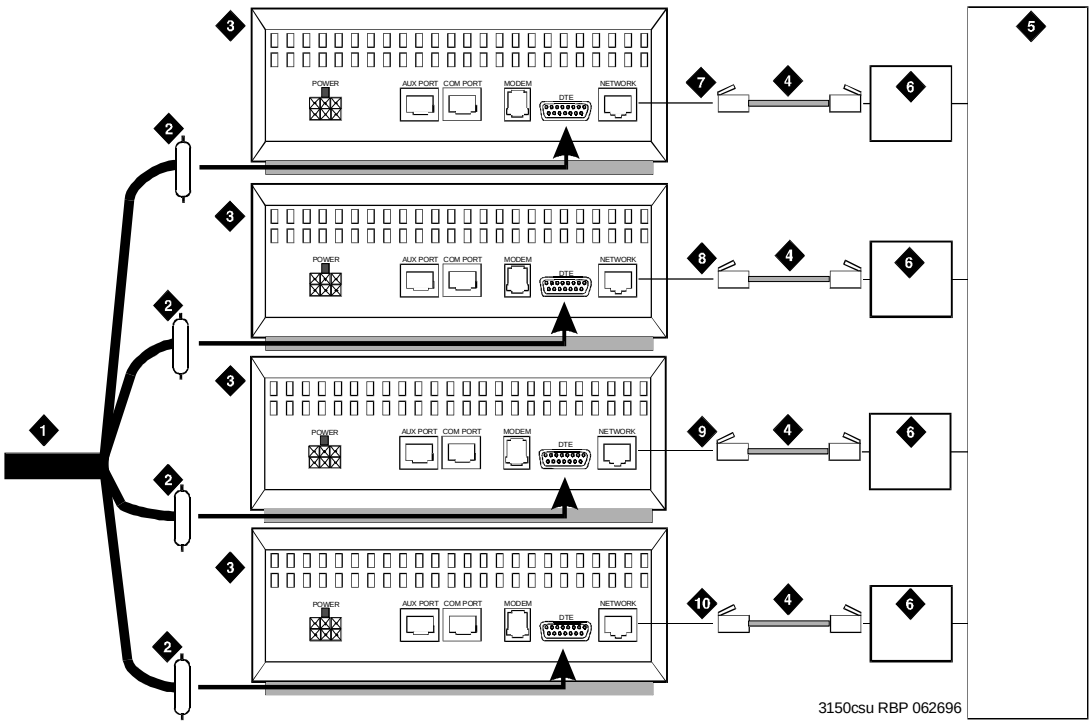

Figure Notes

1. H600-348 Quad Cable
2. 15-Pin Male “D” Connectors (to DTE Jacks on CSU)
3. Channel Service Unit (CSU)
4. H600-307 Cable (RJ-48C to RJ-48C)
5. Network Interface
6. Smart Jack (if Provided)
7. Cable “A”
8. Cable “B”
9. Cable “C”
10. Cable “D”

Figure 1-61. Channel Service Unit Connections

The quad cable provides up to four connections using a 15-pin connector that plugs into the DTE jack on each CSU. An adapter cable (comcode 107063711) may be required to connect the H600-348 quad cable to the CSU.

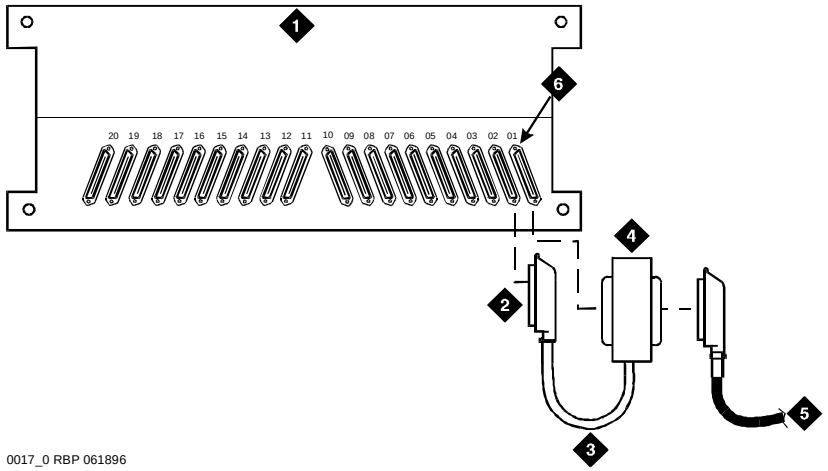

Figure Notes

1. Port Carrier
2. 50-Pair Female Connector to DEFINITY System
3. 14-Inch (35.56 cm) “Y” Cable
4. 50-Pin Male/50-Pin Female Double-Headed Connector Cable
5. Quad Cable (With 50-Pin Male Connector) Connects to Channel Service Unit
6. DS1 Converter Connector

Figure 1-62. DS1 Converter Connections Using Double-Headed Cable

For some installations, such as a DS1 Converter (T1), use a “Y” cable to connect between the DEFINITY System and the quad cable. See Figure 1-62.

Table 1-12 shows the “Y” cable lengths and associated comcode numbers.

Refer to *DEFINITY Enterprise Communications Server Release 5 Installation and Test for Multi-Carrier Cabinets* for T1 and E1 DS1 Converter installation (TN1654).

Table 1-12. "Y" Cable Lengths (DS1 Converter Only)

Length	Description	Comcode
14 Inches (35.5 cm)	TN1654 to adjacent Expansion Interface circuit pack or TN573B Switch Node Interface circuit pack in same carrier	847245750
70 Inches (177.8 cm)	TN1654 to Expansion Interface circuit pack or Switch Node Interface in another carrier	847245768
14 Inches (35.5 cm)	TN1654 to fiber optic transceiver (DC-powered cabinets only). This cable is for intercabinet cabling only.	847245776
14 Inches (35.5 cm)	TN1654 to adjacent TN570C Expansion Interface circuit pack	847746641

DS1 CPE Loopback Jack (T1 Only)

Using the DS1 CPE Loopback Jack (apparatus code 700A, comcode 107988867), a technician can test the DS1 span between the system and the network interface point. *The loopback jack is required when DC power appears at the interface to the ICSU*. The loopback jack isolates the ICSU from the DC power and properly loops the DC span power.

NOTE:
The loopback jack operates with any vintage of TN767E (or later) or TN464F (or later) DS1 circuit packs and with G3V3 EDI release 3 (or later) software. The loopback jack operates with the 120A2 (or later) Integrated Channel Service Unit (ICSU) only; *not* the 31xx series of Channel Service Units or other external CSUs or earlier ICSUs.

Loopback Jack Installation

Configurations Using a Smart Jack

The preferred location of the loopback jack is at the interface to the Smart Jack. This provides maximum coverage of CPE wiring when remote tests are run using the loopback jack. If the Smart Jack is not accessible, install the loopback jack at the extended demarcation point.

1. If there is no extended demarcation point, install the loopback jack directly at the network interface point as shown in Figure 1-63.
2. If there is an extended demarcation point and the Smart Jack is not accessible, install the loopback jack as shown in Figure 1-64.
3. If there is an extended demarcation point, but the Smart Jack is accessible, install the loopback jack as shown in Figure 1-65.

Configurations Without a Smart Jack

1. Install the loopback jack at the point where the cabling from the ICSU plugs into the “dumb” block. If there is more than one “dumb” block, choose the one that is closest to the Interface Termination feed or the fiber MUX. This provides maximum coverage for loopback jack tests. Refer to Figure 1-66 and Figure 1-67.

Installation

1. To install the loopback jack, simply disconnect the RJ-48 (8-wide) connector (typically an H600-383 cable) at the appropriate interface point and connect the loopback jack in series with the DS1 span. See Figure 1-63 through Figure 1-67.
2. Plug the H600-383 cable from the ICSU into the female connector on the loopback jack.
3. Plug the male connector on the loopback jack cable into the network interface point.

NOTE:
Do not remove the loopback jack after installation. This is not a test tool and should always be available to remotely test a DS1 span.

Administration

1. At the management terminal, enter **change ds1 <location>**. The "location" is the DS1 interface circuit pack for which the loopback jack was installed.
2. Be sure the "near-end CSU type" is set to `integrated`.
3. On page 2 of the form, change the `supply CPE loopback jack power` field to `y`.

NOTE:
Setting this field to **y** informs the technician that a loopback jack is present on the facility. This allows a technician to determine that the facility is available for remote testing.

4. Enter **save translation** to save the new information.

DS1 Span Test

This test should only be performed after the DS1 circuit pack and the 120A2 (or later) ICSU have been successfully tested using appropriate maintenance procedures. The DS1 span test consists of 2 sequential parts. Each part provides a result indicating if there is a problem in the CPE wiring. CPE wiring may be considered problem-free only if the results of both parts are successful.

The first part of the span test powers-up the loopback jack and attempts to send a simple code from the DS1 board, through the wiring and loopback jack, and back to the DS1 board. Maintenance software waits about 10 seconds for the loopback jack to loop, sends the indication of the test results to the management terminal, and proceeds to the second part of the test.

The second part of the test sends the standard DS1 3-in-24 stress testing pattern from the DS1 board, through the loopback jack, and back to a bit error detector and counter on the DS1 board. The bit error rate counter may be examined at will via the management terminal, and provides the results of the second part of the test. The test remains in this state until it is terminated so that the CPE wiring may be bit error rate tested for as long as desired.

1. Busy out the DS1 circuit pack by entering **busyout board UUCCSS** (where UUCCSS is the cabinet, carrier, and slot number of the DS1 board).
2. At the management terminal, enter **change ds1 <location>** and verify the `near-end csu type` is set to `integrated`.
3. Change to page 2 of the DS1 administration form and confirm that the TX LBO field is 0dB. If not, record the current value and change it to 0dB for testing. Press Enter to implement the changes or press Cancel to change nothing.
4. Enter **test ds1-loop <location> cpe-loopback-jack**. This turns on simplex power to the loopback jack and waits about 20 seconds for any active DS1 facility alarms to clear. A "PASS" or "FAIL" displays on the terminal. This is the first of the 2 results. A "FAIL" indicates a fault is present in the wiring between the ICSU and the loopback jack. The loopback jack may also be faulty. A "PASS" only indicates that the loopback jack looped successfully, not that the test data contains no errors. If a "PASS" is obtained, continue with the following steps.

   NOTE:
   The loss of signal (LOS) alarm (demand test #138) is not processed during this test while the 3-in-24 pattern is active.

5. Enter **clear meas ds1 loop <location>** to clear the bit error count.
6. Enter **clear meas ds1 log <location>** to clear the performance measurement counts.
7. Enter **clear meas ds1 esf <location>** to clear the ESF error count.
8. Enter **list meas ds1 sum <location>** to display the bit error count. Refer to Table 1-13 for troubleshooting information.

Table 1-13. DS1 Span Troubleshooting

Displayed Field	Function	Indication
Test: cpe-looback-jack	Pattern 3-in-24	The loopback jack test is active.
Synchronized	Y or N	If “y” displays, the DS1 circuit pack has synchronized to the looped 3-in-24 pattern and is accumulating a count of the bit errors detected in the pattern until the test has ended. If “n” displays, retry the test 5 times by ending the test per Step 11 and re-starting the test per Step 4. If the circuit pack never synchronizes, substantial bit errors in the 3-in-24 pattern are likely. This could be intermittent connections or a broken wire in a receive or transmit pair in the CPE wiring.
Bit Error Count	Cumulative count of detected errors	If there are no wiring problems, the counter remains at 0. A count that pegs at 65535 or continues to increment by several hundred to several thousand on each **list meas** command execution indicates intermittent or corroded connections, severe crosstalk, or impedance imbalances between the two conductors of the receive pair or the transmit pair. Wiring may need replacement. Note that “ESF error events” counter and the ESF performance counter summaries (“errored seconds”, “bursty errored seconds”, and so forth) will also increment. These counters are not used with the loopback jack tests. However, they will increment if errors are occurring. Counters should be cleared following the test.

9. Repeat Steps 5 through 8 as desired to observe bit error rate characteristics. Also, wait 1 to 10 minutes between Steps 5 through 7. One minute without errors translates to better than a 1 in 10 to the eighth error rate. Ten minutes without errors translates to better than a 1 in 10 to the ninth error rate.
10. If the test runs for 1 minute with an error count of 0, confirm that the 3-in-24 pattern error detector is operating properly by entering **test ds1-loop <location> inject-single-bit-error**. This causes the 3-in-24 pattern generator on the DS1 circuit pack to inject a single-bit error into the transmit pattern. A subsequent **list meas ds1 summary <location>** command displays the bit error count. If a count greater than 1 is displayed, replace the ICSU and retest. If the problem continues, replace the DS1 circuit pack.

11. Terminate the test by entering **test ds1-loop <location> end cpe-loopback-jack-test**. Wait about 30 seconds for the DS1 to re-frame on the incoming signal and clear DS1 facility alarms.

    Loopback termination fails under the following conditions:

    a. The span is still looped somewhere. This could be at the loopback jack, at the ICSU, or somewhere in the network. This state is indicated by a fail code of 1313. If the red LED on the loopback jack is on, replace the ICSU. Re-run the test and verify that the loopback test terminates properly. If not, replace the DS1 circuit pack and repeat the test.

    b. The DS1 cannot frame on the incoming span's signal after the loopback jack is powered down. This means that there is something wrong with the receive signal into the loopback jack from the "dumb" block or the Smart Jack. If the service provider successfully looped and tested the span, up to the Smart Jack, this condition isolates the problem to the wiring between the loopback jack and the Smart Jack. Refer to "Loopback Jack Fault Isolation Procedures" for information on how to proceed in this case. The test cannot be successfully terminated until a good signal is received. To properly terminate the test before a good receive signal is available, enter **reset board <location>**.

12. Restore the "TX LBO" field to the original value recorded in Step 2.
13. Release the DS1 circuit pack using the **release board UUCCSSpp** command.
14. Leave the loopback jack connected to the DS1 span.

Loopback Jack Fault Isolation Procedures

This section describes the possible DS1 configurations in which the loopback jack may be used. These configurations are: when the DS1 provider includes a Smart Jack, when no Smart Jack is provided at all, and when sites use fiber multiplexers. These configurations are separated into "Configurations Using a Smart Jack" and "Configurations Without a Smart Jack."

Configurations Using a Smart Jack

The addition of the loopback jack and the presence of a Smart Jack divides the DS1 span into 3 separate sections for fault isolation. These sections are shown in Figure 1-63 through Figure 1-65 for the different span configurations. They are:

Section 1: Between the 120A2 (or later) ICSU and the loopback jack.
Section 2: Between the loopback jack and the Smart Jack (network interface point).
Section 3: From the Smart Jack to the CO. It is necessary to contact the DS1 provider to run this test.

A problem can exist in 1 or more of the 3 sections. The field technician is responsible for finding and correcting problems in the first 2 sections. The DS1 service provider is responsible for finding and correcting problems in the third section. Testing is divided into 3 steps.

- Test customer premises wiring (section 1 in the following 3 figures) from the ICSU to the loopback jack as described in "DS1 Span Test."
- Test the CO-to-network interface wiring (section 3 in Figure 1-63) using the Smart Jack loopback (CO responsibility). Coordinate this test with the DS1 provider.
- Test the short length of customer premises wiring (section 2 in the following 3 figures) between the loopback jack and the Smart Jack. This can be done using a loopback that "overlaps" section 2 of the cable. Any of the following loopbacks can do this:
  - The local ICSUs line loopback, which is typically activated, tested, and then deactivated by the DS1 service provider at the CO end.
  - The local DS1 interface's payload loopback, activated and tested by the DS1 service provider at the CO end.
  - The far-end ICSU's line loopback. This test is activated at the management terminal by entering **test ds1-loop <location> far-csu-loopback-test-begin**. The test is terminated by entering **test ds1-loop <location> end-loopback/span-test**. Bit error counts are examined as described in "DS1 Span Test." This test method is the least preferable because it covers wiring that is not in the local portion of the span. This test only isolates problems to section 2 wiring if there are no problems in the wiring between the far-end CO and the far-end ICSU. Coordinate this test with the DS1 service provider.

  If any of the above tests (a, b, or c) fail, a problem is indicated in section 2 as long as the tests for section 1 and section 3 pass. Since section 2 includes the network interface point, it is necessary to work with the service provider to isolate the fault to the loopback jack cable, the "dumb" block, or the Smart Jack.

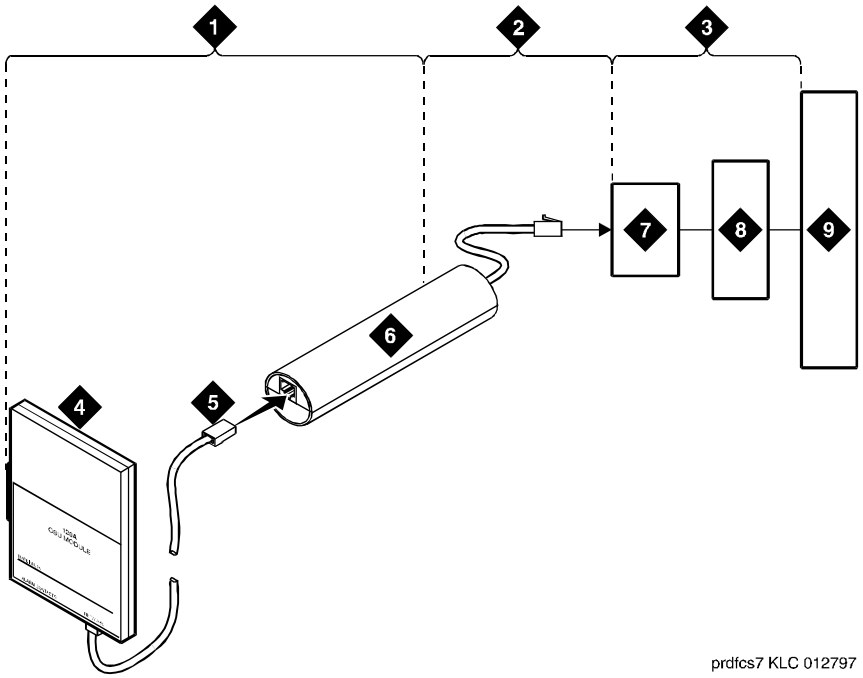

Figure Notes

1. Span Section 1
2. Span Section 2
3. Span Section 3
4. 120A2 (or later) Integrated Channel Service Unit (ICSU)
5. RJ-48 to Network Interface (Up to 1000 Feet) (305 m)
6. Loopback Jack
7. Network Interface Smart Jack
8. Interface Termination or Fiber MUX
9. Central Office

Figure 1-63. Network Interface at Smart Jack

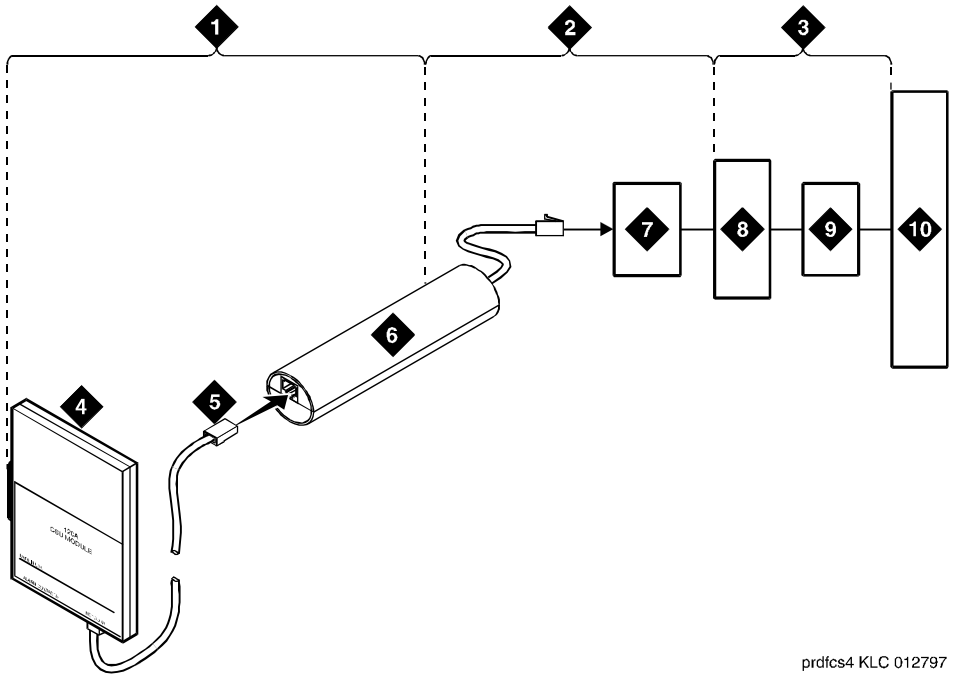

Figure Notes

1. Span Section 1
2. Span Section 2
3. Span Section 3
4. 120A2 (or later) Integrated Channel Service Unit (ICSU)
5. RJ-48 to Network Interface (Up to 1000 Feet) (305 m)
6. Loopback Jack
7. “Dumb” Block (Extended Demarcation)
8. Network Interface Smart Jack
9. Interface Termination or Fiber MUX
10. Central Office

Figure 1-64. Network Interface at Extended Demarcation Point (Smart Jack Inaccessible)

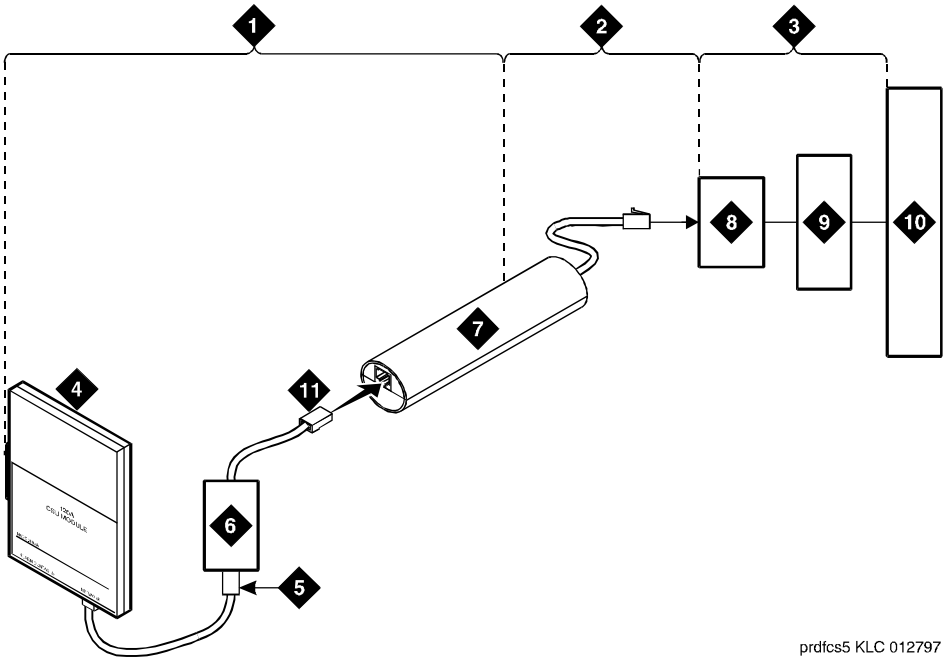

Figure Notes

1. Span Section 1
2. Span Section 2
3. Span Section 3
4. 120A2 (or later) Integrated Channel Service Unit (ICSU)
5. RJ-48 to Network Interface (Up to 1000 Feet) (305 m)
6. “Dumb” Block (Extended Demarcation)
7. Loopback Jack
8. Network Interface Smart Jack
9. Interface Termination or Fiber MUX
10. Central Office
11. “Dumb” Block to Smart Jack RJ-48

Figure 1-65. Network Interface at Extended Demarcation Point (Smart Jack Accessible)

Configurations Without a Smart Jack

When the loopback jack is added to a span that does not contain a Smart Jack, the span is divided into 2 sections. See Figure 1-66 and Figure 1-67.

1. ICSU to the loopback jack.
2. Loopback jack to the Central Office (CO).

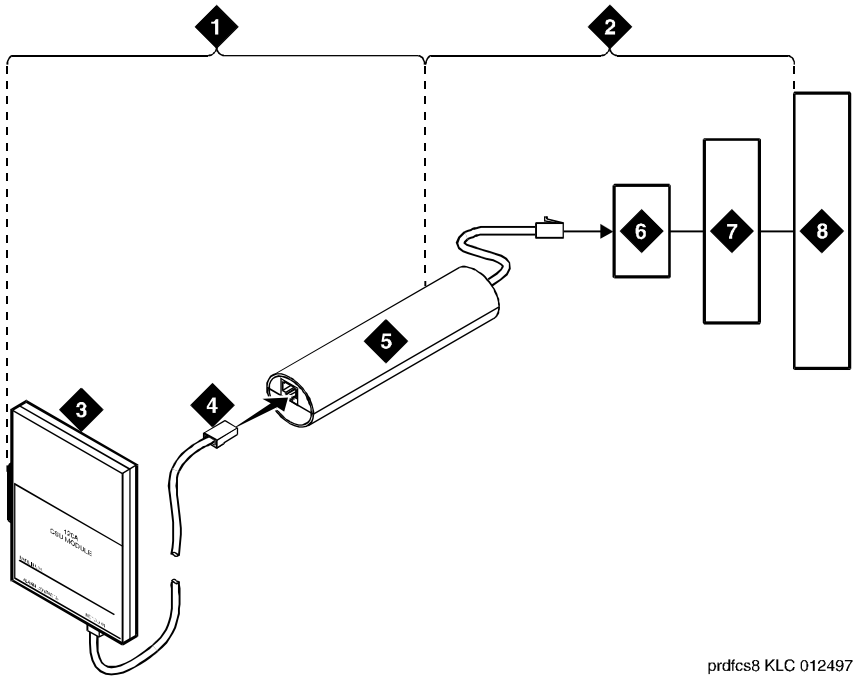

Figure Notes

1. Span Section 1
2. Span Section 2
3. 120A2 (or later) Integrated Channel Service Unit (ICSU)
4. RJ-48 to Network Interface (Up to 1000 Feet) (305 m)
5. Loopback Jack
6. “Dumb” Block (Demarcation Point)
7. Interface Termination or Fiber MUX
8. Central Office

Figure 1-66. Network Interface at “Dumb” Block

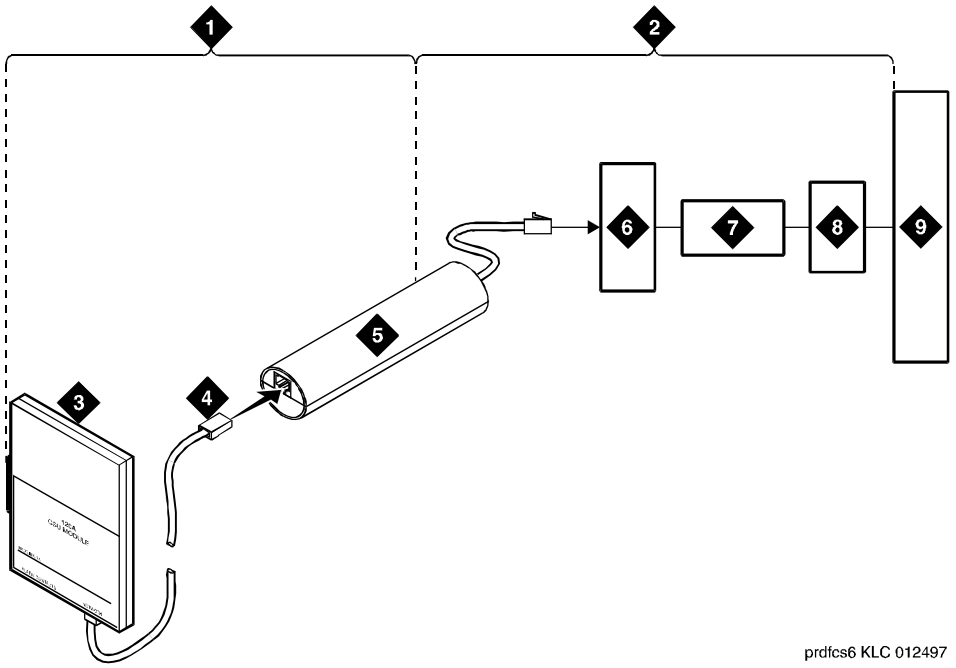

Figure Notes

1. Span Section 1
2. Span Section 2
3. 120A2 (or later) Integrated Channel Service Unit (ICSU)
4. RJ-48 to Network Interface (Up to 1000 Feet) (305 m)
5. Loopback Jack
6. “Dumb” Block (Demarcation Point)
7. Repeater
8. Fiber MUX
9. Central Office

Figure 1-67. Network Interface at “Dumb” Block with Repeater Line to Fiber MUX

Section 2 includes the short cable from the loopback jack to the “dumb” block demarcation point (part of the loopback jack). This is the only portion of section 2 that is part of customer premises wiring but is not covered in the loopback jack’s loopback path.

A problem can exist in 1 or both of the 2 sections. The field technician is responsible for finding and correcting problems in section 1 and the loopback cable portion of section 2. The DS1 service provider is responsible for finding and correcting problems in the majority of section 2. Testing is divided into 2 steps.

1. Test customer premises wiring (section 1 in Figure 1-66) from the ICSU to the loopback jack as described in the “DS1 Span Test” section.
2. Test the loopback jack-to-”dumb” block and ”dumb” block-to-CO wiring (section 2 in Figure 1-66). This can be done using a loopback that “overlaps” the section of the span. Any of the following loopbacks can do this:
    a. The local ICSUs line loopback, which is typically activated, tested, and then deactivated by the DS1 service provider at the CO end.
    b. The local DS1 interface’s payload loopback, activated and tested by the DS1 service provider at the CO end.
    c. The far-end ICSU’s line loopback. This test is activated at the management terminal by entering **test ds1-loop <location> far-csu-loopback-test-begin**. The test is terminated by entering **test ds1-loop <location> end-loopback/span-test**. Bit error counts are examined as described in the “DS1 Span Test” section. This test only isolates problems to section 2 wiring if there are no problems in the wiring between the far-end CO and the far-end ICSU. Coordinate this test with the DS1 service provider.

       If any of the above tests (a, b, or c) fail, a problem is indicated in section 2. This could mean bad loopback jack -to-”dumb” block cabling, but is more likely to indicate a problem somewhere between the “dumb” block and the CO. This is the responsibility of the DS1 service provider. If the DS1 Span Test confirms that there are no problems in section 1, the technician should proceed as follows to avoid unnecessary dispatch.

        1. Identify and contact the DS1 service provider
        2. Inform the DS1 provider that loopback tests of the CPE wiring to the “dumb” block (section 1) showed no problems
        3. If the far-end ICSU line loopback test failed, inform the DS1 provider
        4. Request that the DS1 provider perform a loopback test of their portion of the section 2 wiring by sending someone out to loop section 2 back to the CO at the “dumb” block.

           If this test fails, the problem is in the service provider’s wiring.

           If the test passes, the problem is in the cable between the loopback jack and the “dumb” block. Replace the loopback jack.

Configurations Using Fiber Multiplexers

Use the loopback jack when customer premises DS1 wiring connects to an on-site fiber multiplexer (MUX) and allows wiring to the network interface point on the MUX to be remotely tested. This requires that ICSUs be used on DS1 wiring to the MUX.

Fiber MUXes can take the place of Interface termination feeds as shown in Figure 1-63, Figure 1-64, Figure 1-65, and Figure 1-66. Test these spans using the same procedures as metallic spans. Note the following points:

1. Fiber MUXes may have loopback capabilities that can be activated by the service provider from the CO end. These may loop the signal back to the CO or back to the DS1 board. If the MUX provides the equivalent of a line loopback on the “problem” DS1 facility, this may be activated following a successful loopback jack test and used to isolate problems to the wiring between the loopback jack and the MUX.
2. Be aware that there are installations that use repeatered metallic lines between the MUX and the “dumb” block. These lines require DC power for the repeaters and this DC power is present at the “dumb” block interface to the CPE equipment. *A loopback jack is required in this configuration to properly isolate and terminate the DC power*.

To check for the presence of DC, make the following 4 measurements at the network interface jack:

1. From Transmit Tip (T, Pin 5) to Receive Tip (T1, Pin 2)
2. From Transmit Ring (R, Pin 4) to Receive Ring (R1, Pin 4)
3. From Transmit Tip (T, Pin 5) to Transmit Ring (R, Pin 4)
4. From Receive Tip (T1, Pin 2) to Receive Ring (R1, Pin 4)

All measurements should read 0 (zero) volts DC. For pin numbers and pin designations, refer to *Integrated Channel Service Unit (ICSU) Installation and Operation*, 555-230-193.

Operating Characteristics

If a TN464F or TN767E and a 120A2 were installed in a system running pre-G3V3 software and the software is later upgraded to G3V3 Release 3 or later, the DS1 circuit pack must be removed and re-installed before the ICSU administration fields will appear on the DS1 administration screen.

Multimedia Call Handling (MMCH) Endpoints

Connect the Endpoints

1. Each PC used as a MMCH endpoint must contain an H.221 adapter.
2. Connect the port on the H.221 adapter on the PC to any ISDN BRI port on the DEFINITY System. Refer to the tables at the end of this chapter for the pinout of the ISDN BRI circuit pack.
3. Connect a DCP telephone to a Digital Line port circuit pack. The DCP telephone must be used in conjunction with the PC. Refer to the tables at the end of this chapter for the pinout of the Digital Line circuit pack.

Administer the System

1. For R5vs and R5si, enter **change system-parameters maintenance**. Change the `Packet Bus Activated?` field to **y** and press Enter.
2. Call INADS and notify the representative that the `Multimedia Call Handling (MMCH)?` field on page 2 of the `customer-options` form must be changed to **y**.
3. Enter **change dial plan**. Enter the extension number in the `Extension:` field.
4. Logoff the terminal when finished to put the changes into effect.

Administer the Endpoints

1. Enter **add data next** <or a valid extension number>.
2. The Data Module form appears. On page 1 of the form, enter the `Data Extension:`, `Type:`, the `Name:` of the endpoint (such as ProShare), and enter **y** in `Multimedia?` field.
3. On page 2 of the form, enter **n** in the `XID?` field, and enter **n** in the `MIM Support?` field and press Enter.

Administer "One Number Complex"

1. Identify the voice telephone (DCP set) to associate with the data endpoint. The station record for this voice station must be changed.
2. Enter **change station** <**station number**>. The Station form appears.
3. On page 1 of the form, enter the data extension number in the `MM Complex Data Ext:` field.
4. On page 2 of the form, enter **y** in the `H.320 Conversion?` field and press Enter.

Setup and Test the MMCH Installation

This section provides general setup and testing procedures for the PictureTel, ProShare, Vistium, and Zydacron multimedia endpoints. Use the documentation that accompanies the endpoint equipment for more details.

PictureTel PCS50 (Live 50) and PCS100 Configuration

Minimum Requirements

Version: Live 50 version 1.6 or higher
Minimum Processor Speed: 486/33 MHz, DX2/66
Disk Space: 20 MB
Memory: 8 MB RAM, 16 MB recommended
ISA Expansion Slots (16 bits): 2 slots
Monitor: VGA, SVGA
Operating System: Windows™ 3.1x or Windows™ 95

These endpoints do not need any special configuration settings. The standard PictureTel configuration for a DEFINITY ECS is as follows.

1. Load the LiveShare Plus software first.
2. Enter the user name and company name. Use default values for subsequent prompts.
3. Enter a site name.
4. Select Restart Windows and FINISH.
5. Load the Live 50 VAFC drivers.
6. Load the Picture Tel Live 50 software.
7. Open the *PictureTel Live* program group from the Windows™ Program Manager screen.
8. Double click on the **PictureTel Live Configure** icon.
9. At the **Welcome** screen, click on **continue**.
10. Go to the **registration confirmation** screen and click on **continue**.
11. Enter the **Network Interface Settings**. Be sure that “ISDN” has an “x” in the box. Click on **continue**.
12. At the **ISDN Parameters** screen, set the signaling protocol to **USA Canada: 5ESS Custom Point-to-Point**. Click on **continue**.
13. At the **Hardware Settings** screen, set the following: Interrupt (IRQ) to 11, Base I/O Port=280, and Base Memory=D000. Under the Video Input section, select the NTSC circle. Click on **continue**.
14. At the Audio Device screen, enter the necessary information.

15. At the **Node Name** screen, enter a name for the PC using the application software package.
16. At the **Modify config.sys** screen, click the **SAVE** button.
17. The remainder of the software loads automatically.
18. When the load is finished, reboot the PC.
19. Open the *PictureTel Live* program group from the Windows™ Program Manager screen.
20. Double click on the **PictureTel Live** icon. The program takes about 1 minute to open.

How to Place a PictureTel Video Call

1. Turn on the video camera. Be sure the green LED is on.

NOTE:
A problem may be encountered when trying to open the PictureTel application software. If the application seems to freeze during initialization (no response for several minutes) then there may be a conflict with the interrupt (IRQ) port setting. Check the PictureTel configuration to make sure that the IRQ port is set to 11. If initialization is still a problem, contact a PictureTel representative.

2. Open the PictureTel application program.
3. Two windows should appear: one local video and one remote video.
4. Go to the remote video window (the one without the local video image inside it).
5. Click on the **blue phone** icon at the top left of the window.
6. A **DIAL PAD** window opens. Use the keyboard, or mouse and dial pad, to enter the *DATA* extension of another multimedia endpoint. If you are dialing another PictureTel, you can place a 1B (one 64 Kb channel) call by only filling in the first telephone extension box on the **DIAL PAD** window. To make a 2B (two 64 Kb channels) call, you must put the same called party extension in the second telephone extension box on the **DIAL PAD** window.
7. To initiate a call, click on the **VIDEO CALL** button on the top right of the **DIAL PAD** window.
8. The dial pad disappears and you see a status window that shows “ringing.”
9. When the connection is made, the status window disappears and you can see the connection status on the bottom bar of the remote video window.

Troubleshooting the PictureTel

Symptom: A conference call between a PictureTel and a ProShare has problems with the video connection or with video switching.

Solution: Be sure the PictureTel is version 1.6 or higher and the ProShare is version 2.0 or higher.

ProShare Configuration

Minimum Requirements

Version: Version 2.0 or higher
Minimum Processor Speed: 486/33 MHz, DX2/66
Disk Space: 6 MB
Memory: 12 MB RAM, 16 MB recommended
ISA Expansion Slots (16 bits): 2 slots
Monitor: 640x480x256 colors, VGA, SVGA
Operating System: Windows™ 3.1x or Windows™ 95

The ProShare system must be set up so that it does not look for a Service Profile Identifier (SPID) when connecting to the DEFINITY ECS. This is important because you administer the ProShare as a single 7500 data set and the telephone extension associated with that data set applies to both BRI channels.

1. Load the ProShare software onto the PC using the default values.
2. Enter the company name and serial number of the software.
3. Select the default directory location and install all files.
4. Answer NO to Modem Setup.
5. Scroll through the list of countries and select the country in which the PC is installed.
6. At the **Protocol and Switch Mfg** window, click on **Custom**. Click on **AT&T** and click on **Accept**.
7. At the next window, choose **PBX** for Exchange Switch, and choose **G3r** (for Release 5r) or **G3i** (for Release 5si) (as appropriate) as the PBX type. Click on **Accept**.
8. Select yes or no for Phone Call Support.
9. A window with **#Phone Numbers** and **#SPIDS** appears. Set **#Phone Numbers** to **1** and set **#SPIDS** to **0**.
10. Click on the **Aliases** button and enter the last 5 digits of the data extension number and an external alias.
11. Leave the telephone number at default and click on **Accept**.
12. Select **restart windows**.

How to Place a ProShare Video Call

1. Boot the ProShare computer.
2. Open the camera lens. Be sure the green LED is on.
3. Open **ProShare Personal Conferencing** program group from the Windows™ Program Manager screen.
4. Double click on the **ProShare Conferencing** icon.
5. If this is a first time install, click on OK for the camera test. This test can take several minutes to complete.
6. After the tutorial runs (if desired) and the product is registered, the ProShare application opens with 2 video windows.
7. Click on the Call button. A telephone dial pad appears. Use the dial pad to enter the telephone number of the desired extension to place a test call *to*. The ProShare only makes 2B calls. The telephone number entered is used to place both calls. To place a 2B (two 64 Kb channels) call to 2 different telephone extensions, separate them with a colon "**:**". To place a 56 Kb call instead of a 64 Kb call, enter a pound "#" sign to the end of the called party extension.
8. To initiate the call, click on the **DIAL** button on the handset window. The dialing status displays where the extension was entered. When the connection is made, remote video appears.

Troubleshooting the ProShare

Symptom: Any attempt to place a data call to the complex's voice station is denied by the ProShare.

Solution: When configuring the ProShare, you entered the voice extension of the complex. You need to enter the data extension (Step G, below). To do this:

a. Go to the ProShare directory and run the Diagnostics and Utilities program.

b. Double click on the **Hardware and ISDN Configuration** utility.

c. Choose **ISDN Line Configuration**.

d. Set **Protocol = custom** and **Manufacturer = AT&T (5ESS)**. Click on the **Accept** button.

e. Set **Switch = PBX**, **PBX Type = G3r** (or Release 5r) or **G3i** (or Release 5si). Click on the **Accept** button.

f. Set **Phone Call Support = No** and click on the **Accept** button.

g. Set **#Phone Numbers = 1**, **#SPIDs = 0**, and **Phone Number** to the data endpoint extension. Click on the **Accept** button.

Symptom: Cannot accept a multimedia telephone call from off-premises to the single number.

Solution: Under “Aliasing”, enter the data extension number. To do this:

a. Go to the ProShare directory and run the Diagnostics and Utilities program.

b. Double click on the **Hardware and ISDN Configuration** utility.

c. Choose **ISDN Line Configuration**.

d. Set **Protocol = custom** and **Manufacturer = AT&T (5ESS)**. Click on the **Accept** button.

e. Set **Switch = PBX**, **PBX Type = G3r** (for Release 5r) or **G3i** (for Release 5si). Click on the **Accept** button.

f. Set **Phone Call Support = No** and click on the **Accept** button.

g. Set **#Phone Numbers = 1**, **#SPIDs = 0**, and **Phone Number** to the data endpoint extension.

h. Click on the **Aliasing** button.

i. In the **Alias** box, enter the data extension number, choose **External**, click the **Add** button, click the **OK** button, and click the **Accept** button.

Symptom: Get a short break in audio path during first few seconds of a call. This is most noticeable when covering to AUDIX/Voice mail.

Solution: ProShare mutes the audio path when it does a “capabilities exchange” in H.320. This problem is being addressed in later versions of the ProShare software. Contact your Lucent Technologies representative for more information.

Vistium Configuration

Minimum Requirements

Version: 1.03.10
Minimum Processor Speed: 486/33 MHz, DX2/66 or higher
Disk Space: 10 MB
Memory: 8 MB RAM, 16 MB recommended
ISA Expansion Slots (16 bits): 1 slot
Monitor: VGA, SVGA
Operating System: Windows™ 3.1x or Windows™ 95

Zydacron Configuration

Minimum Requirements

Version: Z250 version 1.0 or ZydApp2 version 1.3
Minimum Processor Speed: 486/33 MHz, DX2/66 or higher
Disk Space: 5 MB
Memory: 4 MB RAM, 8 MB recommended
ISA Expansion Slots (16 bits): 1 slot
Monitor: VGA, SVGA
Operating System: Windows™ 3.1x or Windows™ 95

These endpoints do not need any special configuration settings. The standard configuration for a DEFINITY ECS is as follows. Use the documentation that accompanies the Zydacron equipment for more details.

1. Open Windows and load the software application.
2. Select Full Installation.
3. Click on OK for the default location of the application directory (c:\ZYDAPP2).
4. Select Yes to reset the video drivers (if desired).
5. View or close the READZA2.txt file as desired.
6. When the Collaboration Software dialog box opens, select Yes if another vendor's video conferencing application is being loaded. Select No if only Zydacron software is being loaded.
7. The software continues to load automatically. When finished, the application icons appear in the program group.

How to Place a Zydacron Video Call

1. Turn on the video camera. Be sure the green LED is on.
2. Double click on the **Zydacron** icon to start the program. The program may take about 30 seconds to open.
3. Two local video windows should appear.
4. Click the Dial icon from the Main toolbar.
5. Use the keypad or the computer keyboard to enter the telephone number of the test endpoint or telephone.
6. To initiate the call, click on the **CALL** button. The Incoming Call screen appears on the test endpoint (or the test telephone rings).
7. Select ANSWER on the test endpoint or pick up the test telephone handset.
8. Remote video appears on the local screen and a talk path is opened on the headset. For a test telephone, a talk path is opened.

Troubleshooting the Zydacron

Symptom: After each PC reboot, the first time you bring up the Zydacron application and receive a telephone call, if you do not answer the data call, the answer screen stays frozen in the window.

Solution: Restart the Zydacron application. Press the Ctrl, Alt, and Del keys at the same time. This brings up a window that allows you to select a task. Select the **Zydacron** application and click on the **end task** button.

Symptom: Cannot make an outgoing call. Get a Message Interrupt.

Solution: The interrupt (IRQ) setting is incorrect. Contact your Zydacron representative for the recommended IRQ settings.

Connect Stratum 3 Clock

Set Clock Options

1. There are four sets of option switches on the clock. Set the options on the Clock Input Board (CI) per Table 1-14.

Table 1-14. CI Option Switch Settings

Switch	Function	Position
1	T1 Select	OFF = enable (default) ON = disable
2	CC Select	OFF = enable ON = disable (default)
3	Framing Select	OFF = ESF ON = D4 (default)
4	BX.25	OFF = enable ON = disable (default)

2. Set the options on the Stratum 3 Clock board (ST3) per Table 1-15.

Table 1-15. ST3 Clock Board Option Switch Settings

Switch	Status/Results
SW1 Minor Alarm Control	OFF = minor alarm never output ON = minor alarm is output if holdover occurs
SW2 Major Alarm Control	OFF = major alarm is output and fail lamp lights if 5 VDC power is lost and 4 kHz output is lost ON = major alarm is output and fail lamp lights if 5 VDC power is lost and 4 kHz output is lost and holdover occurs

NOTE:
Only SW 1 and SW2 are used. SW1 controls the output of alarm signals from the Stratum 3 Clock board.

3. Set the options on the Composite Clock Timing Output Board (TOCA) per Table 1-16.
4. Set the Stratum 2/Stratum 3 switch to the STRATUM 3 position.

Table 1-16. Composite Clock Timing Output Board (TOCA)

Switch		Range						
500	1000	1 Foot (0.3 m)	500 Feet (152 m)	1000 Feet (305 m)	1500 Feet (457 m)	2000 Feet (610 m)	2500 Feet (762 m)	3000 Feet (914 m)
OFF	OFF	<----------			---------->			
ON	OFF		<----------		---------->			
OFF	ON			<----------	---------->			
ON	ON				<----------	----------	---------->	

NOTE:
Set switches 1 and 2 according to the distance from the Stratum 3 clock to the DEFINITY System. Set switch 3 to ON. Set switch 4 to OFF.

Cabling the Stratum 3 Clock

Figure 1-68 shows typical connections to a Stratum 3 Clock cabinet. Connections are made through the yellow field cross-connect. A custom "Y" cable (H600-274) connects the CSU to the DS1 circuit pack and taps off the input for the Stratum 3 Clock. A resistor built into the cable to provides the necessary isolation between the system and the clock. The "Y" cable plugs directly into the CSU and connects to standard cables for interface to the system and the yellow field on the MDF.

The H600-307 cable connects the system end of the "Y" cable to a DS1 circuit pack (shown as TN464F, TN722B, or TN767E). The B25A cable connects the clock end of the "Y" cable to the yellow field on the MDF.

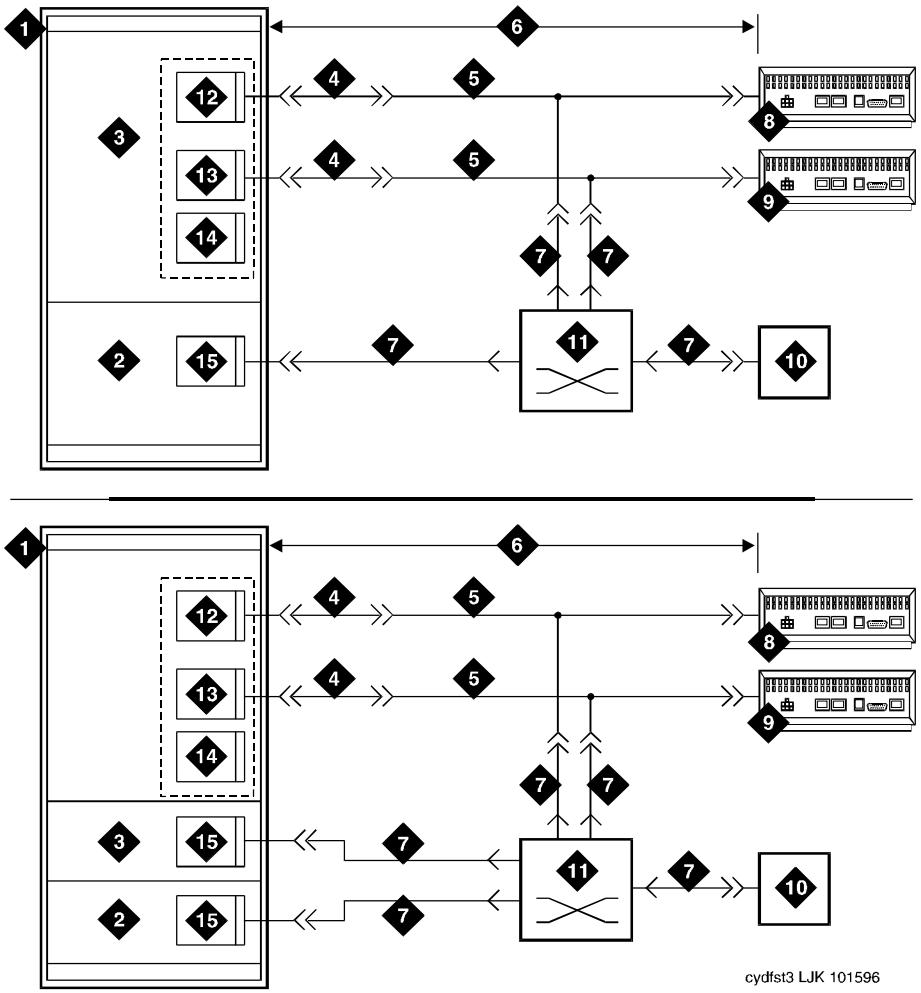

Figure Notes

1. PPN Cabinet
2. “A” Position
3. “B” Position
4. H600-307 Cable
5. H600-274, G2 Cable
6. 1300 Feet (396 m)
7. B25A Male to Female Cables
8. Secondary CSU
9. Primary CSU
10. Stratum 3 Clock
11. Main Distribution Frame (MDF)
12. TN464F DS1/E1 Interface Circuit Pack
13. TN722B Digital Signal Level 1 Tie Trunk Circuit Pack
14. TN767E DS1 Interface Circuit Pack
15. TN780 Tone-Clock Circuit Pack

Figure 1-68. Typical Connections to Stratum 3 Clock

The H600-307 cable connects the system end of the "Y" cable to a DS1 circuit pack (shown as TN464, TN722, or TN767). The B25A cable connects the clock end of the "Y" cable to the yellow field cross-connect.

Stratum 3 Clock Wiring Installation Procedure

1. Connect the B25A cables from the TN780 connector panel slot on the system cabinet and the Stratum 3 Clock to the cross-connect module in the yellow field.
2. Connect the CSU plug end of the H-600-274 (Y) cable to the primary CSU. Route an H600-307 cable from the DS1 connector panel slot on the system cabinet to the connector on the "SYSTEM" end of the "Y" cable.
3. Route a B25A cable from the "CLOCK" end of the "Y" cable to the cross-connect module in the yellow field.
4. Repeat steps 2 and 3 for the secondary CSU. The maximum allowable cabling distance between the Stratum 3 clock and the CSU is shown in Table 1-17.

Table 1-17. Maximum Cabling Distance

Channel Service Unit (CSU)	Maximum Cabling Distance
551A	85 Feet (26 m)
551V	85 Feet (26 m)
551V EFS/R	655 Feet (199.6 m)
EFS T1	655 Feet (199.6 m)

5. For standard reliability systems, refer to Table 1-18 to cross-connect the TN780 and "CLOCK" end connections to the Stratum 3 Clock connections on the cross-connect module.
6. For high or critical reliability systems, refer to Table 1-19 to cross-connect the TN780 and "CLOCK" end connections to the Stratum 3 Clock connections on the cross-connect module.

Table 1-18. Cross-Connects for Standard Reliability

From: Stratum 3 Clock			To: Y Cable Clock End (Primary)		
Designation	**Wire Color**	**Connecting Block Terminal**	**Lead Designation**	**Lead Color**	**Connecting Block Terminal**
RREF1	W-BL	1		V-O	43
TREF1	BL-W	2		O-V	44
			To: Y Cable Clock End (Secondary)		
RREF2	W-O	3		V-O	43
TREF2	O-W	4		O-V	44
			To: TN780 Carrier A		
BCLKRTN	R-O	13	ALRM5B	V-G	45
BCLKLST	O-R	14	ALRM5A	G-V	46
BPWRRTN	R-BR	17	ALRM4B	BK-BL	21
BPWRLST	BR-R	18	ALRM4A	BL-BK	22
REF2RTN	W-BR	7	ALRM3B	R-BR	17
REF2LST	BR-W	8	ALRM3A	BR-R	18
SCLKRTN	R-BL	11	ALRM2B	R-BL	11
SCLKLST	BL-R	12	ALRM2A	BL-R	12
SPWRRTN	R-G	15	ALRM1B	Y-BL	31
SPWRLST	G-R	16	ALRM1A	BL-Y	32
REF1RTN	W-G	5	ALRM0B	W-BR	7
REF1LST	G-W	6	ALRM0A	BR-W	8
CCA01R	R-S	19	EXTSYN0T	V-BL	41
CCA01T	S-R	20	EXTSYN0R	BL-V	42
CCB01R	BK-BL	21	EXTSYN1T	Y-G	35
CCB01T	BL-BK	22	EXTSYN1R	G-Y	36

Table 1-19. Cross-Connects for High or Critical Reliability

From: Stratum 3 Clock			To: Y Cable Clock End (Primary)					
Lead Designation	Lead Color	Connecting Block Terminal	Lead Designation	Lead Color	Connecting Block Terminal			
RREF1	W-BL	1		V-O	43			
TREF1	BL-W	2		O-V	44			
			To: Y Cable Clock End (Secondary)					
RREF2	W-O	3		V-O	43	Lead Designation	Lead Color	Connecting Block Terminal
TREF2	O-W	4		O-V	44			
			To: TN780 Carrier A			To: TN780 Carrier B		
BCLKRTN	R-O	13	ALRM5B	V-G	45	ALRM5B	V-G	45
BCLKLST	O-R	14	ALRM5A	G-V	46	ALRM5A	G-V	46
BPWRRTN	R-BR	17	ALRM4B	BK-BL	21	ALRM4B	BK-BL	21
BPWRLST	BR-R	18	ALRM4A	BL-BK	22	ALRM4A	BL-BK	22
REF2RTN	W-BR	7	ALRM3B	R-BR	17	ALRM3B	R-BR	17
REF2LST	BR-W	8	ALRM3A	BR-R	18	ALRM3A	BR-R	18
SCLKRTN	R-BL	11	ALRM2B	R-BL	11	ALRM2B	R-BL	11
SCLKLST	BL-R	12	ALRM2A	BL-R	12	ALRM2A	BL-R	12
SPWRRTN	R-G	15	ALRM1B	Y-BL	31	ALRM1B	Y-BL	31
SPWRLST	G-R	16	ALRM1A	BL-Y	32	ALRM1A	BL-Y	32
REF1RTN	W-G	5	ALRM0B	W-BR	7	ALRM0B	W-BR	7
REF1LST	G-W	6	ALRM0A	BR-W	8	ALRM0A	BR-W	8
CCA01R	R-S	19	EXTSYN0T	V-BL	41			
CCA01T	S-R	20	EXTSYN0R	BL-V	42			
CCB01R	BK-BL	21	EXTSYN1T	Y-G	35			
CCB01T	BL-BK	22	EXTSYN1R	G-Y	36			
CCA02R	BK-O	23				EXTSYN0T	V-BL	41
CCA02T	O-BK	24				EXTSYN0R	BL-V	42
CCB02R	BK-G	25				EXTSYN1T	Y-G	35
CCB02T	G-BK	26				EXTSYN1R	G-Y	36

7. The common cross-connection from the TN780 in A and B carriers to the Stratum 3 Clock should be done by bridging the jumper wires.
8. Dress the cables down sides of the cabinet and run through the Cable Slack Manager, if provided.
9. Administer per *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

DEFINITY Wireless Business System

To install and test the hardware, refer to *DEFINITY Wireless Business System Installation and Tests Guide*, 555-232-102.

To interface the Wireless Business System to the system cabinet, refer to *DEFINITY Wireless Business System Interface*, 555-232-108.

To operate the wireless handsets, refer to *DEFINITY Wireless Business System User's Guide*, 555-232-105.

Cellular Business System

The DEFINITY Cellular Business System allows use of the same full-feature cellular telephone inside and outside of the building. The system supports up to 600 users. Total system coverage is up to 4 million square feet (370,000 square meters).

Refer to the installation and usage documentation that comes with the system components.

Forum PCM

The Forum Personal Communications Manager uses a Forum switch, serving as an adjunct to DEFINITY ECS, to manage mobility. The system uses Cordless Telephone Generation 2 (CT2) technology, which is a global standard for wireless telephone service. This standard defines the radio interface between the Forum pocket telephones and the base stations in the system.

Refer to the installation and usage documentation that comes with the Forum Personal Communications Manager components.

Connector and Cable Diagrams (Pinout Charts)

See Table 1-20 for lead designations. The circuit packs and auxiliary equipment are classified as shown in Table 1-24.

Table 1-20. 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
25	BK-G	38	302
26	G-BK	13	202
27	BK-BR	39	303
28	BR-BK	14	203

Continued on next page

Table 1-20. Lead and Color Designations — *Continued*

Cross-Connect Pin	Color	Amphenol Pin	Backplane Pin
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

Table 1-21. Port Circuit Pack Lead Designations

Cross-Connect Pin	TN742 TN747B TN753 TN769 TN2147 TN465	TN754 TN726	TN760B TN760C TN760D	TN762/B	TN763D TN763B TN763C	TN735	TN767E TN722B TN464F	TN746/B TN2183	TN2224
1	T.0		T.0	T.0	T.0	T.0		T.0	T.1
2	R.0		R.0	R.0	R.0	R.0		R.0	R.1
3		TXT.0	T1.0	TXT.0	SZ.0	BT.0	GRD	T.1	T.2
4		TXR.0	R1.0	TXR.0	SZ1.0	BR.0	GRD	R.1	R.2
5		PXT.0	E.0	PXT.0	S.0	LT.0	GRD	T.2	T.3
6		PXR.0	M.0	PXR.0	S1.0	LR.0	GRD	R.2	R.3
7	T.1		T.1	T.1	T.1	T.1		T.3	T.4
8	R.1		R.1	R.1	R.1	R.1	GRD	R.3	R.4
9		TXT.1	T1.1	TXT.1	SZ.1	BT.1			T.5
10		TXR.1	R1.1	TXR.1	SZ1.1	BR.1	GRD		R.5
11		PXT.1	E.1	PXT.1	S.1	LT.1	GRD		T.6
12		PXR.1	M.1	PXR.1	S1.1	LR.1	GRD		R.6
13	T.2		T.2	T.2	T.2	T.2			T.7
14	R.2		R.2	R.2	R.2	R.2			R.7
15		TXT.2	T1.2	TXT.2	SZ.2	BT.2			T.8
16		TXR.2	R1.2	TXR.2	SZ1.2	BR.2	GRD		R.8
17		PXT.2	E.2	PXT.2	S.2	LT.2	GRD	T.4	T.9
18		PXR.2	M.2	PXR.2	S1.2	LR.2	GRD	R.4	R.9
19	T.3		T.3	T.3	T.3	T.3		T.5	T.10
20	R.3		R.3	R.3	R.3	R.3	GRD	R.5	R.10
21		TXT.3	T1.3	TXT.3	SZ.3	BT.3		T.6	T.11
22		TXR.3	R1.3	TXR.3	SZ1.3	BR.3	GRD	R.6	R.11
23		PXT.3	E.3	PXT.3	S.3	LT.3	+5	T.7	T.12
24		PXR.3	M.3	PX4.3	S1.3	LR.3	+5	R.7	R.12
25	T.4		T.4	T.4	T.4	T.4		T.8	T.13
26	R.4		R.4	R.4	R.4	R.4		R.8	R.13
27		TXT.4	T1.4	TXT.4	SZ.4	BT.4	GRD	T.9	T.14
28		TXR.4	R1.4	TXR.4	SZ1.4	BR.4	GRD	R.9	R.14
29		PXT.4	E.4	PXT.4	S.4	LT.4	GRD	T.10	T.15

Continued on next page

Table 1-21. Port Circuit Pack Lead Designations — *Continued*

Cross-Connect Pin	TN742 TN747B TN753 TN769 TN2147 TN465	TN754 TN726	TN760B TN760C TN760D	TN762/B	TN763D TN763B TN763C	TN735	TN767E TN722B TN464F	TN746/B TN2183	TN2224
30		PXR.4	M.4	PXR.4	S1.4	LR.4		R.10	R.15
31	T.5		T.5	T.5	T.5	T.5	LBACK1	T.11	T.16
32	R.5		R.5	R.5	R.5	R.5	LBACK2	R.11	R.16
33		TXT.5	T1.5	TXT.5	SZ.5	BT.5	GRD		T.17
34		TXR.5	R1.5	TXR.5	SZ1.5	BR.5	GRD		R.17
35		PXT.5	E.5	PXT.5	S.5	LT.5	GRD		T.18
36		PXR.5	M.5	PXR.5	S1.5	LR.5	GRD		R.18
37	T.6		T.6	T.6	T.6	T.6	LO		T.19
38	R.6		R.6	R.6	R.6	R.6	LO*		R.19
39		TXT.6	T1.6	TXT.6	SZ.6	BT.6	GRD		T.20
40		TXR.6	R1.6	TXR.6	SZ1.6	BR.6	GRD		R.20
41		PXT.6	E.6	PXT.6	S.6	LT.6	GRD	T.12	T.21
42		PXR.6	M.6	PXR.6	S1.6	LR.6		R.12	R.21
43	T.7		T.7	T.7	T.7	T.7	LI*	T.13	T.22
44	R.7		R.7	R.7	R.7	R.7	LI	R.13	R.22
45		TXT.7	T1.7	TXT.7	SZ.7	BT.7	GRD	T.14	T.23
46		TXR.7	R1.7	TXR.7	SZ1.7	BR.7	GRD	R.14	R.23
47		PXT.7	E.7	PXT.7	S.7	LT.7	+5	T.15	T.24
48		PXR.7	M.7	PXR.7	S1.7	LR.7	+5	R.15	R.24
49	GRD	GRD	GRD	GRD	GRD	GRD	GRD	GRD	
50	GRD	GRD	GRD	GRD	GRD	GRD	GRD	GRD	

Table 1-22. DS1 Interface Cable H600-348

50-Pin			15-Pin		
Pin	**Color**	**Designation**	**Pin**	**Color**	**Designation**
			Plug 04		
38	W-BL	LI (High)	11	W-BL	LI (High)
13	BL-W	LI	03	BL-W	LI
39	W-O	LO	09	W-O	LO
14	O-W	LO (High)	01	O-W	LO (High)
			Plug 03		
41	W-G	LI (High)	11	W-G	LI (High)
16	G-W	LI	03	G-W	LI
42	W-BR	LO	09	W-BR	LO
17	BR-W	LO (High)	01	BR-W	LO (High)
			Plug 02		
44	W-SL	LI (High)	11	W-SL	LI (High)
19	SL-W	LI	03	SL-W	LI
45	R-BL	LO	09	R-BL	LO
20	BL-R	LO (High)	01	BL-R	LO (High)
			Plug 01		
47	R-O	LI (High)	11	R-O	LI (High)
22	O-R	LI	03	O-R	LI
48	R-G	LO	09	R-G	LO
23	G-R	LO (High)	01	G-R	LO (High)

Table 1-23. 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 empty.

Table 1-24. 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	ISDN BRI Line 4-wire	ISDN BRI Line 2-wire	Packet Data Line	Four Port DIOD
TN467	TN2149	TN726B	TN2224	TN762	TN735	TN417	TN429	TN2199	TN429	TN478	TN483	TN556B	TN2198	TN553	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

Table 1-25. 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				E1		PXR2	T3	TXT2	
G-W	03		R3	PXR1	R3	P+1	PXR1	S11		C1		M1		PXT2	R3	TXR2	
W-BR	29	T2	T4		T4	V1T2	T2	T2	T2	A2	T2	T2		TXT2	T4	PXT2	T2
BR-W	04	R2	R4		R4	V1R2	R2	R2	R2	B2	R2	R2		TXR2	R4	PXR2	R2
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	
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	

Continued on next page

Table 1-25. 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
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			TXT7	T20	CT7								TXT10		PXT10	
S-Y	20			TXR7	R20	CR7								TXR10		PXR10	
V-BL	46		T13	PXT7	T21	P-7								PXR11		TXT11	
BL-V	21		R13	PXR7	R21	P+7								PXT11		TXR11	
V-O	47	T8	T14		T22	V1T8			T8		T8		LI*	TXT11		PXT11	
O-V	22	R8	R14		R22	V1R8			R8		R8		LI	TXR11		PXR11	
V-G	48		T15	TXT8	T23	CT8							LO	PXR12		TXT12	
G-V	23		R15	TXR8	R23	CR8							LO*	PXT12		TXR12	
V-BR	49		T16	PXT8	T24	P-8							LBACK2	TXT12		PXT12	

Continued on next page

Table 1-25. 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
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

Setting Options

2

Some of the interface units used between the system and other types of equipment require specific option settings for each application. This section lists the settings required for data modules, modems, printers, and so forth. Refer to the user's guide for each type of equipment for information on how to locate and set the options.

Data Module Option Settings

DCS Switch Settings

The Distributed Communications System (DCS) for a system is sometimes connected to the system through the TN765 Processor Interface circuit pack or a TN778 Packet Interface circuit pack. The first circuit can be connected directly to the DCS through the processor interface (**PI**) connector on the rear of the control carrier.

Any of the remaining three circuits on the processor interface used to support the DCS must be connected through a data module serving as the interface link. The option settings for a 7400B Data Module are shown in Table 2-1. Refer to Figure 2-1 for the location of the switches. Also refer to *7400B Data Module User's Manual*, 555-020-707.

NOTE:
The options for the 7400A and 7400C Data Modules are set from the front panel interface. For the 7400A, refer to *7400A Data Module User's Manual*, 555-020-706. For the 7400C, refer to *DEFINITY Communications System High Speed Link User's Guide*, 555-020-711.

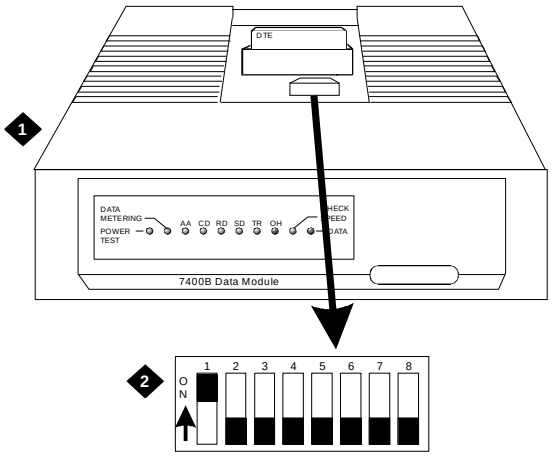

Figure Notes

1. Data Module (7400B Shown)
2. DIP Switch

Figure 2-1. DIP Switch Locations

1. Remove the top cover from the data module. See page 5-76.
2. Switches 1, 5, and 8 are the only switches to be set. Refer to Table 2-1 for the switch option settings.

Table 2-1. Data Module Option Switch Settings

DIP Switch	Function	Setting
1	With Phone Without Phone	ON OFF
5	Data Metering No Data Metering	ON OFF
8	Make Busy on Loc Loop No Make Busy on Loc Loop	ON OFF
2, 3, 4, 6, and 7		OFF

7400D Data Module Option Settings

The option settings shown in Table 2-2 are for the Answer Only interface and are set from the front panel interface. Set only the desired speed of the 7400D. All other default settings can be used. Refer to the next page to set the speed.

Table 2-2. 7400 Series Data Module Options (Answer Only Interface)

Set Option Display	Abbreviation	Possible Values	Default
Set 300 SPEED?	300	ON, OFF	ON
Set 1200 SPEED?	1200	ON, OFF	ON
Set 2400 SPEED?	2400	ON, OFF	ON
Set 4800 SPEED?	4800	ON, OFF	ON
Set 9600 SPEED?	9600	ON, OFF	ON
Set 19200 SPEED?	19200	ON, OFF	ON
Set ANSWER?	ANS	AUTO, MANUAL	AUTO
Set CI LEAD?	CI	ON, OFF	OFF
Set CH LEAD?	CH	ON, OFF	OFF
Set CTS LEAD?	CTS	NORMAL, ON	ON
Set DCD LEAD?	DCD	NORMAL, ON	ON
Set DSR LEAD?	DSR	NORMAL, ON	ON
Set DTR DETECT?	DTR	0, 10, 20, 30, 50, 100 MSEC	50
Set DTR LEAD?	DTR	EIA STANDARD, IGNORE	EIA STANDARD
Set LL LEAD?	LL	ON, OFF	OFF
Set REMOTE LOOP?	REMLOOP	GRANT, DENY	GRANT
Set RI LEAD?	RI	CYCLE, ON	ON
Set RL LEAD?	RL	ON, OFF	OFF
Set SIGLS DISC?	SIGLS DISC	ON, OFF	ON
Set TIMING?	TIMING	INTERNAL, EXTERNAL	INT
Set TM LEAD?	TM	ON, OFF	OFF

NOTE:
It is recommended that CI and CH be set to ON, and DCD and DSR be set to normal. This allows login information to be displayed on the screen without having to send a carriage return character.

Set 7400D Options

The following steps are used as an example to change the default setting of 9600 to the custom setting of 19200.

NOTE:
If the link is between a Release 5r and a CMS, set the 7400D to 19200. If the link is between any other system and a CMS, leave the speed of the 7400D set at 9600.

1. From the HOME screen, press **NEXT/NO** until `SET OPTIONS ?` is displayed.
2. Press **ENTER/YES** to stay in the `SET OPTIONS ?` menu.
3. Press **NEXT/NO** until `SET 9600 SPEED ?` is displayed.
4. Press **ENTER/YES** when `SET 9600 SPEED ?` is displayed.
5. Press **NEXT/NO** when `9600 = ON ?` is displayed.
6. Press **ENTER/YES** when `9600 -> OFF ?` is displayed.
7. Press **ENTER/YES** when `CONTINUE ?` is displayed.
8. Press **ENTER/YES** when `SET 19200 SPEED ?` is displayed.
9. Press **NEXT/NO** when `19200 = OFF ?` is displayed.
10. Press **ENTER/YES** when `19200 -> ON ?` is displayed.
11. Press **NEXT/NO** when `CONTINUE ?` is displayed.
12. Press **ENTER/YES** when `19200 -> ON ?` is displayed.
13. Press **ENTER/YES** when `SAVE CHANGES ?` is displayed.

NOTE:
The `SET OPTIONS ?` menu cannot be terminated if all speeds are set to off.

Modem Pooling (Combined) Option Settings

Combined modem pooling requires option switch settings on different modems and data modules. Refer to the vendor's documentation.

7400A and 7400B Option Settings

Determine if the 7400A or 7400B is interfacing with D-lead modems or attention control modems. Use Table 2-3 for D lead modems and Table 2-4 for attention control modems.

Table 2-3. 7400A Options for D-Lead Modems

Set Option Display	Option	Desired Setting
Set 300 Speed?	300	Note 1
Set 1200 Speed?	1200	Note 1
Set 2400 Speed?	2400	Note 1
Set 4800 Speed?	4800	Note 1
Set 9600 Speed?	9600	Note 1
Set 19200 Speed?	19200	Note 1
Set AT Control?	AT	OFF
Set CI Lead?	CI	Note 2
Set CI2 Lead?	CI2	Note 2
Set CH Lead?	CH	Note 2
Set CH2 Lead?	CH2	Note 2
Set LL Lead?	LL	Note 2
Set REMOTE Loop?	REMLOOP	Grant
Set RL Lead?	RL	Note 2
Set SIGLS Disc?	SIGLS DISC	ON
Set TM Lead?	TM	Note 2

NOTE:
1. Set speed to match remote modem. At least one speed must be set ON.

NOTE:
2. Set to match remote modem.

Table 2-4. 7400A Options — Attention Control Modems

Set Option Display	Option	Setting
Set 300 Speed?	300	Note 1
Set 1200 Speed?	1200	Note 1
Set 2400 Speed?	2400	Note 1
Set 4800 Speed?	4800	Note 1
Set 9600 Speed?	9600	Note 1
Set 19200 Speed?	19200	Note 1
Set AT Control?	AT	ON
Set CI Lead?	CI	Note 2
Set CI2 Lead?	CI2	Note 2
Set CH Lead	CH	Note 2
Set CH2 Lead?	CH2	Note 2
Set LL Lead?	LL	Note 2
Set REMOTE Loop?	REMLOOP	Grant
Set RL Lead?	RL	Note 2
Set SIGLS Disc?	SIGLS DISC	ON
Set TM Lead?	TM	Note 2

NOTE:
1. Set speed to match remote modem. At least one speed must be set ON.

NOTE:
2. Set to match remote modem.

External Modem Option Settings

The COMSPHERE 3700, 3800, and 3900 series (recommended) external modems may require option switch settings. Refer to the documentation that accompanies each modem to set the options.

NOTE:
A locally obtained, type-approved external modem may be used. Contact your Lucent Technologies representative for more information.

The Release 5 and later systems operate with the COMSPHERE modems set to the factory default settings. See Screen 2-1. Refer to *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*, to administer the modem after the options are set. The Customer Options Screen (Page 3) is modified.

```
   change system-parameters maintenance          Page 3 of 3

           MAINTENANCE-RELATED SYSTEM PARAMETERS

         Modem Connection: external
                Data Bits: 8
                   Parity: none
               Modem Name: ___

          RTS/CTS Enabled: \Q3        Auto Answer Ring Count (rings): ___
   Asynchronous Data Mode: &M0&Q0                          Dial Type: T
      DTE Auto-Data Speed: ___           Adjustable Make/Break Ratio: ___
Disable Data Compression: ___                          Dial Command: D
     Enable Error Control: ___                   No Answer Time-out: S7=255
        Misc. Init. Param: _____________________




Help/Error Message Line
Command Line
```

Screen 2-1. External Modem Default Settings

There are fields that are hidden when the “Modem Connection” field is set to “internal.” When the “Modem Connection” field is set to “external” these fields are displayed. Two fields help setup the data format for the serial data from the system to the modem: the “Data Bits:” and “Parity:” fields. There are only two valid combinations of these two fields.

- Data Bits = 8, Parity = None
- Data Bits = 7, Parity =(odd, even, mark, or space)

The remaining modem fields are listed in Table 2-5.

Table 2-5. Modem Fields

Field	Description
Modem Connection	Valid entries are “internal” or “external”. Default is internal.
Modem Name	This field is 20 characters long and permits alphanumeric characters to provide a unique qualifier for a given modem (such as INTEL).
RTS/CTS Enabled	Informs the modem that communication with the data source UART is driven with RTS/CTS flow control. The field name has a default of \Q3 in a field 6 characters long. This field is not case sensitive. Default is upper case.
Asynchronous Data Mode	Configures modem as an asynchronous communications device. The field name has a default value of &M0&Q0 in a field 8 characters long. This field is not case sensitive. Default is upper case.
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 blank default value in a field of 6 characters. The Lucent products use the command S90=1 to enable this functionality while the Intel product uses the command \J1 to enable similar functionality. This field is not case sensitive. Default is upper case.
Disable Data Compression	Turns off the default data compression algorithms in use 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. Default is upper case.
Enable Error Control	Turns on the V.42 LAPM and MNP error control protocols, if available. The field has a blank field of 6 characters as default. 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. This V.42/MNP/Buffer mode attempts to negotiate V.42 error control with the remote modem. If this fails, the modem changes to MNP, if this fails, no error control is used. This field is not case sensitive. Default is upper case.

Continued on next page

Table 2-5. Modem Fields — *Continued*

Field	Description
Misc. Init. Param	This field has a blank as a default and a field length of 20 characters. This field supports any initialization parameters not already specified. The AT commands specified in this free-form field is always the last initialization parameters to be sent to the external modem. This field is not case sensitive. Default is upper case.
Auto-Answer Ring Number	This field controls the number of rings required before the modem answers an incoming call. This field has a blank default value in a field 6 characters long. Typically, the maximum permissible value for this register is 255. The values 1-255 denote the number of incoming ring cycles. This field is not case sensitive. Default is upper case.
Dial Type	This field controls the type of interregister signaling to be used between the modem and the Central Office. The field has a default of "T " for tone dialing. Pulse dialing is indicated by "P". The field length should be 3 characters long. This field is concatenated with the dial string. This field is not case sensitive. Default is upper case.
Adjustable Make/Break Ratio	This field controls the make/break ratios of pulses and DTMF dialing. The Intel product information has support for different make/ break options for pulse dialing only. Intel uses &P0 to select a ratio of 39% make and 61% break for communication within 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 field has a blank default and a 5 character long entry. This field is not case sensitive. Default is upper case.
Dial Command	This field has a default of "D" in a field 3 characters long. This field denotes the dialing command of the modem. This is a standard command. This field is not case sensitive. Default is upper case.
No Answer Time-Out	Most external modems provide a timer that abandons any outbound data call after a predetermined interval. Some modems disable this timer, allowing an outbound call to ring indefinitely. Paradyne does not provide this capability because it is undesirable to have an outbound call attempt to ring indefinitely. Therefore, the initialization string must contain the following ASCII string to set the "No-Answer Timer" to the maximum value: S7=255. The internal modem must have this parameter disabled or set to at least 255 seconds. This is a non-administrable parameter. For the modem connection, this parameter is the first initialization string to be transmitted to the modem. This field is visible on the administration form in display mode only. The new field is set to S7=255. This hardcoded constant can be overriden for type approval applications, specifically in the United Kingdom and other Western European nations, by the use of the "Misc. Init. Param:" field. (S7=255)

Printer Option Settings

Printers can be used with a management terminal as journal printers for the hospitality feature and also as an output device for Call Detail Recording (CDR).

A 572 printer can function as a Call Detail Recording (CDR) device, system printer, or journal printer. The options are set with function keys rather than DIP switches. Figure 2-2 shows the arrangement of the function keys on the printer control panel.

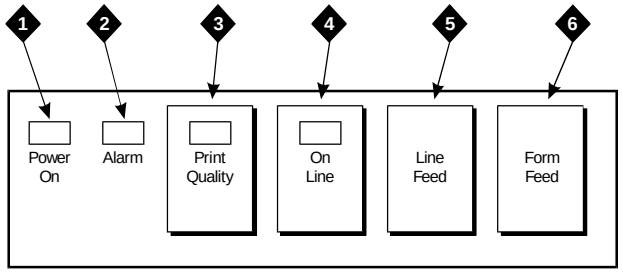

Figure Notes:

1. Power On Button
2. Alarm Button
3. Print Quality Button
4. On Line Button
5. Line Feed Button
6. Form Feed Button

Figure 2-2. Control Panel for 572 Printer

1. Load the printer with paper and turn the power off (Callout 1).
2. Simultaneously press and hold the **Print Quality** and **On Line** buttons. Press the **Power On** button. Release all three buttons. The printer is now in set-up mode and it prints its current settings:

   If the printer is used with a management terminal, CDR, or as a Journal printer, set the options as shown in Table 2-6. If the printer is used as the system printer, set the options as shown in Table 2-7.
3. Use **Line Feed** or **Form Feed** to step through the options for the function.
4. Press **On Line**. This activates the menu for the function. Use **Line Feed** and **Form Feed** to step through the options for the function.
5. When a desired option is located, press **Print Quality**. Each time an option is set, the setting is printed. Repeat for each option to be set.
6. When finished, press **Print Quality**. The printer changes to normal mode.

Table 2-6. 572 Printer Used with Management Terminal

Function	Function Name	Menu	Menu Status
01	FORM LENGTH	09	11
02	LPI	01	6
03	CPI	01	10
04	LQ or NLQ	01	LQ
05	BUZZER	01	ON
06	FONT	02	FONTCART
07	RESOLUTION	01	144
11	BUFFER	02	N-LINE
13	PW ON MODE	01	ON-LINE
14	DIRECTION	01	B1-DIR.1
15	BUFF FULL	02	LF + CR
16	P.E.	01	ACTIVE
17	AUTO CARRIAGE RETURN (CR)	01	CR + LF
18	ZERO	01	0
22	AUTO LINE FEED	01	CR ONLY
31	1” SKIP	01	OFF
32	CHAR.SET (GO, GL)	02	USA
33	CHAR.SET (G1, GR)	01	UK
34	CHAR SET (G2)	03	GE
35	CHAR SET (G3)	07	LINE DRAWING
81	OFF-LINE STATE	01	ALL RECEIVE
82	DSR	02	OFF
83	REQUEST TO SEND (RTS) TIMING	01	RTS
84	CD	02	OFF
85	CLEAR TO SEND (CTS)	02	OFF
91	OVER RUN	02	256
92	DATA BIT	02	8
93	PROTOCOL	03	XON/XOFF
94	STOP BIT	01	1
95	PARITY	01	NONE
96	PBS (matches connected device)	01	9600

Table 2-7. 572 Printer Used as System Printer

572 Printer Option Settings

Function	Function Name	Menu	Menu Status
01	FORM LENGTH	09	11
02	LPI	01	6
03	CPI	01	10
04	LQ or NLQ	01	LQ
05	BUZZER	01	ON
06	FONT	02	FONTCART
07	RESOLUTION	01	144
11	BUFFER	02	N-LINE
13	PW ON MODE	01	ON-LINE
14	DIRECTION	01	B1-DIR.1
15	BUFF FULL	02	LF + CR
16	P.E.	01	ACTIVE
17	AUTO CARRIAGE RETURN (CR)	01	CR + LF
18	ZERO	01	0
22	AUTO LINE FEED	01	CR ONLY
31	1'' SKIP	01	OFF
32	CHAR.SET (GO, GL)	02	USA
33	CHAR.SET (G1, GR)	01	UK
34	CHAR SET (G2)	03	GE
35	CHAR SET (G3)	07	LINE DRAWING
81	OFF-LINE STATE	01	ALL RECEIVE
82	DSR	02	OFF
83	REQUEST TO SEND (RTS) TIMING	01	RTS
84	CD	02	OFF
85	CLEAR TO SEND (CTS)	02	OFF
91	OVER RUN	02	256
92	DATA BIT	02	8
93	PROTOCOL	03	XON/XOFF
94	STOP BIT	01	1
95	PARITY	01	NONE
96	PBS	04	1200

Call Detail Recording Option Settings

The interface between the system and CDR equipment may be:

- Data Module — Recommended option settings are shown in Table 2-3
- Modem — Recommended option settings are in modem vendor document
- TN726 Data Line circuit pack and an Asynchronous Data Unit — Data modules or modems are not required
- Connected directly to the **DCE** connector (EIA Port) located on the rear of the Control Carrier — Data modules or modems are not required.

A 572 Printer can be used as an output receiving device for CDR. The recommended option settings for this printer is shown in Table 2-8. Also, a TELESEER, CDR, 94A Local Storage Unit (LSU), or Customer Premises Equipment (CPE) can be used as the output receiving device.

Administration procedures for CDR equipment are provided in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

Table 2-8. 572 Printer Used with Management Terminal, CDR, or Journal Printer

Function	Function Name	Menu	Menu Status
01	FORM LENGTH	09	11
02	LPI	01	6
03	CPI	01	10
04	LQ or NLQ	01	LQ
05	BUZZER	01	ON
06	FONT	02	FONTCART
07	RESOLUTION	01	144
11	BUFFER	02	N-LINE
13	PW ON MODE	01	ON-LINE
14	DIRECTION	01	B1-DIR.1
15	BUFF FULL	02	LF + CR
16	P.E.	01	ACTIVE
17	AUTO CARRIAGE RETURN (CR)	01	CR + LF
18	ZERO	01	0
22	AUTO LINE FEED	01	CR ONLY

Continued on next page

Table 2-8. 572 Printer Used with Management Terminal, CDR, or Journal Printer —

Function	Function Name	Menu	Menu Status
31	1” SKIP	01	OFF
32	CHAR.SET (GO, GL)	02	USA
33	CHAR.SET (G1, GR)	01	UK
34	CHAR SET (G2)	03	GE
35	CHAR SET (G3)	07	LINE DRAWING
81	OFF-LINE STATE	01	ALL RECEIVE
82	DSR	02	OFF
83	REQUEST TO SEND (RTS) TIMING	01	RTS
84	CD	02	OFF
85	CLEAR TO SEND (CTS)	02	OFF
91	OVER RUN	02	256
92	DATA BIT	02	8
93	PROTOCOL	03	XON/XOFF
94	STOP BIT	01	1
95	PARITY	01	NONE
96	PBS	01	9600

AUDIX Interface Option Settings

The Audio Information Exchange (AUDIX) sometimes connects to the system through the Processor Interface circuit pack. The first circuit on the processor interface can connect directly to the AUDIX through the **PI** connector on the rear of the Control Carrier.

Any of the remaining three circuits on the processor interface to be used to support AUDIX must connect through a 7400D Data Module serving as the interface link for AUDIX. The option settings are shown in Table 2-9.

Table 2-9. Data Module Settings for DEFINITY AUDIX

DIP Switch 1	Setting
9600	ON
DIP Switch 2	Setting
SYNC	ON
INT	ON
AANS	ON
All Other Switches	OFF

TN760D Tie Trunk Option Settings

The TN760D Tie Trunk circuit pack interfaces between four 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 2-10 and Table 2-11), set the switches on the TN760D and administer the port per Figure 2-3 on page 2-17 and Table 2-12 on page 2-18.

CAUTION:
To prevent damage from static electricity, wear an EMC wrist strap (comcode 900698226) when handling circuit packs or other components.

Table 2-10. 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 2-11. Signaling Type Summary

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

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

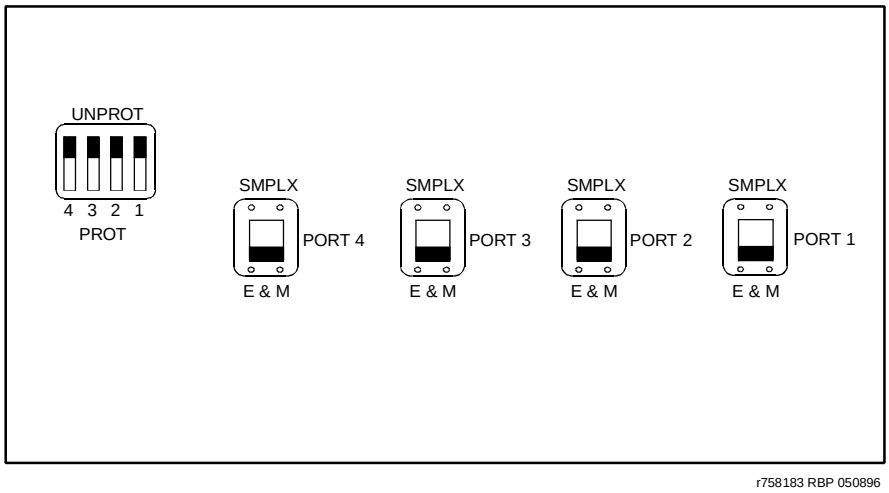

Figure 2-3. TN760D Tie Trunk Circuit Pack (Component Side)

Table 2-12. TN760D Option Switch Settings and Administration

Installation Situation		Signaling Format		E&M/ SMPLX Switch	Prot/ Unprot Switch	Port
Condition	**To**	**System**	**Far-End**			
Collocated	Sys75/ G1	Simplex Type 5	Simplex Type 5	SMPLX	Either	Type 5
Inter-Building	Sys75/ G1	Simplex Type 5	Simplex Type 5	SMPLX	Either	Type 5
Co-Located	Sys85/ G2	Simplex Type 5	Simplex Type 5	SMPLX	Either	Type 5
Inter-Building	Sys85/ G2	Simplex Type 5	Simplex Type 5	SMPLX	Either	Type 5
Collocated	Dimension PBX	E&M Type 1 Compatible	E&M Type 1 Standard	E&M	Unprot	Type 1 Compatible
Inter-Building	Dimension PBX	Protected Type 1 Compatible	Protected Type 1 Standard	E&M	Prot	Type 1 Compatible
Collocated	Other	E&M Type 1 Compatible	E&M Type 1 Standard	E&M	Unprot	Type 1 Compatible
Inter-Building	Other	Protected Type 1 Compatible	Protected Type 1 Standard Plus	E&M	Prot	Type 1 Compatible
Collocated	Net Integrated	E&M Type 1 Standard	Any PBX	E&M	Unprot	Type 1

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 2-13 and Figure 2-4.

Table 2-13. 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

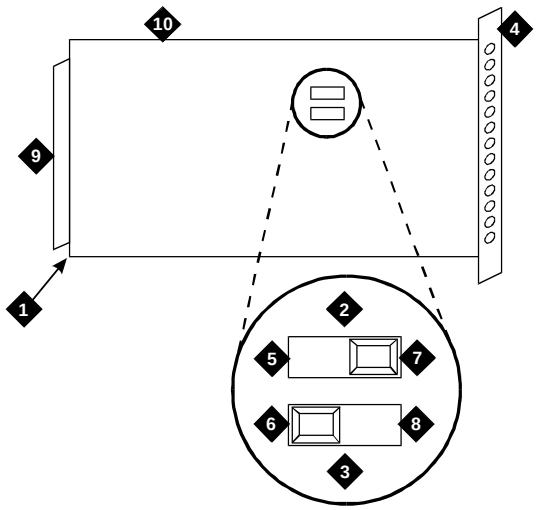

Figure Notes:

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. Rear Connector
10. TN464E/F DS1/E1 Interface Circuit Pack

Figure 2-4. TN464E/F Option Settings

212-Type Modem Switch Settings

Refer to Table 2-14 for the 212-type modem settings for CDR.

Table 2-14. 212-Type Modem Switch Settings (for CDR)

Switch	Setting
AL	OFF
ST	OFF
RDL	OFF
DL	OFF
HS	ON

Index

Symbols

"T" Cable, 1-10

Numerics

105C Isolator adapter, 1-44
1145B power supply, 1-6
1146B power distribution unit, 1-9, 1-13
1147B battery, 1-9
1148B battery, 1-9
1149B battery, 1-9
1151A and 1151A2 loop range, 1-18
1151A Power Supply, 1-16, 1-17
1151A2 Power Supply, 1-16, 1-17
120A ICSU, 1-105
2.5 Amp Hour batteries, 1-6
2.5 Amp Hour battery, 1-9
5 Amp Hour battery, 1-9
572 printer, 2-10
7400A data module
  option settings, 2-5
8 Amp Hour battery, 1-9
888B converter, 1-64
909A
  DC version, 1-19
909A/B Universal Coupler, 1-29
909B
  AC version, 1-19

A

alarm relay contact, 1-3
answer only interface, 2-3
APP connector information, 1-129, 1-135–1-137
AT control modem, 2-5
AUDIX
  system, 1-48
auxiliary equipment
  909A/B Universal Coupler, 1-4
  Asynchronous Data Units, 1-4
  CONVERSANT, 1-4
  Data Modules, 1-3
  PagePac paging system, 1-4
auxiliary equipment pin designations, 1-129, 1-135–1-137

B

back-up battery, 1-7
back-up battery, PEC codes, 1-9
battery back-up, 1-9
battery back-up switch, 1-10
bit rate
  setting, 2-19
Busy Tone Disconnect, 1-94

C

cables
  diagrams, 1-129, 1-135–1-137
Call Detail Recording (CDR), 2-10
calling queue, 1-5
CDR, 2-10
  option settings, 2-13
  printer, 2-10
Cellular Business System, 1-128
Channel Service Unit
  cabling to DS1 Converter, 1-98
  Smart Jacks, 1-98
circuit packs
  DEFINITY AUDIX System, 1-48
  pin designations, 1-129, 1-135–1-137
  TN2181 Digital Line 2-Wire, 1-93
  TN2181 Digital Line 2-Wire DCP, 1-72
  TN2183 Analog Line, 1-5
  TN2224 Digital Line, 1-131, 1-134
  TN2224 Digital Line 24-port 2-Wire DCP, 1-72
  TNCCSC-1 PRI to DASS Converter, 1-64, 1-66
  TNCCSC-2 PRI to DPNSS converter, 1-64, 1-66
  TNPRI/BRI Converter, 1-65, 1-67
CO trunk, 2-19
coaxial converter, 888B, 1-64
COMSPHERE modem, 2-7
connecting
  CONVERSANT Voice Information System, 1-91
  music-on-hold, FCC-registered, 1-33
connections
  music-on-hold, non-FCC-registered, 1-33
connectors
  data communications equipment, 2-13
Cordless Telephone Generation 2 (CT2), 1-128

D

data communications equipment connector, 2-13
data module, 2-1
DC power
  signaling leads, 2-16
DCS switch settings, 2-2

DEFINITY
AUDIX System, 1-48
D-lead modem, 2-5
DS1
interface, 2-19
DS1 Converter
"Y" cable, 1-99
cabling, 1-98
quad cable, 1-98
DS1 loopback, 1-101
DS1 span, 1-102
DS1 span test, 1-102
DS1 span, T1, 1-101

E

E1 interface, 2-19
EIA port, 2-13
Electronic Industries Association, see EIA, 2-13
Endpoints, 1-114
ESPA radio paging, 1-97
European Standard Paging Access, 1-97
expanded power distribution unit, 1-10
expanded power distribution unit spacer bracket, 1-10
ExpressRoute 1000 data module, 1-68
external modem
COMSPHERE, 2-7
external modem connections, 1-95
external modem option settings, 2-7
external ringing, 1-5

F

Forum
base stations, 1-128
Personal Communications Manager, 1-128
pocket telephone, 1-128

I

impedance, setting, 2-19
ISDN, 2-19
PRI interface, 2-19

K

KS-22911 power supply, 1-19, 1-84
KS-22911L2 power supply, 1-34
KS-23395, to connect music-on-hold, 1-33

L

lead designations, 1-129
loop range, 1151A and 1151A2, 1-18
loopback jack, 1-101

M

MMCH
multimedia call handling, 1-114
modem
AT control, 2-5
D-lead, 2-5
external, switch settings, 2-7
pooling, switch settings, 2-4
Modem Connection field, 2-7
multimedia call handling, 1-114
multimedia endpoint
PictureTel, 1-115
ProShare, 1-117
Vistium, 1-120
Zydacron, 1-120
multimedia endpoints, 1-114
multi-mount DCP extender, 1-72
music-on-hold equipment
connecting non-FCC-registered, 1-33

N

network interface, 1-105

O

option switch settings, 2-1

P

PassageWay adapter, 1-83
PC Console, 1-84
PictureTel endpoint, 1-115
PictureTel testcall, 1-116
PictureTel troubleshooting, 1-117
pin designations, 1-129
auxiliary equipment, 1-129, 1-135–1-137
circuit packs, 1-129, 1-135–1-137
pinouts, 1-129
auxiliary, 1-135–1-137
circuit packs, 1-135–1-137

power supply
    1145B -48V, 1-6
    1146B -48V, 1-6
    1151A -48V, 1-16
    1151A2 -48V, 1-16
printer
    572 option settings, 2-10
    option settings, 2-10
processor interface circuit pack
    AUDIX connections, 2-15
    switch settings, 2-2
ProShare endpoint, 1-117
ProShare testcall, 1-118
ProShare troubleshooting, 1-118

Q

queue calling, 1-5
queue warning indicator, 1-5

R

rack mount DCP extender, 1-72

S

security issues, xiii
setting
    bit rate, 2-19
    line impedance, 2-19
signaling leads, DC power, 2-16
switch setting
    7400 series data modules, 2-3
switch settings
    572 printer, 2-10
    7400A, 2-5
    7400A Data Module, 2-5
    CDR, 2-13
    data module, 2-1
    DCS, 2-2
    external modem, 2-7
    modem pooling, 2-4
    printer, 2-10
    processor interface, 2-2
    TN464 circuit pack, 2-19
    TN760 tie trunk, 2-16
system printer, 2-10

T

T1 Asynchronous Transfer Mode, 1-96
T1 DS1 span, 1-101
TDM bus, 2-19
testcall, PictureTel, 1-116
testcall, ProShare, 1-118
testcall, Zydacron, 1-121
tie trunk
    circuit pack option settings, 2-16
TN2183 Analog Line circuit pack, 1-5
TN2224 Digital Line, 1-131, 1-134
TN464 circuit pack
    option settings, 2-19
TN760 circuit pack
    option settings, 2-16
TNCCSC-1 PRI to DASS Converter, 1-64, 1-66
TNCCSC-2 PRI to DPNSS Converter, 1-64, 1-66
TNPRI/BRI converter, 1-65, 1-67
troubleshooting PictureTel, 1-117
troubleshooting ProShare, 1-118
troubleshooting Zydacron, 1-121
type-approved external modem, 2-7

V

VIS, see Voice Information System
Vistium endpoint, 1-120
Voice Information System, connecting, 1-91
voicemail, AUDIX system, see also AUDIX

W

Wideband endpoints
    non-signaling, 1-80
    remote port module, 1-82
    signaling, 1-81
Wireless Business System, 1-128
wiring
    pin designations, 1-129, 1-135–1-137
    procedures, 1-1

Z

Zydacron endpoint, 1-120
Zydacron testcall, 1-121
Zydacron troubleshooting, 1-121