

**Lucent Technologies**  
Bell Labs Innovations



**DEFINITY<sup>®</sup>**  
**Enterprise Communications Server**  
Release 6  
Installation for Adjuncts and Peripherals

555-230-125  
Comcode 108041955  
Issue 2  
August 1997

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#### 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.

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#### 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 Numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

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See the preface of this document.

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#### 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.

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## About This Book

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This document provides procedures and information for installing adjunct and peripheral equipment. This document emphasizes Release 6 and later systems.

This document covers information related to DEFINITY ECS Release 6. For details about changes for Release 6, refer to *DEFINITY Enterprise Communications Server Release 6.1, Change Description*.

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

- The term *Release 6* is a general term encompassing all Release 5 and later systems.
- The word *system*, is a general term and includes references to the DEFINITY enterprise communications server
- DEFINITY Systems are called: Release 5; Release 6; Release 6vs; Release 6csi, Release 6si, and Release 6r
- All occurrences of Release 5si, Release 6si, Release 5si + memory, and Release 6si + memory are called Release 6si unless a specific configuration is required to differentiate between product offerings
- Information in this document is applicable for G3V4 through Release 6, 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**

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The following documents are useful for system-related information:

- *DEFINITY Enterprise Communications Server Release 6 System Description Pocket Reference, 555-230-211*
- *DEFINITY Enterprise Communications Server Release 6 Installation and Test for Multi-Carrier Cabinets, 555-230-112*
- *DEFINITY Enterprise Communications Server Release 6 Upgrades and Additions for R6vs/si, 555-230-120*
- *DEFINITY Enterprise Communications Server Release 6 Upgrades and Additions for R6r, 555-230-121*
- *DEFINITY Enterprise Communications Server Release 6 Maintenance for R6r, 555-230-126*
- *DEFINITY Enterprise Communications Server Release 6 Maintenance for R6vs/si, 555-230-127*
- *DEFINITY Enterprise Communications Server Release 6 Installation and Test for Compact Modular Cabinets, 555-230-128*
- *DEFINITY Enterprise Communications Server Release 6 Maintenance for Compact Modular Cabinets, 555-230-129*
- *AT&T Network and Data Connectivity Reference, 555-025-201*
- *BCS Products Security Handbook, 555-025-600*
- *Switch Administration for DEFINITY AUDIX, 585-300-509*
- *DEFINITY Wireless Business System Users Guide, 555-232-105*
- *DEFINITY Wireless Business System Installation and Test Guide, 555-232-102*
- *DEFINITY AUDIX Installation and Upgrade, 585-300-118*
- *DEFINITY Enterprise Communications Server Release 6 Administration and Feature Description, 555-230-522*
- *Intuity Integration with System 75 and DEFINITY Communications System G1 and G3, 585-310-214*
- *CentreVU Call Management System Release 3 Version 5 SunSparc Server Installation and Maintenance, 585-215-827*
- *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

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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

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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 6 Installation for Adjuncts and Peripherals*, 555-230-125.

## Trademarks

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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<sup>®</sup> is a registered trademark of Harris Corporation, Dracon Division
- Shockwatch<sup>®</sup> is a registered trademark of Media Recovery, Incorporated
- Styrofoam<sup>®</sup> is a registered trademark of Styrofoam Corporation
- Tiltwatch<sup>®</sup> is a registered trademark of Media Recovery, Incorporated
- Zone Mate<sup>®</sup> is a registered trademark of Harris Corporation

## **Standards Compliance**

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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

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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

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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 Part 15
- Australia AS3548



#### **NOTE:**

The system conforms to Class A (industrial) equipment. Voice terminals meet Class B requirements.

- Electrostatic Discharge (ESD) IEC 1000-4-2
- Radiated radio frequency field IEC 1000-4-3
- Electrical Fast Transient IEC 1000-4-4
- Lightning effects IEC 1000-4-5
- Conducted radio frequency IEC 1000-4-6
- Mains frequency magnetic field IEC 1000-4-8
- Low frequency mains disturbance

The system conforms to the following:

- 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**

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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 Européenne) 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 6 products:

- Global AC powered Multi-Carrier Cabinet (MCC) with 25-Hz and 50-Hz ring generator
- 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
- AC powered Compact Modular Cabinet (CMC) with 25-Hz and 50-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 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

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### Part 68: Statement

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

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

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

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

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

This equipment complies with Part 68 of the FCC Rules. 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.

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

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

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

If trouble is experienced with this equipment, for repair or warranty information, please contact the Technical Service Center at 1-800-242-2121. 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 adjunct and peripheral 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 (0.26 mm <sup>2</sup> )		26 AWG Wire (0.14 mm <sup>2</sup> )	
	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 26B1 selector console, and DCP terminals derive their power from an auxiliary power source. One console can connect to Release 6vs and Release 6 csi, and 3 consoles can connect to each cabinet stack or Release 6r. 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 1151A1 or 1151A2 power supply
- 258A-type adapter
- Bulk power supply such as the 1145B

A console's maximum distance from its 1145B 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<sup>®</sup> 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**

- Call detail recording (CDR) equipment

#### **Data Modules**

Data modules provide an interface to:

- AUDIX
- Customer-provided terminals and computers
- 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 main distribution frame (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 6 Administration and Feature Description*.

## Queue Warning Indicator

---

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

The light 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 6 Administration and Feature Description*.

## 1145B Power Supply

---

The 1145B closet power arrangement provides an uninterruptible -48 VDC power source with optional 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:

- Any 8520 terminal
- Attendant console 302C1
- PassageWay adapter interface
- Any 7500-series terminal whether in passive bus, or point to point (one per BRI port)
- Any 7500- or 8500-series terminal with an asynchronous data module
- Any 8510 terminal in passive bus or with an asynchronous data module (unless the 8510 will not be used to support data or video)
- Any 6400-series terminal with XM24 expansion module
- Any 7400-series terminal with adjuncts 7407, 74 34 or 7444
- Any 8400-series terminal with adjuncts 8411 or 8434

[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

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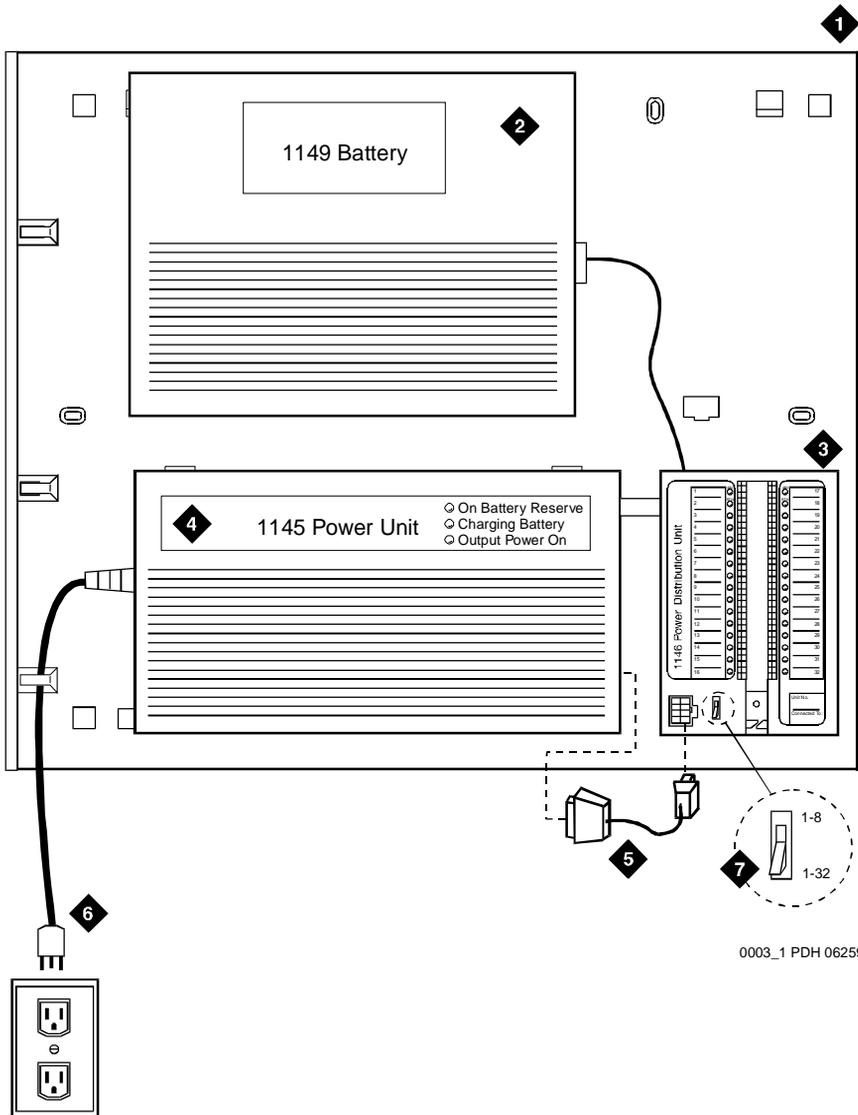
The top plate is used for mounting the back-up battery. The bottom plate is used to mount the power supply and distribution units. The plates can be rack-mounted using standard rack-mounting brackets.

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            | 5. Power cable  |
| 2. Optional battery (1149B shown) | 6. Unswitched outlet (120 VAC, 20 A or 230 VAC, 15 A) |
| 3. 1146B power distribution unit  | 7. Battery backup switch setting                      |
| 4. 1145B power unit               |   |

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 Ah	24700
1149B	5 Ah	24701
1147B	8 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.*

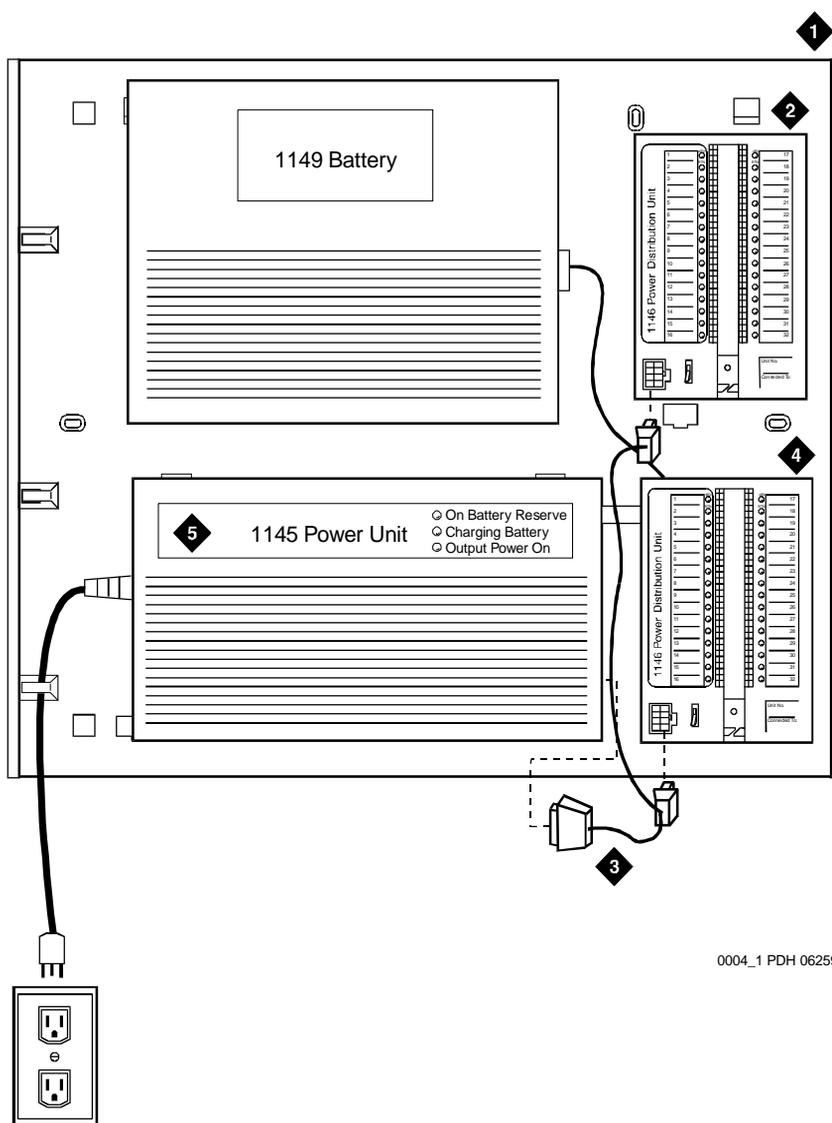
*The maximum DCP terminal mixture is twenty four 7400-series and twenty four 8400-series or sixty four 8400-series terminals. The maximum mixture of 6400-series terminals is 64 if the average power per terminal will not exceed 3.125 W.*

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.



0004\_1 PDH 062596

**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.

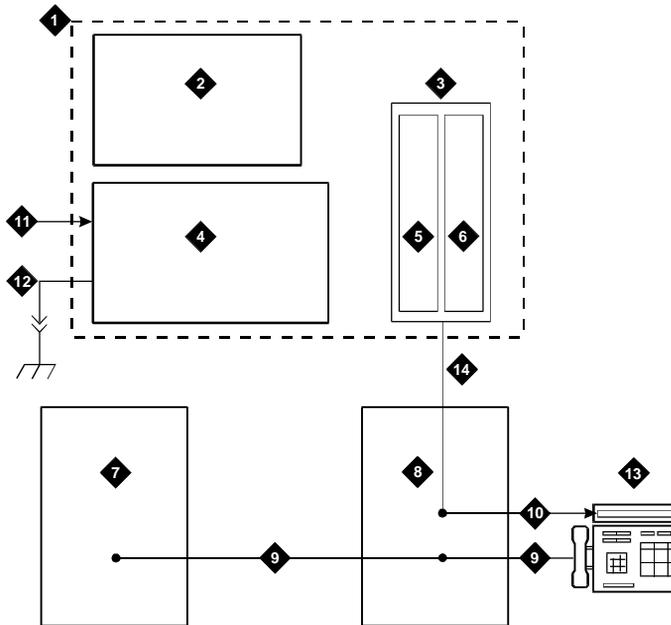
**FAIL:** If either green or red LED is not lit after disconnecting AC power, check the connections. If the connections are good, replace the power unit or batteries.

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](#)



### Figure Notes

- |   |  |
|---|--|
| 1. Power supply kit                           | 8. MDF                                     |
| 2. 2.5, 5.0, or 8.0 A hour battery (optional) | 9. Modular cord                            |
| 3. 1146B distribution unit                    | 10. Pins 7 and 8 (display terminal power)  |
| 4. 1145B power supply                         | 11. AC input                               |
| 5. Circuits 1-16                              | 12. Installer-provided ground wire         |
| 6. Circuits 17-32                             | 13. ISDN/ display system protocol terminal |
| 7. Port circuit                               | 14. Circuits 1-32                          |

**Figure 1-3. Typical Wiring to a Terminal**

2. Mark lead destinations on the label next to each connector. Also mark the unit number and connectivity information on the label.

## **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 6400-, 7500-, 8400-, and 8500-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 A, 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:

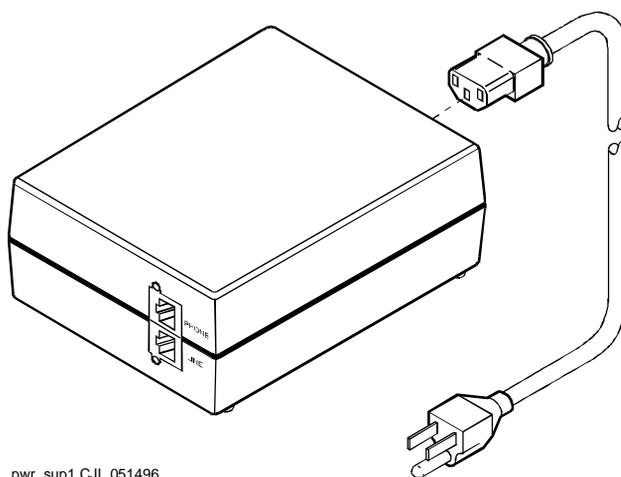
*Do not locate the unit within six inches (15.25 cm) of the floor.*

## 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.

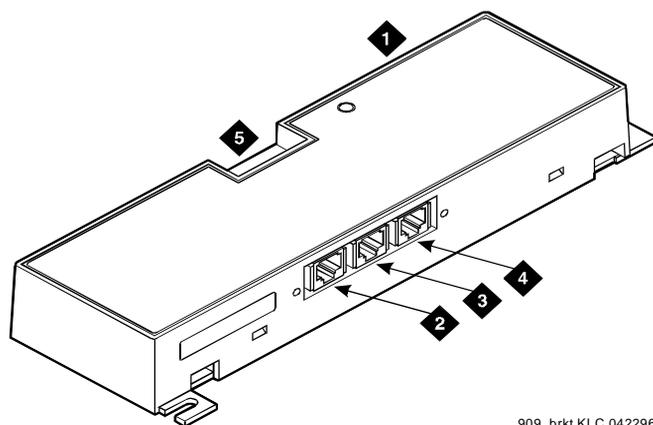


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**Figure 1-4. Typical 1151A Power Supply (Front)**

## 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 | 4. J3 6-Pin modular jack |
| 2. J1 8-Pin modular jack    | 5. DIP switch location   |
| 3. J2 8-Pin modular jack    |                          |

### 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)**

<b>Pin</b>	<b>Color</b>	<b>Designation</b>	<b>Description</b>
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)**

<b>Pin</b>	<b>Color</b>	<b>Designation</b>	<b>Description</b>
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

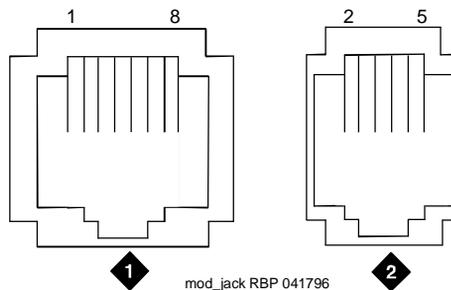
**CAUTION:**

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**

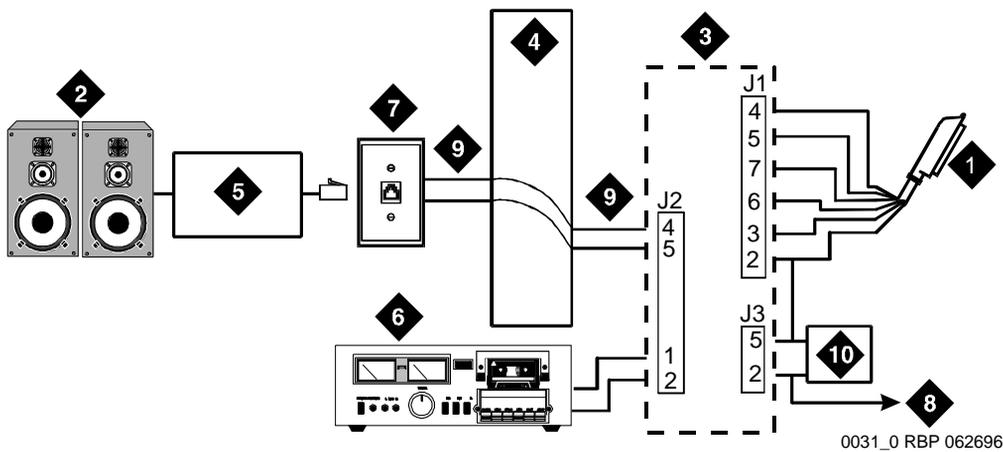
[Figure 1-7](#) shows the connections for the loudspeaker paging feature. These connections are used when the loudspeaker interface equipment is not located in the equipment room. If the equipment is located in the equipment room, the information outlet is not required. The connections shown are for 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.



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**Figure Notes**

- |   |  |
|---|--|
| 1. 25-pair cable to TN763B/C/D auxiliary trunk circuit pack (SZ1 connects to GRD on key 10) | 5. Paging amplifier                                    |
| 2. Loudspeaker system   | 6. Music source for background music over loudspeakers |
| 3. 909A/B universal coupler (if required)   | 7. 103A or modular wall jack                           |
| 4. Part of MDF circuits 1-16  | 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 6 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 universal 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.



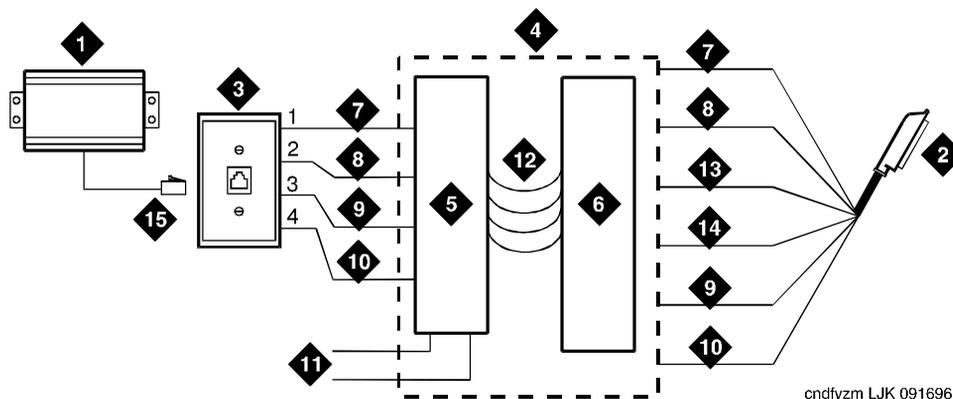
### **CAUTION:**

*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 6 Administration and Feature Description*.



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.



cnrfyzm LJK 091696

### Figure Notes

- |   |  |
|---|--|
| 1. PagePac 20 PowerMate<br>(With Zone- Mate 9 or 39)                | 8. Ring (red)                                  |
| 2. B25A 25-pair cable to TN763B/C/D<br>auxiliary trunk circuit pack | 9. S   |
| 3. 103A or modular wall jack  | 10. S1   |
| 4. Part of MDF  | 11. SZ and SZ1 are not used on station<br>side |
| 5. Station side (yellow field)                                      | 12. 110P6A patch cord or jumpers               |
| 6. System side (purple field)                                       | 13. SZ   |
| 7. Tip (green)  | 14. SZ1  |
|   | 15. 4-pair modular cord                        |

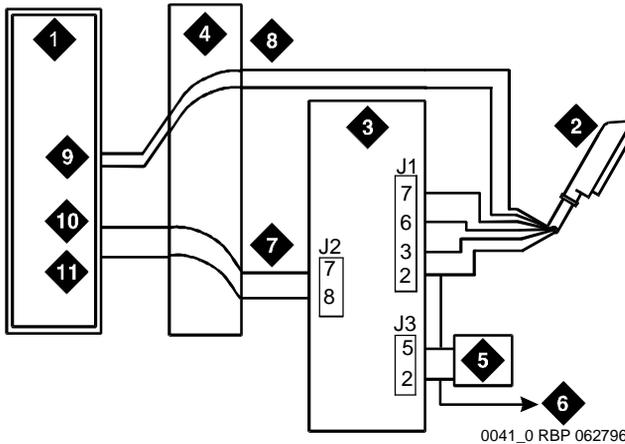
**Figure 1-9. Connections for PagePac 20 With Zone-Mate**

- A wiring block must be locally engineered.



**PagePac 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**

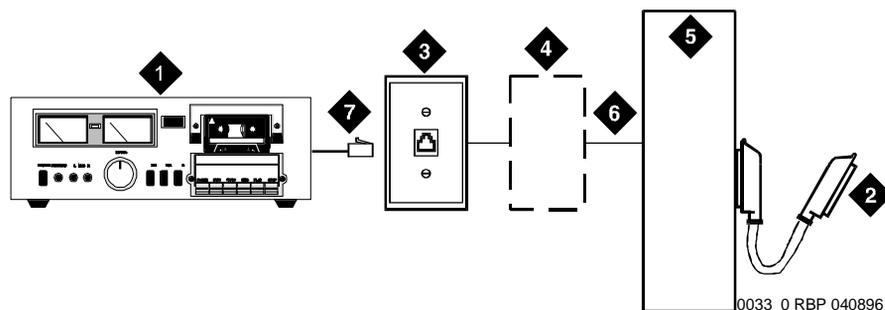
- |   |                              |
|---|------------------------------|
| 1. PagePac 50/100/200 system  | 6. To SZ1 on TN763 connector |
| 2. 25-pair cable to auxiliary trunk circuit pack (T, R, S, S1, Sz, SZ1) | 7. CBS1/C1 and CBS2/C2       |
| 3. 909A/B universal coupler   | 8. Tip and ring wires        |
| 4. Part of MDF  | 9. Page in connections       |
| 5. Power supply for universal coupler                                   | 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  | 4. 122A music adapter (if required primarily france) |
| 2. A25D 25 pair cable (male-to-male) to auxiliary trunk circuit pack | 5. Part of MDF                                       |
| 3. 103A or modular wall jack   | 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 6 Administration and Feature Description*.

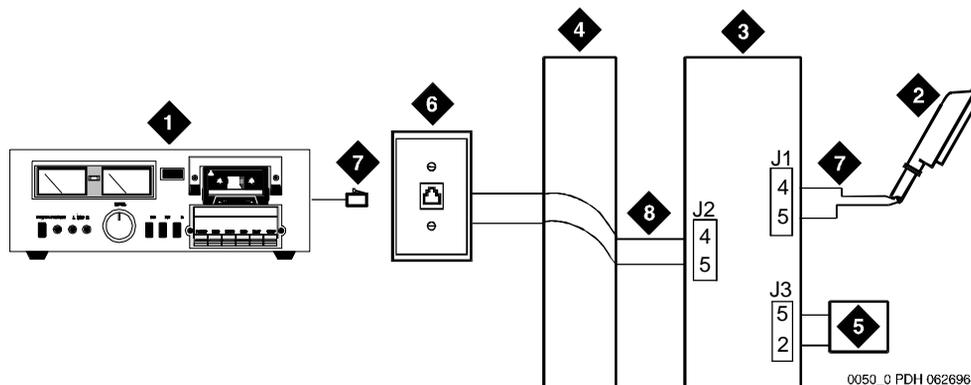
## **Non-Registered Music Source**

---

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 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 6 Administration and Feature Description*.

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



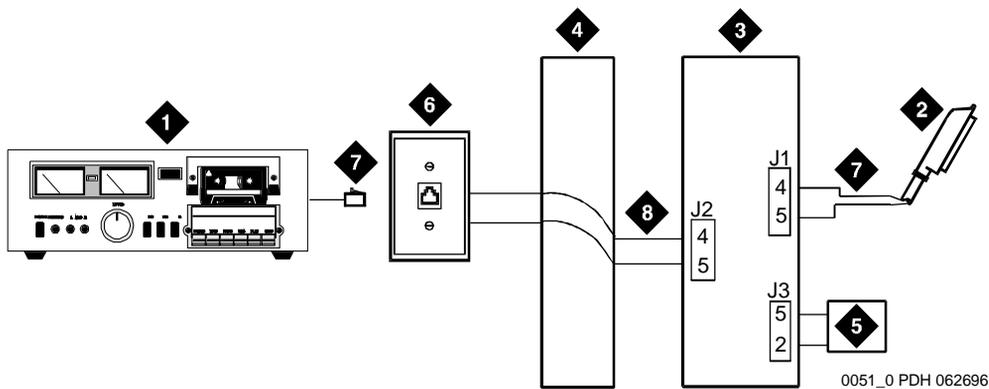
### Figure Notes

- |  |                                       |
|--|---------------------------------------|
| 1. Customer-supplied music Source                                    | 5. Power supply for universal coupler |
| 2. A25D 25-pair cable (male-to-male) to auxiliary trunk circuit pack | 6. 103A or modular wall jack          |
| 3. 909A/B universal coupler  | 7. 4-pair modular cord                |
| 4. Part of MDF   | 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**

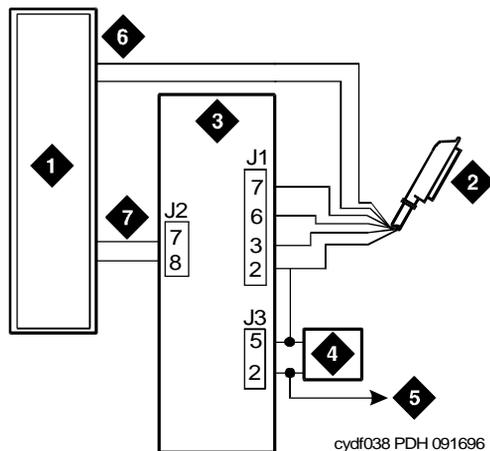
- |  |                                       |
|--|---------------------------------------|
| 1. Customer-supplied music Source            | 5. Power supply for universal coupler |
| 2. 25-pair cable to analog line circuit pack | 6. 103A or modular wall jack          |
| 3. 909A/B universal coupler                  | 7. 4-pair modular Cord                |
| 4. Part of MDF                               | 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  | 4. Power supply for universal coupler |
| 2. 25-pair cable (T, R, S, S1, Sz, SZ1) to TN763/D auxiliary trunk circuit pack | 5. To SZ1 on TN763 connector          |
| 3. 909A/B universal coupler   | 6. Tip and ring wires                 |
|   | 7. CBS1/C1 and CBS2/C2                |

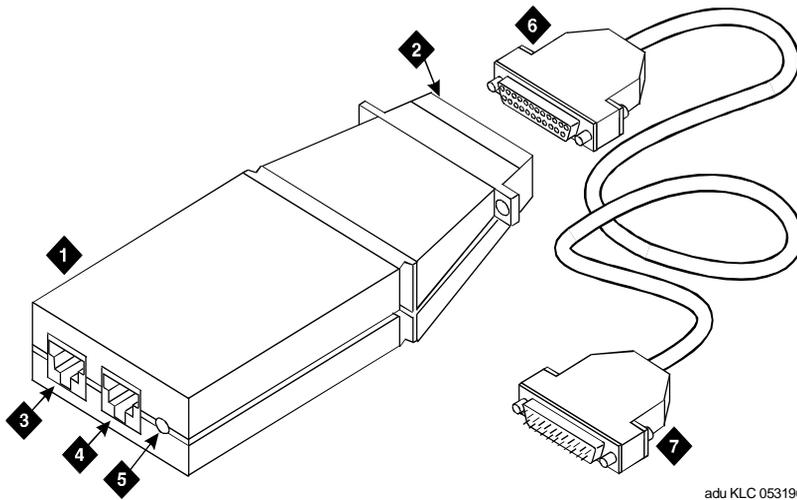
### Figure 1-15. Malicious Call Trace

- 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 6 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)   | 4. Telephone jack (to analog telephone) |
| 2. 25-pin male D-connector (EIA-232-D) to DTE  | 5. Originate/disconnect jack            |
| 3. Wall jack connector (To data line circuit pack (TN726) and analog line circuit pack (TN2183) or equivalent) | 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

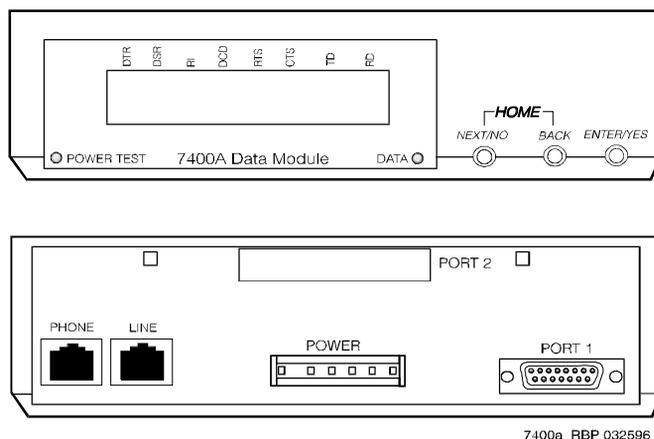
### 7400A/B/C/D and 8400B Plus Data Modules

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
- System printer or journal printer
- Customer-supplied terminals and host computers
- Call detail recording (CDR) devices

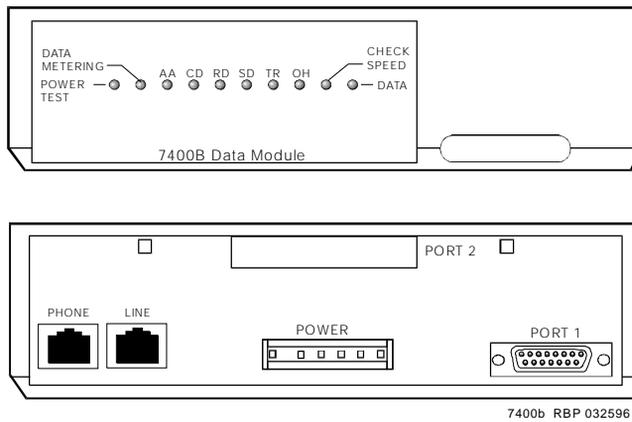
### Data Module Types

[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.



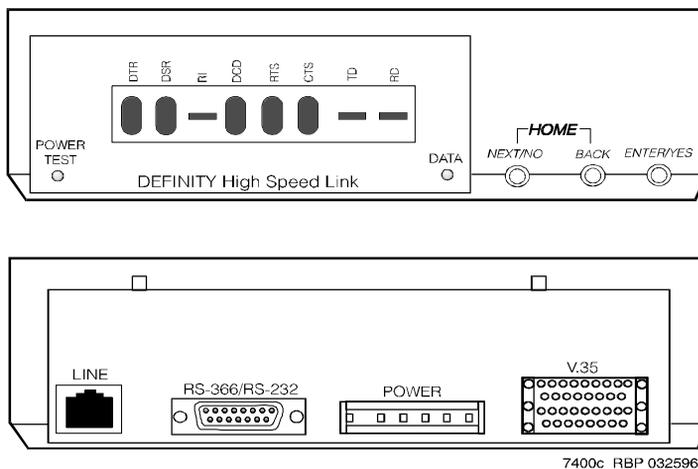
**Figure 1-17. 7400A Data Module**

[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.



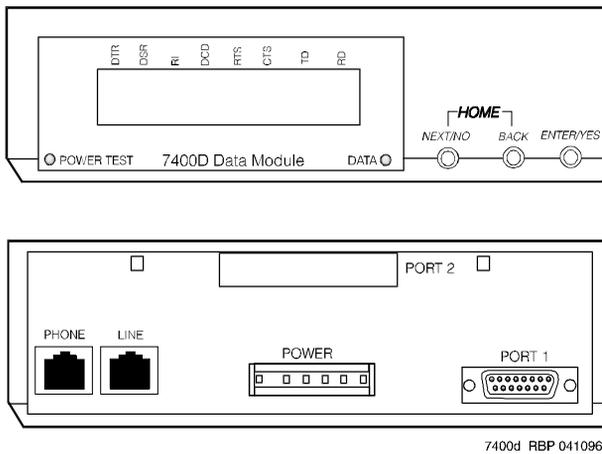
**Figure 1-18. 7400B Data Module**

[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.



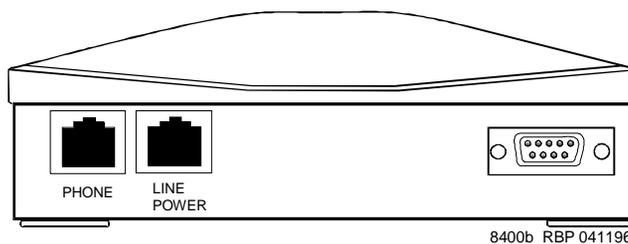
**Figure 1-19. 7400C Data Module (High Speed Link)**

[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.

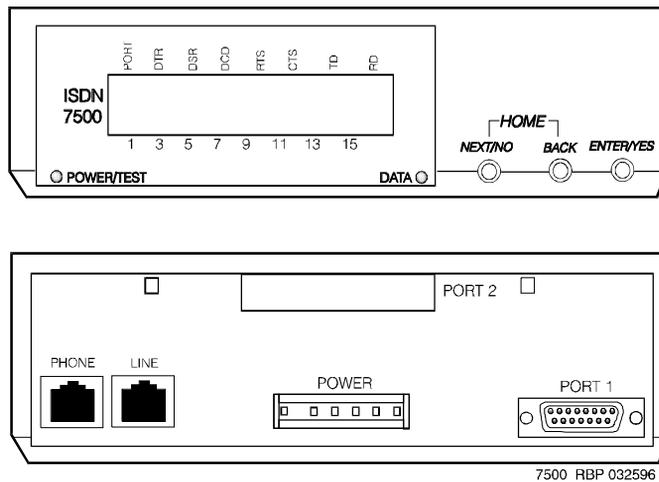
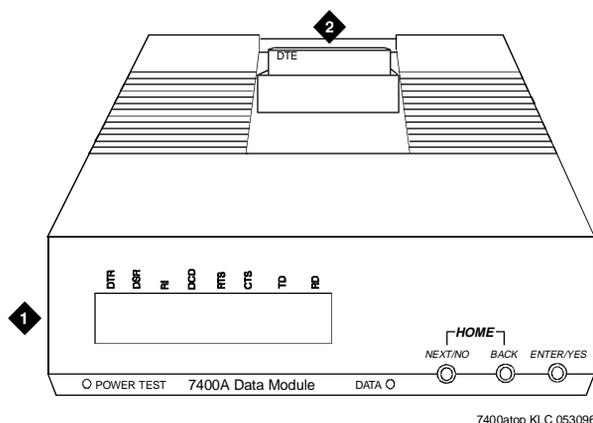


Figure 1-22. 7500B ISDN Data Module

## 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)

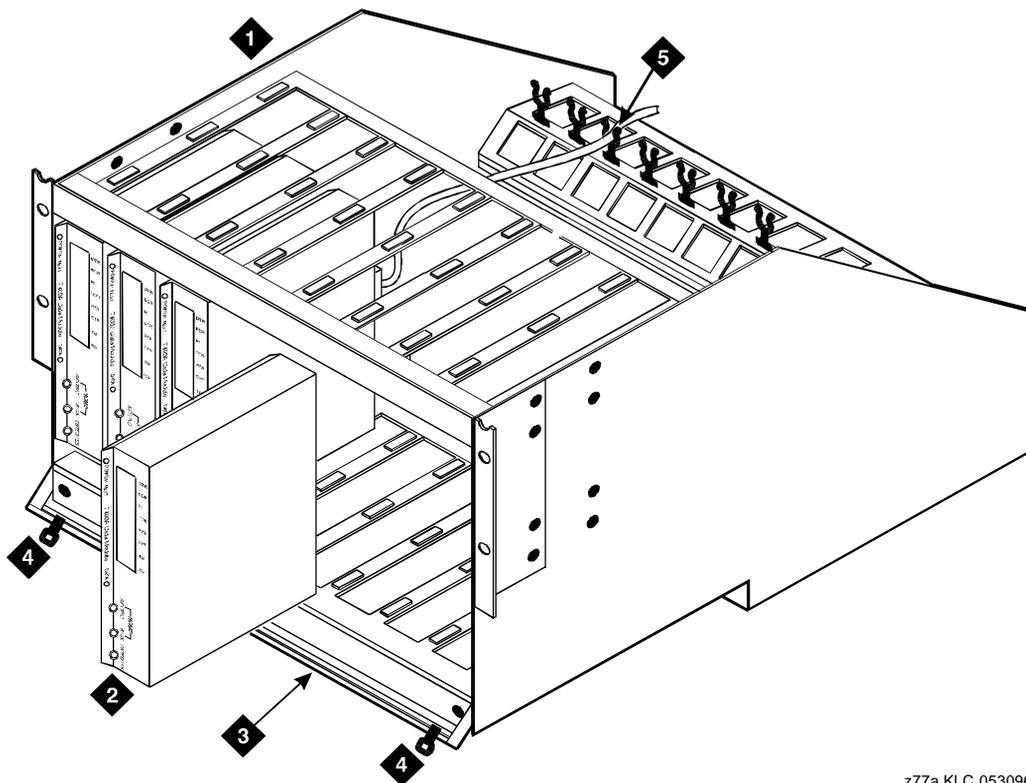
### Figure 1-23. Data Module Mode Selector

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:



z77a KLC 053096

### Figure Notes

- |                              |                               |
|------------------------------|-------------------------------|
| 3. Z77A data mounting        | 6. Retaining bar plunger      |
| 4. Data module (7400A shown) | 7. Twist-lock cable retainers |
| 5. Retaining bar             |                               |

### 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 1-44](#)).
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**

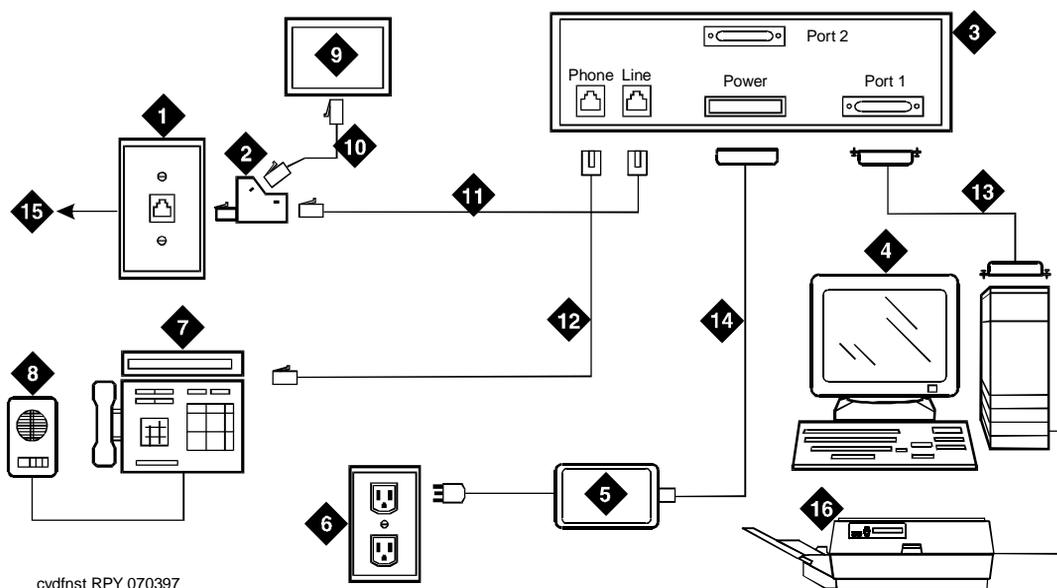


### **CAUTION:**

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

## 7400A Data Module

Typical connections between a 7400A data module and the associated host computer call management system (CMS) interface are shown in [Figure 1-25](#).



cydfnst RPY 070397

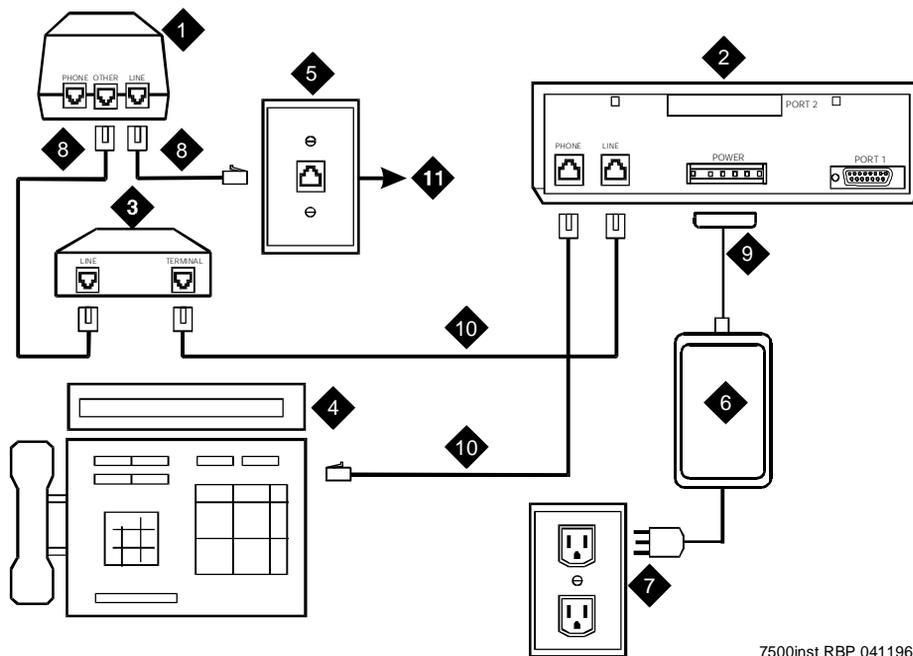
### Figure Notes

- |  |   |
|--|---|
| 1. 103A or modular wall jack                             | 10. D6AP cord   |
| 2. 400B2 adapter   | 11. D8W cord  |
| 3. Rear of data module (7400B Shown)                     | 12. Line to display telephone (D8W cord)                          |
| 4. Host computer   | 13. Electronic industries association (EIA) cable                 |
| 5. Data module power supply                              | 14. Power cable (from data module power supply)                   |
| 6. Electrical outlet                                     | 15. To MDF and TN754B digital line circuit pack in system cabinet |
| 7. Display telephone                                     | 16. Printer   |
| 8. S101A speakerphone                                    |   |
| 9. Auxiliary power supply for telephone and speakerphone |   |

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

## 7500B Data Module

Typical connections between a 7500B data module and the associated equipment interface are shown in [Figure 1-26](#).



7500inst RBP 041196

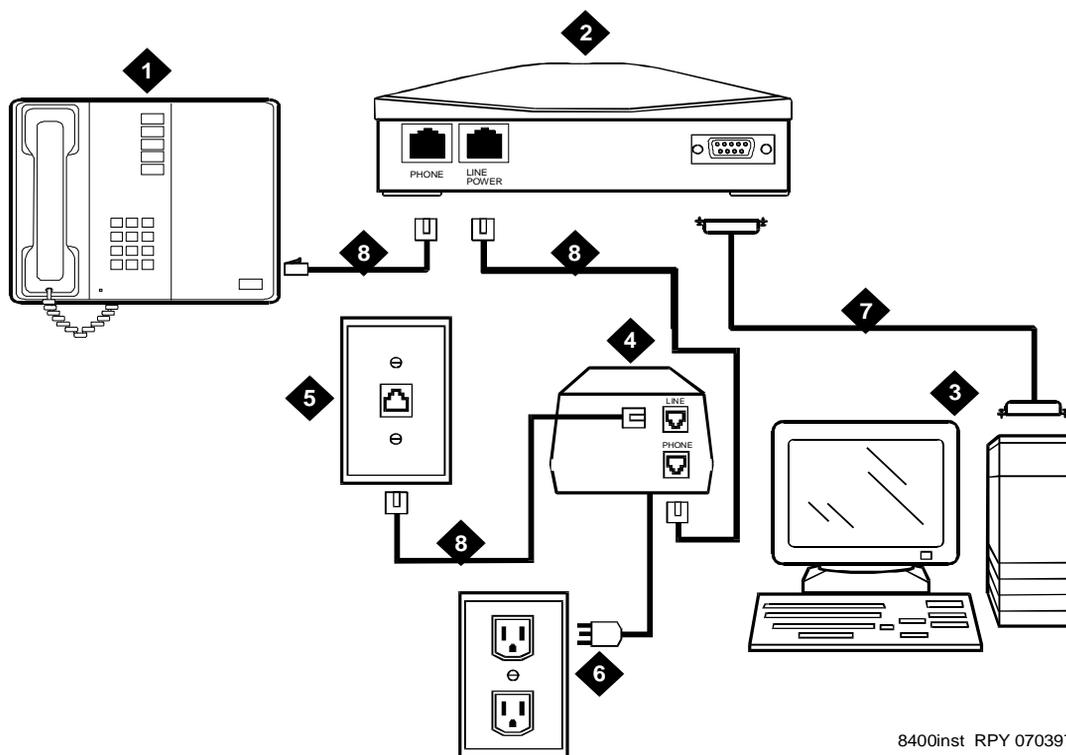
### Figure Notes

- |                                       |  |
|---------------------------------------|--|
| 1. MSP-1 power supply (or equivalent) | 7. Electrical outlet                                   |
| 2. Rear of data module (7500B shown)  | 8. D6AP cord   |
| 3. NT1 network interface              | 9. Power cable (from data module power supply)         |
| 4. ISDN display telephone             | 10. D8W cord   |
| 5. 103A or modular wall jack          | 11. To BRI line circuit pack in system cabinet via MDF |
| 6. Data module power supply           |  |

**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](#).



8400inst RPY 070397

### Figure Notes

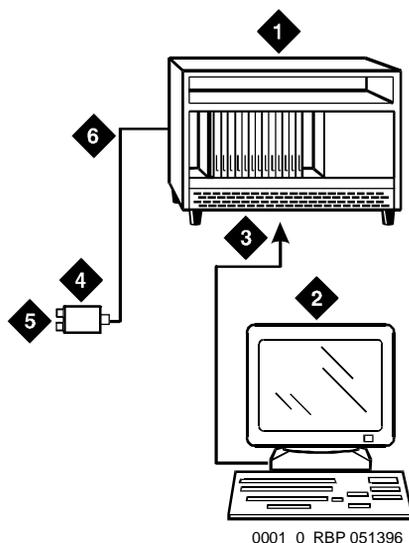
1. 2-wire DCP telephones
2. Rear of 8400B plus data module
3. Host computer
4. 1151A or 1151A2 power supply (or equivalent)
5. 103A or modular wall jack
6. Electrical outlet
7. EIA-232-D cable (use M9/F25 adapter if required)
8. D8W cord
9. To 2-wire TN2181 or TN2224 digital line circuit pack

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

## PRI Converters (SCC)

### PRI to DASS and PRI to DPNSS Converters

Figure 1-28 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:

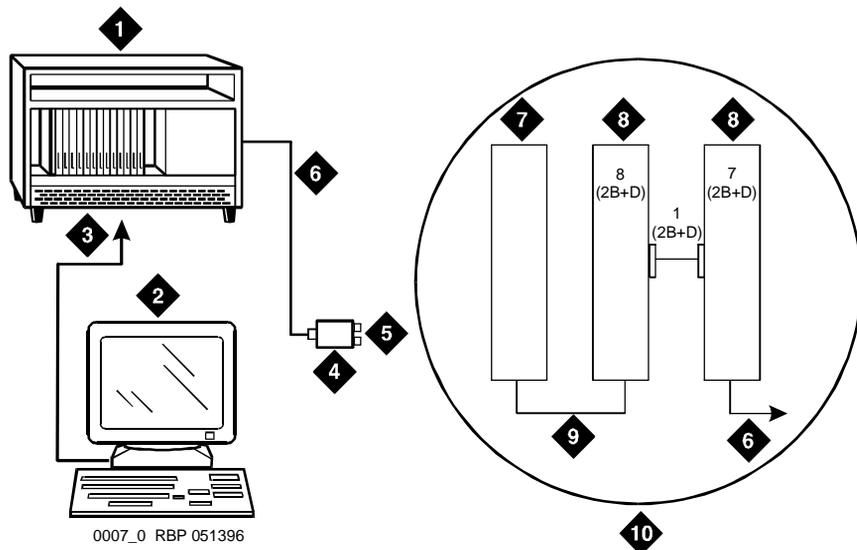
1. To TN464F DS1 circuit pack and either a TNCSCC-1 PRI to DASS converter or a TNCSCC-2 PRI to DPNSS converter circuit pack
2. Administration Terminal
3. RS-232 cable to Front of PRI converter circuit pack
4. 888B coaxial converter
5. Coaxial Connection to 2 MB per Second Facility
6. Coaxial cable from PRI converter circuit pack to coaxial converter

#### Figure 1-28. 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 1-29 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 | 6. Coaxial cable from PRI converter circuit pack to coaxial converter |
| 2. Administration terminal   | 7. TN464F circuit pack  |
| 3. RS-232 cable to front of converter circuit pack                 | 8. TNPRI/BRI converter circuit pack                                   |
| 4. 888B coaxial converter  | 9. Jumper coaxial cable   |
| 5. Coaxial connection to 2 MB per second facility                  | 10. Inset showing connections on rear of carrier                      |

Figure 1-29. Typical PRI to BRI Converter Cabling

### NOTE:

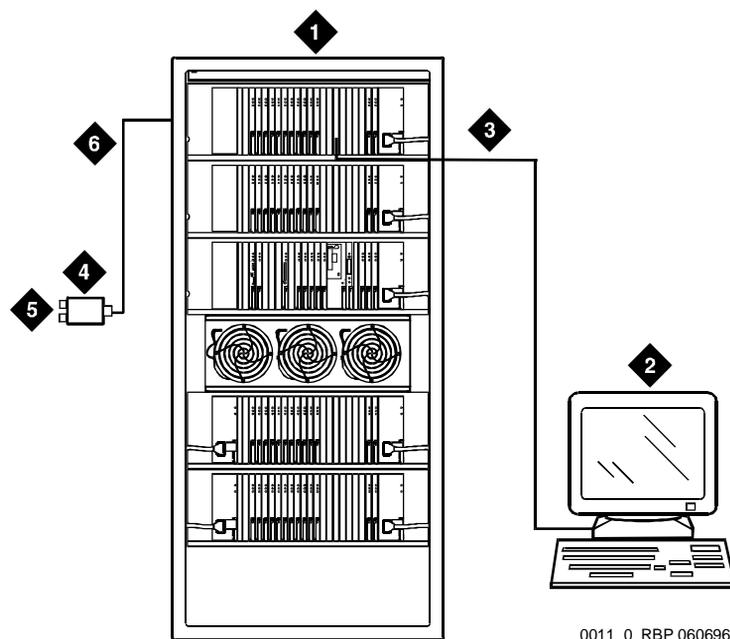
The inset shows details of the cable connections between the circuit packs.

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 1-28 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

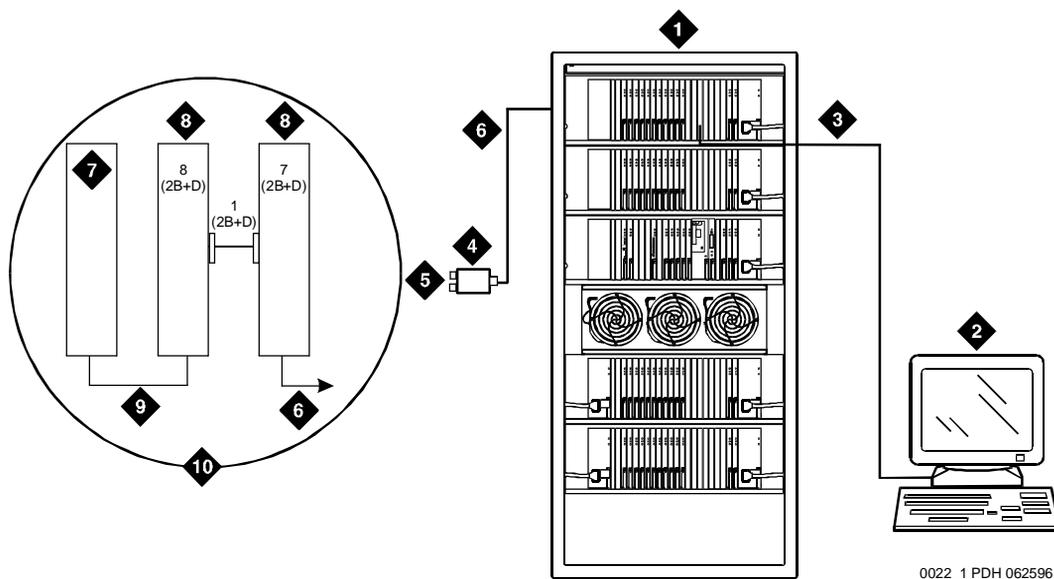
1. To TN464F DS1 circuit pack and either a TNCSCC-1 PRI to DASS converter or a TNCSCC-2 PRI to DPNSS converter circuit pack
2. Administration terminal
3. RS-232 cable to Front of PRI converter circuit pack
4. 888B 75 ohm coaxial converter
5. Coaxial connection To 2 MB per Second Facility
6. Coaxial cable from PRI converter circuit pack to coaxial converter

#### Figure 1-30. 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 1-29 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.



0022\_1 PDH 062596

### 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 1-31. Typical PRI to BRI Converter Cabling

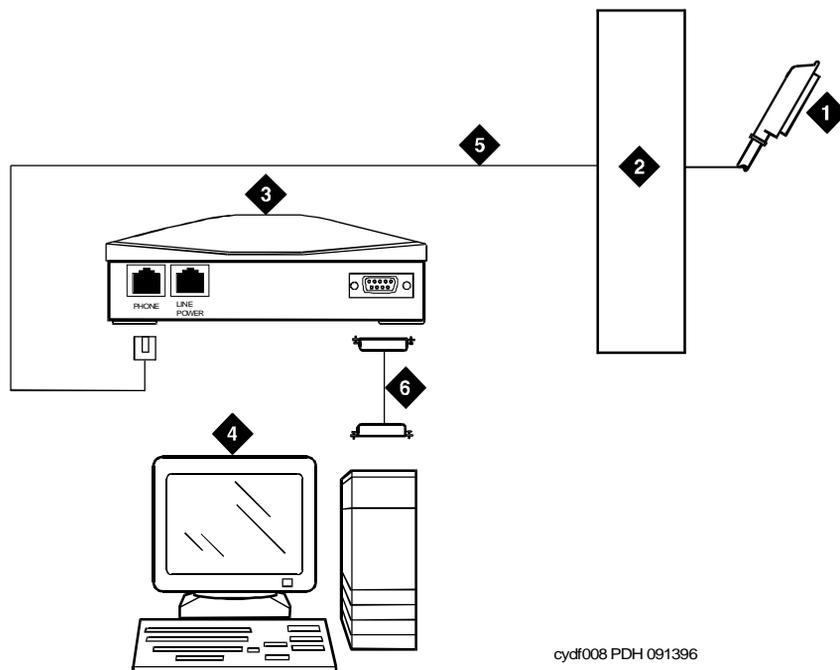


### NOTE:

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 1-32](#) shows typical connections.



cydf008 PDH 091396

### Figure Notes

1. To TN565B BRI circuit pack; or TN2181 or TN2224 circuit pack
2. Part of MDF
3. ExpressRoute 1000 data module
4. Administration terminal
5. Modular line cord
6. M25B (25-Pin RS-232) cable

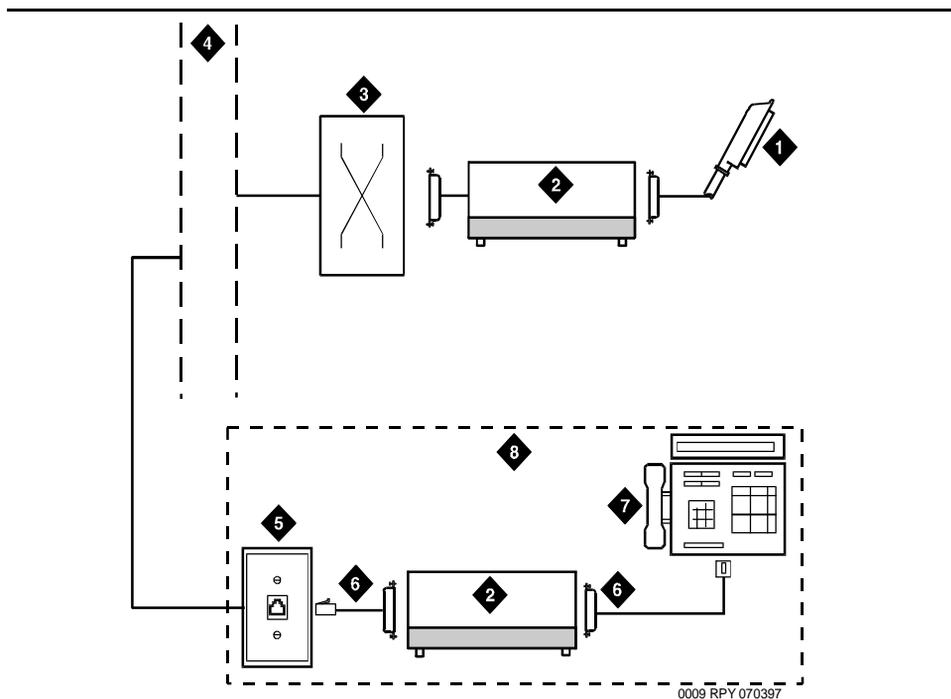
**Figure 1-32. Typical ExpressRoute 1000 Data Module Connections**

### **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 1-33 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 1-6 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         | 5. Wall jack  |
| 2. DEFINTY DCP extender                     | 6. Modular line cord                                  |
| 3. Part of MDF                              | 7. DCP telephone (Such as 603E, 8410D, 8405, or 8434) |
| 4. Public switched telephone network (PSTN) | 8. Remote work location                               |

Figure 1-33. Typical DEFINTY DCP Extender Connections

**Table 1-6. DCP Extender 25-Pair Cable Pinout**

<b>Cross-Connect Pin</b>	<b>Wire Color</b>	<b>Amphenol Pin</b>	<b>Backplane Pin</b>
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

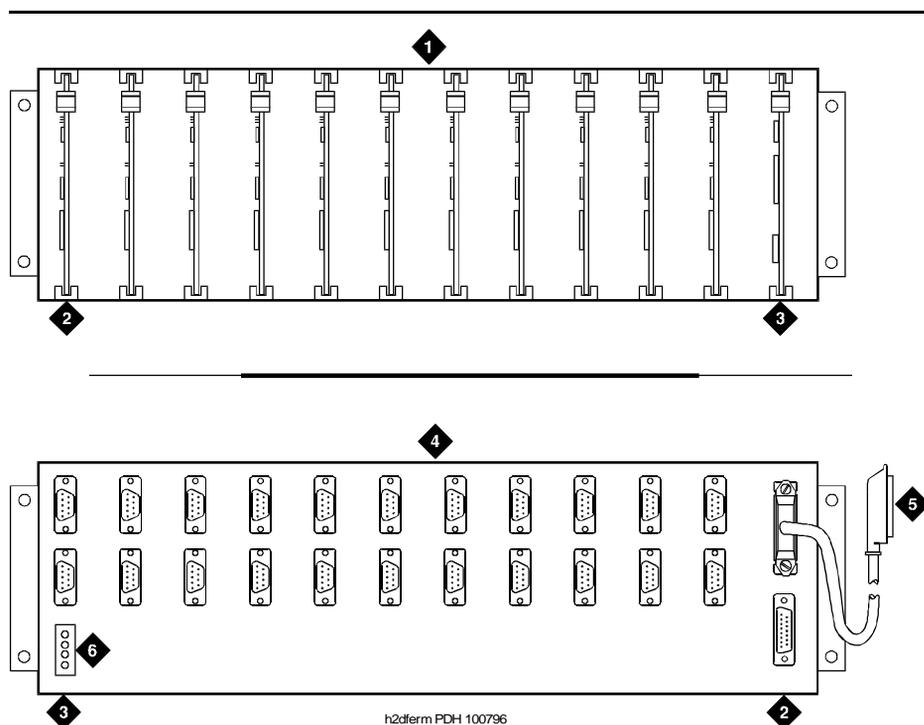
***Continued on next page***

**Table 1-6. DCP Extender 25-Pair Cable Pinout — Continued**

<b>Cross-Connect Pin</b>	<b>Wire Color</b>	<b>Amphenol Pin</b>	<b>Backplane Pin</b>
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 1-34 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 in "[DEFINITY DCP Extender \(Stand Alone\)](#)" earlier in this chapter. Refer to [Table 1-6](#) 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       | 4. Rear of rack mount assembly                                     |
| 2. First circuit pack in slot 1 ("A") | 5. 25-pair connector to MDF and the TN2181 or TN2224 circuit packs |
| 3. Slot 12 ("L")                      | 6. Power connector   |

**Figure 1-34. Typical DEFINITY DCP Extender Connections**

## Call Detail Recording Unit Interface

---

The interface between the system and call detail recording (CDR) output devices can be through a data module or an external 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 6 Administration and Feature Description*.

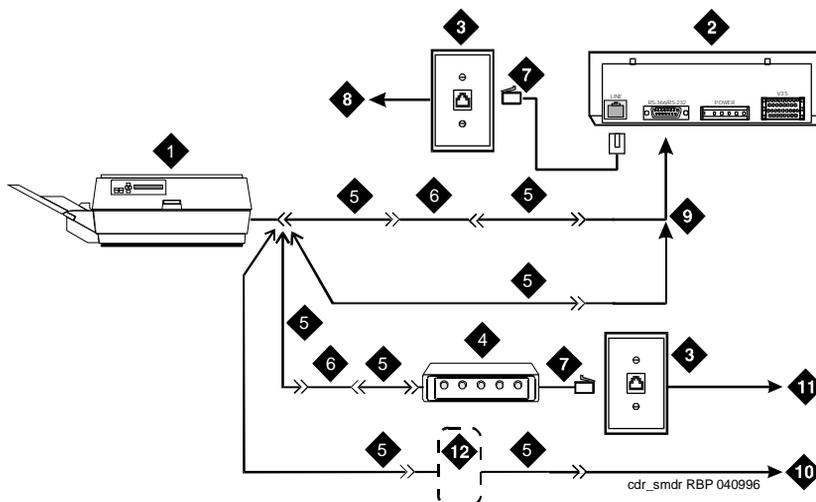
A data line circuit pack may also be used. If so, data modules are not required for DTE equipment. Connections to the CDR output device is the same as a customer-provided data terminal. The CDR output device can be connected directly to the **DCE** connector on the rear of the control carrier. This connection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

[Figure 1-35 on page 1-57](#) 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 an external 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 1-35 shows the cabling to connect a printer or customer-supplied DTE equipment.



### Figure Notes

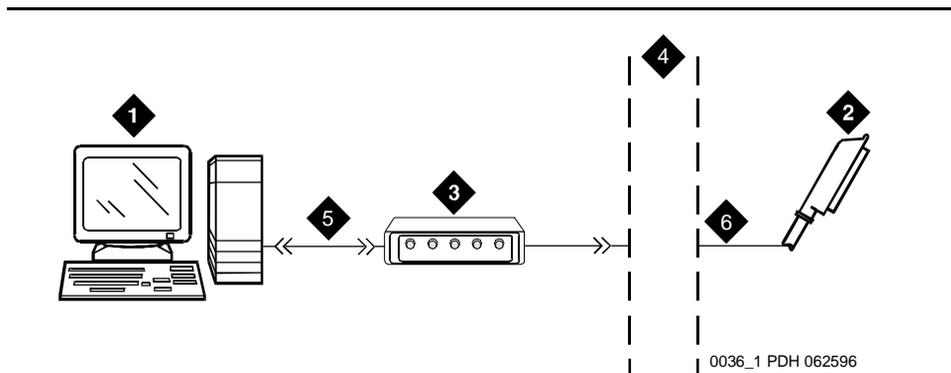
- |  |   |
|--|---|
| 1. Printer, 94A local storage unit (LSU), or customer-supplied DTE | 7. 4-pair modular cord                      |
| 2. Data module (7400C shown)                                       | 8. To TN754/B digital line circuit pack     |
| 3. 103A or modular wall jack                                       | 9. To 25-pair connector on data module      |
| 4. External modem  | 10. To DCE connector on control carrier     |
| 5. M25B cable (25-Pin RS-232)                                      | 11. To TN746 analog line circuit pack       |
| 6. M10M null modem cable   | 12. 116A isolator (DC powered systems Only) |

### Figure 1-35. 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 1-36 shows the connections to a remote host connected by an analog line.



### Figure Notes

- |  |   |
|--|---|
| 1. Host computer                                       | 4. Public switched telephone network (PSTN)       |
| 2. To analog line or central office trunk circuit pack | 5. M25B cable (25-Pin RS-232)                     |
| 3. Modem or data service unit (DSU)                    | 6. 25-pair cable to network interface via the MDF |

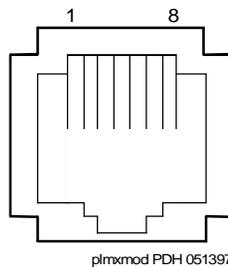
**Figure 1-36. Call Detail Recording Cabling to Remote Host (Analog Line)**

# Multimedia Application Server Interface

The multimedia application server interface (MASI) provides the capability for the DEFINITY ECS to provide calling features to the multimedia communications exchange (MMCX). The MMCX server connects to the DEFINITY ECS through a D8W cable. See [Table 1-7](#) for pin assignments and [Figure 1-37](#) for pin locations.

**Table 1-7. D8W cable Modular Pin Assignments**

Pin	Signal	Pin	Signal
1	Receive ring	5	Transmit Tip
2	Receive tip	6	No connection
3	No connection	7	No connection
4	Transmit ring	8	No connection



plmxmod PDH 051397

**Figure 1-37. Modular Jack Pin Assignment**

There are 2 methods to connect the MMCX server to the DEFINITY ECS, the direct method and the MDF method.

The direct method shown in [Figure 1-38](#), illustrates the connection from a DEFINITY ECS DS1 interface circuit pack through a D8W cable to a customer supplied digital line pc board in the MMCX.

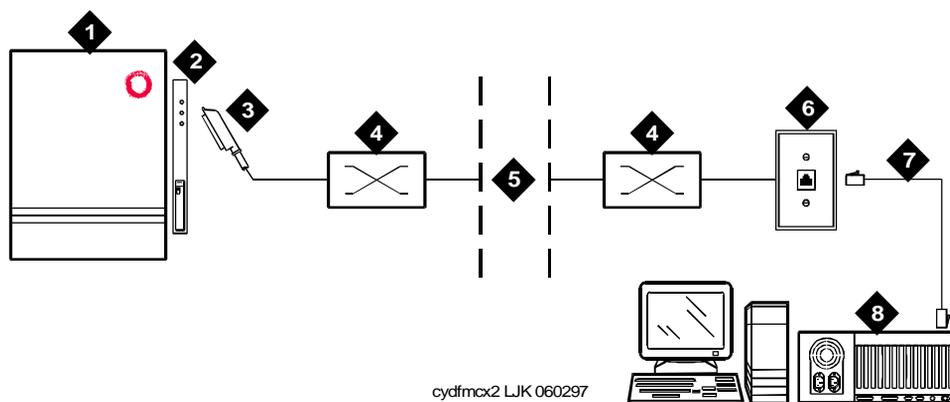


### Figure Notes

- |                                      |                            |
|--------------------------------------|----------------------------|
| 1. DEFINITY ECS                      | 4. D8W 4-pair modular cord |
| 2. TN464F DS1 interface circuit pack | 5. MMCX server             |
| 3. 356A adapter                      |                            |

Figure 1-38. Direct DEFINITY to MASI Connection

The MDF method shown in [Figure 1-39](#), illustrates the connection from a DEFINITY ECS DS1 interface circuit pack through a 25-pair cable to the MDF, through a t D8W cable to the to the customer supplied digital line pc board in the MMCX.



### Figure Notes

- |                                      |   |
|--------------------------------------|---|
| 1. DEFINITY ECS                      | 5. Public switched telephone network (PSTN) |
| 2. TN464F DS1 interface circuit pack | 6. 103A or modular wall jack                |
| 3. 25-pair cable                     | 7. D8W 4-pair modular cord                  |
| 4. Part of MDF                       | 8. MMCX server                              |

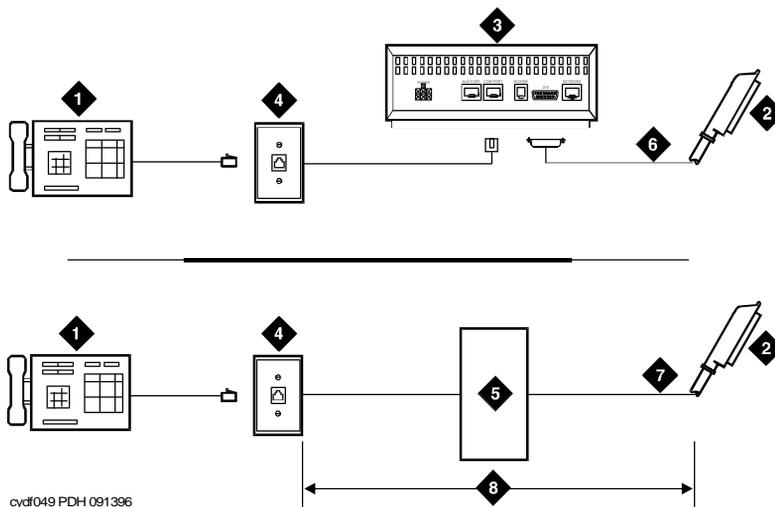
**Figure 1-39. DEFINITY to MDF to MASI Connection**

## 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 1-40](#). The maximum distance depends on the type of cable and type of endpoint.



#### Figure Notes:

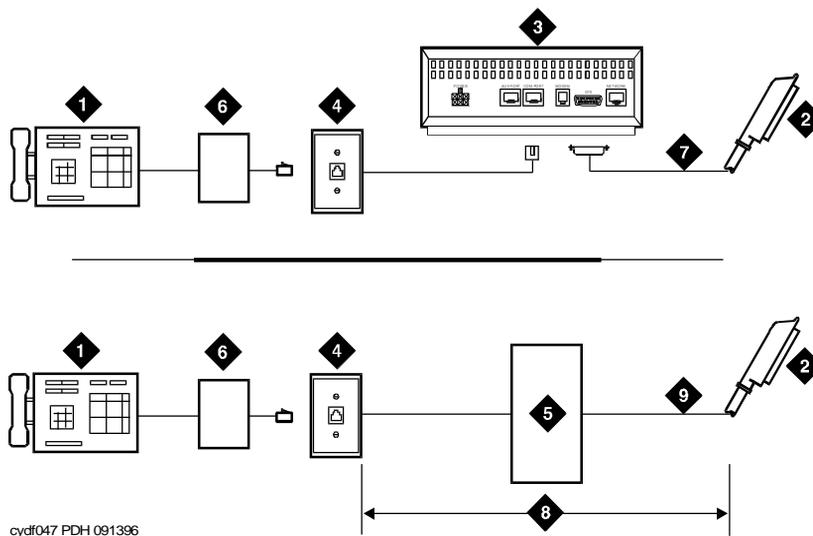
1. Wideband endpoint (wire per manufacturer)
2. To TN464F DS1/E1 circuit pack (TN464C or later can be used)
3. Channel service unit (CSU) (3150 shown)
4. 103A or modular wall jack
5. Part of MDF
6. H600-307 cable (To DTE connector on channel service unit)
7. A25D 25-pair cable (male-to-male)
8. Distance limit depends on cable type and endpoint type. See text.

**Figure 1-40. 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 1-41](#) shows connections with and without a CSU.



### Figure Notes

- |   |   |
|---|---|
| 1. Wideband endpoint (wire per manufacturer)        | 6. Bandwidth controller   |
| 2. To TN464F DS1/E1 circuit pack                    | 7. H600-307 cable (To DTE connector on channel service unit)          |
| 3. Optional channel service unit (CSU) (3150 Shown) | 8. Distance limit depends on cable type and bandwidth controller type |
| 4. 103A or modular wall jack                        | 9. A25D 25-pair cable (male-to-male)                                  |
| 5. Part of MDF                                      |   |

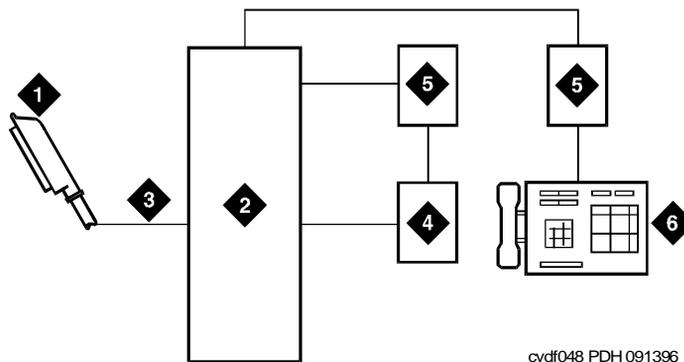
### Figure 1-41. Typical Signaling Wideband Configuration

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.

- For CSU installations, cross the transmit and receive lines between the CSU and the bandwidth controller.

Figure 1-42 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.



cydf048 PDH 091396

### Figure Notes

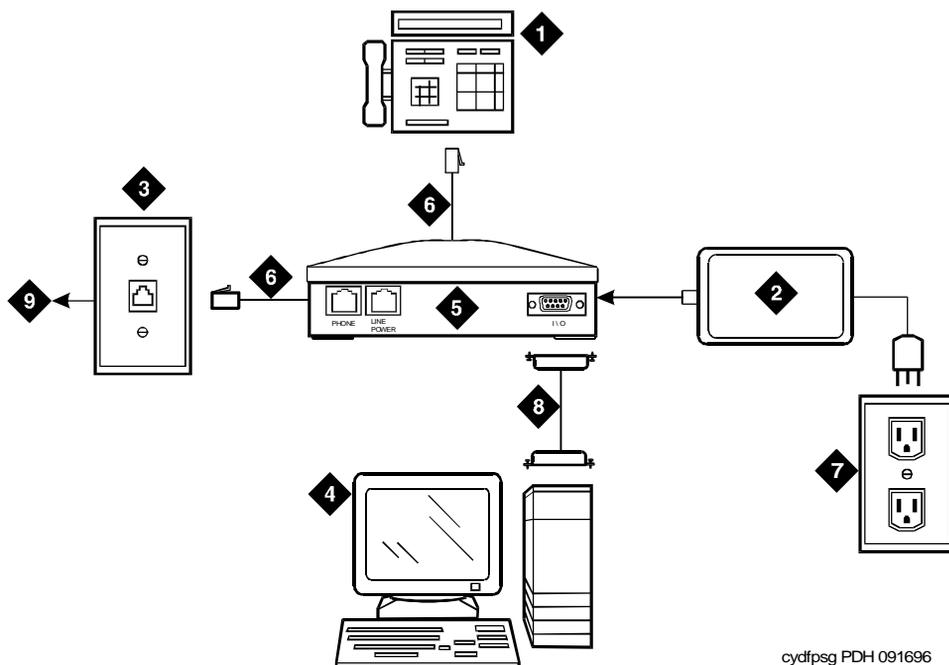
- |                                  |  |
|----------------------------------|--|
| 1. To TN464F DS1/E1 circuit pack | 4. Bandwidth controller                      |
| 2. Part of MDF                   | 5. Remote PORT module                        |
| 3. H600-307 cable                | 6. Wideband Endpoint (wire per manufacturer) |

**Figure 1-42. Typical Signaling Wideband Configuration with Remote PORT Module**

- 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.
- For CSU installations, cross the transmit and receive lines between the CSU and the bandwidth controller.

## PassageWay Adapter (2- or 4-Wire)

The passageWay adapter makes it possible to connect a mu-Law digital telephone and a PC through a single 2- or 4-wire DCP digital port to the system. See [Figure 1-43](#). The adapter requires one Watt at about -48 VDC, from a bulk or individual power supply.



cydfpsg PDH 091696

### Figure Notes

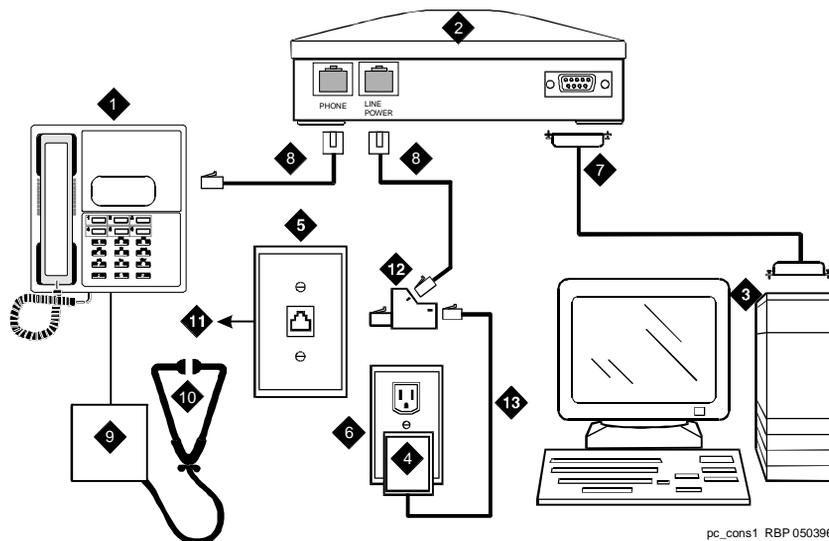
- |   |   |
|---|---|
| 1. Digital telephone (such as a Callmaster)       | 5. 2- or 4-wire PassageWay adapter                        |
| 2. Individual power supply for PassageWay adapter | 6. 4-pair modular cord                                    |
| 3. 103A or modular wall jack                      | 7. Electrical outlet for power supply                     |
| 4. Host computer (Serial I/O connection)          | 8. 25-pair cable from PC to serial I/O jack               |
|   | 9. To TN754B, TN2181, or TN2224 digital line circuit pack |

**Figure 1-43. Typical Connections Through PassageWay**

## PC Console

### PC Console (United States)

Figure 1-44 shows a PassageWay adapter providing an interface between a Personal Computer (PC) and a DCP voice terminal (8403 or 8411).



pc\_cons1 RBP 050396

#### Figure Notes

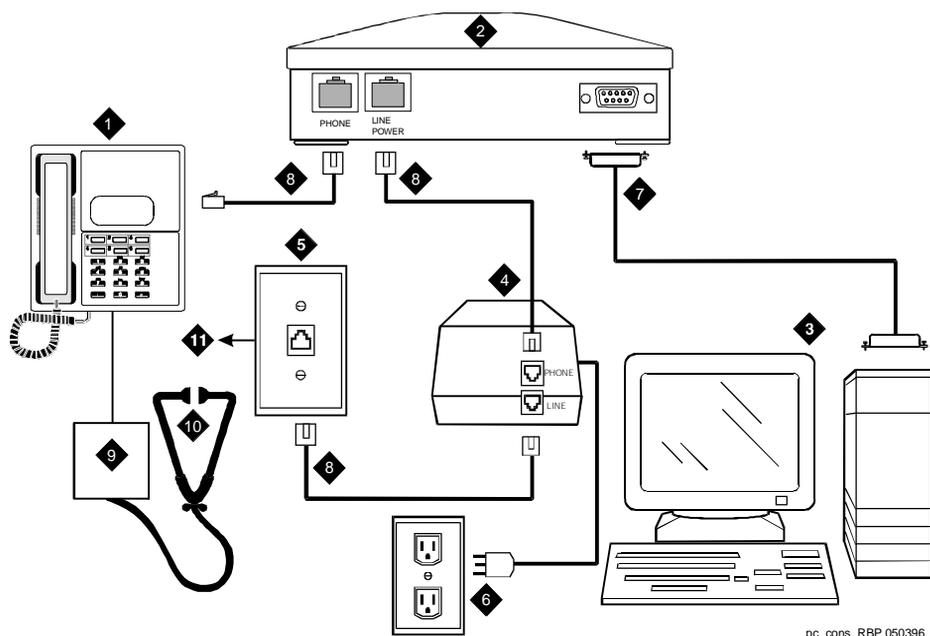
1. DCP telephone (Such as 8403 or 8411)
2. PassageWay adapter
3. Host computer (Serial I/O connection)
4. KS-22911 power supply for PassageWay adapter
5. 103A or modular wall jack
6. Electrical outlet for power supply
7. 25-pair cable
8. D8W 4-pair modular cord
9. Optional 500A adapter
10. Optional headset
11. To TN754B, TN2181, or TN2224 digital line circuit pack
12. 400B2 adapter
13. D6AP cable

#### Figure 1-44. 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 1-45 shows a PassageWay adapter providing an interface between a PC and a DCP voice terminal (8403 or 8411).



pc\_cons RBP 050396

**Figure Notes**

1. DCP telephone (Such as 6400, 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 1-45. 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. This device is used with the 700A DS1 loopback jack when testing the DS1 span.



**NOTE:**

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

### 120A CSU Module Installation

---

Refer to [Figure 1-46](#) 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**

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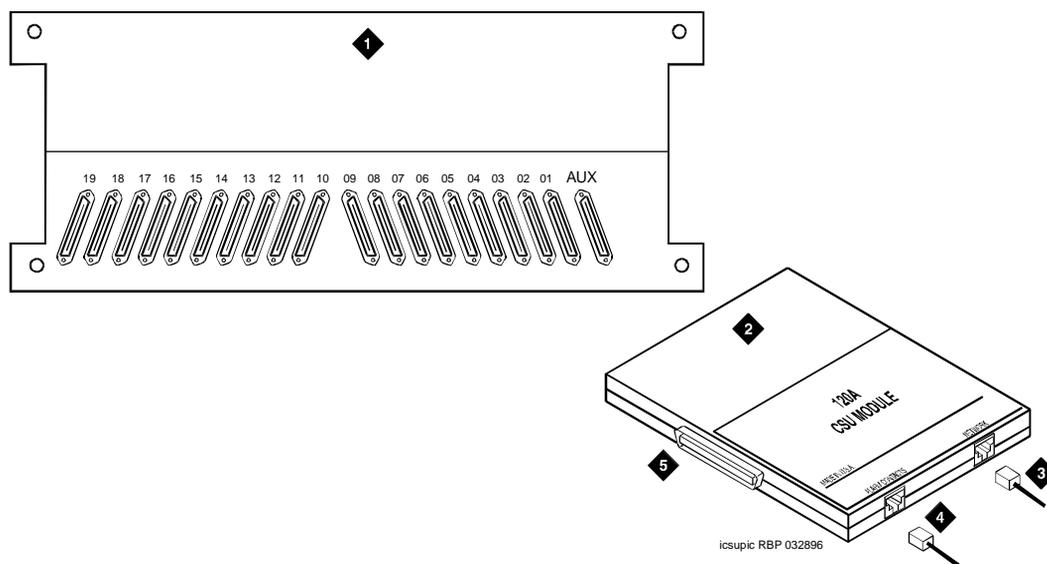
Part	Notes
120A CSU module	
Cable H600-383	4-pair modular cord Group 2, 50-Foot (15.2 m) cable (standard)
Cord DW8A-DE	4-pair modular cord to alarm contacts

---



**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 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 1-46. 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**

<b>Pin</b>	<b>Color</b>	<b>Channel Service Unit Designation</b>	<b>Network Designation</b>	<b>Function</b>
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**

<b>Group</b>	<b>Length</b>	<b>Group</b>	<b>Length</b>
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 6vs 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.

## DS1 CPE Loopback Jack (T1 Only)

---

### ⇒ 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.

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 recommended 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 1-47](#).
2. If there is an extended demarcation point and the smart jack is not accessible, install the loopback jack as shown in [Figure 1-48](#).
3. If there is an extended demarcation point, but the smart jack is accessible, install the loopback jack as shown in [Figure 1-49](#).

### 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 1-50](#) and [Figure 1-51](#).

## 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 1-47](#) through [Figure 1-51](#).
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 1-11](#) for troubleshooting information.

**Table 1-11. DS1 Span Troubleshooting**

Displayed Field	Function	Indication
Test: cpe-loopback-jack	Pattern 3-in-24	The loopback jack test is active.
Synchronized	Y or N	If <b>y</b> 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 <b>n</b> 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	<p>If there are no wiring problems, the counter remains at 0.</p> <p>A count that pegs at 65535 or continues to increment by several hundred to several thousand on each <b>list meas</b> 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.</p> <p>Note that <i>ESF error events</i> counter and the ESF performance counter summaries (<i>errored seconds</i>, <i>bursty errored seconds</i>, 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.</p>

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 UUCSSpp** 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

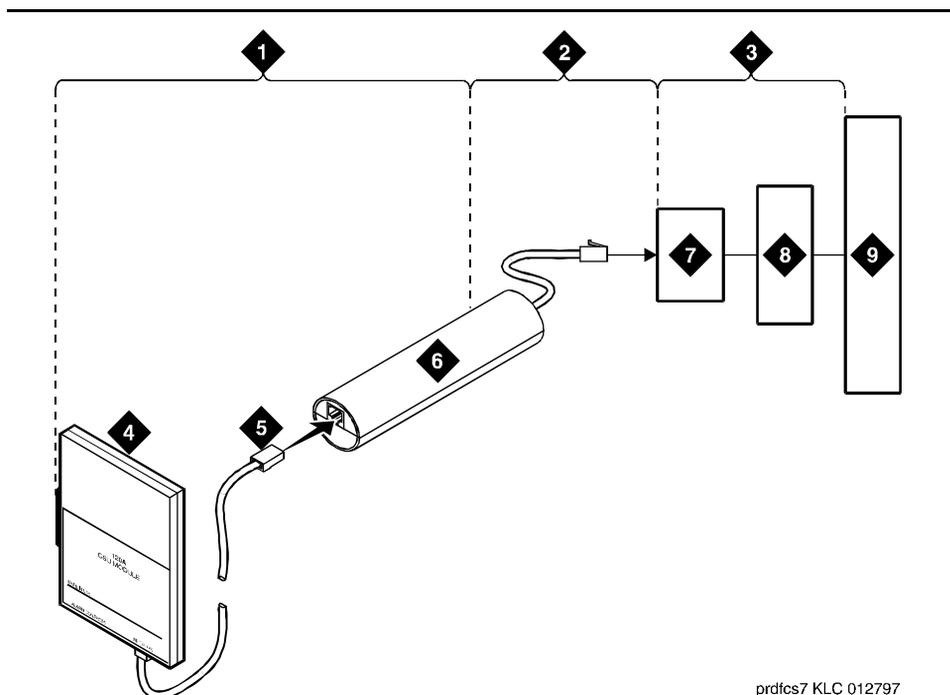
The addition of the loopback jack and the presence of a smart jack divides the DS1 span into 3 separate sections for fault isolation. These sections are shown in [Figure 1-47](#) through [Figure 1-49](#) for the different span configurations. They are:

- 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 1-47](#)) 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 ICSU's 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.

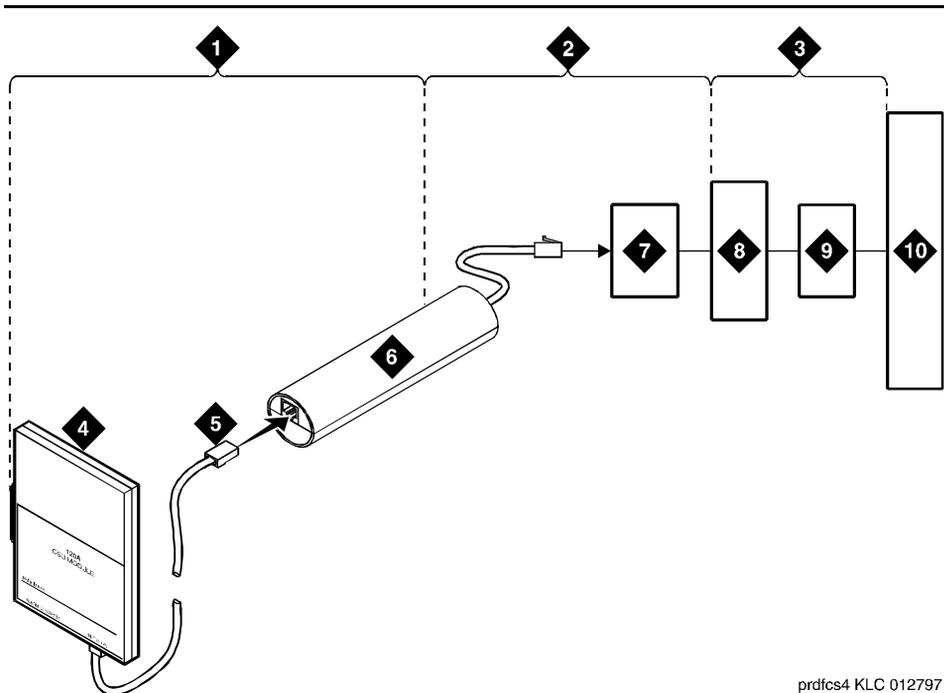
If any of the above tests (a, b, or c) fail, a problem is indicated in section 2 as long as the tests for section 1 and section 3 pass. Since section 2 includes the network interface point, it is necessary to work with the service provider to isolate the fault to the loopback jack cable, the "dumb" block,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



### Figure Notes

- |   |  |
|---|--|
| 1. Span section 1   | 5. RJ-48 to network interface<br>(Up to 1000 feet) (305 m) |
| 2. Span section 2   | 6. Loopback jack   |
| 3. Span section 3   | 7. Network interface smart jack                            |
| 4. 120A2 (or later) integrated channel<br>service unit (ICSU) | 8. Interface termination or fiber MUX                      |
|   | 9. Central office  |

**Figure 1-47. Network Interface at Smart Jack**

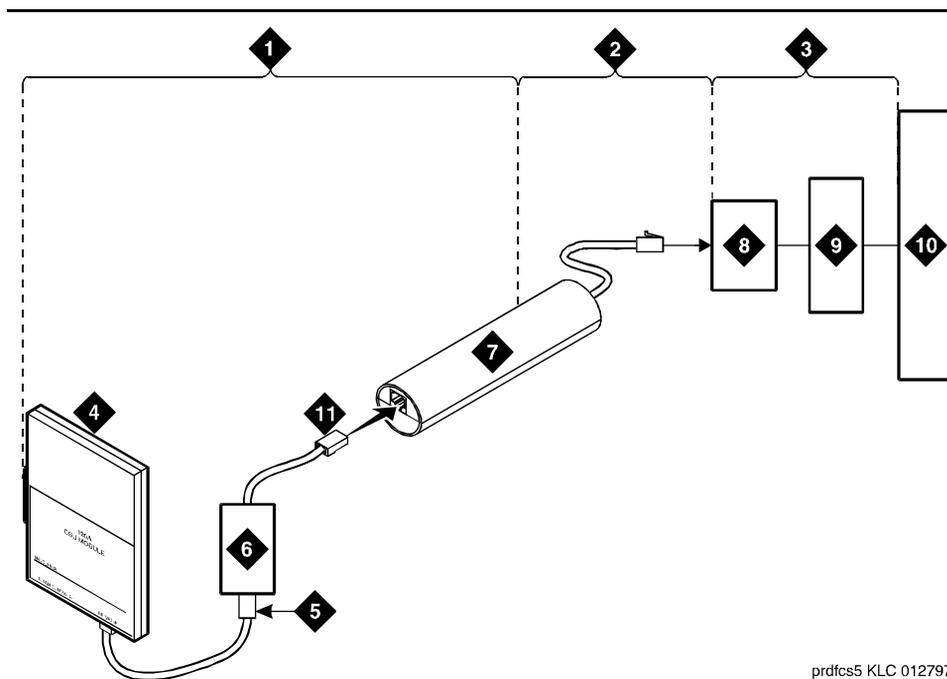


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### Figure Notes

- |  |  |
|--|--|
| 1. Span section 1  | 6. Loopback jack                       |
| 2. Span section 2  | 7. "Dumb" block (extended demarcation) |
| 3. Span section 3  | 8. Network interface smart jack        |
| 4. 120A2 (or later) integrated channel service unit (ICSU) | 9. Interface termination or fiber MUX  |
| 5. RJ-48 to network interface (Up to 1000 feet) (305 m)    | 10. Central office                     |

**Figure 1-48. Network Interface at Extended Demarcation Point (Smart Jack Inaccessible)**



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### Figure Notes

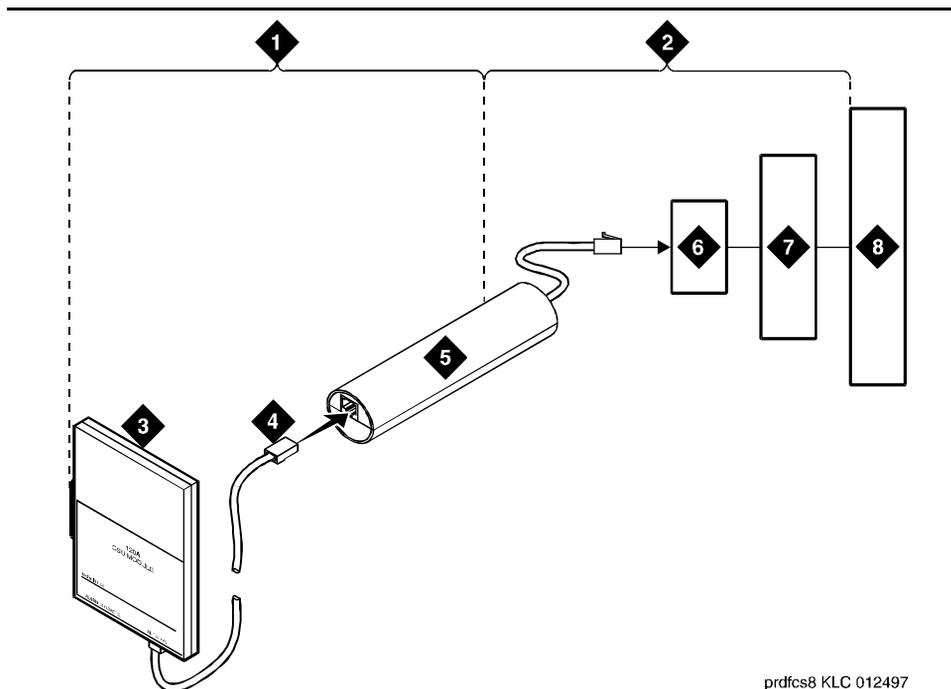
- |  |  |
|--|--|
| 1. Span section 1  | 6. "Dumb" block (extended demarcation) |
| 2. Span section 2  | 7. Loopback jack                       |
| 3. Span section 3  | 8. Network interface smart jack        |
| 4. 120A2 (or later) integrated channel service unit (ICSU) | 9. Interface termination or fiber MUX  |
| 5. RJ-48 to network interface (Up to 1000 feet) (305 m)    | 10. Central office                     |
|  | 11. "Dumb" block to smart jack RJ-48   |

**Figure 1-49. 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 1-50](#) and [Figure 1-51](#).

1. ICSU to the loopback jack.
2. Loopback jack to the central office (CO).

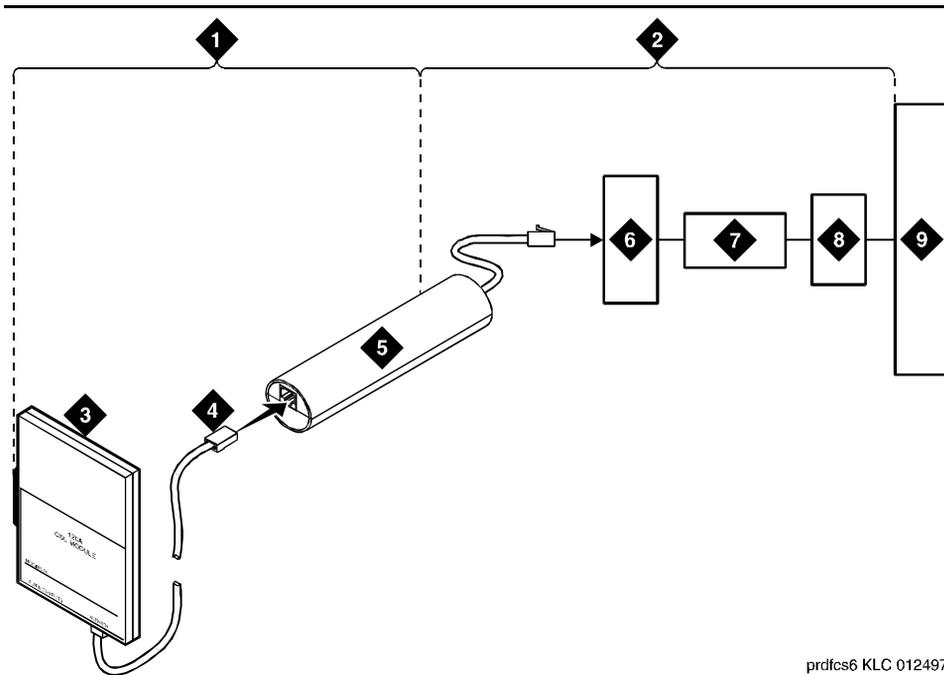


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### Figure Notes

- |  |                                       |
|--|---------------------------------------|
| 1. Span section 1  | 5. Loopback jack                      |
| 2. Span section 2  | 6. "Dumb" block (demarcation point)   |
| 3. 120A2 (or later) Integrated channel service unit (ICSU) | 7. Interface termination or fiber MUX |
| 4. RJ-48 to network interface (Up to 1000 feet) (305 m)    | 8. Central office                     |

**Figure 1-50. Network Interface at "Dumb" Block**



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### Figure Notes

- |  |                                     |
|--|-------------------------------------|
| 1. Span section 1  | 5. Loopback jack                    |
| 2. Span section 2  | 6. "Dumb" block (demarcation point) |
| 3. 120A2 (or later) integrated channel service unit (ICSU) | 7. Repeater                         |
| 4. RJ-48 to network interface (Up to 1000 feet) (305 m)    | 8. Fiber MUX                        |
|  | 9. Central office                   |

**Figure 1-51. 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 1-50](#)) 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 1-50](#)). 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 1-47](#), [Figure 1-48](#), [Figure 1-49](#), and [Figure 1-50](#). 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.

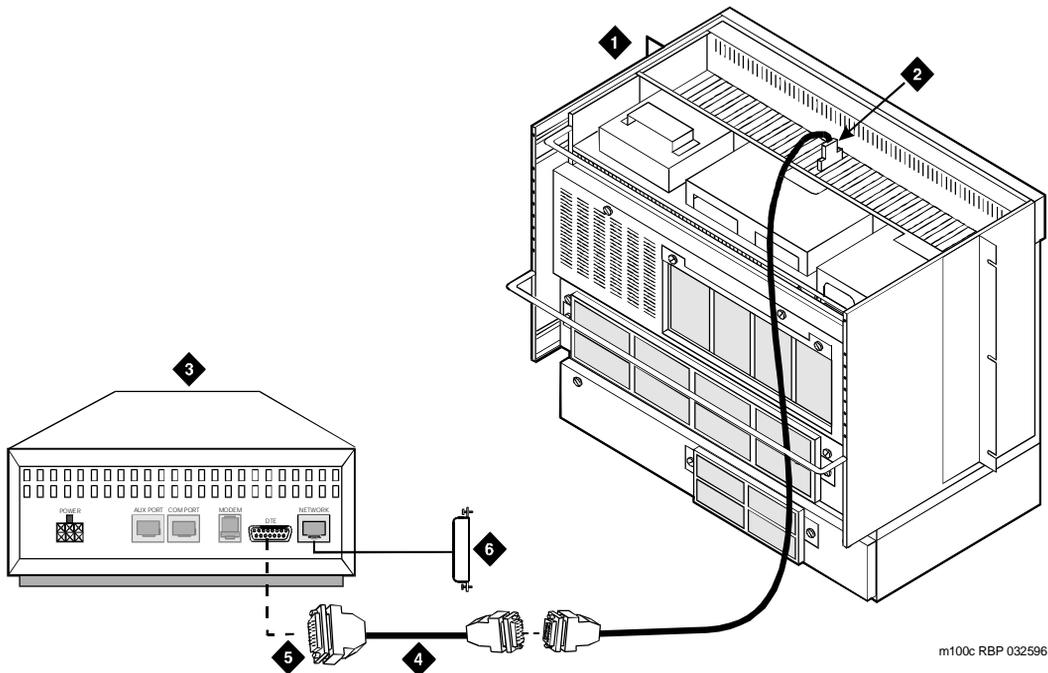
## Operating Characteristics

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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.

## CONVERSANT System

Figure 1-52 shows a typical CONVERSANT® System connecting to a 3150 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.



m100c RBP 032596

### 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 1-52. 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

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**CAUTION:**

Except for auxiliary power, if necessary (per [Table 1-12](#)), these should be the **only** connections to the modular wall jack. Do not bridge or parallel these telephones.

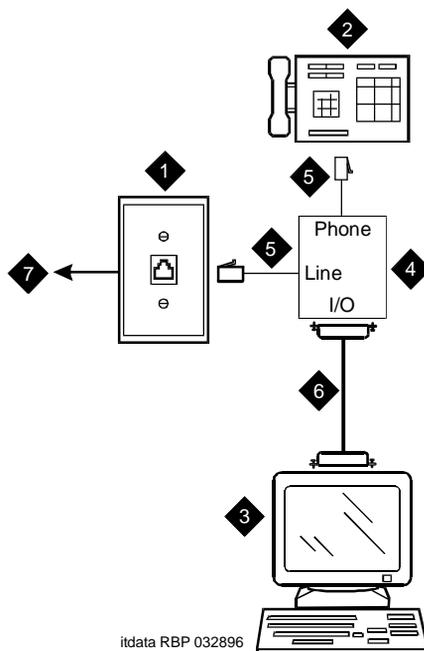
**Table 1-12. DCP Information Outlet Pinout**

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 1-53 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).



itdata RBP 032896

### Figure Notes

- |                                   |  |
|-----------------------------------|--|
| 1. 103A or modular wall jack      | 5. 4-wire modular cord                 |
| 2. 2-wire endpoint                | 6. 25-pair cable                       |
| 3. Data terminal (serial data)    | 7. To TN2181 digital line circuit pack |
| 4. Data adapter (such as Italtel) |  |

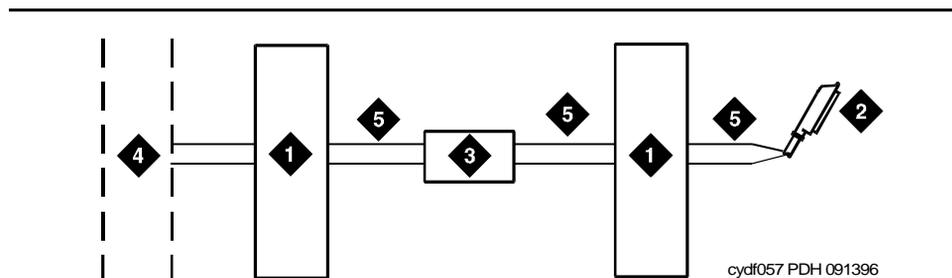
### Figure 1-53. Typical Connections to a Two-Wire DCP Workstation

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 customer-provided 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 PSTN sends tones in the voice band instead of line disconnect to indicate caller-disconnect. [Figure 1-54](#) shows typical connections.



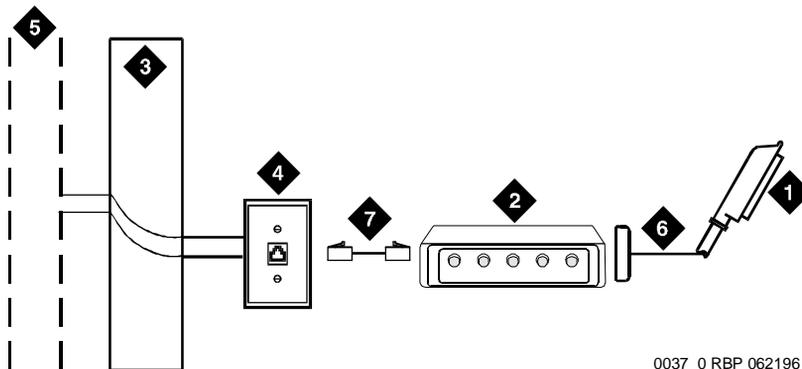
### Figure Notes

- |   |                              |
|---|------------------------------|
| 1. Part of MDF  | 4. PSTN central office trunk |
| 2. To loop start central office trunk circuit pack such as TN465B or TN747B | 5. Tip and ring wires        |
| 3. Busy tone disconnect device  |                              |

**Figure 1-54. Typical Cabling for Busy Tone Disconnect**

## External Modem

Figure 1-55 shows a typical connection from the TN790 or TN798 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

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>1. To DCE connector on cabinet</li> <li>2. External modem</li> <li>3. Part of MDC</li> <li>4. 103A or modular wall jack</li> <li>5. PSTN</li> </ul> | <ul style="list-style-type: none"> <li>6. M25B cable (25-Pin RS-232) (50 feet, 15.24 m maximum). may require an adapter</li> <li>7. Modular line cord to DTE connector on modem</li> </ul> |
|--|--|

### Figure 1-55. 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.



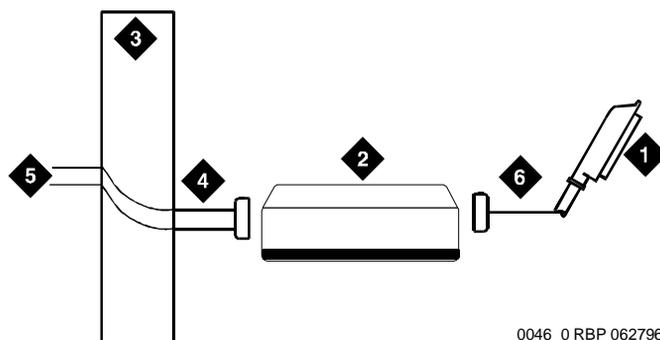
#### NOTE:

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 1-56](#) shows a typical connection from a TN464F or TN767E DS1 circuit pack to a T1 asynchronous transfer mode (ATM) interface.



0046\_0 RBP 062796

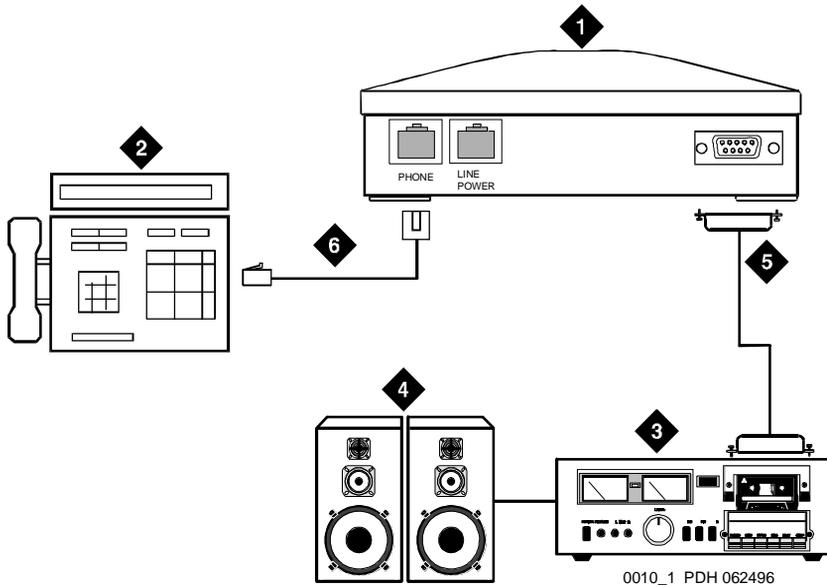
### Figure Notes

1. To TN464F or TN767E DS1 circuit pack
2. T1 ATM interface device
3. Part of MDF
4. 9-Pin cable to MDF
5. To T1 network
6. 25-pair to 9-pin cable (To T1 NETWORK connector on T1 ATM device). May require an adapter

**Figure 1-56. Typical T1 ATM Interface Connections**

## ESPA Radio Paging

Figure 1-57 shows typical connections to European Standard Paging Access (ESPA) equipment.



### Figure Notes

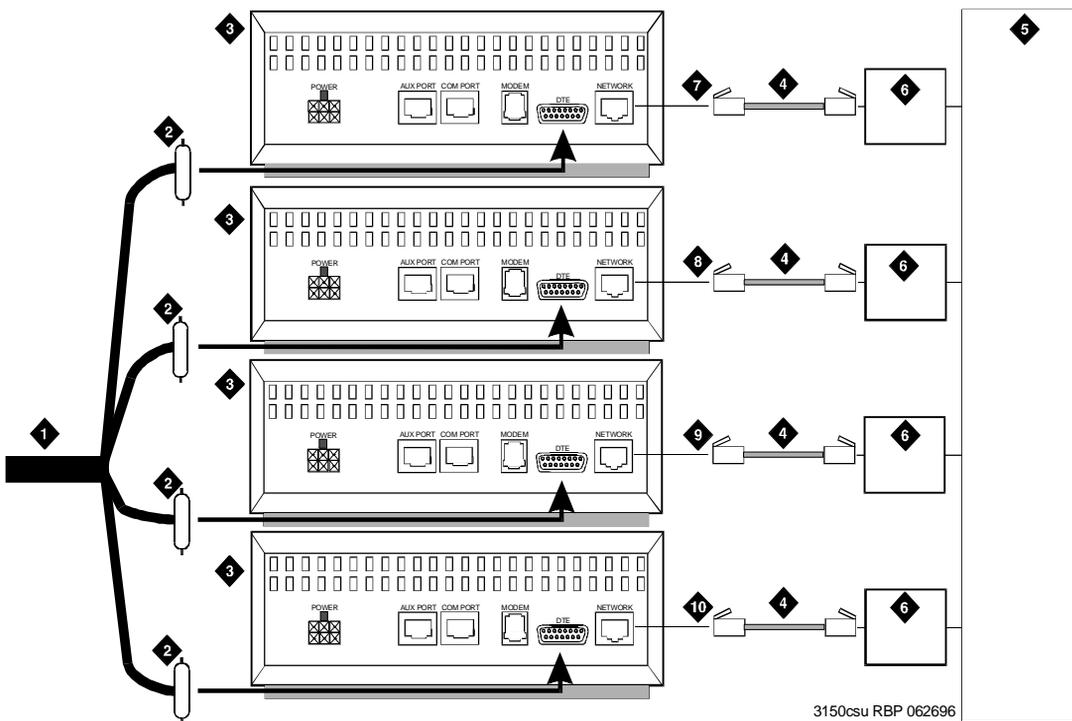
- |   |                        |
|---|------------------------|
| 1. PassageWay interface                 | 4. Paging loudspeakers |
| 2. DCP telephone (such as 8410 or 8434) | 5. RS-232 connector    |
| 3. ESPA radio paging equipment          | 6. Modular line cord   |

### Figure 1-57. 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.

## 3150/3160 Channel Service Unit

During the following installation, be sure to label all cables. [Figure 1-58](#) 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.

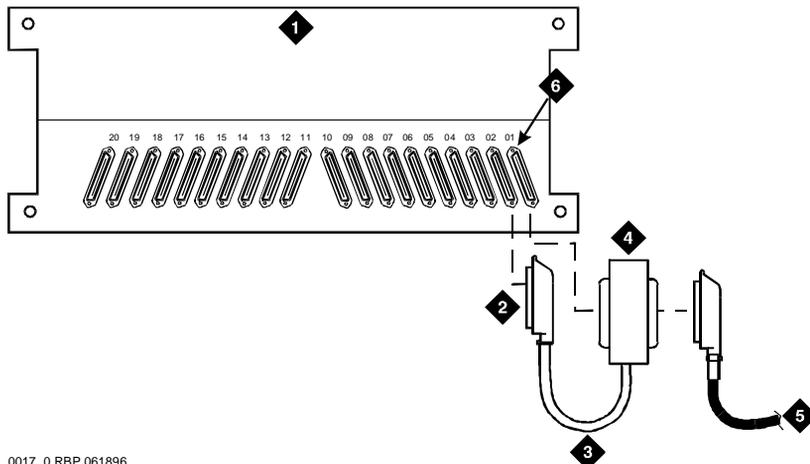


### Figure Notes

- |  |                             |
|--|-----------------------------|
| 1. H600-348 quad cable                                 | 6. Smart jack (if provided) |
| 2. 15-pin male "D" connectors<br>(to DTE jacks on CSU) | 7. Cable "A"                |
| 3. Channel service unit (CSU)                          | 8. Cable "B"                |
| 4. H600-307 cable (RJ-48C to RJ-48C)                   | 9. Cable "C"                |
| 5. Network interface                                   | 10. Cable "D"               |

Figure 1-58. 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.



0017\_0 RBP 061896

**Figure Notes**

- |  |   |
|--|---|
| 1. PORT carrier  | 5. Quad cable (with 50-pin male connector) connects to channel service unit |
| 2. 50-pair female connector to DEFINITY System             | 6. DS1 converter connector  |
| 3. 14-Inch (35.56 cm) "Y" cable                            |   |
| 4. 50-Pin Male/50-pin female double-headed connector cable |   |

**Figure 1-59. 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 1-59](#).

[Table 1-13](#) shows the "Y" cable lengths and associated Comcode numbers.

Refer to *DEFINITY Enterprise Communications Server Release 6 Installation and Test for Multicarrier Cabinets* for T1 and E1 DS1 converter installation (TN1654).

**Table 1-13. “Y” cable Lengths (DS1 converter Only)**

<b>Length</b>	<b>Description</b>	<b>Comcode</b>
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 TN570/B/C expansion interface circuit pack	847746641

## Multimedia Call Handling (MMCH) Endpoints

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### 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 R6vs and R6si, 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. Log in and 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 6r) or **G3i** (for Release 6si) (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 6r) or **G3i** (or Release 6si). 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 6r) or **G3i** (for Release 6si). 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				<----->			

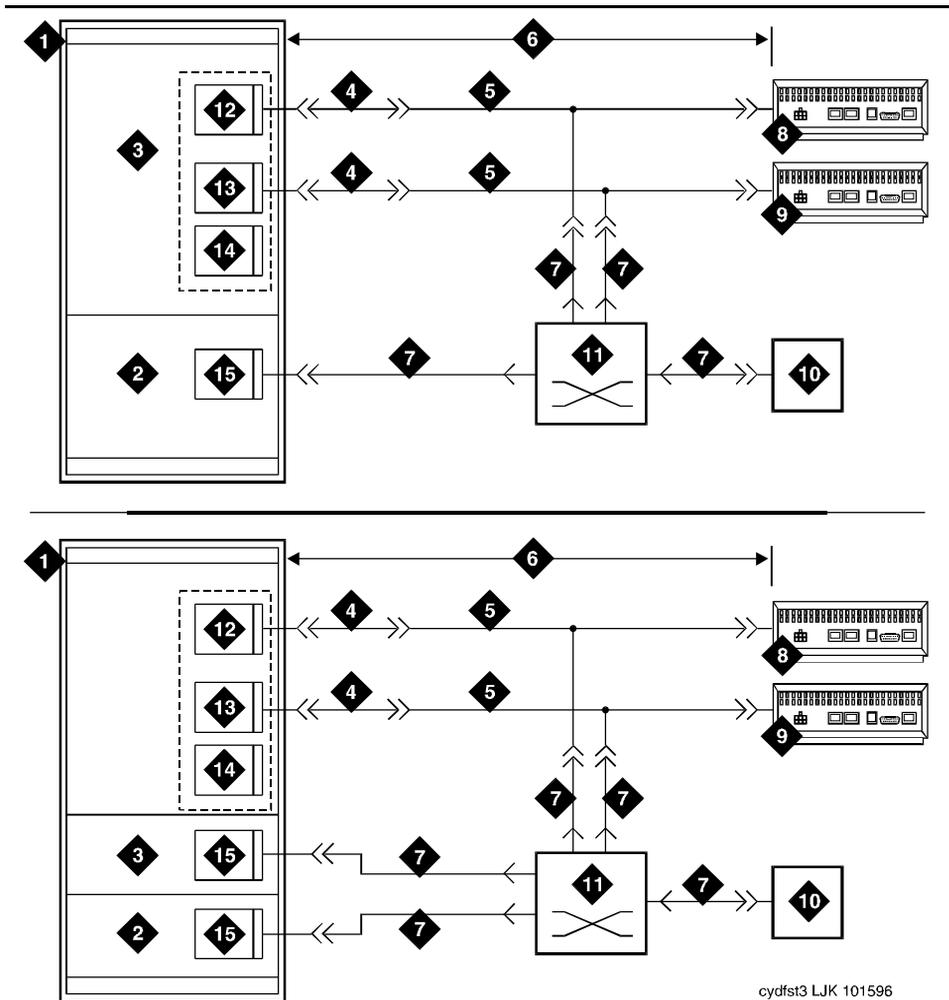
**NOTE:**

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 1-60](#) 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 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.



cydfst3 LJK 101596

**Figure Notes**

- |                               |  |
|-------------------------------|--|
| 1. PPN cabinet                | 9. Primary CSU   |
| 2. "A" position               | 10. Stratum 3 Clock                                      |
| 3. "B" position               | 11. MDC  |
| 4. H600-307 cable             | 12. TN464F DS1/E1 interface circuit pack                 |
| 5. H600-274, G2 cable         | 13. TN722B digital signal level 1 tie trunk circuit pack |
| 6. 1300 feet (396 m)          | 14. TN767E DS1 interface circuit pack                    |
| 7. B25A male to female cables | 15. TN780 tone-clock circuit pack                        |
| 8. Secondary CSU              |  |

**Figure 1-60. 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

**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
TREF2	O-W	4		O-V	44
			<b>To: TN780 carrier A</b>		
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	ALRMOB	W-BR	7
REF1LST	G-W	6	ALRMOA	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			
			<b>To: Y cable Clock End (Secondary)</b>					
RREF2	W-O	3		V-O	43	<b>Lead Designation</b>	<b>Lead Color</b>	<b>Connecting Block Terminal</b>
TREF2	O-W	4		O-V	44			
			<b>To: TN780 carrier A</b>			<b>To: TN780 carrier B</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

**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			
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 6 Administration and Feature Description*.

## **DEFINITY Wireless Business System**

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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.

## **Forum PCM**

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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

*Continued on next page*

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

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

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

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

*Continued on next page*

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

<b>Cross-Connect Pin</b>	<b>TN742/B TN747B TN753 TN769 TN2147</b>	<b>TN754 TN726</b>	<b>TN760/B TN760C TN760D</b>	<b>TN762/B</b>	<b>TN763 TN763B TN763C</b>	<b>TN735</b>	<b>TN767B TN464E</b>	<b>TN746/B TN2183</b>	<b>TN2224</b>
37	T.7		T.7	T.7	T.7	T.7	SCLK		T.19
38	R.7		R.7	R.7	R.7	R.7			R.19
39		TXT.7	T1.7	TXT.7	SZ.7	BT.7			T.20
40		TXR.7	R1.7	TXR.7	SZ1.7	BR.7			R.20
41		PXT.7	E.7	PXT.7	S.7	LT.7	GRD	T.13	T.21
42		PXR.7	M.7	PXR.7	S1.7	LR.7		R.13	R.21
43	T.8		T.8	T.8	T.8	T.8	C_PRES*	T.14	T.22
44	R.8		R.8	R.8	R.8	R.8		R.14	R.22
45		TXT.8	T1.8	TXT.8	SZ.8	BT.8		T.15	T.23
46		TXR.8	R1.8	TXR.8	SZ1.8	BR.8	DC2_DATA	R.15	R.23
47		PXT.8	E.8	PXT.8	S.8	LT.8	LI* (RX)	T.16	T.24
48		PXR.8	M.8	PXR.8	S1.8	LR.8	LO (TX)	R.16	R.24
49	GRD	GRD	GRD	GRD	GRD	GRD	LBACK2	GRD	GRD
50	GRD	GRD	GRD	GRD	GRD	GRD	GND	GRD	GRD

**Table 1-22. DS1 Interface cable H600-348**

50-Pin			15-Pin		
Pin	Color	Designation	Pin	Color	Designation
			<b>Plug 04</b>		
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)
			<b>Plug 03</b>		
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)
			<b>Plug 02</b>		
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)
			<b>Plug 01</b>		
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**

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	TN2185			
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

1 Install Adjunct and Peripheral Equipment

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		T6	PXT2	T6	P-2	PXT2	S2				E2		TXT3	T6	PXT3	
BL-R	06		R6	PXR2	R6	P+2	PXR2	S12		C2		M2		TXR3	R6	PXR3	
R-O	32	T3	T7		T7	V1T3	T3	T3	T3	A3	T3	T3		PXR4	T7	TXT4	T3
O-R	07	R3	R7		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		T9	PXT3	T9	P-3	PXT3	S3				E3		PXR5	T9	TXT5	
BR-R	09		R9	PXR3	R9	P+3	PXR3	S13		C3		M3		PXT5	R9	TXR5	
R-S	35	T4	T10		T10	V1T4	T4	T4	T4	A4	T4	T4		TXT5	T10	PXT5	T4
S-R	10	R4	R10		R10	V1R4	R4	R4	R4	B4	R4	R4		TXR5	R10	PXR5	R4
BK-BL	36		T11	TXT4	T11	CT4	TXT4	SZ4				T14		PXR6	T11	TXT6	
BL-BK	11		R11	TXR4	R11	CR4	TXR4	SZ14				R14		PXT6	R11	TXR6	
BK-O	37		T12	PXT4	T12	P-4	PXT4	S4				E4		TXT6	T12	PXT6	

Continued on next page

1 Install Adjunct and Peripheral Equipment

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 Thk.	CO Trunk 3-wire	DIID/DIOD Trunk	Tie Trk.	DS1 Tie Trunk	ISDN BRI Line 4-wire	ISDN BRI Line 2-wire	Packet Data Line	Four Port DIOD
O-BK	12		R8	PXR4	R12	P+4	PXR4	S14				M4		TXR6	R12	PXR6	
BK-G	38	T5	T9		T13	V1T5			T5		T5			PXR7		TXT7	
G-BK	13	R5	R9		R13	V1R5			R5		R5			PXT7		TXR7	
BK-BR	39		T10	TXT5	T14	CT4								TXT7		PXT7	
BR-BK	14		R10	TXR5	R14	CR4								TXR7		PXR7	
BK-S	40		T11	PXT5	T15	P-5								PXR8		TXT8	
S-BK	15		R11	PXR5	R15	P+5								PXT8		TXR8	
Y-BL	41	T6	T12		T16	V1T6			T6		T6			TXT8		PXT8	
BL-Y	16	R6	R12		R16	V1R6			R6		R6			TXR8		PXR8	
Y-O	42			TXT6	T17	CT6								PXR9		TXT9	
O-Y	17			TXR6	R17	CR6								PXT9		TXR9	
Y-G	43			PXT6	T18	P-6								TXT9		PXT9	
G-Y	18			PXR6	R18	P+6								TXR9		PXR9	
Y-BR	44	T7			T19	V1T7			T7		T7			PXR10		TXT10	
BR-Y	19	R7			R19	V1R7			R7		R7			PXT10		TXR10	
Y-S	45			TXT7	T20	CT7								TXT10		PXT10	
S-Y	20			TXR7	R20	CR7								TXR10		PXR10	
Y-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	

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/DIODE Trunk	Tie Trk.	DS1 Tie Trunk	ISDN BRI Line 4-wire	ISDN BRI Line 2-wire	Packet Data Line	Four Port DIOD
V-BR	49		T16	PXT8	T24	P-8							LBACK2	TXT12		PXT12	
BR-V	24		R16	PXR8	R24	P+8							LBACK1	TXR12		PXR12	
V-S	50																
S-V	25																

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

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

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

The following wire colors apply in the above chart:

- W White S Slate (Grey)
- BL Blue R Red
- O Orange BK Black
- G Green Y Yellow
- BR Brown V Violet



## Setting Options

# 2

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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

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### DCS Switch Settings

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The distributed communications system (DCS) for a DEFINITY System is sometimes connected 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.



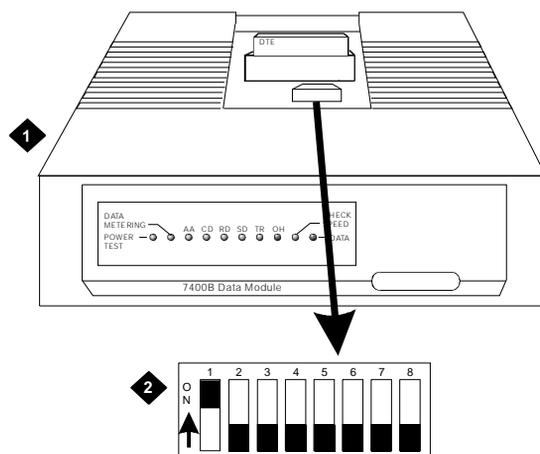
**NOTE:**

The CMC DCS+ is connected via the TDM/LANbus.

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. For the 8400B, refer to the *8400B Plus Data Module User's Guide*, 555-020-709.



**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 6r 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.

## **8400B Data Module Option Settings**

---

Set the options on the 8400B with an ASCII data terminal or a PC using a terminal emulation package (such as TERRANOVA ECS Administration). Connect the data terminal or PC to the EIA interface connector on the back of the 8400B. For the server-to-link (the link is an adjunct device, such as PMS, CMS, or CDR), only a subset of options must be changed. Use the "AT" command set to change the subset of these options. To set the options on the 8400B, do the following:

1. Set the speed on the data terminal or terminal emulation package to match the speed of the link.
2. From the data terminal or PC, type **at** and press Enter. The 8400B senses and automatically sets the speed and parity for the connection. The OK prompt should display.
3. Type the following command as shown.

### **⇒ NOTE:**

Before you press **enter**, make sure that the command is entered correctly. One part of this command turns off keyboard echo (E0). After you enter this command, keyboard entries will *not* be displayed.

**at&F&C1&D2E0Q1S0=1&W0&Y0**

4. Disconnect the data terminal or PC from the 8400B and reconnect the unit to the linked adjunct device.

If your adjunct device requires a different set of options, consult the *8400B Plus Data Module User's Guide*, (555-020-709).

## External Modem Option Settings

### The COMSPHERE 3700, 3800, and 3900 Series

The COMSPHERE external modem is recommended for Release 5 and later TN790-based systems. These systems operate with the COMSPHERE modems set to the factory default settings. To set the modems, refer to [Table 2-5](#) and to the documentation that accompanies the modem.

#### ⇒ NOTE:

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

1. Enter the **change system-parameters maintenance** command. The modem screen (Page 3) is modified. See [Screen 2-1](#).

```
change system-parameters maintenance Page 3 of 3 SPE A
      MAINTENANCE-RELATED SYSTEM PARAMETERS

      Modem Connection: external
      Data Bits: 8
      Parity: none

      Modem Name: _____

      RTS/CTS Enabled: \Q3           Auto Answer Ring Count (rings): S0=10
      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: _____
```

#### Screen 2-1. External Modem Default Settings

2. Set the Modem Connection field to **external**.
3. Set the Data Bits: field to **8**.
4. Set the Parity: field to **none**.
5. Set the remaining modem fields as shown in [Table 2-5](#).

**Table 2-5. TN790-Based Modem Fields**

Field	Description
Modem connection	Valid entries are "internal" or "external". Default is internal. Set to <b>external</b> .
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 <b>VQ3</b> 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 <b>&amp;M0&amp;Q0</b> 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.
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.

**Table 2-5. TN790-Based Modem Fields — Continued**

Field	Description
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	<p>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.</p> <p>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 overridden 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)</p>

## U.S. Robotics Model 839

The U.S. Robotics Model 839 external modem (Comcode 407633999) is the recommended external modem for Release 6csi systems.

### NOTE:

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

1. Enter **change system-parameters customer-options** and press Enter. On page 3 of the form, set the Modem Connection field: to **external**. See [Screen 2-2](#).

```
change system-parameters maintenance Page 3 of 3 SPE A
      MAINTENANCE-RELATED SYSTEM PARAMETERS

      Modem Connection: external
      Data Bits: 8
      Parity: none

      Modem Name: _____

      RTS/CTS Enabled: \Q3      Auto Answer Ring Count (rings): S0=10
      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: _____
```

### Screen 2-2. Maintenance-Related System Parameters Form

2. Set the Data Bits: field to **8**.
3. Set the Parity: field to **none**.
4. Set the remaining modem fields as shown in [Table 2-6](#).
5. Use [Table 2-7](#) to set the switches on the external modem.

**Table 2-6. Release 6csi Modem Fields**

Field	Description
Modem connection	Default is <b>none</b> . Set to <b>external</b> for Release 6csi. If no modem is installed, set to "none."
Modem name	This field is 20 characters long and permits alphanumeric characters to provide a unique qualifier for a given modem (such as <b>USRobotics839</b> ).
RTS/CTS enabled	Informs modem that communication with the data source UART is driven with RTS/CTS flow control. The default 6-character field name is <b>&amp;H1</b> for Release 6csi. Set the field name to \Q3 for Intel modems. This field is not case sensitive.
Asynchronous data mode	Configures modem as an asynchronous communications device. This 8-character field name has a default value of <b>&amp;M0</b> for Release 6csi. Set the field name to &M0&Q0 for Intel modems. This field is not case sensitive.
DTE auto-data speed	Adjusts the speed of the data source (DTE) UART to the outgoing (modem-to-modem) data rate. At maximum, this speed is 9600 baud. It is not desirable to have the serial data fill the modem buffer faster than the outgoing data rate, since data compression is disabled. The field name has a 6-character blank default value. The Paradyne products use S90=1 to enable this functionality while the Intel product uses U1 to enable similar functionality. This field is not case sensitive.
Disable data compression	Turns off the default data compression algorithms used by most modems. The field has a blank field of 6 characters as default. The AT commands that control this are supported by similar commands; however, these commands do not operate in the same manner. The Intel modems require H0%C0 to disable V.42bis & MNP Class 5 data compression algorithms. The Paradyne products only use %C0 to disable both algorithms. This field is not case sensitive.  This option is not available for U.S. Robotics modems.
Enable error control	Turns on the V.42 LAPM and MNP error control protocols. The field has a blank default of 6 characters. The Paradyne products use the command \N5 to enable V.42/MNP/Buffer error control while the Intel product uses \N3 to provide similar functionality.  This option is not available for U.S. Robotics modems.

*Continued on next page*

**Table 2-6. Release 6csi Modem Fields — Continued**

Field	Description
Misc. init. parameters	This field has a 20-character blank default. This field supports any initialization parameters not already specified. The AT commands specified in this field are always the last initialization parameters to be sent to the external modem. This field is not case sensitive.
Auto-answer ring number	This field controls the number of rings required before the modem answers an incoming call. This field has a 6-character blank default value. Typically, the maximum value is 255. 1-255 are generally used.
Dial type	This field controls the type of interregister signaling used between the modem and the CO. The field has a 3-character default of "T" for tone dialing. Pulse dialing is indicated by "P". This field is concatenated with the dial string and is not case sensitive.
Adjustable make/break ratio	This field controls the make/break ratios of pulses and DTMF dialing. Most modems have support for different make/ break options for pulse dialing only. Paradyne, Intel, and U.S. Robotics use the default <b>&amp;P0</b> to select a ratio of 39% make and 61% break for communication within the United States and Canada. The option <b>&amp;P1</b> sets a ratio of 33% make and 67% break for the United Kingdom and Hong Kong. This field has a blank default in a field 5 characters long. This field is not case sensitive.
Dial command	This field has a default of "D" in a 3-character field. This field denotes the standard dialing command of the modem. This field is not case sensitive.
No answer time-out	Most modems provide a timer that abandons any outbound data call after a predetermined interval. This is a non-administrable parameter.

**Continued on next page**

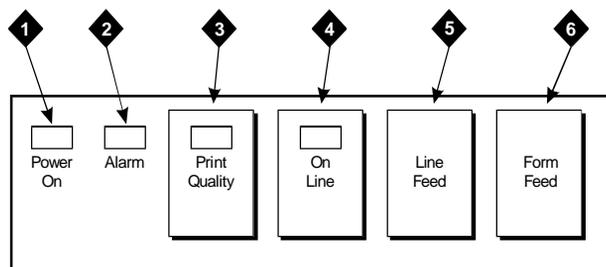
**Table 2-7. U.S. Robotics External Modem Switch Settings**

<b>Switch</b>	<b>Setting</b>	<b>Function</b>
1	OFF (Up)	DTR (data terminal ready) override
2	OFF (Up)	Verbal result codes
3	ON (Down)	Enable result codes
4	OFF (Up)	Displays keyboard commands (local echo)
5	OFF (Up)	Auto answer (modem answers on first ring)
6	OFF (Up)	CD (carrier detect) override (modem sends CD signal on connect, drops CD on disconnect)
7	OFF (Up)	Power-on and ATZ reset software defaults (loads Y or Y1 configuration from NVRAM)
8	ON (Down)	AT (attention) command set recognition (enables recognition, smart mode)

## 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 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      | 4. On line button   |
| 2. Alarm button         | 5. Line feed button |
| 3. Print quality 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 2-8](#). If the printer is used as the system printer, set the options as shown in [Table 2-9](#).
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 2-8. 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 2-9. 572 Printer Used as System Printer**

<b>572 Printer Option Settings</b>			
<b>Function</b>	<b>Function Name</b>	<b>Menu</b>	<b>Menu Status</b>
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 — all except Release 6 CMC. Data modules or modems are not required.
- For Release 6 CMC — connected to the MODEM (P2) connector on the processor interface cable.

A 572 Printer can be used as an output receiving device for CDR. The recommended option settings for this printer is shown in [Table 2-10](#). Also, a 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 6 Administration and Feature Description*.

**Table 2-10. 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

*Continued on next page*

**Table 2-10. 572 Printer Used with Management Terminal, CDR, or Journal Printer**

Function	Function Name	Menu	Menu Status
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	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 (all except Release 6 CMC).

For Release 6 CMC, the control link (CL) mode is not used.

Any of the remaining 3 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 2-11](#).

**Table 2-11. Data Module Settings for DEFINITY AUDIX**

---

<b>DIP Switch 1</b>	<b>Setting</b>
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 2-12](#) and [Table 2-13](#)), set the switches on the TN760D and administer the port per [Figure 2-3 on page 2-22](#) and [Table 2-14](#).

### CAUTION:

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

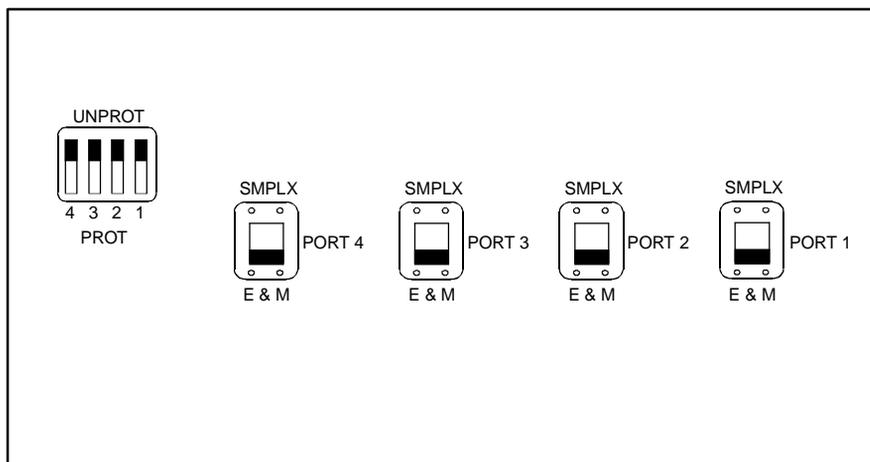
**Table 2-12. Signaling Formats for TN760D**

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 2-13. 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 <sup>1</sup> /bat	Grd
Type I compatible	Open <sup>1</sup> /bat	Grd	Grd	Open <sup>1</sup> /bat
Type V	Open <sup>1</sup> /bat	Grd	Open	Grd
Type V reversed	Grd	Open	Grd	Open

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



r758183 RBP 050896

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

Table 2-14. TN760D Option Switch Settings and Administration

Installation Situation		Signaling Format		E&M/ SMPLX Switch	Prot/ Unprot Switch	Port
Condition	To	System	Far-End			
Co-located	Sys75/	Simplex	Simplex	SMPLX	Either	Type 5
	G1	Type 5	Type 5			
Inter-building	Sys75/	Simplex	Simplex	SMPLX	Either	Type 5
	G1	Type 5	Type 5			
Co-located	Sys85/	Simplex	Simplex	SMPLX	Either	Type 5
	G2	Type 5	Type 5			
Inter-building	Sys85/	Simplex	Simplex	SMPLX	Either	Type 5
	G2	Type 5	Type 5			
Co-located	Dimension	E&M type 1	E&M type 1	E&M	Unprot	Type 1
	PBX	Compatible	Standard			Compatible
Inter-building	Dimension	Protected type 1	Protected type 1	E&M	Prot	Type 1
	PBX	Compatible	Standard			Compatible

Continued on next page

**Table 2-14. TN760D Option Switch Settings and Administration**

Co-located	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
Co-located	Net integrated	E&M Type 1 Standard	Any PBX	E&M	Unprot	Type 1

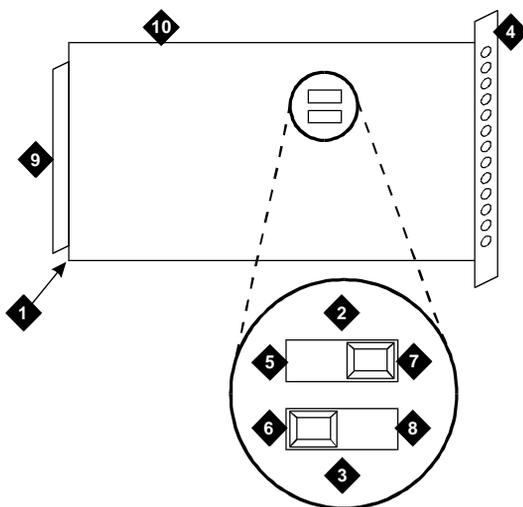
## TN464E/F Option Settings

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 2-15](#) and [Figure 2-4](#).

**Table 2-15. 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**

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