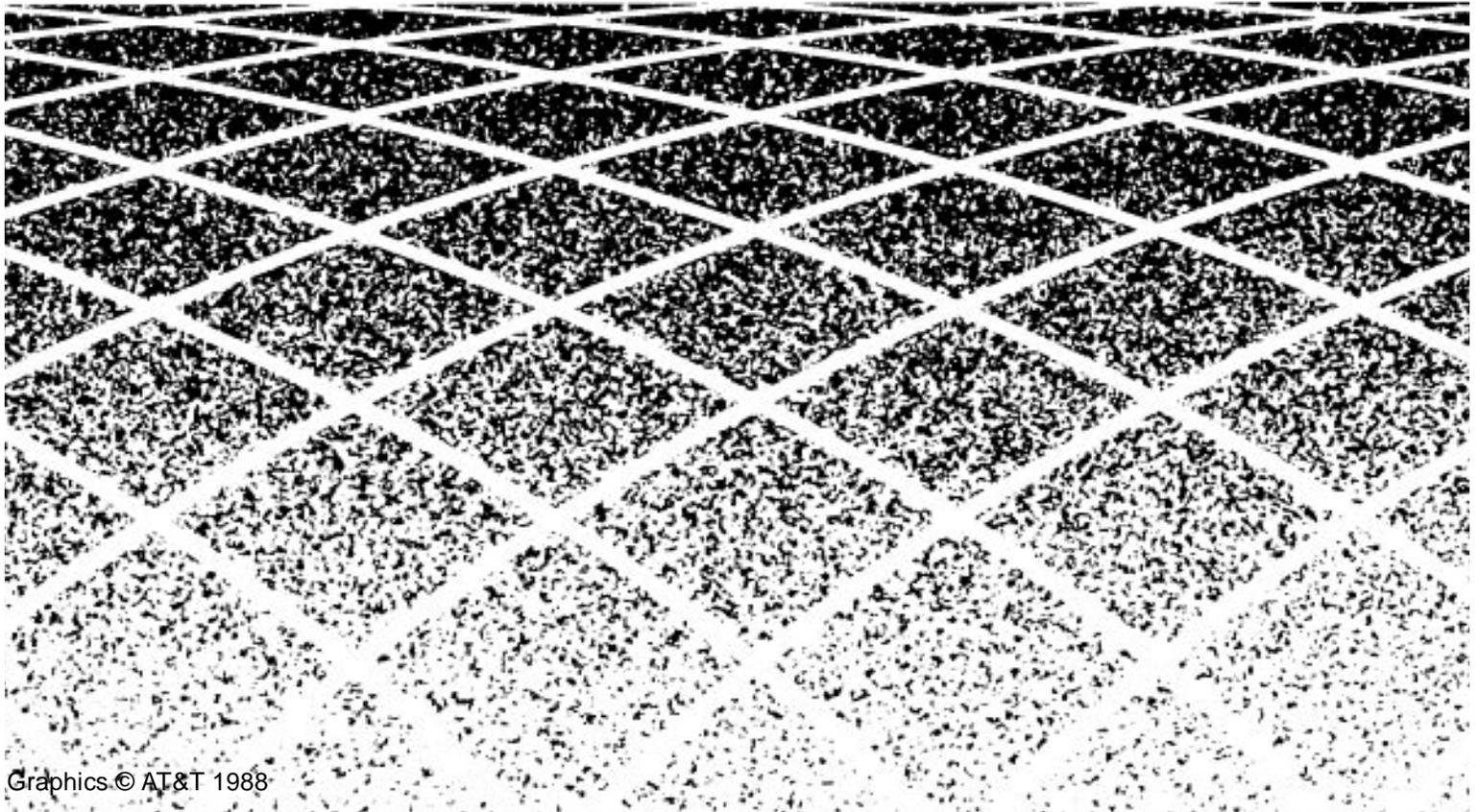




555-230-894
Issue 2
September, 1996

DEFINITY Enterprise Communications Server Release 5 Installation and Test for Single-Carrier Cabinets



Contents

About This Document	xiii
■ Related Documents	xiv
■ How to Order Documentation	xiv
■ How to Comment on This Document	xv
■ Trademarks	xv
■ Standards Compliance	xvi
■ Electromagnetic Compatibility Standards	xvii
European Union Standards	xviii
■ Technical Support	xviii

1	Install and Connect the Cabinets	1-1
	■ Check Circuit Packs	1-1
	■ Check Customer's Order	1-2
	■ How to Correct Shipping Errors	1-2
	■ Unpack and Inspect	1-2
	■ Install Single-Carrier Cabinets	1-2
	Position Cabinets (Standard Reliability)	1-3
	Position Cabinets (High or Critical Reliability)	1-4
	■ Approved Grounds	1-5
	■ Connect Cabinet Grounds	1-6
	DC-Powered Cabinets Only	1-6
	Connect Single-Carrier Cabinet Frame Ground	1-11
	Grounding AC-Powered Cabinets Only	1-12
	■ Connect AC Power	1-14
	Connect AC Power to DC Power Cabinet	1-14
	■ Connect DC Power	1-15
	DC Power Connections	1-15
	■ Connect Battery Cabinet	1-19
	■ Connect Optional Battery Leads	1-20
	■ Connect Time Division Multiplexing Bus Cables	1-21
	Standard Reliability Processor Port Network	1-21
	High or Critical Reliability Processor Port Network	1-21

Contents

High or Critical Reliability Processor Port Network	1-21
Expansion Port Network (All Reliability Options)	1-25
■ Verify Port Cabinet Address Plugs	1-26
■ Install Rear Panels	1-27
■ Install Ground Plates	1-28
Install Rear Ground Plates (Systems with Earthquake Protection)	1-28
Install Front Ground Plates (Systems with Radiation Shielding and Earthquake Protection)	1-28
Install Cabinet Clips (Systems without Earthquake Protection)	1-30
■ Connect System Cables	1-31
Inter-Carrier Cabinet Cables (High or Critical Reliability)	1-31
Fiber Optic Cables (Release 5si Only)	1-31
Recommended Cable Routing	1-33
Standard Reliability Fiber Connections	1-34
High Reliability Fiber Connections	1-35
Critical Reliability Fiber Connections	1-36
■ Install Compact Single-Carrier Cabinet	1-37
Install the System Cabinet	1-38
Compact Single-Carrier Cabinet Grounds	1-40
Connect AC Power	1-41
Connect System Cables	1-41
Install Management Terminal Cable	1-42
Install Rear Cover	1-42
■ Install Earthquake Protection	1-43

2	Install Telecommunications Cabling	2-1
■	Equipment Room Hardware	2-1
	Cross-Connect Fields	2-3
■	Main Distribution Frame	2-4
■	Installation Requirements	2-5
	Sneak Fuse Panels and Emergency Transfer Units	2-5

Contents

110-Type Hardware	2-5
Cable Slack Manager	2-5
■ Install Equipment and Cables	2-6
■ Install Sneak Fuse Panels	2-7
■ Install Coupled Bonding Conductor	2-10
■ Label the Main Distribution Frame	2-12

3	Install Management Terminal and Activate System	3-1
■	Install Management Terminal	3-2
	Unpack and Inspect	3-3
	Install a 715 BCS Terminal	3-3
	Install a 715 BCS Terminal (2900/715)	3-3
	Install a 715 BCS-2 Terminal	3-3
	Connect to the System	3-5
	Remotely Connect Terminal	3-7
	Compact Single-Carrier Cabinets	3-8
	Set Up Management Terminal	3-8
■	Activate the System	3-8
	Install Translation Flash Memory Card	3-8
	Power Up AC-Powered System	3-8
	Power Up DC-Powered System	3-9
	Verify Messages on Terminal	3-10
■	Using Screens and Commands	3-11
	Screens	3-11
	Commands	3-11
	Getting Help	3-11
■	Log in to the System	3-12
■	Set Country Options	3-13
■	Change Craft Password	3-15
■	Set Date and Time	3-16
■	Set System Maintenance Parameters	3-19
■	Save Translations	3-20

Contents

Add Translations	3-21
■ Installation Completion	3-21
Logoff the System	3-21
■ DEFINITY AUDIX System Power Procedures	3-22
Manually Power Down AUDIX System	3-22

4	Test the System	4-1
■	Check System Status for Each Cabinet	4-2
■	Check Circuit Pack Configuration	4-4
■	Test Time Division Multiplexing Bus in Processor Port Network	4-6
■	Test Tone-Clock Boards	4-7
■	Test Expansion Interface Circuit Packs	4-8
■	Test Time Division Multiplexing Bus for Each Expansion Port Network	4-9
■	Test Tone-Clock for Each Expansion Port Network	4-10
■	Test Tone-Clock Interchange for Each Expansion Port Network	4-10
■	Test Expansion Interface Exchange for Each Expansion Port Network	4-11
■	Check Circuit Pack Configuration	4-12
■	Save Translations, if Required	4-12
■	Next Steps	4-13

5	Install and Wire Telephones and Other Equipment	5-1
■	Voice and Data Terminals	5-1
■	Telephone Connection Example	5-1
■	Connect Adjunct Power	5-3
■	Analog Station or 2-Wire Digital Station Example	5-4
■	Analog Tie Trunk Example	5-5
■	Digital Tie Trunk Example	5-6

Contents

■ DS1 Tie Trunk Example	5-7
Collocated DS1 Tie Trunks	5-7
DS1 Tie Trunks Using Channel Service Unit	5-8
■ Auxiliary Connector Outputs	5-9
■ Three-Pair and Four-Pair Modularity	5-12
■ Adjunct Power Connections	5-15
■ Connect External Alarm Indicators	5-16
■ Install Remote Network Interface	5-17
Remote Network Interface Installation	5-17
■ Install Off-Premises Station Wiring	5-18
■ Install Off-Premises or Out-of-Building Stations	5-18
Analog Off-Premises Stations	5-18
Digital Out-of-Building Voice Terminals	5-22
■ Install Emergency Transfer Units and Associated Telephones	5-24
Install the 808A Emergency Transfer Panel	5-25
■ Install External Ringing	5-33
■ Install Queue Warning Indicator	5-33
■ Install the 1145B Power Supply	5-34
Wall-Mounting Plates	5-35
Mount the 1146B Power Distribution Unit	5-37
Battery Mounting/Wiring	5-37
Install the Expanded Power Distribution Unit	5-38
Power Up and Test	5-40
Wire the 1146B Power Distribution Unit	5-41
Reset LEDs on Power Distribution Unit	5-42
■ Install the 1151A Power Supply	5-44
Important Safety Instructions	5-44
The 1151A Power Supply	5-45
Connect the Power Supply	5-46
■ Install the BRI Terminating Resistor	5-47
Terminating Resistor Adapter	5-48
Closet Mounted (110RA1-12)	5-49
■ Install Multipoint Adapters	5-51
BR851-B Adapter (T-Adapter)	5-51

Contents

367A Adapter	5-52
Basic Multipoint Installation Distances	5-53
■ Install Auxiliary Equipment	5-54
■ Install the 909A/B Universal Coupler	5-55
■ Install Loudspeaker Paging and Music-on-Hold	5-58
Install Loudspeaker Paging without Paging Adapter	5-58
Install Loudspeaker Paging Access (Without Universal Coupler)	5-59
Install Loudspeaker Paging with Universal Coupler	5-60
■ Install PagePac Paging System	5-61
Install PagePac 20	5-61
Install PagePac VS	5-63
Install PagePac 50/100/200	5-64
■ Install Music-on-Hold, Dial Dictation, or Recorded Announcement Access	5-65
Install Registered Music Source	5-66
Install Non-Registered Music Source	5-66
■ Malicious Call Trace	5-69
■ Asynchronous Data Units	5-71
Asynchronous Data Units	5-71
■ Data Modules	5-72
7400A/B/C/D and 8400B Plus Data Modules	5-72
Install Data Modules Into Data Mounting	5-77
■ Data Module Equipment Connections	5-79
7400B Data Module	5-79
7500B Data Module	5-81
8400B Plus Data Module	5-82
■ Install DEFINITY AUDIX R3 System	5-83
Connect the Alarm Origination Cable	5-84
Install the Terminal(s)	5-85
Install the Printer (Optional)	5-95
■ Call Management System	5-96
Install Call Management System Interface	5-96
Install Distributed Communications System	5-97
Install Property Management System Interface	5-98

Contents

Install Printers and Terminals	5-99
■ Install Call Detail Recording Unit Interface	5-100
Cabling to Call Detail Recording Output Device	5-101
■ Install Wideband Endpoints	5-102
Non-Signaling Configuration	5-103
Signaling Configuration	5-104
■ Install PassageWay Adapter	5-106
■ Install PC Console	5-107
PC Console (United States)	5-107
PC Console (Non-United States)	5-108
■ Install Integrated Channel Service Unit Module	5-109
Install the 120A CSU Module	5-109
Install the 120A Module	5-112
■ Install CONVERSANT System	5-114
■ Install a Two-Wire DCP Endpoint	5-115
Install Two-Wire Voice Terminals	5-115
Install Two-Wire Voice and Data Terminals	5-116
■ Install Busy Tone Disconnect	5-117
■ Install External Modem	5-118
■ Install T1 ATM Interface	5-119
■ Install PRI Converters	5-120
PRI to DASS and PRI to DPNSS Converters	5-120
PRI to BRI Converter	5-121
■ Install ExpressRoute 1000 Data Module	5-122
■ Install DEFINITY DCP Extender	5-123
■ Install ESPA Radio Paging	5-124
■ Install DEFINITY Wireless Business System	5-125
■ Install Cellular Business System	5-125
■ Install Forum PCM	5-125
■ Re-install Front Doors	5-125
■ Connector and Cable Diagrams (Pinout Charts)	5-126

Contents

6	Test Telephones and Other Equipment	6-1
	■ Make Test Calls	6-2
	■ Test 302C Attendant Console	6-2
	Test Selector Console	6-2
	■ Test External Ringing	6-3
	■ Test Queue Warning Indicator	6-3
	■ Test Integrated Announcement	6-3
	Record Announcement	6-3
	Playback Announcement	6-3
	Delete Announcement	6-3
	■ Test Music-on-Hold	6-4
	■ Test Emergency Transfer	6-4
	■ Test Remote Access Interface	6-4
	Remote Test	6-4
	Local Test	6-5
	■ Test Basic Rate Interface	6-5

A	Wire Conversions and Electrical Codes	A-1
	■ Common Wire Colors	A-1
	■ AWG to SWG Conversion (Stranded Wire)	A-2
	■ Wire Gauge Comparison (Solid Conductor)	A-5
	■ Electrical Codes	A-8

B	Option Switch Settings	B-1
	■ Distributed Communications System Option Settings	B-1
	■ External Modem Option Settings	B-4
	■ Modem Pooling (Combined) Option Settings	B-8
	■ 7400A and 7400B Option Settings	B-8
	■ Printer Option Settings	B-10
	■ Call Detail Recording Option Settings	B-14
	■ AUDIX Interface Option Settings	B-17

Contents

- TN760D Tie Trunk Circuit Pack Option Settings B-18
- TN464E/F Option Settings B-21

C Connecting and Handling Fiber Optic Cables C-1

- Optical Cross-Connect Hardware C-1
 - 100A Lightguide Interconnect Unit C-4
 - 10A Lightguide Connector Panel C-5
 - Lightguide Troughs C-5
 - Multi-mode Fiber Cable C-6
 - Single-mode Fiber Cable C-7
- Labels for Fiber Optic Cables C-8
 - Cable Labels C-8
 - Cross-Connect Labels C-8
- Administering Fiber Optic Cables C-8

D Connector and Cable Diagrams D-1

ABB Abbreviations ABB-1

GL Glossary GL-1

Contents

About This Document

This document provides procedures and information for installing and initially testing the DEFINITY[®] Release 5vs and Release 5si system configurations. This document also provides information on power and peripheral equipment that connects directly to a system. This document emphasizes Release 5 systems.

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

- The word *system*, is a general term encompassing Release 5 and includes references to the DEFINITY Enterprise Communications Server
- DEFINITY Systems are called: G3V4, Release 5; Release 5vs; and Release 5si
- All occurrences of G3siV4, G3siV4+m, Release 5si, and Release 5si +memory are called Release 5si unless a specific configuration is required to differentiate between product offerings
- Information in this document is applicable for G3V4 through Release 5, unless otherwise specified
- DEFINITY Enterprise Communications Server is abbreviated DEFINITY ECS

Related Documents

The following documents are useful for system-related information:

- *DEFINITY Enterprise Communications Server Release 5 Feature Description*, 555-230-301
- *DEFINITY Enterprise Communications Server Release 5 System Description and Specifications*, 555-230-203
- *DEFINITY Enterprise Communications Server Release 5vs/si Maintenance*, 555-204-105
- *DEFINITY Enterprise Communications Server Release 5r Maintenance*, 555-230-105
- *AT&T Network and Data Connectivity Reference*, 555-025-201
- *GBCS Products Security Handbook*, 555-025-600
- *DEFINITY Wireless Business System Users Guide*, 555-232-105
- *DEFINITY Wireless Business System Installation and Test Guide*, 555-232-102
- *DEFINITY Wireless Business Systems System Interface*, 555-232-108
- *DEFINITY Enterprise Communications Server Release 5 Installation and Test for Multi-Carrier Cabinets*, 555-230-112
- *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302
- *DEFINITY Enterprise Communications Server Release 5vs/s/i Upgrades and Additions*, 555-230-120
- *DEFINITY Enterprise Communications Server Release 5r Upgrades and Additions*, 555-230-121

How to Order Documentation

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

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

How to Comment on This Document

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

If the reader comment card is missing, fax your comments to 1-303-538-1741 or to your Lucent Technologies representative, and mention this document's name and number, *DEFINITY Enterprise Communication Server Release 5 Installation and Test for Single-Carrier Cabinets*, 555-230-894.

Trademarks

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

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

The following products are trademarked by their appropriate vendor:

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

Standards Compliance

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

- ITO-T (Formerly CCITT)
- ECMA
- ETSI
- IPNS
- DPNS
- National ISDN-1
- National ISDN-2
- ISO-9000
- ANSI
- FCC Part 15 and Part 68
- EN55022
- EN50081
- EN50082
- CISPR22
- Australia AS3548 (AS/NZ3548)
- IEC950
- UL 1459
- UL1950
- CSA C222 Number 225
- TS001

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



CAUTION:

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

Contact your Lucent Technologies representative for more information.

Electromagnetic Compatibility Standards

This product complies with and conforms to the following:

- Limits and Methods of Measurements of Radio Interference Characteristics of Information Technology Equipment, EN55022 (CISPR22), 1993
- EN50082-1, European Generic Immunity Standard
- FCC Parts 15 and 68
- Australia AS3548

⇒ NOTE:

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

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

The system conforms to the following:

- Electromagnetic compatibility General Immunity Standard, part 1; residential, commercial, light industry, EN50082-1, CENELEC, 1991
- Issue 1 (1984) and Issue 2 (1992), Electrostatic discharge immunity requirements (EN55024, Part 2) IEC 1000-4-2
- Radiated radio frequency field immunity requirements IEC 1000-4-3
- Electrical fast transient/burst immunity requirements IEC 1000-4-4

European Union Standards

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

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

The “CE” mark is applied to the following Release 5 products:

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

Technical Support

To obtain technical support, refer to one of the following telephone numbers. Be sure to use the telephone number for the region in which the system is being installed.

- Asia/Pacific 65-872-8686
- Western Europe/Middle East/South Africa 441-252-391-889
- Central/Eastern Europe 361-270-5160
- Central/Latin America/Caribbean 1-303-538-4666
- North America 1-800-248-1111

Install and Connect the Cabinets

1

This chapter describes how to install the Release 5si Single-Carrier Cabinets and the Release 5vs Compact Single-Carrier Cabinets.

Multi-Carrier Cabinet installation procedures are provided in *DEFINITY Enterprise Communications Server Release 5 Installation and Test for Multi-Carrier Cabinets*, 555-230-112. Floor plans and equipment layouts for typical system installations are provided in *DEFINITY Enterprise Communications Server Release 5 System Description and Specifications*, 555-230-203.

Check Circuit Packs

Ensure all circuit packs are fully inserted into the proper slots according to the Customer Service Document (CSD). Report any discrepancies in circuit pack type or quantity to your Lucent Technologies representative. For detailed circuit pack descriptions, refer to *DEFINITY Enterprise Communications Server Release 5 System Description and Specifications*, 555-230-203.

Release 5vs and Release 5si contain a RISC-based TN790 Processor circuit pack. These systems must also contain a TN777B Network Control circuit pack and a TN780 or TN2182 Tone-Clock circuit pack. If G3si systems are to support packet applications, a TN778 Packet Controller circuit pack is required. The TN765 Processor Interface is required for external adjunct interface and Primary Rate Interface (PRI) applications. The TN772 Duplication Interface circuit pack is used in high and critical reliability configurations.

Check Customer's Order

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

How to Correct Shipping Errors

Defective equipment and over-shipped equipment must be red-tagged and returned per the nearest Material Stocking Location (MSL) instructions.

Short-shipped reports must also be directed to the nearest Material Stocking Location (MSL). Contact the appropriate location for specific instructions. For Streamlined Implementation in the United States, call 1-800-772-5409.

Unpack and Inspect

1. Unpack the cabinets from the shipping material and inspect for damage. Report any shipping damage according to local shipping instructions.
2. Open and remove the front door and rear panels from the cabinet.
3. Verify the label near the circuit breaker on the power supply toward the rear of each cabinet corresponds to the local voltage type.



DANGER:

*If the label is different than the voltage type at the site, notify your Lucent Technologies representative immediately for a replacement power supply. Do **not**, under any circumstances, connect an incorrect power supply to power.*

Install Single-Carrier Cabinets

This section describes how to position and stack the cabinets for all reliability configurations. To install Compact Single-Carrier Cabinets, skip to "Install Compact Single-Carrier Cabinet" on page 1-37.



CAUTION:

Lifting the cabinet may require two people, as it may weigh as much as 130 pounds (60 kilograms). Use caution to avoid injury.

Before beginning the cabinet installation, check the location of the AC/DC power receptacle. The receptacle must be on a separately fused circuit *not* controlled by a wall switch. It must be located within 10 feet (3 meters) of the cabinet, and should be located outside the Main Distribution Frame (MDF) area.

Refer to the serial numbers and lettered designation strips in the Customer Service Document (CSD) when stacking the cabinets. If earthquake protection is required, skip to "Install Earthquake Protection" on page 1-43. Return to this section when finished.



CAUTION:

System grounding must comply with the general rules for grounding contained in Article 250 of the National Electrical Code (NEC), National Fire Protection Agency (NFPA) 70, or the applicable electric code in the country containing the equipment.

Position Cabinets (Standard Reliability)

One Cabinet Stack (Processor Port Network)

Perform this step first for *all* standard reliability cabinet installations.

1. Place Control Cabinet A (J58890L) on the floor in the position determined when the room layout was planned.
2. Set Port Cabinet B (J58890H) on top of Control Cabinet A.
3. Set Port Cabinet C (J58890H) on top of Port Cabinet B.
4. Set Port Cabinet D (J58890H) on top of Port Cabinet C.
5. If additional cabinet stacks are being installed, continue to the next section. If not, proceed to "Approved Grounds" on page 1-5.

Two Cabinet Stacks (Expansion Port Network)

1. Place the Expansion Control Cabinet (J58890N) on the floor next to Control Cabinet A. See previous instructions.
2. Set Port Cabinet B (J58890H) on top of the Expansion Control Cabinet.
3. Set Port Cabinet C (J58890H) on top of Port Cabinet B.
4. Set Port Cabinet D (J58890H) on top of Port Cabinet C.
5. If three cabinet stacks are being installed, continue to the next section. If not, proceed to "Approved Grounds" on page 1-5.

Three Cabinet Stacks (Expansion Port Network)

1. Place the second Expansion Control Cabinet (J58890N) on the floor next to the first Expansion Control Cabinet. See previous instructions.
2. Set Port Cabinet B (J58890H) on top of the Expansion Control Cabinet.
3. Set Port Cabinet C (J58890H) on top of Port Cabinet B.
4. Set Port Cabinet D (J58890H) on top of Port Cabinet C.
5. Proceed to "Approved Grounds" on page 1-5.

Position Cabinets (High or Critical Reliability)

One Cabinet Stack (Processor Port Network)

Perform this step first for *all* high or critical reliability cabinet installations.

1. Place Control Cabinet A (J58890L) on the floor in the position determined when the room layout was planned.
2. Set Duplicate Control Cabinet B (J58890M) on top of Control Cabinet A.
3. Set Port Cabinet C (J58890H) on top of Duplicate Control Cabinet B.
4. Set Port Cabinet D (J58890H) on top of Port Cabinet C.
5. If additional cabinet stacks are being installed, continue to the next section. If not, proceed to "Approved Grounds" on page 1-5.

Two Cabinet Stacks (Expansion Port Network)

1. Place the Expansion Control Cabinet (J58890N) on the floor next to Control Cabinet A See previous instructions.
2. Set Port Cabinet B (J58890H) on top of the Expansion Control Cabinet.
3. Set Port Cabinet C (J58890H) on top of Port Cabinet B.
4. Set Port Cabinet D (J58890H) on top of Port Cabinet C.
5. If additional cabinet stacks are being installed, continue to the next section. If not, proceed to "Approved Grounds" on page 1-5.

Three Cabinet Stacks (Expansion Port Network)

1. Place the second Expansion Control Cabinet (J58890N) on the floor next to the first Expansion Control Cabinet. See previous instructions.
2. Set Port Cabinet B (J58890H) on top of the second Expansion Control Cabinet.
3. Set Port Cabinet C (J58890H) on top of Port Cabinet B.
4. Set Port Cabinet D (J58890H) on top of Port Cabinet C.
5. Proceed to "Approved Grounds" on page 1-5.

Approved Grounds

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

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

Acceptable Water Pipe — A metal underground water pipe, at least 1/2-inch (1.27 cm) in diameter, in direct contact with the earth for at least 10 feet (3 m). The pipe must be electrically continuous (or made electrically continuous by bonding around insulated joints, plastic pipe, or plastic water meters) to the point where the protector ground wire is connected. A metallic underground water pipe must be supplemented by the metal frame of the building, a concrete encased ground, or a ground ring. If these grounds are not available, the water pipe ground can be supplemented by one of the following types of grounds:

- Other local metal underground systems or structures — Local underground structures such as tanks and piping systems
- Rod and pipe electrodes — A 5/8-inch (1.58 cm) (solid rod) or 3/4-inch (1.9 cm) (conduit or pipe) electrode driven to a minimum depth of 8 feet (2.43 m)
- Plate electrodes — Must have a minimum of 2 square feet (0.6 square m) of metallic surface exposed to the exterior soil

Concrete Encased Ground — An electrode encased by at least 2 inches (5.08 cm) of concrete and located within and near the bottom of a concrete foundation or footing in direct contact with the earth. The electrode must be at least 20 feet (6.1 m) of one or more steel reinforcing bars or rods 1/2-inch (1.27 cm) in diameter, or at least 20 feet (6.1 m) of bare, solid copper, 4 AWG wire.

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

APPROVED FLOOR GROUNDS

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

- Building steel
- The grounding conductor for the secondary side of the power transformer feeding the floor
- Metallic water pipes
- Power feed metallic conduit supplying panel boards on the floor
- A grounding point specifically provided in the building for the purpose



WARNING:

If the approved ground or approved floor ground can only be accessed inside a dedicated power equipment room, then connections to this ground should be made by a licensed electrician.

Connect Cabinet Grounds

To connect the cabinet grounds on the J58890R DC Power Cabinet and the Single-Carrier Cabinets, perform the following steps. To connect the cabinet grounds on AC-powered cabinets, skip to "Grounding AC-Powered Cabinets Only" on page 1-12.

DC-Powered Cabinets Only



CAUTION:

System grounding shall comply with the general rules for grounding contained in Article 250 of the National Electrical Code (NEC), National Fire Protection Agency (NFPA) 70, or the applicable code at the installation site. Refer to Appendix A, "Wire Conversions and Electrical Codes" for wire conversions for countries outside the United States.



NOTE:

Before connecting the cabinets to the approved ground, determine the best method of grounding. Also, locate the approved ground as close to the cabinets as possible.



NOTE:

The ground plates and cabinet clips are installed later in this chapter.

Connect DC Power Cabinet Ground

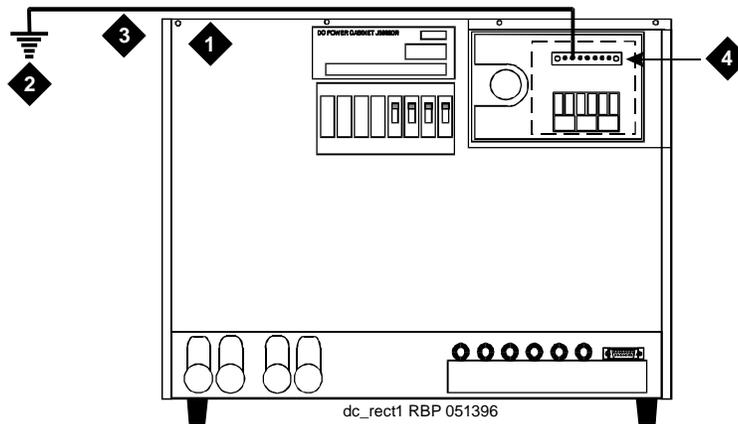


Figure Notes:

- | | |
|-----------------------|-------------------------|
| 1. DC Power Cabinet | 3. 1 AWG (#70) Wire |
| 2. To Approved Ground | 4. Ground Discharge Bar |

Figure 1-1. DC Power Cabinet Grounding

1. At the DC Power Cabinet, connect a 1 AWG (#70) ground wire to the GROUND DISCHARGE bar. See Figure 1-1.
2. Route the ground wire out of the cabinet and terminate it on the approved ground.



CAUTION:

The approved ground must be connected using the correct gauge wire, terminated with a listed clamp, and identified with a grounding tag (FORM 15657NR, or equivalent).

Connect DC Battery Cabinet Frame Ground

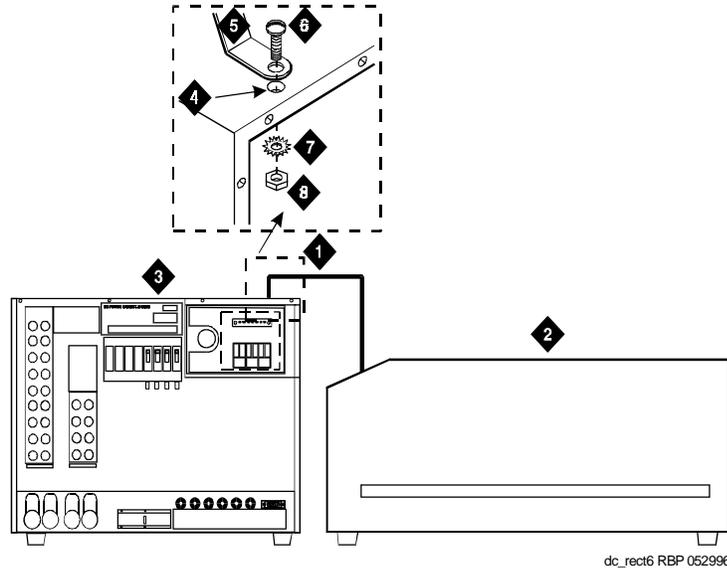


Figure Notes:

- | | |
|--------------------------------------|------------------------------------|
| 1. 6 AWG (#40) Wire | 5. Terminal Lug (Part of D-181895) |
| 2. DC Battery Cabinet | 6. Pan Head Slotted Screw |
| 3. DC Power Cabinet | 7. Star Washer |
| 4. Grounding Hole in Top of Cabinets | 8. Hex Nut |

Figure 1-2. Frame Ground Wiring Between Power Cabinets

1. Use the supplied wire or measure and cut a length of 6 AWG (#40) wire long enough to reach between the DC Power Cabinet and the DC Battery Cabinet. See Figure 1-2.
2. Crimp a terminal lug on the each end of the wire. The terminal lugs are furnished as part of D-181895, kit of parts.
3. At the DC Battery Cabinet, attach the 6 AWG (#40) wire to the frame ground mounting hole using a pan head slotted screw, star washer, and hex nut. Tighten the screw securely.
4. Route the opposite end of the wire to the DC Power Cabinet.
5. Attach the 6 AWG (#40) wire to the mounting hole in the top of the cabinet. Use a pan head slotted screw, star washer, and hex nut. Tighten the screw securely.

Connect DC Power Distribution Unit Ground

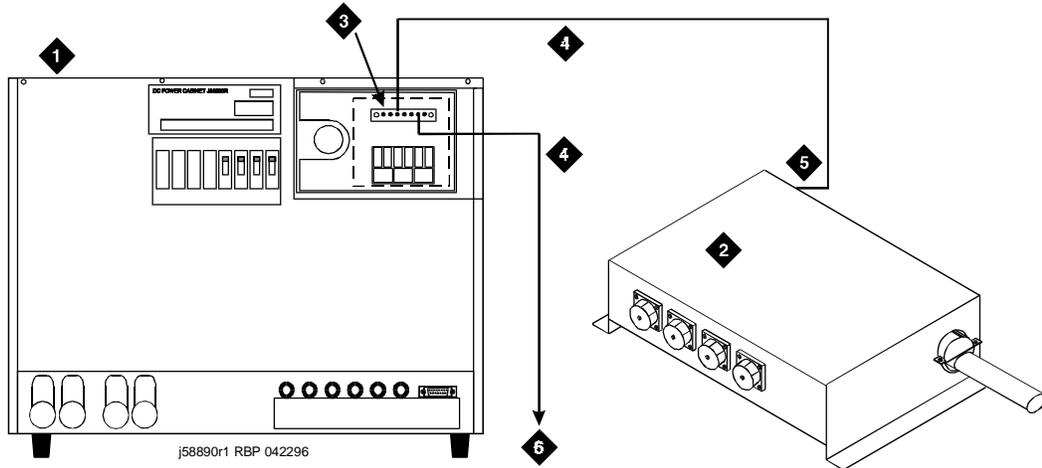


Figure Notes:

1. DC Power Cabinet
2. DC Power Distribution Unit
3. Ground Discharge Bar
4. 6 AWG (#40) Wire
5. GRD Connector Terminal on DC Power Distribution Unit
6. To Additional DC Power Distribution Units (If Required)

Figure 1-3. DC Power Distribution Unit Ground

1. Measure and cut a length of 6 AWG (#40) wire long enough to reach between the GROUND DISCHARGE bar in the DC Power Cabinet and the GRD connector on the DC Distribution Unit. See Figure 1-3.
2. At the DC Power Cabinet, connect the 6 AWG (#40) wire to the GROUND DISCHARGE bar.
3. Route the opposite end of the wire to the DC Power Distribution Unit and connect the wire to the GRD connector.
4. Repeat Steps 2 and 3 for each remaining DC Power Distribution Unit.

Connect Single-Carrier Cabinet Ground

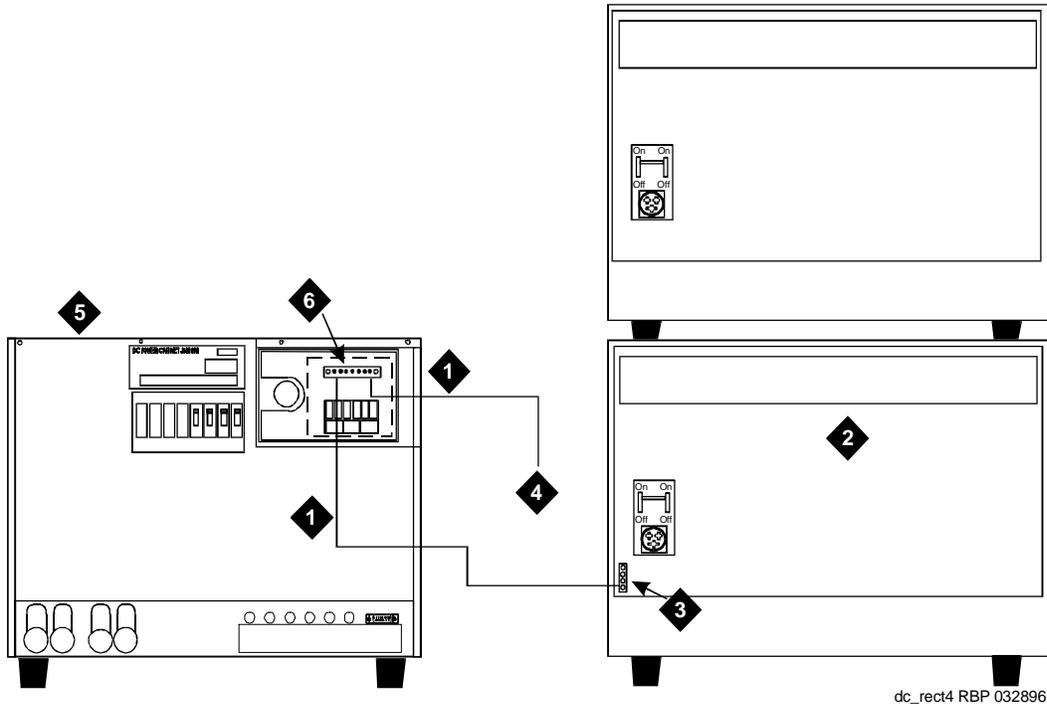


Figure Notes:

1. 6 AWG (#40) Wire
2. Control Cabinet (Cabinet A)
3. Single-Point Ground Block
4. To Additional Control Cabinets in Same Room
5. DC Power Cabinet
6. Ground Discharge Bar

Figure 1-4. Single-Carrier Cabinet Ground

1. Cut a length of 6 AWG (#40) wire long enough to reach between the GROUND DISCHARGE bar on the DC Power Cabinet and the single-point ground block on the Control Cabinet (bottom cabinet in Figure 1-4).
2. At the DC Power Cabinet, connect the wire to the GROUND DISCHARGE bar.
3. Route the wire to Control Cabinet and connect to the single-point ground block.
4. Repeat for each Control Cabinet in the system room (duplicated Control Cabinet and Expansion Control Cabinet).

Connect Single-Carrier Cabinet Frame Ground

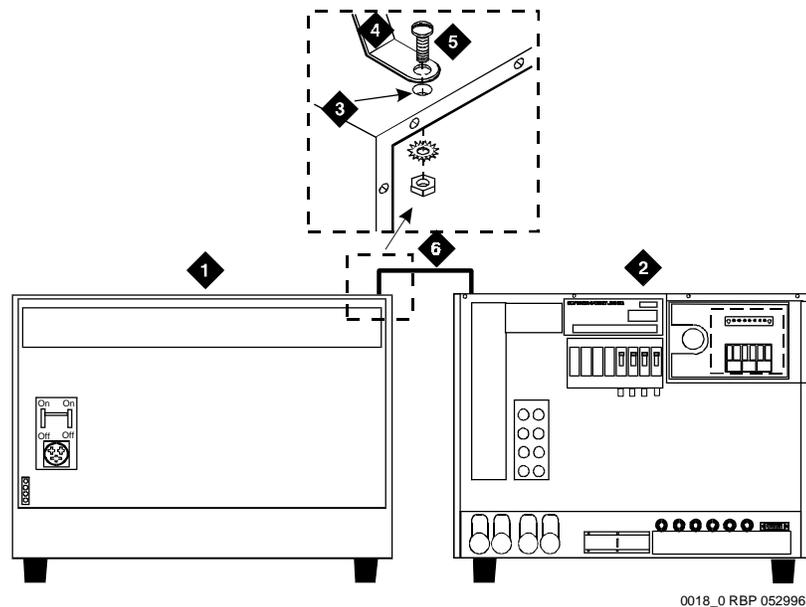


Figure Notes:

- | | |
|--------------------------------------|--|
| 1. Control Cabinet (Cabinet A) | 4. Terminal Lug (Part of D-181895) |
| 2. DC Power Cabinet | 5. Pan Head Slotted Screw (Part of D-181895) |
| 3. Grounding Hole in Top of Cabinets | 6. 6 AWG (#40) Wire |

Figure 1-5. Single-Carrier Cabinet Frame Ground

1. Use the supplied wire or measure and cut a length of 6 AWG (#40) wire long enough to reach between the DC Power Cabinet and the Control Cabinet. See Figure 1-5.
2. Crimp a terminal lug on the each end of the wire. The terminal lugs are furnished as part of D-181895, kit of parts.
3. At the Control Cabinet, attach the 6 AWG (#40) wire to the frame ground mounting hole using a pan head slotted screw, star washer, and hex nut. Tighten the screw securely.
4. Route the opposite end of the wire to the DC Power Cabinet.
5. Attach the 6 AWG (#40) wire to the mounting hole in the top of the cabinet. Use a pan head slotted screw, star washer, and hex nut.

Grounding AC-Powered Cabinets Only



CAUTION:

System grounding shall comply with the general rules for grounding contained in Article 250 of the National Electrical Code (NEC), National Fire Protection Agency (NFPA) 70, or the applicable code at the installation site. Refer to Appendix A, "Wire Conversions and Electrical Codes" for wire conversions for countries outside the United States.



NOTE:

Before connecting the cabinets to the approved ground, determine the best method of grounding. See "Approved Grounds" on page 1-5. Also, locate the approved ground as close to the cabinets as possible.



NOTE:

The ground plates and cabinet clips are installed later in this chapter.

1. Measure and cut a length of 6 AWG (#40) wire long enough to reach between the cabinet stack single-point ground block and the approved ground. See Figure 1-6.
2. At the lower left rear of the Control Cabinet (Cabinet A), connect the 6 AWG (#40) ground wire to the cabinet stack single-point ground block.
3. Run the ground wire to the approved ground and attach securely.
4. Repeat Steps 1-3 for each Expansion Control Cabinet.



NOTE:

If the Expansion Control Cabinet is remotely located from Cabinet A (in a separate room or building), run the 6 AWG (#40) cabinet ground wire to an approved protective ground.

5. At Cabinet A, connect a 10 AWG (#25) wire to the single-point ground block. The 10 AWG (#25) wire must be long enough to reach the telecommunications cables at the rear of the system cabinets, follow these cables to the Main Distribution Frame (MDF), and to terminate at the Coupled Bonding Conductor (CBC).

The Coupled Bonding Conductor (CBC) wires are installed and terminated in Chapter 2, "Install Telecommunications Cabling".

Single-Carrier Cabinet Ground

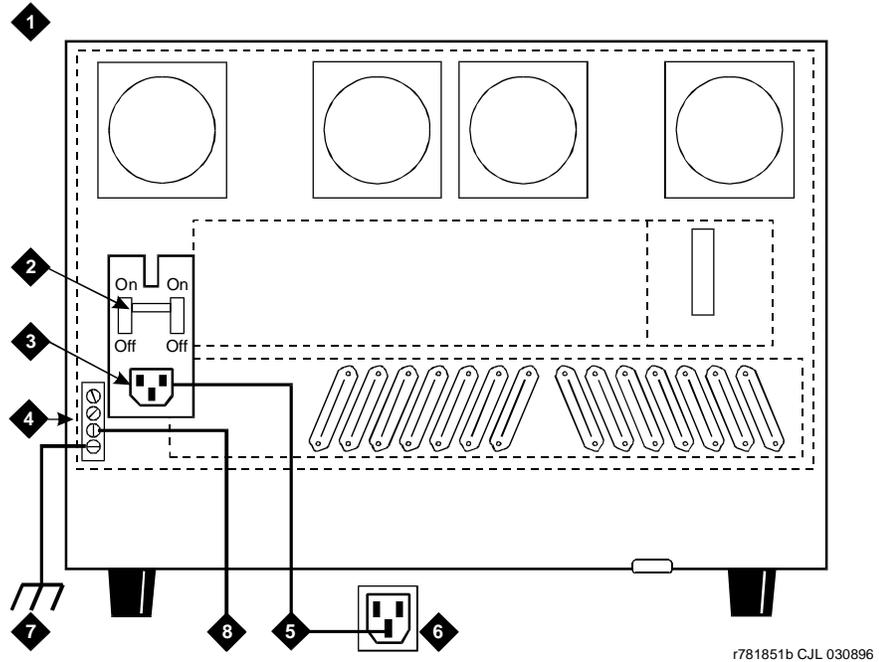


Figure Notes:

- | | |
|--|---|
| 1. Cabinet Stack 1 Control Cabinet A | 6. National Electrical Manufacturers Association (NEMA) 5-15 or 5-20 Receptacle or Equivalent |
| 2. Circuit Breaker | |
| 3. AC Power Receptacle | |
| 4. Cabinet Stack Single-Point Ground Block | 7. 6 AWG (#40) Ground Wire to Approved Ground |
| 5. 8-Foot Power Cord (2.5 Meters) | 8. 10 AWG (#25) Wire to Coupled Bonding Conductor |

Figure 1-6. Typical AC Power and Ground Layout — Rear

Connect AC Power

Verify the label near the circuit breaker on the power supply toward the rear of each cabinet corresponds to the local voltage type.



DANGER:

*If the label is different than the voltage type at the site, notify your Lucent Technologies representative immediately for a replacement power supply. Do **not**, under any circumstances, connect an incorrect power supply to AC power.*

Provide one receptacle per Single-Carrier Cabinet.

1. Verify the circuit breakers are **OFF**.
2. Plug the cabinet AC power cord into the AC power receptacle on the rear of each cabinet.
3. Plug the opposite end of each AC power cord into the appropriate AC power receptacle in the equipment room.

Connect AC Power to DC Power Cabinet

1. Ensure the associated circuit breakers at the AC power panel are **OFF**.
2. Have an electrician connect AC power leads to the rectifiers using the instructions provided with the rectifiers in the DC Power Cabinet. Each rectifier should have its own branch circuit. Terminate leads on the AC INPUT terminal block of each rectifier.

Connect DC Power

The following procedures apply to both the Processor Port Networks (PPN) and Expansion Port Networks (EPN). Verify the label near the circuit breaker on the power supply toward the rear of each cabinet corresponds to the local voltage type.



DANGER:

*If the label is different than the voltage type at the site, notify your Lucent Technologies representative immediately for a replacement power supply. Do **not**, under any circumstances, connect an incorrect power supply to DC power.*

DC Power Connections

A 30 Foot (9 meter) cable connects to each cabinet. A special connector on one end of the cable is plugged into the cabinet power connector. The cable must be cut to length and terminated inside the J58890R DC Power Cabinet.

Each rectifier assembly can supply up to 50 Amps of DC current. A minimum of two rectifiers are installed in each DC Power Cabinet to supply a total of 100 Amps. A third rectifier assembly can be installed and is used as a backup (N+1). Each Single-Carrier Cabinet can pull up to 15 Amps. Up to three DC Power Cabinets can be stacked to supply power to Single-Carrier Cabinet stacks.

Figure 1-7 on page 1-16 shows a typical power and ground layout for a DC-powered system without a J58890CG DC Power Distribution Unit. The J58890CG is required if the distance between the DC Power Cabinet(s) is greater than 30 feet (9 m). Figure 1-8 on page 1-17 shows a typical power and ground layout for a DC-powered system containing a DC power distribution unit.

Refer to Appendix A, "Wire Conversions and Electrical Codes" for wire conversions for countries outside the United States.

DC Power Connections

Figure 1-7 shows typical connections to the Single-Carrier Cabinets from the DC Power Cabinet.

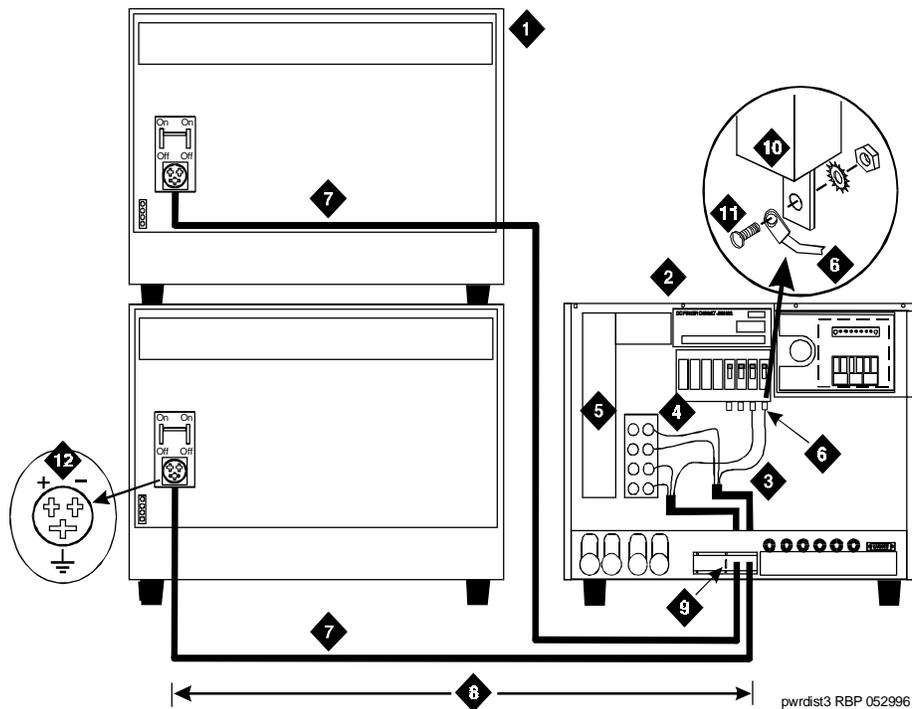


Figure Notes:

1. System Cabinet Stack
2. DC Power Cabinet
3. White Wires
4. Green Ground Wires and Black Wires Connect to the -48 VDC Return Bus
5. -48 VDC Bus
6. Connect White Wires to Circuit Breakers
7. DC Power Cable (H600-436, G1) to Power Connector on Each Cabinet. Cut to Length and Crimp a Ring Terminal Onto Each Wire
8. 30 Feet (9 m) Maximum
9. Route Cables Through Sliding Door
10. Circuit Breaker
11. Supplied #10-32 Screw, #10 Star Washer, and #10-32 Hex Nut
12. Inset Showing DC Power Connector (Male)

Figure 1-7. Typical DC Power Connections

Stacking DC Power Cabinets

Up to three DC Power Cabinets can be stacked to supply power to Single-Carrier Cabinet stacks. See Figure 1-9.

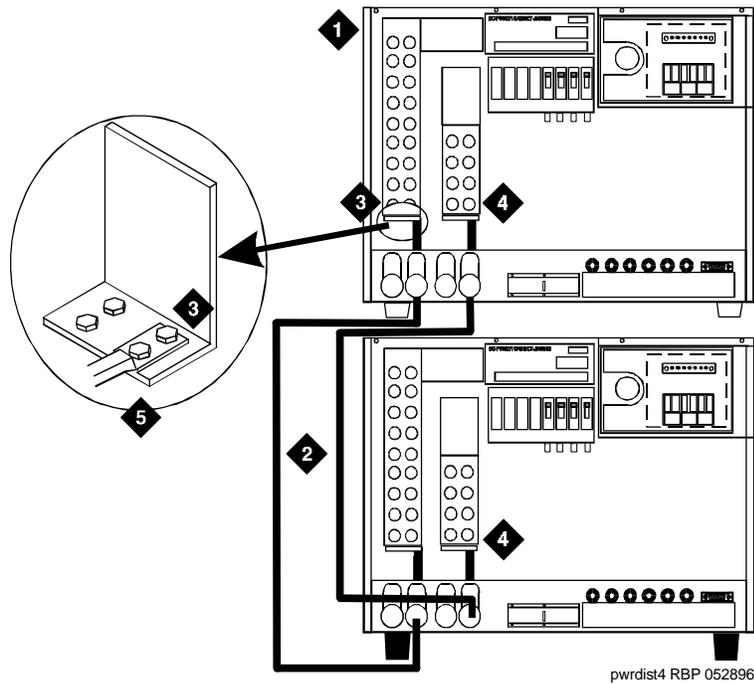


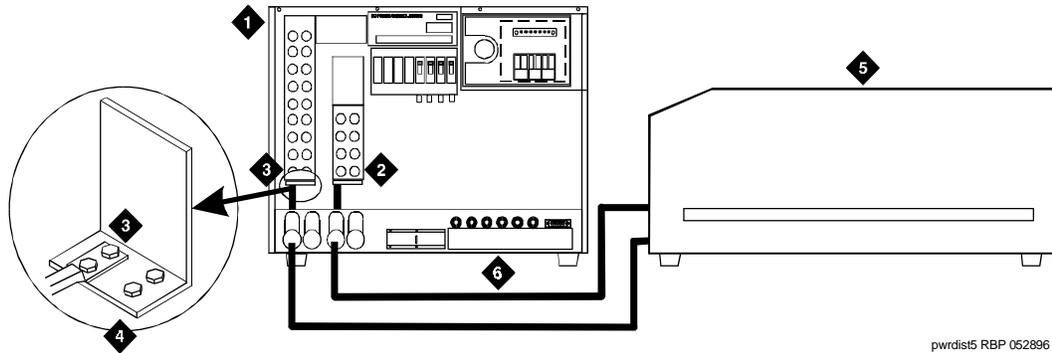
Figure Notes:

1. DC Power Cabinet Stack
2. DC Power Cables Daisy Chained Between DC Power Cabinets
3. Connect to -48 VDC Bus
4. Connect to -48 VDC Return Bus
5. Inset Applies to -48 VDC and -48 VDC Return Buses in All Three DC Power Cabinets

Figure 1-9. DC Power Cabinet Stack — Rear

Connect Battery Cabinet

Figure 1-10 shows typical connections from the DC Battery Cabinet to the DC Power Cabinet.



pwrdis15 RBP 052896

Figure Notes:

- | | |
|---|--|
| 1. DC Power Cabinet | 4. Inset Applies to -48 VDC and -48 VDC Return Buses |
| 2. Connect Red DC Power Cable to -48 VDC Return Bus | 5. Battery Cabinet |
| 3. Connect Black DC Power Cable to -48 VDC Bus | 6. DC Power Cables (Red and Black) |

Figure 1-10. DC Battery to DC Power Cabinet Connections

Connect Optional Battery Leads

To prevent the internal batteries from discharging, the Control Cabinet is shipped with the battery leads disconnected.

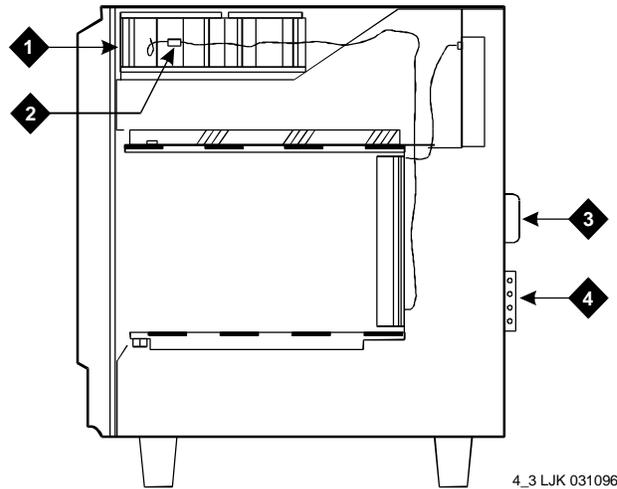


Figure Notes:

- | | |
|---------------------------|--|
| 1. Battery | 3. Circuit Breakers (Located Between Plates) |
| 2. Battery Lead Connector | 4. Cabinet Single-Point Ground Block |

Figure 1-11. Control Cabinet Battery Location — Right Side

1. Set the circuit breakers **OFF**. See Figure 1-11.
2. Connect the battery leads. The battery is near the top of the carrier toward the front-right. The battery leads are located next to the battery and are accessible from the front of the cabinet.

Connect Time Division Multiplexing Bus Cables

If the cabinet stack contains only one Single-Carrier Cabinet, skip this section and proceed to "Verify Port Cabinet Address Plugs" on page 1-26.

Locate the white fabric-covered Time Division Multiplexing (TDM) bus cable on the rear of the cabinets.

Standard Reliability Processor Port Network

One cabinet stack:

1. Remove the Time Division Multiplexing (TDM) Bus Terminator (AHF110) from Slot 18 of the Control Cabinet (Processor Port Network (PPN)) and move it to Slot 17 on the top Port Cabinet. See Figure 1-12.
2. Connect the supplied Time Division Multiplexing (TDM) Bus Cables (WP-91716 L3) as shown in Figure 1-12.

High or Critical Reliability Processor Port Network

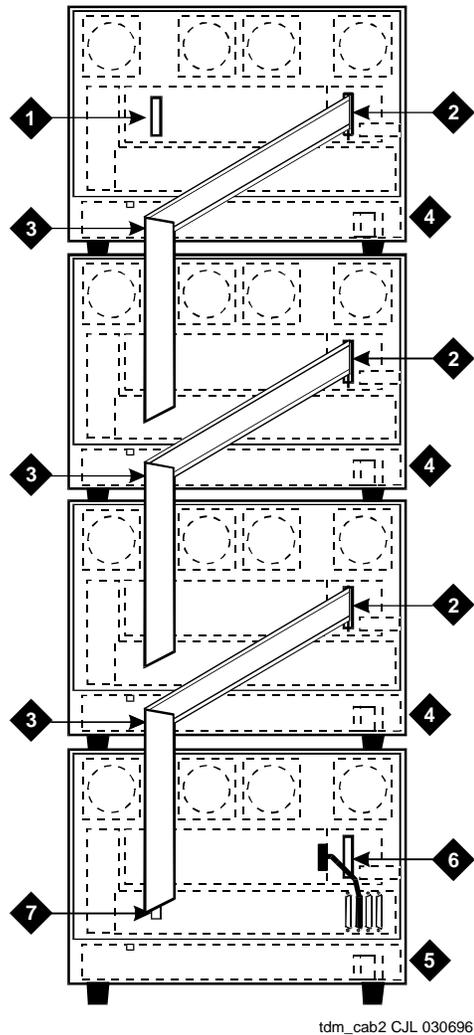
Two cabinet stacks:

1. Remove the Time Division Multiplexing (TDM) Bus Terminator (AHF110) from Slot 18 of Control Cabinet A (Processor Port Network (PPN)) and move it to Slot 18 of Control Cabinet B. See Figure 1-13 on page 1-23.
2. Connect the supplied Time Division Multiplexing (TDM) Bus Cables (WP-91716 L3) from Cabinet A to Cabinet B as shown.

High or Critical Reliability Processor Port Network

Three cabinet stacks:

1. Remove the Time Division Multiplexing (TDM) Bus Terminator (AHF110) from Slot 18 of Control Cabinet A (Processor Port Network (PPN)) and move it to Slot 17 on the top port cabinet. See Figure 1-14 on page 1-24.
2. Connect the supplied Time Division Multiplexing (TDM) Bus Cables (WP-91716 L3) as shown.



tdm_cab2 CJL 030696

Figure Notes:

- | | |
|---|---|
| 1. AHF110 Time Division Multiplexing (TDM) Bus Terminator (Slot 17) | 4. Port Cabinet (Standard Reliability) |
| 2. Time Division Multiplexing/Local Area Network (TDM/LAN) Pinfield (Slot 00) | 5. Control Cabinet A Position |
| 3. Time Division Multiplexing (TDM) bus Cable WP-91716 L3 | 6. AHF110 Time Division Multiplexing (TDM) Bus Terminator (Slot 03) |
| | 7. Slot 18 |

Figure 1-12. Connections for Standard Reliability Systems

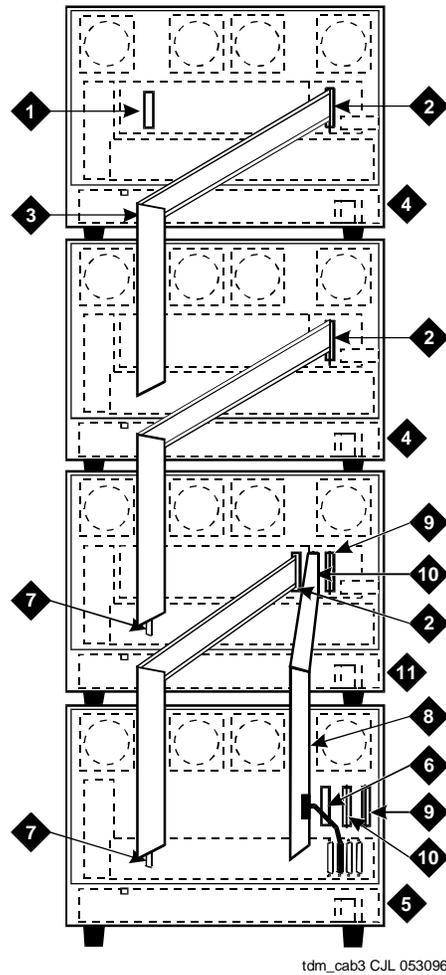
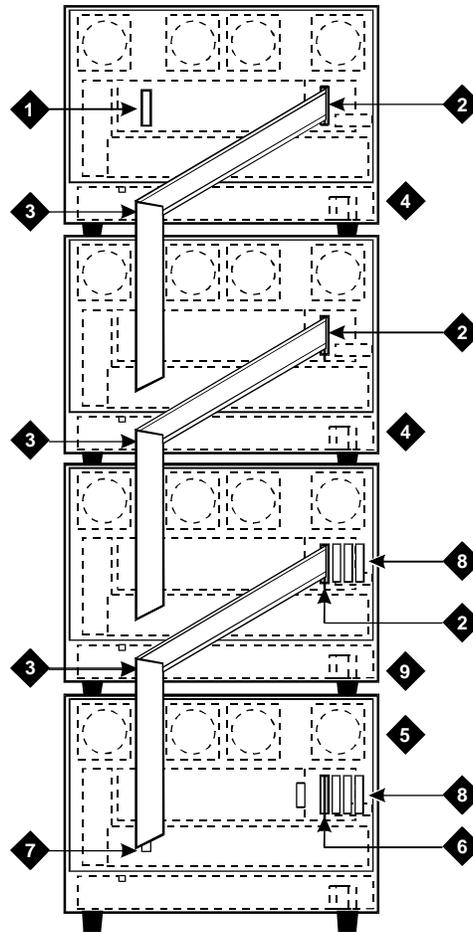


Figure Notes:

- | | |
|---|---|
| 1. AHF110 Time Division Multiplexing (TDM) Bus Terminator (Slot 17) | 6. AHF110 Time Division Multiplexing (TDM) Bus Terminator (Slot 01) |
| 2. Time Division Multiplexing/Local Area Network (TDM/LAN) Pinfield (Slot 00) | 7. Slot 18 |
| 3. Time Division Multiplexing (TDM) bus Cable (WP-91716 L3) | 8. Inter-Cabinet Cables (ICC) A, B and C (H600-248-G1) |
| 4. Port Cabinet | 9. Inter-Cabinet Cable (ICC) A |
| 5. Control Cabinet A Position | 10. Inter-Cabinet Cable (ICC) B |
| | 11. Duplicated Control Cabinet B Position |

Figure 1-13. Connections for High or Critical Reliability Systems



tdm_cab4 C.J.L 053096

Figure Notes:

- | | |
|---|---|
| 1. AHF110 Time Division Multiplexing (TDM) Bus Terminator (Slot 17) | 5. Control Cabinet A Position |
| 2. Time Division Multiplexing/Local Area Network (TDM/LAN) Pinfield (Slot 00) | 6. AHF110 Time Division Multiplexing (TDM) Bus Terminator (Slot 03) |
| 3. Time Division Multiplexing (TDM) bus Cable (WP-91716 L3) | 7. Slot 18 |
| 4. Port Cabinet | 8. Inter-Cabinet Cables (ICC) A, B, and C (H600-259-G1) |
| | 9. Duplicated Control Cabinet B Position |

Figure 1-14. Connections for High or Critical Reliability Systems

Expansion Port Network (All Reliability Options)

1. Remove the Time Division Multiplexing (TDM) Bus Terminator (AHF110) from Slot 18 of Control Cabinet A (Processor Port Network (PPN)) and move it to Slot 17 on the top port cabinet. See Figure 1-13 on page 1-23.
2. Connect the supplied Time Division Multiplexing (TDM) Bus Cables (WP-91716 L3) as shown.

Verify Port Cabinet Address Plugs

The address plug is a jumper field on port cabinets only. The address plug is located on the far right hand side of the backplane, to the right of slot 00.

A group of six pins is labeled for the cabinet (carrier) jumper connections. Verify the address plug for *each* port carrier is in the correct location for that carrier. See Figure 1-15. The factory default setting is “B” (Callout 2 in Figure 1-15).

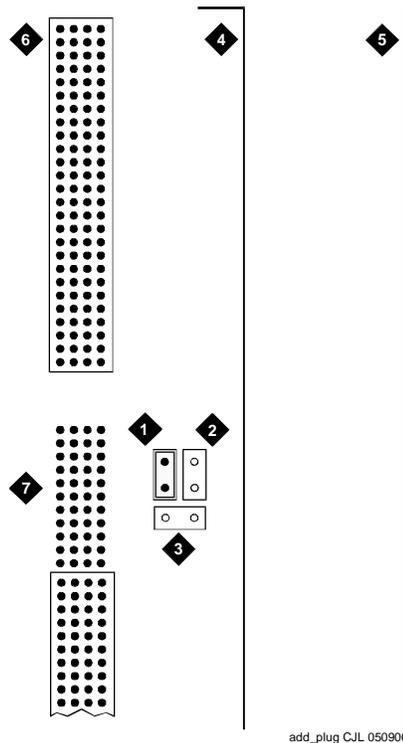
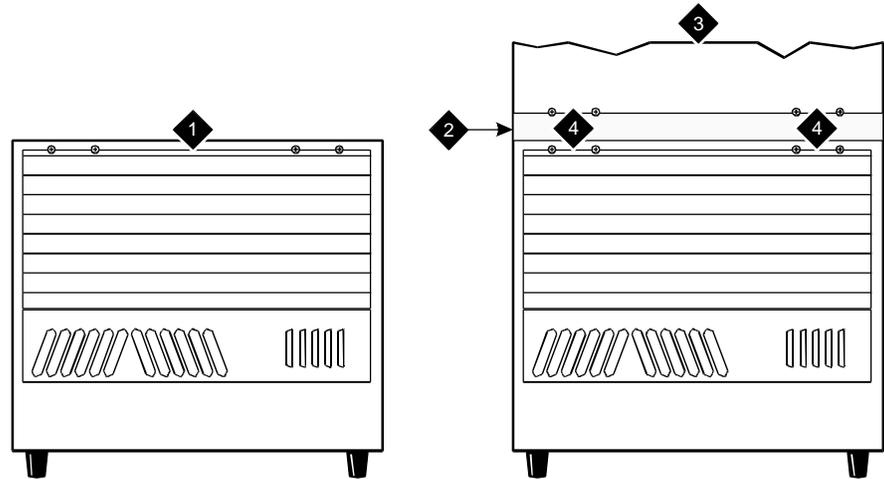


Figure Notes:

- | | |
|--|--------------------------|
| 1. Address Plug (Shown Set to Carrier D) | 5. Right Edge of Cabinet |
| 2. Carrier B Jumper Location (Default) | 6. Backplane Slot 00 |
| 3. Carrier C Jumper Location | 7. To Connector Panel |
| 4. Right Edge of Backplane | |

Figure 1-15. Port Cabinet Address Plug Location — Cabinet Rear

Install Rear Panels



grnd_plt CJL 030696

Figure Notes:

1. Cabinet in A Position (No Ground Plate is Installed on an Unstacked Cabinet)
2. Rear Ground Plate (Attached Between Stacked Cabinets)
3. Cabinet in B Position
4. Screws to Loosen

Figure 1-16. Rear Panel Screw Locations

1. Install the rear panels and loosely thread each screw. See Figure 1-16.
2. For *unstacked* cabinets, tighten the screws securely.
For a *stack* of cabinets, allow the screws labeled Callout 4 to remain loose. These screws are tightened when the ground plates are installed.
3. Be sure the Time Division Multiplexing (TDM) bus cables and the Inter-Cabinet Cables (ICC) are not pinched by the panels. Also be sure the cables are routed through the channels provided on the rear panels.

Install Ground Plates

Ground plates are installed between stacked cabinets, provide the ground connection between cabinets, provide radio frequency (RF) radiation protection, and help stabilize the cabinets.

Install Rear Ground Plates (Systems with Earthquake Protection)

1. Loosen the four screws at the bottom of the top cabinet and at the top of the cabinet underneath the top cabinet. See Figure 1-16 on page 1-27.
2. Align the mounting holes in the rear ground plate over the bottom screws in the top cabinet. See Figure 1-17 on page 1-29.
3. Align the mounting holes in the ground plate with the four holes at the top of the cabinet below the top cabinet. Slide the mounting plate down to seat on the screws.
4. Check all Time Division Multiplexing (TDM) bus cables and the Inter-Cabinet Cables (ICC) to be sure they are not pinched by the plates.
5. Repeat Steps 1-3 until the rear ground plates are installed between all stacked cabinets.
6. Do not tighten the screws yet.

Install Front Ground Plates (Systems with Radiation Shielding and Earthquake Protection)

Use the front ground plate instead of the cabinet clip to attach the cabinets to each other. Use one front ground plate between two *stacked* cabinets.

1. At the front of the cabinets, align the holes in the top of the front ground plate with the holes at the bottom of the upper cabinet, and insert the four screws. Do not tighten the screws yet. See Figure 1-17.
2. At the front of the cabinets, align the holes in the bottom of the front ground plate with the holes at the top of the lower cabinet. Insert the four supplied #12-24 x 1/2-inch (1.27 cm) thread-forming screws. Do not tighten the screws yet.
3. Repeat Steps 1 and 2 until all stacked cabinets are fastened together.
4. Tighten all screws securely.

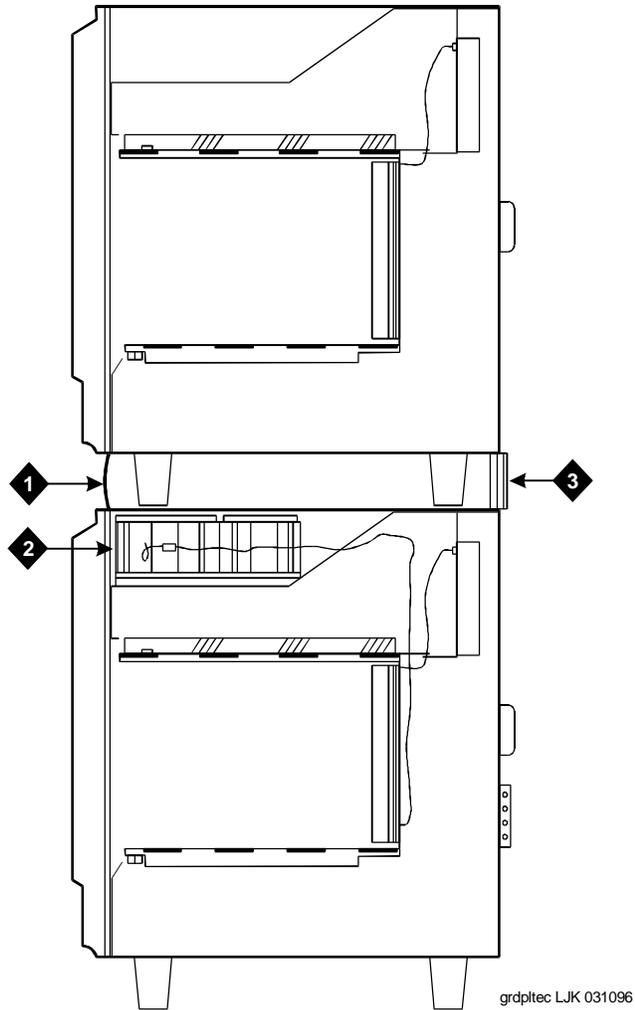


Figure Notes:

- 1. Front Ground Plate or Cabinet Clip
- 2. Battery
- 3. Rear Ground Plate

Figure 1-17. Rear Ground Plate and Front Plate or Cabinet Clip — Side View

Install Cabinet Clips (Systems without Earthquake Protection)

A cabinet clip is required between each pair of stacked cabinets.

At the front of the cabinets, install a cabinet clip between each pair of cabinets by hooking the clip into the slot of the upper cabinet and snapping the straight leg of the clip into the slot on the lower cabinet. See Figure 1-18.

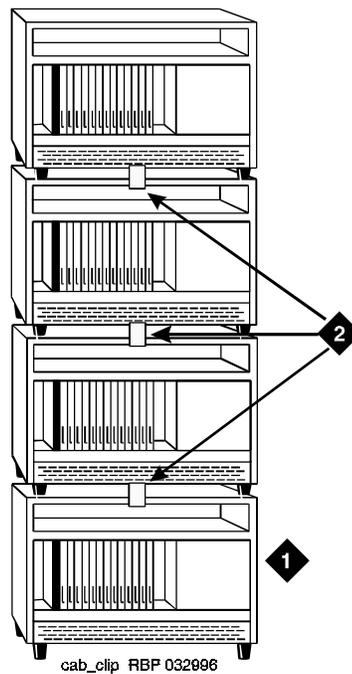


Figure Notes:

- 1. Control Cabinet A (or Expansion Control Cabinet)
- 2. Cabinet Clips

Figure 1-18. Location of Cabinet Clips

Connect System Cables

Inter-Carrier Cabinet Cables (High or Critical Reliability)

1. Connect the cables for critical reliability Expansion Port Networks (EPNs) as shown in Figure 1-12 on page 1-22 and in Table 1-1 below.
2. Connect the cables for high or critical-reliability Processor Port Networks (PPNs) as shown in Figure 1-14 on page 1-24.

Table 1-1. Inter-Cabinet Cable Connections

Cabinet	From Cabinet A		To Cabinet B	
	Carrier	Connection	Carrier	Connection
Processor Port Network (PPN)	J58890L	(ICC) A	J58890M	(ICC) A
		(ICC) B		(ICC) B
		(ICC) C		(ICC) C
Expansion Port Network (EPN)	J58890N	(ICC) A	J58890H	(ICC) A
		(ICC) B		(ICC) B

Fiber Optic Cables (Release 5si Only)

The fiber optic cables are connected to the Main Distribution Frame (MDF) in Chapter 2, "Install Telecommunications Cabling". Refer to Appendix C, "Connecting and Handling Fiber Optic Cables" for information about connecting to optical cross-connect hardware and routing through lightguide equipment.

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).



CAUTION:

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

Fiber Optic Cable Operation

If the cabinets are close together, the signal may go through a single, directly-connected fiber optic cable. If the cabinets are far apart, it may be convenient to connect the cabinets through the fiber optic cross-connect field.

The requirements that determine the maximum fiber optic cabling distances are:

- The mean loss and the length of the outside plant fiber cable
- The mean loss and the length of fiber cable shipped with the cabinet (including any fiber riser cable)
- The mean loss of an ST connector and the number of ST connections
- The mean loss due to the total number of splices
- Higher-order mode loss

 **NOTE:**

If estimated fiber limits such as loss, length, excessive splices, and so forth are expected, OTDR (Optical Time Domain Reflectometer) tests should be made to ensure a successful installation of a remote Expansion Port Network (EPN) fiber link.

Fiber Optic Cable Connections

The Customer Service Document (CSD) provides an “Inter-Cabinet Cable Running List.” Each row on the list represents a cable connection. Use the running list to determine where to connect each fiber optic cable.

Multi-Mode Fiber Optic Connections

The following components are used in multi-mode fiber optic connections:

- Expansion Interface (EI) circuit packs in port slots in cabinet carriers
- Cables from each interface circuit pack to each port slot connector
- The 9823A lightwave transceiver transmits up to 4,900 feet (1.5 km). The 9823B lightwave transceiver transmits up to 25,000 feet (7.6 km).
- Multi-mode fiber optic cable consists of two separate 62.5 micron diameter fiber optic cables.

Single-Mode Fiber Optic Connections

The following components are used in single-mode fiber optic connections:

- Expansion Interface (EI) circuit packs in port slots in cabinet carriers
- Cables from each interface circuit pack to each port slot connector
- The 300A lightwave transceivers transmits light up to 115,000 feet (35 km). Fiber loss must be less than 17dB. Saturation may occur if distances are short; attenuators may be required if the total loss on the fiber link is less than 10dBm. An Optical Time Domain Reflectometer (OTDR) test is recommended to determine specific fiber optic hardware requirements.
- Single-mode fiber optic cable consists of two separate 8 to 10 micron core cables.

Recommended Cable Routing

1. Route the fiber optic cable up toward the top of the cabinet. The excess cable should be looped and draped from the B25A cable clamp on the top ground plate in the stack. See Figure 1-19.
2. Dress the cable by tie wrapping it to the outside of the B25A cable clamp.

⚠ CAUTION:
Do not route fiber optic cables and the B25A cables together.

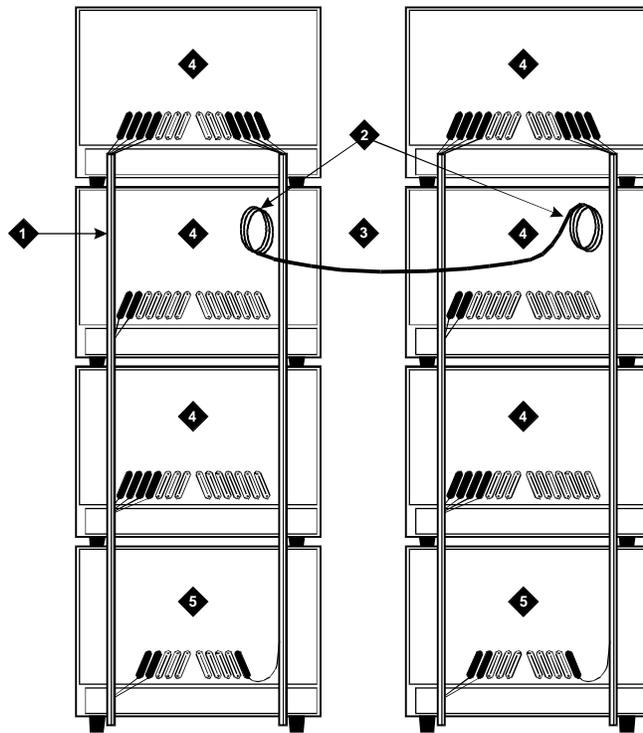


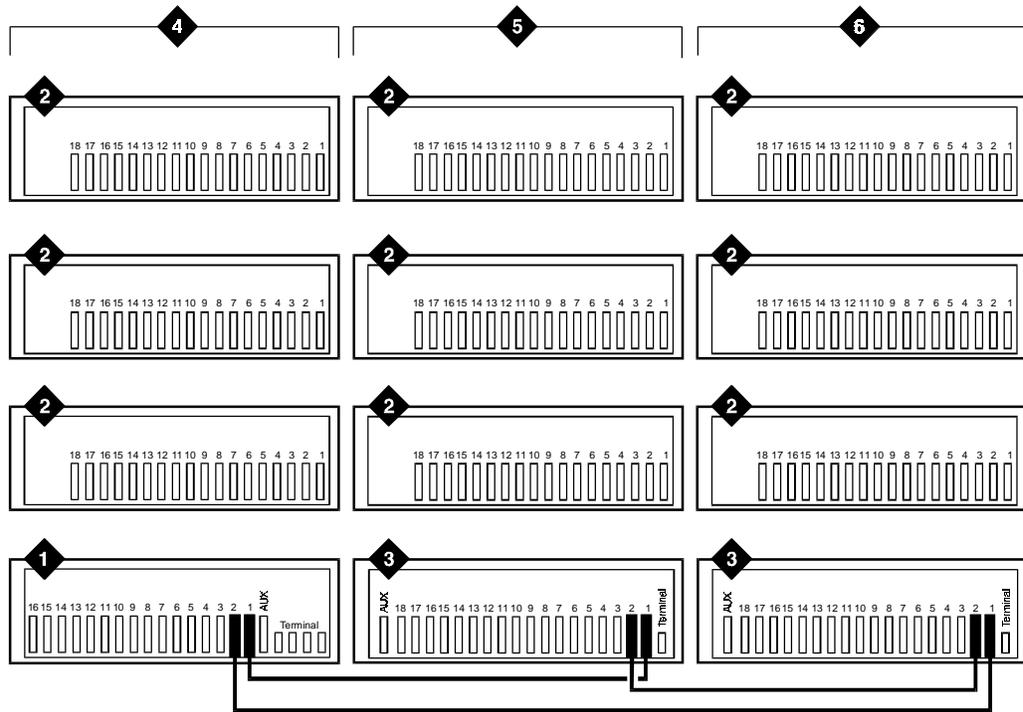
Figure Notes:

- | | |
|---|-----------------------------|
| 1. Supplied B25A Cables | 3. Fiber Optic Cable Sheath |
| 2. Loop and Drape Excess Fiber Optic Cable. | 4. Port Cabinet |
| | 5. Control Cabinet |

Figure 1-19. Single-Carrier Cabinet Fiber Routing

Standard Reliability Fiber Connections

Connect and route the fiber optic cable as shown in the running list. See Figure 1-20.



standard LJK 032896

Figure Notes:

- | | |
|------------------------------|--------------------|
| 1. Control Cabinet | 4. Cabinet Stack 3 |
| 2. Port Cabinet | 5. Cabinet Stack 2 |
| 3. Expansion Control Cabinet | 6. Cabinet Stack 1 |

Figure 1-20. Connections to Standard Reliability Systems

High Reliability Fiber Connections

Connect and route the fiber optic cable as shown in the running list. See Figure 1-21.

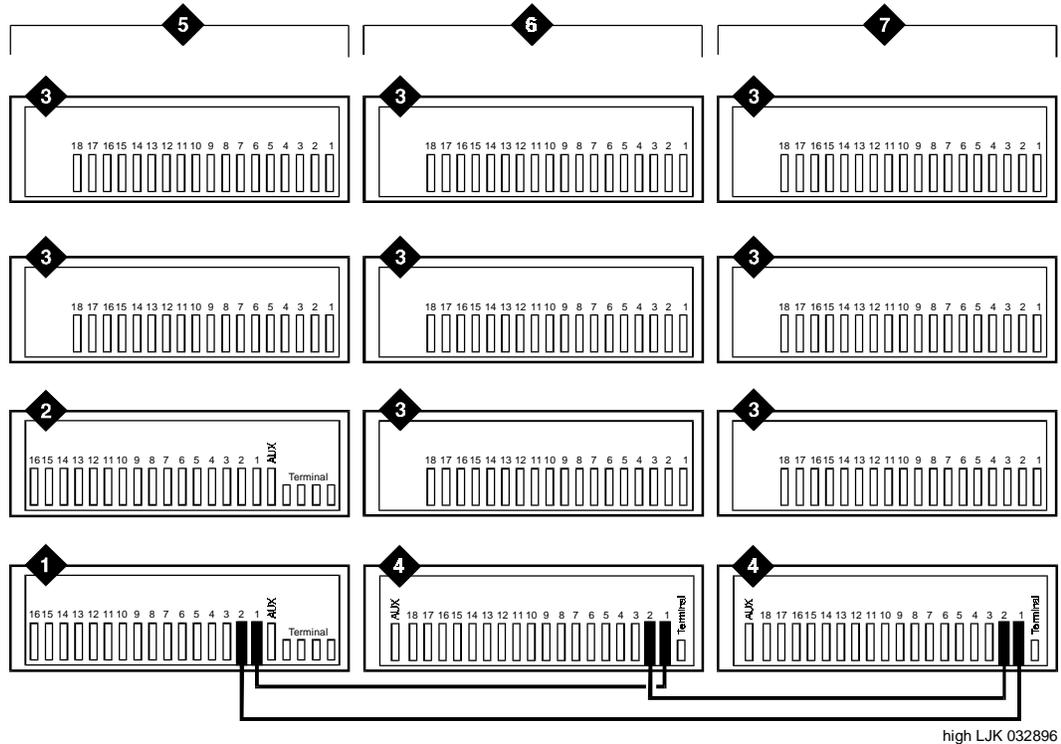


Figure Notes:

- | | |
|------------------------------|--------------------|
| 1. Control Cabinet | 5. Cabinet Stack 3 |
| 2. Duplicate Control Cabinet | 6. Cabinet Stack 2 |
| 3. Port Cabinet | 7. Cabinet Stack 1 |
| 4. Expansion Control Cabinet | |

Figure 1-21. Connections to High Reliability Systems

Critical Reliability Fiber Connections

Connect and route the fiber optic cable as shown in the running list. See Figure 1-22.

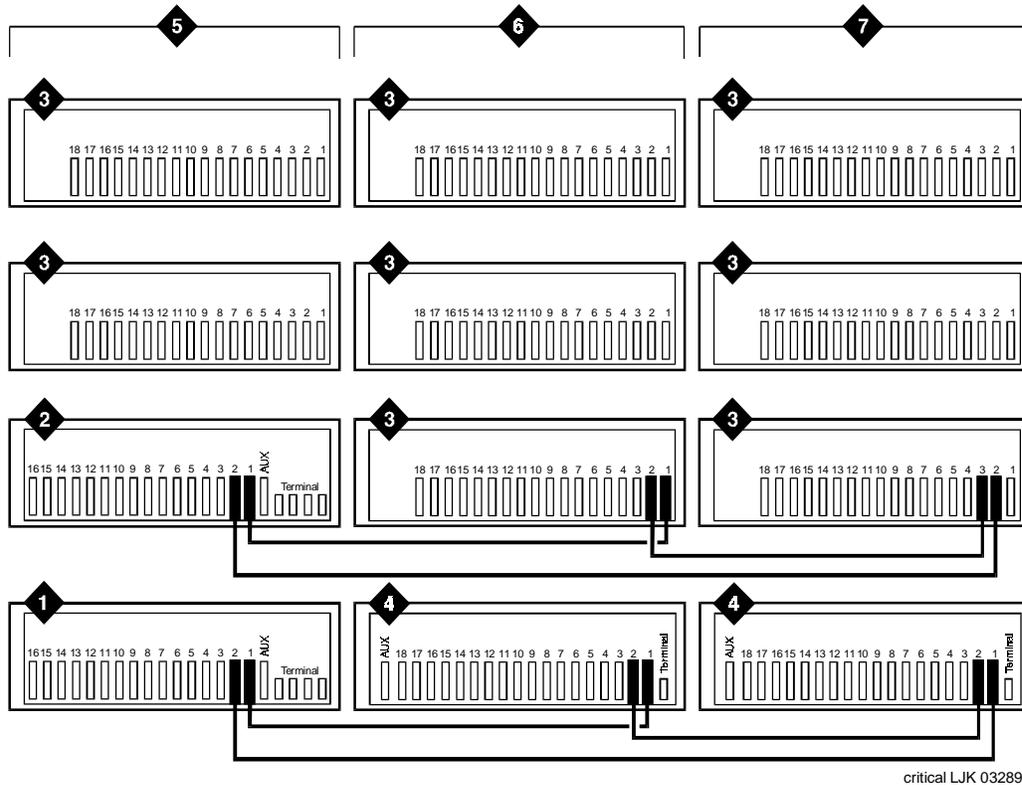


Figure Notes:

- | | |
|------------------------------|--------------------|
| 1. Control Cabinet | 5. Cabinet Stack 3 |
| 2. Duplicate Control Cabinet | 6. Cabinet Stack 2 |
| 3. Port Cabinet | 7. Cabinet Stack 1 |
| 4. Expansion Control Cabinet | |

Figure 1-22. Connections to Critical Reliability Systems

Install Compact Single-Carrier Cabinet

The Compact Single-Carrier Cabinet is attached to a wall by a support bracket mounted to a plywood sheet in the equipment room.

⇒ NOTE:

Before installing the cabinet, a 3/4-inch (19 mm) thick piece of plywood is required to mount the cabinet to the wall. Attach the plywood sheet in the desired location in the equipment room. The plywood and all required hardware to mount the plywood is installer-supplied.

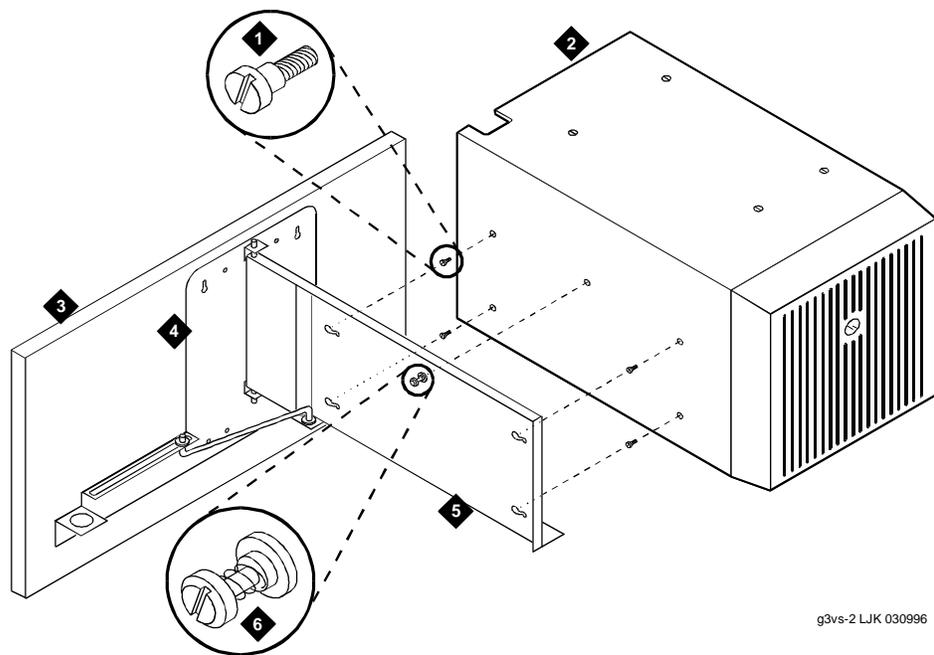


Figure Notes:

- | | |
|-----------------------------------|--|
| 1. Shoulder Screws | 4. Wall Mounting Plate Showing Keyhole Slots |
| 2. Compact Single-Carrier Cabinet | 5. Cabinet Support Bracket |
| 3. Plywood Sheet | 6. Spring-Loaded Housing Locking Screws |

Figure 1-23. Compact Single-Carrier Cabinet Installation

Install the System Cabinet

1. Thread the four supplied shoulder screws into the threaded holes nearest the corners on the side of the cabinet. See Figure 1-23.
2. Hold the mounting plate against the plywood sheet so the cabinet support bracket opens to the right and the cabinet is at a convenient height to handle, install, and service. Set the mounting plate so it is level and horizontal.



NOTE:

The bottom of the cabinet must be at least six inches above the nearest possible obstruction to the air inlet.

3. Using the mounting plate as a template, mark the plywood sheet inside the top of the two keyhole slots.
4. Drill a 1/8-inch (0.32 mm) diameter pilot hole into the two positions just marked on the plywood sheet.
5. Thread two of the seven supplied wood screws into the holes so the screw heads are about 3/16-inch (0.476 mm) from the wall.
6. Hang the mounting plate on the two screws just installed. Adjust the plate so the screws are at the top of the two keyhole slots and the mounting plate is level. Tighten the screws securely.
7. Drill pilot holes at the remaining five holes in the mounting plate.
8. Secure the mounting plate to the plywood sheet using the remaining five wood screws.
9. Close the hinge on the mounting plate.
10. Remove the cabinet rear panel.
11. Raise the cabinet so the four shoulder screws on its far surface face the wall. Lay the cabinet's bottom edge on top of the narrow shelf on the hinged plate.



NOTE:

A fully loaded system weighs 48 pounds (22 kg). Use lifting precautions.

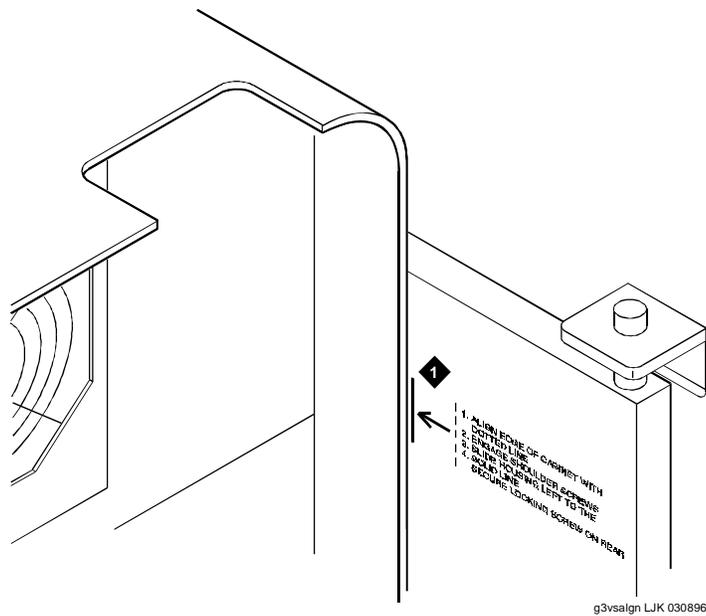


Figure Notes:

1. Align Edge of Cabinet with Dotted Line. Engage Shoulder Screws. Slide Housing Left to the Solid Line. Secure Locking Screw on Rear.

Figure 1-24. Rear Edge of Cabinet

12. A label on the mounting plate shows an arrow from a dashed line to a solid line. See Figure 1-24. Place the cabinet so its rear edge is at the dotted line.
13. Push the cabinet toward the wall so the shoulder screws go through the keyholes in the mounting plate.
14. Move the cabinet left to make the shafts of the shoulder screws engage the slots on the mounting plate. Continue to move the cabinet to the left until the rear edge of the cabinet is at the solid line on the label.
15. Thread the spring-loaded housing locking screw (in the mounting plate) into the cabinet. Tighten this screw securely.



CAUTION:

To prevent equipment damage and possible injury, the locking screw must be securely fastened to the cabinet.

Compact Single-Carrier Cabinet Grounds

1. Measure and cut a length of 6 AWG (#40) wire long enough to reach between the ground block and the approved ground.
2. Connect the wire to the ground block on the rear of the cabinet. See Figure 1-25. Securely attach the ground wire to the approved ground.

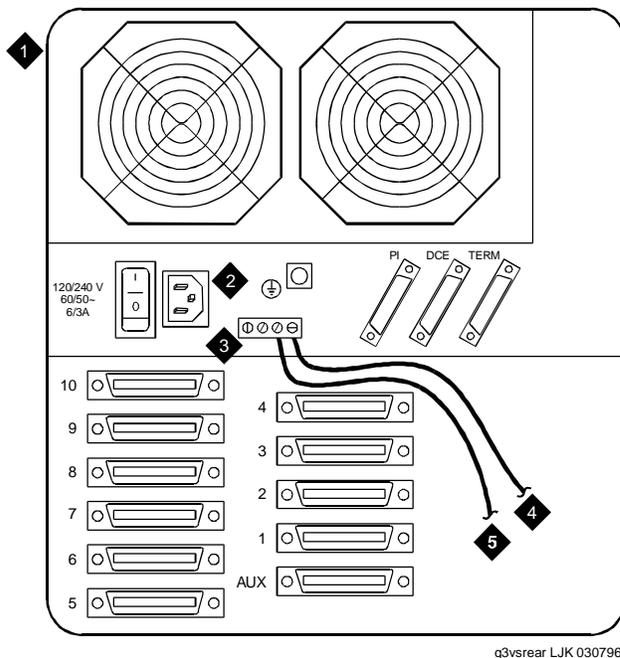


Figure Notes:

- | | |
|---|---|
| 1. Rear of Compact Single-Carrier Cabinet | 4. 6 AWG (#40) Wire to Approved Ground |
| 2. AC Power Receptacle | 5. 10 AWG (#25) Wire to Coupled Bonding Conductor (CBC) |
| 3. Ground Block | |

Figure 1-25. Compact Single-Carrier Cabinet Ground

3. Measure and cut a length of 10 AWG (#25) wire long enough to reach between the ground block and the Coupled Bonding Conductor (CBC).
4. Connect the wire to the ground block on the rear of the cabinet. The opposite end of the wire is attached to the Coupled Bonding Conductor (CBC) in Chapter 2, "Install Telecommunications Cabling".

Connect AC Power

Provide one receptacle per cabinet.

1. Verify the power switch is **OFF**. See Figure 1-26.
2. Plug the AC power cord into the power receptacle on the rear of the cabinet. Plug the opposite end of the power cord into the appropriate AC power receptacle in the equipment room.

Connect System Cables

1. Connect the supplied system cables to the connectors (1-10) on the rear of the cabinet. See Figure 1-26.
2. Route the cables to the Main Distribution Frame (MDF). The cables are connected in Chapter 2, "Install Telecommunications Cabling".

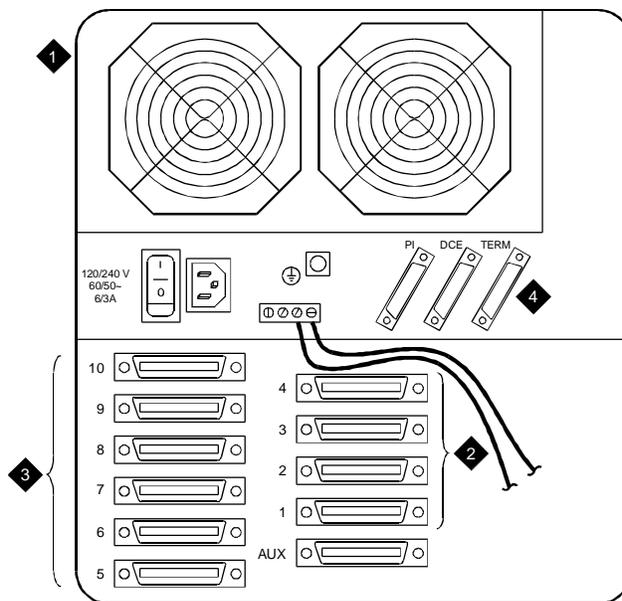


Figure Notes:

- | | |
|-----------------------------------|------------------------------|
| 1. Compact Single-Carrier Cabinet | 3. Backplane Connectors 5-10 |
| 2. Backplane Connectors 1-4 | 4. TERM Connector |

Figure 1-26. System Cable Connections

Install Management Terminal Cable

1. Connect the supplied 25-pin Data Terminal Equipment (DTE) cable (H600-426) to the rear of the cabinet.
2. Plug the cable into the **TERM** connector. See Figure 1-26 on page 1-41.

Install Rear Cover

1. Carefully close the cabinet against the wall-mount support bracket.
2. Set the rear panel against the rear of the cabinet. See Figure 1-27. Route the cables through the cable access slot.
3. Tighten the 1/4-turn fastener.

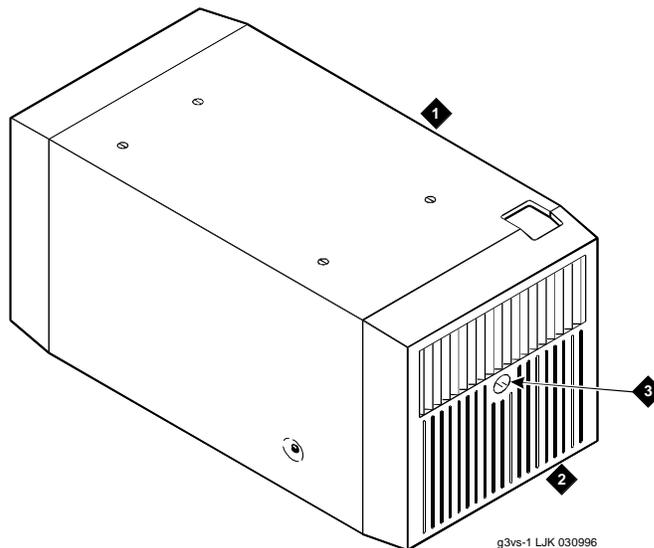


Figure Notes:

- | | |
|-----------------------------------|---------------------------|
| 1. Compact Single-Carrier Cabinet | 3. Tighten Screw Securely |
| 2. Rear Panel | |

Figure 1-27. Compact Single-Carrier Cabinet Rear Panel

Proceed to Chapter 2, "Install Telecommunications Cabling" to connect the cables to the Main Distribution Frame (MDF).

Install Earthquake Protection

Earthquake protection is only required on Single-Carrier Cabinets.

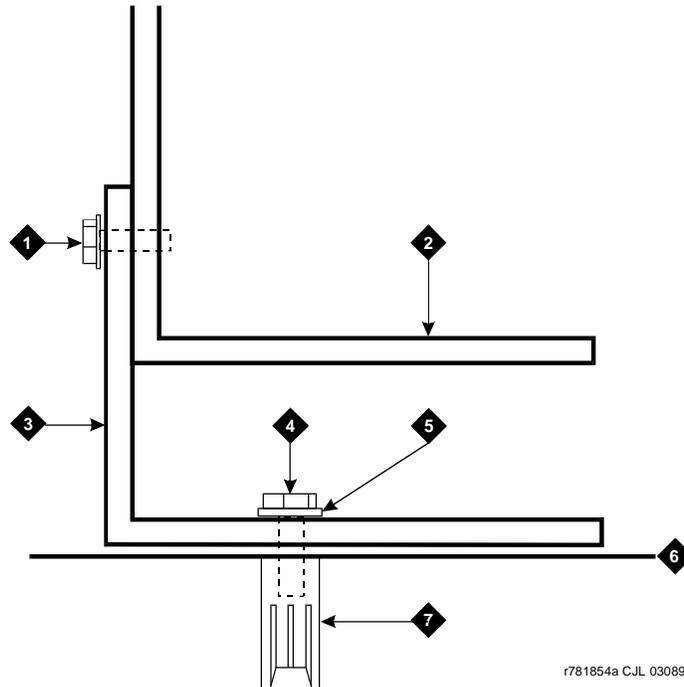


Figure Notes:

- | | |
|---|----------------------------|
| 1. #12-24x1/2-inch Thread Forming Screw | 5. Nylon Insulating Washer |
| 2. Control Cabinet | 6. Concrete Floor |
| 3. Front Mounting Angle | 7. Concrete Floor Anchor |
| 4. Hex Head Bolt | |

Figure 1-28. Front Mounting Angle Location

1. Position the Control Cabinet (J58890L) in the position it is to occupy when the installation is complete. Be sure the cabinet is level.
2. Using a pencil or marker and using the Front Mounting Angle as a template, mark the locations of the two floor mounting holes.
3. Move the cabinet out of the way and drill a hole 0.5-inch (1.3 cm) in diameter and 1.5 inches (3.8 cm) deep at the locations marked in Step 2.

4. Insert a concrete floor anchor (STARR part number 3425) into each hole.
5. Secure the Front Mounting Angle to the floor using the short hex head bolts provided.
6. Move the cabinet back into place.
7. At the rear of the cabinet, remove the two hole plugs from the bottom of the cabinet. See Figure 1-29.
8. Insert a pencil or marker through the holes in the bottom of the cabinet and mark the floor directly beneath each hole.
9. Move the cabinet out of the way and drill a hole 0.5-inch (1.27 cm) in diameter and 1.5 inches (3.8 cm) deep at the locations marked in Step 9.
10. Insert a concrete floor anchor (STARR part number 3425) into each hole.
11. Move the cabinet back into place and align with the Front Mounting Angle.
12. Attach the cabinet to the Front Mounting Angle using the four supplied #12-24 x 1/2-inch (1.27 cm) thread-forming screws. See Figure 1-28.

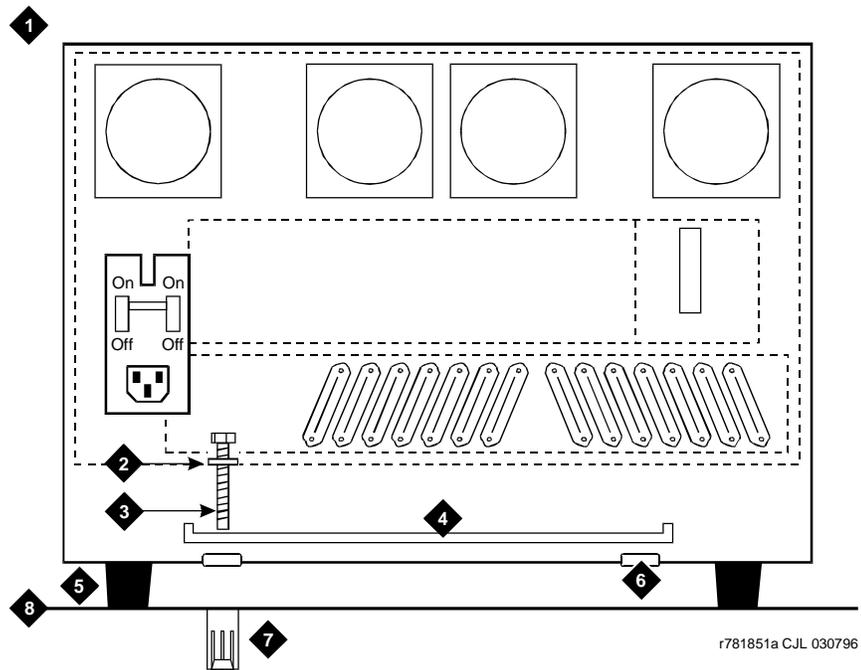


Figure Notes:

- | | |
|---|--------------------------|
| 1. Cabinet | 5. Cabinet Foot |
| 2. Nylon Insulating Washer (2 Required) | 6. Floor Plugs (Remove) |
| 3. Long Hex Head Bolt (2 Required) | 7. Concrete Floor Anchor |
| 4. Stiffener | 8. Concrete Floor |

Figure 1-29. Cabinet Earthquake Mounting — Rear View

13. Lay the supplied Stiffener on the bottom rear of the cabinet and align with the holes in the bottom of the cabinet. See Figure 1-29.
14. Slide a nylon washer onto each of the two supplied long hex head bolts.
15. Insert the bolts through the Stiffener and thread into the concrete floor anchor. Tighten securely.

NOTE:

If critical reliability is installed, the Expansion Control Cabinet sets on the floor, next to Control Cabinet A. Repeat the above procedures.

Install Telecommunications Cabling

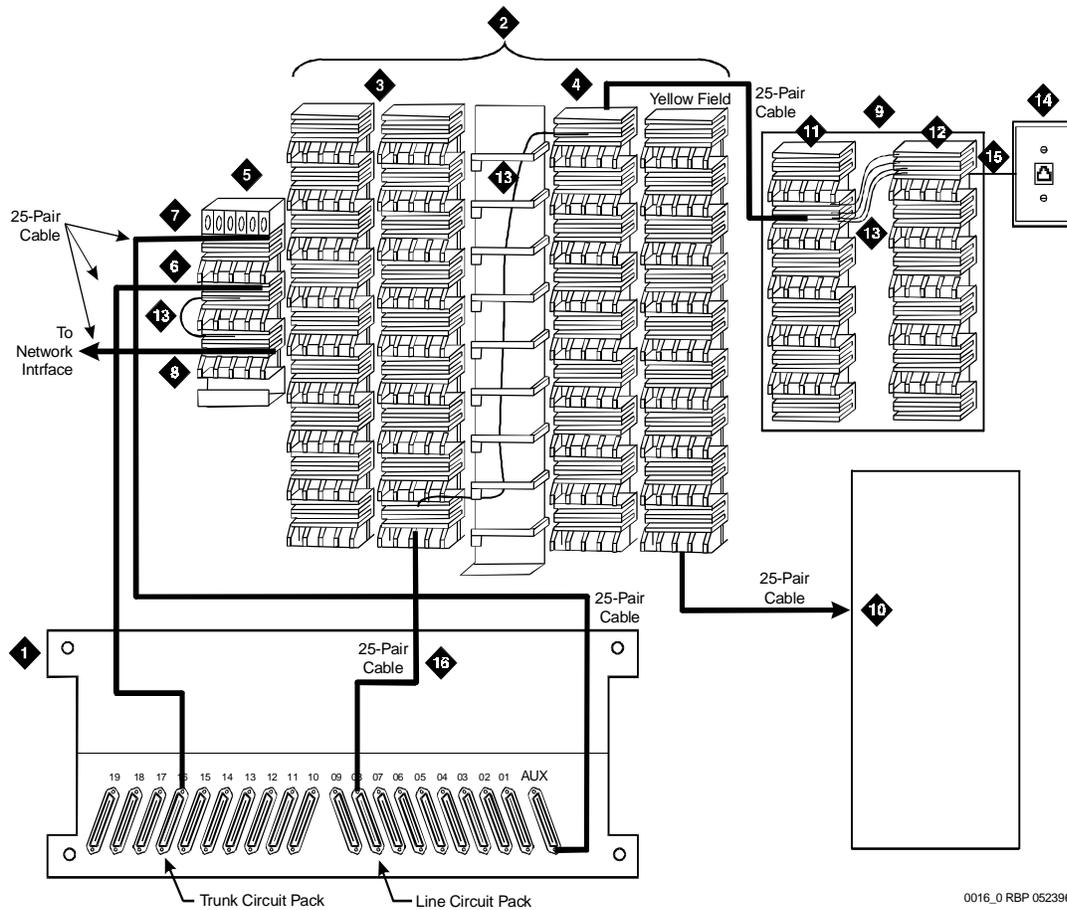
2

Equipment Room Hardware

SYSTIMAX 110-type hardware is used for the Main Distribution Frame (MDF). 110-type hardware is available in two basic types: the 110A and 110P. The 110A requires less wall space than the 110P. The 110P includes horizontal and vertical cable troughs for managing cross-connect cables. The system is connected to the Main Distribution Frame (MDF) with the supplied B25A male to female 25-pair cables. The cables are provided in 10-foot (3 m) and 15-foot (4.5 m) lengths.

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

Figure 2-1 shows a detailed example of cables connecting system cabinets and satellite closets to the Main Distribution Frame (MDF). The figure shows the cross-connections for one example station circuit.



0016_0 RBP 052396

Figure Notes:

- | | |
|---|--------------------------------------|
| 1. Rear of Port Carrier | 9. Satellite Closet |
| 2. Main Distribution Frame (MDF) | 10. Auxiliary Cabinet (Yellow Field) |
| 3. Port Distribution Field (Purple Field) | 11. White Field |
| 4. Station Distribution Field (White Field) | 12. Blue Field |
| 5. Trunk/Auxiliary Field | 13. Cross-Connect Jumpers |
| 6. Purple Field | 14. 103A or Modular Wall Jack |
| 7. Yellow Field | 15. 4-Pair Line Cord |
| 8. Green Field | 16. To Line Circuit Pack |

Figure 2-1. Example MDF Connections

Cross-Connect Fields

Each Main Distribution Frame (MDF) contains a trunk/auxiliary field and a distribution field. The trunk/auxiliary field contains three cross-connect areas:

1. *The green field* terminates the network interface leads from the Central Office (CO) and provides the terminals to cross-connect the leads to the purple or yellow fields as required. A single row of the 110-type terminal block can terminate twenty-four 1-pair, eight 3-pair, or twelve 2-pair trunks.
2. *The purple field* terminates the trunk circuits from the system with WP-90929, List 1 or 3 concentrator cables. Also, 25-pair cables can be used to terminate trunk circuits from the system with each trunk circuit pack connecting to one 25-pair row of the 110-type terminal block. Each terminal block row can terminate twenty-four 1-pair, eight 3-pair, or twelve 2-pair trunks.
3. *The yellow field* provides cross-connect terminals for all miscellaneous leads from the system, such as alarm monitors, emergency transfer relay power, and attendant console power. This field is used for emergency transfer wiring, paging equipment, music sources, and so forth.

The distribution field contains four cross-connect areas:

1. *The purple field* (port field) terminates 25-pair cables from the system. Each line circuit pack connects to one 25-pair row of the 110-type terminal block. One 25-pair cable is required for each line circuit pack.

⇒ NOTE:

The 16-port analog line circuit pack requires an adapter cable to connect from one connector on the system to two 25-pair connectors on a terminal block. Two MET circuit packs require a concentrator cable to connect from two connectors on the system to one 25-pair connector on a terminal block.

2. *The yellow field* (auxiliary field) terminates all 25-pair cables from the auxiliary cabinet and the Application Processor. The yellow field is located in the lower right-hand corner of the distribution field.
3. *The white field* (station field) terminates the station wiring. The white field indicates 3-pair station circuits (eight circuits per 25-pair cable) routed through a satellite closet.
4. *The blue field* (station field) also terminates station wiring. The blue field indicates 3- and/or 4-pair station circuits (eight or six circuits, respectively, per 25-pair cable). The fourth pair, of the 4-pair station circuit provides adjunct power from the cross-connect field on an as-needed basis to terminals within 250 feet (wire length) of the MDF.

Main Distribution Frame

The Main Distribution Frame (MDF) is located directly behind the cabinet stack. Figure 2-2 shows a typical installation using 110A-type terminal blocks.

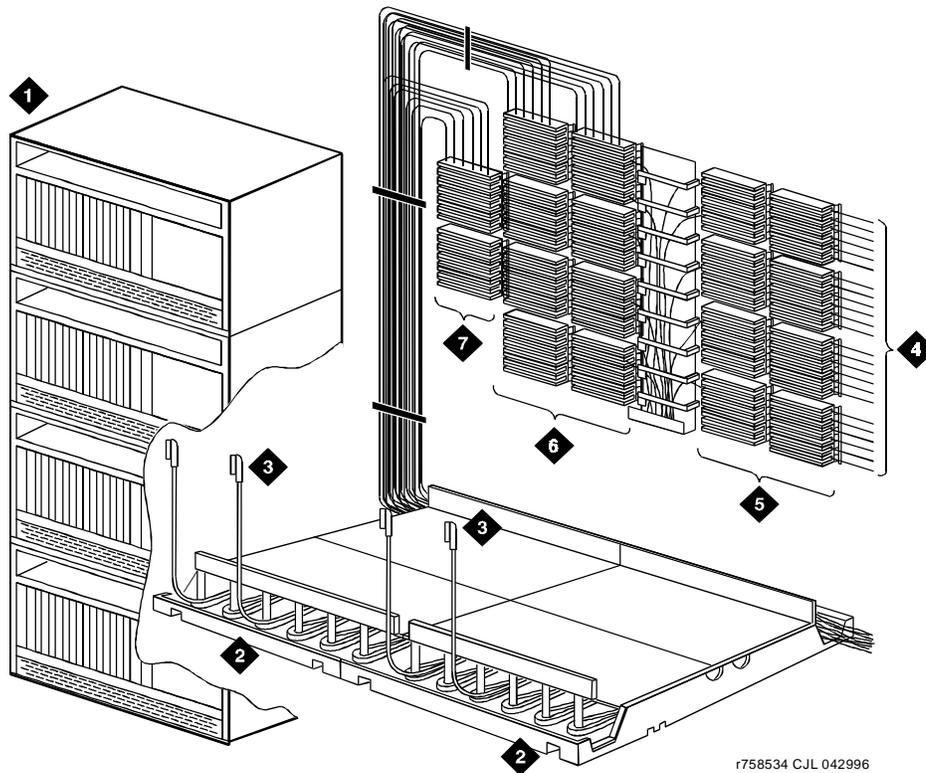


Figure Notes:

- | | |
|------------------------------------|-------------------------------|
| 1. System Cabinets (Stacked) | 5. Station Distribution Field |
| 2. Z113A Cable Slack Manager | 6. Port Distribution Field |
| 3. 25-Pair Cable to System Cabinet | 7. Trunk/Auxiliary Field |
| 4. Station Cables | |

Figure 2-2. Typical 110A-Type Terminal Blocks

Installation Requirements

Sneak Fuse Panels and Emergency Transfer Units

Approximately eight inches (20 cm) of horizontal wall space is required for each column of sneak fuse panels. Horizontal wall space must also be provided for emergency transfer units.

110-Type Hardware

The trunk/auxiliary field and the distribution field are mounted on the same wall. Each 110P-type terminal block is 8.5 inches (21.6 cm) wide. Vertical patch cord troughs are 5.31 inches (13.4 cm) wide and horizontal patch cord troughs are 23 inches (58.4 cm) wide.

Each 110A-type terminal block is 10.81 inches (27.4 cm) wide; however, no horizontal patch cord troughs are used and the blocks are shorter than 110P-type terminal blocks. This allows the 110A-type terminal blocks to be stacked. Therefore, the 110A-type hardware requires less space than the 110P-type hardware on a per-station basis.

Cable Slack Manager

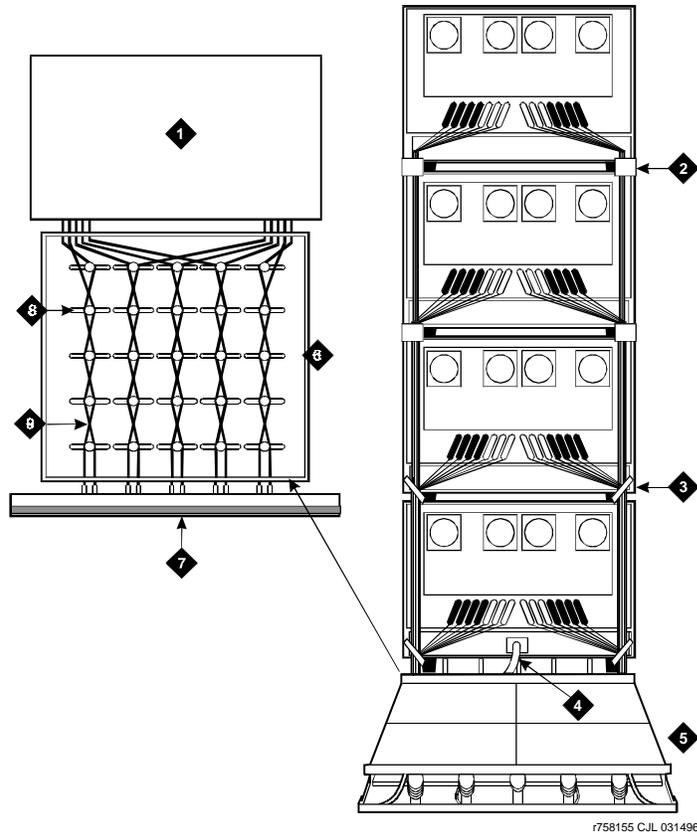
A Cable Slack Manager is 32 inches (81.3 cm) wide. Slack managers are commonly used in installations consisting of cabinet stacks. The quantity of slack managers is determined by dividing the total length of the Main Distribution Frame (MDF) in inches (cm) by 32. A partial number of 0.4 or less should be rounded down, and a partial number of 0.5 or more should be rounded up (for example: 2.4 = 2 Cable Slack Managers and 2.5 = 3 Cable Slack Managers).

NOTE:

Cable clamps are required in installations with Cable Slack Managers. At the rear of the cabinets, on each rear ground plate, install two cable clamps using the screws provided. These clamps hold the 25-pair input/output or Main Distribution Frame (MDF) cables in place.

Install Equipment and Cables

Install the Main Distribution Frame (MDF), the Cable Slack Manager, and the sneak fuse panels. Route the cables from the rear of the cabinet stack to the Main Distribution Frame (MDF) via the Cable Slack Manager. See Figure 2-3.



r758155 C.JL 031496

Figure Notes:

1. Top View of System Cabinets
2. Cable Clamps
3. Cable Ties (Optional)
4. Power Cord
5. Cable Slack Manager
6. Cable Slack Manager (Cover Removed)
7. Main Distribution Frame (MDF)
8. Route Cables Along Path Shown
9. Port Cables

Figure 2-3. Cable Routing Through Cable Slack Manager

Install Sneak Fuse Panels

Sneak current protection is required between the incoming RJ21X or RJ2GX network interface and the system for both trunk and off-premise circuit packs.

The Model 507B sneak current fuse panel, or equivalent, is recommended for sneak current protection. See Figure 2-4. The panel contains two 25-pair connectors, fuse removal tool, and fifty 220029 Sneak Fuses (and two spares).

Connector cables (B25A male to female) connect the network interface to the sneak fuse panel. Also, 157B connecting blocks equipped with SCP-110 protectors can be used for sneak current protection.

Sneak Fuse Panel Ordering Information

Description	Comcode
157B Connecting Block	403613003
SCP-110 Protector	406948976
507B Sneak Current Fuse Panel	107435091
220029 Sneak Current Fuse	407216316

⇒ NOTE:

Sneak current protectors with a rating of 350 mA at 600 volts must be Underwriter's Laboratory (UL) listed for domestic installation and Canadian Standards Association (CSA) certified for Canadian installation.

The 507B includes 52 sneak fuses and two cables and can be ordered using PEC code 63210.

The SCP-110 protectors are used with 110-type hardware and on the 507B Sneak Fuse Panel. The SCP-110 Protectors can be ordered separately and installed on the 157B connecting block. Fifty protectors are required per block.

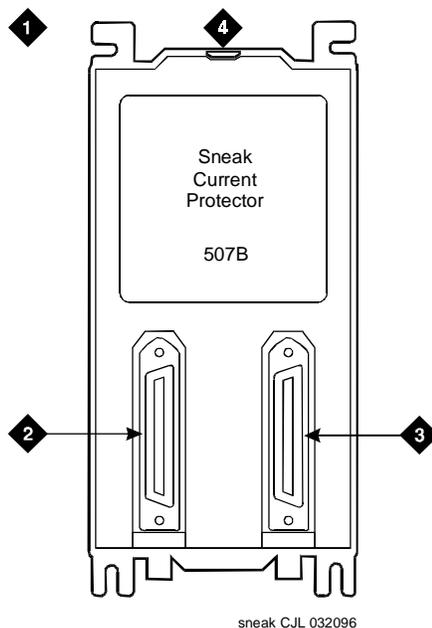


Figure Notes:

- | | |
|--------------------------------|--|
| 1. Sneak Fuse Panel | 3. 25-Pair Female Connector (Out) |
| 2. 25-Pair Male Connector (In) | 4. 220029 Fuses (Inside Panel). Use Small Screwdriver to Pry Top Cover Off |

Figure 2-4. Model 507B Sneak Fuse Panel

1. Locate the 507B near the network interface or the Main Distribution Frame (MDF).
2. Hold the panel against the mounting surface and mark the mounting screw locations. Drill pilot holes at the marked locations and partially install a locally obtained #12 x 3/4-inch screw into the two bottom mounting slots.
3. Slide the sneak fuse panel onto the mounting screws and tighten the screws securely.
4. Install a locally obtained #12 x 3/4-inch screw into the top two mounting slots and tighten securely.
5. Repeat the procedure for each sneak fuse panel.

Table 2-1 is a pinout of the cable wiring and associated fuse numbers.

Table 2-1. Sneak Fuse Connector Pinout

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

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

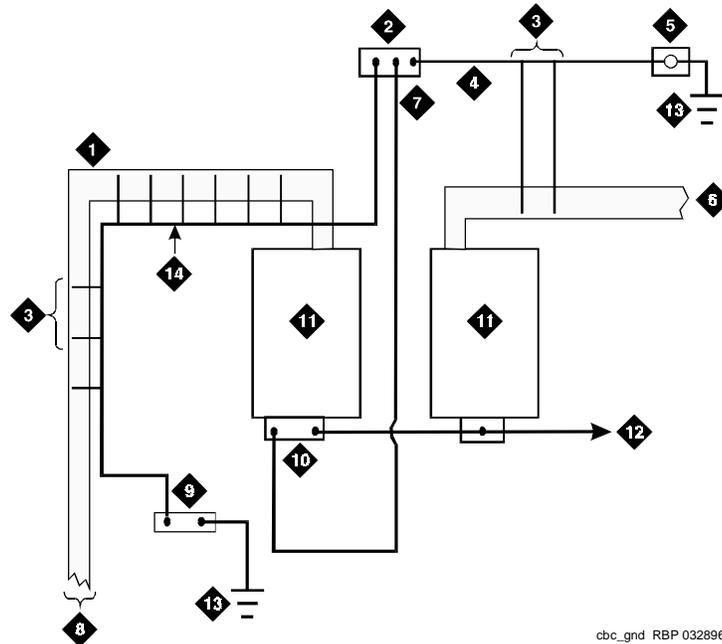
Install Coupled Bonding Conductor

The Coupled Bonding Conductor (CBC) connects to the single-point ground block and runs adjacent to pairs in an associated telecommunications cable. See Figure 2-5 on page 2-11. The mutual coupling between the bonding conductor and the pairs reduces potential differences in terminating equipment.

The conductor consists of a 10 AWG (#25) wire tie-wrapped to the inside wiring cable and terminated at the Coupled Bonding Conductor (CBC) terminal bar at the Main Distribution Frame (MDF). A minimum of 12 inches (30.48 cm) spacing must be maintained between the Coupled Bonding Conductor (CBC) and other power and ground leads.

The 10 AWG (#25) wire must be long enough to reach the telecommunications cables at the rear of the system cabinets, follow these cables to the Main Distribution Frame (MDF), and to terminate at the Coupled Bonding Conductor (CBC).

1. Cut a 10 AWG (#25) wire long enough to reach from the system's single-point ground block or DC power cabinet Ground Discharge Bar to the Main Distribution Frame (MDF) Coupled Bonding Conductor (CBC) block.
2. Connect one end of the 10 AWG (#25) wire to the single-point ground block (or Ground Discharge Bar).
3. Route the wire next to the 25-pair cables connecting to the trunk/auxiliary (purple) field.
4. Tie wrap the 10 AWG (#25) wire to the 25-pair cables.
5. Connect the 10 AWG (#25) wire to the Main Distribution Frame Coupled Bonding Conductor (CBC) ground block.
6. Repeat the above steps for each Coupled Bonding Conductor (CBC) ground wire installed.



cbc_gnd RBP 032896

Figure Notes:

- | | |
|---|---|
| 1. 25-Pair Tip & Ring Cables to Cabinets | 8. To Network Cabinets |
| 2. Coupled Bonding Conductor (CBC) Terminal Block | 9. Battery Plant Ground Discharge Bar for Single-Point Ground |
| 3. Tie Wraps | 10. Cross-Connect Ground Block |
| 4. Cable Shield or Six Spare Pairs | 11. Main Distribution Frame (MDF) |
| 5. Ground on Carbon Block Protector or Equivalent | 12. To Other Cross-Connect Ground Blocks |
| 6. Trunk Cable to Network Interface | 13. Approved Ground |
| 7. 10 AWG (#25) Wire | 14. Coupled Bonding Conductor (CBC) |

Figure 2-5. Coupled Bonding Conductor

Label the Main Distribution Frame

Figure 2-6 shows the graphic symbols used on labels for the system, cross-connections, information outlets, and cables. The labels are color-coded to identify system wiring:

- Green — To Central Office (CO)
- Purple — To system ports
- Yellow — To auxiliary equipment and miscellaneous system leads
- Blue — To information outlets
- White — From Main Distribution Frame to satellite locations (3-pair)

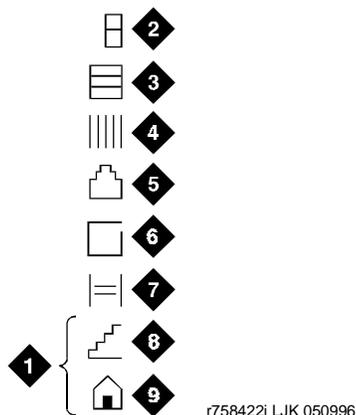


Figure Notes:

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Write Floor or Building Identification on Label as Required 2. Cabinet 3. Carrier 4. Slot | <ol style="list-style-type: none"> 5. Information Outlet 6. Site/Satellite Closet 7. Tie Circuit 8. Floor 9. Building |
|---|--|

Figure 2-6. Label Graphic Symbols and Nomenclature

Each label identifies 2 rows on the terminal block. The upper half identifies the row above it and the lower half identifies the row below it. The labels are inserted into the clear plastic designation strips furnished with the terminal blocks. The strip is snapped in place between the terminal block rows. Label code number 220A (comcode 103970000) contains all of the required labels.

Install Management Terminal and Activate System

3

This chapter contains procedures for installing the management terminal and bringing the system up to a “no red LEDs” state. This chapter details how to:

- Install the Management Terminal
- Activate the System
- Power Up the System
- Use Screens and Commands
- Log in to the System
- Set Country Options
- Change Craft Password
- Set Date and Time
- Set System Maintenance Parameters
- Save Translations
- Initiate DEFINITY AUDIX Power Down/Up Procedures



CAUTION:

To prevent unnecessary trouble tickets, do not enable the system alarms (Alarm Origination feature) until all installation and administration procedures are completed. This chapter describes basic system startup procedures only and is not intended to identify all system alarms or error conditions.

Install Management Terminal

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

In general, the terminal must be connected directly to the system with the shortest possible cable. For maintenance purposes, the terminal must be located in the same equipment room as the system or in sight of the system.

NOTE:

The management terminal in Figure 3-1 is shown for illustration purposes only and does not represent a specific terminal type.

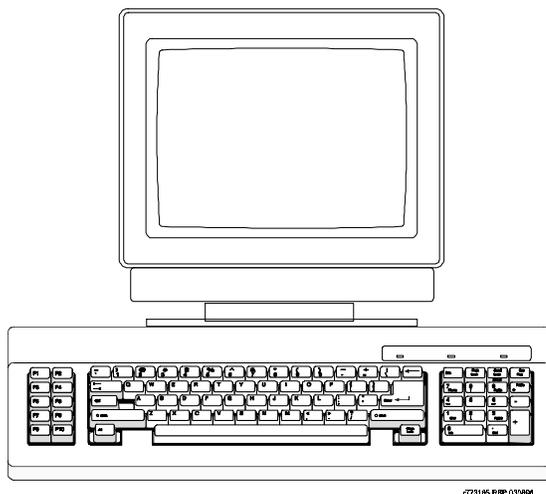


Figure 3-1. Management Terminal and Keyboard

The following types of terminals can be connected to a system:

- 715 BCS
- 2900/715 BCS
- 715 BCS-2

The following notes apply to the installation of the management terminal:

- This chapter emphasizes terminal installation in Release 5 and later systems
- Power for the terminal must be obtained from an appropriate electrical receptacle in the equipment room
- If the terminal is installed to support a DC-powered system, a 116A Isolator (comcode 106005242) must be installed
- An optional printer may be connected using a locally obtained Electronic Industries Association (EIA) cord. See Appendix B, "Option Switch Settings" for printer option switch settings.

Unpack and Inspect

1. Unpack the terminal and inspect for damage. Report all damage according to local requirements.
2. Remove and retain the installation and usage instructions from the carton. These instructions are needed to set up the terminal after it is installed.
3. Set the terminal, keyboard, and all cables onto the equipment room table.

Install a 715 BCS Terminal

1. Plug the keyboard cable into the 6-pin mini-DIN jack on the rear of the terminal. See Callout 2 in Figure 3-2 on page 3-4.
2. Plug the supplied 25-pin Data Terminal Equipment (DTE) cable into the P2 port (center connector) on the rear of the terminal.

Install a 715 BCS Terminal (2900/715)

1. Plug the keyboard cable into the 6-pin RJ-11 jack on the left side of the terminal. An adapter cable is available to convert a 6-pin mini DIN jack to an RJ-11 jack to allow a 715 BCS keyboard to be used (comcode 847489895 or 847489903).
2. Plug the supplied 25-pin Data Terminal Equipment (DTE) cable into the P2 port (right side connector). See Callout 4 in Figure 3-2 on page 3-4.

Install a 715 BCS-2 Terminal

1. Plug the keyboard cable into the modular keyboard jack on the rear of the terminal. See Callout 5 in Figure 3-2. This is a unique cable and must be connected to the 715 BCS-2 only.
2. Plug the supplied 25-pin Data Terminal Equipment (DTE) cable (H600-426) into the COM1 port (right side connector).

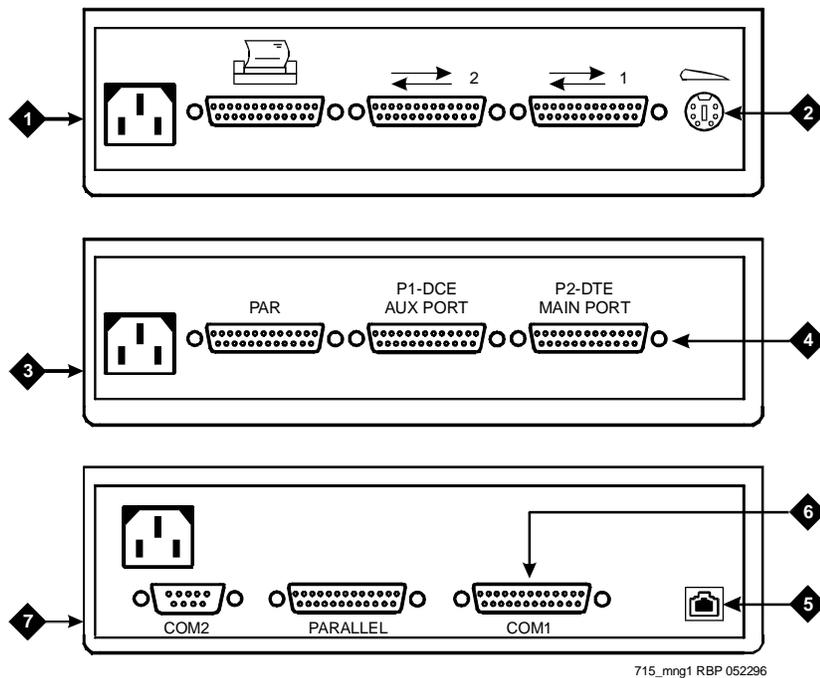


Figure Notes:

- | | |
|--|-------------------------------------|
| 1. Rear Panel of 715 BCS Terminal | 5. Modular Keyboard Jack |
| 2. 6-Pin Mini DIN Connector | 6. COM 1 Port |
| 3. Rear Panel of 2900/715 BCS Terminal | 7. Rear Panel of 715 BCS-2 Terminal |
| 4. P2-DTE Port | |

Figure 3-2. Rear Panels on Management Terminals

Connect to the System

Single-Carrier Cabinets

To connect the management terminal to a Compact Single-Carrier Cabinet, skip to page 3-8.

⇒ NOTE:

If the system is DC-powered, skip to "DC-Powered Systems Only" on page 3-6.

1. Route the 25-pin Data Terminal Equipment (DTE) cable (H600-426) from the terminal to the rear of the Control Cabinet.
2. For a standard reliability system, plug the cable into the **TERM** connector. See Figure 3-3. For a high or critical reliability system, plug the cable into the **DOT** (Duplication Option Terminal) connector.

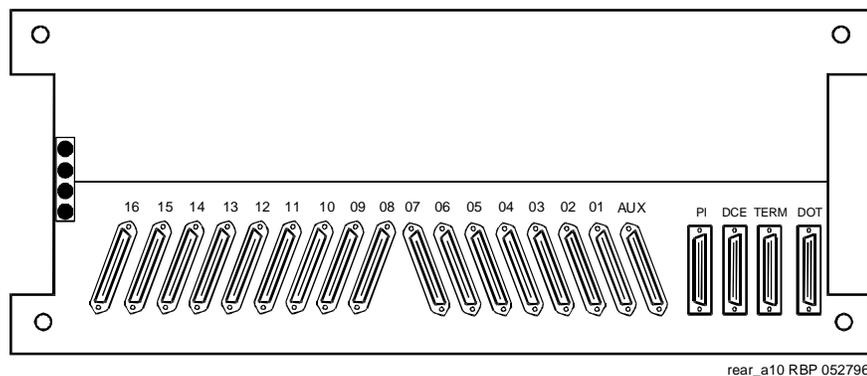


Figure 3-3. Typical Management Terminal Connections

3. Plug the terminal AC power cord into the AC receptacle on the terminal.
4. Plug the opposite end of the power cord into the AC power receptacle.
5. Set the terminal power switch to the **ON** position.

DC-Powered Systems Only

If the terminal is connected to a DC-powered system, a 116A Electronic Industries Association (EIA) Isolator (comcode 106005242) must be installed in series with the 25-pin Data Terminal Equipment (DTE) cable. See Figure 3-4.

1. For a standard reliability configuration, plug the 116A isolator into the **Term** connector on the Control Carrier. See Figure 3-3 on page 3-5.
2. For a high and critical reliability configuration, plug the 116A isolator into the **DOT** (Duplication Option Terminal) connector on the Control Carrier. See Figure 3-3 on page 3-5.
3. Plug the 25-pin Data Terminal Equipment (DTE) cable (H600-426) from the terminal into the end of the 116A isolator.
4. Plug the terminal AC power cord into the AC receptacle on the terminal.
5. Plug the opposite end of the power cord into the AC power receptacle.

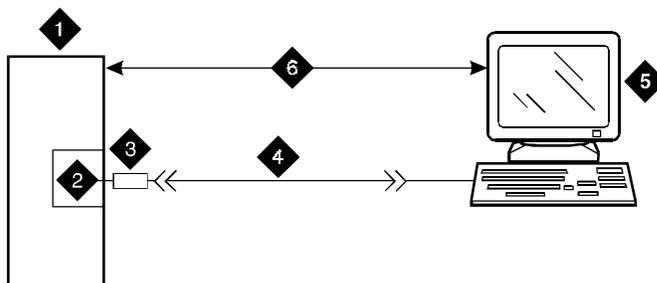


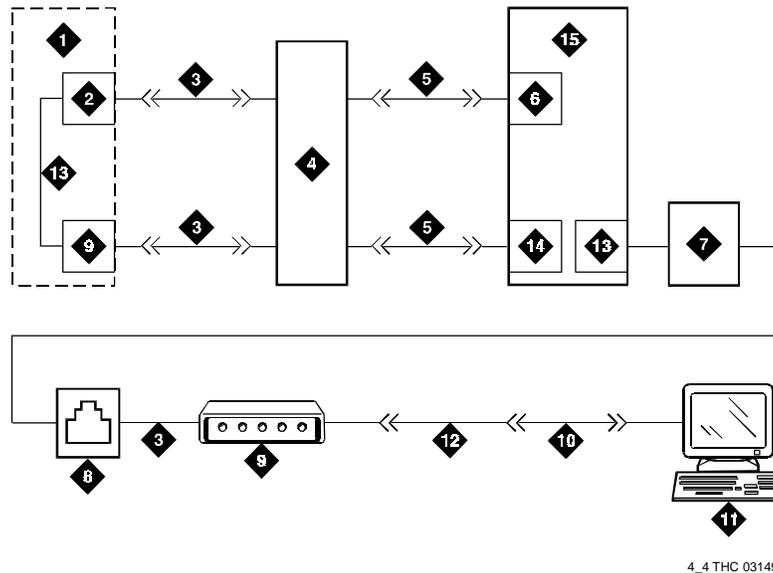
Figure Notes:

- | | |
|---|---------------------------------------|
| 1. Processor Port Network (PPN) | 4. M25B Cable (50 Feet, 18 m Maximum) |
| 2. TERM or DOT Connector (As Appropriate) | 5. Management Terminal |
| 3. 116A Isolator | 6. 50 Feet (18 m) Maximum |

Figure 3-4. Direct Connections to Management Terminal

Remotely Connect Terminal

Typical remote connections are shown in Figure 3-5.



4_4 THC 031496

Figure Notes:

- | | |
|---|--|
| <ul style="list-style-type: none"> 1. External Modem Pool 2. 7400A Data Module 3. Line Cord 4. Main Distribution Frame (MDF) 5. B25A Cable (Male to Female) 6. TN754 Digital Line 4-Wire Circuit Pack 7. Public Switched Telephone Network 8. 103A or Modular Wall Jack 9. Modem 10. A DB9 to DB25 Converter (ED3-1-70, G115) May Be Required on a Personal Computer (PC) | <ul style="list-style-type: none"> 11. Remote Management Terminal or Other Remote Device (Call Detail Recording Utility, CAS+, Property Management System, Basic Call Management System, System Journal Printers, Cost Allocator) 12. M25A Cable 13. Can Be Any of the Following Trunk Circuit Packs: TN747, TN753, TN760, TN767, TN464, TN2147, TN465, and so forth. 14. Can Be Any Analog Line Circuit Pack 15. Single-Carrier Cabinet System |
|---|--|

Figure 3-5. Typical Connections to Remote Devices

Compact Single-Carrier Cabinets

The management terminal was connected to the Compact Single-Carrier Cabinet in Chapter 1, "Install and Connect the Cabinets". To continue the installation:

1. Plug the terminal AC power cord into the AC receptacle on the terminal.
2. Plug the opposite end of the power cord into the AC power receptacle.
3. Set the terminal power switch to the **ON** position.

Set Up Management Terminal

Each management terminal requires a different setup procedure. Refer to the installation and usage instructions packed with the management terminal.

Activate the System



CAUTION:

It may be necessary to reseat circuit packs. To prevent damage from static electricity, always wear an Electromagnetic Compatibility (EMC) wrist strap (comcode 900698226) when handling all system components.

Install Translation Flash Memory Card

1. Verify the write switch on the Translation Flash-Memory Card (Translation Card) is positioned down so the card can be written to. See Figure 3-6 on page 3-9.
2. Insert the Translation Card into the TN777B Network Control circuit pack in the direction indicated by the arrow on the label.

Power Up AC-Powered System

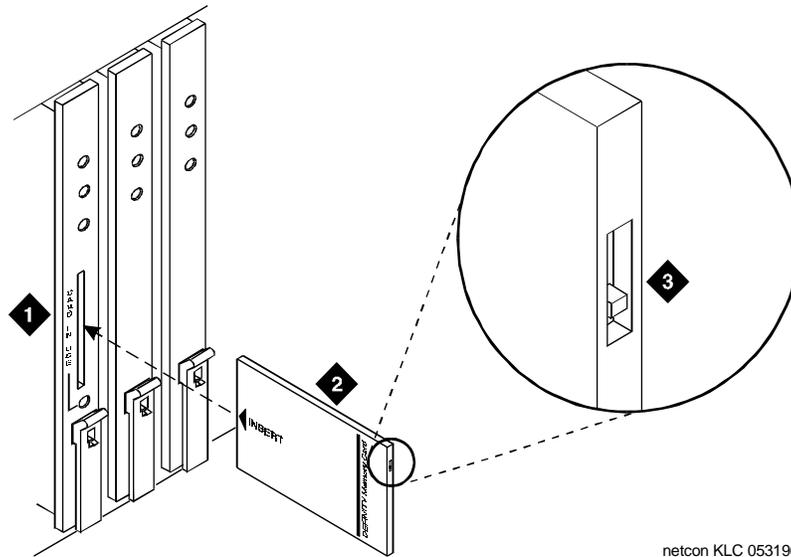
1. Set the associated circuit breakers on the AC power panel **ON**.



NOTE:

If the system is high or critical reliability, power-up the Expansion Port Network (EPN) first, then the Processor Port Network (PPN). *Always power up the control cabinet last.*

2. At the rear of each cabinet, set the circuit breakers to **ON**. This starts the system initialization and test. Some red lights may be on but will be turned off by other procedures in this chapter.
3. Skip to "Verify Messages on Terminal" on page 3-10.



netcon KLC 053196

Figure Notes:

1. Slot in TN777B Network Control Circuit Pack
2. Insert Card in Direction of Arrow
3. Write Switch Positioned Down

Figure 3-6. Write Switch on Translation Card

Power Up DC-Powered System

1. At the DC Battery Cabinet (if installed), set the circuit breaker to **ON**.
2. At the DC Power Cabinet, set the circuit breakers on the associated rectifiers **ON**.
3. At the rear of each Power Distribution Unit (if installed), set the circuit breaker to **ON**.

This starts the system initialization and test. Some red lights may be on but will be turned off by other procedures in this chapter.

If the system is high or critical reliability, power-up the Expansion Port Network (EPN) first, then the Processor Port Network (PPN). *Always* power up the control cabinet *last*.

Verify Messages on Terminal

1. After several minutes, verify all tests pass. Screen 3-1 displays the screen of a typical Release 5vs and Release 5si system.



NOTE:

If any of the terminal messages indicate a test has failed or if the message "spe down mode" is displayed, refer to *DEFINITY Enterprise Communications Server Release 5vs/si Maintenance*, 555-204-105, to clear the trouble, or call your Lucent Technologies representative.

```
INTERNAL REGISTER TEST          PASSED
LOOP DATA TEST                 PASSED
DUART TEST                      PASSED
ROM CHECKSUM TEST              PASSED
CONTROL STATUS TEST            PASSED
DCACHE TEST                    PASSED
ICACHE TEST                    PASSED
WRITE BUFFER TEST              PASSED
BTO TEST                       PASSED
MEM CONFIG TEST                PASSED
MEMORY FUNCTIONAL TEST         PASSED
MEMORY MODULE A STUCK BIT TEST PASSED
MEMORY MODULE A PARITY TEST     PASSED
MEMORY MODULE A BURST TEST      PASSED
MEMORY MODULE B STUCK BIT TEST  PASSED
MEMORY MODULE B PARITY TEST     PASSED
MEMORY MODULE B BURST TEST      PASSED
MEMORY MODULE C STUCK BIT TEST  PASSED
MEMORY MODULE C PARITY TEST     PASSED
MEMORY MODULE C BURST TEST      PASSED
VIRTUAL MEMORY TEST            PASSED
EXCEPTION TEST                 PASSED
TIMER TEST                     PASSED
MTP TEST                       PASSED
SANITY TIMER TEST              PASSED
ADDRESS MATCHER TEST           PASSED
FLASH TEXT CHECKSUM TEST        PASSED
RAM DATA CHECKSUM TEST         PASSED
RESET 4 (REBOOT PERFORMED)
```

Screen 3-1. Typical Start-up Messages

2. About two minutes after REBOOT PERFORMED is displayed, verify the screen displays: Login:

Using Screens and Commands

Screens

The system is administered using screens displayed on the terminal. The screens are used to add, change, display, list data, and to remove system and telephone features. To access a screen, enter a valid system command in response to the `command:` prompt.

Commands

System commands are standard words and phrases instructing the system to perform a specific function. The commands are arranged in a hierarchy of keywords; that is, enter one command to go to a different level. The commands contain three parts: ACTION, OBJECT, and QUALIFIER.

- ACTION is the first part of the command. When `command:` appears on the screen. The ACTION specifies the operation desired. Examples include **add**, **duplicate**, **change**, **remove**, **display**, **list**, and **save**.
- OBJECT is the second part of the command and specifies the particular object to be administered. Typical entries are **hunt-group**, **coverage path**, and **station**.
- QUALIFIER is the last part of the command. It is one or more words or digits used to further identify or complete the OBJECT. For example, *hunt group 15* or *station 3600*, where *15* and *3600* are qualifiers.

An example of the command line required to add a station with extension number *1234* is **add station 1234**. In this example, **add** is the ACTION, **station** is the OBJECT, and **1234** is the QUALIFIER. In the command line, spaces are required between the ACTION, OBJECT, and QUALIFIER.

To save time, enter enough letters for each part of the command to make it unique. For example, if you want to enter the command **change system-parameters country-options**, typing **cha sys coun** is sufficient.

NOTE:

The craft login may not be allowed to perform some of the steps needed to initialize the system. If access is denied to some of these procedures, contact your Lucent Technologies representative for assistance.

Getting Help

Use the HELP key for a list of options and the CANCEL key to back out of any command. Refer to *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302, for detailed procedures.

Log in to the System

1. Verify the screen displays `Login:`
2. Type **craft** and press ENTER.
3. Verify the screen displays `password:`
4. Type **crftpw** and press ENTER. For security reasons, the password is not displayed as it is typed. The system verifies a valid login and password name were entered. If an invalid login or password name was entered, the screen displays `login incorrect:`

In this case, repeat the procedure using the correct login and matching password.

If the system recognizes the login and password name, the screen displays the software version.

5. Verify the screen display is similar to:

```
Terminal Type (513, 715, 4410, 4425, VT220): [715]
```
6. Type the number of the management terminal and press ENTER.
7. Verify the screen displays `command:`

 **NOTE:**

The following sections describe some of the procedures used to access and change certain options. These sections are not intended to replace or modify the instructions provided in *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302.

Set Country Options

Certain country options need to be set to turn red failure indication LEDs off. Refer to Table 3-1 on page 3-14 for a list of country codes.

1. Verify the screen displays `command`:
2. Type **change system-parameters country options** and press ENTER.

A screen similar to Screen 3-2 is displayed on the terminal. The cursor is set on the `Companding Mode` line.

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

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

TONE DETECTION PARAMETERS
      Tone Detection Mode: 5   Dial Tone Validation Timer (msec): 600
      Interdigit Pause: short
```

Screen 3-2. Typical System Parameters Country-Options Screen

3. The default companding mode is Mu-Law. If the country uses A-Law companding, type A-Law. Press ENTER when this information is correct.

Other items eventually need to be entered on this screen, but this is all that must be done to turn the red alarm LEDs off.

Table 3-1. Country Codes

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

4. If all red LEDs do not go off, reseal (unplug and reinsert) any *purple*-labeled circuit packs displaying red LEDs.



CAUTION:

*To avoid a disk crash, **never** reseal the DEFINITY AUDIX System without first shutting it down. Shut down the DEFINITY AUDIX System (and allow the disk to completely spin down) before unplugging the assembly. See Page 3-22, "DEFINITY AUDIX System Power Procedures" for the proper procedures.*

5. If the red LEDs still do not go off, refer to *DEFINITY Enterprise Communications Server Release 5vs/si Maintenance, 555-204-105*.



NOTE:

Ignore the red alarm indication LED on the TN767 or TN464 DS1 circuit pack until after the DS1 circuit pack is administered. Alarms will appear in the Alarm Log when power is applied to the system before all equipment connecting to port circuit packs is installed. Normally, some alarms will be logged when power is applied to the system, but should be resolved quickly. If no equipment is connected to the port circuit packs, alarms associated with these ports can take up to four hours to log, but will clear automatically after all equipment is installed and operating correctly.

Change Craft Password

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



CAUTION:

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

Passwords are changed using the Change Password Screen. See Screen 3-3. "

1. Verify the screen displays `command`:
2. Type **change password craft**. Press ENTER.

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

Password For Login Making Change:

LOGIN BEING CHANGED
      Login Name: craft
LOGIN'S PASSWORD INFORMATION
      Login's Password:
      Reenter Login's Password:
```

Screen 3-3. Typical Change Password Screen

3. Verify the screen displays the Change Password Screen. The cursor is positioned on "Password for Login Making Change:"
4. Type the password assigned to the craft login (assigned as *crftpw* when system is shipped) and press ENTER. The cursor is positioned on "Login's Password:".
5. Enter new password. Valid passwords consist of a combination of from four to eleven alpha or numeric characters. At least one letter and one number must be used in each password.

6. Press ENTER. The cursor is positioned on "Reenter Login's Password:".
7. Type new password again and press ENTER.
8. Verify the screen displays:
command successfully completed
command:

Set Date and Time

1. Verify the screen displays `command:`
2. Type **set time** and press ENTER.
3. Verify the screen displays Set Date and Time Screen.
The cursor is positioned on Day of the Week: field.

```
set time                                     Page 1 of 1

                                DATE AND TIME

DATE

Day of the Week: _____   Month: _____
Day of the Month:  __         Year:  _____

TIME

Hour:  __           Second: xx
Minute:  __
```

Screen 3-4. Typical Date and Time Screen

4. Type the day of the week in English (Sunday through Saturday) and press TAB to move to next field. See Table 3-2 for English day of the week names.

Table 3-2. English Day of the Week Names

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

5. The cursor is positioned on the `Month:` field. Type the current month in English (January through December). See Table 3-3 for English month names. After the month is entered, press `TAB` to move to next field.

Table 3-3. English Month Names

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

6. The cursor is positioned on the `Day of the Month:` field. Type the day of month (1 through 31) and press `TAB` to move to the next field.
7. The cursor is positioned on the `Year:` field. Type the current year and press `TAB` to move to the next field.

8. The cursor is positioned on the `Hour:` field. Type the current hour for a 24-hour clock. See Table 3-4. Press `TAB` to move to the next field.
9. The cursor is positioned on the `Minute:` field. Type current minute (0 through 59). Seconds cannot be set.
10. Press `ENTER` when the information is correct.

Table 3-4. Conversion to 24-Hour Clock

Standard Time		Standard Time	
12-Hour	24-Hour	12-Hour	24-Hour
12:00 midnight	0000	12:00 noon	1200
1:00 am	0100	1:00 pm	1300
2:00 am	0200	2:00 pm	1400
3:00 am	0300	3:00 pm	1500
4:00 am	0400	4:00 pm	1600
5:00 am	0500	5:00 pm	1700
6:00 am	0600	6:00 pm	1800
7:00 am	0700	7:00 pm	1900
8:00 am	0800	8:00 pm	2000
9:00 am	0900	9:00 pm	2100
10:00 am	1000	10:00 pm	2200
11:00 am	1100	11:00 pm	2300

11. Verify the screen displays:


```
command successfully completed
command:
```
12. Type **display time**, and press `ENTER` to verify date/time data.

Set System Maintenance Parameters

If the system does not contain a TN778 Packet Control circuit pack, skip to “Save Translations” on the next page.

1. Verify the terminal screen displays command:
2. Type **change system-parameters maintenance** and press ENTER. Verify the screen displayed is similar to Screen 3-5. The screen shows default values and the cursor is positioned on `Product Identification:` line.

```
change system-parameters maintenance                               Page 1 of 2
                                                                MAINTENANCE-RELATED SYSTEM PARAMETERS
OPERATIONS SUPPORT PARAMETERS
    Product Identification: 1000000000
    First OSS Telephone Number:                               Abbrev Alarm Report?
    Second OSS Telephone Number:                             Abbrev Alarm Report?
    Alarm Origination to OSS Numbers: Neither
    Cleared Alarm Notification? n
    Restart Notification? n
    Test Remote Access Port? n
    CPE Alarm Notification Level: none
    Customer Access to INADS Port? n
    Repeat Dial Interval (mins): 7
SCHEDULED MAINTENANCE
    Start Time: 01 : 00                                       Stop Time: 06 : 00
    Daily Maintenance: daily                                   Save Translation: daily
    Control Channel Interchange: no                           System Clocks Interchange: no
    SPE Interchange: no
```

Screen 3-5. Typical Display System-Parameters Maintenance Screen (Page 1)



CAUTION:

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

3. Move the cursor by pressing TAB to move down the screen from field to field and enter **y** in the `Packet Bus Activated?` field to indicate a TN778 circuit pack is installed. This is the only field needing change on this screen to turn the red LEDs off.
4. Press ENTER when the information is correct.

Save Translations

The **save translation** command copies the current system translations onto the translation card. For standard reliability systems, one translation card plus one backup is required. For high or critical reliability systems, two translation cards plus two backups are required.

**CAUTION:**

Do not attempt to save translations on the orange-labeled, 10 MB memory card. Use the white translation card.

The following procedure can be used to save system translations on the original card(s) and can also be used to make a backup card or cards:

1. Verify the screen displays `command:`
2. Type **save translation** and press ENTER.
3. After several minutes, a display similar to Screen 3-6 appears.

```
save translation                               SPE A
                                         SAVE TRANSLATION
Processor      Command Completion Status      Error Code
SPE_A          Success                        0
SPE_B          Success                        0

Command successfully completed
command:
```

Screen 3-6. Typical Save Translation Screen

4. Verify a **0** is displayed in the Error Code column for each Switch Processing Element (SPE). A **0** indicates the save translation was successfully completed. If a **0** did not appear, the save translation did not complete. Record the "error code number" and the "error message" and notify your Lucent Technologies representative.
5. Remove the original translation card(s) from the TN777B(s) and replace with backup card(s).
6. Repeat Steps 1 through 4 for the backup card(s).

7. Remove the backup translation card(s) from the TN777B and replace with the original translation card(s).
8. Label the backup card(s) with the date and time of the backup. Store the backup in a secure place.

Add Translations

1. Refer to *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302, to add new terminals to the system.
2. Enter the save translations command at the `command:` prompt to merge these translations with the contents of Flash memory.

Installation Completion

After the system is activated, it must be tested for proper operation. See Chapter 4, "Test the System".

After completion of the system tests, the telephones and other equipment must be installed. See Chapter 5, "Install and Wire Telephones and Other Equipment".

The system is then administered by adding the customer data to match the wiring, telephones, and other equipment. See *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302.

After the system is administered, the telephones and other equipment are tested. See Chapter 6, "Test Telephones and Other Equipment."

Logoff the System

Log off the system to prevent unauthorized changes to data. To log off:

1. Enter **logoff** at the `command:` prompt.
2. The `login:` prompt appears on the screen.

DEFINITY AUDIX System Power Procedures

Manually Power Down AUDIX System

A yellow caution sticker on the system's power unit notifies technicians to shut down the DEFINITY AUDIX System prior to powering down the system.

1. Using a pointed object, such as a paper clip or pen (do not use a pencil), press the Boot/Shutdown button. The button is located at the top right portion of the front panel.
2. Hold the Boot/Shutdown button in until the LCD display flashes the message `MSHUT`.
3. Release Boot/Shutdown button.



NOTE:

The DEFINITY AUDIX System takes about five minutes to shut down. The "heartbeat" indication on the display continues to flash.

Manually Power Up AUDIX System

1. Using a pointed object such as a paper clip or a pen (do not use a pencil), press the Boot/Shutdown button.
2. Hold the Boot/Shutdown button in until the display indicates the message, `BTEST`, steady on.
3. Release the Boot/Shutdown button. The DEFINITY AUDIX System takes approximately five minutes to power up.

- The display has the following sequence of steady on messages:
 - `OSINIT`
 - `OS`
 - `AINIT`
 - `ADX`
- The DEFINITY AUDIX System is now powered up. When the system is in the active state, the display indicates `ADX`, and the red LED is off.



NOTE:

Upon the system powering up, the DEFINITY AUDIX System automatically reboots. This sequence may show an `MD` or `MJ ADX` alarm in the display until the system has powered up. When the system has completed its power up sequence, the DEFINITY AUDIX System display reads: `ADX`.

Test the System

4

The following tests provide verification of the Time Division Multiplexing (TDM) cables, terminators, and the Inter-Cabinet Cables (ICC). If a FAIL Result code is seen or other problems are indicated, check these cables. If problems persist, refer to *DEFINITY Enterprise Communications Server Release 5vs/si Maintenance*, 555-204-105.

The status of the system should be reviewed first, followed by testing the tone-clock, Time Division Multiplexing (TDM) bus, and duplication link in the Processor Port Network (PPN). Test the expansion interfaces, tone-clock(s), Time Division Multiplexing (TDM) buses, and duplication in the Expansion Port Networks (EPNs).

 **NOTE:**

Circuit pack positions are usually given by cabinet, carrier, and slot. They may also be given by port. The term “cabinet” refers to a stack of Single-Carrier Cabinets making up one port network. A port network is defined as a group of cabinets connected together with one Time Division Multiplexing (TDM) bus.

 **CAUTION:**

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

Check System Status for Each Cabinet

The system status may suggest problem areas. Specific tests later provide more specific diagnostic information.

1. Verify the terminal screen displays:
 command:
2. Type **status system all-cabinets** and press ENTER.
3. Verify the screen displays system status screens similar to Screen 4-1.

```

status system all-cabinets                               Page 1 of 3  SPE A
                SYSTEM STATUS CABINET 1

SPE  MODE                SELECT  SPE ALARMS  TONE/  SERVICE SYSTEM SYSTEM
1A   active              SWITCH  MAJOR MINOR  CLOCK STATE  CLOCK  TONE
1B   maint/init         auto   0    0    1A   in   standby standby
                                auto   0    0    1B   in   active  active

SERVICE  CONTROL  DEDICATED                SERVICE  BUS ALARMS  BUS  OPEN BUS
TDM STATE  CHANNEL  TONES                STATE  MAJOR MINOR  FAULTS LEADS
1A   in    y      n      1
1B   in    n      y

EMERGENCY  SELECT                SERVICE  CABINET
TRANSFER  SWITCH  EXP-LINK  STATE  MODE  TYPE
1A        auto-on  01A01-02A01  in   standbySCC
1B        auto-on  01B01-02B02  in   active
    
```

Screen 4-1. Sample System Status Screen for Cabinet 1

NOTE:

In the first section of the report, all Tone-Clocks should report a SERVICE STATE of in.

In the second section of the report, all Time Division Multiplexing (TDM) buses should report a SERVICE STATE of in.

In the third section of the report, all expansion links should report a SERVICE STATE of in, and, under EXP-LINK, the cabinet/carrier/slot numbers for the fiber optic cables are listed. For example, 01A01 in Screen 4-2 refers to cabinet stack 01, carrier A, and slot 01.

```

status system all-cabinets
SYSTEM STATUS CABINET 2
Page 2 of 3 SPE A

SPE MODE
1A active
1B maint/init

SELECT SWITCH
auto 0 0
auto 0 0

SPE ALARMS MAJOR MINOR
2A 2A in active active
2B 2B in standby standby

TONE/ CLOCK
2A 2A in active active
2B 2B in standby standby

SERVICE STATE
2A 2A in active active
2B 2B in standby standby

SERVICE SYSTEM SYSTEM
2A 2A in active active
2B 2B in standby standby

SERVICE CONTROL DEDICATED SERVICE BUS ALARMS BUS OPEN BUS
TDM STATE CHANNEL TONES PKT STATE MAJOR MINOR FAULTS LEADS
2A in y n 2
2B in n y

EMERGENCY TRANSFER
2A auto-on

SELECT SWITCH
auto-on

EXP-LINK
01A01-02A01
01B01-02B02

SERVICE STATE
in
in

MODE
standby
active

CABINET TYPE
MCC

```

Screen 4-2. Sample System Status Screen for Cabinet 2

NOTE:

In the first section of the report in Screen 4-2, all Tone-Clocks should report a SERVICE STATE of in.

In the second section of the report, all Time Division Multiplexing (TDM) buses should report a SERVICE STATE of in.

In the third section of the report, all expansion links should report a SERVICE STATE of in, and, under EXP-LINK, the cabinet/carrier/slot numbers for the fiber optic cables are listed.

Check Circuit Pack Configuration

The list configuration report provides a list of circuit packs plugged into the system and recognized by the software.

1. Verify the screen displays `command`:
2. Type **list configuration all** and press ENTER.
3. Verify the screen displays list configuration similar to Screen 4-3. Make sure the software is communicating with each circuit pack (except power supply circuit packs). Wait until after the diagnostic tests later in this chapter before attempting to correct any problems.
4. Note any displays for boards that say in the VINTAGE column: NO BOARD or CONFLICT.

```
list configuration all                               Page 1  SPE B
                                                    SYSTEM CONFIGURATION
Board
Number  Board Type          Code      Vintage   Assigned Ports
u=unassigned t=tti
01A01   EXPANSION INTRFC        TN570B   000001
01A03   DID TRUNK               TN459    000004   u u u u u u u u
01A04   DID TRUNK               TN436    000004   u u u u u u u u
01A07   TIE TRUNK               TN439    000004   u u u u
01A09   ANNOUNCEMENT           TN750    000007   01 02 03 04 05 06 07 08
                                           09 10 11 12 13 14 15 16
01B01   EXPANSION INTRFC        TN570    000009
01B02   TONE DETECTOR           TN748D   000002   01 02 03    05 06 07
01B03   DATA LINE              TN726    000012   u u u u u u u u
01B08   BRI LINE                TN556B   000003   u u u u u u u u
                                           u u u u u u u u
01C01   ANALOG LINE             TN746B   000006   u u u u u u u u
                                           u u u u u u u u
press CANCEL to quit -- press NEXT PAGE to continue
```

Screen 4-3. Sample System Configuration Screen — Page 1

NOTE:

A “u” indicates unassigned ports and a number indicates the port has been translated.

Check Circuit Pack Configuration

```
configuration all Page 4
                                SYSTEM CONFIGURATION
Board
Number   Board Type           Code   Vintage   Assigned Ports
                                u=unassigned t=tti
02B01    TONE/CLOCK                 TN780   000005
02B02    EXPANSION INTRFC          TN570   000009
02B04    ANALOG LINE                TN2135  000003   u u u u u u u u
                                u u u u u u u u
02B06    DIGITAL LINE              TN2181  000001   u u u u u u u u
                                u u u u u u u u
01A      DUPLICATION INTRFC        TN772   000012
01A      PROCESSOR                  TN790   000004
01A      MEMORY EXPANSION          000005
01A      NETWORK CONTROL           TN777B  000018   u u u u
01A      TONE/CLOCK                TN2182  000002   01 02 03 04 05 06 07 08
01B      DUPLICATION INTRFC        TN772   000013
01B      PROCESSOR                  TN790   000004
01B      MEMORY EXPANSION          CPP1    000005

                                press CANCEL to quit -- press NEXT PAGE to continue
```

Screen 4-4. Sample System Configuration Screen — Page 4

```
list configuration all SPE B
                                SYSTEM CONFIGURATION
Board
Number   Board Type           Code   Vintage   Assigned Ports
                                u=unassigned t=tti
01B      NETWORK CONTROL           TN777B  000018   u u u u
01B      TONE/CLOCK                TN2182  000002   01 02 03 04 05 06 07 08
02A      MAINTENANCE                TN775B  000001
02A      TONE/CLOCK                TN780   000005

Command successfully completed
```

Screen 4-5. Sample System Configuration Screen — Page 5

Test Time Division Multiplexing Bus in Processor Port Network

1. Verify the screen displays `command` :
2. Type **test tdm port-network 1** and press ENTER.
3. Verify the screen displays the results of this test. See Screen 4-6.

```
test tdm port-network 1 SPE B
                                TEST RESULTS
Port      Maintenance Name  Alt. Name  Test No.  Result      Error Code
PN 01A    TDM-BUS                294       PASS
PN 01A    TDM-BUS                296       PASS
PN 01A    TDM-BUS                297       ABORT      1005
PN 01B    TDM-BUS                294       PASS
PN 01B    TDM-BUS                296       ABORT      1005
PN 01B    TDM-BUS                297       PASS
Command successfully completed
Command:
```

Screen 4-6. Sample Test Results for Time Division Multiplexing Bus Port Network 1

4. If the result is `FAIL` for any test, check the connectors of the Time Division Multiplexing (TDM) bus cables in Processor Port Network (PPN) 1.

Test Tone-Clock Boards

Testing the Tone-Clock board also detects problems with the Time Division Multiplexing (TDM) bus cables.

1. Verify the screen displays `command` :
2. Type **test tone-clock 1a** and press ENTER.
3. Verify the screen displays test results similar to Screen 4-7.

```
test tone-clock 1a                                     SPE A
                                                    TEST RESULTS
Port      Maintenance Name  Alt. Name  Test No.  Result      Error Code
01A       TONE-BD                 46         PASS
01A       TONE-BD                 52         PASS
01AXX01   ETR-PT                  42         PASS
01AXX01   ETR-PT                  43         PASS
01AXX02   ETR-PT                  42         PASS
01AXX02   ETR-PT                  43         PASS
01AXX03   ETR-PT                  42         PASS
01AXX03   ETR-PT                  43         PASS
01AXX04   ETR-PT                  42         PASS
01AXX04   ETR-PT                  43         PASS
01AXX05   ETR-PT                  42         PASS
01AXX05   ETR-PT                  43         PASS
01AXX06   ETR-PT                  42         PASS
01AXX06   ETR-PT                  43         PASS

Command successfully completed

Command:
```

Screen 4-7. Sample Test Results for Tone-Clock 1A

Test Expansion Interface Circuit Packs

Check each Expansion Interface (EI) circuit pack in the system.

1. Verify the screen displays `command`:
2. Type **test board xxx** where **xxx** is the cabinet, carrier, and slot for an Expansion Interface (EI) circuit pack in the system, and press ENTER.



NOTE:

Labels on the port network and carrier and on the strip under the circuit pack contain this information.

3. Verify the screen displays test results similar to Screen 4-8. This example is for board 2a01.

TEST RESULTS					
Port	Maintenance Name	Alt. Name	Test No.	Result	Error Code
02A01	EXP-INTF		237	PASS	
02A01	EXP-INTF		238	PASS	
02A01	EXP-INTF		240	PASS	
02A01	EXP-INTF		241	PASS	
02A01	EXP-INTF		244	PASS	
02A01	EXP-INTF		316	PASS	

Screen 4-8. Sample Test Results for Expansion Interface Board 2A01

4. If any result is FAIL, check the connections for the fiber optic link.
5. Repeat Steps 2 and 3 for each Expansion Interface circuit pack.

Test Time Division Multiplexing Bus for Each Expansion Port Network

Check each Time Division Multiplexer (TDM) bus for each Expansion Port Network (EPN) in the system.

1. Verify the screen displays `command`:
2. Type **test tdm port-network 2** and press ENTER.
3. Verify a test results screen similar to Screen 4-9 is displayed:

```
test tdm port-network 2                                     SPE B

                                TEST RESULTS

Port      Maintenance Name  Alt. Name  Test No.  Result      Error Code
-----
PN 02A    TDM-BUS                  294       PASS
PN 02A    TDM-BUS                  296       PASS
PN 02A    TDM-BUS                  297       ABORT      1005
PN 02B    TDM-BUS                  294       PASS
PN 02B    TDM-BUS                  296       ABORT      1005
PN 02B    TDM-BUS                  297       PASS

Command successfully completed

Command:
```

Screen 4-9. Sample Test Results for Time Division Multiplexing Bus Port Network 2

4. If result is `FAIL` for any test, check the connectors of the Time Division Multiplexing (TDM) bus cables in Processor Port Network (PPN) 2.
5. Repeat these steps for each Expansion Port Network (EPN) to check the Time Division Multiplexing (TDM) bus cables.

Test Tone-Clock for Each Expansion Port Network

1. Verify the screen displays `command` :
2. Type **test tone-clock 2A** where **2A** is the cabinet and carrier number for one of the Tone-Clocks installed, and press ENTER.

If any result is `FAIL`, check the associated Time Division Multiplexing (TDM) bus cables and intercabinet cables in the Expansion Port Network.
3. Repeat Step 2 for each installed Tone-Clock circuit pack.

Test Tone-Clock Interchange for Each Expansion Port Network

If the system is critical reliability, test the Tone-Clock interchange for each Expansion Port Network (EPN).

1. Verify the screen displays `command` :
2. Type **status system all-cabinets** and press ENTER. This displays the location of the Standby Tone-Clock.
3. Type **set tone-clock xx** where **xx** is the Port-Network/Carrier for the Standby Tone-Clock. Press enter.
4. Type **status system all-cabinets** and press ENTER.
5. Verify the duplicated Tone-Clock is active using the information displayed on the screen.

If any problems are indicated, check the Time Division Multiplexing (TDM) cables in the associated Expansion Port Network (EPN).

Test Expansion Interface Exchange for Each Expansion Port Network

If the system is critical reliability, test the expansion interface exchange for each Expansion Port Network (EPN).

1. Verify the screen displays `command`:
2. Type **status system all-cabinets** and press ENTER.

This displays the standby expansion link. See Screen 4-10.

```
status system all-cabinets                                     SPE B
                                     SYSTEM STATUS CABINET 1
EMERGENCY   SELECT          SERVICE          CABINET
TRANSFER    SWITCH         EXP-LINK      STATE     MODE     TYPE
1A          unavail        01A01-02A01  in       standby  MCC
1B          auto-on       01B01-02B02  in       active
-
-
Command successfully completed
Command:
```

Screen 4-10. Sample of System Status before Expansion Link is Set

3. Type **set expansion-link xxxx** where **xxxx** is the either one of the cabinet, carrier, and port locations of the standby expansion link.
4. Verify the screen displays:
`Command successfully completed`
`Command:`
5. Type **status system all-cabinets** and press ENTER. A screen similar to Screen 4-11 is displayed.

```
status system all-cabinets                                SPE B
                                     SYSTEM STATUS CABINET 1
EMERGENCY   SELECT      SERVICE      CABINET
TRANSFER    SWITCH      EXP-LINK   STATE     MODE     TYPE
1A          auto-on     01A01-02A01  in       active   MCC
1B          auto-on     01B01-02B02  in       standby
```

Screen 4-11. Sample of System Status after Expansion Link is Set

6. Verify the `MODES` of the expansion links have changed.
7. If any problems are indicated, check the Time Division Multiplexing (TDM) cables and the inter-cabinet cables (ICC) in the associated Expansion Port Network (EPN).

Check Circuit Pack Configuration

1. Verify the screen displays `command`:
2. Type **list configuration all** and press `ENTER`.
3. Verify all circuit packs are listed in the reports.

Refer to *DEFINITY Enterprise Communications Server Release 5vs/si Maintenance*, 555-204-105, to resolve any discrepancies.

Save Translations, if Required

If any administration changes have been made, save and make a back up copy of the translations. See Chapter 3, "Install Management Terminal and Activate System" for instructions.

Next Steps

1. Install the telephones and other equipment. These procedures are in Chapter 5, "Install and Wire Telephones and Other Equipment."
2. Administer the features, telephones, and other equipment according to customer data found on the provisioning plan. Use the procedures in *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302.
3. After the system is administered, test the telephones and other equipment using Chapter 6, "Test Telephones and Other Equipment."

 **NOTE:**

It may be more efficient to install each hardware component, administer it, and test it before going on to install another component. As an example, install the attendant console using the procedures in Chapter 5, "Install and Wire Telephones and Other Equipment," administer it using the procedures in *DEFINITY Communications System Release 5 Implementation*, 555-230-302, and test it using the procedures in Chapter 6, "Test Telephones and Other Equipment."

 **CAUTION:**

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

Install and Wire Telephones and Other Equipment

5

The wiring procedures are the same for most of the DEFINITY System telephones and other equipment. This section provides wiring examples of these similar installation procedures. These are examples only and actual wiring procedures may vary at each site. All wiring pinouts for all circuit packs in this chapter can be found in the tables at the end of this chapter.

Voice and Data Terminals

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

Telephone Connection Example

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

The attendant console always requires auxiliary (adjunct) power (-48 VDC). Power is connected to the console through Pins 7 and 8 of the information outlet. See Figure 5-2 on page 5-3. Only three consoles can be powered by the system through the **AUX** connector. When possible, the primary console should be powered from the system so it has the same power failure backup as the system.

The maximum cabling distance for the console powered from the cabinet is 350 feet (100 meters).

The general steps to connect a telephone are:

1. Choose a device to connect such as a 302C1 Attendant Console.
 2. Choose the port circuit pack (from Table 5-3 on page 5-11) and its carrier and slot number. Such as: TN754B, Cabinet 1, Carrier C, Slot 02.
 3. Choose a port circuit on the port circuit pack. Such as Port 05.
-

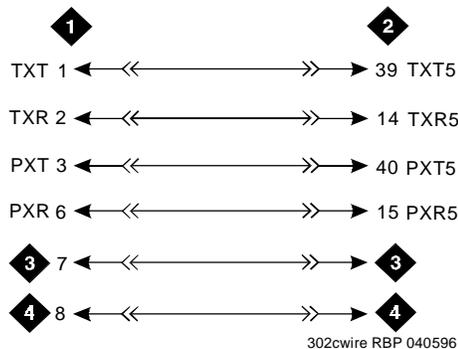


Figure Notes:

- | | |
|--|-------------------------------|
| 1. 302C1 Attendant Console | 3. -48 VDC From Adjunct Power |
| 2. TN754B Digital Line Circuit Pack
(Position 1C02) | 4. Ground From Adjunct Power |

Figure 5-1. 302C1 to TN754B Wiring

4. Install cross-connect jumpers to wire the terminal to the port circuit pack. See Figure 5-1. This pinout is for the TN754B Digital Line circuit pack.
5. For terminals needing adjunct power, wire -48 VDC and ground to appropriate pins on the terminal. See Figure 5-2 on page 5-3.

Connect Adjunct Power

The 400B2 adapter is convenient for connecting local -48 VDC power to a modular plug. See Figure 5-2.

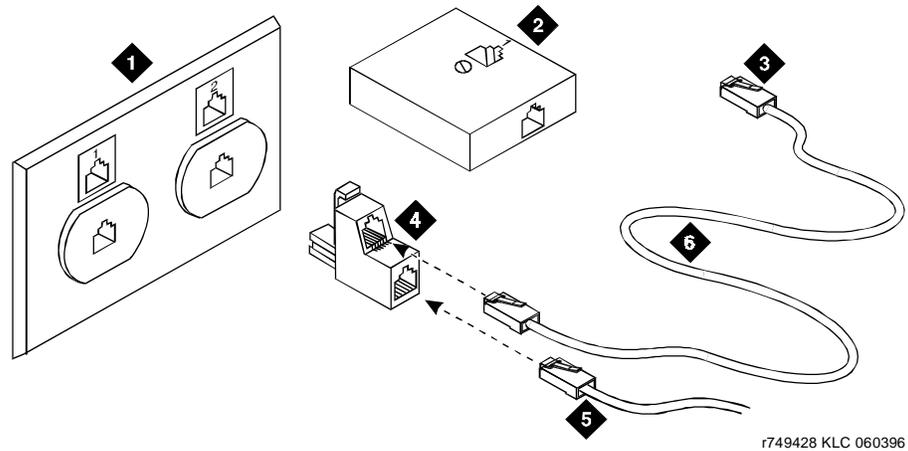


Figure Notes:

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

Figure 5-2. 400B2 Adapter Connecting to a Modular Plug

Adjunct power can be provided from the equipment room or equipment closet with 1145B power unit. See “Install the 1145B Power Supply” on page 5-34.

Each port network can provide power for up to three attendant consoles. This source of power is preferred for the attendant consoles because it has the same battery backup as the system. See Table 5-2 on page 5-9.

Adjunct power can be provided locally at the telephone or console by the 1151A Power Supply. See “Install the 1151A Power Supply” on page 5-44.

Analog Station or 2-Wire Digital Station Example

This example is typical of the 2-wire digital stations (603E, 84xx, 94xx, 302C1), 2-wire analog stations (500, 2500, 71xx), analog Central Office (CO) trunks, Direct Inward Dial (DID) trunks, and external alarms. See Figure 5-3.



Figure Notes:

1. 2500-Type Analog Station
2. TN2183 Analog Line Circuit Pack, Position 1C01

Figure 5-3. 2500-Type Analog Telephone Wiring

1. Choose a peripheral to connect (such as a 2-wire digital station).
2. Choose the port circuit pack to use and its carrier and slot number (from Table 5-3 on page 5-11). For example: TN2183 Analog Line, Cabinet 1, Carrier C, Slot 1.
3. Choose a port circuit on the port circuit pack, for example port 3.
4. Install cross-connect jumpers to connect the pins from the 2-wire digital station to the appropriate pins on the port circuit pack.
5. Administer using *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302.

Analog Tie Trunk Example

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

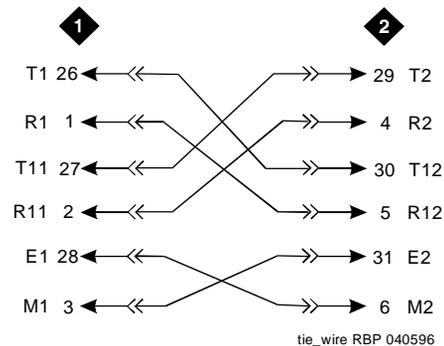


Figure Notes:

1. External Trunk or Adapter
2. TN760 Tie Trunk Circuit Pack (Position 1C05)

Figure 5-4. Analog Tie Trunk Wiring

1. Set the option switches on the port circuit pack (TN760) as described in Appendix B, "Option Switch Settings".
2. Install cross-connect jumpers to connect the pins from the tie trunk circuit pack to the appropriate leads on the external tie trunk. Names of the tie trunk leads must be determined from the manufacturer or supplier of the external trunk circuit. The example in Figure 5-4 shows a DEFINITY System tie trunk connected to a DEFINITY System tie trunk.
3. Administer on the Trunk Group Screen of the management terminal. See *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302, for more details.

Digital Tie Trunk Example

This example shows how to connect digital tie trunk wiring from one DEFINITY System to another DEFINITY System. See Figure 5-5.

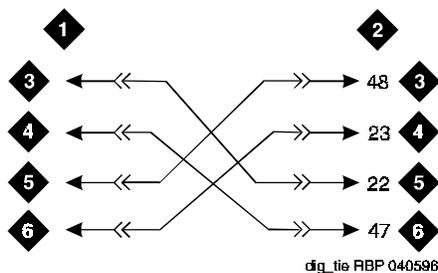


Figure Notes:

- | | |
|--|------------------------------|
| 1. External Trunk | 4. LO (Balanced Output Pair) |
| 2. TN464F Digital Trunk Circuit Pack,
Position 1C06 | 5. LI |
| 3. LO | 6. LI (Balanced Input Pair) |

Figure 5-5. Digital Tie Trunk Wiring

1. Install cross-connect jumpers to connect the pins from the digital trunk circuit pack to appropriate pins on the manufacturer's or supplier's external digital trunk.
2. Set option switches on the port circuit pack (TN464F Digital Trunk) according to Appendix B, "Option Switch Settings".
3. Administer on the DS1 and Trunk Group Screens of the management terminal. See *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302, for more details.

DS1 Tie Trunk Example

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

- C6C connector cable (comcode 104307327) — 50-foot (15.2 m) shielded cable equipped with a 50-pin male connector on one end and a 15-pin male connector on the other end. Use this cable to connect a DS1 tie trunk circuit pack to a Channel Service Unit (CSU).
- C6D connector cable (comcode 104307376) — 50-foot (15.2 m) shielded cable equipped with a 50-pin male connector on each end. Use this cable to connect a DS1 tie trunks in collocated cabinets.
- C6E connector cable (comcode 104307434) — 100-foot (30.5 m) shielded cable equipped with a 50-pin male connector on one end and a 50-pin female connector on the other end. Use this cable as an “extension” cable between the DS1 tie trunk circuit pack and other connector cables.
- C6F connector cable (comcode 104307475) — 50-foot (15.2 m) shielded cable equipped with a 50-pin male connector on one end and a three inch (7.62 cm) stub on the other end. Use this cable to connect the DS1 tie trunk circuit pack to channel multiplexers requiring hardwired connections. See Table 5-1 for a pinout of the C6F cable.

Table 5-1. Pinout of C6F Cable

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

Collocated DS1 Tie Trunks

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

⇒ NOTE:

The maximum distance between cabinets is 1310 feet (399.3 m).

DS1 Tie Trunks Using Channel Service Unit

Figure 5-6 shows a DS1 tie trunk connected to a T1 Channel Service Unit (CSU). The Channel Service Unit (CSU) is used to interface the DS1 tie trunks with the 1.544 Mbps digital facility. Contact your Lucent Technologies representative for maximum cabling distances.

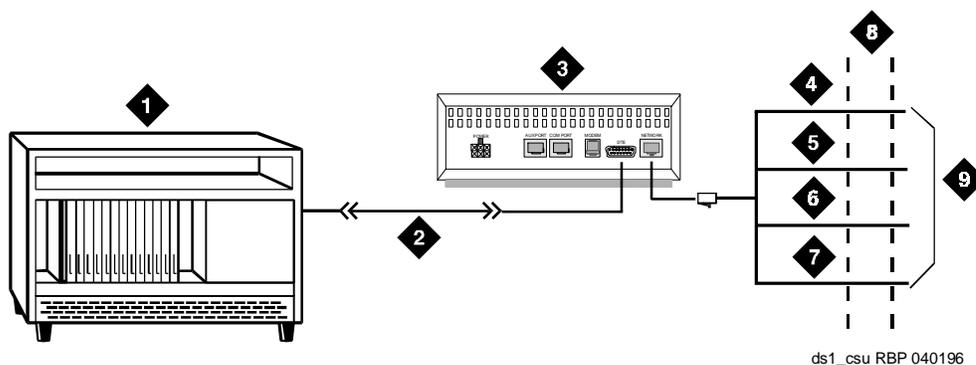


Figure Notes:

- | | |
|---|---|
| 1. System Cabinet (TN464F or TN767E DS1 Tie Trunk Circuit Pack) | 5. R (Ring) |
| 2. C6C Cable (For Distances Over 50 Feet (15.24 m), Use C6E Cable(s)) | 6. T1 (Tip 1) |
| 3. T1 Channel Service Unit (CSU) | 7. R1 (Ring 1) |
| 4. T (Tip) | 8. 1.544 Mbps Digital Service Interface |
| | 9. To T1 Carrier |

Figure 5-6. Typical Connections to Channel Service Unit

Auxiliary Connector Outputs

The Control Carrier outputs cable pinouts are shown in Table 5-2. The Control Carrier **AUX** connector outputs include the following:

- Alarm monitoring for the auxiliary cabinet
- Seven -48 VDC power sources for emergency transfer units
- Three -48 VDC power sources for remotely powering three attendant consoles or telephone adjuncts
- The remote management terminal interface trunk connection location
- A relay contact actuates a customer-supplied light, bell, or similar device. The relay can activate when a major, minor or warning condition occurs. The pinouts for an external alarm are shown in Table 5-2.

Connect a 25-pair cable from the **AUX** connector to a connecting block on the trunk/auxiliary field.

Table 5-2. Auxiliary Lead Appearances at AUX Connector

Color ^{1,2}	Pin Number	AUX Connection Outputs
W-BL BL-W	26 1	Major*
W-O O-W	27 2	Minor*
W-G G-W	28 3	GRD
W-BR BR-W	29 4	GRD
W-S S-W	30 5	GRD
R-BL BL-R	31 6	GRD
R-O O-R	32 7	GRD
R-G G-R	33 8	Not Connected
R-BR BR-R	34 9	Not Connected
R-S S-R	35 10	Not Connected
BK-BL BL-BK	36 11	-48 GND
		Emergency Transfer Relay Power

Continued on next page

Table 5-2. Auxiliary Lead Appearances at AUX Connector — *Continued*

Color ^{1,2}	Pin Number	AUX Connection Outputs	
BK-O O-BK	37 12	-48 GND	Emergency Transfer Relay Power
BK-G G-BK	38 13	-48 GND	
BK-BR BR-BK	39 14	-48 GND	
BK-S S-BK	40 15	-48 GND	
Y-BL BL-Y	41 16	-48 GND	
Y-O O-Y	42 17	-48 GND	
Y-G G-Y	43 18	Not Connected	
Y-BR BR-Y	44 19	GND -48	AUX Power
Y-S S-Y	45 20	GND -48	
V-BL BL-V	46 21	GND -48	
V-O O-V	47 22	Not Connected	
V-G G-V	48 23	Ext Alarm A** Ext Alarm Return	
V-BR BR-V	49 24	Not Connected	
V-S S-V	50 25	INADS Tip INADS Ring	

* External alarm with signal incoming to system.

** External alarm with signal outgoing from system.

1 Color designation is the main wire color and the color of the stripe on the wire.

2 The following wire colors apply to Table 5-2:

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

Table 5-3 provides port circuit pack and telephone pin designations.

Table 5-3. Port Circuit Pack and Telephone Pin Designations

Pin on Modular Plug	4-wire; 302C1, 8400-Series, 603E, 9403, 9434	2-wire; 302C1, 8400-Series, 603E, 9403, 9410, 9434	8510T Basic Rate Interface (BRI) (with adjunct speaker phone)	Analog Station, Modem	NT1	Z3A1 & Z3A2 Asynchronous Data Units (ADU), Data Module
1	TXT					TXT
2	TXR			T		TXR
3	PXT		TXT	R		PXT
4		T	PXR		T	
5		R	PXT	No Connection	R	
6	PXR		TXR	4-pin modular jack		PXR
7	-48VDC	(-48VDC)	(-48VDC)		-48VDC	
8	GRD	GRD	GRD		GRD	
Circuit Pack	TN754 4-wire digital (8 port)	TN2181 2-wire digital (16 port) TN2224 2-wire digital (24 port)	TN556 ISDN-BRI Line	TN2183 Analog line (16 port)	TN2198 2-wire Basic Rate Interface line	TN726 Data Line

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

Three-Pair and Four-Pair Modularity

Figure 5-7 shows 3-pair and 4-pair modularity from the port circuit pack to the voice or data terminal. Refer to Chapter 2, "Install Telecommunications Cabling" for descriptions of 3- and 4-pair modularity and distribution.

Most terminals are connected to an information outlet (modular jack) installed at the work location. Make the connections as shown in Figure 5-7. Figure 5-8 on page 5-15 shows three methods of connecting adjunct power.

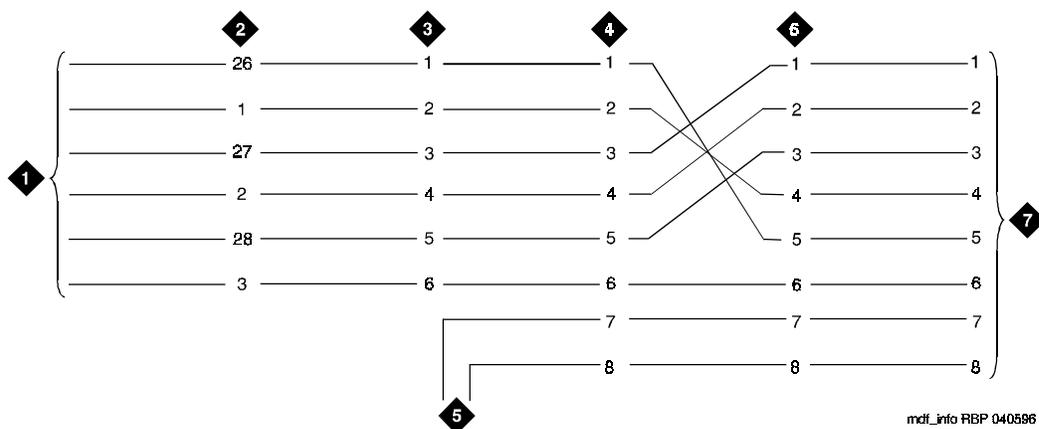


Figure Notes:

- | | |
|---|---|
| 1. Port Circuit Pack | 4. Input to Information Outlet (4-Pair Modularity) |
| 2. System Cabinet Connector Pins (3-Pair Modularity) | 5. Adjunct Power |
| 3. Main Distribution Frame (MDF) Pins (3-Pair Modularity) | 6. Output From Information Outlet (4-Pair Modularity) |
| | 7. Voice or Data Terminal Pins |

Figure 5-7. 3-Pair and 4-Pair Modularity

Table 5-4 lists voice and data terminals that can be connected to the system.

Table 5-4. Voice and Data Terminals

Terminal	Type
Multi-button Electronic Telephone (MET) sets: 10, 20, 30 Button	Voice
Analog: 500, 2500/2554, 2500 DMGC, 2500YMGK, S203A Speakerphone	Analog voice
71XXX series: 7101A, 7102A, 7103A, 7104A	Analog voice
73XXX series: 7302H, 7303H, 7303S, 7305S, 7305H	Hybrid voice
74XXD series: 7401D, 7403D, 7404D, 7405D, 7406D, 7407D, 7410D, 7434D, 7444	Digital voice
81XX series: 8102, 8110 91XX series: 9101, 9103, 9110	Analog voice
84XX series: 8403B, 8405B/D/B+/D+, 8410B/D, 8411B/D, 8412, 8434, 8435 94XX series: 9403, 9410, 9434	Digital voice
Basic Rate Interface (BRI) (75XX series): 7505-VOM/T, 7506-VOM/T, 7507-VOM/T 85XX series: 8503, 8510, 8520	BRI voice
Workstation series Business Communications Terminals (BCTs) and Business Communications Systems (BCS): 510D BCT, 513 BCT, 515 BCT, 615 BCT, 715 BCT, 715 BCS PC/PBX platform (digital): PC/ISDN platform (BRI)	Data
Consoles: 301A Attendant Console 302A1 Enhanced Generic 1 Console 602A1 ACD Console (CallMaster® digital communications terminal)	Data and voice
ZE01A Expansion Module for 8434Dx	Voice and Features

Continued on next page

Table 5-4. Voice and Data Terminals — Continued

Terminal	Type
Cordless Hybrid: MDW 9000 (TransTalk 9000) MDC 9000	Voice
DCP Data interface: Constellation Automatic Call Distribution (ACD) data terminal	Data and voice
PassageWay interface: Consoles: 302B1, 302C1 Attendant Console 603A/D Automatic Call Distribution (ACD) Console (CallMaster digital console) 603E Automatic Call Distribution (ACD) Console (CallMaster digital console)	Data and voice

Administration Terminals

Table 5-5 lists the administration terminals that can be connected to the system.

Table 5-5. Administration Terminals

Administration Terminal	Application
510D	Remote administration
610D, 513, 610, 615, 715* Business Communications Terminal (BCT), 4410, 4425, and VT220	Management Terminal: administration and general purpose
515 Business Communications Terminal (BCT)	Remote administration, general purpose
615 Management Terminal	Management Terminal system administration and maintenance terminal
715 BCS and 715 BCS-2 Management Terminal	Management Terminal system administration and maintenance terminal

*The keyboards and terminals are interchangeable when an adapter cable is used.

NOTE:

The older version of 715 BCT (the 715 Business Communications System (BCS)) (406803148 and 406803155), has a 6-pin mini-DIN keyboard connector.

The new version of 715 BCT (the 715 Business Communications System (BCS)) (4073113881 and 407313899), has a 6-pin RJ-11 keyboard jack located on the side of the terminal

Adjunct Power Connections

Figure 5-8 shows typical connection locations for adjunct power.

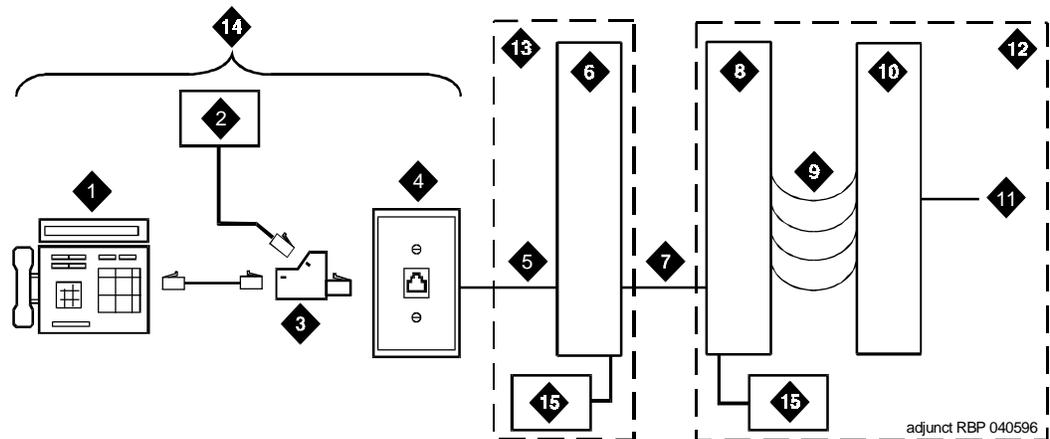


Figure Notes:

- | | |
|--|--|
| 1. Typical Display Telephone | 9. 100P6A Patch Cord or Jumpers |
| 2. Individual Power Supply (Such as 1151A) | 10. System Side of Main Distribution Frame (MDF) |
| 3. 400B2 Adapter | 11. 25-Pair Cable to System Cabinet (Analog Line Circuit Pack) |
| 4. Information Outlet (Modular Jack) | 12. Equipment Room |
| 5. 4-Pair D-Inside Wire (DIW) Cable | 13. Satellite Location |
| 6. Satellite Site or Adapter Location | 14. Work Location |
| 7. 25-Pair D-Inside Wire (DIW) Cable | 15. Bulk Power Supply (Such as 1145B) |
| 8. Station Side of Main Distribution Frame (MDF) | |

Figure 5-8. Example Adjunct Power Connections

For this figure, the following example is used:

- a. If 25 telephones are connected to the system and all 25 telephones need adjunct power, install a bulk power supply in the equipment room.
- b. If only ten of the telephones need adjunct power, install a bulk power supply at the satellite location.
- c. If only one telephone needs adjunct power, install the individual power supply at the work location.

Connect External Alarm Indicators

The system provides access to a relay contact that can be used to operate a customer-supplied alarm, such as a light or bell. The circuitry and power source must be provided by the customer. The device connected to the alarm leads must not exceed a rating of more than 100 volts at 0.75 Amp.

The **AUX** connector on the Control Carrier is normally connected to a wiring block at the trunk/auxiliary field. DEFINITY products route one major alarm pair and one minor alarm pair for each control cabinet to the trunk/auxiliary field. These are designated *1M* (major) and *1m* (minor) in Table 5-6. Table 5-24 and Table 5-25 are a cross-index of connector pin numbers to wiring block terminals.

Table 5-6. External Alarm Leads at Main Distribution Frame

Color	110-Type Wiring Block Terminal	Cabinet AUX Connector Outputs
White-Blue	01	1M (Pin 26)
Blue-White	02	Ground (Pin 1)
White-Orange	03	1m (Pin 27)
Orange-White	04	Ground (Pin 2)

Alarms can be generated on adjunct equipment, sent to the DEFINITY System, and recorded and reported by the DEFINITY System as "External Alarms."

- An example typical major alarm input command would be from pins 14 and 15 of J2 on an Uninterruptible Power Supply (UPS).
 1. Connect external alarm inputs from the adjunct equipment through terminals 45 and 20 of the wiring block associated with the **AUX** connector of a Control Carrier.
 2. The connection is completed through the 25-pair cable to pins 48 and 23 of the **AUX** connector.

Having wired the external alarms as instructed by the system designers, note which device is connected to which alarm. After the system is installed, be sure to contact your Lucent Technologies representative with this information for possible troubleshooting purposes in the future.

Install Remote Network Interface

The Remote Network Interface (formerly Initialization and Administration System (INADS)) provides a 1200 bps modem connection for the remote management terminal. The network interface trunk should appear on the twenty-fifth pair of a RJ21X network interface jack. The trunk is a two-way, rotary dial, loop start trunk that connects to a TN731 Maintenance circuit pack, the TN790 Processor circuit pack, or the TN1648 Sysam circuit pack through the Remote Network Interface terminals at the trunk/auxiliary field. Figure 5-9 shows a typical Remote Network Interface trunk installation.

Remote Network Interface Installation

1. Determine the network interface trunk appearance at the green trunk/auxiliary field.
2. Label the terminals for the trunk appearance.
3. Install jumpers between the trunk appearance and Remote Network Interface terminals.

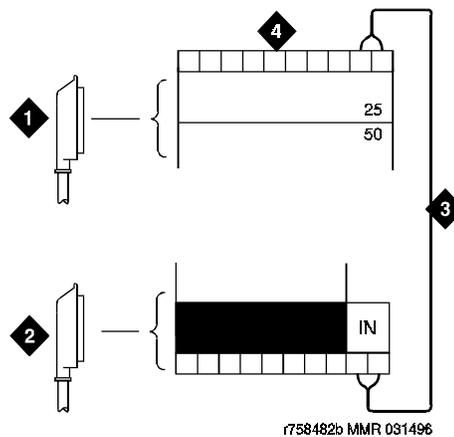


Figure Notes:

- | | |
|---|--|
| 1. To Network Interface Facility | 3. One Pair of Wires |
| 2. To Control Carrier Auxiliary Connector | 4. Twenty-fifth Pair of RJ21X Network Interface Jack |

Figure 5-9. Connections at Trunk/Auxiliary Field

Install Off-Premises Station Wiring

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

⚠ CAUTION:

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

1. Install an A25D (male to male) cable between the RJ21X network interface and a sneak fuse panel.
2. At the Main Distribution Frame (MDF), connect jumper wires between one row/connecting block in the green field and up to three rows/connecting blocks in the purple field to concentrate the analog line pairs.
3. Connect an A25D cable between the sneak fuse panel and the terminal block connector associated with the green row in Step 2.
4. Install a green label on the terminal block to identify the remote location.
5. Administer per *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302.

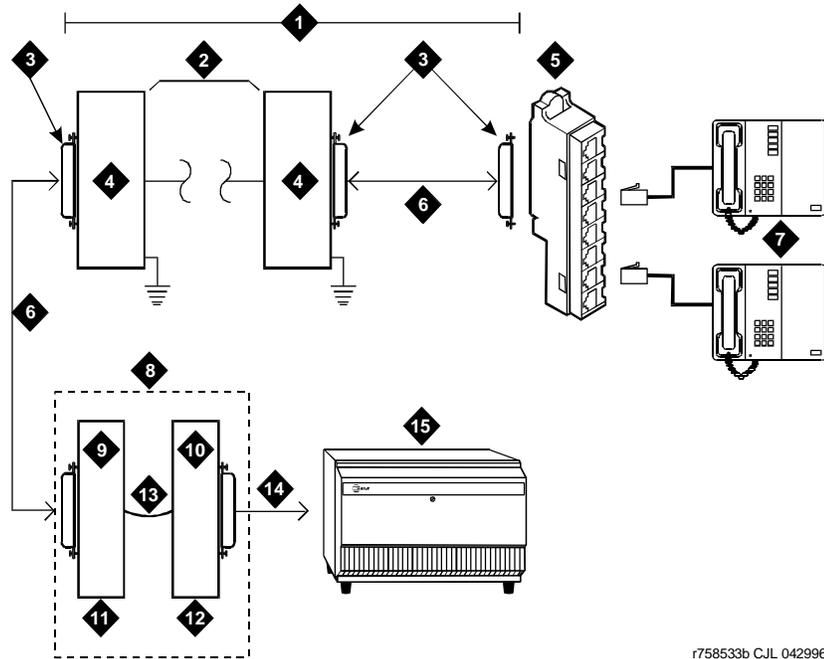
Install Off-Premises or Out-of-Building Stations

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

Analog Off-Premises Stations

Figure 5-10 shows the connections for one to eight off-premises analog telephones. Only analog telephones connected to TN742, TN746B, TN2183, or TN769 Analog Line circuit packs can be installed out-of-building.

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



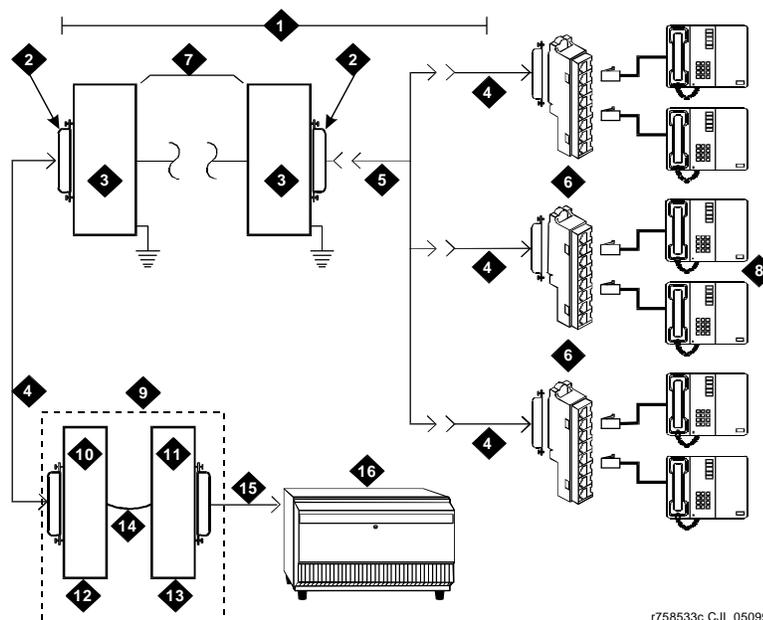
r758533b C.J.L 042996

Figure Notes:

- | | |
|--|---|
| 1. Locally Engineered Cables and Equipment | 8. Part of Main Distribution Frame (MDF) |
| 2. Out-of-Building Wiring | 9. Station Side |
| 3. 25-Pair Connector | 10. System Side |
| 4. Multi-Pair Protector Units (Primary Protectors with Heat Coils or Equivalent with Sneak Current Protection) | 11. White Field |
| 5. 356A Adapter | 12. Purple Field |
| 6. B25A Cable (Male to Female) | 13. Cross-Connect Jumpers |
| 7. Out-Of-Building Analog Telephones | 14. Tip and Ring Wires |
| | 15. System Cabinet (TN2183, TN769, TN742, or TN746B Analog Line Circuit Pack) |

Figure 5-10. Connections for One to Eight Out-of-Building Analog Telephones

Figure 5-11 shows the connections for up to 24 off-premises analog telephones. Concentrations of analog line pairs are used at both buildings to minimize the off-premises wiring required. At the Main Distribution Frame (MDF), jumpers must be connected between one row/connecting block in the white field and up to three rows/connecting blocks in the purple field. At the station location, a WP-90929, List 1 Concentrator Cable is used. There are eight station appearances on each of the three fingers of the concentrator cable.



r758533c CJL 050996

Figure Notes:

- | | |
|--|---|
| 1. Locally Engineered Cables and Equipment | 9. Part of Main Distribution Frame (MDF) |
| 2. 25-Pair Connector | 10. Station Side |
| 3. Multi-Pair Protector Units (Primary Protectors with Heat Coils or Equivalent with Sneak Current Protection) | 11. System Side |
| 4. B25A Cable (Male to Female) | 12. White Field |
| 5. Concentrator Cable (WP90929 List 1) | 13. Purple Field |
| 6. 356A Adapter | 14. Cross-Connect Jumpers |
| 7. Out-of-Building Wiring | 15. Tip and Ring Wires |
| 8. Out-Of-Building Analog Telephones | 16. System Cabinet (TN2183, TN769, TN742, or TN746B Analog Line Circuit Pack) |

Figure 5-11. Connections to 24 Out-of-Building Telephones

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

The 4-type protector is the preferred device. For installations not using primary protection, 4-type protectors should always be used. When the 3-type protector is already installed, a separate sneak current protector is required. The multi-pair protector units and the off-premises cabling must be locally engineered. Connectorized multi-pair protector units (female 25-pair connector) are recommended. The protectors can be ordered from the *Premises Distribution Systems Equipment and Supplies Catalog*. Table 5-7 shows the recommended protectors.

Table 5-7. Analog Line Circuit Protectors

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

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

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

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

- 7300-type voice terminals connected to TN762 Hybrid Line circuit packs
- Multi-button Electronic Telephone (MET) sets connected to TN735 Multi-button Electronic Telephone (MET) Line circuit packs
- Analog telephones connected to TN746 Analog Line circuit packs

The following table details the protector ordering information.

Protector Ordering Information	
Description	Comcode
3B1A (Carbon Block)	102381779
3B1E-W (Wide Gap Gas Tube)	104410147
3C1S (Solid State)	105514756
4B1C (Carbon Block with Heat Coil)	102904893
4B1E-W (Wide Gap Gas Tube w/Heat Coil)	104401856
4C1S (Solid State with Heat Coil)	104386545
SCP-110 Sneak Current Protector	406948976
220029 Fuse (sneak current protector)	407216316

Digital Out-of-Building Voice Terminals

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

The 4C3S-75 may only be used with Vintage 14 or newer TN754 circuit packs. The 4C3S-75 can be used on all vintages of the TN754B circuit packs. The ITW Linx may be used on all vintages of the TN754 and TN754B circuit packs. Table 5-8 lists the approved protectors.

⇒ NOTE:

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

Table 5-8. Digital Voice Circuit Protectors

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

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

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

The maximum range for out-of-building digital voice terminals is 3400 feet when using 24 AWG wire and 2200 feet when using 26 AWG wire. The range can be extended to 5000 feet (24 AWG wire) or 4000 feet (26 AWG wire) with the use of a data link protector. The protector is an isolating transformer used to remove phantom power on the system side and re-introduce it on the terminal side.

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

Protector and Data Link Protector Ordering Information

Description	Comcode
4C3S-75 (Solid State with Heat Coil)	105581086
ITW LINX (Gas Tube, Avalanche Suppress)	406144907
ITW Linx Ground Bar (used with above)	901007120
ITW Linx Replacement Fuse	406304816
Data Link Protector (one circuit)	103972758
Data Link Protector (eight circuits)	103972733

Refer to Figure 5-8 on page 5-15 and Figure 5-9 on page 5-17.

Install Emergency Transfer Units and Associated Telephones

Emergency transfer capability is provided by a transfer unit mounted next to the trunk/auxiliary field. Analog telephones connected to the transfer panel can be used. The 500- and 2500-type telephones can also be used as normal extensions. Emergency transfer capability may be provided on analog Central Office (CO) and Wide Area Telecommunications Service (WATS) trunks.

The 808A Emergency Transfer Panel provides emergency trunk bypass or power-fail transfer for up to five incoming Central Office (CO) trunk loops to five selected station sets. The 808A equipment's Ringer Equivalency Number (REN) is 1.0A.

At the Main Distribution Frame (MDF), the unit is controlled by a connection to a yellow terminal row/connecting block in the trunk/auxiliary field. The unit is controlled by -48 VDC from the **EM TRANS RELAY PWR** terminals. There are seven **EM TRANS RELAY PWR** terminal pairs that allow powering of up to seven transfer units.

Should power be restored to the relays while a call connected through the 808A is in progress, the 808A maintains the connection until the user goes on-hook. Each 808A can handle up to five Central Office (CO) trunks.

The panel can be installed on any mounting frame in either a vertical or horizontal position. The housing has ears for screw-mounting and cutouts for snap-mounting the unit in an 89-type mounting bracket. See Figure 5-13.

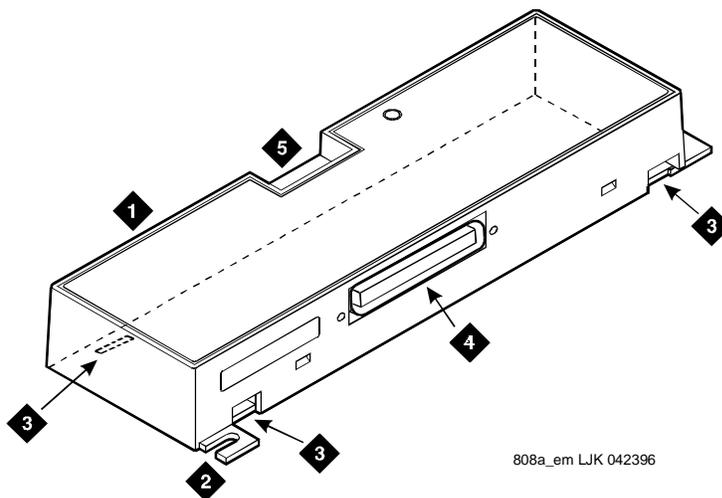


Figure Notes:

- | | |
|----------------------------------|---------------------------|
| 1. 808A Emergency Transfer Panel | 3. Cut-Out for Snap Mount |
| 2. Ear for Screw Mount | 4. 25-Pair Male Connector |
| | 5. Circuit Start Switches |

Figure 5-13. 808A Emergency Transfer Panel Mounting

NOTE:

The 808A must be installed in a location that can be accessed only by authorized personnel. The location must meet standard environmental considerations such as temperature, humidity, and so forth.

1. Verify dial tone is present at each trunk circuit.
2. Locate the circuit start selection switches (see Figure 5-12). These are the first 10 two-position switches on the left side of the Emergency Transfer Panel. They are used to set each of the five incoming trunk lines to either loop start or ground start. Two switches are used for each circuit; switches 1 and 2 are used for circuit 1, switches 3 and 4 are used for circuit 2, and so forth. See Table 5-9. For loop start, set the switches to the **left**. For ground start, set the switches to the **right**.

Table 5-9. Trunk/Test Switches

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

3. Connect a 25-pair cable between the male RJ21 25-pair connector on the Emergency Transfer Panel and the yellow field of the Main Distribution Frame (MDF). Table 5-10 shows the pinouts.
4. Make cross-connections for each emergency trunk/emergency station pair. See Figure 5-14 on page 5-30 and Table 5-15 on page 5-31.

Table 5-10. Pin Assignments for 25-Pair Connector

Pin	Color	Designation	Connector/Description
26	W-BL	TTC1	Tip-PBX Trunk Circuit 1
1	BL-W	RTC1	Ring-PBX Trunk Circuit 1
27	W-O	TTK1	Tip-CO Trunk Circuit 1
2	O-W	RTK1	Ring-CO Trunk Circuit 1
28	W-G	TLC1	Tip-PBX Line Port 1
3	G-W	RLC1	Ring-PBX Line Port 1
29	W-BR	TST1	Tip-Emergency Terminal 1
4	BR-W	RST1	Ring-Emergency Terminal 1
30	W-S	TTC2	Tip-PBX Trunk Circuit 2
5	S-W	RTC2	Ring-PBX Trunk Circuit 2
31	R-BL	TTK2	Tip-CO Trunk Circuit 2
6	BL-R	RTK2	Ring-CO Trunk Circuit 2
32	R-O	TLC2	Tip-PBX Line Port 2
7	O-R	RLC2	Ring-PBX Line Port 2
33	R-G	TST2	Tip-Emergency Terminal 2
8	G-R	RST2	Ring-Emergency Terminal 2
34	R-BR	TTC3	Tip-PBX Trunk Circuit 3
9	BR-R	RTC3	Ring-PBX Trunk Circuit 3
35	R-S	TTK3	Tip-CO Trunk Circuit 3
10	S-R	RTK3	Ring-CO Line Port 3
36	BK-BL	TLC3	Tip-PBX Line Port 3
11	BL-BK	RLC3	Ring-PBX Line Port 3
37	BK-O	TST3	Tip-Emergency Terminal 3
12	O-BK	RST3	Ring-Emergency Terminal 3
38	BK-G	TTC4	Tip-PBX Trunk Circuit 4
13	G-BK	RTC4	Ring-PBX Trunk Circuit 4
39	BK-BR	TTK4	Tip-CO Trunk Circuit 4
14	BR-BK	RTK4	Ring-CO Trunk Circuit 4
40	BK-S	TLC4	Tip-PBX Line Port 4
15	S-BK	RLC4	Ring-PBX Line Port 4
41	Y-BL	TST4	Tip-Emergency Terminal 4
16	BL-Y	RST4	Ring-Emergency Terminal 4
42	Y-O	TTC5	Tip-PBX Trunk Circuit 5
17	O-Y	RTC5	Ring-PBX Trunk Circuit 5
43	Y-G	TTK5	Tip-CO Trunk Circuit 5

Continued on next page

Table 5-10. Pin Assignments for 25-Pair Connector — Continued

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

5. On the trunk identification label at the bottom of the panel, record the trunk line, extension, and location for each circuit.
6. To each voice terminal designated as an emergency terminal, attach a label identifying it as such. The labels are provided with the unit.
7. Check the system for normal operation as follows:
 - Place the test switch (switch 12) in NORMAL OPERATION.
 - Ensure the power supply is providing -48 VDC at 80 mA maximum. The power LED should be ON.
 - Check wiring connections.
 - Verify there is dial tone on all emergency transfer sets.

If all of the above conditions are not met, remove the panel from service and replace it with a new panel.

8. Check the system for transfer operation as follows:
 - Place the test switch (switch 12) in the ACTIVATED position.
 - The power LED should be OFF.
 - Verify there is dial tone on all emergency transfer sets.

If all of the above conditions are not met, remove the panel from service and replace it with a new panel.

The 808A is connected to the Main Distribution Frame (MDF) by means of a B25A cable. Figure 5-14 shows the connections at the trunk/auxiliary field for a telephone used only for emergency transfer.

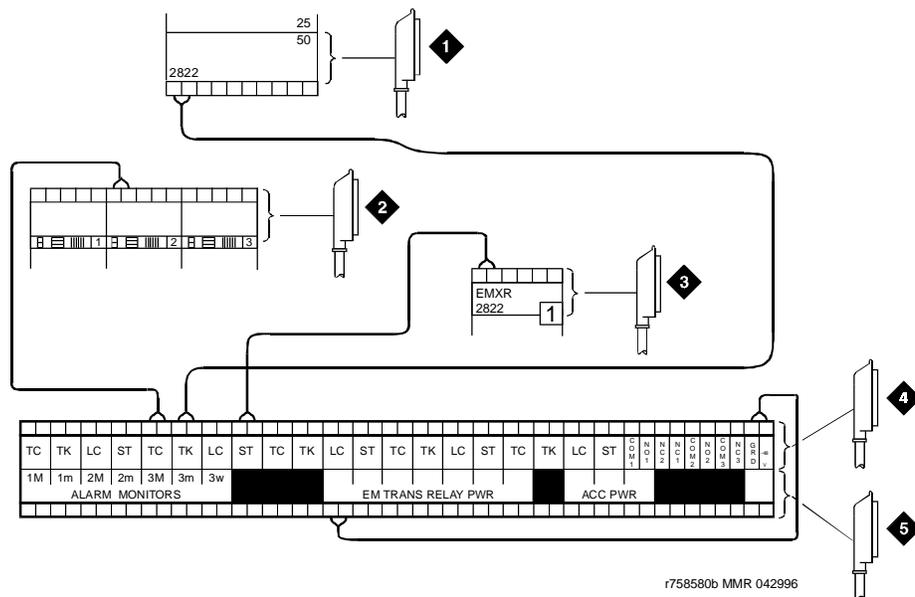


Figure Notes:

- | | |
|---|---|
| 1. To Network Interface Circuitry | 4. To Power Transfer Unit |
| 2. To TN747 (or Equivalent) Central Office Trunk Circuit Pack | 5. To Control Carrier Auxiliary Connector |
| 3. To Blue or White Station Distribution Field | |

Figure 5-14. Connections for Telephone Used for Emergency Transfer

Install Telephone for Power Transfer Unit

Trunk/Auxiliary Field: Telephone Used Only for Emergency Transfer

1. Connect a pair of wires between the **-48V** and **GRD** terminals on the yellow emergency transfer row/connecting block and the **EM TRANS RELAY PWR** terminal. See Figure 5-14 on page 5-30.
2. Connect Central Office (CO) trunk leads from the purple field to **TC** terminals on the yellow emergency transfer row/connecting block for each trunk.
3. Connect CO trunk leads from the green field to **TK** terminals on the yellow emergency transfer row/connecting block for each trunk.
4. Connect **ST** leads on the yellow emergency transfer row/connecting block for each emergency transfer telephone to the **ST** terminal appearance in the yellow trunk/auxiliary field. The **ST** terminal leads should be terminated on the following pairs: 1, 4, 7, 10, 13, 16, 19, or 22 (the first pair of any 3-pair group).
5. Connect the **ST** leads from the terminal in Step 4 to the assigned terminal in the blue or white station distribution field.

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

1. Connect a pair of wires between the **-48V** and **GRD** terminals on the yellow emergency transfer row/connecting block to the **EM TRANS RELAY PWR** terminal. See Figure 5-15 on page 5-31.
2. Connect CO trunk leads from the purple field to **TC** terminals on the yellow emergency transfer row/connecting block for each trunk.
3. Connect CO trunk leads from the green field to **TK** terminals on the yellow emergency transfer row/connecting block for each trunk.
4. Connect telephone leads from the purple analog line board row/connecting block to the **LC** terminals on the yellow emergency transfer row/connecting block for each telephone.
5. Connect **ST** leads on the yellow emergency transfer row/connecting block for each emergency transfer telephone to the **ST** terminal appearance in the purple trunk/auxiliary field.
6. Connect the **ST** leads from the terminal in Step 4 to the assigned terminal in the blue or white station distribution field.

Telephone Installation

1. Connect telephone to the information outlet.
2. Install patch cords/jumper wires between the system side and the station side of the station distribution field on the Main Distribution Frame (MDF).

Install 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 as shown in Figure 5-7 on page 5-12 and Figure 5-8 on page 5-15.
2. Administer per *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302.

Install Queue Warning Indicator

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

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

1. Wire the queue warning indicator to the information outlet as shown in Figure 5-7 on page 5-12 and Figure 5-8 on page 5-15.
2. Administer per *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302.

Install the 1145B Power Supply

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

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

 **NOTE:**

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

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

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

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

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

Figure 5-16 on page 5-36 shows how the standard power supply and wall-mounting plates fit together. Figure 5-17 on page 5-39 shows the expanded power supply components (power distribution unit and “T” cable).

Wall-Mounting Plates

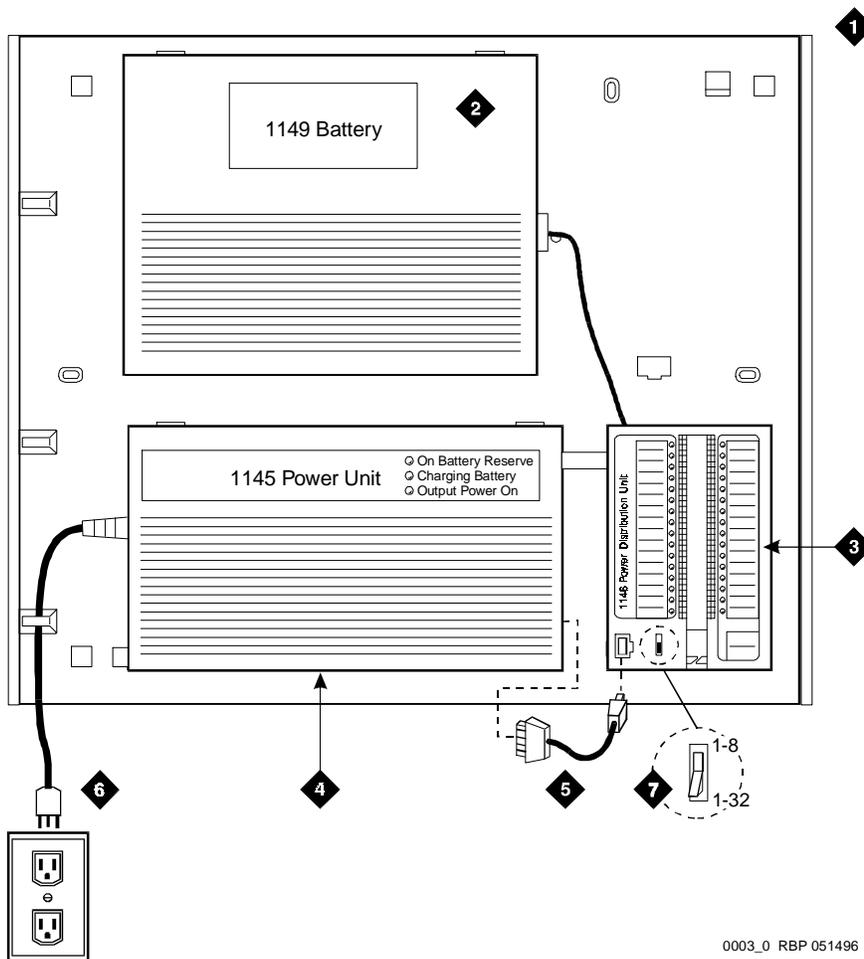
The top plate is used for mounting the back-up battery. The bottom plate is used to mount the power supply and distribution units. The plates can be rack-mounted using standard rack-mounting brackets.

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

 **NOTE:**

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

2. Secure the wall mounting plates to a standard 3/4 inch (2 cm) thick plywood mounting board. Each mounting plate comes with four #10 x 1/2-inch wood screws.
3. The 1145B Power Supply is snap-fit onto the bottom wall mounting plate without tools.
4. An installer-provided insulated ground wire, 16 AWG 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.



0003_0 RBP 051496

Figure Notes:

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

Figure 5-16. 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 5-11 provides the rating and PEC code of each battery.

Table 5-11. Back-Up Battery PEC Codes

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

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

Install the Expanded Power Distribution Unit

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

CAUTION:

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

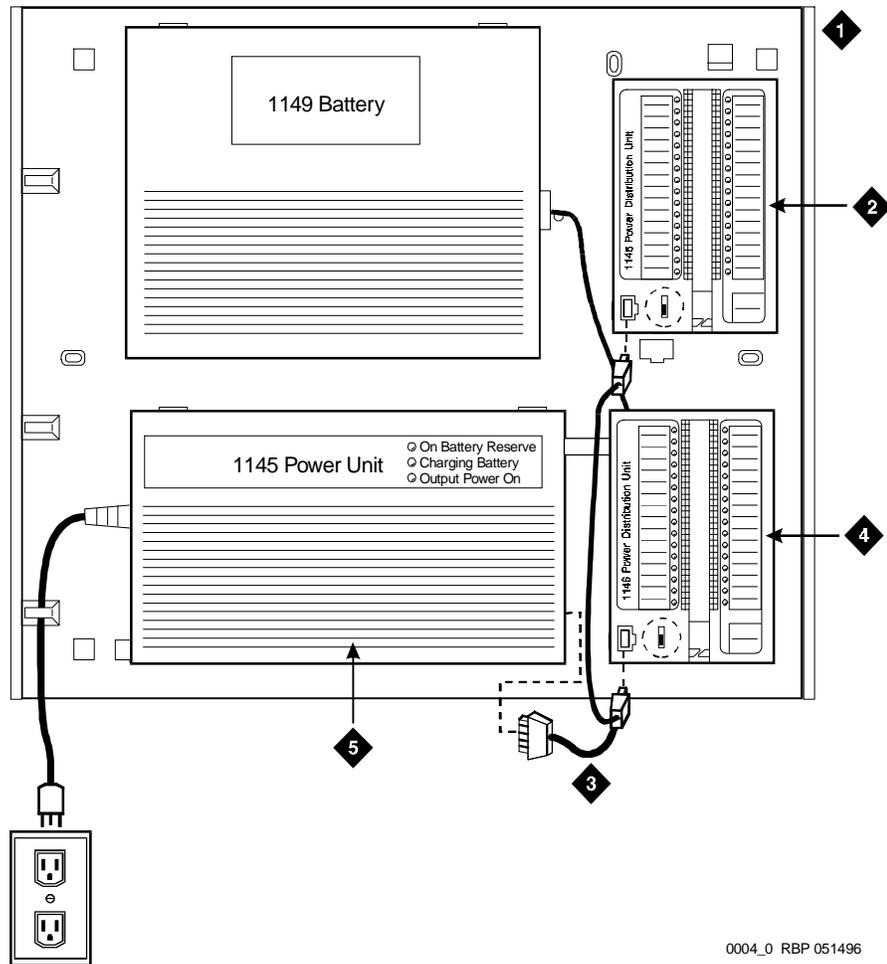
The maximum DCP terminal mixture is twenty four 7400-series and twenty four 8400-series or sixty four 8400-series terminals.

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

- a. One 1146B Power Distribution Unit (comcode 107250995)
- b. One "T" Cable (comcode 847529872)
- c. Two #8-32 x 1/2-inch Shoulder Screws
- d. One #8-32 x 1 inch Screw
- e. One Spacer Bracket (comcode 847554441)

Refer to Figure 5-17 on page 5-39 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_0 RBP 051496

Figure Notes:

- 1. Wall-Mounting Plate
- 2. Second 1146B Power Distribution Unit
- 3. "T" Cable (H600-347-G7)
- 4. First 1146B Power Distribution Unit
- 5. 1145B Power Unit

Figure 5-17. 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 twenty 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 to wire from the unit (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 5-18.
2. Mark lead destinations on the label next to each connector. Also mark the Unit Number and Connectivity information on the label.

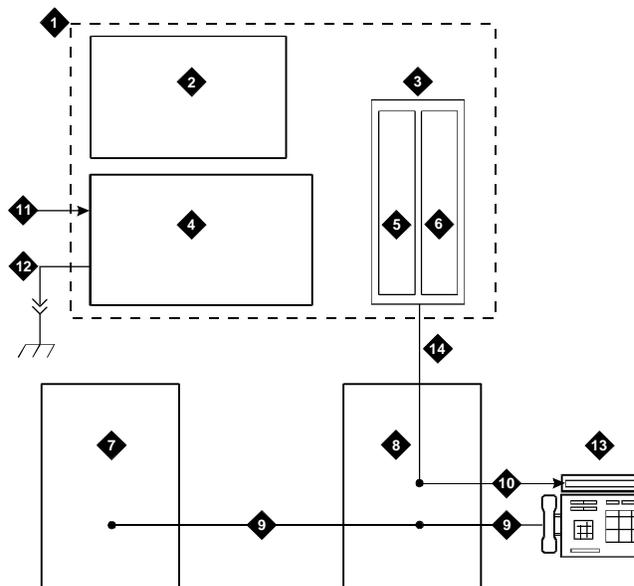


Figure Notes:

- | | |
|--------------------------------------|--|
| 1. Power Supply Kit | 8. Main Distribution Frame |
| 2. 2.5, 5.0, or 8.0 Amp Hour Battery | 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 5-18. Typical Wiring to a Terminal

Reset LEDs on Power Distribution Unit

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

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



WARNING:

Important Safety Instructions follow.

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

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

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

Install the 1151A Power Supply

The 1151A Power Supply complies 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 Power Supply

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



CAUTION:

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

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

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



CAUTION:

Do not locate the unit within six inches of the floor.

Connect the Power Supply

One power supply supports 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 5-19 shows a 1151A Power Supply.

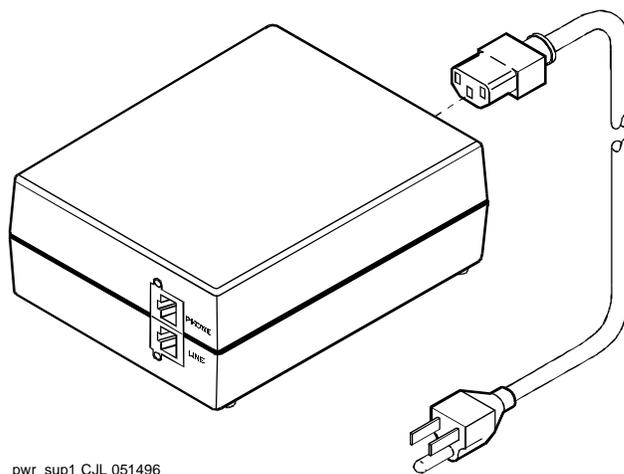


Figure 5-19. Typical 1151A Power Supply — Front

Install the BRI Terminating Resistor

The resistors balance the cable plant between the receiver and the transmitter on the interface. When using the TN2198 ISDN-BRI 2-Wire U Interface circuit pack, an NT1 is required. A terminating resistor is always required near the terminal when the BRI S-type interface circuit pack (TN556 BRI 4-Wire S-NT Line circuit pack) is used (see *#5ESS Switch Integrated Services Digital Network Customer Premises Planning Guide Issue 7*, 533-700-100).

The resistor is built into the NT1 and can be one of three values, depending on the configuration and the distance from the NT1 to the ISDN terminal. The resistor value is controlled from the NT1. A terminating resistor adapter may be needed near the terminal and can be placed in the satellite closet or work location.

NOTE:

The 440A4 terminating resistor and 110RA1-12 terminating resistor block are UL listed. Most new installations are the 110RA1-12 terminating resistor block. The following installation instructions should be observed.

- Never install telephone wiring during a lightning storm
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations
- Never touch uninsulated wires or terminals unless the telephone line has been disconnected at the network interface
- Use caution when installing or modifying telephone lines

Terminating Resistor Adapter

Figure 5-20 shows an 8-pin 440A4 terminating resistor adapter. The adapter is three inches long with an 8-wide plug at one end, a short cord, and an 8-wide jack at the opposite end.

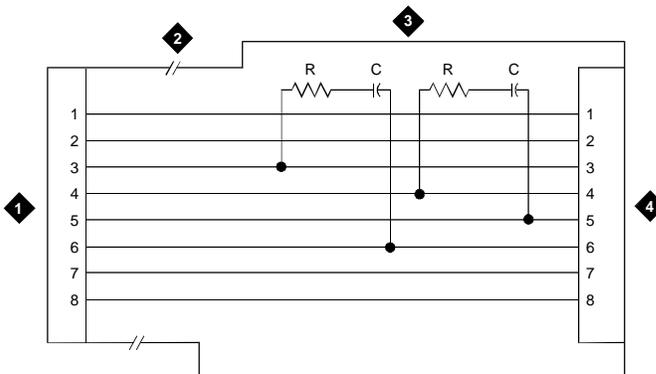


Figure Notes:

- | | |
|----------------|--------------------|
| 1. 8-Wide Plug | 3. Plastic Housing |
| 2. Cord | 4. 8-Wide Jack |

Figure 5-20. 8-Wide Terminating Resistor Adapter (440A4)

Closet Mounted (110RA1-12)

The 110RA1-12 terminating resistor block is designed to mount in the telecommunications wire closet. It consists of twelve 2-pair circuits and provides the 100 Ohm termination used for ISDN-BRI circuits.

Figure 5-21 shows the wiring of the 110RA1-12. Three rows of 110D-4 connector blocks are mounted on a printed wire board along with circuit resistors and capacitors. The bottom row is designated as the input row and the top and middle rows are designated as the output rows. The circuit assembly is mounted on a standard 110A-100 pair mounting base. The 110RA1-12 is shipped with preprinted designation strips to simplify circuit identification and installation.

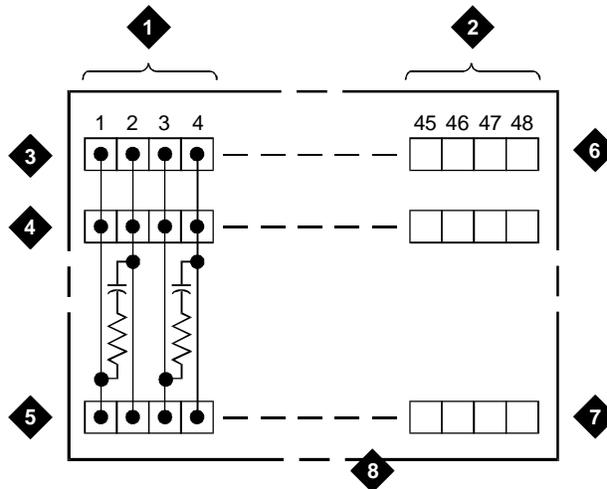


Figure Notes:

- | | |
|-------------------|---|
| 1. Circuit 1 | 6. Only First Circuit Shown to All 12 Circuits (2APR) Per Block |
| 2. Circuit 12 | 7. 110D-4 Connector Block |
| 3. Output Row "A" | 8. Printed Circuit Board Mounted on Standard 110A or 100APR Block |
| 4. Output Row "B" | |
| 5. Input Row "C" | |

Figure 5-21. Terminating Resistor Block (110RA1-12)

Figure 5-22 shows the wiring connections for the 110RA1-12 terminal block. The TN556 BRI switch port is terminated to bottom row C.

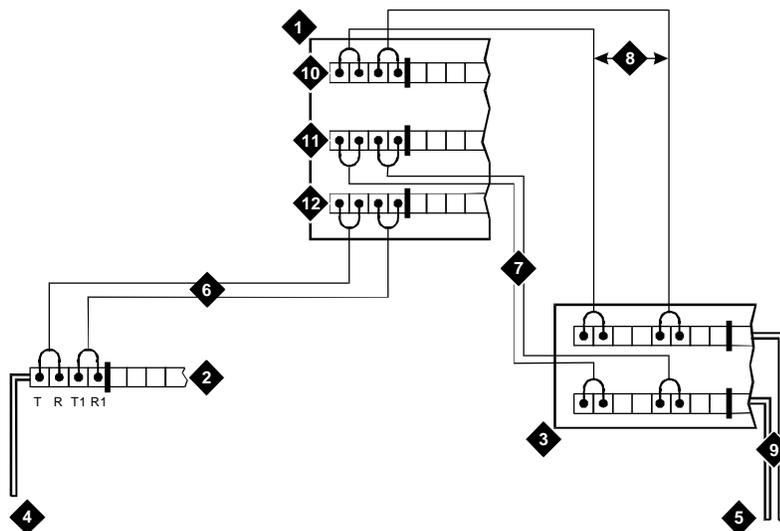


Figure Notes:

- | | |
|---|-----------------------------|
| 1. Part of Terminating Resistor Block | 7. Basic Multipoint Option |
| 2. White or Purple Field | 8. 2-Pair Cross-Connect |
| 3. Part of 4-Pair Blue Field | 9. 4-Pair Horizontal Cables |
| 4. From ISDN T-interface Circuit (2-Pair) | 10. Row "A" |
| 5. To ISDN S/T-interface Terminals | 11. Row "B" |
| 6. 2-Pair Cross-Connect | 12. Row "C" |

Figure 5-22. Typical Installation of Terminating Resistor Block

For point-to-point wiring, the top row is connected to the blue station field. The pair connects from the 110RA1-12 to the standard 4-pair circuit. Pair 1 from the 110RA1-12 is connected to Pair 1 of the station field, and Pair 2 is connected to Pair 3 of the station field.

Two terminal basic multipoint applications are accommodated by connecting row B (output) to the second terminal common to the multipoint circuit.

Install Multipoint Adapters

Multipoint adapters are used to provide signal fanout of the T-interface. Fanout can be performed at the work station by the BR851-B or the 367A. These adapters support more than one ISDN terminal per horizontal 4-pair D-inside wire (DIW). To support multiple horizontal runs, fanout must be performed in the satellite closet by a Main Distribution Frame (MDF) with multiple common rows. The 110RA1-12 provides fanout for two horizontal runs and contains the 100 Ohm terminating resistor. This can be used for basic multipoint or point-to-point with terminating resistor in the closet. Other fanout blocks include the 110AB1-025M and the 110AB1-050M.

BR851-B Adapter (T-Adapter)

The BR851-B supports two terminals on one multipoint BRI at the work station. It is a T-shaped device used to fanout transmission and power. The BR851-B is an 8-pin device with a single plug and two jacks. See Figure 5-23.

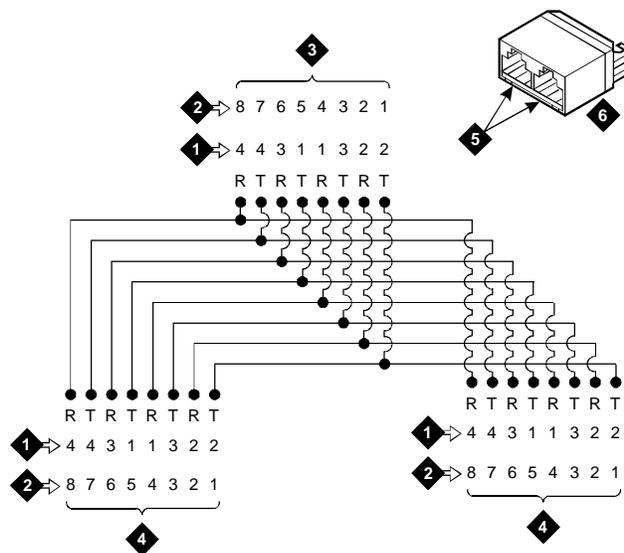


Figure Notes:

- | | |
|------------------------|----------------------------|
| 1. Wire Pairs | 4. Female |
| 2. Pin Numbers | 5. Two 8-pin Modular Jacks |
| 3. Modular Plug (Male) | 6. T-Type Adapter |

Figure 5-23. Wiring Diagram of BR851-B

367A Adapter

The 367A adapter provides fanout. See Figure 5-24. It can provide inputs to up to seven terminals. The 367A is an 8-conductor adapter and can be used at the work location for bridging three to seven terminals.

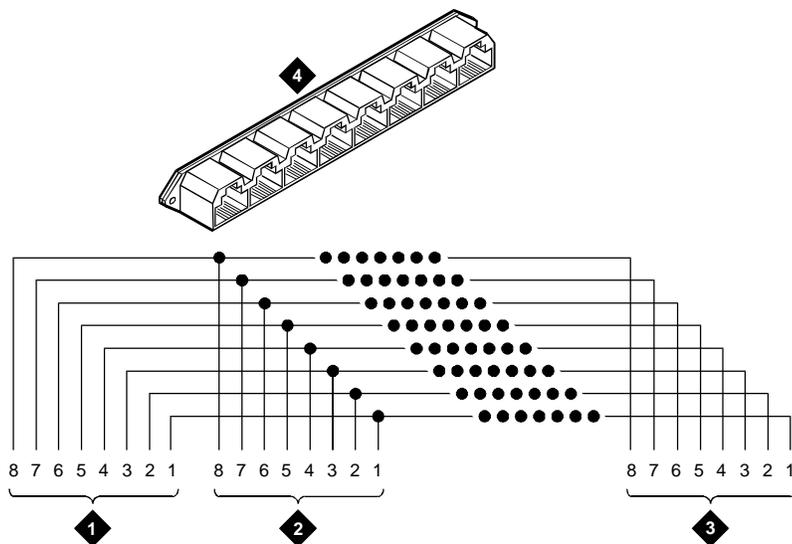


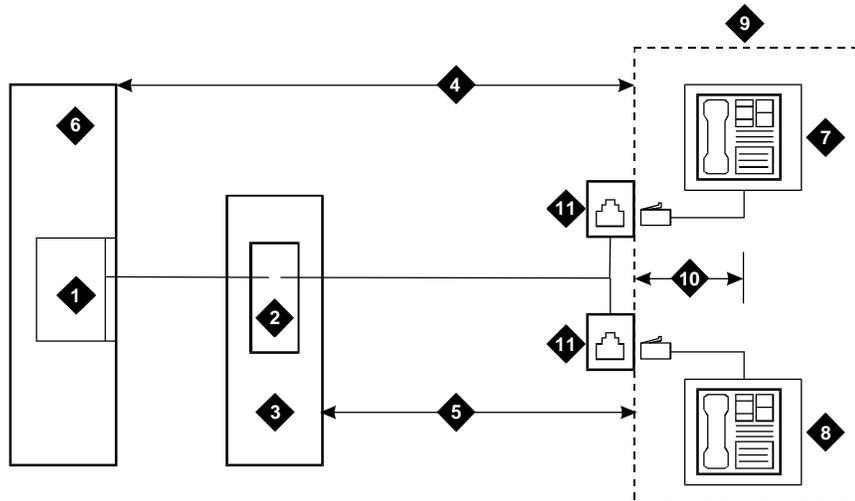
Figure Notes:

- 1. Jack 1
- 2. Jack 2
- 3. Jack 8
- 4. 367A Adapter

Figure 5-24. Wiring Diagram of 367A Adapter

Basic Multipoint Installation Distances

Figure 5-25 provides cabling information for fan-out of ISDN-BRI multipoint installations. In Figure 5-25, the terminating resistor is located in the satellite closet. All distances assume 24-gauge D-Inside Wire (DIW).



inst_dis CJL 030796

Figure Notes:

- | | |
|--|---|
| 1. S-Interface Source (TN556) | 6. System Cabinet |
| 2. Terminating Resistor | 7. Terminating Endpoint 1 |
| 3. Satellite Closet | 8. Terminating Endpoint 2 |
| 4. Maximum Distance from S-Interface Source to Work Location (1600 Feet) (488 m) | 9. Work Location |
| 5. Maximum Distance From Satellite Closet to Work Location (250 Feet) (76 m) | 10. Maximum Distance from Information Outlet to Terminating Endpoint (33 Feet) (10 m) |
| | 11. Information Outlet |

Figure 5-25. Basic Multipoint with One Work Location

Install Auxiliary Equipment

Data Modules provide an interface to:

- AUDIX
- Call Management System (CMS)
- Distributed Communications System (DCS)
- Property Management System (PMS)
- Customer-provided terminals and computers
- Call Detailed Recording (CDR)

Asynchronous Data Units (ADU) provide an interface to:

- Property Management System (PMS)
- Call Detail Recording (CDR) equipment

909A/B Universal Coupler is used when equipment is not FCC-registered:

- 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)

CONVERSANT™ Voice Information System

PagePac paging system. Three models are available:

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

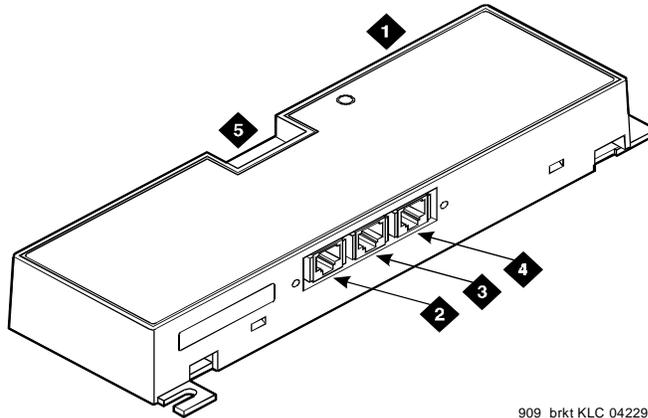
PC Console

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

Install the 909A/B Universal Coupler

Figure 5-26 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).



909_brkt KLC 042296

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 5-26. Typical 909A/B Universal Coupler

The 909A is the DC version 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-22911 L2).

The DIP switches on the unit set the following:

- 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 requirements of Central Office (CO) equipment.
- 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 5-12, Table 5-13, and Table 5-14. Refer to these tables when connecting music or paging equipment.

Table 5-12. J1 Pin Assignments (System Connections)

Pin	Color	Designation	Description
1	White-Orange	—	Not Used
2	Orange	PG2/BZ2	Seizure control lead, connected to -48 VDC from the system or from the 909A/B when the Protection/Paging switch is set to C2, or to GRD 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 5-13. J2 Pin Assignments (Accessory Connections)

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

⚠ CAUTION:

*If the cable is plugged into J3 **before** all cross-connects are completed, arcing may occur at the Main Distribution Frame (MDF) and damage the 909A/B.*

Table 5-14. 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 5-27 shows the physical locations of the pins for J1, J2, and J3.

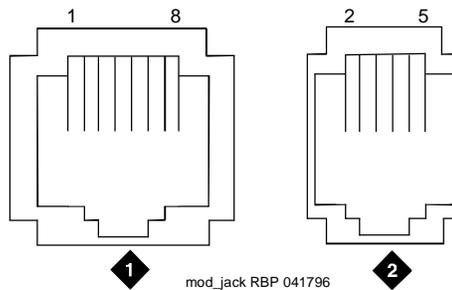


Figure Notes:

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

Figure 5-27. Typical Modular Jack Pinout

Install 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.

Install Loudspeaker Paging without Paging Adapter

Figure 5-28 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 5-28 shows connections from the music source to the loudspeaker system through a paging amplifier. The figure also shows connections to the loudspeaker system through a 909A/B coupler. A wiring block must be locally engineered.

⇒ NOTE:

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

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

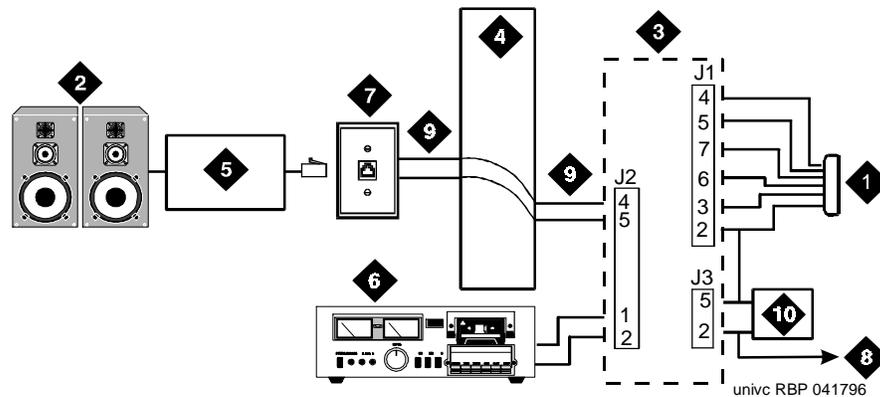


Figure Notes:

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

Figure 5-28. Connections for Loudspeaker Paging

Install Loudspeaker Paging Access (Without Universal Coupler)

1. Determine port assignment of paging zone(s) from Loudspeaker Paging Form.
2. At the Main Distribution Frame (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 Main Distribution Frame (MDF).
5. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the paging amplifier (to the loudspeaker system).
6. Install loudspeaker equipment per the manufacturer's instructions.
7. Administer per *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302.

Install Loudspeaker Paging with Universal Coupler

Access to loudspeaker paging is provided by an information outlet. The system side of the Main Distribution Frame (MDF) is connected to a 909A/B Universal Coupler. Provisions must be made for obtaining the DC power required by the 909A/B Coupler. An 1151A 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 Main Distribution Frame (MDF). A wiring block must be locally engineered.
4. Refer to Table 5-12, Table 5-13 and Table 5-14 to make connections from the 909A/B Universal Coupler to the wiring blocks.



CAUTION:

*If the cable is plugged into J3 **before** all cross-connects are completed, arcing may occur at the Main Distribution Frame (MDF) and damage the 909A/B.*

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 Main Distribution Frame (MDF).
7. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the loudspeaker system.
8. Install loudspeaker equipment per the manufacturer's instructions.
9. Connect an approved -48 VDC power source to the **-48** and **GRD** terminals (pins 5 and 2, respectively, of J3).
10. Administer per *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302.

Figure 5-30 shows a PagePac 20 with a Zone-Mate 9 or 39 incorporated into the PagePac 20. The 909A/B is not required when a Zone-Mate is installed.

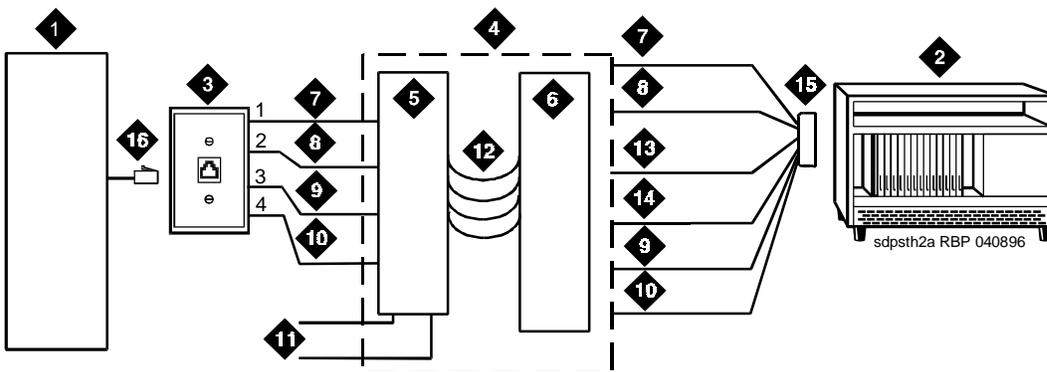


Figure Notes:

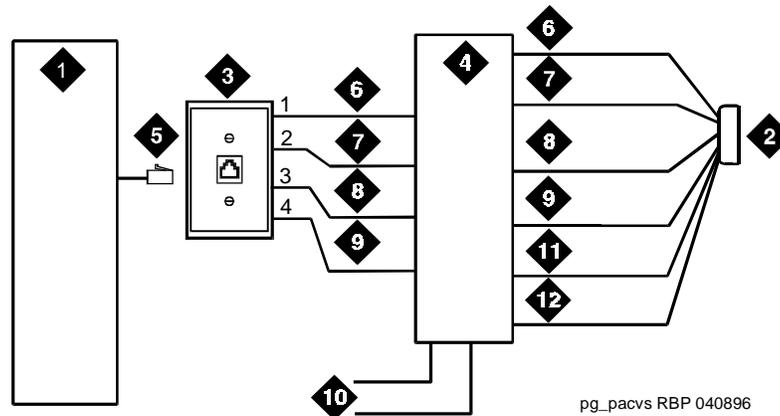
- | | |
|---|---|
| 1. PagePac 20 PowerMate (With Zone-Mate 9 or 39) | 9. S |
| 2. System Cabinet (TN763B/C/D Auxiliary Trunk Circuit Pack) | 10. S1 |
| 3. 103A or Modular Wall Jack | 11. SZ and SZ1 Are Not Used on Station Side |
| 4. Part of Main Distribution Frame (MDF) | 12. 110P6A Patch Cord or Jumpers |
| 5. Station Side (Yellow Field) | 13. SZ |
| 6. System Side (Purple Field) | 14. SZ1 |
| 7. Tip (Green) | 15. B25A 25-Pair Cable (Male-to-Female) |
| 8. Ring (Red) | 16. 4-Pair Modular Cord |

Figure 5-30. Connections for PagePac 20 With Zone-Mate

- A wiring block must be locally engineered.

Install PagePac VS

The PagePac VS is a 35 watt amplifier that provides up to three paging zones. The PagePac VS does not require a 909A/B Universal Coupler. See Figure 5-31.



pg_pacvs RBP 040896

Figure Notes:

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

Figure 5-31. Connections for PagePac VS

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

Install PagePac 50/100/200

The 50/100/200 PagePac Amplicenter paging system provides three output wattages: 50, 100 and 200. If the unit is used alone, a 909A/B Universal Coupler is required. See Figure 5-32.

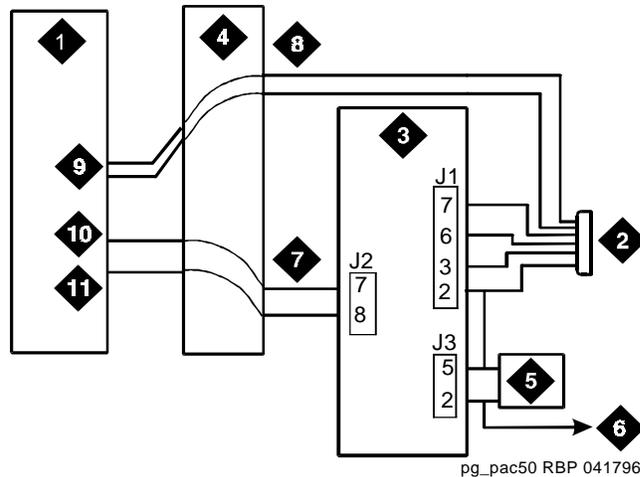


Figure Notes:

- | | |
|---|------------------------------|
| 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 Main Distribution Frame (MDF) | 9. Page In Connections |
| 5. Power Supply for Universal Coupler | 10. Music/Page Connection |
| | 11. Signal Ground Connection |

Figure 5-32. Connections for PagePac 50/100/200 System

- A wiring block must be locally engineered.

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

Figure 5-33 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 5-34 on page 5-67 shows the connections when the music source is not FCC-registered (or equivalent).

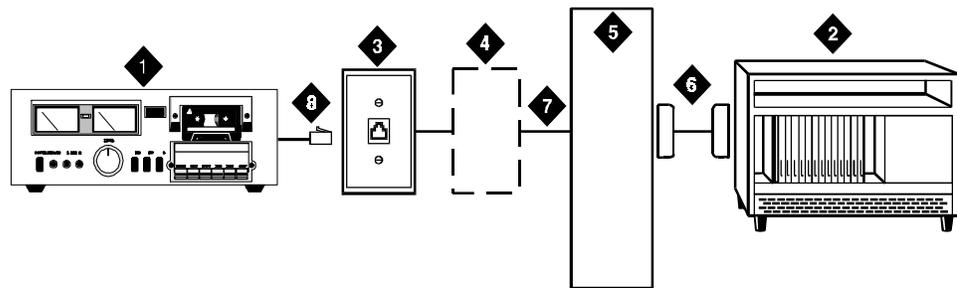


Figure Notes:

- | | |
|--|--|
| 1. Music Source | 5. Part of Main Distribution Frame (MDF) |
| 2. System Cabinet (Auxiliary Trunk Circuit Pack) | 6. A25D 25-Pair Cable (Male-to-Male) |
| 3. 103A or Modular Wall Jack | 7. Tip (Green) and Ring (Red) |
| 4. 122A Music Adapter (If Required) (Primarily France) | 8. 4-Pair Modular Cord |

Figure 5-33. Typical FCC-Registered Equipment Connections (Auxiliary Access)

If the music source is Federal Communications Commission (FCC) registered (or equivalent), the system side of the Main Distribution Frame (MDF) is connected directly to the system. If the music source is not Federal Communications Commission (FCC) registered, the system side of the Main Distribution Frame (MDF) is connected to a 909A/B Universal Coupler.

The following connection instructions are used when the music source is not located in the equipment room. If the music source is located in the equipment room, the connections do not have to be routed through the information outlet.

Install Registered Music Source

Refer to Figure 5-33 to install a Federal Communications Commission (FCC) or equivalent 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 Main Distribution Frame (MDF).
4. Administer per *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302.

Install Non-Registered Music Source

Refer to Figure 5-34 on page 5-67 and the following instructions to install a music source that is not registered with the Federal Communications Commission (FCC) (or equivalent).

1. Determine feature port assignment from Feature-Related System Parameters Form.
2. Install the music source per the manufacturer's instructions.
3. Connect a cable from the assigned port carrier slot to J1 on the 909A/B. A wiring block must be locally engineered.
4. At the 909A/B Universal Coupler:
 - Connect the T-lead at pin 5 and the R-lead at pin 4 of J1 on the 909A/B to the corresponding leads from the TN2183
 - Connect the CT-lead at pin 5 and the CR-lead at pin 4 of J2 on the 909A/B to the Main Distribution Frame (MDF)
 - Install patch cord/jumper wires at the Main Distribution Frame (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 or other approved power supply.
7. Administer per *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302.

Figure 5-34 shows a system connected to a non-FCC-registered (or equivalent) customer-supplied music source via auxiliary access.

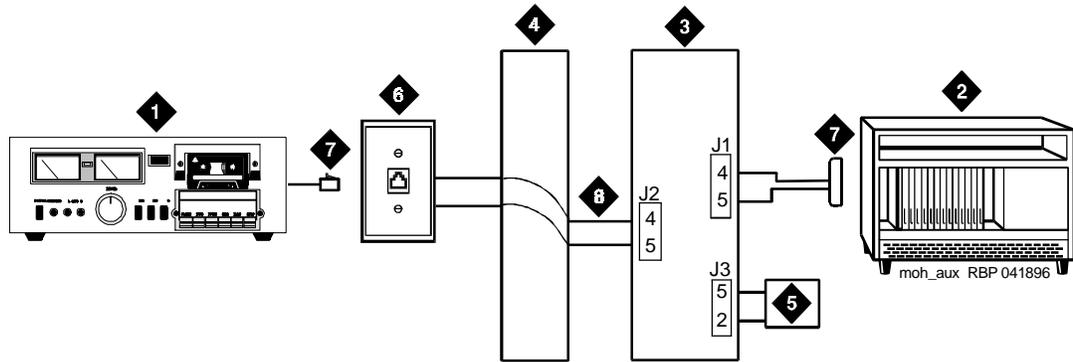


Figure Notes:

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

Figure 5-34. Typical Non-FCC-Registered Equipment Connections (Auxiliary Access)

- A wiring block must be locally engineered.

Figure 5-35 shows a system connected to a non-FCC-registered (or equivalent) customer-supplied music source via an analog line.

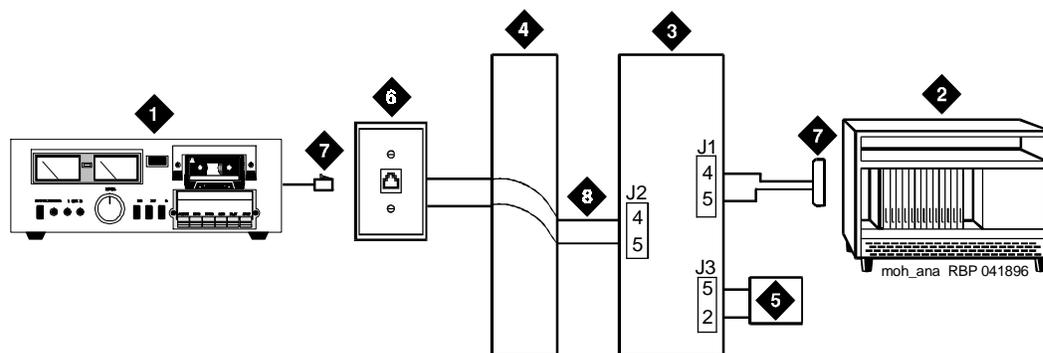


Figure Notes:

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

Figure 5-35. Connections to Music-on-Hold (non-FCC-registered) via Analog Line

- A wiring block must be locally engineered.

- 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).

Administer per *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302.

Asynchronous Data Units

The following section describes how Asynchronous Data Units (ADUs) are used to connect equipment to the system.

Asynchronous Data Units

Figure 5-37 shows a typical Z3A2 Asynchronous Data Unit (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.

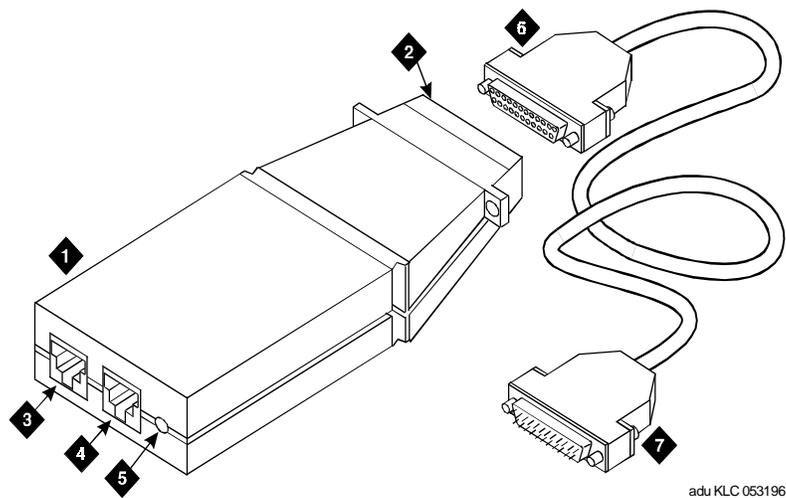


Figure Notes:

- | | |
|--|---|
| 1. Z3A2 Asynchronous Data Unit (ADU) | 4. Telephone Jack (To Analog Telephone) |
| 2. 25-Pin Male D-Connector (EIA-232-D) to DTE Equipment | 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 5-37. Z3A2 Asynchronous Data Unit (ADU)

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

Data Modules

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

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

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

Data Module Types

Figure 5-38 shows the front and rear of a 7400A Asynchronous Data Module. This unit is intended for connecting data processing or data communications equipment 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.

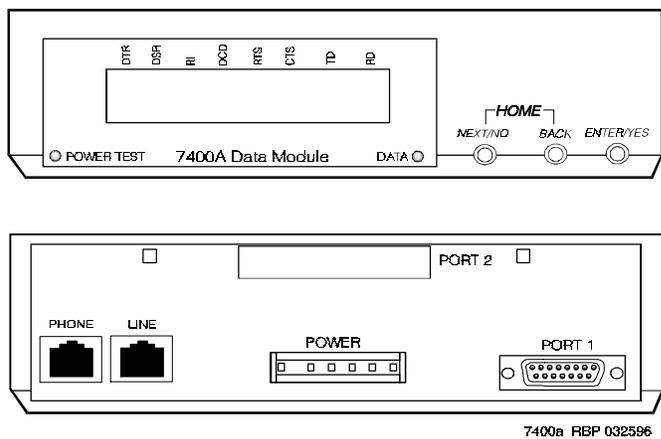


Figure 5-38. 7400A Data Module

Figure 5-39 shows the front and rear of a 7400B Asynchronous Data Module. An EIA-232-D standard interface connects a terminal device to the 7400B and a standard Digital Communications Protocol (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.

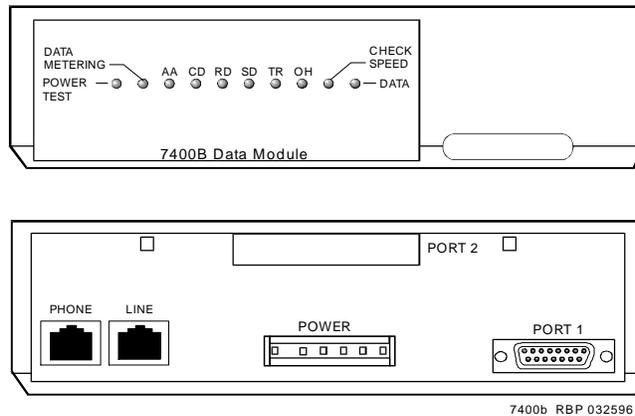


Figure 5-39. 7400B Data Module

Figure 5-40 shows the front and rear of a 7400C Data Module. 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.

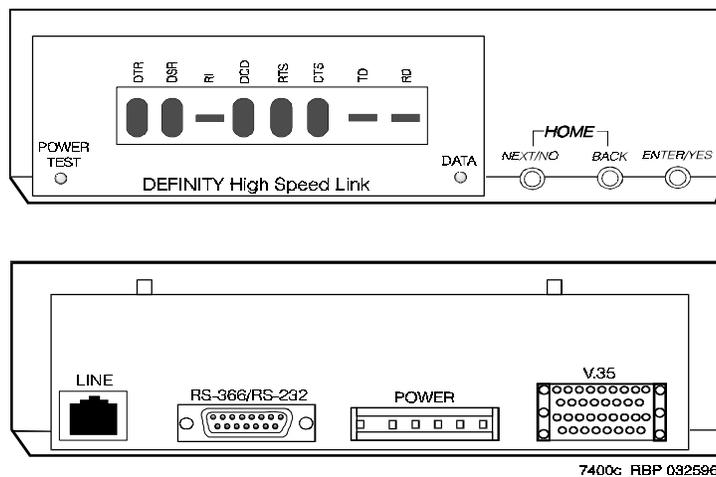


Figure 5-40. 7400C Data Module (High Speed Link)

Figure 5-41 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.

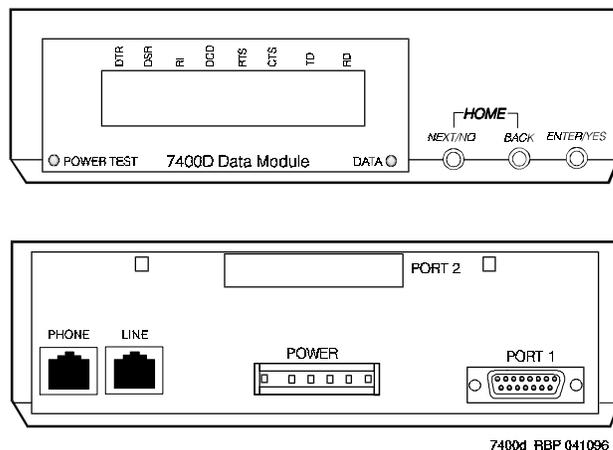


Figure 5-41. 7400D Data Module

Figure 5-42 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.

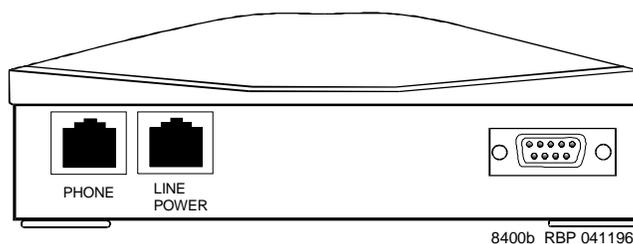


Figure 5-42. 8400B Plus Data Module

Figure 5-43 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 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.

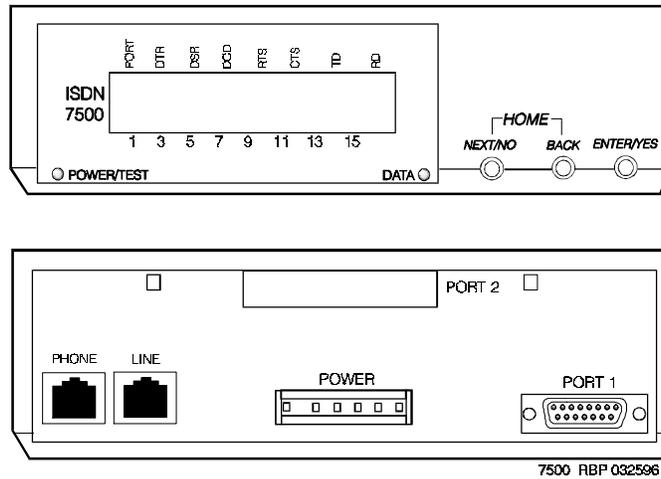


Figure 5-43. 7500B ISDN Data Module

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 5-44.

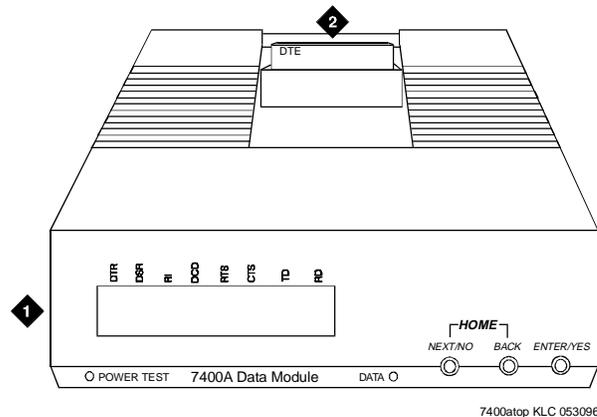


Figure Notes:

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

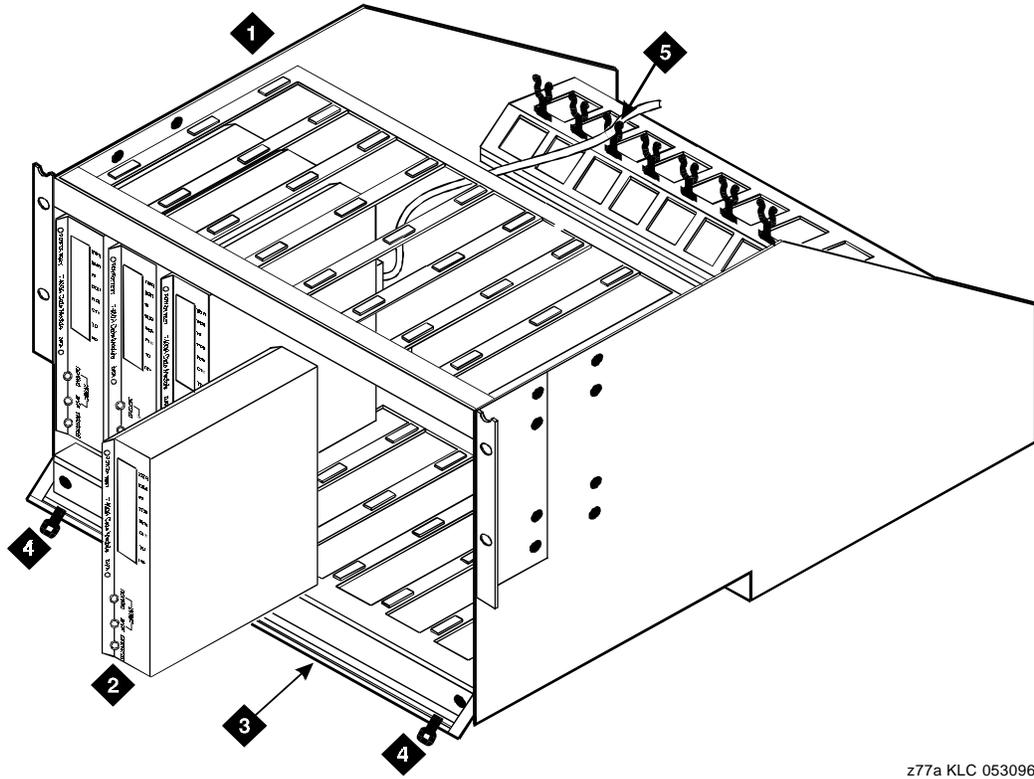
Figure 5-44. Data Module Mode Selector

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 5-45. To install the data modules, perform the following:



z77a KLC 053096

Figure Notes:

- | | |
|------------------------------|-------------------------------|
| 1. Z77A Data Mounting | 4. Retaining Bar Plunger |
| 2. Data Module (7400A Shown) | 5. Twist-Lock Cable Retainers |
| 3. Retaining Bar | |

Figure 5-45. 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 5-46 on page 5-80).
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 Main Distribution Frame (MDF) to a digital line circuit pack (such as a TN754B). The following sections detail these connections.

Data Module Equipment Connections



CAUTION:

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

7400B Data Module

Typical connections between a 7400B Data Module and the associated host computer Call Management System (CMS) interface are shown in Figure 5-46.

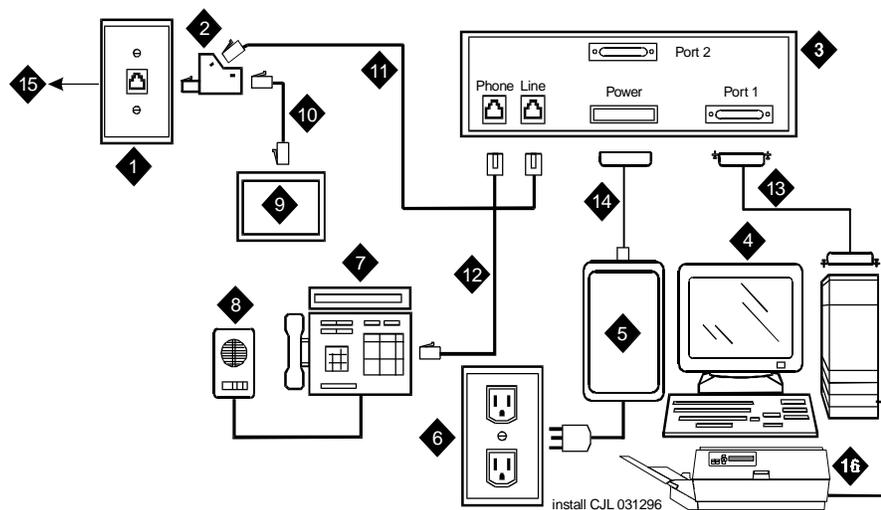


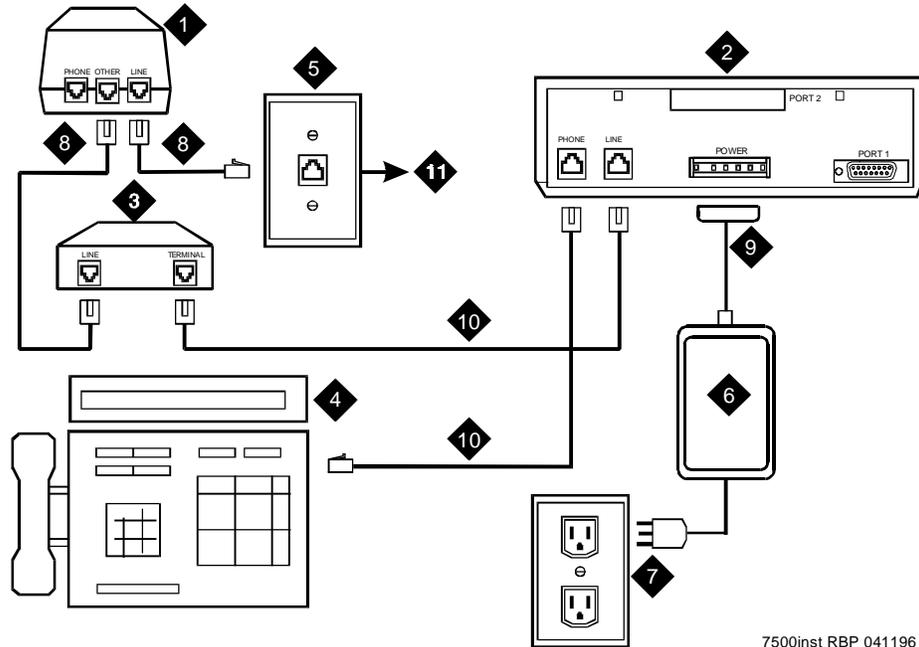
Figure Notes:

- | | |
|--|--|
| 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 Main Distribution Frame (MDF) and Digital Line Circuit Pack in System Cabinet |
| 7. Display Telephone | 16. Printer |
| 8. S101A Speakerphone | |
| 9. Auxiliary Power Supply for Telephone and Speakerphone | |

Figure 5-46. Typical Connections to a 7400B Data Module

7500B Data Module

Typical connections between a 7500B Data Module and the associated equipment interface are shown in Figure 5-47.



7500inst RBP 041196

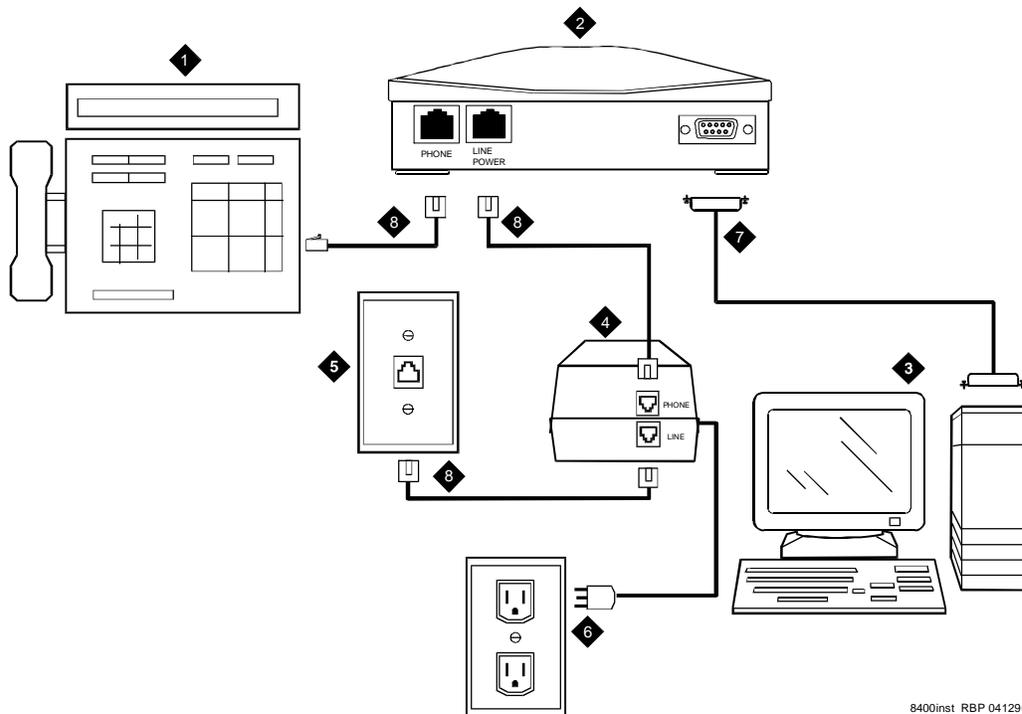
Figure Notes:

- | | |
|--------------------------------------|--|
| 1. MSP-1 Power Supply | 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 Main Distribution Frame (MDF) |
| 6. Data Module Power Supply | |

Figure 5-47. 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 5-48.



8400inst RBP 041296

Figure Notes:

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

Figure 5-48. Typical Connections to a 8400B Plus Data Module

Install DEFINITY AUDIX R3 System

The DEFINITY Audio Information Exchange (AUDIX) R3 System is installed in five adjacent purple slots; preferably, the five rightmost slots. For installation information, refer to *DEFINITY AUDIX Installation and Upgrade*, 585-300-111. Figure 5-49 shows a typical AUDIX System installation.

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

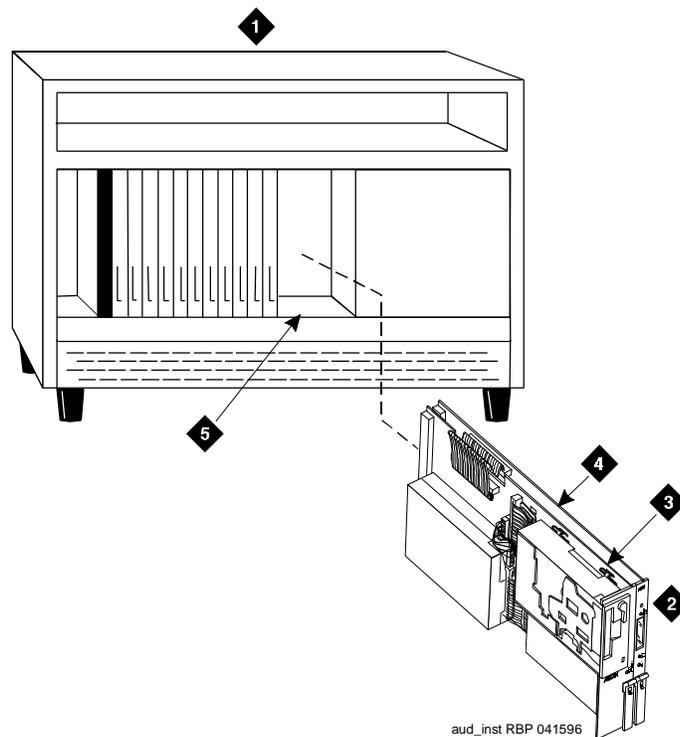


Figure Notes:

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

Figure 5-49. Typical DEFINITY AUDIX System Installation

Connect the Alarm Origination Cable

Figure 5-50 shows a typical alarm origination cable installation. The alarm cable is connected to the Main Distribution Frame (MDF) and cross-connected to the customer-supplied alarm equipment. Also refer to Table 5-15 on page 5-85.

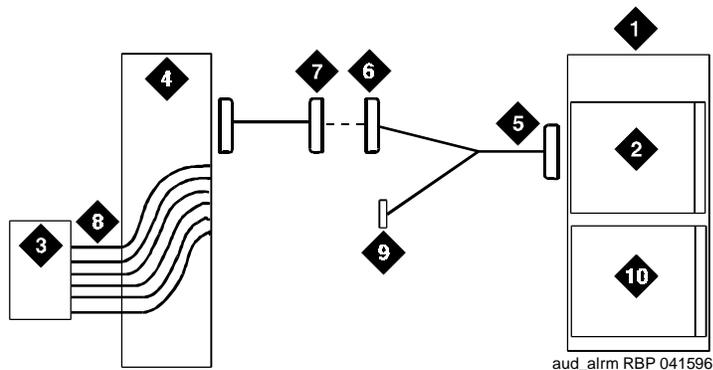


Figure Notes:

- | | |
|---|--|
| 1. System Cabinet | 6. Female "ALARM" Connector on ALB Y Cable |
| 2. TN2169 Alarm Circuit Pack (Part of AUDIX System) | 7. Male Connector on Group 300 Cable |
| 3. Customer-Supplied Alarm Equipment | 8. Cross-Connections to Alarm Equipment |
| 4. Part of Main Distribution Frame (MDF) | 9. Unused RS-232 Connector |
| 5. ALB Y Cable | 10. Multi-Function Circuit Pack (Part of AUDIX System) |

Figure 5-50. Connecting the Alarm Origination Cable

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

➡ NOTE:

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

4. Perform the cross-connects for the alarm origination connection as described on the service order. Also see Table 5-15.

Table 5-15. Alarm Origination Pinouts (ALB Y Cable)

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

* RTN is the return or ground.

Install the Terminal(s)

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

- Via a direct connection
- Via modems
- Via asynchronous data units (ADU)
- Via data modules

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

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

⇒ NOTE:

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

Install a Directly-Connected Terminal

Figure 5-51 shows typical connections for a local maintenance terminal. Figure 5-52 shows typical connections for a local administration terminal. Refer to the documentation shipped with the terminal to connect the keyboard, terminal power, and to set up the terminal after installation.

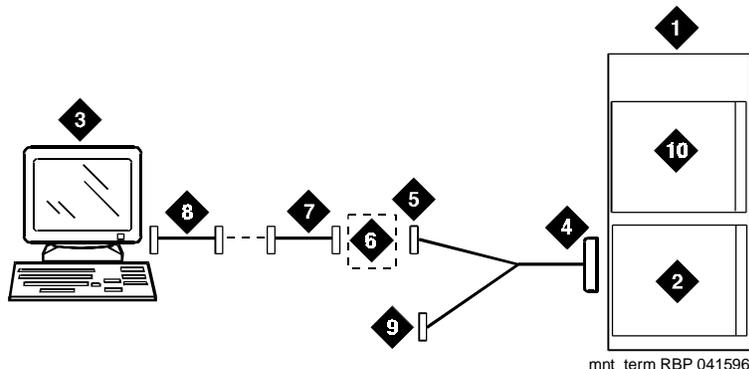


Figure Notes:

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

Figure 5-51. Typical Local Maintenance Terminal Connections

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

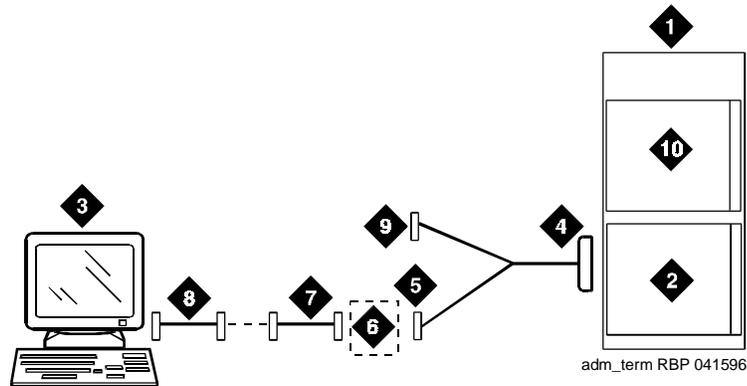


Figure Notes:

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

Figure 5-52. Typical Local Administration Terminal Connections

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

Testing the Connection

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

⇒ NOTE:

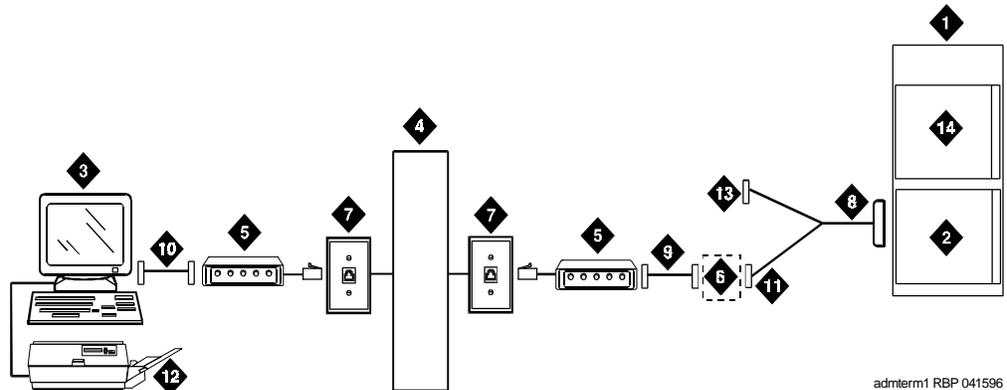
When installing a serial printer, set the options on the printer as described in the manual supplied with the printer then set the corresponding options on the terminal to match.

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

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

Install the Administration Terminal via Modems

Figure 5-53 shows typical connections to the administration terminal using modems. Be sure the modems are on the list of supported peripherals. Refer to the *DEFINITY AUDIX System Description*, 585-300-205.



admterm1 RBP 041596

Figure Notes:

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

Figure 5-53. Typical Administration Terminal Connections via Modems

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

4. Attach the connector on one end of a modular cord to the modem. Attach the other connector to the modular wall jack (information outlet).
5. Connect the second modem to the wall jack at the terminal site.
6. Connect a null modem cable (if required) from the modem to the terminal.
7. Connect the printer to the terminal (if required). See "Install the Printer" on page 5-95.



NOTE:

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

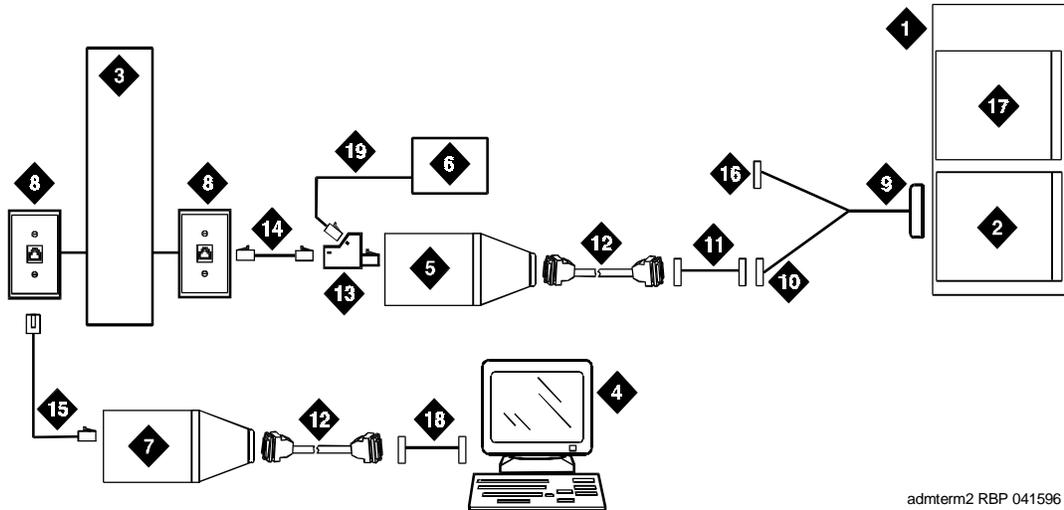
8. Set the terminal and modem options. See *DEFINITY AUDIX Installation*, 585-300-111, for a complete list of option settings for all supported terminals and modems.
9. At the terminal, enter `AT`. If the modem is installed correctly, it responds with `OK` (on the terminal screen).
10. Enter `ATDT` and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

If the terminal is installed correctly (and the *DEFINITY AUDIX* System is in either *ADX*, *OAM*, *OS* or *A/INIT* state), the screen displays the `login` prompt.

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

Install the Administration Terminal via Asynchronous Data Units

Figure 5-54 shows typical connections to an administration terminal using Asynchronous Data Units (ADUs).



admterm2 RBP 041596

Figure Notes:

- | | |
|---|---|
| 1. System Cabinet | 11. Group 311 Cable |
| 2. Multi-Function Circuit Pack (Part of AUDIX System) | 12. 25-Pin EIA-232-D Connector (Male to Female for Z3A1 or Female to Female for Z3A4) |
| 3. Part of Main Distribution Frame (MDF) | 13. 400B2 Adapter |
| 4. Administration Terminal | 14. D8W Cord |
| 5. Z3A2 Asynchronous Data Unit (ADU) | 15. D8AM Crossover Cord |
| 6. Asynchronous Data Unit (ADU) Power Supply | 16. Unused RS-232 Connector |
| 7. Z3A1 Asynchronous Data Unit (ADU) | 17. Alarm Circuit Pack (Part of AUDIX System) |
| 8. 103A or Modular Wall Jack | 18. Null Modem Cable |
| 9. MFB Y Cable | 19. D6AP Cord |
| 10. "PORT B" Connector on MFB Y Cable | |

Figure 5-54. Typical Administration Terminal Connections through Asynchronous Data Units

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

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

Install the Administration Terminal via Data Modules

Figure 5-55 shows typical connections to an administration terminal using data modules.

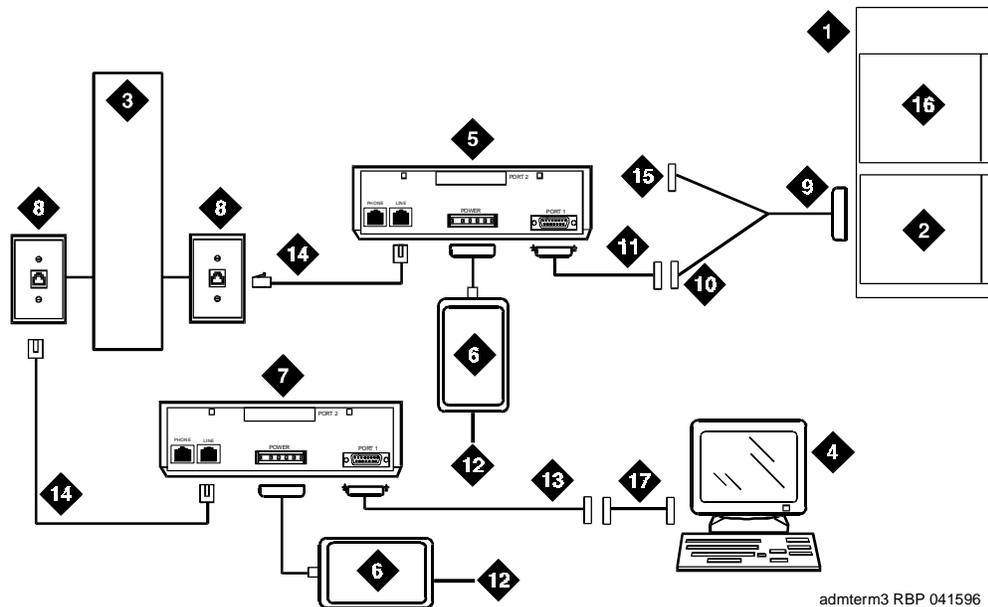


Figure Notes:

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

Figure 5-55. Typical Administration Terminal Connections Using Data Modules

 **NOTE:**

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

1. Make sure the EIA connector board (located inside the data module) is set to DCE (factory default). If not, unplug the card and turn it around to the DCE setting (see "Mode Selection" on page 5-76 for details).
2. Connect the MFB Y cable to the appropriate connector on the rear of the system cabinet.
3. Attach one end of a Group 311 cable (supplied with the DEFINITY AUDIX PEC) to the RS-232 connector labeled **PORT B** on the MFB Y cable.
4. Attach the opposite end of the Group 311 cable to the 25-pin female connector on the rear of the 7400A Data Module.
5. Plug one end of the D8W 4-pair modular cord (supplied with the data module) into the **LINE** connector on the 7400A data module. Plug the other end into an information outlet (modular wall jack).
6. At the Main Distribution Frame (MDF), cross-connect the wires to the modular wall jack at the administration terminal location.
7. Plug a D8W 4-pair modular cord into the wall jack at the administration terminal location. Plug the opposite end of the cord into the **LINE** connector on the 7400B (or second 7400A) data module.
8. Attach a 25-pin RS-232 cable to the null modem cable. Attach the opposite end of the null modem cable to the serial RS-232 port (**DTE**) on the terminal.
9. Plug the 4-pin connector on the end of each data module power supply into the **POWER** connector on each data module.
10. Set the options and interface baud rate on the 7400A data module. Refer to *7400A Data Module User's Manual*, 555-020-706. Set the options and interface baud rate on the 7400B data module. Refer to *AT&T 7400B Data Module User's Guide*, 555-020-707.
11. Check the dip switches inside the front panel. If a telephone is not connected with the data module, set the first dip switch (1) to the ON position. If a telephone is connected, set all dip switches OFF.
12. Set the terminal options. See *DEFINITY AUDIX Installation*, 585-300-111, for a complete list of option settings for all supported terminals.

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

13. At the terminal, enter **AT**. If the 7400B data module is connected correctly, it responds with **OK** (written on the terminal screen).

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

Install the Printer (Optional)

This task is required only if the customer requested a printer on the DEFINITY AUDIX administration terminal. See Figure 5-53 on page 5-89. The following instructions are typical for most installations. The instructions supplied with the printer should be followed.

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

⇒ NOTE:

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

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

⇒ NOTE:

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

Call Management System

Install Call Management System Interface

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

A typical Call Management System (CMS) connection using mode conversion is shown in Figure 5-56.

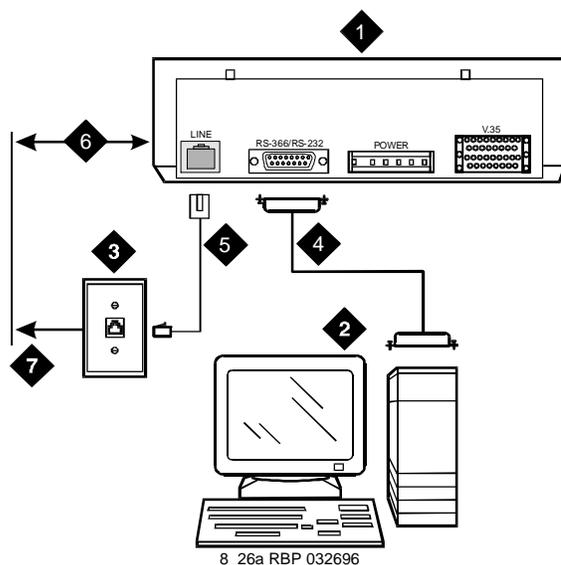


Figure Notes:

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

Figure 5-56. Typical Call Management System Connections

Install Distributed Communications System

Figure 5-57 shows a typical connection between two cabinets, through DCS links. The link to the system can be provided by direct connection or by modems. The top half of Figure 5-57 shows direct connections. The bottom half of Figure 5-57 shows modem connections.

The system uses the TN765 Processor Interface as the required control circuit pack. The TN765 provides a single Electronic Industries Association (EIA) port that allows access to one data link.

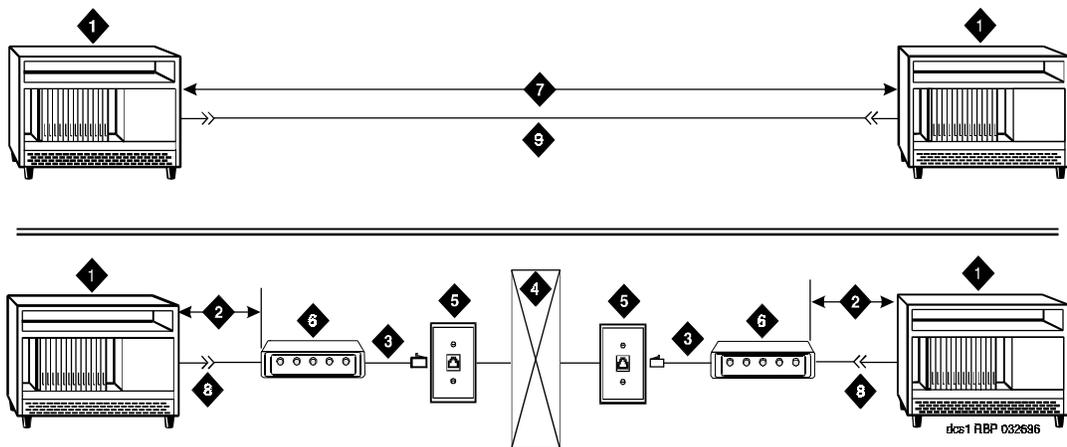


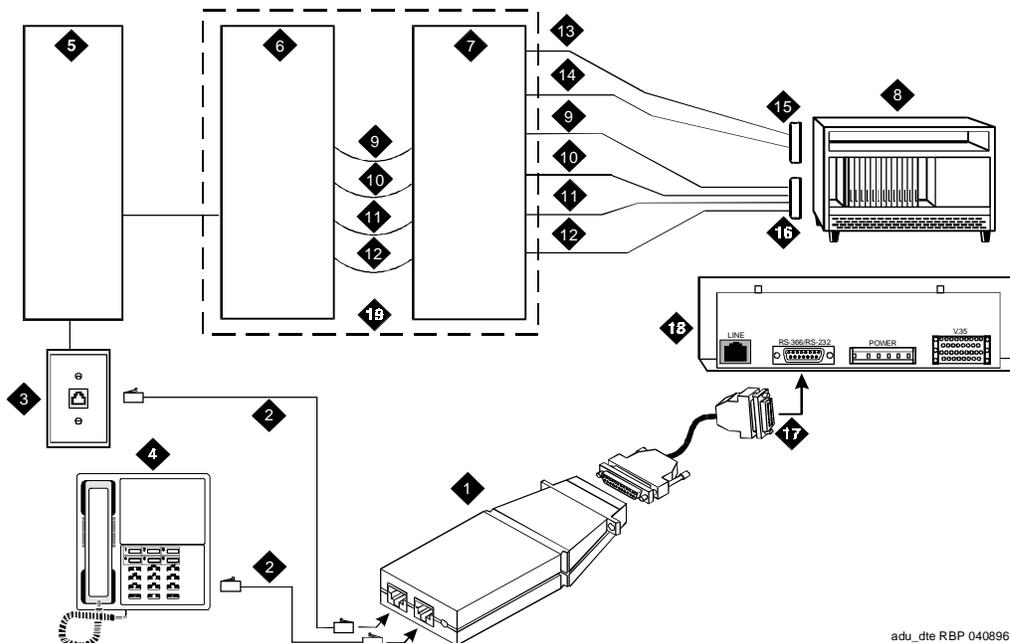
Figure Notes:

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. System Cabinet (TN765 Processor Interface Circuit Pack) to TN675 Processor Interface Circuit Pack via PI Connector on Rear of Control Carrier) 2. 25 Feet (7.62 m) Maximum 3. Modular Cord 4. Public Switched Telephone Network (PSTN) | <ol style="list-style-type: none"> 5. 103A or Modular Wall Jack 6. Modem 7. 50 Feet (15.24 m) Maximum 8. M25B 25-Pair RS-232 Cable 9. A25D 25-Pair Cable (Male-to-Male) |
|--|--|

Figure 5-57. Typical DCS Link — System to System

Install Property Management System Interface

The interface between the system and the Property Management System (PMS) can be through data modules. Such connections are covered in the section for installing data modules. See Figure 5-58.



adu_dte RBP 040896

Figure Notes:

- | | |
|---------------------------------------|--|
| 1. Z3A2 Asynchronous Data Unit (ADU) | 11. PXT |
| 2. 4-Pair Line Cord | 12. PXR |
| 3. 103A Modular Wall Jack | 13. Tip |
| 4. Analog Telephone | 14. Ring |
| 5. Satellite Site or Adapter Location | 15. TN746 Analog Line Circuit Pack |
| 6. Station Side (Blue or White Field) | 16. TN726B Data Line Circuit Pack |
| 7. System Side (Purple Field) | 17. 25-Pin EIA-232-D Connector (Male)
(Z3A1 Only) |
| 8. System Cabinet | 18. Data Module (7400C Shown) |
| 9. TXT | 19. Part of Main Distribution Frame (MDF) |
| 10. TXR | |

Figure 5-58. Connections to Asynchronous Data Unit

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

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

Install Printers and Terminals

Printers

A journal printer can be used with the Property Management System (PMS). The connections for the printer are the same as for the host computer Call Management System (CMS). See Figure 5-56 on page 5-96.

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

The Property Management System (PMS) interface and the journal printers can also be installed using Asynchronous Data Unit (ADUs). The connections are the same as for a customer-provided data terminal. Equipment connections can be through a modem or through a data module.

Terminals

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

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

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

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

Install Call Detail Recording Unit Interface

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

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

Administer the system as described in *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302.

A data line circuit pack may also be used. If so, data modules are not required for DTE equipment. Connections to the Call Detail Recording (CDR) output device is the same as a customer-provided data terminal. The Call Detail Recording (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 Asynchronous Data Unit (ADU) is required.

Figure 5-59 on page 5-101 shows four types of connections to the output device. The following connections are shown:

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

Figure 5-60 shows the connections for a remote host connected by an analog line.

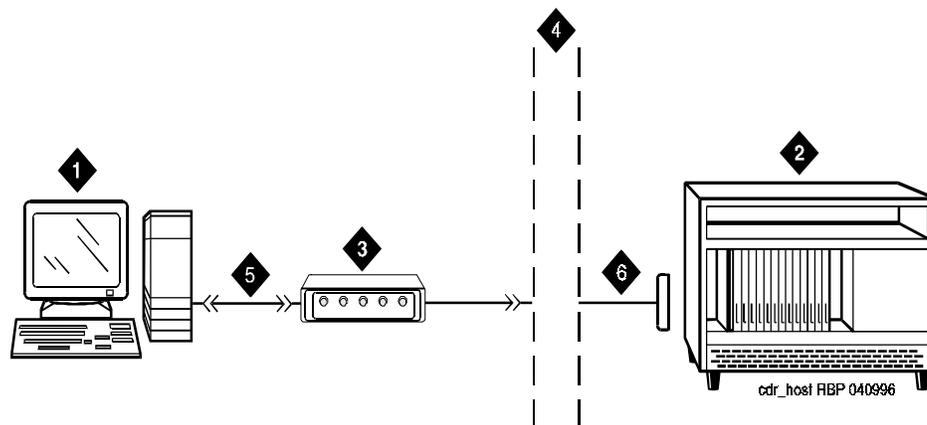


Figure Notes:

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

Figure 5-60. Call Detail Recording Cabling to Remote Host

Install Wideband Endpoints

Wideband switching makes it possible for the system to support high-speed data transfer between endpoints. Wideband endpoints may include video equipment or bridge/routers for Local Area Networks (LANs).

Use the running list that accompanies the system to make cable connections. The following illustrations provide *examples* of how a system could be wired.

Non-Signaling Configuration

A non-signaling connection from the system to a wideband endpoint may be connected to a Channel Service Unit (CSU). If no Channel Service Unit (CSU) is used, the distance between the system and the endpoint is limited to a few hundred feet. See Figure 5-61. The maximum distance depends on the type of cable and type of endpoint used.

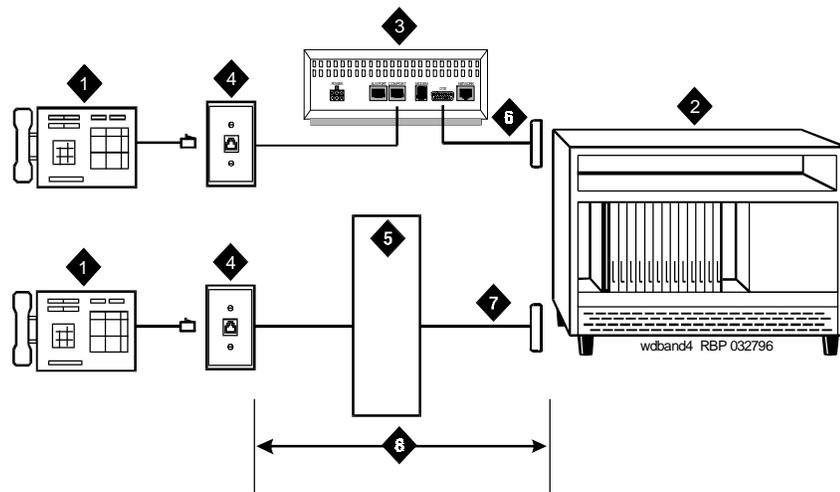


Figure Notes:

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

Figure 5-61. Typical Non-Signaling Wideband Configuration

If a Channel Service Unit (CSU) is used, the distance between connections may be up to 1300 feet (396.2 m). The maximum distance to the wideband endpoint depends on the type of cable used and the specifications of the wideband 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 used. Figure 5-62 shows connections with and without a Channel Service Unit (CSU).

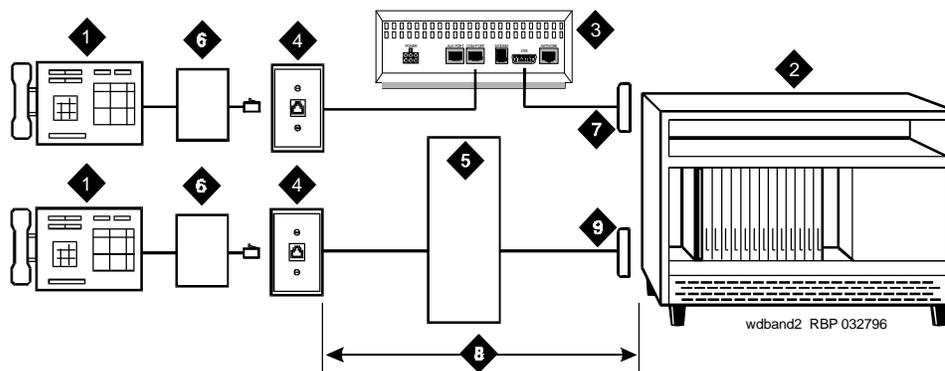


Figure Notes:

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

Figure 5-62. Typical Signaling Wideband Configuration

Figure 5-62 shows the bandwidth controller connected directly to the wideband endpoint. The controller is typically installed near the wideband endpoint where they are directly connected (usually within a few feet of each other). See the “Digital Tie Trunk Example” on page 5-6 for wiring and pinout information.

- For non-Channel Service Unit (CSU) installations, cross the transmit and receive lines so a transmit signal from the TN464/F is connected to the receive connection on the bandwidth controller and a transmit signal from the bandwidth controller is connected to the receive connection on the TN464/F.

- For Channel Service Unit (CSU) installations, cross the transmit and receive lines between the Channel Service Unit (CSU) and the bandwidth controller

Figure 5-63 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 depend on the quality of the cables and on the specifications of the wideband equipment.

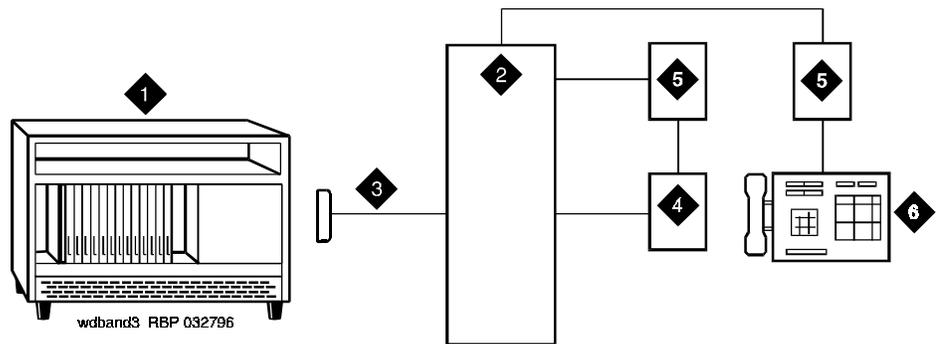


Figure Notes:

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

Figure 5-63. Typical Signaling Wideband Configuration with Remote Port Module

- For non-Channel Service Unit (CSU) installations, cross the transmit and receive lines so a transmit signal from the TN464/F is connected to the receive connection on the bandwidth controller and a transmit signal from the bandwidth controller is connected to the receive connection on the TN464/F.
- For Channel Service Unit (CSU) installations, cross the transmit and receive lines between the Channel Service Unit (CSU) and the bandwidth controller

Install PassageWay Adapter

The PassageWay adapter makes it possible to connect a Mu-Law digital telephone and a personal computer through a single four-wire DCP digital port to the system. See Figure 5-64.

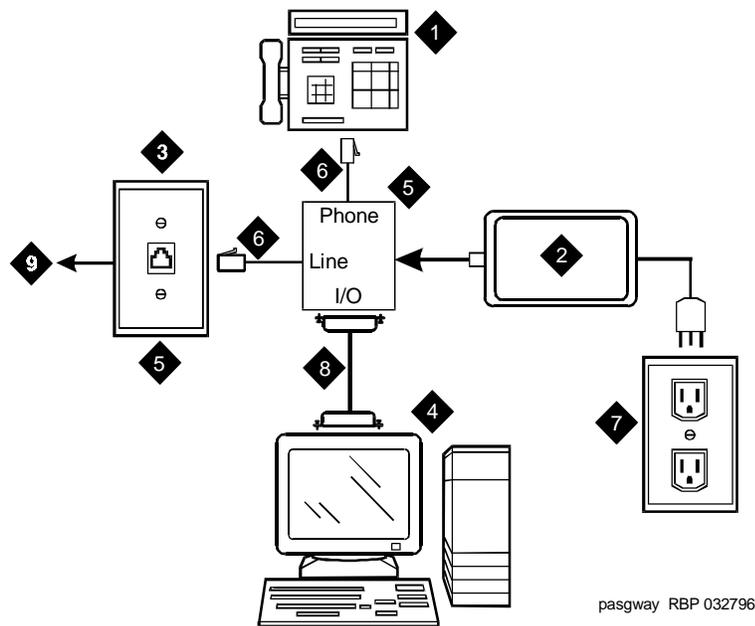


Figure Notes:

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

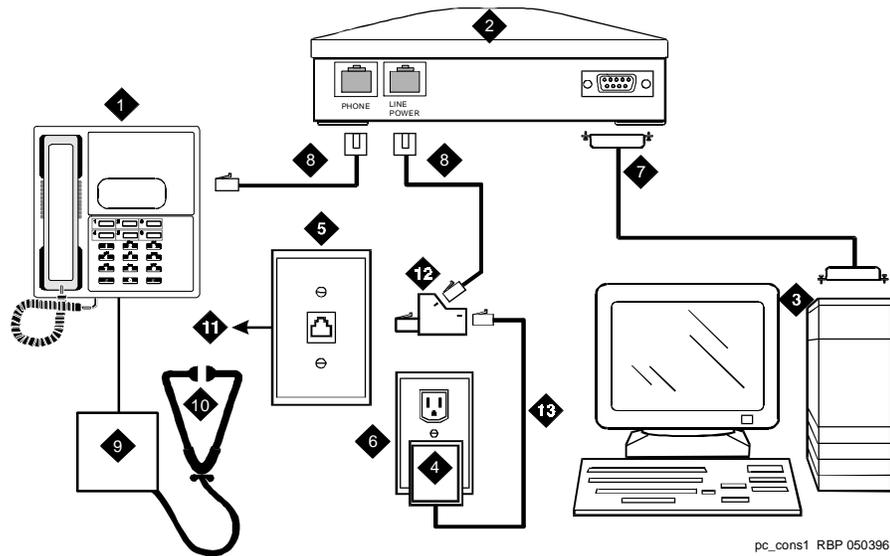
Figure 5-64. Typical Connections Through PassageWay

PassageWay provides two standard 8-pin modular jacks, one for connection to the telephone and one for connection to a modular wall jack leading to the system. Connect the wall jack to the **Line** jack. Plug the telephone into the **Phone** jack. Plug an optional Personal Computer (PC) into the 25-pin serial **I/O** connector. The PassageWay interface requires one Watt at about -48 VDC that must be provided by a bulk or individual power supply.

Install PC Console

PC Console (United States)

Figure 5-65 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) | 8. D8W 4-Pair Modular Cord |
| 2. PassageWay Adapter | 9. Optional 500A Adapter |
| 3. Host Computer (Serial I/O Connection) | 10. Optional Headset |
| 4. KS-22911 Power Supply for PassageWay Adapter | 11. To System Cabinet (TN754B, TN2181, or TN2224 Digital Line Circuit Pack) |
| 5. 103A or Modular Wall Jack | 12. 400B2 Adapter |
| 6. Electrical Outlet for Power Supply | 13. D6AP Cable |
| 7. 25-Pair Cable | |

Figure 5-65. Typical PC Console Connections (United States)

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

Install Integrated Channel Service Unit Module

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

⇒ NOTE:

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

Install the 120A CSU Module

Refer to Figure 5-67 when installing the 120A module. Installation instructions follow the figure and tables. Table 5-16 describes the components shipped with the 120A module.

Table 5-16. 120A Module Parts List

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

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

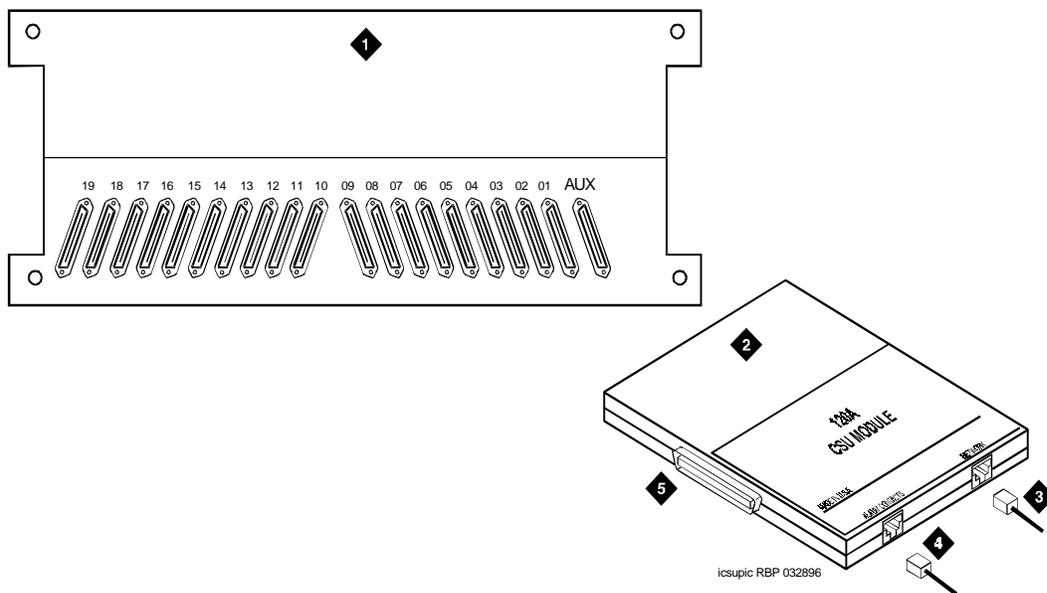


Figure Notes:

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

Figure 5-67. 120A Channel Service Unit Module

Table 5-17 provides the H600-383 cable pinouts. Table 5-18 provides the cable lengths for each cable group number.

Table 5-17. H600-383 Cable Pin Assignments

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

Table 5-18. H600-383 Cable Lengths by Group Number

Group	Length	Group	Length
1	25 Feet (7.62 m)	5	125 Feet (38.1 m)
2	50 Feet (15.24 m)	6	200 Feet (61 m)
3	75 Feet (22.86 m)	7	400 Feet (122 m)
4	100 Feet (30.48 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.*

Perform the following steps to install the 120A CSU Module:

 **NOTE:**

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

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 B-4.
 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. This is done 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.

Install CONVERSANT System

Figure 5-68 shows a typical CONVERSANT® System connected to a 3150 Channel Service Unit (CSU). The CONVERSANT Systems connect similarly. The MAP/40 installs inside a Personal Computer (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. The CONVERSANT system should be located within 75 feet (22.86 m) of the Channel Service Unit (CSU).

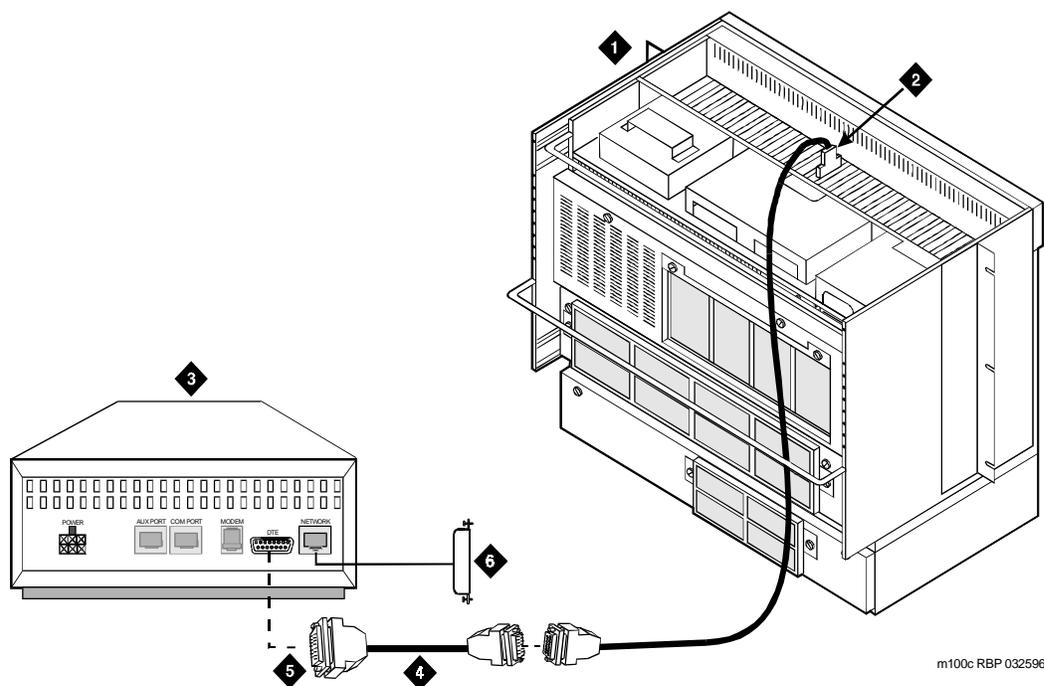


Figure Notes:

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

Figure 5-68. Typical Connections for CONVERSANT

Install a Two-Wire DCP Endpoint

The Tip and Ring connections of two-wire DCP endpoints are wired 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. Refer to page 5-14 to wire from the port circuit pack to the information outlet.

Install Two-Wire Voice Terminals



CAUTION:

*Except for auxiliary power, if necessary (wired per Table 5-19), these should be the **only** connections to the modular wall jack. Do **not** bridge or parallel these telephones..*

Table 5-19. 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

Install Two-Wire Voice and Data Terminals

Figure 5-69 shows a workstation connected to a data adapter. The line side of the adapter connects to the TN2224 Digital Line 2-Wire circuit pack (or equivalent) by way of the Main Distribution Frame (MDF) (to the system cabinet).

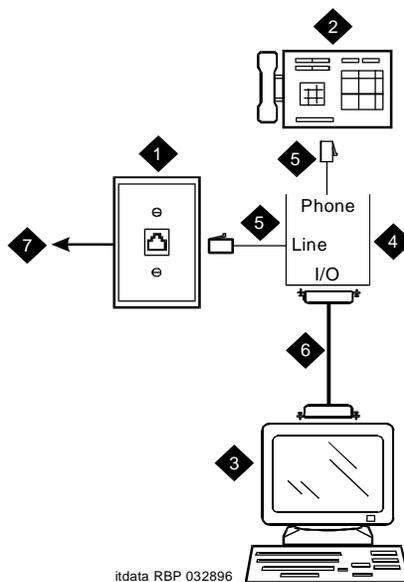


Figure Notes:

- | | |
|-----------------------------------|---|
| 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 System Cabinet (TN2181 Digital Line Circuit Pack) |
| 4. Data Adapter (Such as Italtel) | |

Figure 5-69. Typical Connections to a Two-Wire DCP Workstation

Wire the circuit pack to the Main Distribution Frame (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.

Install Busy Tone Disconnect

The Busy Tone Disconnect external adjunct provides a method to detect disconnect of incoming calls connected via loop start 2-wire analog trunks. These 2-wire trunks are used in some countries outside the United States where the Public Switched Telephone Network (PSTN) sends tones in the voice band instead of line disconnect to indicate caller-disconnect. Figure 5-70 shows typical connections.

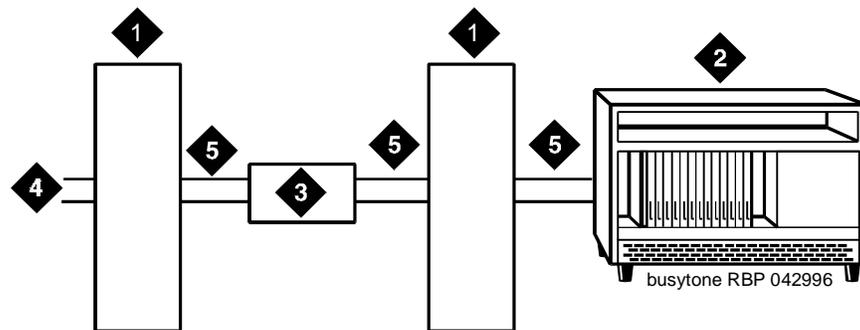


Figure Notes:

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

Figure 5-70. Typical Cabling for Busy Tone Disconnect

Install External Modem

Figure 5-71 shows a typical connection from the TN790 Processor circuit pack to a recommended COMSPHERE external modem.

A customer-supplied, type-approved modem may be used in place of the COMSPHERE modem. Contact your Lucent Technologies representative for specifications.

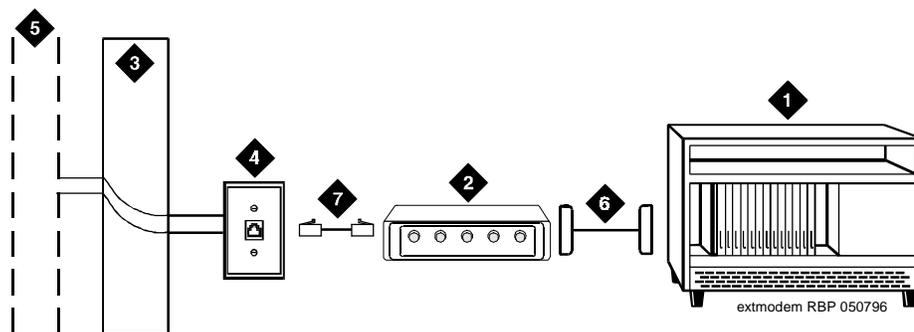


Figure Notes:

- | | |
|--|--|
| 1. System Cabinet (DCE Connector) | 5. Public Switched Telephone Network (PSTN) |
| 2. External Modem | 6. M25B Cable (25-Pin RS-232) An adapter May be Required |
| 3. Part of Main Distribution Frame (MDF) | 7. Modular Line Cord to DTE Connector on Modem |
| 4. 103A or Modular Wall Jack | |

Figure 5-71. 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 COMSPHERE modem. An adapter may be required.
3. Connect the modem to the network interface via the Main Distribution Frame (MDF).
4. Refer to Appendix B, "Option Switch Settings" to set the options.

⇒ NOTE:

The Release 5 systems are designed to operate with the COMSPHERE modems set to their factory default settings.

Install T1 ATM Interface

Figure 5-72 shows a typical connection from a TN464F or TN767E DS1 circuit pack to a T1 Asynchronous Transfer Mode (ATM) interface.

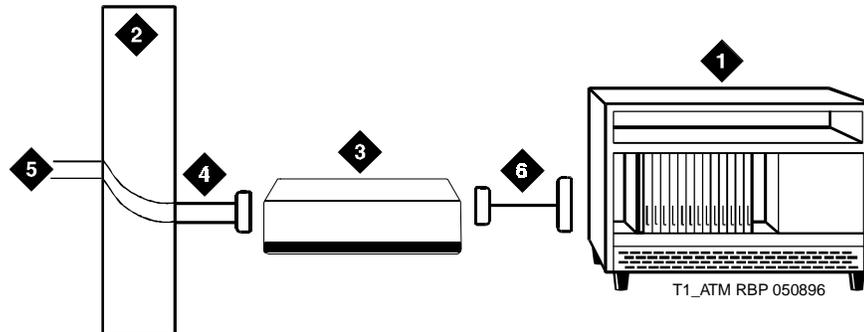


Figure Notes:

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

Figure 5-72. Typical T1 ATM Interface Connections

Install PRI Converters

PRI to DASS and PRI to DPNSS Converters

Figure 5-73 shows typical connections from the TNCCSC-1 PRI to DASS Converter or the TNCCSC-2 PRI to DPNSS Converters to the coaxial facility. The administration terminal is connected to the RS-232 connector on the front of the PRI Converter circuit pack. A "Y" coaxial cable is used to connect the TN464F to the PRI converter circuit pack. The remaining end of the cable connects to the 888B coaxial converter.

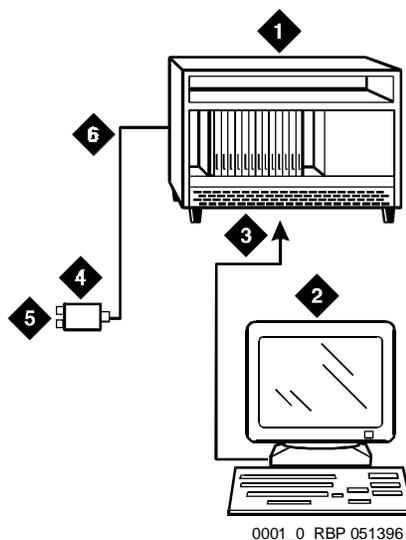


Figure Notes:

1. System Cabinet (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 5-73. Typical DASS or DPNSS Converter Cabling

PRI to BRI Converter

Figure 5-74 shows typical connections from the TNPRI/BRI converter to the coaxial facility. The administration terminal is connected to the RS-232 connector on the front of the PRI Converter circuit pack.

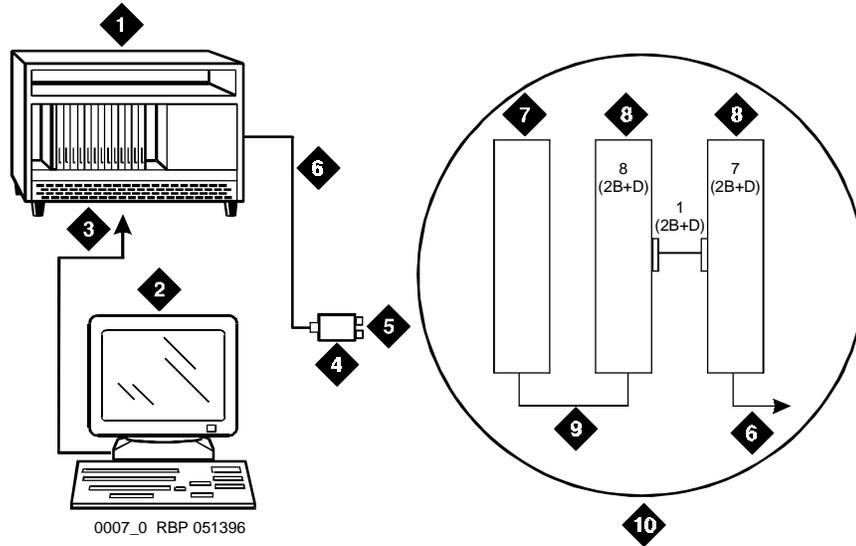


Figure Notes:

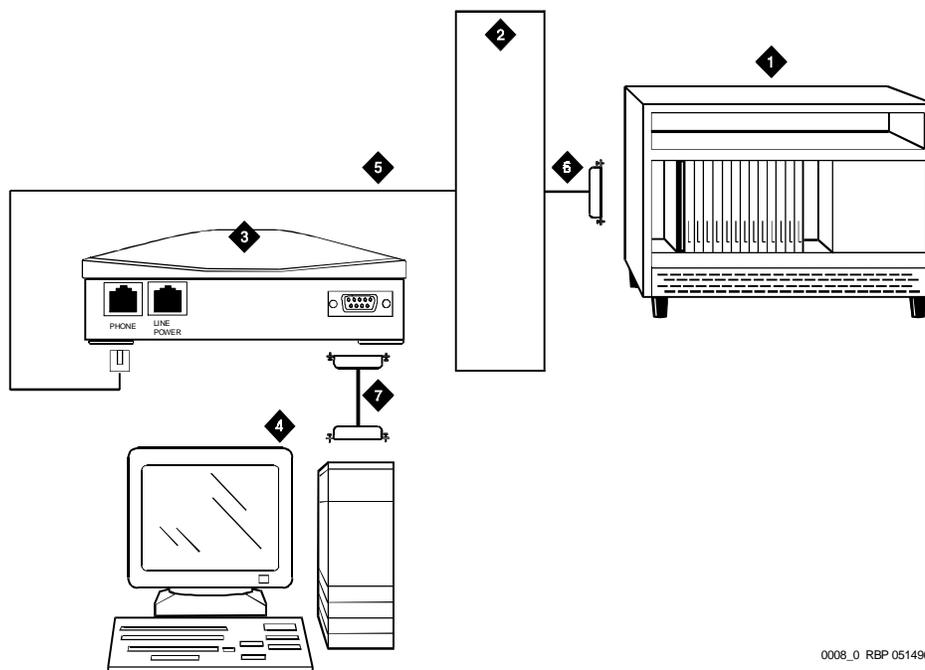
- | | |
|---|---|
| <ul style="list-style-type: none"> 1. System Cabinet (TN464F DS1 Circuit Pack and TNPRI/BRI Converter Circuit Pack) 2. Administration Terminal 3. RS-232 Cable to Front of Converter Circuit Pack 4. 888B Coaxial Converter | <ul style="list-style-type: none"> 5. Coaxial Connection to 2 MB per Second Facility 6. Coaxial Cable from PRI Converter Circuit Pack to Coaxial Converter 7. TN464F Circuit Pack 8. TNPRI/BRI Converter Circuit Pack 9. Jumper Coaxial Cable 10. Inset |
|---|---|

Figure 5-74. Typical PRI to BRI Converter Cabling

The inset shows a detailed view of the cable connections between the circuit packs.

Install 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 5-75 shows typical connections.



0008_0 RBP 051496

Figure Notes:

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

Figure 5-75. 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.

Install DEFINITY DCP Extender

The DEFINITY DCP Extender is used to provide digital telecommunications features in a remote office that match the normal office environment. Figure 5-76 shows a typical connection from either a TN2181 Digital Line 2-Wire DCP circuit pack or a TN2224 Digital Line 24-port 2-Wire DCP circuit pack, through two DCP extender devices. The second extender is installed at the work location.

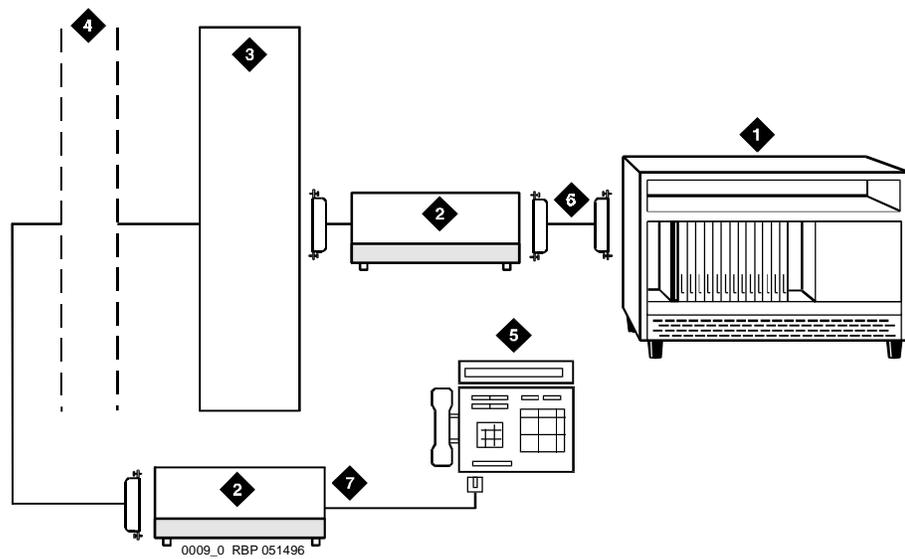


Figure Notes:

- | | |
|---|---|
| 1. System Cabinet (TN2181 or TN2224 Circuit Pack) | 5. DCP Telephone (Such as 603E, 8410D, or 8434) |
| 2. DEFINITY DCP Extender | 6. 25-Pair Connector to Circuit Pack Connector |
| 3. Part of Main Distribution Frame (MDF) | 7. Modular Line Cord |
| 4. Public Switched Telephone Network (PSTN) | |

Figure 5-76. Typical DEFINITY DCP Extender Connections

Install DEFINITY Wireless Business System

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

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

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

Install Cellular Business System

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

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

Install Forum PCM

The Forum Personal Communications Manager uses a Forum switch, which can serve 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.

Re-install Front Doors

Put the doors back on the Single-Carrier Cabinets after all the system installation procedures are completed.

Connector and Cable Diagrams (Pinout Charts)

See Table 5-20 for lead designations. The circuit packs and auxiliary equipment are classified as shown in Table 5-25.

Table 5-20. Lead and Color Designations

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

Continued on next page

**Table 5-20. Lead and Color Designations —
Continued**

Cross-Connect Pin	Color	Amphenol Pin	Backplane Pin
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 5-21. Port Circuit Pack Lead Designations

Cross-Connect Pin	TN742/B TN747/B TN753 TN769	TN754 TN726	TN760/B TN760C	TN762/B	TN763 TN763B TN763C	TN735	TN767 TN722/B TN464C	TN746	TN2224
1	T.0		T.0	T.0	T.0	T.0		T.0	T1
2	R.0		R.0	R.0	R.0	R.0		R.0	R1
3		TXT.0	T1.0	TXT.0	SZ.0	BT.0	GRD	T.1	T2
4		TXR.0	R1.0	TXR.0	SZ1.0	BR.0	GRD	R.1	R2
5		PXT.0	E.0	PXT.0	S.0	LT.0	GRD	T.2	T3
6		PXR.0	M.0	PXR.0	S1.0	LR.0	GRD	R.2	R3
7	T.1		T.1	T.1	T.1	T.1		T.3	T4
8	R.1		R.1	R.1	R.1	R.1	GRD	R.3	R4
9		TXT.1	T1.1	TXT.1	SZ.1	BT.1			T5
10		TXR.1	R1.1	TXR.1	SZ1.1	BR.1	GRD		R5
11		PXT.1	E.1	PXT.1	S.1	LT.1	GRD		T6
12		PXR.1	M.1	PXR.1	S1.1	LR.1	GRD		R6
13	T.2		T.2	T.2	T.2	T.2			T7
14	R.2		R.2	R.2	R.2	R.2			R7
15		TXT.2	T1.2	TXT.2	SZ.2	BT.2			T8
16		TXR.2	R1.2	TXR.2	SZ1.2	BR.2	GRD		R8
17		PXT.2	E.2	PXT.2	S.2	LT.2	GRD	T.4	T9
18		PXR.2	M.2	PXR.2	S1.2	LR.2	GRD	R.4	R9
19	T.3		T.3	T.3	T.3	T.3		T.5	T10
20	R.3		R.3	R.3	R.3	R.3	GRD	R.5	R10
21		TXT.3	T1.3	TXT.3	SZ.3	BT.3		T.6	T11
22		TXR.3	R1.3	TXR.3	SZ1.3	BR.3	GRD	R.6	R11
23		PXT.3	E.3	PXT.3	S.3	LT.3	+5	T.7	T12
24		PXR.3	M.3	PXR.3	S1.3	LR.3	+5	R.7	R12
25	T.4		T.4	T.4	T.4	T.4		T.8	T13
26	R.4		R.4	R.4	R.4	R.4		R.8	R13
27		TXT.4	T1.4	TXT.4	SZ.4	BT.4	GRD	T.9	T14
28		TXR.4	R1.4	TXR.4	SZ1.4	BR.4	GRD	R.9	R1
29		PXT.4	E.4	PXT.4	S.4	LT.4	GRD	T.10	T15
30		PXR.4	M.4	PXR.4	S1.4	LR.4		R.10	R15
31	T.5		T.5	T.5	T.5	T.5	LBACK1	T.11	T16
32	R.5		R.5	R.5	R.5	R.5	LBACK2	R.11	R16
33		TXT.5	T1.5	TXT.5	SZ.5	BT.5	GRD		T17
34		TXR.5	R1.5	TXR.5	SZ1.5	BR.5	GRD		R17
35		PXT.5	E.5	PXT.5	S.5	LT.5	GRD		T18
36		PXR.5	M.5	PXR.5	S1.5	LR.5	GRD		R18
37	T.6		T.6	T.6	T.6	T.6	LO		T19
38	R.6		R.6	R.6	R.6	R.6	LO*		R19
39		TXT.6	T1.6	TXT.6	SZ.6	BT.6	GRD		T20
40		TXR.6	R1.6	TXR.6	SZ1.6	BR.6	GRD		R20

Continued on next page

Connector and Cable Diagrams (Pinout Charts)

Cross-Connect Pin	TN742/B TN747/B TN753 TN769	TN754 TN726	TN760/B TN760C	TN762/B	TN763 TN763B TN763C	TN735	TN767 TN722/B TN464C	TN746	TN2224
41		PXT.6	E.6	PXT.6	S.6	LT.6	GRD	T.12	T21
42		PXR.6	M.6	PXR.6	S1.6	LR.6		R.12	R21
43	T.7		T.7	T.7	T.7	T.7	LI*	T.13	T22
44	R.7		R.7	R.7	R.7	R.7	LI	R.13	R22
45		TXT.7	T1.7	TXT.7	SZ.7	BT.7	GRD	T.14	T23
46		TXR.7	R1.7	TXR.7	SZ1.7	BR.7	GRD	R.14	R23
47		PXT.7	E.7	PXT.7	S.7	LT.7	+5	T.15	T24
48		PXR.7	M.7	PXR.7	S1.7	LR.7	+5	R.15	R24
49	GRD	GRD	GRD	GRD	GRD	GRD	GRD	GRD	
50	GRD	GRD	GRD	GRD	GRD	GRD	GRD	GRD	

Table 5-22. DS1 Interface Cable H600-348

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

Table 5-23. DS1 Interface Cable H600-307 (and C6C)

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

All other pins empty.

Table 5-24. 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		DID/DIOD Trunk	Tie Trunk	DS1 Tie Trunk	ISDN BRI Line 4-wire	ISDN BRI Line 2-wire	Packet Data Line	Four Port DIOD
							Central Office Trunk	Central Office Trunk 3-Wire							
TN467	TN2149	TN726	TN2224	TN762	TN735	TN417	TN429	TN2199	TN429	TN478	TN483	TN556	TN2198	TN553	TN2184
TN432	TN2135	TN754B		TN762B		TN763	TN493		TN2139	TN458	TN722				
TN431	TN468	TN564B				TN763D	TN422		TN459	TN449	TN767B				
TN411B	TN448	TN413					TN421		TN436	TN434	TN722B				
TN742	TN746	TN726					TN438		TN414	TN415	TN464D				
TN769	TN746B						TN447		TN2146	TN760					
	TN2181						TN465		TN753	TN760D					
							TN747B								
							TN2138								
							TN2147								
							TN2148								

1. DID means Direct Inward Dialing
2. DIOD means Direct Inward Outward Dialing
3. DS1 means Digital Signal Level 1
4. ISDN means Integrated Services Digital Network
5. BRI means Basic Rate Interface
6. MET means Multibutton Electronic Telephone

Test Telephones and Other Equipment

6

This chapter describes how to test the telephones and other equipment. The following tests must be performed:

1. Make test calls
2. Test 302C Attendant Console
3. Test Selector Console
4. Test External Ringing
5. Test Queue Warning Indicator
6. Test Integrated Announcement
7. Test Music-on-Hold
8. Test Emergency Transfer
9. Test Remote Access Interface (formerly INADS)
10. Test Basic Rate Interface (BRI)

⇒ NOTE:

The tests in this chapter are performed after the equipment has been wired to the system and after the customer's data for that equipment has been administered.

The following tests are acceptance tests or sanity tests and provide some assurance the system will perform properly after installation and administration. If problems occur or more extensive or specific tests are required, refer to *DEFINITY Enterprise Communications Server Release 5vs/si Maintenance*, 555-204-105.

Make Test Calls

Make two calls from one telephone to another telephone. Make the first call by dialing a telephone and make the second call by dialing a trunk access code and a Listed Directory Number (LDN).

Test 302C Attendant Console

Check all lamps are operational and call another telephone in the system.

1. Simultaneously press and hold the Ringer Volume up button and the **POS BUSY button**. This puts the console in the self-test mode.

 **NOTE:**

Releasing the buttons causes the console to return to normal mode.

2. Verify all lamps on display light and remain lighted. Each row of lamps on the console lights and goes dark in sequence from top to bottom.
3. Press **Start**. Listen for dial tone.
green lamp associated with idle call appearance button lights.
Position Available lamp goes dark.
4. Dial number associated with a working telephone. Audible ringing tone is heard in ear piece.
5. Press **Release**. Audible ringing tone is silenced.
green lamp associated with idle call appearance button goes dark.
Position Available lamp lights.

Test Selector Console

Check all selector console lamps are operational. Make call to a telephone in the system.

1. Simultaneously press and hold the Ringer Volume up button and the **POS BUSY button**. This puts the console in the self-test mode.
2. Each row of lamps on the selector console lights and goes dark in sequence from top to bottom.
3. Press hundreds group select button. The hundreds group select lamp lights and any lamps associated with busy telephone light.
4. Press Direct Extension Selection (DXS) button for the desired extension. Audible ringing tone is heard in the earpiece on attendant console.
5. On attendant console, press **Release**. Audible ringing tone is silenced.

Test External Ringing

Make a test call to the attendant console to verify ringing device sounds when **Night** lamp on console is lighted. If ringing device has not been installed by customer, connect spare telephone to information outlet reserved for ringing device and make test call.

Test Queue Warning Indicator

Make a test call to an extension associated with a Uniform Call Distribution (UCD) or Direct Department Calling (DDC) group, and verify the queue warning indicator lamp lights. If the queue warning indicator has not been installed by customer, connect a spare telephone to the information outlet reserved for queue warning indicator and make a test call.

Test Integrated Announcement

The TN750/B/C Announcement circuit pack provides the ability to store messages. The messages can be recorded from telephones on- or off-premises and have flexible message lengths. The telephone selected as the test telephone must have a class of service (COS) with console permission enabled.

Record Announcement

1. Select test telephone with console permission enabled.
2. Dial access code followed by the integrated announcement extension number. Dial tone is heard.
3. Dial "1." A short burst of tone is heard and recording begins. Speak the announcement into the telephone.
4. Dial "#" or hang up. Recording stops and dial tone is heard.

Playback Announcement

1. Dial access code followed by the integrated announcement extension number. Dial tone is heard.
2. Dial "2." The announcement is heard and dial tone is heard at completion of announcement.

Delete Announcement

1. Dial access code followed by the integrated announcement extension number. Dial tone is heard.
2. Dial "3." A confirmation tone is heard and announcement is deleted.

Test Music-on-Hold

Verify music is provided to a held party during any hold interval.

Test Emergency Transfer

Put system in emergency transfer mode and make call using emergency transfer telephone. There may be up to four Emergency Transfer switches, depending on the system configuration. The switch is located on the Processor circuit pack(s) in the Processor Port Network (PPN) control carrier.

Test Remote Access Interface

Test the communication link between the system and the remote interface (formerly INADS) and verify the alarm notification process. Make a remote test from the remote interface to the DEFINITY System and a local test from the DEFINITY System to the remote interface.

In some countries, this remote access interface is not allowed. Contact your Lucent Technologies representative.

Remote Test

1. Call outside personnel who will be accessing the system remotely to perform administration, maintenance, and testing.
2. Ask remote personnel to call system and login and display System Parameters Maintenance screen. The login must be successful.



NOTE:

Product Identification on the System Parameters screen must match the Product Identification administered by the local technician.

3. Remote personnel enters **test inads-link** command, terminates login, and disconnects.
4. Remote personnel then check the appropriate trouble ticket. The trouble ticket should show "INADS,n,MINOR" in the description field to indicate a minor off-board alarm was reported to the remote personnel. There may be more text in the description field if other resolved alarms were reported.
5. Remote personnel makes second call and login to system and checks the error log to verify no problems. See *DEFINITY Enterprise Communications Server Release 5vs/si Maintenance*, 555-204-105, for error log and error code information.
6. Remote access personnel terminate login and disconnects.

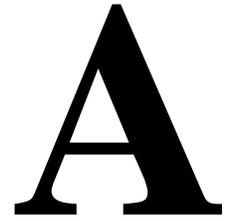
Local Test

1. Log in and enter **test inads-link** command.
2. Request remote access personnel to verify a trouble ticket was created.
3. Check error log to verify no problems.
4. Log off the system.

Test Basic Rate Interface

Check for normal voice telephone function (dial tone, ability to make and receive calls). Check for the correct Service Profile Identifier (SPID) on a display telephone and the management terminal.

Wire Conversions and Electrical Codes



This appendix provides some wire conversion information that may be useful when following the installation instructions provided in this document.

Common Wire Colors

Table A-1 lists common wires types and colors for power (AC Mains):

Table A-1. Standard Wire Colors for Power (AC Mains)

Wire Type	United States	Europe
Neutral or Telecommunications Ground	White	Blue
Hot	Black	Black or Brown
Ground	Green, or Green with Yellow Stripe	Green with Yellow Stripe
Tip	Green	
Ring	Red	

AWG to SWG Conversion (Stranded Wire)

The following table provides conversion information from American Wire Gauge (AWG) to British (Imperial) Standard Wire Gauge (SWG). It also includes metric sizes.

Table A-2. Stranded Wire Conversion (AWG to SWG to metric)

Square Millimeters	Number and Diameter of Strands Millimeters	Corresponding AWG
0.014	7 x 0.05	--
0.035	7 x 0.08	--
0.047	24 x 0.05	--
0.049	1 x 0.25	--
0.055	7 x 0.10	--
0.079	10 x 0.10	28
0.079	7 x 0.12	28
0.080	1 x 0.32	28
0.093	7 x 0.13	--
0.094	12 x 0.10	--
0.094	48 x 0.05	--
0.096	19 x 0.08	--
0.113	10 x 0.12	--
0.118	60 x 0.05	--
0.118	15 x 0.10	--
0.124	7 x 0.15	--
0.126	1 x 0.40	26
0.149	19 x 0.10	--
0.177	10 x 0.15	--
0.188	24 x 0.10	--
0.196	1 x 0.50	--
0.212	27 x 0.10	--
0.212	12 x 0.15	--
0.220	7 x 0.20	--

Continued on next page

Table A-2. Stranded Wire Conversion (AWG to SWG to metric) — Continued

Square Millimeters	Number and Diameter of Strands Millimeters	Corresponding AWG
0.251	32 x 0.10	--
0.252	19 x 0.13	--
0.283	1 x 0.60	--
0.291	37 x 0.10	--
0.314	40 x 0.10	--
0.322	1 x 0.64	22
0.336	19 x 0.15	22
0.344	7 x 0.25	--
0.377	12 x 0.20	--
0.377	48 x 0.10	--
0.389	22 x 0.15	--
0.442	1 x 0.75	--
0.459	26 x 0.15	--
0.491	10 x 0.25	--
0.495	7 x 0.30	--
0.503	16 x 0.20	--
0.515	1 x 0.81	20
0.563	7 x 0.32	--
0.597	19 x 0.20	--
0.636	36 x 0.15	--
0.754	24 x 0.20	--
0.785	16 x 0.25	--
0.817	1 x 1.02	18
0.848	12 x 0.30	--
0.880	7 x 0.40	--
0.933	19 x 0.25	--
0.990	56 x 0.15	--
1.005	32 x 0.20	--
1.276	26 x 0.25	--
1.327	1 x 1.30	16

Continued on next page

Table A-2. Stranded Wire Conversion (AWG to SWG to metric) — Continued

Square Millimeters	Number and Diameter of Strands Millimeters	Corresponding AWG
1.343	19 x 0.30	--
1.374	7 x 0.50	--
1.473	30 x 0.25	--
1.508	12 x 0.40	--
1.828	19 x 0.35	--
1.885	60 x 0.20	--
1.909	27 x 0.30	--
1.979	7 x 0.60	--
2.011	16 x 0.40	--
2.013	41 x 0.25	--
2.087	1 x 1.63	14
2.454	50 x 0.25	--
3.022	19 x 0.45	--
3.142	16 x 0.50	--
3.181	45 x 0.30	--
3.191	65 x 0.25	--
3.393	48 x 0.30	12
3.958	56 x 0.30	--
4.650	37 x 0.40	--
4.714	7 x 7 x 0.35	--
5.154	105 x 0.25	--
5.160	73 x 0.30	10
5.300	75 x 0.30	10

Wire Gauge Comparison (Solid Conductor)

Table A-3 provides information for converting American Wire Gauge (AWG) to British Standard Wire Gauge (Imperial), in addition to metric wire gauge.

Table A-3. Solid Conductor Wire Gauge Comparison

Diameter (Mils)	Gauge Numbers (mm)	American Wire Gauge (AWG)	British Standard Wire Gauge (Imperial)	Metric Wire Gauge
460.1	11.68	4/0	--	--
432	11.0	--	5/0	--
409.6	10.40	3/0	--	--
400	10.2	--	4/0	--
393.7	10.0	--	--	100
372	9.45	--	3/0	--
364.8	9.266	2/0	--	--
354	9.00	--	--	90
348	8.84	--	2/0	--
324.9	8.252	1/0	--	--
324	8.23	--	1/0	--
315	8.00	--	--	80
300	7.62	--	1	--
289.3	7.348	1	--	--
276	7.01	--	2	--
276	7.00	--	--	70
257.6	6.543	2	--	--
252	6.40	--	3	--
236	6.00	--	--	60
232	5.89	--	4	--
229.4	5.827	3	--	--
212	5.38	--	5	--
204.3	5.189	4	--	--
197	5.00	--	--	50
192	4.88	--	6	--
181.9	4.620	5	--	--
177.2	4.50	--	--	45

Continued on next page

Table A-3. Solid Conductor Wire Gauge Comparison — Continued

Diameter (Mils)	Gauge Numbers (mm)	American Wire Gauge (AWG)	British Standard Wire Gauge (Imperial)	Metric Wire Gauge
176	4.47	--	7	--
162.0	4.115	6	--	--
160	4.06	--	8	
157	4.00	--	--	40
144.3	3.665	7	--	--
144	3.66	--	9	--
138	3.50	--	--	35
128.5	3.264	8	--	--
128	3.25	--	10	--
118	3.00	--	--	30
116	2.95	--	11	--
114.4	2.906	9	--	--
104	2.64	--	12	--
101.9	2.588	10	--	--
98.4	2.50	--	--	25
92	2.34	--	13	--
90.7	2.30	11	--	--
80.8	2.05	12	--	--
80.0	2.03	--	14	--
78.7	2.00	--	--	20
72.0	1.83	13	15	--
70.9	1.80	--	--	18
64.1	1.63	14	--	--
64	1.63	--	16	--
63	1.60	--	--	16
57.1	1.45	15	--	--
56	1.42	--	17	--
55.1	1.40	--	--	14
50.8	1.29	16	--	--
48	1.22	--	18	--
47.2	1.20	--	--	12
45.3	1.15	17	--	--
40.3	1.02	18	--	--

Continued on next page

Table A-3. Solid Conductor Wire Gauge Comparison — Continued

Diameter (Mils)	Gauge Numbers (mm)	American Wire Gauge (AWG)	British Standard Wire Gauge (Imperial)	Metric Wire Gauge
40	1.02	--	19	--
39.4	1.00	--	--	10
36	0.914	--	20	--
35.9	0.912	19	--	--
35.4	0.90	--	--	9.0
32.0	0.813	20	21	--
31.5	0.800	--	--	8.0
28.5	0.724	21	--	--
28	0.711	--	22	--
27.6	0.70	--	--	7.0
25.3	0.643	22	--	--
24	0.610	--	23	--
23.6	0.60	--	--	6.0
22.6	0.574	23	--	--
22	0.559	--	24	--
20.1	0.511	24	--	--
20	0.508	--	25	--
19.7	0.50	--	--	5.0
18	0.457	--	26	--
17.9	0.455	25	--	--
17.7	0.45	--	--	4.5
16.4	0.417	--	27	--
15.9	0.404	26	--	--

Electrical Codes

This section lists electrical code information that applies to countries outside of North America.

North American Electrical Code

In North America, the standard electrical code that must be followed is called the National Electrical Code (NEC). When installing a DEFINITY System, determine the equivalent code in the country of the installation.

Option Switch Settings

B

Some of the interface units used between the system and other types of equipment require specific option switch 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 option switches.

Distributed Communications System Option Settings

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

Any of the remaining three circuits on the processor interface used to support the Distributed Communications System (DCS) must be connected through a data module serving as the interface link. The option settings for a 7400B Data Module are shown in Table B-1. Refer to Figure B-1 for the location of the switches.

⇒ NOTE:

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

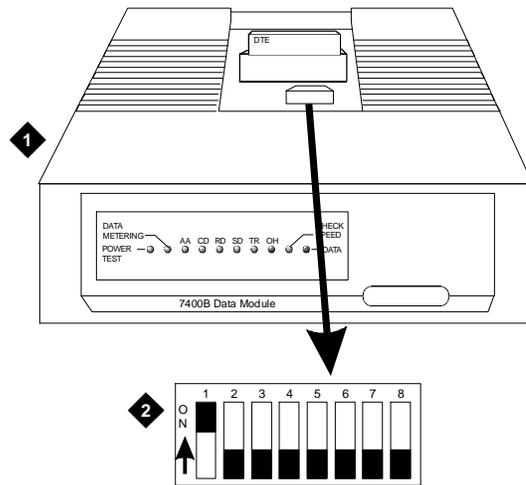


Figure Notes:

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

Figure B-1. DIP Switch Locations

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

Table B-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

Table B-2 shows the options and values for the 7400 series of data modules. These option settings are for the Answer Only interface. These options can only be set from the front panel interface. Refer to the documentation shipped with the data modules.

Table B-2. Option Settings for 7400 Series Data Modules

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 BREAK DISC?	BRKDISC	TRIPLE, LONG, NONE	LONG
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 TM LEAD?	TM	ON, OFF	OFF

⇒ NOTE:
Set at least one speed to ON.

⇒ 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.

External Modem Option Settings

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

NOTE:

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

The Release 5 systems operate with the COMSPHERE modems set to the factory default settings. See Screen B-1. Refer to *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302, to administer the modems after the options are set. The Customer Options Screen (Page 3) is modified.



CAUTION:

When administering the system, do not enable the system alarms until all installation procedures are completed.

```

change system-parameters maintenance          Page 3 of 3

      MAINTENANCE-RELATED SYSTEM PARAMETERS

Modem Connection: external
      Data Bits: 8
      Parity: none
      Stop Bits: 1
      Modem Name: intel

      RTS/CTS Enabled: \Q3          Auto Answer Ring Count (rings): S0=10
Asynchronous Data Mode: &M0&Q0          Dial Type: T
      DTE Auto-Data Speed: \J1          Adjustable Make/Break Ratio: &P0
Disable Data Compression: "H0%C0          Dial Command: D
      Enable Error Control: \N3          No Answer Time-out: S7=255
      Misc. Init. Param: _____

```

Screen B-1. External Modem Default Settings

There are fields that are hidden when the "Modem Connection" field is set to "internal." When the "Modem Connection" field is set to "external" these fields are displayed. The following three fields help setup the data format for the serial data from the system to the modem. These fields are the "Data Bits:", "Parity", and the "Stop Bits" field. There are only two valid combinations of these three fields:

- Data Bits = 8, Parity = None, Stop Bits = 1
- Data Bits = 7, Parity =(odd , even, mark, or space), Stop Bits = 1

The remaining fields are listed below:

Modem Connection	The only valid entries for this field are "internal" or "external". The default is set to internal.
Modem Name	This field is 20 characters long and permits alphanumeric characters to provide a unique qualifier for a given modem. The field is called "Modem Name: " (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 is "RTS/CTS Enabled: " with a default of \Q3 in a field 6 characters long. This field is not case sensitive; however, the default is upper case (\Q3).
Asynchronous Data Mode	Configures the modem as an asynchronous communications device. The field name is "Asynchronous Data Mode: " with a default value of &M0&Q0 in a field 8 characters long. This field is not case sensitive; however, the default is upper case (&M0&Q0).
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 is "DTE Auto-Data Speed: " with 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; however, the default is upper case (\J1).
Disable Data Compression	Turns off the default data compression algorithms in use by most consumer modems. The field is called "Disable Data Compression:" with a blank field of 6 characters as a default. The AT commands that control this capability are supported by similar commands; however, these commands do not operate in the same manner. The Intel modems require the use of "H%C0" to disable V.42bis & MNP Class 5 data compression algorithms; however, the Paradyne products only use %C0 to disable both algorithms. This field is not case sensitive; however, the default is upper case (H%C0).

Enable Error Control	<p>Turns on the V.42 LAPM and MNP error control protocols, if available on the modem. The field is called "Enable Error Control:" with a blank field of 6 characters as a 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. The option \N3, as a default, would provide an inferior error control scheme with a Paradyne product while \N5, as a default, is an invalid entry for the Intel product.</p> <p>This V.42/MNP/Buffer mode attempts to negotiate V.42 error control with the remote modem. If this fails, the modem transitions to MNP, and if this fails, no error control is used.</p> <p>This field is not case sensitive; however, the default is upper case (\N3).</p>
Misc. Init. Param	<p>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.</p> <p>This field is not case sensitive; however, the default is upper case ().</p>
Auto-Answer Ring Number	<p>This field controls the number of rings required before the modem automatically answers an incoming call. This field is called "Auto Answer Ring Count:" with a default value of S0=10 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.</p> <p>This field is not case sensitive; however, the default is upper case (S0=10).</p>
Dial Type	<p>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; however, the default is upper case (T).</p>

Adjustable
Make/Break
Ratio

This field is important when using a modem that may be transferable from country to country. This field controls the make/break ratios of pulses and DTMF dialing. The Intel product information has support for the different make/break options for pulse dialing only. Intel uses the option &P0 to select a ratio of 39% make and 61% break for communication within the United States and Canada. The option &P1 sets a ration 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; however, the default is upper case (&PO).

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 fairly standard command.

This field is not case sensitive; however, the default is upper case (D).

No Answer
Time-Out

Most off-the-shelf external modems provide a timer that abandons any outbound data call after a predetermined interval. Some modems provide for this timer to be disabled, thus allowing an outbound call to ring indefinitely. Paradyne does not provide this capability with their modem line because it is undesirable to have an outbound call attempt ring indefinitely. Therefore, the initialization string must contain the following ASCII string to set the "No-Answer Timer" to the maximum value for the external modems: S7=255.

The internal modem must have this parameter disabled or set to at least 255 seconds. This is a non-administrable parameter.

For the external modem connection, this parameter is the first initialization string to be transmitted to the external modem. This field is visible on the administration form in display mode only. The new field is "No Answer Time-out:" which 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)

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 will be interfacing with D-lead modems or attention control modems. Use Table B-3 to set the options to interface with D lead modems and Table B-4 to set the options to interface with attention control modems.

Table B-3. 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 B-4. Options for Attention Control 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	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.

Printer Option Settings

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

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

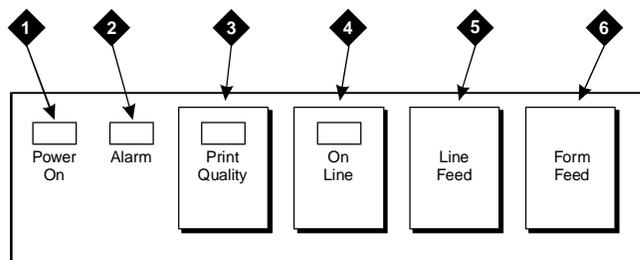


Figure B-2. Control Panel for 572 Printer

To set the options:

1. Load the printer with paper and turn the power off (Callout 1).
2. Simultaneously press and hold both the **Print Quality** (Callout 3) and **On Line** (Callout 4) buttons.
3. Press the **Power On** (Callout 1) button. Release all three buttons. This puts the printer in the set-up mode and it prints the following settings:
 - Form length
 - Lines per inch
 - Characters per inch
 - Letter quality or near letter quality
 - Buzzer on/off
4. If the printer is used with a management terminal, Call Detail Recording (CDR), or as a Journal printer, set the options as shown in Table B-7 on page B-14. If the printer is used as the system printer, set the options as shown in Table B-8 on page B-16.
5. Use **Line Feed** button to step forward through the list of functions or use **Form Feed** button to step backward.

Table B-5. 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

Continued on next page

Table B-5. 572 Printer Used with Management Terminal — Continued

Function	Function Name	Menu	Menu Status
94	STOP BIT	01	1
95	PARITY	01	NONE
96	PBS (matches connected device)	01	9600

Table B-6. 572 Printer used as System Printer

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

Continued on next page

Table B-6. 572 Printer used as System Printer — Continued

Function	Function Name	Menu	Menu Status
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)	04	1200

6. When the function to be changed is reached, press the **On Line** button. This activates the menu for the function. Use the **Line Feed** and **Form Feed** buttons to step through the options for the function.
7. When a desired option is located, press the **Print Quality** button.
8. Each time an option is set, the function and setting is printed.
9. Repeat Step 3 for each option to be set.
10. When the options are set, depress **Print Quality** button. The printer is now in the normal print mode.

Call Detail Recording Option Settings

The interface between the system and Call Detail Recording (CDR) equipment may be one of the following:

- Data Module — recommended option settings are shown in Table B-3
- Modem — recommended option settings are in 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 (Electronic Industries Association (EIA) Port) located on the rear of the Control Carrier — data modules or modems are not required
- 7400A — recommended option settings for the 7400A/B Data Module are given on page B-5

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

Administration procedures for Call Detail Recording (CDR) equipment are provided in *DEFINITY Enterprise Communications Server Release 5 Implementation*, 555-230-302.

Table B-7. 572 Printer Used with Management Terminal, Call Detail Recording 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

Continued on next page

Table B-7. 572 Printer Used with Management Terminal, Call Detail Recording or Journal Printer

Function	Function Name	Menu	Menu Status
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	01	9600

Table B-8. 572 Printer used as System Printer

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

AUDIX Interface Option Settings

The Audio Information Exchange (AUDIX) is sometimes connected to the system through the TN765 Processor Interface circuit pack. The first circuit on the processor interface can be connected directly to the AUDIX through the processor interface (PI) connector on the rear of the control carrier.

Any of the remaining three circuits on the processor interface to be used to support AUDIX must be connected through a data module serving as the interface link for AUDIX. The option settings recommended for this application are shown in Table B-9.

Table B-9. Option Switch Settings on Data Module for AUDIX

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

TN760D Tie Trunk Circuit Pack Option Settings

The TN760D Tie Trunk circuit pack interfaces between the tie trunks and the Time Division Multiplex (TDM) bus. Two tip and ring pairs form a 4-wire analog transmission line. An E and M pair is used for signaling and are direct current 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 B-10 and Table B-11), set the switches on the TN760D and administer the port per Figure B-3 and Table B-12.



CAUTION:

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

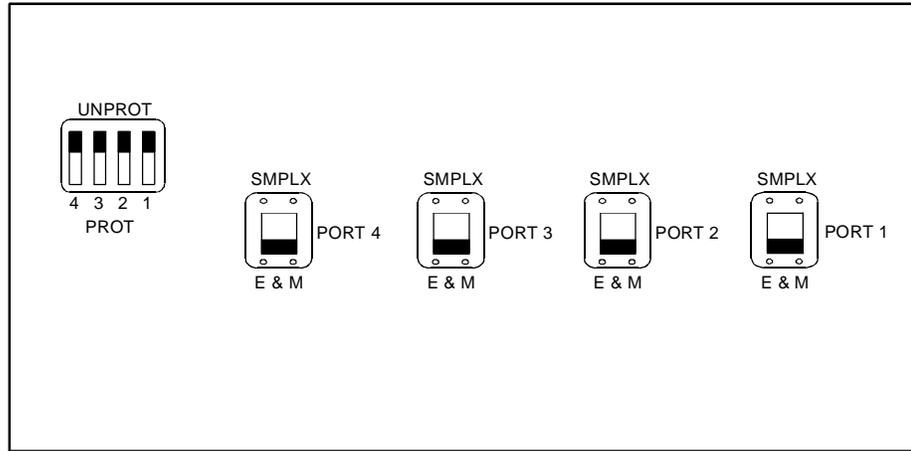
Table B-10. Signaling Formats for TN760D

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

Table B-11. Signaling Type Summary

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

* An open circuit is preferred over voltage.



r758183 RBP 050896

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

Table B-12. TN760D Option Switch Settings and Administration

Installation Situation		Preferred Signaling Format		Set E&M/SMPLX Option Switch	Set Prot/Unprot Option Switch	Administered Port
Circumstance	To	System	Far-End			
Co-Located	Sys75/G1	Simplex	Simplex	SMPLX	Either	Type 5
		Type 5	Type 5			
Inter-Building	Sys75/G1	Simplex	Simplex	SMPLX	Either	Type 5
		Type 5	Type 5			
Co-Located	Sys85/G2	Simplex	Simplex	SMPLX	Either	Type 5
		Type 5	Type 5			
Inter-Building	Sys85/G2	Simplex	Simplex	SMPLX	Either	Type 5
		Type 5	Type 5			
Co-Located	DIMENSION	E&M Type 1	E&M Type 1	E&M	Unprotected	Type 1
	PBX	Compatible	Standard			Compatible
Inter-Building	DIMENSION	Protected Type 1	Protected Type 1	E&M	Protected	Type 1
	PBX	Compatible	Standard			Compatible
Co-Located	Other	E&M Type 1	E&M Type 1	E&M	Unprotected	Type 1
		Compatible	Standard			Compatible
Inter-Building	Other	Protected Type 1	Protected Type 1	E&M	Protected	Type 1
		Compatible	Standard Plus			Compatible
			Protection			
			Unit			
Co-Located	Net Integrated	E&M Type 1	Any PBX	E&M	Unprotected	Type 1
		Standard				

TN464E/F Option Settings

The TN464 DS1/E1 Interface - T1, 24 Channel - E1, 32 Channel circuit pack interfaces between a 24 or 32 channel Central Office/Integrated Services Digital Network (CO/ISDN) or tie trunk and the Time Division Multiplex (TDM) bus.

Set the switches on the circuit pack to select bit rate and impedance match. Set the impedance and bit rate as shown in Table B-13 and Figure B-4.

Table B-13. Option Switch Settings on TN464E/F

120 Ohms	Twisted pair
75 Ohms	Coaxial requiring 888A adapter
32 Channel	2.048 megabits per second
24 Channel	1.544 megabits per second

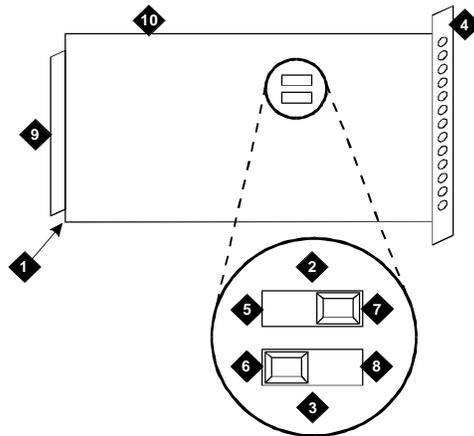


Figure Notes:

- 1. Backplane Connectors
- 2. 24/32 Channel Selector
- 3. 75/120 Ohm Selector
- 4. Faceplate
- 5. 32 Channel
- 6. 120 Ohm (shown selected)
- 7. 24 Channel (shown selected)
- 8. 75 Ohm
- 9. Connector
- 10. TN464E/F

Figure B-4. TN464E/F Option Settings

Connecting and Handling Fiber Optic Cables

C

Signals between the cabinets composing the system are carried by fiber optic cables. To accomplish this, the electronic signals at the connectors on the back of a cabinet must be converted into optical signals and optical signals from another cabinet must be converted back into electronic signals. Opto-electronic devices (lightwave transceivers) provide this interface.

Optical Cross-Connect Hardware

Optical cross-connects consist of Lightguide Interconnect Units (LIUs) with lightguide troughs in between them. See Figure C-1. One Lightguide Interconnect Unit (LIU) terminates the incoming cables and the other terminates the outgoing cables. A fiber optic patch cord or jumper is used to connect the circuits. Circuits can be rerouted the same as on 110-type connecting blocks, by moving the patch cord from one point on the Main Distribution Frame (MDF) to another.

⇒ NOTE:

Refer to Chapter 1, "Install and Connect the Cabinets" for multi-mode and single-mode fiber optic cable lengths.

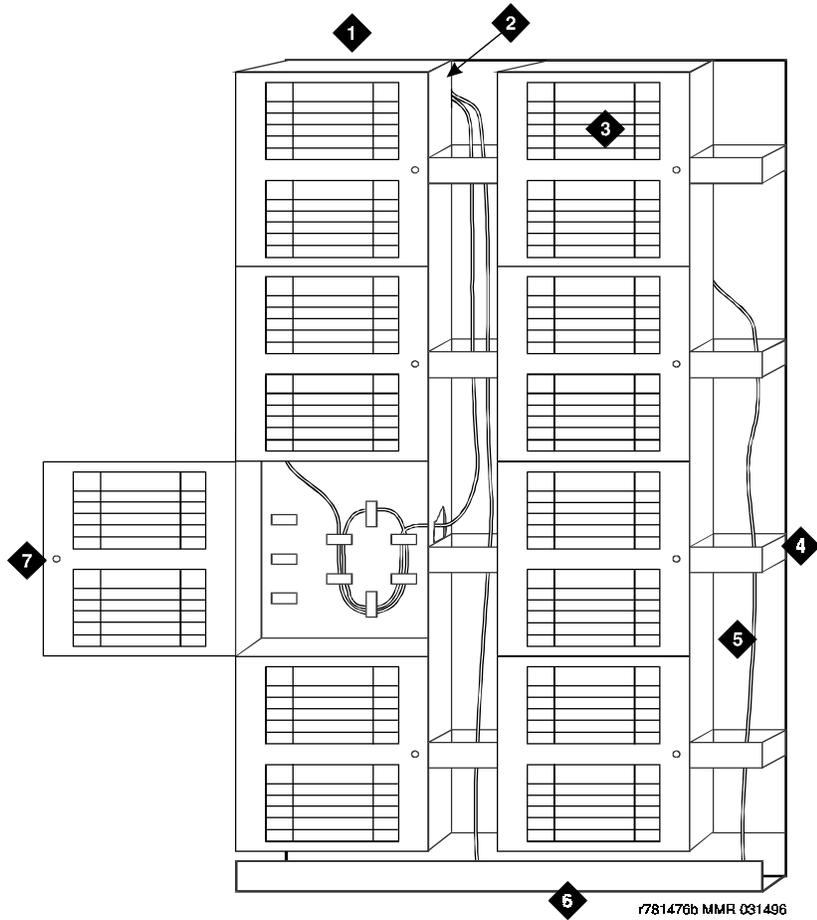


Figure Notes:

- | | |
|--|---|
| 1. 100A Lightguide Interconnect Unit (LIU) | 5. Multi-Mode or Single-Mode Fiber Patch Cord |
| 2. C2000A-2 Connector (Multi-Mode)
C3000A-2 Connector (Single-Mode) | 6. 1A6 Lightguide Trough |
| 3. Adhesive-Backed Circuit Labels | 7. Open Lightguide Interconnect Unit (LIU) Door |
| 4. 1A4 Lightguide Trough | |

Figure C-1. Optical Lightguide Interconnect Unit

Optical interconnects consist of Lightguide Interconnect Units (LIUs) without a trough between them. See Figure C-2. Incoming and outgoing multi-mode and single-mode cables are connected directly to each other. This arrangement makes circuit changes more difficult, but reduces optical losses.

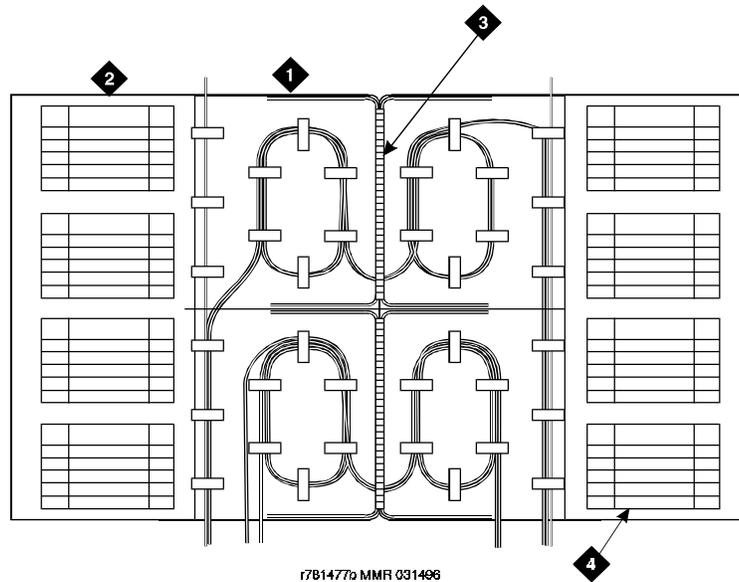


Figure Notes:

- | | |
|--|--|
| 1. 100A Lightguide Interconnect Unit (LIU) | 3. C2000A-2 Connector (Multi-Mode)
C3000A-2 Connector (Single-Mode) |
| 2. Open Lightguide Interconnect Unit (LIU)
Door | |

Figure C-2. Optical Interconnect Field

Optical cross-connect and interconnect fields are made up of the following:

- 100A Lightguide Interconnect Unit (LIU)
- 10A Lightguide Connector Panel
- C2000A-2 Connector Coupling (Multi-Mode) or C3000A-2 Connector Coupling (Single-Mode)
- 1A4 Lightguide Trough
- 1A6 Lightguide Trough
- Multi-Mode or Single-Mode Fiber Interconnect Cable

100A Lightguide Interconnect Unit

The 100A Lightguide Interconnect Unit (LIU) (comcode 104141841) consists of a cabinet with retainer rings to hold slack fiber cables, mounting cutouts for two 10A lightguide connector panels, and a door with circuit labels on each side. See Figure C-3.

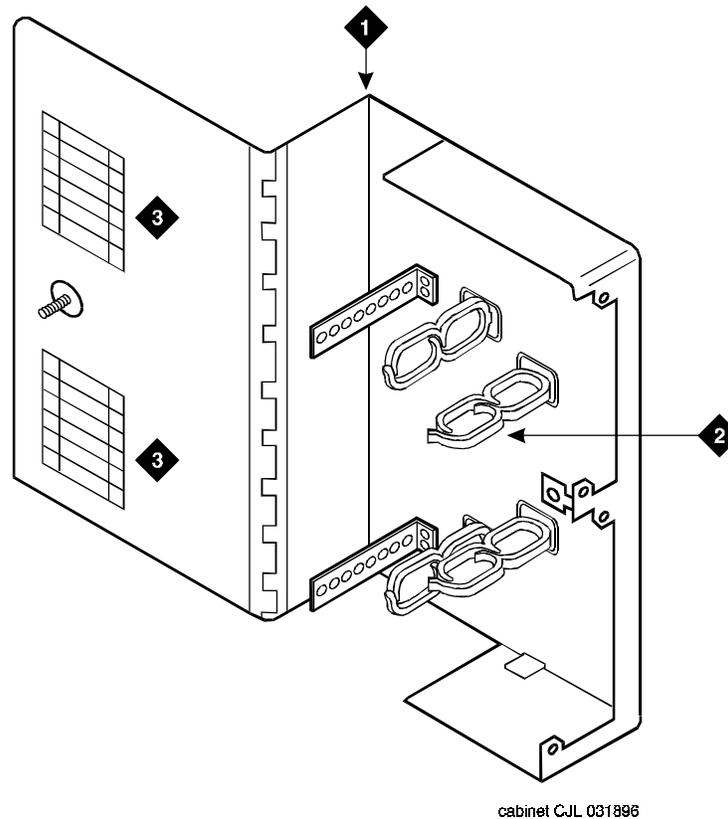


Figure Notes:

- | | |
|--|-------------------|
| 1. 100A Lightguide Interconnect Unit (LIU) | 3. Circuit Labels |
| 2. Retainer Rings | |

Figure C-3. 100A Lightguide Interconnection Unit

10A Lightguide Connector Panel

The 10A Lightguide Connector Panel (comcode 104141858) mounts in the cutouts of a 100A Lightguide Interconnect Unit (LIU). A Lightguide Interconnect Unit (LIU) contains two connector panels. Each connector panel can hold six C2000A-2 Connector Couplings.

The C2000A-2 Connector Coupling (comcode 104148028) is used to join multi-mode fiber optic cables equipped with ST connectors. It has a threaded midsection that allows it to be screwed into the 10A Lightguide Connector Panel.

The C3000A-2 Connector Coupling (comcode 105271142) is used to join single-mode fiber optic cables equipped with ST connectors. It has a threaded midsection that allows it to be screwed into the 10A Lightguide Connector Panel.

Lightguide Troughs

Two types of troughs are used with optical cross-connect hardware. The 1A4 trough secures single fiber optic jumpers routed between Lightguide Interconnect Unit (LIU) columns, and the 1A6 trough is used at the bottom of a Lightguide Interconnect Unit (LIU) column to prevent cable slack.

Ordering Information

Description	Comcode
1A4 Lightguide Trough	104141866
1A6 Lightguide Trough	104141874

Multi-mode Fiber Cable

The multi-mode fiber interconnection cables are used as patch cords and to connect fiber optic equipment to lightguide cross-connect and interconnect fields. This is a dual fiber cable equipped with ST connector plugs on each end.

Table C-1 provides the available cable lengths and associated comcode numbers.

Table C-1. Multi-mode Fiber Cable Ordering Information

Description	Length	Comcode
Fiber Interconnection Cable	20 Feet (6.1 m)	407439975
Fiber Interconnection Cable	25 Feet (7.62 m)	407441427
Fiber Interconnection Cable	30 Feet (9.14 m)	407441435
Fiber Interconnection Cable	35 Feet (10.67 m)	407441443
Fiber Interconnection Cable	40 Feet (12.2 m)	407441450
Fiber Interconnection Cable	50 Feet (15.2 m)	407441468
Fiber Interconnection Cable	75 Feet (22.8 m)	407441476
Fiber Interconnection Cable	100 Feet (30.48 m)	407441484
Fiber Interconnection Cable	125 Feet (38.1 m)	407441492
Fiber Interconnection Cable	150 Feet (45.7 m)	407441500
Fiber Interconnection Cable	175 Feet (53.3 m)	407441518
Fiber Interconnection Cable	200 Feet (61 m)	407441666

Single-mode Fiber Cable

The single-mode fiber interconnection cables are used as patch cords and to connect fiber optic equipment to lightguide cross-connect and interconnect fields. This is a dual fiber cable equipped with ST connector plugs on each end.

Table C-2 provides the available cable lengths and associated comcode numbers.

Table C-2. Single-mode Fiber Cable Ordering Information

Description	Length	Comcode
Fiber Interconnection Cable	20 Feet (6.1 m)	407598325
Fiber Interconnection Cable	30 Feet (9.14 m)	407598333
Fiber Interconnection Cable	40 Feet (12.2 m)	407598341
Fiber Interconnection Cable	50 Feet (15.2 m)	407598358
Fiber Interconnection Cable	75 Feet (22.8 m)	407598366
Fiber Interconnection Cable	100 Feet (30.48 m)	407598374
Fiber Interconnection Cable	125 Feet (38.1 m)	407598390
Fiber Interconnection Cable	150 Feet (45.7 m)	407598408

Labels for Fiber Optic Cables

There are two types of labels used with fiber optic cables:

- Cable labels
- Cross-connect labels

Cable labels are used on the cables and cross-connect labels are used on the cross-connect equipment.

Cable Labels

Cable labels, with adhesive backing, are installed on each end of a fiber optic cable. Each label displays the following information:

- The numbers of the cabinets, carriers, and slots connected by the cable
- Information on the cable itself, such as cable comcode number, and how it is used

Cross-Connect Labels

The label used with cross-connect fiber optic cables shows the cabinet, carrier and slot numbers of the source of the cable. It also indicates that the cable goes to the Main Distribution Frame (MDF). The type of cable is indicated by its comcode number.

Administering Fiber Optic Cables

When a fiber optic cable has been properly labeled, it is easy to trace the desired circuit by looking at the labels on the cross-connect, the cable itself, and the individual fibers in the cable. For more information, refer to the *PDS Fiber Installation Manual*, 555-401-102.

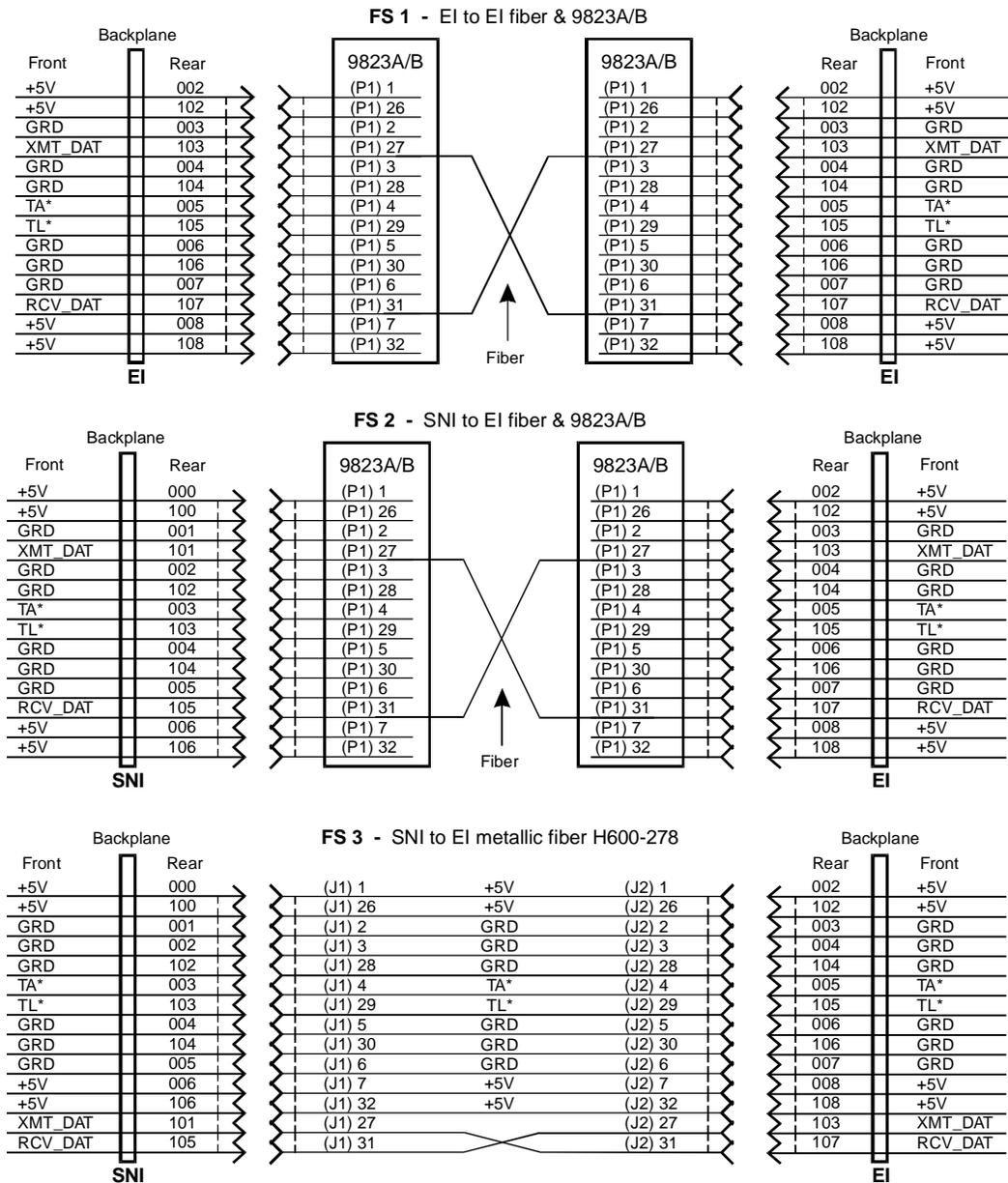
Connector and Cable Diagrams

D

This chapter provides connector and cable diagrams for the DEFINITY Enterprise Communications Server.

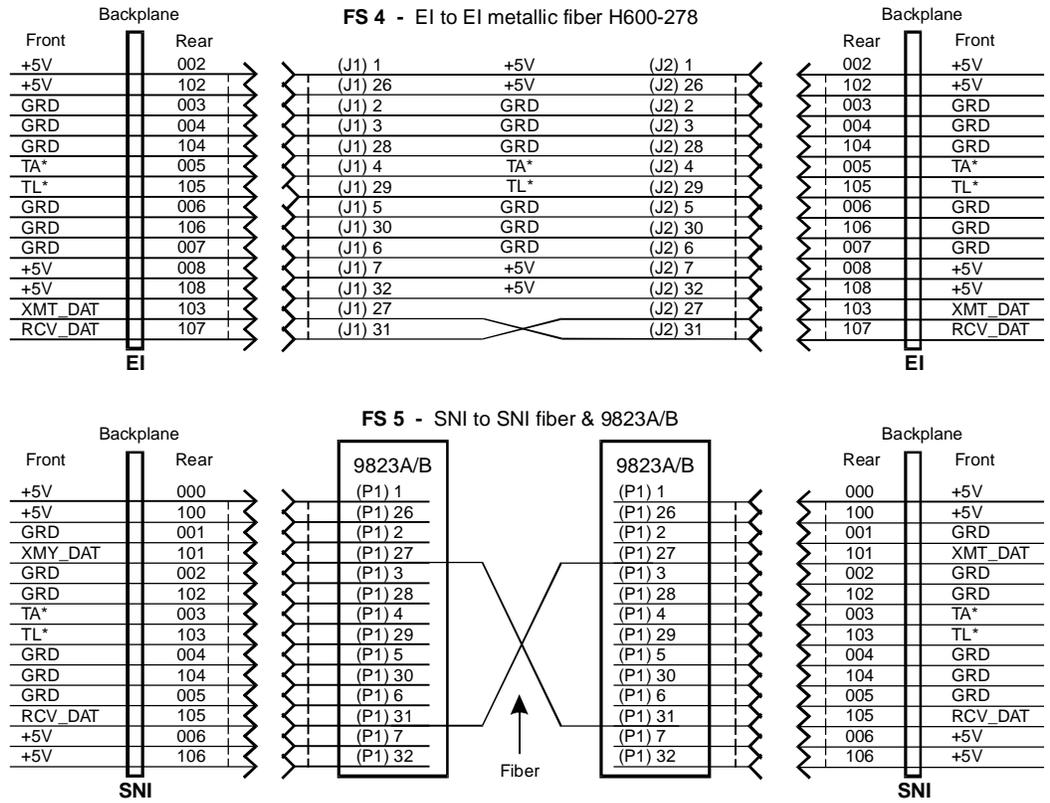
For circuit pack and auxiliary equipment classifications, see Table 5-19. For circuit pack and auxiliary equipment lead designations, see Table 5-25.

See Figure D-1 for Expansion Interface to Expansion Interface fiber interconnect.



r975bb1a MMR 051096

Figure D-1. Expansion Interface to Expansion Interface Fiber (Part 1)



r975bb1b MMR 051096

Figure D-2. Expansion Interface to Expansion Interface Fiber (Part 2)

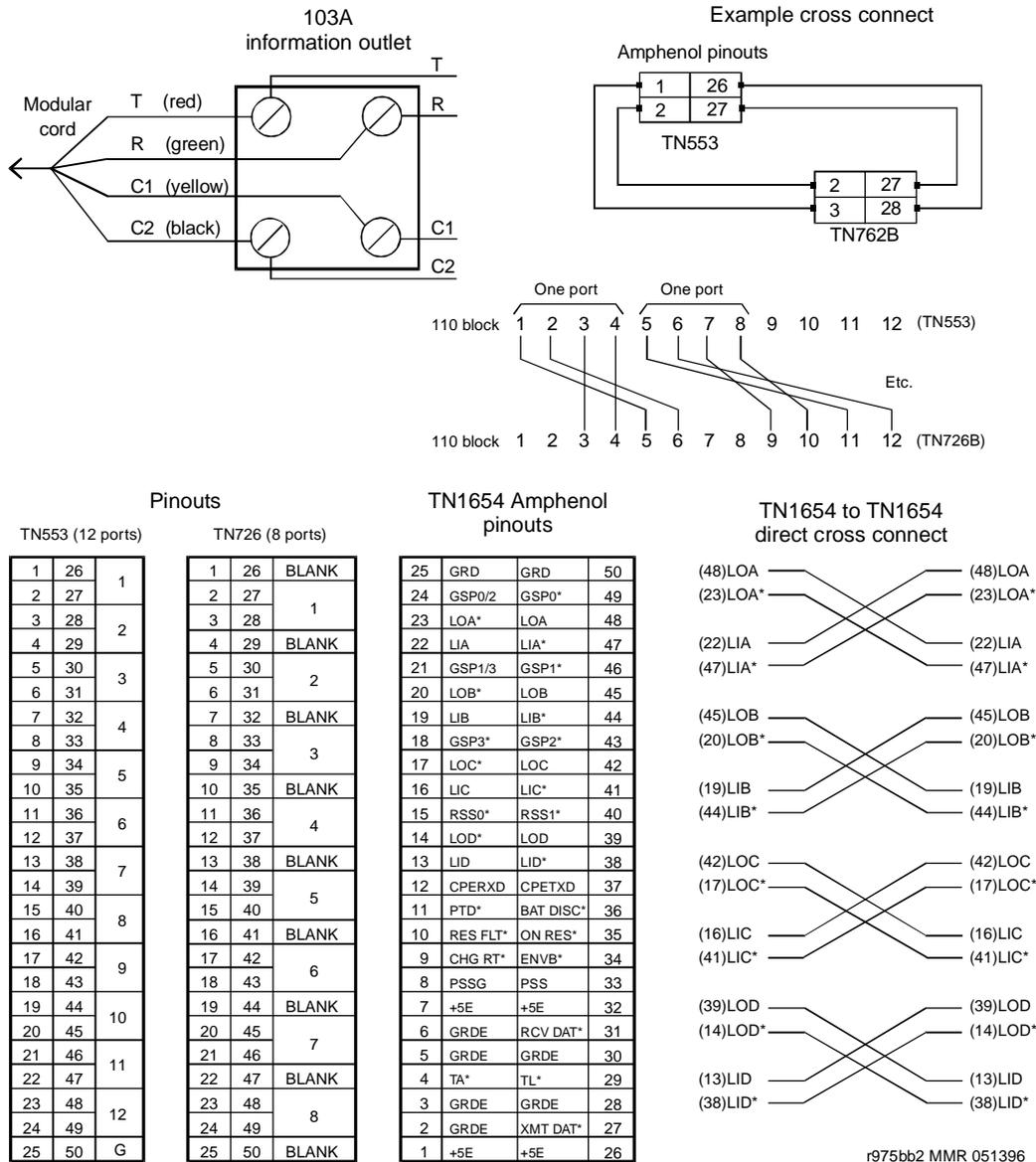
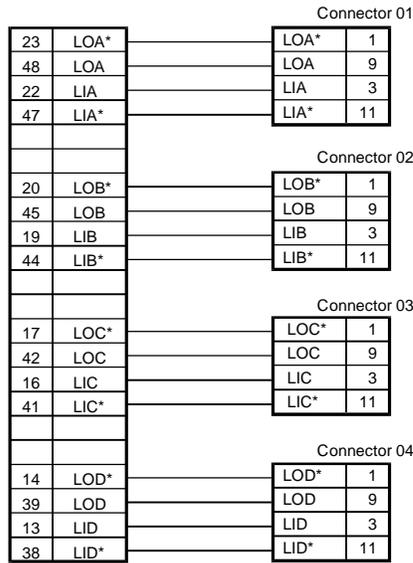
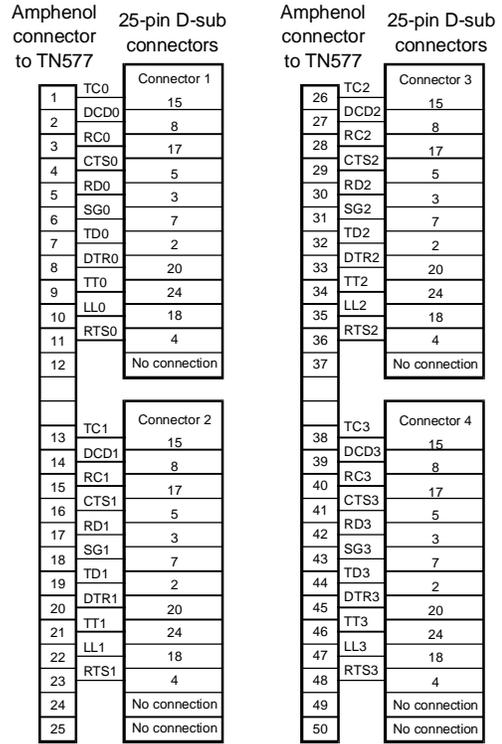


Figure D-3. Sample Cross-Connects

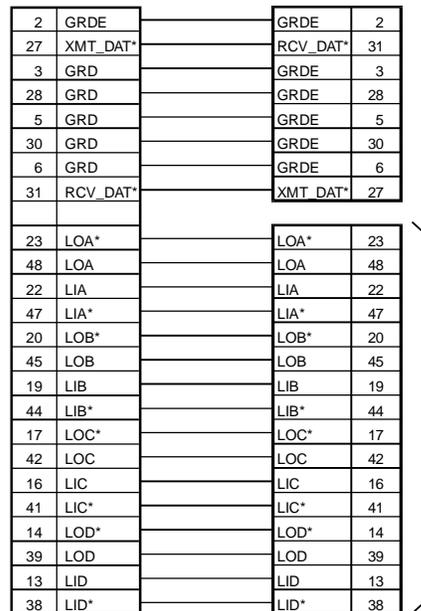
FS 10 H600-348 cable
50-pin Amphenol connector TN1654 15-pin D-sub DS1 interface to a CSU



FS 11 H600-347 cable
(packet gateway interface cable)



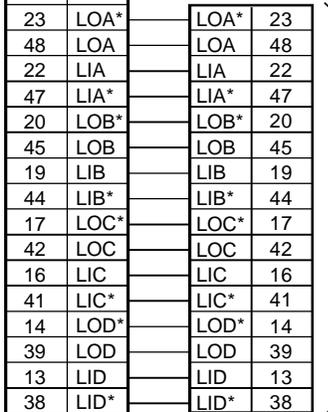
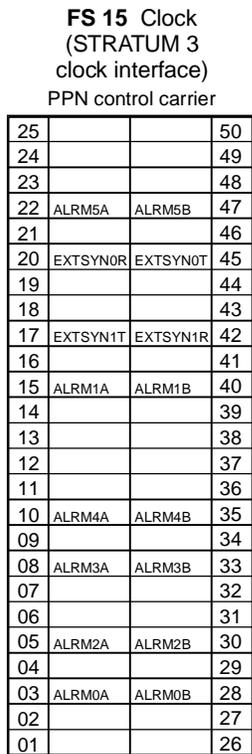
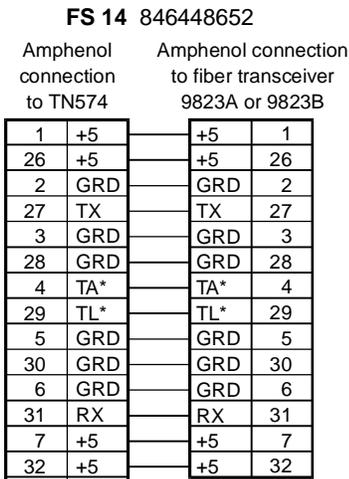
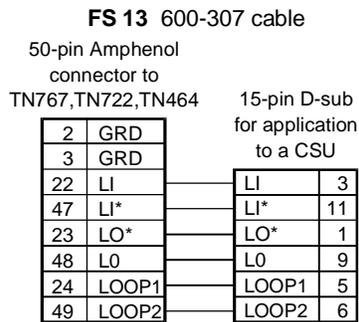
FS 12
Amphenol connector to TN1654 Amphenol connector to TN570 or TN573



Pass thru to Amphenol connector to H600-348 or to cross connect

r975bb3 MMR 051096

Figure D-4. Sample Cable Pinouts



Pass thru to Amphenol connection to H600-348 or to cross connect

r975bb4 MMR 051396

Figure D-5. Sample Pinouts

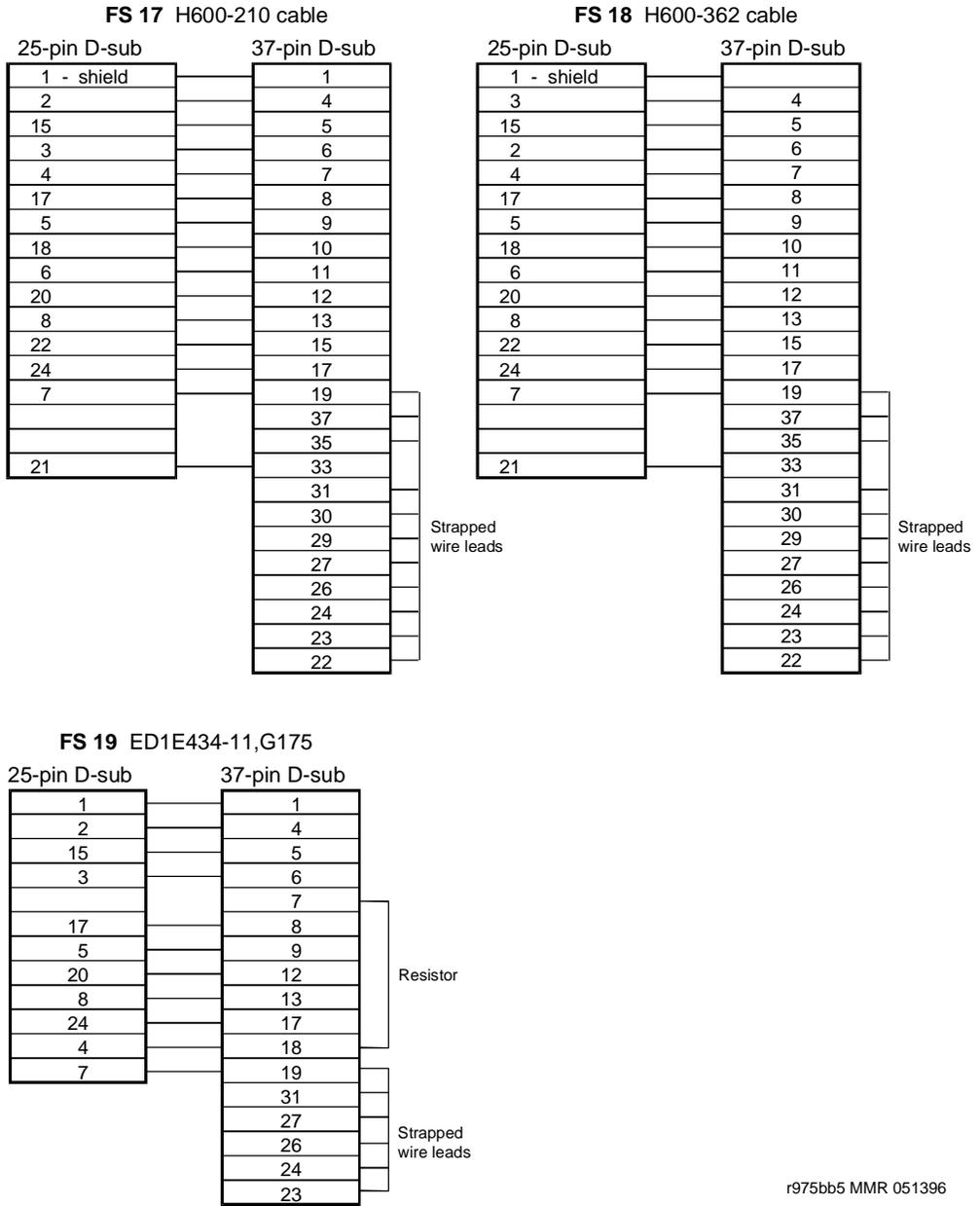
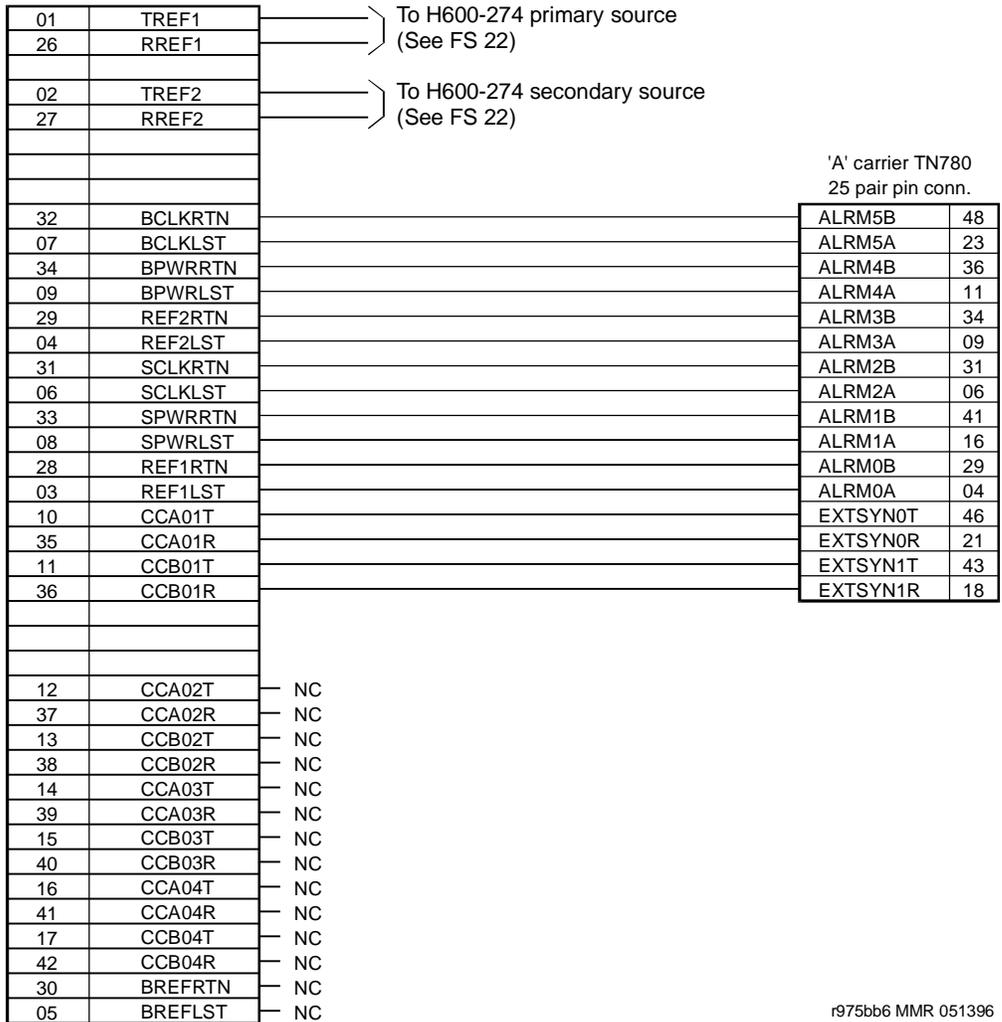


Figure D-6. Sample Cable Pinouts

FS 20 STRATUM 3 clock connector

Duplicated synchronization clock,
simplex system, dual input references

STRATUM 3 clock connector



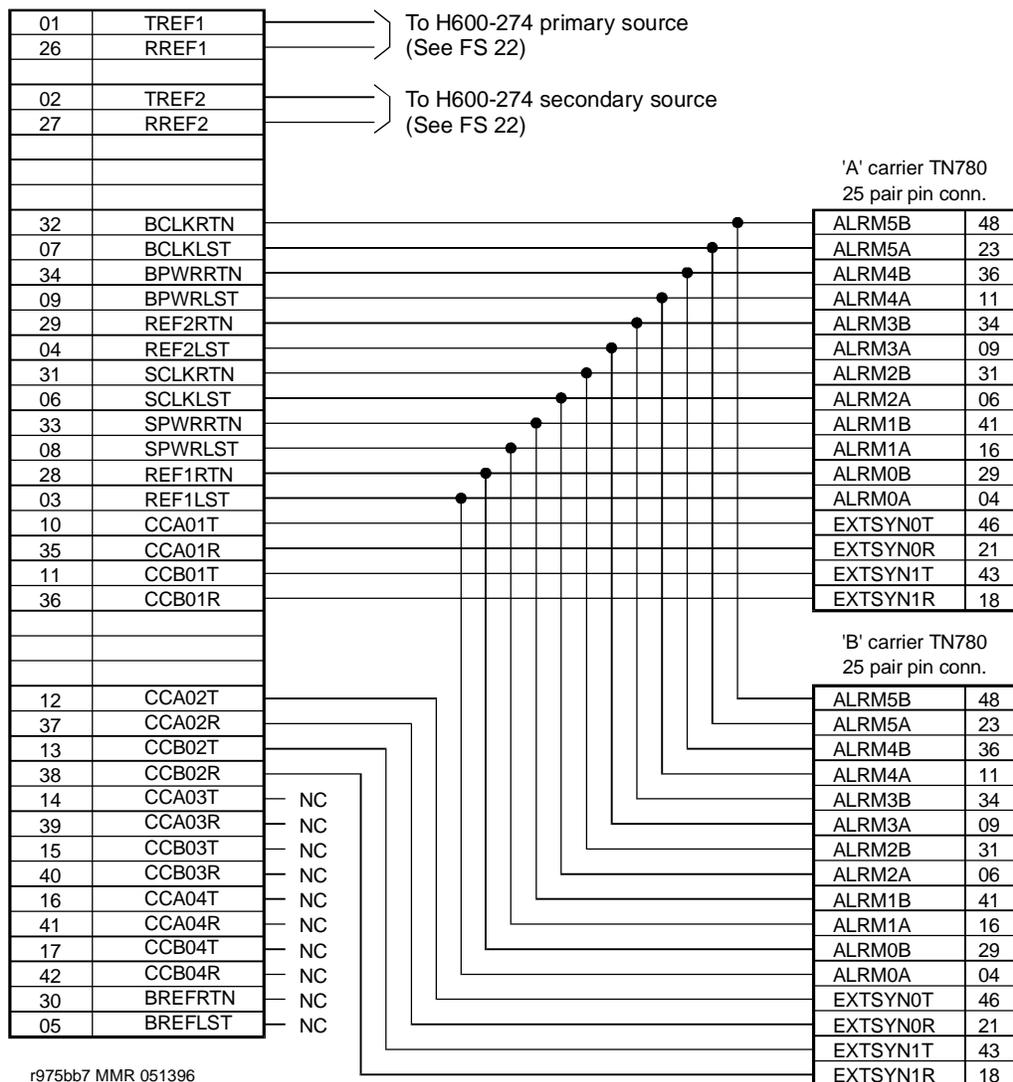
'A' carrier TN780
25 pair pin conn.

r975bb6 MMR 051396

Figure D-7. STRATUM 3 Clock Connector Pinout

FS 21 STRATUM 3 clock connector
 Duplicated synchronization clock,
 duplicated system, dual input references

STRATUM 3 clock connector



r975bb7 MMR 051396

Figure D-8. STRATUM 3 Clock Connector

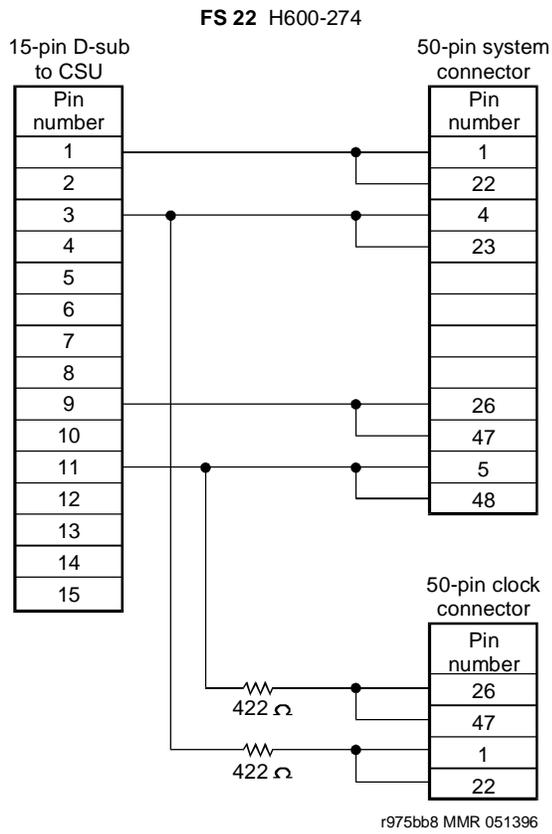


Figure D-9. Sample H600-274 Cable

Abbreviations

A

AA

Archangel

AAC

ATM Access Concentrator

AAR

Automatic Alternate Routing

AC

Alternating Current

ACA

Automatic Circuit Assurance

ACB

Automatic Callback

ACD

Automatic Call Distribution

ACU

Automatic Call Unit

ACW

After Call Work

AD

Abbreviated Dialing

ADAP

AUDIX Data Acquisition Package

ADM

Asynchronous Data Module

ADU

Asynchronous Data Unit

AE

Access Endpoint

AG

ASAI Gateway

AIM

Asynchronous Interface Module

AIOD

Automatic Identification of Outward Dialing

ALBO

Automatic Line Build Out

ALM-ACK

Alarm Acknowledge

AMW

Automatic Message Waiting

AN

Analog

ANI

Automatic Number Identification

AOL

Attendant Offered Load

AP

Applications Processor

APLT

Advanced Private Line Termination

ARS

Automatic Route Selection

ASAI

Adjunct Switch Applications Interface

ASCII

American Standard Code for Information Interchange

ATB

All Trunks Busy

ATD

Attention Dial

ATM

Asynchronous Transfer Mode

AUDIX

Audio Information Exchange

AUX

Auxiliary

AVD

Alternate Voice/Data

AWOH

Administration Without Hardware

AWG

American Wire Gauge

AWT

Average Work Time

B

BCC
Bearer Capability Class

BCMS
Basic Call Management System

BCT
Business Communications Terminal

BER
Bit Error Rate

BHCC
Busy Hour Call Completions

BLF
Busy Lamp Field

BN
Billing Number

BOS
Bit Oriented Signaling

BPN
Billed Party Number

BPS
Bits Per Second

BRI
Basic Rate Interface

BTU
British Thermal Unit

B8ZS
Bipolar Eight Zero Substitution

C

CA-TSC
Call-Associated Temporary Signaling Connection

CACR
Cancellation of Authorization Code Request

CAG
Coverage Answer Group

CAMA
Centralized Automatic Message Accounting

CARR-POW
Carrier Port and Power Unit for AC Powered Systems

CAS
Centralized Attendant Service or Call Accounting System

CBC
Call-By-Call or Coupled Bonding Conductor

CC
Country Code

CCIS
Common Channel Interoffice Signaling

CCITT
Consultative Committee for International Telephone and Telegraph

CCMS
Control Channel Message Set

CCS
Centum (Hundred) Call Seconds

CCSA
Common Control Switching Arrangement

CDM
Channel Division Multiplexing

CDOS
Customer-Dialed and Operator Serviced

CDR
Call Detail Recording

CDRP
Call Detail Record Poller

CDRR
Call Detail Recording and Reporting

CDRU
Call Detail Recording Utilities

CEM
Channel Expansion Multiplexing

CEPT1
European Conference of Postal and Telecommunications Rate 1

CI
Clock Input

CISPR
International Special Committee on Radio Interference

Abbreviations

cm
Centimeter

CM
Connection Manager

CMDR
Centralized Message Detail Recording

CMS
Call Management System

CO
Central Office

COR
Class of Restriction

COS
Class of Service

CP
Circuit Pack

CPE
Customer Premises Equipment

CPN
Called-Party Number

CPN/BN
Calling Party Number/Billing Number

CPTR
Call Progress Tone Receiver

CRC
Cyclical Redundancy Checking

CSA
Canadian Safety Association

CSCC
Compact Single Carrier Cabinet

CSCN
Center Stage Control Network

CSD
Customer Service Document

CSM
Centralized System Management

CSS
Center Stage Switch

CSSO
Customer Services Support Organization

CSU
Channel Service Unit

CTS
Clear to Send

CWC
Call Work Codes

D

DAC
Dial Access Code or Direct Agent Calling

dB
Decibel

dba
Decibels in reference to Amperes

dBrnC
Decibels above reference noise with C filter

DC
Direct Current

DCE
Data Communications Equipment

DCO
Digital Central Office

DCP
Digital Communications Protocol

DCS
Distributed Communications System

DDC
Direct Department Calling

DDD
Direct Distance Dialed

DID
Direct Inward Dialed

DIOD
Direct Inward and Outward Dialing

DIVA
Data In/Voice Answer

DLC
Data Line Circuit

Abbreviations

DLDM

Data Line Data Module

DMI

Digital Multiplexed Interface

DND

Do Not Disturb

DNIS

Dialed Number Identification Service

DOD

Direct Outward Dialing

DOSS

Delivery Operations Support System

DOT

Duplication Option Terminal

DPM

Dial Plan Manager

DPR

Dual Port RAM

DS1

Digital Signal Level 1

DS1C

Digital Signal Level-1 protocol C

DSI

Digital Signal Interface

DSU

Data Service Unit

DTDM

Digital Terminal Data Module

DTE

Data Terminal Equipment

DTGS

Direct Trunk Group Select

DTMF

Dual-Tone Multi-Frequency

DTS

Disk Tape System

DXS

Direct Extension Selection

E

E & M

Ear and Mouth (receive and transmit)

EAA

Expansion Archangel

EAL

Expansion Archangel Link

EBCDIC

Extended Binary-Coded Decimal Interexchange Code

ECC

Error Correct Code

ECMA

European Computer Manufacturers Association

EPF

Electronic Power Feed

EI

Expansion Interface

EIA

Electronic Industries Association

EMI

Electro-Magnetic Interference

EPN

Expansion Port Network

EPROM

Erasable Programmable Read Only Memory

EPSCS

Enhanced Private Switched Communications Services

ERL

Echo Return Loss

ESF

Extended Superframe Format

ESPA

European Standard Paging Access

ETA

Extended Trunk Access, also Enhanced Terminal Administration

ETN

Electronic Tandem Network

Abbreviations

ETSI
European Telecommunications Standards Institute

F

FAC
Feature Access Code

FAS
Facility-Associated Signaling

FAT
Facility Access Trunk

FAX
Facsimile

FCC
Federal Communications Commission

FEAC
Forced Entry of Account Codes

FEP
Front End Processor

FIC
Facility Interface Codes

FNPA
Foreign Numbering-Plan Area

FRL
Facilities Restriction Level

FX
Foreign Exchange

G

G3-MA
Generic 3 Management Applications

G3-MT
Generic 3 Management Terminal

G3r
Generic 3, RISC (Reduced Instruction Set Computer)

GM
Group Manager

GPTR
General-Purpose Tone Receiver

GRS
Generalized Route Selection

H

HNPA
Home Numbering Plan Area Code

Hz
Hertz

I

IAS
Inter-PBX Attendant Service

IC
Inter-Cabinet

ICC
Intercarrier Cable

ICD
Inbound Call Director

ICDOS
International Customer Dialed Operator Serviced

ICHT
Incoming Call-Handling Table

ICI
Incoming Call Identifier

ICM
Inbound Call Management

IDDD
International Direct Distance Dialing

IDF
Intermediate Distribution Frame

IE
Information Element

IMT
Intermachine Trunk

Abbreviations

in

Inch

INADS

Initialization and Administration System

INS

ISDN Network Service

INWATS

Inward Wide Area Telephone Service

IO

Information Outlet

ISDN

Integrated Services Digital Network

IS/DTT

Integrated Services/Digital Tie Trunk

ISN

Information Systems Network

ISO

International Standards Organization

ISV

Independent Software Vendor

ITP

Installation Test Procedures

ITU

International Telecommunications Union

IXC

Interexchange Carrier Code

K

kHz

Kilohertz

kbps

Kilobits Per Second

kbyte

Kilobyte

kg

Kilogram

L

LAN

Local Area Network

LAP-D

Link Access Procedure on the D-channel

LAPD

Link Access Procedure Data

LATA

Local Access and Transport Area

lb

Pound

LBO

Line Build Out

LDN

Listed Directory Number

LDS

Long-Distance Service

LEC

Local Exchange Carrier

LED

Light Emitting Diode

LINL

Local Indirect Neighbor Link

LOFC

LSU

Local Storage Unit

LWC

Leave Word Calling

M

MAC

Medium Access

M-Bus

Memory Bus

MA-UUI

Message Associated User-to-User Signaling

Abbreviations

MADU

Modular Asynchronous Data Unit

MAP

Maintenance Action Process

MAPD

Multi-Application Platform for DEFINITY

Mbps

Megabits Per Second

MCC

Multi-Carrier Cabinet

MCS

Message Center Service

MCT

Malicious Call Trace

MCU

Multipoint Control Unit

MDF

Main Distribution Frame

MDM

Modular Data Module

MDR

Message Detail Record

MEM

Memory

MET

Multibutton Electronic Telephone

MF

Multi-Frequency

MFB

Multifunction Board

MFC

Multi-Frequency Code

MHz

Megahertz

MIM

Management Information Message

MIPS

Million Instructions Per Second

MIS

Management Information System

MISCID

Miscellaneous Identification

MMCS

Multimedia Call Server

MMCH

Multimedia Call Handling

MMI

Multimedia Interface

MMS

Material Management Services

MO

Maintenance Object

MOS

Message-Oriented Signaling

MPDM

Modular Processor Data Module

MS

Message Server

ms

Millisecond

MS/T

Main Satellite/Tributary

MSA

Message Servicing Adjunct

MSG

Message Service

MSM

Modular System Management

MSS

Mass Storage System

MSSNET

Mass Storage/Network Control

MT

Management Terminal

MTDM

Modular Trunk Data Module

MTP

Maintenance Tape Processor

MTT

Multi-Tasking Terminal

Abbreviations

MWL
Message Waiting Lamp

Mbps
Megabits Per Second

Mbyte
Megabytes

N

NANP
North American Numbering Plan

NAU
Network Access Unit

NCA/TSC
Non-Call Associate/Temporary Signaling Connection

NCOSS
Network Control Operations Support Center

NCSO
National Customer Support Organization

NEC
National Engineering Center

NEMA
National Electrical Manufacturer's Association

NETCON
Network Control Circuit Pack

NFAS
Non-Facility Associated Signaling

NI
Network Interface

NID
Network Inward Dialing

NM
Network Management

NN
National Number

NPA
Numbering Plan Area

NPE
Network Processing Element

NQC
Number of Queued Calls

NSE
Night Service Extension

NSU
Network Sharing Unit

NXX
Public Network Office Code

O

OA
Operator Assisted

OCM
Outbound Call Management

ONS
On-Premises Station

OPS
Off-Premises Station

OPX
Off Premises Extension

OQT
Oldest Queued Time

OSHA
Occupational Safety and Health Act

OSI
Open Systems Interconnect

OSS
Operations Support System

OSSI
Operational Support System Interface

OTDR
Optical Time Domain Reflectometer

OTQ
Outgoing Trunk Queuing

P

PACCON

Packet Control

PAD

Packet Assembly/Disassembly

PBX

Private Branch Exchange

PC

Personal Computer

PCM

Pulse Code Modulation

PCOL

Personal Central Office Line

PCOLG

Personal Central Office Line Group

PCS

Permanent Switched Calls

PDM

Processor Data Module

PDS

Premises Distribution System

PE

Processing Element

PEC

Price Element Codes

PEI

Processor Element Interchange

PGATE

Packet Gateway

PGN

Partitioned Group Number

PI

Processor Interface

PIB

Processor Interface Board

PIDB

Product Image Database

PKTINT

Packet Interface

PL

Private Line

PLS

Premises Lightwave System

PMS

Property Management System

PN

Port Network

PNA

Private Network Access

POE

Processor Occupancy Evaluation

POP

Point Of Presence

PPM

Parts Per Million, or Periodic Pulse Metering

PPN

Processor Port Network

PRI

Primary Rate Interface

PROCR

Processor

PSC

Premises Service Consultant

PSDN

Packet Switch Public Data Network

PT

Personal Terminal

PTC

Positive Temperature Coefficient

PTT

Postal Telephone and Telegraph

R

RAM

Random Access Memory

RBS

Robbed-Bit Signaling

Abbreviations

RC	Radio Controller	SAT	System Access Terminal
RCL	Restricted Call List	SCC	Single Carrier Cabinet or Serial Communications Controller
REN	Ringer Equivalency Number	SCD	Switch-Control Driver
RFP	Request For Proposal	SCI	Switch Communications Interface
RHNPA	Remote Home Numbering Plan Area	SCO	System Control Office
RINL	Remote Indirect Neighbor Link	SCOTCH	Switch Conferencing for TDM Bus in Concentration Highway
RISC	Reduced Instruction Set Computer	SCSI	Small Computer System Interface
RLT	Release Link Trunk	SDDN	Software Defined Data Network
RMATS	Remote Maintenance, Administration, and Traffic System	SDI	Switched Digital International
RNX	Route Number Index (Private Network Office Code)	SDLC	Synchronous Data Link Control
ROM	Read-Only Memory	SDN	Software Defined Network
RPN	Routing Plan Number	SFRL	Single-Frequency Return Loss
RS-232C	Recommended Standard 232C	SID	Station Identification Number
RS-449	Recommended Standard 449	SIT	Special Information Tones
RSC	Regional Support Center	SMDR	Station Message Detail Recording
<hr/>		SN	Switch Node
S		SNA	Systems Network Architecture
SABM	Set Asynchronous Balance Mode	SNC	Switch Node Clock
SAC	Send All Calls	SNI	Switch Node Interface
SAKI	Sanity and Control Interface		

Abbreviations

SNMP

Simple Network Management Protocol

SPE

Switch Processing Element

SPID

Service Profile Identifier

SSI

Standard Serial Interface

SSM

Single Site Management

SSV

Station Service

ST3

Stratum 3 Clock Board

STARLAN

Star-Based Local Area Network

SVN

Security Violation Notification

SXS

Step-by-Step

SYSAM

System Access and Administration

T**TAAS**

Trunk Answer from Any Station

TABS

Telemetry Asynchronous Block Serial

TAC

Trunk Access Code

TC

Technical Consultant

TCM

Traveling Class Mark

TDM

Time Division Multiplex(ing)

TDR

Time of Day Routing

TEG

Terminating Extension Group

TEI

Terminal Endpoint Identifier

TOD

Time of Day

TOP

Task Oriented Protocol

TSC

Technical Service Center

TTR

Touch-Tone Receiver

TTT

Terminating Trunk Transmission

TTTN

Tandem Tie Trunk Network

TTY

Teletypewriter

U**UAP**

Usage Allocation Plan

UART

Universal Asynchronous Transmitter

UCD

Uniform Call Distribution

UCL

Unrestricted Call List

UDP

Uniform Dial Plan

UL

Underwriter Laboratories

UM

User Manager

UNMA

Unified Network Management Architecture

UNP

Uniform Numbering Plan

Abbreviations

UPS
Uninterruptible Power Supply

USOP
User Service Order Profile

UUCP
UNIX-to-UNIX Communications Protocol

UUI
User-to-user information

WSS
Wireless Subscriber System

Z

ZCS
Zero Code Suppression

V

VAR
Value Added Reseller

VDN
Vector Directory Number

VIS
Voice Information System

VLSI
Very Large Scale Integration

VM
Voltmeter

VNI
Virtual Nodepoint Identifier

W

WATS
Wide Area Telecommunications Service

WCC
World Class Core

WCR
World Class Routing

WCTD
World Class Tone Detection

WFB
Wireless Fixed Base

WSA
Waiting Session Accept

Glossary

Numerics

3B2 Message Server

A software application that combines voice and data messaging services for voice terminal users whose extensions are connected to a system.

800 service

A service in the United States that allows incoming calls from a certain area or areas to an assigned number for a flat-rate charge based on usage.

A

abandoned call

An incoming call, where the caller hangs up before being answered.

access code

A 1-, 2-, or 3-digit dial code used to activate or cancel a feature, or access an outgoing trunk. The star (*) and pound (#) can be used as the first digit of an access code.

access endpoint

Either a nonsignaling channel on a DS1 interface or a nonsignaling port on an analog tie trunk circuit pack that is assigned a unique extension.

access tie trunk

A trunk that connects a main communications system with a tandem communications system in an electronic tandem network (ETN). An access tie trunk can also be used to connect a system or tandem to a serving office or service node. Also called "access trunk."

ACCUNET

A trademarked name for a family of digital services offered by AT&T in the USA.

ACD

See **Automatic Call Distribution**. ACD also refers to the "Work State" indicating the agent is on an ACD call.

ACD split (or split)

A group of extensions that are staffed by agents trained to handle a certain type of incoming call. Valid split numbers range from 1 through 99. Each number identifies a unique grouping of ACD agent positions. ACD split is also referred to as an *ACD hunt group* or *hunt group*.

ACD work modes

See **work modes**.

active-notification association

A "link" that is initiated by the adjunct allowing it to receive Event Reports for a specific switch entity, for example, an outgoing call. This association is initiated by the adjunct via the *Event Notification Request* capability.

active-notification call

A call for which Event Reports are being sent over an active-notification association (communication channel) to the adjunct. Sometimes referred to as a monitored call.

active notification domains

Domains are VDNs and ACD split extensions for which Event Notification has been requested.

adjunct-control association

A relationship initiated by an application via the *Third Party Make Call*, the *Third Party Take Control* or *Domain (Station) Control* capabilities to set up calls and control calls already in progress.

adjunct-controlled calls

Include all the calls that can be controlled using an adjunct-control association. These calls must have been originated via the *Third Party Make Call* or *Domain (Station) Control* capabilities or must have been taken control of via the *Third Party Take Control* or *Domain (Station) Control* capabilities.

adjunct-controlled splits

ACD splits administered to be under adjunct control. Agents logged into such splits must do all telephony and ACD login and/or logout and change work mode functions through the adjunct (except for auto-available adjunct controlled splits, whose agents may not be logged in and/or logged out or have their work modes changed).

adjunct-monitored calls

Include all the adjunct-controlled calls and the active-notification calls. In addition it includes calls which provide event reporting over domain-control associations.

ANSI

The American National Standards Institute. This is a United States professional/technical association supporting a variety of standards.

adjunct

A processor that does one or more tasks for another processor and that is optional in the configuration of the other processor.

adjunct-switch application interface (ASAI)

A recommendation for interfacing adjuncts and communications systems, based on the CCITT Q.932 specification for layer 3.

administer

To access and change parameters associated with the services or features of a system.

Administered Connection (AC)

Administered Connection is a feature that allows the switch to automatically establish and maintain end-to-end connections between access endpoints (trunks) and/or data endpoints (data modules).

administration terminal

A terminal used to administer and maintain a system. See also **terminal**.

Administration Without Hardware (AWOH)

Provides the ability to administer ports without the need for the associated terminals or other hardware to be physically present.

after call work (ACW) mode

In this mode, agents are unavailable to receive ACD calls. Agents should enter the ACW mode to perform ACD-related activities such as filling out a form after an ACD call. If agents are in the Manual-In mode and disconnect from an ACD call, they automatically enter the ACW mode.

Agents normally using Auto-In mode can enter the ACW state by pressing the ACW button during a call.

agent (or ACD agent)

An answering position who receives calls directed to a split. A member of an ACD hunt group (ACD split).

agents in multiple splits

An agent may be logged into more than one split (three maximum). If, while logged into more than one split, the agent (1) answers an ACD call, (2) is in ACW mode for any split, or (3) makes or receives a direct extension call, the switch will not distribute additional ACD calls to that agent.

agent report

Provides historical traffic information for internally measured agents.

American National Standard Code for Information Interchange

See **ASCII**.

analog

The representation of information by means of continuously variable physical quantities such as amplitude, frequency, and phase.

analog data

Data that is transmitted over a digital facility in analog (pulse code modulation) form. The data must pass through a modem either at both ends or at a modem pool at the distant end.

analog telephone

A telephone that receives acoustic voice signals and sends analog electrical signals along the telephone line. Analog telephones are usually served by a single wire pair (tip and ring). The model-2500 telephone set is a typical example of an analog telephone.

analog-to-digital converter (ADC)

A device that converts an analog signal to digital form. See also **digital-to-analog converter**.

angel

A microprocessor located on each port card in a processor port network (PPN). The angel uses the control-channel message set (CCMS) to manage communications between the port card and the archangel on the controlling switch processing element (SPE). The angel also monitors the status of other microprocessors on a port card and maintains error counters and thresholds. See also **archangel**.

answerback code

An assigned number used to respond to a page from a code-calling or loudspeaker-paging system, or to retrieve a parked call.

appearance

A software process that is associated with an extension and whose purpose is to supervise a call. Also called "call appearance," "line appearance," and "occurrence."

application

Refers to an adjunct entity that requests and receives ASAI services or capabilities. One or more applications can reside on a single adjunct. However, the switch cannot distinguish among several applications residing on the same adjunct and treats the adjunct, and all resident applications, as a single application. The terms application and adjunct are used interchangeably throughout this document.

applications processor

A micro-computer based, program controlled computer providing application services for the DEFINITY switch. The processor is used with several user-controlled applications such as traffic analysis and electronic documentation.

architecture

The organizational structure of a system, including hardware and/or software.

ARS

See **Automatic Route Selection**.

ASCII (American National Standard Code for Information Interchange)

The standard code, using a coded character set consisting of 7-bit coded characters (eight bits, including parity check), used for information interchange among data processing systems, data communications systems, and associated equipment. The ASCII set consists of control characters and graphic characters.

asynchronous data transmission

A method of transmitting data in which each character is preceded by a start bit and followed by a stop bit, thus permitting data characters to be transmitted at irregular intervals. This type transmission is advantageous when transmission is not regular (characters typed at a keyboard). Also called "asynchronous transmission." See also **synchronous data transmission**.

association

An association is a communication channel between the adjunct and switch for messaging purposes. An active association is one which applies to an existing call on the switch or to an extension on the call.

asynchronous data unit (ADU)

A data communications equipment (DCE) type device that allows direct connection between RS-232C equipment and a digital switch.

asynchronous transfer mode

The Asynchronous Transfer Mode (ATM) Interface is a high speed access concentrator for data networking in Local Area Network (LAN), campus, and Wide Area Network (WAN) environments. Data rates can be as high as 155 Mbps (Mega bits per second).

attendant

A person at a console on a customer's premises who provides personalized service for incoming callers and voice-services users by performing switching and signaling operations. See also attendant console.

attendant console

The workstation used by an attendant. The attendant console allows the attendant to originate a call, answer an incoming call, transfer a call to another extension or trunk, put a call on hold, and remove a call from hold. Attendants using the console can also manage and monitor some system operations. Also called "console." See also **attendant**.

Audio Information Exchange (AUDIX)

A fully integrated voice-mail system that can be used with a variety of communications systems to provide call-history data, such as subscriber identification and reason for redirection.

auto-in trunk groups

Those trunk groups where the CO processes all of the digits for the incoming call. Whenever the switch determines that the CO has seized a trunk from an Auto-In trunk group, it automatically (without processing any digits) connects the trunk to the destination. The destination will typically be an ACD split where (emif there are no agents available(emthe call will go into a queue in which the callers wait to be answered in the order in which they arrived.

auto-in work mode

One of four agent work modes. The work mode where an agent indicates, to the system, that the agent is ready to process another call as soon as the current call is completed. Specifically, if an agent disconnects from an ACD call while in Auto-in Work Mode, then that agent immediately becomes available to receive another ACD call. See **Manual-In Work Mode** for a contrast.

Automatic Call Distribution (ACD) split

Calls of a similar type are distributed among agents.

automatic trunk

A trunk that does not require the sending or receiving of addressing information because the destination is predetermined. A request for service on the trunk, called a "seizure," is sufficient to route the call. The normal destination of an automatic trunk is the communications-system attendant group. Also called "automatic incoming trunk" and "automatic tie trunk."

automatic restoration

A service that restores disrupted connections between access endpoints (nonsignaling trunks) and data endpoints (devices that connect the switch to data terminal and/or communications equipment). This restoration is done within seconds of a service disruption so that critical data applications can remain operational.

auxiliary equipment

Equipment used for optional system features, such as Loudspeaker Paging and Music-on-Hold.

auxiliary trunk

A trunk used to connect auxiliary equipment, such as radio-paging equipment, to a communications system.

aux-work mode

In this mode, agents are unavailable to receive ACD calls. Agents should enter aux-work mode when involved in non-ACD activities such as taking a break, going to lunch, or placing an outgoing call.

When agents log in, they are automatically placed in the Aux-Work mode. They can then use the Auto-In or Manual-In feature to make themselves available to answer the first call.

Also, the last available agent in a split cannot enter the aux-work mode if any ACD calls are remaining in the queue. If the last available agent attempts to enter aux-work mode, the following occurs: (1) Calls in the queue are routed to the agent until the queue is empty (2) If the last available agent has an aux-work button, the light next to the button flashes until all calls in the queue are answered. When the last call is answered, the light next to the button goes on steadily, and the agent then enters aux-work mode.

B

bandwidth

The difference, expressed in Hertz, between the defined highest and lowest frequencies in a frequency range.

barrier code

A security code used with the Remote Access feature to prevent unauthorized access to the system.

baud

In telecommunications applications, a unit of transmission speed equal to the number of signal events per second. See also **bit rate** and **bits per second**.

BCC

The Bearer Capability Class (BCC) identifies the type of a call, for example, voice and different types of data. Determination of BCC is based on the call originator's characteristics for non-ISDN endpoints and on the Bearer Capability and Low-Layer Compatibility Information Elements of an ISDN endpoint. Current BCCs are:

- a. 0: Voice-grade data and voice
- b. 1: DMI Mode 1, 56 kbps data transmission
- c. 2: DMI Mode 2, synchronous/asynchronous data transmission up to 19.2 kbps
- d. 3: DMI Mode 3, 64 kbps circuit/packet data transmission
- e. 4: DMI Mode 0, 64 kbps synchronous data
- f. 5: Temporary Signaling Connection
- g. 6: Wideband Call, 128 to 1984 kbps synchronous data

bit (binary digit)

One unit of information in binary notation having two possible states or values, 0 or 1.

bits per second (bps)

The number of binary units of information that are transmitted or received per second. See also **baud** and **bit rate**.

bit rate

The speed at which bits are transmitted, usually expressed in bits per second. Also called "data rate." See also **baud** and **bits per second**.

bridge (bridging)

The appearance of a voice terminal's extension at one or more other voice terminals.

BRI

The ISDN Basic Rate Interface specification.

bridged appearance

A call appearance on a voice terminal that matches a call appearance on another voice terminal for the duration of a call.

buffer

(1) In hardware, a circuit or component that isolates one electrical circuit from another. Typically, a buffer holds data from one circuit or process until another circuit or process is ready to accept the data. (2) In software, an area of memory used for temporary storage.

bus

A multiconductor electrical path used to transfer information over a common connection from any of several sources to any of several destinations.

business communications terminal (BCT)

An integrated digital data terminal used for business applications. A BCT can function via a data module as a special-purpose terminal for services provided by a processor or as a terminal for data entry and retrieval.

BX.25

An AT&T version of the CCITT X.25 protocol for data communications. BX.25 adds a fourth level to the standard X.25 interface. This uppermost level combines levels 4, 5, and 6 of the International Standards Organization (ISO) reference model.

bypass tie trunks

A one-way, outgoing tie trunk from a tandem switch to a main switch in an electronic tandem network (ETN). Bypass tie trunks, provided in limited quantities, are used as a "last-choice" route when all trunks to another tandem switch are busy. Bypass tie trunks are used only if all applicable intertandem trunks are busy.

byte

A sequence of (usually eight) bits processed together.

C

cabinet

Housing for racks, shelves, or carriers that hold electronic equipment.

cable

The physical connection between two pieces of equipment (for example, cable from a data terminal to a modem (or between a piece of equipment and a termination field (for example, circuit pack I/O cables).

cable connector

A cable connector is either a jack (female) or plug (male) on the end of a cable. A cable connector connects wires on a cable to specific leads on telephone or data equipment.

call appearance, attendant console

Six buttons, labeled "a" through "f," and used to originate, receive, and hold calls. Each button has two lights to show the status of the call appearance.

call appearance, voice terminal

A button labeled with an extension number and used to place outgoing calls, receive incoming calls, or hold calls. Two lights next to the button show the status of the call appearance or the status of the call.

call control capabilities

call control capabilities are all the capabilities (*Third Party Selective Hold, Third Party Reconnect, Third Party Merge*) that can be used in either of the Third Party Call Control ASE (cluster) subsets: Call Control and Domain Control.

call detail recording

A switch feature that utilizes software and hardware to record call data (same as CDRU).

call detail recording utility (CDRU)

Applications software that collects, stores, optionally filters, and outputs call detail records for direct or polled output to peripheral devices.

call management system (CMS)

An application, running on an adjunct processor, that collects information from an Automatic Call Distribution (ACD) unit. CMS enables customers to monitor and manage telemarketing centers by generating reports on the status of agents, splits, trunks, trunk groups, vectors, and vector directory numbers (VDNs), and enables customers to partially administer the ACD feature for a communications system.

call reference value (CRV)

An identifier present in ISDN messages that serves to associate a related sequence of messages. In ASAI, the CRVs distinguish between associations.

call vector

A set of up to 15 vector commands to be performed for an incoming or internal call.

callback call

A call that is automatically returned to a voice terminal user who activated the Automatic Callback or Ringback Queuing feature.

call-waiting ringback tone

A low-pitched tone identical to ringback tone except that the tone decreases in the last 0.2 seconds (in the United States). A call-waiting ringback tone notifies the attendant that the Attendant Call Waiting feature has been activated and that the called user is aware of the waiting call. Tones in international countries may sound different.

call work code

A number, up to 16 digits, entered by Automatic Call Distribution (ACD) agents to record the occurrence of customer-defined events (such as account codes, social security numbers, or phone numbers) on ACD calls.

carrier

An enclosed shelf containing vertical slots that hold circuit packs.

carried load

The amount of traffic actually served by traffic-sensitive facilities during a given interval.

CCS or hundred call seconds

A unit of traffic measure used to determine usage. To determine usage for a facility, it is scanned every 100 seconds. If the facility is found busy, then it is assumed to have been busy for the entire scan interval. There are 3600 seconds per hour. The Roman numeral for 100 is the capital letter "C." The abbreviation for call seconds is CS. Therefore, 100 call seconds is abbreviated as CCS. If a facility is busy for an entire hour, then it is said to have been busy for 36 CCS. *See also Erlang.*

capability

A capability is either a request or indication of an operation. For example, a *Third Party Make Call* is a request for setting-up a call and an *Event Report* is an indication that an event has occurred.

capability groups

Capability groups are sets of capabilities, provisioned through switch administration, that can be requested by an application. Each capability group may contain capabilities from several capability groups. Capability groups are also referred to, in other documentation, as administration groups or Application Service Elements (ASEs). Capability groups denote association types. For example, *Call Control* is a type of association which allows certain functions (the ones in the capability group) to be performed over this type of association.

cause value

A Cause Value is returned in responses to requests or in event reports when a denial occurs or an unexpected condition is encountered. ASAI cause values fall into two “coding standards”: Coding Standard 0 includes any cause values that are part of AT&T and CCITT ISDN specifications, and, Coding standard 3 includes any other ASAI cause values. This document uses a notation for cause value where the coding standard for the cause is given first, then a slash, then the cause value. For example, CS0/100 is coding standard 0, cause value 100.

CCITT

CCITT (Comite Consultatif International Telephonique et Telegraphique) is now called *International Telecommunications Union* (ITU). See this name for information.

center stage switch (CSS)

The central interface between the processor port network (PPN) and expansion port networks (EPNs) in a CSS-connected system.

central office (CO)

The location housing telephone switching equipment that provides local telephone service and access to toll facilities for long-distance calling.

central office (CO) codes

The first three digits of a 7-digit public network telephone number in the USA. CO codes are numbered from 200 through 999.

central office (CO) trunk

A telecommunications channel that provides access from the system to the public network through the local CO.

channel

The term channel is nonspecific and must be taken in context. Channel can refer to a circuit-switched call or a communications path for transmitting voice and/or data.

In wideband, a channel refers to all of the time slots necessary to support a call. For example, an H0-channel uses six 64 kbps time slots. This definition of channel is the same whether the time slots necessary to support the call are contiguous or noncontiguous.

Channel can also refer to a DS0 on a T1 or E1 facility not specifically associated with a logical circuit-switched call. In this context, a channel is analogous to a single trunk.

channel negotiation

Channel negotiation is the process by which the channel offered in the Channel Identification Information Element (CIIE) in the SETUP message is “negotiated” to be another channel acceptable to the switch receiving the SETUP message and ultimately to the switch that sent the SETUP. Negotiation will only be attempted if the CIIE is encoded as *Preferred*. Channel negotiation will not be attempted for wideband calls.

circuit

(1) An arrangement of electrical elements through which electric current flows, providing one or more specific functions. (2) A channel or transmission path between two or more points.

circuit pack

A card on which electrical circuits are printed, and integrated circuit (IC) chips and electrical components are installed. A circuit pack is installed in a switch carrier.

Class of Restriction (COR)

A feature that allows up to 64 classes of call-origination and call-termination restrictions for voice terminals, voice terminal groups, data modules, and trunk groups. See also **Class of Service (COS)**.

Class of Service (COS)

A feature that uses a number (0 through 15) to specify if voice terminal users can activate the Automatic Callback, Call Forwarding All Calls, Data Privacy, or Priority Calling features.

common control switching arrangement (CCSA)

A private telecommunications network using dedicated trunks and a shared switching center for interconnecting company locations.

communications system

The software-controlled processor complex that interprets dialing pulses, tones, and/or keyboard characters and makes the proper interconnections both within the system and external to the system. The communications system itself consists of a digital computer, software, storage device, and carriers with special hardware to perform the actual connections. A communications system provides voice and/or data communications services, including access to public and private networks, for telephones and data terminals on a customer's premises. See also **switch**.

confirmation tone

A tone confirming that a feature activation, deactivation, or cancellation has been accepted.

connectivity

The connection of disparate devices within a single system.

console

See **attendant console**.

contiguous

Contiguous refers to adjacent DS0s within one T1 or E1 facility or adjacent TDM or fiber time slots. Note that the first and last TDM bus, DS0, or fiber time slots are not considered contiguous (no wraparound). For an E1 facility with a D-channel, DS0s 15 and 17 are considered contiguous.

control cabinet

See **control carrier**.

control carrier

A carrier in a Multi-Carrier Cabinet that contains the switch processing element (SPE) circuit packs and, unlike a G3r control carrier, port circuit packs. Also called "control cabinet" in a single-carrier cabinet. See also **switch processing element**.

controlled station

A station that is being monitored and controlled via a domain-control association.

coverage answer group

A group of up to eight voice terminals that ring simultaneously when a call is redirected to it by Call Coverage. Any one of the group can answer the call.

coverage call

A call that is automatically redirected from the called party's extension number to an alternate answering position when certain coverage criteria are met.

coverage path

The order in which calls are redirected to alternate answering positions.

coverage point

An extension or attendant group, vector directory number (VDN), or Automatic Call Distribution (ACD) split designated as an alternate answering position in a coverage path.

covering user

A person at a coverage point who answers a redirected call.

critical reliability system

A system that has the following duplicated items: control carriers, tone-clocks, expansion interface (EI) circuit packs, and cabling between port networks (PNs) and center stage switch (CSS) in a CSS-connected system. See also **duplicated common control**, **duplicate processor-only system**, and **duplication**.

D

data channel

A communications path between two points used to transmit digital signals.

data communications equipment (DCE)

The equipment (usually a modem, data module, or packet assembler/disassembler) on the network side of a communications link that provides the functions to make the binary serial data from the source or transmitter compatible with the communications channel.

data link

The configuration of physical facilities enabling end terminals to communicate directly with each other.

data module

An interconnection device between a basic rate interface (BRI) or digital communications protocol (DCP) interface of the switch and data terminal equipment (DTE) or data communications equipment (DCE).

data path

The end-to-end connection used for a data communications link. A data path is the combination of all elements of an interprocessor communication in a distributed communications system (DCS).

data port

A point of access to a computer that uses trunks or lines for transmitting or receiving data.

data rate

See **bit rate**.

data service unit (DSU)

A device designed to transmit digital data on transmission facilities.

data terminal

An input/output (I/O) device that has either switched or direct access to a host computer or to a processor interface.

data terminal equipment (DTE)

Equipment consisting of the endpoints in a connection over a data circuit. In a connection between a data terminal and host, the terminal, the host, and their associated modems or data modules make up the DTE.

D-channel backup

D-channel backup is used with Non-Facility Associated Signaling (NFAS). With D-channel backup, a primary D-channel provides signaling for an NFAS D-channel group (two or more PRI facilities). A second D-channel, located on a separate PRI facility of the NFAS D-channel group is designated as backup for the D-channel. The failure of the primary D-channel causes an automatic transfer of call-control signaling to the backup D-channel. In this case, the backup

becomes the primary D-channel, and when the previous primary is returned to service it becomes the backup D-channel.

delay-dial trunk

A trunk that allows dialing directly into a communications system (the digits are received as they are dialed).

denying a request

Denying a Request is the same as sending a negative acknowledgement (NAK), and is done by sending an Facility Information Element (FIE) with a *return error* component (a cause value is also provided). It should not be confused with the "denial" event report which applies to calls.

designated voice terminal

The specific voice terminal to which calls, originally directed to a certain extension number, are redirected. Commonly used to mean the "forwarded-to" terminal when Call Forwarding All Calls is active.

dial-repeating tie trunk

A tie trunk that transmits called-party addressing information between two communications systems.

digit conversion

A process used to convert specific dialed numbers into other dialed numbers.

digital communications protocol (DCP)

An AT&T proprietary protocol used to transmit both digitized voice and digitized data over the same communications link. A DCP link is made up of two 64 kbps information (I-) channels and one 8-kbps signaling (S-) channel.

digital data endpoints

In G3iV2, digital data endpoints include devices such as the 510D terminal or the 515-type business communications terminal (BCT).

digital multiplexed interface (DMI)

An interface that provides connectivity between a communications system and a host computer or between two communications systems using digital signal level-1 (DS1) 24th-channel signaling. DMI provides twenty three 64 kbps data channels and 1 common signaling channel over a twisted-pair connection. DMI is offered through two capabilities: bit-oriented signaling (DMI-BOS) and message-oriented signaling (DMI-MOS).

digital signal level 0 (DS0)

A single 64 kbps voice channel. A DS0 is a single 64 kbps channel in a T1 or E1 facility and consists of eight bits in a T1 or E1 frame every 125 micro-seconds.

digital signal level 1 (DS1)

A single 1.544 Mbps (United States) or 2.048 Mbps (outside the United States) digital signal carried on a T1 transmission facility. A DS1 converter complex consists of a pair, one at each end, of DS1 converter circuit packs and the associated T1/E1 facilities.

digital terminal data module (DTDM)

An integrated or adjunct data module that shares with a digital telephone the same physical port for connection to a communications system. The function of a DTDM is similar to that of a processor data module (PDM) and modular processor data module (MPDM) in that it converts RS-232C signals to DCP signals.

digital-to-analog converter

A device that converts data in digital form to the corresponding analog signals. See also **analog-to-digital converter**.

digital transmission

A mode of transmission in which the information to be transmitted is first converted to digital form and then transmitted as a serial stream of pulses.

digital trunk

A circuit in that carries digital voice and/or digital data in a telecommunications channel.

dial-repeating trunks

A PBX tie trunk that is capable of handling PBX station signaling information without attendant assistance.

direct agent

A switch feature accessed only via Adjunct Switch Applications Interface (ASAI) which allows a call to be placed in a split queue but routed only to a specific agent in that split. This allows a call to receive normal ACD call treatment (for example, announcements) and to be measured as an ACD call while ensuring that a particular agent answers.

Direct Extension Selection (DXS)

A feature on an attendant console that allows an attendant direct access to voice terminals by pressing a group select button and a DXS button.

Direct Inward Dialing (DID)

A feature that allows an incoming call from the public network (not FX or WATS) to reach a specific telephone without attendant assistance. DID calls to DID-restricted telephone lines are routed to an attendant or recorded announcement, depending on the option selected.

direct inward dialing (DID) trunk

An incoming trunk used for dialing directly from the public network into a communications system without help from the attendant.

disk drive

An electromechanical device that stores data on and retrieves data from one or more disks.

distributed communications system (DCS)

A network configuration linking two or more communications systems in such a way that selected features appear to operate as if the network were one system.

domain

Available domains are VDNs, ACD splits, and stations. The VDN domain is only used for active-notification associations, the station domain is only used for the domain-control associations. The ACD-split domain is for active-notification associations and domain-control associations.

domain-control association

A *Third Party Domain Control Request* capability initiates a unique "CRV/link number" combination, which is referred to as a domain-control association.

domain-controlled split

A split for which *Third Party Domain Control* request has been accepted. A domain-controlled split provides an event report for logout.

domain-controlled station

A station for which a *Third Party Domain Control* request has been accepted. A domain-controlled station provides event reports for calls that are alerting, connected, or held at the station.

domain-controlled station on a call

A station active on a call which provides event reports over one or two domain-control associations.

duplicated common control

Two processors ensuring continuous operation of a communications system. While one processor is on-line, the other functions as a backup. The backup processor goes on-line periodically or when a problem condition occurs.

duplication

The use of redundant components to improve availability. When a duplicated subsystem fails, its backup redundant system automatically takes over.

duplication option

A system option that duplicates the following:

1. Control carrier containing the Switch Processing Element (SPE)
2. Expansion interface (EI) circuit packs in carriers
3. Fiber optic cabling between Port Networks (PNs)
4. Center-Stage Switch (CSS) in a CSS-connected system

E

E1

A digital transmission standard that carries traffic at the rate of 2.048 Mbps. The E1 facility is divided into 32 channels (DS0s) of 64 kbps information numbered from 0 to 31. Channel 0 is reserved for framing and synchronization information. A D-channel occupies channel 16.

ear and mouth (E & M) signaling

Trunk supervisory signaling, used between two communications systems, whereby signaling information is transferred through two-state voltage conditions (on the E and M leads) for analog applications and through a single bit for digital applications.

EIA-232

A physical interface specified by the Electronic Industries Association (EIA). EIA-232 transmits and receives asynchronous data at speeds of up to 19.2 kbps over cable distances of up to 50 feet. EIA-232 replaces RS-232 protocol in some DEFINITY applications.

electronic tandem network (ETN)

A tandem tie trunk network that has automatic call routing capabilities based on the number dialed and the most preferred route available at the time the call is placed. Each switch in the network is assigned a unique private network office code (RNX), and each voice terminal is assigned a unique extension number.

Electronics Industries Association (EIA)

A trade association of the electronics industry that establishes electrical and functional standards.

emergency transfer

If a major system failure occurs, the automatic transfer is initiated to a group of telephones capable of making outgoing calls. The system operates in this mode until the failure is repaired and the system automatically returns to normal operation. Also called "power-failure transfer."

end-to-end signaling

The transmission of touch-tone signals generated by dialing from a voice terminal user to remote computer equipment. A connection must first be established over an outgoing trunk from the calling party to the computer equipment. Then additional digits can be dialed to transmit information to be processed by the computer equipment.

enhanced private-switched communications service (EPSCS)

An analog private telecommunications network based on the No. 5 Crossbar and 1A ESS that provides advanced voice and data telecommunications services to companies with many locations.

Erlang

A unit of traffic intensity, or load, used to express the amount of traffic it takes to keep one facility busy for one hour. One Erlang is equal to 36 CCS. See also **Hundred Call Seconds**.

expansion archangel (EAA)

A network-control microprocessor located on an expansion interface (EI) port circuit pack in an expansion port network (EPN). The EA provides an interface between the EPN and its controlling switch processing element (SPE).

expansion-archangel link (EAL)

A link-access function on the D-channel (LAPD) logical link that exists between a switch processing element (SPE) and an expansion archangel (EA). The EAL carries control messages from the SPE to the EA and to port circuit packs in an expansion port network (EPN).

expansion control cabinet

See **expansion control carrier**.

expansion control carrier

A carrier in a Multi-Carrier Cabinet that contains extra port circuit packs and a maintenance interface. Also called "expansion control cabinet" in a single-carrier cabinet.

expansion interface (EI)

A port circuit pack in a port network (PN) that provides the interface between a PN's time-division multiplex (TDM) bus and packet bus, and a fiber-optic link. The EI carries circuit-switched data, packet-switched data, network control, timing control, and DS1 control. In addition, an EI in an expansion port network (EPN) communicates with the master maintenance circuit pack to provide the EPN's environmental and alarm status to the switch processing element (SPE).

expansion port network (EPN)

A port network (PN) that is connected to the TDM bus and packet bus of a processor port network (PPN). Control is achieved by indirect connection of the EPN to the PPN via a port-network link (PNL). See also **port network**.

extension-in

Extension-In (ExtIn) is the work state agents go into when they answer (receive) a non-ACD call. If the agent is in Manual-In or Auto-In and receives an extension-in call, it is recorded by CMS as an AUX-In call.

extension-out

Extension-Out (ExtOut) is the work state agents go into when they place (originate) a non-ACD call. If the agent is in Manual-In or Auto-In and places an extension-out call, it is recorded by CMS as an AUX-Out call.

external measurements

Refers to those ACD measurements that are made by the External CMS adjunct.

extension number

A 1- to 5-digit number by which calls are routed through a communications system or, with a Uniform Dial Plan (UDP) or main-satellite dialing plan, through a private network. Extension numbers are primarily used for telephones and data terminals but can also be used with specific features.

external call

A connection between a communications system user and a party on the public network or on another communications system in a private network.

F

facility

A general term used for a telecommunications transmission pathway and associated equipment.

facility associated signaling (FAS)

When a D-channel carries the signaling only for those channels on the same physical interface.

feature

A specifically defined function or service provided by the system.

feature button

A labeled button on a telephone or attendant console used to access a specific feature.

fiber optics

A technology using materials that transmit ultrawideband electromagnetic light-frequency ranges for high-capacity carrier systems.

fixed

Fixed is a trunk allocation term. In the fixed allocation scheme, the time slots necessary to support a wideband call are contiguous, and the first time slot is constrained to certain starting points.

flexible

Flexible is a trunk allocation term. The flexible allocation scheme allows the time slots of a wideband call to occupy noncontiguous positions within a single T1 or E1 facility.

floating

Floating is a trunk allocation term. In the floating allocation scheme, the time slots necessary to support a wideband call are contiguous, but the position of the first time slot is not fixed.

foreign exchange (FX)

A central office (CO) other than the one providing local access to the public telephone network.

foreign exchange trunk

A telecommunications channel that directly connects the system to a CO other than its local CO.

foreign numbering-plan area code (FNPAC)

An area code other than the local area code and must be dialed to call outside the local geographical area.

G

generalized route selection (GRS)

An enhancement to Automatic Alternate Routing/Automatic Route Selection (AAR/ARS) that performs routing based on call attributes, such as Bearer Capability Classes (BCCs), in addition to the address and facilities restriction level (FRL), thus facilitating a Uniform Dial Plan (UDP) that is independent of the type of call being placed.

glare

The simultaneous seizure of a two-way trunk by two communications systems, resulting in a standoff.

grade of service

The number of call attempts that fail to receive service immediately. Grade of service is also expressed as the quantity of all calls that are blocked or delayed.

ground-start trunk

A trunk on which, for outgoing calls, the system transmits a request for services to a distant switching system by grounding the trunk ring lead. To receive the digits of the called number, that system grounds the trunk tip lead. When the system detects this ground, the digits are sent.

H

H0

An ISDN information transfer rate for 384 kbps data defined by CCITT and ANSI standards.

H11

An ISDN information transfer rate for 1536 kbps data defined by CCITT and ANSI standards.

H12

An ISDN information transfer rate for 1920 kbps data defined by CCITT and ANSI standards.

handshaking logic

A format used to initiate a data connection between two data module devices.

Hertz (Hz)

A unit of frequency equal to one cycle per second.

high reliability system

A system having the following: two control carriers, duplicate expansion interface (EI) circuit packs in the PPN (in G3r with CSS), and duplicate switch node clock circuit packs in the switch node (SN) carriers. See also **duplicated common control**, **duplication**, **duplication option**, and **critical reliability system**.

holding time

The total length of time in minutes and seconds that a facility is used during a call.

home numbering-plan area code

The local area code. The area code does not have to be dialed to call numbers within the local geographical area.

hop

Nondirect communication between two switch communications interfaces (SCI) where the SCI message passes automatically without intermediate processing through one or more intermediate SCIs.

host computer

A computer, connected to a network, that processes data from data-entry devices.

hunt group

A group of extensions that are assigned the Station Hunting feature so that a call to a busy extension will reroute to an idle extension in the group.

I

I2 Interface

A proprietary interface used for the DEFINITY Wireless Business System for the radio controller circuit packs. Each interface provides communication between the radio controller circuit pack and up to two Wireless Fixed Bases.

I3 Interface

A proprietary interface used for the DEFINITY Wireless Business System for the Cell Antenna Units. Each Wireless Fixed Base can communicate to up to four Cell Antenna Units.

immediate-start tie trunk

A trunk on which, after making a connection with a distant switching system for an outgoing call, the system waits a nominal 65 ms before sending the digits of the called number. This allows time for the distant system to prepare to receive digits. On an incoming call, the system has less than 65 ms to prepare to receive the digits.

information exchange

The exchange of data between users of two different systems, such as the switch and a host computer, over a local area network (LAN).

information systems network (ISN)

A wide area network (WAN) and local area network (LAN) with an open architecture combining host computers, minicomputers, word processors, storage devices, PCs, high-speed printers, and nonintelligent terminals into a single packet-switching system.

inside call

A call placed from one telephone to another within the local communications system. A public or private network that provides end-to-end digital communications for all services to which users have access by a limited set of standard multipurpose user-network interfaces defined by the CCITT. Through internationally accepted standard interfaces, ISDN provides digital circuit-switched or packet-switched communications within the network and links to other ISDNs to provide national and international digital communications. See also **Integrated Services Digital Network Basic Rate Interface** and **Integrated Services Digital Network Primary Rate Interface**.

Integrated Services Digital Network Basic Rate Interface (ISDN-BRI)

The interface between a communications system and terminal that includes two 64 kbps B-channels for transmitting voice or data and one 16 kbps D-channel for transmitting associated B-channel call control and out-of-band signaling information. ISDN-BRI also includes 48 kbps for transmitting framing and D-channel contention information, for a total interface speed of 192 kbps. ISDN-BRI serves ISDN terminals and digital terminals fitted with ISDN terminal adapters. See also **Integrated Services Digital Network Primary Rate Interface**.

Integrated Services Digital Network Primary Rate Interface (ISDN-PRI)

The interface between multiple communications systems that in North America includes 24 64 kbps channels, corresponding to the North American digital signal level-1 (DS1) standard rate of 1.544 Mbytes per second.

The most common arrangement of channels in ISDN-PRI is twenty three 64 kbps B-channels for transmitting voice and data and one 64 kbps D-channel for transmitting associated B-channel call control and out-of-band signaling information. Although with non-facility-associated signaling (NFAS), ISDN-PRI can include 24 B-channels and no D-channel. See also **Integrated Services Digital Network** and **Integrated Services Digital Network Basic Rate Interface**.

intercept tone

An tone that indicates a dialing error or denial of the service requested.

interface

A common boundary between two systems or pieces of equipment.

internal call

A connection between two users within a system.

International Tele-communications Union (ITU)

Formerly known as International Telegraph and Telephone Consultative Committee (CCITT), ITU is an international organization that sets universal standards for data communications, including Integrated Services Digital Network (ISDN). ITU members are from telecommunications companies and organizations around the world. See also **BX.25**.

International Telegraph and Telephone Consultative Committee

See **International Telecommunications Union (ITU)**.

interflow

Allows calls to forward to other splits on the same PBX or a different PBX using the Call Forward All Calls switch feature.

intraflow

Allows calls to be redirected to other splits on the same PBX on a conditional or unconditional basis using call coverage "busy," "don't answer," or "all" criteria.

internal measurements

Refers to those BCMS measurements that are made by the system. ACD measurements that are made external to the system (via External CMS) are referred to as external measurements.

in-use lamp

A red light on a multiappearance voice terminal that is illuminated to show which call appearance will be selected when the handset is lifted or which call appearance is active when a user is off-hook.

ISDN Gateway (IG)

A feature allowing integration of the switch and a host-based telemarketing application via a link to a gateway adjunct. The gateway adjunct is a 3B-based product that notifies the host-based telemarketing application of call events.

ISDN trunk

A trunk administered for use with Integrated Services Digital Network primary rate interface (ISDN-PRI). Also called "ISDN facility."

ISDN-PRI Terminal Adapter

A terminal adapter acts as interface between endpoint applications and an ISDN PRI facility. ISDN-PRI terminal adapters are currently available from other vendors and are primarily designed for video conferencing applications. Accordingly, currently available terminal adapters adapt the two pairs of video codec data (V.35) and dialing (RS-366) ports to an ISDN PRI facility.

L

light-emitting diode (LED)

A semiconductor device that produces light when voltage is applied. LEDs provide a visual indication of the operational status of hardware components, the results of maintenance tests, and the alarm status of circuit packs, and the activation of telephone features.

lightwave transceiver

Hardware that provides an interface to fiber-optic cable from port circuit packs and digital signal level-1 (DS1) converter circuit packs. Lightwave transceivers convert electrical signals to light signals and vice versa.

line

A transmission path between a communications system or CO switching system and a voice terminal or other terminal.

line port

The hardware that provides the access point to a communications system for each circuit associated with a telephone and/or data terminal.

link

A transmitter-receiver channel that connects two systems.

link-access procedure on the D-channel (LAPD)

A link-layer protocol on the Integrated Services Digital Network basic rate interface (ISDN-BRI) and primary rate interface (ISDN-PRI) data-link layer (level 2). LAPD provides data transfer between two devices, and error and flow control on multiple logical links. LAPD is used for signaling and low-speed packet data (X.25 and mode 3) on the signaling (D-) channel and for mode-3 data communications on a bearer (B-) channel.

local area network (LAN)

A networking arrangement designed for a limited geographical area. Generally, a LAN is limited in range to a maximum of 6.2 miles and provides high-speed carrier service with low error rates. Common configurations include daisy chain, star (including circuit-switched), ring, and bus.

logical link

The communications path between a processor and a basic rate interface (BRI) terminal.

loop-start trunk

A trunk on which, after establishing a connection with a distant switching system for an outgoing call, the system waits for a signal on the loop formed by the trunk leads before sending the digits of the called number.

M

main distribution frame

This device mounts to the wall inside the system equipment room. The main distribution frame (MDF) provides a connection point from the outside telephone lines, to the PBX switch, and to the inside telephone stations.

main-satellite-tributary

A private network configuration that can either stand alone or access an electronic tandem network (ETN). A "main" switch provides interconnection, via tie trunks, with one or more subtending

switches, called “satellites”; all attendant positions for the main/satellite configuration; and access to and from the public network. To a user outside the complex, a main/satellite configuration appears as one switch, with one listed directory number (LDN). A “tributary” switch is connected to the main switch via tie trunks, but which has its own attendant positions and LDN.

maintenance

The activities involved in keeping a telecommunications system in proper working condition: the detection and isolation of software and hardware faults, and automatic and manual recovery from these faults.

management terminal

The terminal that is used by the system administrator to administer the switch. The terminal may also be used to access the BCMS feature.

major alarm

An indication of a failure that has caused critical degradation of service and requires immediate attention. Major alarms are automatically displayed on LEDs on the attendant console and maintenance or alarming circuit pack, logged to the alarm log, and reported to a remote maintenance facility, if applicable.

manual-in work mode

In this mode, agents automatically enter the ACW mode when they disconnect from an ACD call. However, in order to become available to receive another ACD call, they must then manually enter the Auto-In or Manual-In mode. See **Auto-In Work Mode** for a contrast.

memory

A device into which information can be copied and held, and from which the information can be obtained at a later time.

message center

An answering service that supplies agents to and stores messages for later retrieval.

message center agent

A member of a message center hunt group who takes and retrieves messages for voice terminal users.

minor alarm

An indication of a failure that could affect customer service. Minor alarms are automatically displayed on LEDs on the attendant console and maintenance or alarming circuit pack, sent to the alarm log, and reported to a remote maintenance facility, if applicable.

modem

A device that converts digital data signals to analog signals for transmission over telephone circuits. The analog signals are converted back to the original digital data signals by another modem at the other end of the circuit.

modem pooling

A capability that provides shared conversion resources (modems and data modules) for cost-effective access to analog facilities by data terminals. When needed, modem pooling inserts a conversion resource into the path of a data call. Modem pooling serves both outgoing and incoming calls.

modular processor data module (MPDM)

A processor data module (PDM) that can be configured to provide several kinds of interfaces (RS-232C, RS-449, and V.35) to customer-provided data terminal equipment (DTE). See also **processor data module**.

modular trunk data module (MTDM)

A trunk data module that can be configured to provide several kinds of interfaces (RS-232, RS-449, and V.35) to customer-provided data terminal equipment (DTE).

modulator-demodulator

See **modem**.

multiappearance voice terminal

A terminal equipped with several call appearance buttons for the same extension number, allowing the user to handle more than one call, on that same extension number, at the same time.

Multi-Carrier Cabinet

A structure that holds one to five carriers. See also **Single-Carrier Cabinet**.

Multi-Frequency Compelled (MFC), Release 2 (R2) signalling

A signal consisting of two frequency components, such that when a signal is transmitted from a switch, another signal acknowledging the transmitted signal is received by the switch. "R2" designates signaling used in the United and countries outside the United States.

multiplexer

A device used to combine a number of individual channels into a single common bit stream for transmission.

multiplexing

A process whereby a transmission facility is divided into two or more channels, either by splitting the frequency band into a number of narrower bands or by dividing the transmission channel into successive time slots. See also **time-division multiplexing**.

multi-rate

Multi-rate refers to the new N x DS0 service (see N x DS0).

N

N+1

The method of determining redundant backup requirements. For example, if four rectifier modules are required for a DC-powered Single-Carrier Cabinet, a fifth rectifier module is installed for backup.

N x DS0

N x DS0, equivalently referred to as N x 64 kbps, is an emerging standard for wideband calls separate from H0, H11, and H12 ISDN channels. The emerging N x DS0 ISDN multirate circuit mode bearer service will provide circuit-switched calls with data rate multiples of 64 kbps up to 1536 kbps on a T1 facility or up to 1920 kbps on an E1 facility. In the switch, N x DS0 channels will range up to 1984 kbps using NFAS E1 interfaces.

narrowband

A circuit-switched call at a data rate up to and including 64 kbps. All nonwideband switch calls are considered narrowband.

Non-Facility Associated Signaling (NFAS)

A method that allows multiple T1 and/or E1 facilities to share a single D-channel to form an Integrated Services Digital Network primary rate interface (ISDN PRI). If D-Channel Backup is not used, one facility is configured with a D-channel, while the other facilities that share the D-channel are configured without D-channels. If D-Channel Backup is used, two facilities are configured to

have D-channels (one D-channel on each facility), while the other facilities that share the D-channels are configured without D-channels.

On every facility, all DS0s that are not D-channels are available as B-channels. Therefore, a T1 facility without a D-channel has 24 B-channels, and an E1 facility without a D-channel has 31 B-channels.

network

A series of points, nodes, or stations connected by communications channels.

network-specific facility (NSF)

An information element in an ISDN-PRI message that specifies which public-network service is used. NSF applies only when Call-by-Call Service Selection is used to access a public-network service.

network interface

A common boundary between two systems in an interconnected group of systems.

node

A switching or control point for a network. Nodes are either "tandem" (they receive signals and pass them on) or "terminal" (they originate or terminate a transmission path).

O

offered load

The traffic that would be generated by all the requests for service occurring within a monitored interval, usually one hour.

othersplit

The Work State that indicates the agent is currently active on another split's call, or in ACW for another split.

P

packet

A group of bits (including a message element, which is the data, and a control information element (IE), which is the header) used in packet switching and transmitted as a discrete unit. In each packet, the message element and control IE are arranged in a specified format. See also **packet bus** and **packet switching**.

packet bus

A wide-bandwidth bus that transmits packets.

packet switching

A data-transmission technique whereby user information is segmented and routed in discrete data envelopes called "packets," each with its own appended control information, for routing, sequencing, and error checking. Packet switching allows a channel to be occupied only during the transmission of a packet; on completion of the transmission, the channel is made available for the transfer of other packets. See also **BX.25** and **packet**.

paging trunk

A telecommunications channel used to access an amplifier for loudspeaker paging.

party/extension active on call

A party is on the call if it is actually connected to the call (in active talk or in held state). An originator of a call is always a party on the call. Alerting parties, busy parties, and tones are not parties on the call.

PCOL

Personal Central Office Line.

primary extension

The main extension associated with the physical station set.

principal

A station that has its primary extension bridged on one or more other stations.

personal computer (PC)

A personally controllable microcomputer.

pickup group

A group of individuals authorized to answer any call directed to an extension number within the group.

port

A data- or voice-transmission access point on a device that is used for communicating with other devices.

port carrier

A carrier in a Multi-Carrier Cabinet or a single-carrier cabinet containing port circuit packs, power units, and service circuits. Also called a "port cabinet" in a single carrier cabinet.

port network (PN)

A cabinet containing a TDM bus and packet bus to which the following components are connected: port circuit packs, one or two tone-clock circuit packs, a maintenance circuit pack, service circuit packs, and (optionally) up to four expansion interface (EI) circuit packs in G3. Each PN is controlled either locally or remotely by a switch processing element (SPE). See also **expansion port network** and **processor port network**.

port-network connectivity

The interconnection of port networks (PNs), regardless of whether the configuration uses direct or switched connectivity.

Primary Rate Interface (PRI)

A standard Integrated Services Digital Network (ISDN) frame format that specifies the protocol used between two or more communications systems. PRI runs at 1.544 Mbps and, as used in North America, provides 23 64 kbps B-channels (voice or data) and one 64 kbps D-channel (signaling). The D-channel is the 24th channel of the interface and contains multiplexed signaling information for the other 23 channels.

PRI endpoint (PE)

The wideband switching capability introduces PRI Endpoints on switch line-side interfaces. A PRI endpoint consists of one or more contiguous B-channels on a line-side T1 or E1 ISDN PRI facility and has an extension number. Endpoint applications have call control capabilities over PRI endpoints.

principal (user)

A person to whom a telephone is assigned and who has message center coverage.

private network

A network used exclusively for the telecommunications needs of a particular customer.

private network office code (RNX)

The first three digits of a 7-digit private network number. These codes are numbered 220 through 999, excluding any codes that have a 0 or 1 as the second digit.

processor carrier

A phrase used for "control carrier" in G3rV2. See also **control carrier**.

processor data module (PDM)

A device that provides an RS-232C data communications equipment (DCE) interface for connecting to data terminals, applications processors (APs), and host computers and provides a digital communications protocol (DCP) interface for connection to a communications system. See also **modular processor data module**.

processor port network (PPN)

A port network (PN) controlled by a switch processing element (SPE) that is directly connected to that PN's time-division multiplex (TDM) bus and local area network (LAN) bus. See also **port network**.

processor port network (PPN) control carrier

A carrier containing the maintenance circuit pack, tone/clock circuit pack, and switch processing element (SPE) circuit packs for a processor port network (PPN) and, optionally, port circuit packs.

Property Management System (PMS)

A stand-alone computer used by lodging and health services organizations use for services such as reservations, housekeeping, and billing.

protocol

A set of conventions or rules governing the format and timing of message exchanges to control data movement and correction of errors.

public network

The network that can be openly accessed by all customers for local or long-distance calling.

pulse-code modulation (PCM)

An extension of pulse-amplitude modulation (PAM) in which carrier-signal pulses modulated by an analog signal, such as speech, are quantized and encoded to a digital, usually binary, format.

Q

quadrant

A quadrant is a group of six contiguous DS0s in fixed locations on an ISDN PRI facility. Note that this term comes from T1 terminology (one-fourth of a T1), but there are five quadrants on an E1 ISDN PRI facility (30B + D).

A quadrant is considered available or idle when all six contiguous DS0s are idle. Otherwise, the quadrant is considered contaminated or partially contaminated. This is a dynamic condition; quadrants become idle and contaminated as calls are placed and dropped. Note that a T1 facility containing the primary or backup D-channel (23B + D) has a maximum of three idle quadrants. The fourth quadrant (DS0s 19-24) never has six contiguous idle DS0s because one is always allocated to the D-channel. On an E1 facility, channel 0 is reserved for framing and synchronization, and channel 16 contains the D-channel when present, but five quadrants are potentially available.

queue

An ordered sequence of calls waiting to be processed.

queuing

The process of holding calls in order of their arrival to await connection to an attendant, to an answering group, or to an idle trunk. Calls are automatically connected in first-in, first-out sequence.

R

random access memory (RAM)

A storage arrangement whereby information can be retrieved at a speed independent of the location of the stored information.

read-only memory (ROM)

A storage arrangement primarily for information retrieval applications.

recall dial tone

Tones signalling that the system has completed a function (such as holding a call) and is ready to accept dialing.

redirection criteria

The information administered for each voice terminal's coverage path that determines when an incoming call is redirected to coverage.

redirection on no answer

An optional feature that redirects an unanswered ringing ACD call after an administered number of rings. The call is then redirected back to the agent.

remote home numbering-plan area code (RHNPAC)

A foreign numbering-plan area code that is treated as a home area code by the Automatic Route Selection (ARS) feature. Calls can be allowed or denied based on the area code and the dialed central office (CO) code rather than just the area code. If the call is allowed, the ARS pattern used for the call is determined by these six digits.

reorder tone

A tone to signal that at least one of the facilities, such as a trunk or a digit transmitter, needed for the call was not available at the time the call was placed.

report scheduler

Software that is used in conjunction with the system printer for the purpose of scheduling the days of the week and time of day that the desired reports are to be printed.

RS-232C

A physical interface specified by the Electronic Industries Association (EIA). RS-232C transmits and receives asynchronous data at speeds of up to 19.2 kbps over cable distances of up to 50 feet.

ROSE

Remote Operations Service Element is a CCITT and ISO standard that defines a notation and services that support interactions between the various entities that make up a distributed application.

S

sanity and control interface (SAKI)

A custom, very-large-scale-integration (VLSI) microchip located on each port circuit pack. The SAKI provides address recognition, buffering, and synchronization between the angel and the five control time slots that make up the control channel. The SAKI also scans and collects status information for the angel on its port circuit pack and, when polled, transmits this information to the archangel.

simplex system

A system that has no redundant hardware.

simulated bridged appearance

The same as a **temporary bridged appearance**, allows the station user (usually the principal) the ability to bridge onto a call which had been answered by another party on its behalf.

single-carrier cabinet

A combined cabinet and carrier unit that contains one carrier. See also **Multi-Carrier Cabinet**.

single-line voice terminal

A voice terminal served by a single-line tip and ring circuit (models 500, 2500, 7101A, 7103A).

small computer system interface (SCSI)

An ANSI bus standard that provides a high-level command interface between host computers and peripheral devices.

software

A set of computer programs that perform one or more tasks.

split

A condition whereby a caller is temporarily separated from a connection with an attendant. A split condition automatically occurs when the attendant, active on a call, presses the start button.

split number

The split's identity to the switch and BCMS.

split report

Provides historical traffic information for internally measured splits.

split (agent) status report

Provides the real-time status and measurement data for internally measured agents and the split to which they are assigned.

staffed

Indicates an agent position is logged-in. A staffed agent will be functioning in one of four work modes: Auto-In, Manual-In, ACW, or AUX-work.

Station Message Detail Recording (SMDR)

An obsolete term now called "CDR" (see call detail recording), which is a switch feature that utilizes software and hardware to record call data.

standard serial interface (SSI)

A communications protocol developed by AT&T Teletype Corporation for use with the 500 business communications terminals (BCTs) and the 400-series printers.

status lamp

A green light that shows the status of a call appearance or a feature button by the state of the light (lit, flashing, fluttering, broken flutter, or unlit).

stroke counts

A method used by Automatic Call Distribution (ACD) agents to record up to nine customer-defined events per call when the Call Management System (CMS) is active.

switch

Any kind of telephone switching system. See also **communications system**.

switchhook

The buttons located under the receiver on a voice terminal.

switch node (SN) carrier

A carrier containing a single switch node, power units, and, optionally, one or two digital signal level-1 (DS1) converter circuit packs. An SN carrier is located in a center stage switch (CSS).

switch node (SN) clock

The circuit pack in a switch node (SN) carrier that provides clock and maintenance alarm functions and environmental monitors for an SN.

switch node interface (SNI)

The basic building block of a switch node. An SNI circuit pack controls the routing of circuit, packet, and control messages.

switch node link (SNL)

The hardware that provides a bridge between two or more switch nodes. The SNL consists of the two switch node interface (SNI) circuit packs residing on the switch nodes and the hardware connecting the SNIs. This hardware can include lightwave transceivers that convert the SNI's electrical signals to light signals, the copper wire that connects the SNIs to the lightwave transceivers, a full-duplex fiber-optic cable, digital signal level-1 (DS1) converter circuit cards and DS1 facilities if a company does not have rights to lay cable, and appropriate connectors.

switch processing element (SPE)

A complex of circuit packs (processor, memory, disk controller, and bus-interface cards) mounted in a processor-port-network (PPN) control carrier. The SPE serves as the control element for that PPN and, optionally, for one or more expansion port networks (EPNs).

synchronous data transmission

A method of sending data in which discrete signal elements are sent at a fixed and continuous rate and specified times.

system administrator

The person who maintains overall customer responsibility for system administration. Generally, all administration functions are performed from the Management Terminal. The switch requires a special login, referred to as the system administrator login, in order to gain access to the system administration capabilities.

system printer

An optional printer that may be used to print scheduled reports via the report scheduler.

system report

Provides historical traffic information for all internally measured splits.

system status report

Provide real-time status information for internally measured splits.

system manager

A person responsible for specifying and administering features and services for a system.

system reload

A process that allows stored data to be written from a tape into the system memory (normally after a power outage).

T

T1

A digital transmission standard that in North America carries traffic at the digital signal level-1 (DS1) rate of 1.544 Mbps. A T1 facility is divided into 24 channels (DS0s) of 64 kbps information numbered from 1 to 24. These 24 channels, with an overall digital rate of 1.536 Mbps, and an 8 kbps framing and synchronization channel make up the 1.544 Mbps transmission. When a D-channel is present, it occupies channel 24.

T1 facilities are also used in Japan and some Middle-Eastern countries.

TAC

Trunk Access Code.

tandem switch

A switch within an electronic tandem network (ETN) that provides the logic to determine the best route for a network call, possibly modifies the digits outpulsed, and allows or denies certain calls to certain users.

tandem through

The switched connection of an incoming trunk to an outgoing trunk without human intervention.

tandem tie-trunk network

A private network that interconnects several customer switching systems by dial-

TEG

Terminating Extension Group.

terminal

A device that sends and receives data within a system. See also **administration terminal**.

tie trunk

A telecommunications channel that directly connects two private switching systems.

time-division multiplex (TDM) bus

A bus that is time-shared regularly by preallocating short time slots to each transmitter. In a PBX, all port circuits are connected to the TDM bus, permitting any port to send a signal to any other port.

time-division multiplexing (TDM)

Multiplexing that divides a transmission channel into successive time slots. See also **multiplexing**.

time interval

The period of time, either one hour or one-half hour, that BCMS measurements are collected for a report(s).

time slice

See **time interval**.

time slot

A time slot refers to 64 kbps of digital information structured as eight bits every 125 micro-seconds. In the switch, a time slot refers to either a DS0 on a T1 or E1 facility or a 64 kbps unit on the TDM bus or fiber connection between port networks.

time slot sequence integrity

Time slot sequence integrity means that the "N" octets of a wideband call that are transmitted in one T1 or E1 frame arrive at the output in the same order that they were introduced.

to control

To control means that an application can invoke Third Party Call Control capabilities using either an adjunct-control or a domain-control association.

to monitor

To monitor means that an application can receive *Event_Reports* on either an active-notification, adjunct-control, or a domain-control association.

tone ringer

A device with a speaker, used in electronic voice terminals to alert the user.

trunk

A dedicated telecommunications channel between two communications systems or central offices (COs).

trunk allocation

The manner in which trunks are selected to form wideband channels.

trunk data module

A device that provides the interface for connection between off-premises private-line trunk facilities and a G3V2 switch. The trunk data module provides conversion between the RS-232C and the Digital Communications Protocol (DCP), and can connect to direct distance dialing (DDD) modems as the DCP member of a modem pool.

trunk group

Telecommunications channels assigned as a group for certain functions that can be used interchangeably between two communications systems or central offices (COs).

U

uniform dial plan

A feature that allows a unique 4- or 5-digit number assignment for each terminal in a multiswitch configuration such as a distributed communications system (DCS) or main-satellite-tributary system.

V

vector directory number (VDN)

An extension that provides access to the Vectoring feature on the switch. Vectoring allows a customer to specify the treatment of incoming calls based on the dialed number.

vector-controlled split

A hunt group or ACD split administered with the "vector" field enabled. Access to such split is only possible by dialing a VDN extension. Vector-Controlled Splits cannot be Active Notification Domains.

voice terminal

A single-line or multiappearance telephone.

W

wide area telecommunications service (WATS)

A service in the USA that allows calls to a certain area or areas for a flat-rate charge based on expected usage.

wideband

A circuit-switched call at a data rate greater than 64 kbps. A circuit-switched call on a single T1 or E1 facility with a bandwidth between 128 and 1536 (T1) or 1984 (E1) kbps in multiples of 64 kbps. H0, H11, H12, and N x DS0 calls are all wideband.

wideband access endpoint

The wideband switching capability extends Access Endpoints to include wideband access endpoints. A wideband access endpoint consists of one or more contiguous DS0s on a line-side T1 or E1 facility and has an extension number. The Administered Connections feature provides call control for calls originating from wideband access endpoints.

wink-start tie trunk

A trunk with which, after making a connection with a distant switching system for an outgoing call, the system waits for a momentary signal (wink) before sending the digits of the called number. Similarly, on an incoming call, the system sends the wink signal when ready to receive digits.

work modes (or ACD work modes)

A work mode is one of four states (Auto-In, Manual-In, ACW, AUX-work) that an ACD agent enters after logging in. Immediately upon logging in, an agent enters the AUX-work mode. To become available to receive ACD calls, the agent enters either the Auto-In or Manual-In work modes. To do work associated with an ACD call, at the conclusion of the call, an agent enters the ACW mode. If an agent changes work modes while handling a call, the change becomes effective when the agent finishes the call. The system does not recognize the change until the call is completed.

To answer an ACD call, the ACD agent must specify a work mode. Generally, two methods are available: (1) by pressing the appropriate button on their voice terminal, and (2) by dialing an access code. An agent can change work modes while handling a call, but the system will not recognize the change until the call is completed. It is important that the ACD agents always accurately indicate their correct work mode, otherwise the BCMS measurements will not be accurate.

work state

An ACD agent may be a member of up to three different splits. Each ACD agent continuously exhibits a work state for every split that it is a member of. Valid work states are Avail, Unstaffed, AUX-work, ACW, ACD (answering an ACD call), ExtIn, ExtOut, and OtherSpl. An agent's work state for a particular split may change for a variety of reasons (for example, whenever a call is answered, abandoned, the agent changes work modes, and so forth). The BCMS feature monitors the work states and uses this information to provide the BCMS reports.

write operation

The process of putting information onto a storage medium, such as a hard disk.

Index

Symbols

"T" Cable, 5-38

Numerics

103A wall jack, 3-7
105C Isolator adapter, 5-79
1145B power supply, 5-34
1146B power distribution unit, 5-37, 5-41
1147B battery, 5-37
1148B battery, 5-37
1149B battery, 5-37
1151A loop range, 5-46
1151A Power Supply, 5-44, 5-45
2.5 amp hour batteries, 5-34
2.5 Amp Hour battery, 5-37
25-pair cable pinout, 5-27
2-wire digital station wiring example, 5-4
367A adapter, 5-52
3-pair and 4-pair modularity, 5-12
5 Amp Hour battery, 5-37
572 printer, B-10
7400A data module, 3-7
 option settings, B-8
8 Amp Hour battery, 5-37
888B converter, 5-120

A

AC power
 compact single-carrier cabinet, 1-14
 connect cabinet cords, 1-14, 1-41
 grounding, 1-3
 receptacle location, 1-2
 single-carrier cabinet, 1-14
AC-powered system, 3-8
 turn on procedure, 3-9
activate the system, 3-8 to 3-10
adapter
 400B2, 5-3
address plugs, 1-26
adjunct power, 5-2, 5-3
ADX
 message on AUDIX LCD display, 3-22
AINIT
 message on AUDIX LCD display, 3-22
alarm
 connections, 5-16

 wiring example, 5-4
alarm relay contact, 5-16
alarms
 log of, 3-14
A-Law companding, 3-13
American Wire Gauge, A-2
analog station
 2-wire, 5-4
 wiring example, 5-4
analog tie trunk
 wiring example, 5-5
announcement
 delete procedure, 6-3
 integrated test procedure, 6-3
 playback procedure, 6-3
 record procedure, 6-3
answer only interface, B-3
APP connector information, 5-1, 5-126, D-1
approved floor grounds, 1-6
approved ground, 1-5
Argentina
 country code, 3-14
AT control modem, B-8
attendant console, 5-1
 302C1, 5-1, 5-2
 example, 5-1
 maximum cabling distance, 5-1
 test procedure, 6-2
AUDIX
 important caution about powering down, 3-14
 system, 5-83
Australia
 country code, 3-14
AUX connector
 outputs, 5-9
auxiliary connector outputs, 5-9
auxiliary equipment
 909A/B Universal Coupler, 5-54
 Asynchronous Data Units, 5-54
 CONVERSANT, 5-54
 Data Modules, 5-54
 Model 15A Announcement System, 5-54
 PagePac paging system, 5-54
 PC Console, 5-54
auxiliary equipment pin designations, 5-1, 5-126, D-1
AWG to SWG wire conversion, A-2
AWG wire conversion, A-2

B

B25A cable, 3-7
backplane, port cabinet, 1-26
back-up battery, 5-35
back-up battery, PEC codes, 5-37
backup translations, 3-21
basic rate interface
 see also BRI

- test procedure, 6-5
- battery
 - connecting, 1-20
- battery back-up, 5-37
- battery back-up switch, 5-38
- BCMS, for remote connection, 3-7
- Belgium
 - country code, 3-14
- bit rate
 - setting, B-21
- BR851-B adapter, 5-51
- BRI
 - multipoint cabling distances, 5-53
 - terminating resistor, 5-47
 - test procedure, 6-5
- BRI terminating resistor, 5-47
- Busy Tone Disconnect, 5-117

C

- cabinet
 - address plugs, 1-26
 - attaching to floor, 1-44
 - AUX connector outputs, 5-9
 - backplane, 1-26
 - cable clamps, 2-5
 - definition of, 4-1
 - earthquake protection, 1-43
 - fastening together, 1-28
 - hole plugs, 1-44
 - position, 1-3, 1-4
 - slots, 1-26
 - stabilizing for earthquake, 1-28, A-2
- cabinet clip, 1-30
- cabinet ground, 1-6, 1-12
- cable clamps, 2-5
- cable pinout
 - 25-pair, 5-27
- Cable Slack Manager, 2-5
- cables
 - 25-pair I/O, 2-5
 - diagrams, 5-1, 5-126, D-1
 - fiber-optic, 1-31
 - inter-cabinet, 1-21, 1-25, 1-31
 - outputs for control carrier, 5-9
 - TDM bus, 1-21, 1-25
 - wall field, 2-5
- cabling
 - fiber optic distances, 1-32
- Call Detail Recording (CDR), B-10
- calling queue, 5-33
- carriage bolts, 1-44
- CAS+, for remote connection, 3-7
- caution
 - safeguarding craft password, 3-15
- CDR, B-10

- option settings, B-14
- printer, B-10
- CDRU, for remote connection, 3-7
- Cellular Business System, 5-125
- changing
 - password, 3-15
 - system-parameters country options, 3-13
 - system-parameters maintenance, 3-19
- China
 - country code, 3-14
- circuit breaker, 1-20
- circuit pack configuration
 - test procedure, 4-4, 4-12
- circuit packs
 - configuration test procedure, 4-12
 - DEFINITY AUDIX System, 5-83
 - ISDN wiring, 5-11
 - NT1 wiring, 5-11
 - pin designations, 5-1, 5-126, D-1
 - TN2181 Digital Line 2-Wire, 5-116
 - TN2182 Tone-Clock, 1-1
 - TN2183 Analog Line, 5-33
 - TN2198
 - wiring, 5-11
 - TN765 Processor Interface, 1-1
 - TN772 Duplication Interface, 1-1
 - TN777B Network Control, 1-1
 - TN778 Packet Controller, 1-1
 - TN780 Tone-Clock, 1-1
 - TN790 Processor, 1-1
 - TNCCSC-1 PRI to DASS Converter, 5-120
 - TNCCSC-2 PRI to DPNSS converter, 5-120
 - TNPRI/BRI Converter, 5-121
- clamps, cable, 2-5
- clock
 - conversion table, 3-18
- CO trunk, B-21
 - wiring example, 5-4
- coaxial converter, 888B, 5-120
- colors, of wire, A-1
- commands
 - list configuration, 4-12
 - management terminal introduction, 3-11
 - set expansion-link, 4-11
 - set tone-clock, 4-10
 - status system all-cabinets, 4-10, 4-11
 - test board, 4-8
 - test inads-link, 6-4
 - test TDM port-network, 4-9
 - test tone-clock 1a, 4-7
- companding
 - mode, 3-13
- COMSPHERE modem, B-4
- concrete floor mounting, 1-43
- conductor, coupled bonding, 2-10
- connect AC power, 1-14
- connect DC power, 1-16, 1-17, 1-18
- connecting

- administration terminals, 5-14
- battery, 1-20
- CONVERSANT Voice Information System, 5-114
- music-on-hold, FCC-registered, 5-68
- terminals, 5-1
- connections
 - fiber optic, 1-32
 - music-on-hold, non-FCC-registered, 5-68
- connectors
 - data communications equipment, B-14
- console
 - attendant, test procedure, 6-2
 - selector, test procedure, 6-2
- control carrier outputs cable, 5-9
- Cordless Telephone Generation 2 (CT2), 5-125
- Cost Allocator, 3-7
- country codes, 3-14
- country options, setting, 3-13
- coupled bonding conductor, 1-12, 2-10
 - description, 2-10
- craft password, changing, 3-15
- critical reliability
 - one cabinet stack, 1-4
 - testing systems, 4-10, 4-11
 - three cabinet stacks, 1-4
 - two cabinet stacks, 1-4
- Czechoslovakia
 - country code, 3-14

D

- data communications equipment connector, B-14
- data module, B-1
- date, set procedure, 3-16
- day of the week
 - table of English names, 3-17
- DB9 (on back of PC), 3-7
- DC power
 - signaling leads, B-18
- DC power connections, 1-15
- DCP extender, 5-123
- DC-powered system, 3-9
- DCS switch settings, B-2
- DEFINITY
 - AUDIX System, 5-83
- designations
 - port board and telephone, 5-11
- DID trunk
 - wiring example, 5-4
- digital station
 - 2-wire, 5-4
- digital station wiring example (2-wire), 5-4
- digital tie trunk, wiring example, 5-6
- direct connect systems, 1-31
- direct department calling
 - testing queue warning indicator, 6-3

- distances
 - fiber optic cabling, 1-32
- D-lead modem, B-8
- DS1
 - interface, B-21

E

- E1 interface, B-21
- earthquake front plate, 1-28
- earthquake protection cabinet clip, 1-30
- earthquake protection procedures, 1-43
- EIA port, B-14
- electromagnetic shielding, 1-28
- Electronic Industries Association, see EIA, B-14
- emergency transfer telephone, 5-32
- emergency transfer, test procedure, 6-4
- English day names
 - table of, 3-17
- English month names
 - table of, 3-17
- Ecuador
 - country code, 3-14
- ESPA radio paging, 5-124
- European Standard Paging Access, 5-124
- examples
 - 2-wire digital station wiring, 5-4
 - 302C Attendant Console, 5-1
 - analog station wiring, 5-4
 - analog tie trunk wiring, 5-5
 - CO trunk wiring, 5-4
 - DID trunk wiring, 5-4
 - digital tie trunk wiring, 5-6
 - telephone connection wiring, 5-2
- expanded power distribution unit, 5-38
- expanded power distribution unit spacer bracket, 5-38
- expansion interface
 - boards, test procedure, 4-8
 - exchange, test procedure, 4-11
- expansion links, service state, 4-2, 4-3
- expansion port network
 - testing systems, 4-9, 4-10
- ExpressRoute 1000 data module, 5-122
- external alarm
 - wiring example, 5-4
- external modem
 - COMSPHERE, B-4
- external modem connections, 5-118
- external ringing, 5-33
- external ringing, test procedure, 6-3

F

- fiber optic

- cable labels, C-8
- cables, 1-31 to 1-36, C-6, C-7
- cabling distances, 1-32
- multimode, 1-32
- multi-mode transceiver, 1-32
- single-mode, 1-32
- fiber optic cable
 - direct connect systems, 1-31
 - installation, 1-31
- fiber optic cables, 1-31
- fiber optic mean loss, 1-32
- fiber optic splices, 1-32
- Forum
 - base stations, 5-125
 - Personal Communications Manager, 5-125
 - pocket telephone, 5-125
- frame ground, 1-8, 1-11
- France
 - country code, 3-14
- front plate, 1-28

G

- Germany
 - country code, 3-14
- Greece
 - country code, 3-14
- ground
 - approved floor, 1-6
 - building steel, 1-5
 - concrete encased, 1-5
 - coupled bonded conductor, 1-12, 2-10
 - DC Power Distribution unit, 1-9
 - frame ground, 1-8, 1-11
 - power plant, 1-7
 - ring, 1-5
 - water pipe, 1-5
- ground plate, 1-28, 2-5, A-2
 - installing, 1-26
- grounding
 - AC power, 1-3
 - approved, 1-3
 - planning, 1-3
 - rules, 1-3

H

- hardware
 - fiber optic, 1-31
- hardware installation
 - 110-type terminal blocks, 2-6
- help
 - terminal set-up commands, 3-11
- high reliability

- one cabinet stack, 1-4
- three cabinet stacks, 1-4
- two cabinet stacks, 1-4
- Hong Kong
 - country code, 3-14
- Hungary
 - country code, 3-14

I

- I/O cables, 2-5
- impedance, setting, B-21
- Imperial Wire Ga, A-2
- INADS
 - test procedure, 6-4
- install PPN cabinet, 1-3, 1-4
- integrated announcement
 - test procedure, 6-3
- Inter-Cabinet Cables, 1-31, 1-41
- inter-cabinet cables, 1-21, 1-25, 1-31
- ISDN, B-21
 - 2-wire BRI line, wiring, 5-11
- BRI
 - fanout of multipoint installations, 5-53
 - port board and telephone pin designations, 5-11
 - terminating resistor, 5-47
 - test procedure, 6-5
- PRI interface, B-21
- Italy
 - country code, 3-14

J

- J58890CG DC power distribution unit, 1-15
- J58890H port cabinet, 1-3, 1-4
- J58890L control cabinet, 1-3, 1-4, 1-43
- J58890M control cabinet, 1-4
- J58890N expansion control cabinet, 1-3, 1-4, 1-45
- J58890R DC power cabinet, 1-6, 1-15
- Japan
 - country code, 3-14

K

- KS-22911 power supply, 5-107
- KS-22911L2 power supply, 5-55, 5-69
- KS-23395, to connect music-on-hold, 5-68

L

- labels
 - 110-type terminal block, 2-12
 - Main Distribution Frame, 2-12
 - on power supply, warning, 1-2
 - lead designations, 5-126
 - port board, 5-11
 - port board and telephone, 5-11
 - telephones, 5-11
 - lightguide connector panel, C-5
 - Lightguide Interconnect Unit, C-5
 - see LIU
 - lightguide troughs, C-5
 - list configuration all
 - command, 4-4
 - screens, 4-4 to 4-5
 - list configuration command, 4-12
 - LIU, C-1
 - log in procedure, 3-12
 - loop range, 1151A, 5-46
-

M

- M25A cable, 3-7
- Macedonia
 - country code, 3-14
- Main Distribution Frame, 2-1
 - limitations, 1-2
- major alarm contact, 5-16
- management terminal
 - commands, introduction, 3-11
- management terminal installation, 3-2 to 3-8
- management terminal screens and commands, 3-11
- metric wire conversion, A-2
- Mexico
 - country code, 3-14
- minor alarm contact, 5-16
- modem
 - AT control, B-8
 - D-lead, B-8
 - external, switch settings, B-4
 - pooling, 3-7
 - pooling, switch settings, B-8
- Modem Connection field, B-4
- modularity
 - 3-pair, 5-12
 - 4-pair, 5-12
- month names
 - table of English, 3-17
- mounting bolts, 1-43
- Mu-Law companding, 3-13
- multi-mode fiber optic transceiver, 1-32
- multipoint

- figure, 5-53
 - multipoint adapters, 5-51
 - music-on-hold equipment
 - connecting non-FCC-registered, 5-68
 - music-on-hold, test procedure, 6-4
-

N

- National Electrical Code
 - grounding rules, 1-3
 - Netherlands
 - country code, 3-14
 - night ringing, test procedure, 6-3
 - NT1 network interface, 5-47
 - NT1 wiring, 5-11
-

O

- off-premises stations, 5-18
 - optical connector couplings, C-5
 - optical cross-connects, C-1
 - Optical Time Domain Reflectometer (OTDR), 1-32
 - option switch settings, B-1
 - OS message on AUDIX LCD display, 3-22
 - OSINIT message on AUDIX LCD display, 3-22
 - outputs
 - AUX connector, 5-9
 - outputs cable for control carrier, 5-9
-

P

- parts
 - carriage bolts, 1-44
 - concrete floor anchor, 1-44
 - earthquake front plate, 1-28
 - mounting bolts, 1-43
 - nylon washer, 1-45
 - stiffener, 1-45
 - thread-forming screws, 1-28, 1-44
- password, 3-12
 - changing, 3-15
 - craft, changing, 3-15
 - requirements for valid, 3-15
- PC Console, 5-107
- pin designations, 5-126
 - auxiliary equipment, 5-1, 5-126, D-1
 - circuit packs, 5-1, 5-126, D-1
 - telephones, 5-11
- pinout information
 - port circuit pack, 5-11
 - telephones, 5-11
- pinouts, 5-126

playback announcement, test procedure, 6-3
plugs, address, 1-26
PMS, for remote connection, 3-7
Poland
 country code, 3-14
port board and telephone pin designations, 5-11
port cabinet backplane, 1-26
port circuit pack pin designations, 5-11
port network
 definition, 4-1
positioning cabinet, 1-3, 1-4
power
 receptacle location, 1-2
 supply, 1-20
power down AUDIX, procedure, 3-22
power supply
 1145B -48V, 5-34
 1146B -48V, 5-34
 1151A -48V, 5-44
power up
 AC-powered system, procedure, 3-8, 3-9
 AUDIX procedure, 3-22
 DC-powered system, procedure, 3-9
PPN cabinet
 installing, 1-3, 1-4
printer
 572 option settings, B-10
 option settings, B-10
processor interface circuit pack
 AUDIX connections, B-17
 switch settings, B-2
protection
 earthquake, 1-43
 electromagnetic, 1-28

Q

queue calling, 5-33
queue warning indicator, 5-33
queue warning indicator, test procedure, 6-3

R

recorded announcement, test procedure, 6-3
red lights
 what to do about, 3-14
reliability
 critical
 testing systems, 4-10, 4-11
remote access, test procedure, 6-4
RF shielding, 1-28
ringing
 external, test procedure, 6-3
 night, test procedure, 6-3

Russia
 country code, 3-14

S

Saudi Arabia
 country code, 3-14
save translations, 3-20, 3-21
screens
 management terminal introduction, 3-11
screws, thread-forming, 1-28, 1-44
selector console, test procedure, 6-2
set expansion-link command, 4-11
set tone-clock command, 4-10
setting
 bit rate, B-21
 line impedance, B-21
setting date and time, procedure, 3-16
shielding, electromagnetic, 1-28
signaling leads, DC power, B-18
Singapore
 country code, 3-14
sneak current fuse panel, 2-7
sneak current protection, 2-7
Sneak Fuses, 2-7
Spain
 country code, 3-14
stabilizing cabinets
 for earthquakes, 1-28, A-2
standard reliability
 one cabinet stack, 1-3
 three cabinet stacks, 1-3
 two cabinet stacks, 1-3
status system all-cabinets
 command, 4-2, 4-10, 4-11
stiffener, 1-45
SWG wire conversion, A-2
switch setting
 7400 series data modules, B-3
switch settings
 572 printer, B-10
 7400A, B-8
 7400A Data Module, B-8
 CDR, B-14
 Data Module, B-1
 data module, B-1
 DCS, B-2
 external modem, B-4
 modem pooling, B-8
 printer, B-10
 processor interface, B-2
 TN464 circuit pack, B-21
 TN760 tie trunk, B-18
system maintenance, 3-19
system printer, B-10
system status, 4-2

system-parameters maintenance, 3-19

T

T1 Asynchronous Transfer Mode, 5-119

T1 Channel Service Unit, 5-8

Taiwan

country code, 3-14

TDM bus, B-21

cables, 1-21, 1-25

service state, 4-2, 4-3

terminator, 1-21, 1-25

TDM bus terminator, 1-21

telephone

emergency transfer, 5-32

pin designations, 5-11

telephone calls

making test calls, 6-2

making test calls for single-cabinet system, 6-2

telephone connection example, 5-2

telephones

test procedures, 6-1

template, mounting, 1-43

terminal

connections, 5-1

type, 3-12

terminating resistor, 5-47

terminating resistor adapter, 5-48

terminating resistor block, 5-49

terminator, TDM bus, 1-21, 1-25

test

system overview, 4-1

test board command, 4-8

test inads-link command, 6-4

test TDM port-network 1 command, 4-6

test TDM port-network 2 command, 4-9

test tone-clock 1a command, 4-7

test tone-clock command, 4-10

Thailand

country code, 3-14

thread-forming screws, 1-28, 1-44

tie trunk

analog wiring example, 5-5

circuit pack option settings, B-18

digital wiring example, 5-6

Time Division Multiplexing Bus, 1-21

time division multiplexor

see also TDM

test procedure, 4-6, 4-9

time, set procedure, 3-16

TN2147 circuit pack, 3-7

TN2181 circuit pack

pin designations, 5-11

TN2183 Analog Line circuit pack, 5-33

TN2198

wiring, 5-11

TN464 circuit pack, 3-7

option settings, B-21

TN465 circuit pack, 3-7

TN747 circuit pack, 3-7

TN753 circuit pack, 3-7

TN754 circuit pack, 3-7

TN760 circuit pack, 3-7

option settings, B-18

TN767 circuit pack, 3-7

TN777B circuit pack, 3-8, 3-20

TN778 circuit pack

administration required, 3-19

TNCCSC-1 PRI to DASS Converter, 5-120

TNCCSC-2 PRI to DPNSS Converter, 5-120

TNPRI/BRI converter, 5-121

tone clock

interchange, test procedure, 4-10

test procedure, 4-10

tone clock boards, test procedure, 4-7

tone clocks

service state, 4-2, 4-3

transfer, emergency

test procedure, 6-4

translations

backup procedure, 3-21

save procedure, 3-21

trunk/auxiliary field, 2-1

type-approved external modem, B-4

U

uniform call distribution

testing queue warning indicator, 6-3

United Kingdom

country code, 3-14

United States

country code, 3-14

USA, country code, 3-14

V

Venezuela

country code, 3-14

VIS, see Voice Information System

voice and data terminals

connection information, 5-13

Voice Information System, connecting, 5-114

voicemail, AUDIX system, see also AUDIX

W

wall switch, 1-2

warning

- safety instructions for power supply, 5-42

wire

- colors, A-1

wire conversion

- common wire colors, A-1

solid conductor

- AWG to metric, A-5

- AWG to SWG, A-5

- SWG to metric, A-5

stranded wire

- AWG to metric, A-2

- AWG to SWG, A-2

- SWG to metric, A-2

Wireless Business System, 5-125

wiring

- 2-wire digital station example, 5-4

- analog station wiring example, 5-4

- analog tie trunk example, 5-5

- CO trunk example, 5-4

- DID trunk example, 5-4

- digital tie trunk example, 5-6

- ISDN BRI 2-wire line, 5-11

- NT1, 5-11

- pin designations, 5-1, 5-126, D-1

- procedures, 5-1

- telephone connection example, 5-2