# DEFINITY ${ }^{\circledR}$ Communications System Generic 3 Installation (For Single-Carrier Cabinets) 



## Contents

Table of Contents
i

|  | About This Book | xv |
| :---: | :---: | :---: |
|  | - This Book's Organization | xv |
|  | - Other Books | xvi |
|  | - Trademarks | xvii |
|  |  |  |
| 1 | Overview and Roadmap | 1-1 |
|  | - System Reliability | 1-1 |
|  | Standard Reliability | 1-2 |
|  | High Reliability | 1-2 |
|  | Critical Reliability | 1-2 |
|  | - DEFINITY System Installation Roadmap | 1-3 |
|  | Plan and Prepare the Site | 1-3 |
|  | Unpack the Cabinets | 1-3 |
|  | Install and Connect the Cabinets | 1-3 |
|  | Install Telecommunications Cabling | 1-4 |
|  | Install Generic 3 Management Terminal (G3-MT) | 1-4 |
|  | Activate the System | 1-5 |
|  | Test the System | 1-5 |
|  | Install and Wire Telephones and Other Equipment | 1-6 |
|  | Administer the DEFINITY System According to Customer Requirements | 1-7 |
|  | Test Telephones and Other Equipment | 1-7 |
| - |  |  |
| 2 | Plan and Prepare the Site | 2-1 |
|  | - Check the Customer's Order | 2-1 |
|  | - Locate and Lay Out the Equipment Room | 2-2 |

## Contents

|  | Generic 3 Management Terminal <br> (G3-MT) Requirements |
| :--- | :--- |
| Cross-Connect Fields | $2-2$ |
| Space Requirements | $2-2$ |
| Room Layout | $2-2$ |
| $\quad$ Figure Notes: | $2-2$ |
| Cable Slack Manager (Optional) Requirements | $2-3$ |
| Tools Needed | $2-4$ |
| $\quad$ Lay Out and Ensure Appropriate Power | $2-4$ |
| $\quad$ Power Arrangements for AC Power | $2-6$ |
| $\quad$ Power Arrangements for DC Power | $2-7$ |
| Lay Out and Ensure Appropriate Grounding | $2-8$ |
| $\quad$ Connect Coupled Bonding Conductor | $2-8$ |
| Determine the Location of the Equipment Closets | $2-9$ |
| Determine External Trunk Locations | $2-9$ |
| Create a Provisioning Plan | $2-9$ |


| $\mathbf{3}$ | Unpack the Cabinet | $3-1$ |
| :---: | :---: | :---: |
| Unpack and Inspect for Damage | $3-1$ |  |


| 4 | Install and Connect the Cabinets | 4-1 |
| :---: | :---: | :---: |
|  | - Install Earthquake Mounting | 4-2 |
|  | - Position and Stack the Cabinets | 4-2 |
|  | - Connect System Cabinet Grounds | 4-3 |
|  | Figure Notes: | 4-4 |
|  | - Connect Battery Leads | 4-5 |
|  | - Connect Power | 4-6 |
|  | Connect AC Power | 4-6 |
|  | Connect DC Power | 4-6 |
|  | Figure Notes: | 4-8 |
|  | Connect Power Plant Ground | 4-9 |
|  | Figure Notes: | 4-9 |
|  | Connect Frame Ground | 4-10 |
|  | Figure Notes: | 4-10 |
|  | Connect DC Power Distribution Box Grounding | 4-11 |

## Contents

| Figure Notes: | 4-11 |
| :---: | :---: |
| Connect Single-Carrier Network Grounding | 4-11 |
| Figure Notes: | 4-12 |
| Coupled Bonding Conductor (CBC) | 4-12 |
| Figure Notes: | 4-13 |
| Connect DC Power to Networks | 4-14 |
| Connect AC Power to DC Power Cabinet | 4-14 |
| Test DC Power Plant | 4-14 |
| Connect Stand-by Power | 4-14 |
| - Locate and Connect Time Division Multiplexing (TDM) Bus | 4-15 |
| Figure Notes: | 4-16 |
| - Locate and Connect Inter-Cabinet Cables (ICC) | 4-17 |
| Figure Notes: | 4-18 |
| - Install Fibre-Optic Cables | 4-19 |
| Fibre-Optic Cable Operation | 4-19 |
| Locate Fibre-Optic Cable Connections | 4-19 |
| General Rules and Recommendations for Connecting Fibre-Optic Cables | 4-20 |
| Figure Notes: | 4-22 |
| Figure Notes: | 4-23 |
| Raised Floor or Cable Slack Managers | 4-23 |
| Cable Connections | 4-24 |
| Standard Reliability Fibre-Optic Cable Connections | 4-25 |
| High Reliability Fibre-Optic Cable Connections | 4-26 |
| Critical Reliability Fibre-Optic Cable Connections | 4-27 |
| - Verify Port Cabinet Address Plugs | 4-29 |
| - Install Back Panels | 4-30 |
| - Install Ground Plates | 4-30 |
| Figure Notes: | 4-30 |
| Install Ground Plates on Systems with Earthquake Protection | 4-31 |
| Install Ground Plates on Systems without Earthquake Protection | 4-31 |
| Figure Notes: | 4-31 |
| - Install Cable Clamps | 4-34 |
| Figure Notes: | 4-34 |
| - Install Front Plates | 4-35 |

## Contents

|  | Install Front Plates on Systems with <br> Earthquake Protection |
| :--- | :--- |
| Install Cabinet Clip On Systems without <br> Earthquake Protection | $4-35$ |
| Figure Notes: | $4-35$ |


| 5 | Install Telecommunications Cabling | 5-1 |
| :---: | :---: | :---: |
|  | - Install the Cross-Connect Field | 5-1 |
|  | Typical Cross-Connect Field Using 110-Type Hardware | 5-1 |
|  | Figure Notes: | 5-2 |
|  | Hardware Installation | 5-3 |
|  | - Install Cable Slack Managers | 5-3 |
|  | - Route Cables from Cabinet to Cross-Connect Field | 5-3 |
|  | Figure Notes: | 5-5 |
|  | Figure Notes: | 5-6 |
|  | - Connect Control Carrier Outputs Cable | 5-6 |
|  | Label Cables | 5-7 |
|  | - Install Trunk Cables Among Network Interface, Sneak Current Protector, and Switch Cabinet | 5-7 |


| 6 | Install Generic 3 Management Terminal | 6-1 |
| :---: | :---: | :---: |
|  | - Generic 3 Management Terminal (G3-MT) Requirements | 6-1 |
|  | - Connect Generic 3 Management Terminal (G3-MT) | 6-2 |
|  | Figure Notes: | 6-4 |
|  | - Set Up G3 Management Terminal (G3-MT) | 6-6 |
|  | - Remotely Connect Generic 3 <br> Management Terminal (G3-MT) | 6-7 |
|  | Figure Notes: | 6-7 |


| 7 | Activate the System | $7-1$ |
| :--- | :--- | :--- |
|  | Power Up Switch | $7-2$ |
| Install Translation Flash-Memory Card |  |  |

## Contents

| Power up AC-Powered Switch | 7-3 |
| :---: | :---: |
| Power up DC-Powered Switch | 7-3 |
| Verify Messages on Terminal | 7-3 |
| - Introduction to Terminal Screens and Commands | 7-4 |
| Screens | 7-4 |
| Commands | 7-5 |
| Getting Help | 7-5 |
| - Log in to the System | 7-5 |
| - Set Required Country Options | 7-6 |
| - Change Craft Password | 7-9 |
| - Set Date and Time | 7-11 |
| - Set System Maintenance Parameters | 7-14 |
| - Save Translations | 7-15 |
| Logoff | 7-17 |


| 8 | Test the System | 8-1 |
| :---: | :---: | :---: |
|  | - Check the System Status for Each Cabinet | 8-1 |
|  | - Check Circuit Pack Configuration | 8-4 |
|  | - Test Time Division Multiplexor (TDM) Bus in Processor Port Network (PPN) | 8-9 |
|  | - Test Tone-Clock Boards | 8-10 |
|  | - Test Switch Processing Element (SPE) Duplication Memory Shadowing Link | 8-11 |
|  | - Test Duplicated Switch Processing Element (SPE) Interchange | 8-12 |
|  | - Test Expansion Interface Boards | 8-14 |
|  | - Test Time Division Multiplexer (TDM) for each Expansion Port Network (EPN) | 8-15 |
|  | - Test Tone-Clock for each Expansion Port Network (EPN) | 8-16 |
|  | - Test Tone-Clock Interchange for each Expansion Port Network (EPN) | 8-17 |
|  | - Test Expansion Interface Exchange for Each Expansion Port Network (EPN) | 8-17 |
|  | - Check Circuit Pack Configuration Again | 8-19 |
|  | - Save Translations, if Required | 8-20 |

## Contents

| . | Re-install Front Doors | $8-20$ |
| :--- | :--- | :--- |
| . | Next Steps | $8-20$ |


| 9 | Install and Wire Telephones and Other Equipment | 9-1 |
| :---: | :---: | :---: |
|  | - Telephone Connection Example | 9-1 |
|  | Connect Adjunct Power | 9-3 |
|  | - Analog Station or 2-Wire Digital Station Example | 9-5 |
|  | - Analog Tie Trunk Example | 9-6 |
|  | - Digital Tie Trunk Example | 9-9 |
|  | - Auxiliary Connector Outputs | 9-10 |
|  | - APP Connector and Cable Diagrams (Pinout Charts) | 9-15 |
|  | - Install Initialization and Administration System (INADS) Interface | 9-21 |
|  | Figure Notes: | 9-21 |
|  | Figure Notes: | 9-22 |
|  | - Install Emergency Transfer Units and Associated Telephones | 9-23 |
|  | Install the 808A Emergency Transfer Panel | 9-23 |
|  | - Install External Ringing | 9-24 |
|  | Requirements | 9-24 |
|  | Installation | 9-24 |
|  | Figure Notes: | 9-25 |
|  | - Install Queue Warning Indicator | 9-25 |
|  | Requirements | 9-25 |
|  | Installation | 9-26 |
|  | - Install the 1145B1 Power Supply | 9-26 |
|  | Wall-Mounting Plates | 9-27 |
|  | Figure Notes: | 9-28 |
|  | Mount the 1145B1 Power Supply | 9-29 |
|  | Figure Notes: | 9-29 |
|  | Mount the 1146B1 Power Distribution Unit | 9-30 |
|  | Battery Mounting/Wiring | 9-30 |
|  | Power Up and Test | 9-31 |
|  | Wire the 1146B1 Power Distribution Unit | 9-32 |

## Contents

| Figure Notes: | 9-32 |
| :---: | :---: |
| Reset Light Emitting Diodes (LED) on Power Distribution Unit 9-33 |  |
| - Install the MSP-1 Power Supply | 9-34 |
| Underwriter's Laboratories (UL) Information | 9-34 |
| Important Safety Instructions | 9-35 |
| Description of the MSP-1 Power Supply | 9-36 |
| Locate the MSP-1 Power Supply | 9-36 |
| Mount the MSP-1 Power Supply | 9-36 |
| Connect the Power Supply | 9-37 |
| Figure Notes: | 9-38 |
| Figure Notes: | 9-39 |
| - Install the Basic Rate Interface (BRI) Terminating Resistor | 9-39 |
| Terminating Resistor Adapter | 9-40 |
| Closet Mounted (110RA1-12) | 9-41 |
| Figure Notes: | 9-41 |
| Figure Notes: | 9-42 |
| - Install Multipoint Adapters | 9-42 |
| BR851-B Adapter (T-Adapter) | 9-43 |
| 367A Adapter | 9-44 |
| Basic Multipoint Installation Distances | 9-45 |
| Figure Notes: | 9-46 |
| - Install Power Adapters | 9-47 |
| 400B2 | 9-47 |
| 400F2 | 9-48 |
| - Install Auxiliary Equipment | 9-49 |
| Auxiliary Equipment Description | 9-49 |
| Install Loudspeaker Paging and Music-on-Hold | 9-50 |
| Install Loudspeaker Paging Access without Paging Adapter | 9-50 |
| Requirements | 9-50 |
| Figure Notes: | 9-51 |
| Install Loudspeaker Paging Access | 9-51 |
| Install Music-on-Hold Access | 9-52 |
| Requirements | 9-52 |
| Figure Notes: | 9-53 |

## Contents

| Install Federal Communications Commission (FCC) Registered Music Source | 9-54 |
| :---: | :---: |
| Install Recorded Announcement Equipment | 9-54 |
| Requirements | 9-54 |
| Figure Notes: | 9-55 |
| - Install Processor Data Modules (PDMs) | 9-55 |
| Requirements | 9-55 |
| Installation | 9-56 |
| Figure Notes: | 9-57 |
| Connection to Individual Processor Data Module (PDMs) | 9-57 |
| Figure Notes: | 9-58 |
| - Install Call Management System (CMS) Interface | 9-58 |
| Figure Notes: | 9-59 |
| - Install Property Management System (PMS) Interface | 9-59 |
| Requirements | 9-59 |
| Figure Notes: | 9-61 |
| - Install Customer-Provided Terminal Using Asynchronous Data Unit (ADU) | 9-61 |
| Requirements | 9-61 |
| Installation | 9-61 |
| - Install Station Message Detail Recording (SMDR)/Call Detail Recording Unit (CDRU) Interface | 9-62 |
| Interface Cabling to Station Message Detail Recording (SMDR) Output Device | 9-63 |
| Figure Notes: | 9-64 |
| Switch Settings for Processor Data Module (PDM), Trunk Data Module (TDM), or 212-Type Modem | 9-65 |
| 212-Type Modem Switch Setting | 9-66 |
| - Implement and Administer System Data | 9-66 |


| $\mathbf{1 0}$ | Test Telephones and Other Equipment | $10-1$ |
| :---: | :---: | :---: |
|  | Make Test Calls (Single-Cabinet Switch) | $10-2$ |
| Description | $10-2$ |  |
| Procedure |  | $10-2$ |
|  | Make Test Calls (Two-Cabinet Switch) | $10-3$ |

## Contents

| Description | 10-3 |
| :---: | :---: |
| Procedure | 10-3 |
| - Make Test Calls (Three-Cabinet Switch) | 10-4 |
| Description | 10-4 |
| Procedure | 10-5 |
| - Test the Attendant Console | 10-8 |
| Description | 10-8 |
| Procedure | 10-8 |
| - Test the Selector Console | 10-9 |
| Description | 10-9 |
| Procedure | 10-9 |
| - Test External Ringing | 10-9 |
| Description | 10-9 |
| Procedure-Ringing Device Installed | 10-9 |
| Procedure-Ringing Device Not Installed | 10-10 |
| - Test Queue Warning Indicator | 10-10 |
| Description | 10-10 |
| Procedure-Queue Warning Indicator Installed | 10-10 |
| Procedure-Queue Warning Indicator Not Installed | 10-11 |
| - Test Integrated Announcement | 10-12 |
| Description | 10-12 |
| Procedure - Record Announcement | 10-12 |
| Procedure - Playback Announcement | 10-12 |
| Procedure -Delete Announcement | 10-12 |
| - Test Music-on-Hold | 10-13 |
| Description | 10-13 |
| Procedure | 10-13 |
| - Test Emergency Transfer | 10-13 |
| Description | 10-13 |
| Procedure | 10-14 |
| - Test Remote Access Interface (known as Initialization and Administration System) | 10-14 |
| Description | 10-14 |
| Procedure-Remote Test | 10-14 |

## Contents

|  | Procedure-Local Test |
| :--- | :--- |
| $\quad$ Test Basic Rate Interface (BRI) | $10-15$ |
| Description | $10-15$ |
| Procedure-Dial Tone |  |
| Procedure-Make and Receive Calls |  |
| Procedure-Checking the Service Profile <br> Identifier (SPID) | $10-15$ |


| A | Approved Grounds | A-1 |
| :--- | :--- | :--- | :--- |
|  | Definition of Approved Ground | A-1 |
|  | Acceptable Mediums for Protective Ground | A-1 |
|  | Approved Floor Grounds | A-2 |


| B | Earthquake Protection Procedures | B-1 |
| :--- | :--- | :--- |
|  | Install Floor Mounting to Attach Cabinet to Floor | B-1 |
|  | Figure Notes: | B-2 |
| Figure Notes: | B-3 |  |
|  | Install Ground Plates on Cabinet Backs | B-4 |
|  | Install Front Plates | B-4 |


| $\mathbf{C}$ | DEFINITY AUDIX System Power Procedures | $\mathrm{C}-1$ |
| :--- | :--- | :--- |
|  | a | Manually Power Down DEFINITY AUDIX System |
|  | C-1 |  |


| D | Country Differences | D-1 |
| :--- | :--- | :--- |
|  | United States to United Kingdom and <br> France Terminology Translations | D-1 |
| ■ | Country-Specific Hardware | D-1 |


| $\mathbf{E}$ | Installing the 9400-Series Telephones | $\mathrm{E}-1$ |
| :--- | :--- | :--- |
|  | Installing the 9400-Series Telephones | $\mathrm{E}-1$ |
|  | Wiring Information | $\mathrm{E}-2$ |

## Contents

|  | Distance Limitations | $\mathrm{E}-4$ |
| :---: | :---: | :---: |
|  | Figure Notes: | $\mathrm{E}-5$ |
|  | Figure Notes: | $\mathrm{E}-5$ |
|  | Wall Mounting | $\mathrm{E}-6$ |
| U | $\mathrm{E}-9$ |  |
| The Test Feature |  | $\mathrm{E}-9$ |
| Button Labels | $\mathrm{E}-10$ |  |


| F | Wire Conversion Information | F-1 |
| :--- | :--- | :--- |
|  | - Common Wire Colours | F-1 |
|  | - AWG to SWG Conversion |  |
| (Stranded Wire) |  |  |$\quad$ F-1 | (Wire Gauge Comparison <br> (Solid Conductor) |
| :--- |


| G | Electrical Code Equivalencies | G-1 |
| :---: | :---: | :---: |
|  | - | North American Electrical Code |


| H | Option Switch Settings | H-1 |
| :---: | :---: | :---: |
|  | - Distributed Communications System (DCS) Option Settings for G3i Systems | H-1 |
|  | - Modem Pooling (Combined) Option Settings | H-2 |
|  | - 103JR Modem Option Settings | H-2 |
|  | - 201CR Modem Option Settings | H-4 |
|  | - 202SR Modem Option Settings | H-6 |
|  | - 208BR Modem Option Settings | H-9 |
|  | - Asynchronous 212AR Modem Option Settings | H-11 |
|  | - Synchronous 212AR Modem Option Settings | H-14 |
|  | - Asynchronous 2224A Modem Option Settings | H-17 |
|  | - Synchronous 2224A Modem Option Settings | H-18 |
|  | - 7400A Option Settings | H-19 |
|  | - Printer Option Settings | H-20 |
|  | - 475 Printer Connected to a G3 Management T | H-21 |

## Contents

| - 475 Printer Used as System Printer | H-21 |
| :---: | :---: |
| - 475 or 476 Printer Used as Journal Printer for Hospitality Feature | H-21 |
| - 470 or 471 Printer Used as Journal Printer for Hospitality Feature | H-28 |
| - 572 Printer | H-30 |
| - Station Message Detail Recording (SMDR) Interface Option Settings | H-34 |
| - Audio Information Exchange (AUDIX) Interface Option Settings for G3i Systems | H-36 |
| - TN760 Tie Trunk Circuit Pack Option Settings | H-37 |
| - TN464C, D, E, F Option Settings | H-41 |
| TN464C/D Option Settings | H-41 |
| Figure Notes: | H-42 |
| TN464E/F Option Settings | H-42 |
| Figure Notes: | H-44 |


| $\mathbf{I}$ | References | $\mathrm{I}-1$ |
| :--- | :--- | :--- |
|  | Basic | $\mathrm{I}-1$ |
| ■ | Call Center | $\mathrm{I}-5$ |
| ■ | Networks | $\mathrm{I}-6$ |
|  | Application Specific | $\mathrm{I}-7$ |


| ABB | Abbreviations | ABB-1 |
| :--- | :--- | :--- |
|  |  |  |
| $\mathbf{I N}$ | Index | $\mathrm{IN}-1$ |

## About This Book

This book supports DEFINITY ${ }^{\circledR}$ Communications Systems Generic 3 Version 3 and later. This book provides procedures and information for installing the hardware and initially testing the DEFINITY Communications System Generic 3, Models G3i and G3s. The information in this book applies to single-carrier cabinet switches only.

DEFINITY is a registered trademark of AT\&T. DEFINITY Communications System Generic 3 is abbreviated as G3.

## This Book's Organization

This book is organized into 10 chapters and 10 appendices. The procedures in this book should be read and followed sequentially.

- Chapter 1, "Overview and Roadmap"

Provides an overview of system reliability options and a step-by-step roadmap for installing and testing the system.

- Chapter 2, "Plan and Prepare the Site"

Explains how to plan and prepare the site and includes typical floor plans.

- Chapter 3, "Unpack the Cabinet"

Explains how to safely unpack the cabinets.

- Chapter 4, "Install and Connect the Cabinets"

Explains how to install the cabinets, install the power, and connect the cabinets together.

- Chapter 5, "Install Telecommunications Cabling"

Explains how to install cabling between the switch and the cross-connect field.

- Chapter 6, "Install Generic 3 Management Terminal"

Explains how to install and bring up the Generic 3 Management Terminal.

- Chapter 7, "Activate the System"

Explains how to activate and initialize the system.

- Chapter 8, "Test the System"

Explains how to test the system.

- Chapter 9, "Install and Wire Telephones and Other Equipment"

Explains how to install and wire telephones and other equipment to the switch.

- Chapter 10, "Test Telephones and Other Equipment"

Explains how to test the equipment installed in Chapter 9.

- Appendix A, "Approved Grounds"
- Appendix B, "Earthquake Protection Procedures"
- Appendix C, "DEFINITY AUDIX System Power Procedures"
- Appendix D, "Country Differences"
- Appendix E, "Installing the 9400-Series Telephones"
- Appendix F, "Wire Conversion Information"
- Appendix G, "Electrical Code Equivalencies"
- Appendix H, "Option Switch Settings"
- Appendix I, "References"
- Abbreviations
- Index


## Other Books

In addition to this book, other system description, installation and test, maintenance, and administration books are available. A complete list of DEFINITY Generic 3 books available in United States English can be found in the Global Business Communications Systems Publications Catalog, 555-000-010. A list of books relevant to this product can be found in Appendix I.

This catalog and all DEFINITY Communications System Generic 3 documentation in United States English can be ordered directly from:

General Business Communications System Publications Fulfillment Centre at 1-317-361-5353.

## Trademarks

This book contains references to the following trademarked products:

- AUDIX ${ }^{\circledR}$ is a registered trademark of AT\&T
- DEFINITY ${ }^{\circledR}$ is a registered trademark of AT\&T
- $\operatorname{LINX}^{\text {TM }}$ is a trademark of Illinois Tool Works, Inc.
- Shockwatch ${ }^{\text {TM }}$ is a trademark of Media Recovery, Inc.
- Styrofoam ${ }^{\text {TM }}$ is a trademark of Styrofoam Corporation
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- Tiltwatch ${ }^{\text {TM }}$ is a trademark of Media Recovery, Inc.


## Overview and Roadmap



This chapter presents general information about the methods to configure your DEFINITY System Generic 3 for system availability.

It also provides a roadmap (a high-level overview of the sequence of steps) for the installation of the system. The roadmap provides references to the appropriate chapter in this book or other books for detailed instructions.

## System Reliability

The DEFINITY System G3 provides various system reliability configurations or duplication options. These reliability configurations provide for duplication of G3 system components for higher system availability. The following three types of reliability supply your system's needs:

- Standard Reliability
- High Reliability
- Critical Reliability

Within these configuration options, you can duplicate the following components:

- Processor Port Network (PPN) Control Carrier
- Expansion Port Network (EPN) Control Carrier
- Inter-Port Network (PN) Connectivity (fibre-optic cabling)
- Tone-Clock

Chapter 4, "Install and Connect the Cabinets"provides more detail on system reliability configurations.

## Standard Reliability

DEFINITY System G3 standard reliability systems provide the most costeffective product. This is the only reliability offering for a G3s system. Standard reliability systems do not duplicate Tone-Clock(s), the Control Carriers, or any inter-Port Network (PN) connectivity.

Standard reliability systems use the following components:

- One control carrier per port network (Expansion Port Network (EPN) or Processor Port Network (PPN))
- One Tone-Clock per port network
- Simplex inter-Port Network (PN) connectivity (via fibre-optic cables)


## High Reliability

The G3i high reliability option provides duplication of hardware associated with the Processor Port Network (PPN) Control Carrier.

High Reliability systems use the following components:

- Duplicate Control Carriers in the Processor Port Network (PPN)
- Duplicate Processor Port Network (PPN) Tone-Clocks, one in each Control Carrier
- One Tone-Clock per Expansion Port Network (EPN)
- Simplex inter-Port Network (PN) connectivity


## Critical Reliability

G3i critical reliability option provides the highest reliability through duplication of the control carrier(s), inter-Port Network (PN) connectivity, and Tone-Clocks.

Critical Reliability systems use the following components:

- Duplicate control carriers in the Processor Port Network (PPN) and Expansion Port Network (EPN)
- Duplicate Tone-Clocks in each port network (Processor Port Network (PPN) and Expansion Port Network (EPN))
- Duplicate inter-Port Network (PN) connectivity, using duplicated Expansion Interface circuit packs and fibre optic cables.


## DEFINITY System Installation

## Roadmap

This section is intended to provide a high-level sequence for the installation process and also a roadmap to the information in this book. It is also noted where specific steps are covered in other books.

## Plan and Prepare the Site

Complete this task by following the instructions provided in Chapter 2.

1. Determine what was ordered for the customer: DEFINITY System Generic 3, number of cabinets and port networks, management terminals, adjuncts, consoles, telephones, modems, external trunks, etc.
2. Locate DEFINITY System equipment room and lay out equipment room floorplan for system cabinets, management terminal and desk, crossconnect hardware and adjuncts, etc.
3. Lay out and ensure appropriate power for switch and management terminal in equipment room and arrange for an electrician to install.
4. Lay out and ensure appropriate grounding in equipment room (refer to Appendix A, "Approved Grounds").
5. Determine location of equipment closets where large cables can be connected out into smaller ones.
6. Determine where external trunk lines come into the building and where external trunk converters and adapters will be installed.
7. Determine an appropriate available port circuit on DEFINITY System for each telephone, trunk, and peripheral connection needed and create a provisioning plan.

## Unpack the Cabinets

Complete this task by following the instructions provided in Chapter 3.

1. Unpack and inspect the cabinets.
2. Check circuit packs.

## Install and Connect the Cabinets

Complete this task by following the instructions provided in Chapter 4.

1. Install earthquake floor mounting if needed (refer to Appendix A, "Approved Grounds")
2. Position and stack cabinets.
3. Connect system cabinet grounds.
4. Connect battery leads.
5. Connect AC power or DC power.
6. Locate and connect Time Division Multiplexer (TDM) Bus.
7. Locate and connect inter-cabinet cables, if system has duplicated Switch Processor Elements (SPEs) in Processor Port Network (PPN) control cabinets (high or critical reliability configurations).
8. Install fibre optic cables between port networks (if the system has more than one cabinet stack).
9. Verify port cabinet address plugs.
10. Replace cabinet back panels.
11. Install ground plates.
12. Install cable clamps.
13. Install front plates (if needed for electromagnetic shielding and/or earthquake protection - see Appendix B, "Earthquake Protection Procedures").
14. Install cabinet clip (if you do not have earthquake protection or electromagnetic shielding).

## Install Telecommunications Cabling

Complete this task by following the instructions provided in Chapter 5.

1. Install cross connect equipment.
2. Install cable slack manager.
3. Route cables from cabinet to cross-connect field.
4. Connect control carrier outputs cable.
5. Label cables.
6. Install trunk cables among network interface, sneak fuse or circuit breaker panel, and switch cabinet.
7. Install coupled bonding conductor grounding.

## Install Generic 3 Management Terminal (G3-MT)

Complete this task by following the instructions provided in Chapter 6.

1. Connect Management Terminal.
2. Set up Management Terminal.
3. Connect remote Management Terminal (if included).

## Activate the System

Complete this task by following the instructions provided in Chapter 7.

1. Power up switch.
2. Log in to the system.
3. Set required country options.
4. Change craft password.
5. Set date and time.
6. Set system maintenance parameters, if Packet Controller (TN778 Circuit Pack) is included.
7. Save and back up translations.

## Test the System

Complete this task by following the instructions provided in Chapter 8.

1. Check the system status for each cabinet.
2. Check circuit pack configuration.
3. Test Time Division Multiplexer (TDM) bus in Processor Port Network (PPN).
4. Test Tone-Clock boards.
5. Test Switch Processor Element (SPE) duplication memory shadowing link, only for high and critical reliability systems.
6. Test duplicated Switch Processor Element (SPE) interchange, only for high and critical reliability systems.
7. Test expansion interface boards, if present.
8. Test Time Division Multiplexer (TDM) for each Expansion Port Network (EPN), if Expansion Port Networks (EPN) are present.
9. Test Tone-Clock for each Expansion Port Network (EPN), if Expansion Port Networks (EPN) are present.
10. Test Tone-Clock interchange for each Expansion Port Network (EPN), only for critical reliability systems with Expansion Port Networks (EPN) present.
11. Test expansion interface exchange for each Expansion Port Network (EPN), if Expansion Port Networks (EPNs) are present.
12. Check circuit pack configuration, again.
13. Save and back up translations again, if required.
14. Re-install front doors on switch cabinets.

## Install and Wire Telephones and Other Equipment

Complete this task by following the instructions provided in Chapter 9.

## NOTE:

For easier reference, installation steps and test steps are grouped in separate chapters. It may be better to install each hardware component, administer it, and then test it before going on to install another component. As an example, install the Attendant Console using the procedures in Chapter 9, "Install and Wire Telephones and Other Equipment", $a$ administer it using the procedures in "Administer the DEFINITY System According to Customer Requirements" on page 1-7, and test it using the procedures in Chapter 10, "Test Telephones and Other Equipment".

1. Make and label wiring cross connections for this customer, using provisioning plan as directed in Step 7 of Chapter 2, "Plan and Prepare the Site".
2. Install and label equipment.
3. Install the attendant consoles.
4. Install the telephones.
5. Install the trunks.
6. Install the interface for the remote management terminal (known as INADS).
7. Install the emergency transfer units and associated telephones.
8. Install external ringing.
9. Install queue warning indicator.
10. Install auxiliary power.
11. Install Basic Rate Interface (BRI) telephone, Basic Rate Interface (BRI) terminating resistor, multipoint adapter, and power adapter.
12. Install auxilliary equipment
13. Install the Processor Data Module (PDM).
14. Install the Call Management System (CMS) interface.
15. Install Property Management System (PMS).
16. Install any customer-provided terminals using Asynchronous Data Units (ADUs).
17. Install Station Message Detail Recording (SMDR)/Call Detail Recording Unit (CDRU) interface.

## Administer the DEFINITY System According to Customer Requirements

After the hardware is installed and the system is activated, the data for system and telephone features must be administered, using the provisioning plan created for this customer in Step 7 in Chapter 2, "Plan and Prepare the Site".'All steps for the administration of the system are provided in the United Kingdom English book, DEFINITY Communications System Generic 3 Implementation, 555-230-655.

## Test Telephones and Other Equipment

Complete this task by following the instructions provided in Chapter 10.

1. Make test calls (single-port-network switch).
2. Make test calls (two-port-network switch).
3. Make test calls (three-port-network switch).
4. Test the attendant console and selector console.
5. Test external ringing.
6. Test queue warning indicator.
7. Test integrated announcement.
8. Test music-on-hold.
9. Test emergency transfer.
10. Test remote access interface (known as INADS).
11. Test Basic Rate Interface (BRI).

## Plan and Prepare the Site



This chapter describes tasks required to plan, prepare, and provision the site depending upon which DEFINITY System Generic 3 was ordered. Perform the following:

- Check the customer's order.
- Locate and lay out the equipment room.
- Lay out and ensure appropriate power.
- Lay out and ensure appropriate grounding.
- Determine location of equipment closets.
- Determine location of external trunk lines.
- Create a provisioning plan.


## Check the Customer's Order

Determine what was ordered for the customer: DEFINITY System Generic 3, the number of cabinets, port networks, management terminals, adjuncts, consoles, telephones, modems, external trunks, etc.

## NOTE:

One port network is equivalent to one single-carrier-cabinet stack. Throughout this document, "cabinet" sometimes refers to one single-carrier cabinet and sometimes refers to one stack of single-carrier cabinets, according to the context. An attempt has been made to use "single-carrier cabinet (SCC)" to mean exactly that and to use the more general term, "cabinet," to mean a stack of one or more single-carrier cabinets or a port network. A "system" is one or more single carrier cabinet stacks.

## Locate and Lay Out the Equipment <br> Room

Determine where the DEFINITY System Generic 3 equipment room is located, and then lay out the equipment room floor plan for DEFINITY System cabinets, management terminal and desk, cross-connect hardware and adjuncts, etc.

## Generic 3 Management Terminal

 (G3-MT) RequirementsIn general, the Management Terminal must be directly connected to the cabinet with the shortest possible cable. For maintenance purposes, the terminal must be located in the same equipment room as the cabinet, or in sight of the cabinet.

Power for the terminal must be obtained from a single-phase standard 120 Volt 60 Hz or 230 Volt 50 Hz AC receptacle in the equipment room.

## Cross-Connect Fields

Recommended hardware is the wall-mounted 110 SYSTIMAX premises distribution equipment for structured cabling systems.

## Space Requirements

The floor plan shown in Figure 2-1 provides dimensions for the Processor Port Network (PPN) cabinets and Cable Slack Managers.

## Room Layout

Typical floor plans for a single-carrier cabinet are shown below:


## Figure Notes:

1. Printer (Optional)
2. Cross-Connect Field
3. Wall
4. Cable Slack Manager (Optional)
5. Table
6. Trunk/Auxiliary Field. May be Located within Cross-Connect Field.
7. G3 Management Terminal (G3-MT)
8. Expansion Port Network (EPN) Cabinets (optional). Space indicated by callouts 9 and 10 needed for each Expansion Port Network (EPN) in system.
9. Processor Port Network (PPN) Cabinets
10. Cable Slack Manager
11. 22 Inches ( 55 cm )
12. 27 Inches ( 68 cm )
13. 32 Inches ( 81 cm )
14. 40 Inches ( 101 cm )

## Additional Notes:

AC receptacles must be separately current protected (fuse or circuit breaker) and not under the control of a wall switch. Receptacles must not be shared with other equipment and should be located away from the cross-connect field.

System must be grounded by one of the approved methods. See Appendix A.
Earthquake protection and/or electromagnetic shielding may be required. See Appendix B.

Figure 2-1. Typical Floor Plan for G3i Single-Carrier Processor Port Network (PPN) with Expansion Port Network (EPN) Cabinets

## Cable Slack Manager (Optional) Requirements

A cable slack manager (optional) is 32 inches ( 81 cm ) wide and 40 inches ( 102 cm ) deep. Normally, one slack manager is needed for each cabinet stack. Extra slack managers may be ordered, if necessary.

## Tools Needed

Table 2-1 lists the tools and test equipment required to install the switch. Make sure all tools are available before installing the DEFINITY System Generic 3.

Table 2-1. Tools and Test Equipment Inventory

| Tasks | Equipment Required | Recommended Type | Recommended Types for Europe |
| :---: | :---: | :---: | :---: |
| Unpacking Cabinet | Tin Snips |  |  |
|  | Utility Knife |  |  |
|  | Adjustable Wrench | 6- or 8-inch |  |
| Installing Cabinet | Electric Drill | Impact type |  |
|  | Masonry Bit | 1/2-inch |  |
|  | Drill Bit (for Computer Floors only) | 5/8-inch |  |
|  | Drift Punch | Length as required to reach from computer floor to concrete floor |  |
|  | Chalk Line |  |  |
|  | Rule | 30-inch |  |
|  | Adjustable Wrench | 6 - or 8-inch |  |
|  | Ratchet | 1/2-inch | 1/2-inch ${ }^{\dagger}$ |
|  | Sockets | $\begin{aligned} & 5 / 16-, 1 / 2-\text {, and } 3 / 4- \\ & \text { inch } \end{aligned}$ | $\begin{aligned} & 5 / 16-, 1 / 2-\text {, and } 3 / 4- \\ & \text { inch } \dagger \end{aligned}$ |
|  | Nut driver | 1/4-inch | 1/4-inch ${ }^{\dagger}$ |
|  | Screwdriver | 8-inch flat blade |  |
|  | Allen Wrench $\ddagger$ | 1/8-inch |  |
| Checking Commercial Power | Digital Multimeter | KS-20599 |  |
| Circuit Pack <br> Voltage Check | Voltage Tester | TN2036 (optional) |  |
| Initializing Switch | Generic 3 Management Terminal | 715 Management Terminal |  |
| Installing cables and telephones | Diagonal cutters |  |  |
|  | Phillips screwdriver |  |  |
|  | Electric drill for installing information outlets |  |  |
|  | Impact tool for cross-connect hardware |  |  |
|  | Test (telephone) set |  |  |

* Electric drill and drill bits are required for earthquake mounting.
$\dagger$ Since U.S./English fasteners are used, U.S./English tools are required unless an exact match can be found among metric tools.
$\ddagger$ Required when installing an AC powered switch.


## Lay Out and Ensure Appropriate Power

1. Lay out and ensure appropriate power for switch cabinets and management terminal in equipment room.
2. Provide one power outlet per single-carrier cabinet.
3. Have an electrician check the commercial power and verify power is available and present.

## Power Arrangements for AC Power

The following procedures apply to both the Processor Port Network (PPN) cabinet(s) and Expansion Port Networks (EPN) cabinet(s) (as provided), except where noted.

The following illustration shows a typical power and grounding layout, and the illustration after that shows the AC power receptacle requirements. The power circuit must be dedicated to the DEFINITY System Generic 3 only and must be on a separately current limited (fuse or circuit breaker) circuit. It must not be shared with other equipment and must not be under the control of a wall switch. The power supply for the Generic 3 Management Terminal (G3-MT), however, does not have to be dedicated

Locate and/or arrange the cross-connect field so all power receptacles are accessible.

## Power Arrangements for DC Power

The following table shows the input DC requirements for the system -48 VDC Input Power Requirements

| Parameter | Requirements |
| :--- | :--- |
| Static Voltage | -48 VDC nominal, -42.5 VDC minimum, -52.5 VDC maximum <br> (measured at input to System cabinet) under normal <br> operating conditions. |
| Dynamic | Transient change in voltage- +/- $5 \%$ of steady state <br> voltage. Allowed transient duration-Up to 200 <br> milliseconds. |
| AC Ripple | Maximum wideband AC ripple- 450 mvpp (millivolts peak- <br> to-peak) in the 3 kHZ to 20 MHZ band. |
| Voltage | Automatic disconnect-Occurs when input voltage is less <br> than -42.5 VDC (control provided with battery plant). |
| Disconnect | Input voltage at switching cabinets shall not exceed -52.5 |
| Overvoltage |  |
| Vrotection | VDC. |


| Parameter | Requirements |
| :--- | :--- |
| Electrical | Voice band noise from the battery plant to the system must <br> be less than 32 dBrnC (decibels above reference noise with <br> Noise |
|  | C-filter or -58 dBmp (decibels below 1 milliwatt <br> psphometric). |
| Grounding | A single point ground must be maintained. A ground <br> conductor must be installed from the battery plant GROUND <br> DISCHARGE BAR to the closest "Approved Ground" via the <br> shortest and most direct route as required by the National <br> Electrical Code or applicable electrical code in your area. |
|  | The gauge must be no smaller than the largest conductor in <br> the System and larger than 6 AWG. Grounding between the <br> system cabinet and the battery plant should be connected <br> using the procedures given later in this chapter. |
| Lightning | There must be adequate lightning protection in the battery <br> plant to insure that the system will not be damaged. |
| Protection |  |

## Lay Out and Ensure Appropriate Grounding

Grounding is relatively simple for an AC-powered switch. First, connect the cabinets to each other. Then, connect a single ground wire from the Processor Port Network (PPN) to the approved protective ground.

Grounding of the system 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 your country. See Appendix Afor a description of "approved ground."

## Connect Coupled Bonding Conductor

The Coupled Bonding Conductor connects to the single-point-ground-block and runs adjacent to pairs in an associated telecommunications cable. The mutual coupling between the bonding conductor and the pairs reduces potential differences in terminating equipment. The conductor consists of a 10 AWG wire that must be tie-wrapped to the inside wiring cable and terminated at the coupled bonding conductor terminal bar at the switch cross-connect field.

Refer to Appendix Ffor wire conversion information.
Refer to Figure 4-9 on page 4-13for an illustration of a Coupled Bonding Conductor.

If the approved protective ground or approved floor ground can only be accessed inside a dedicated power equipment room, you should have an electrician make the connections to this ground.

## NOTE:

Check location of the AC power receptacle. The receptacle must be on a separately current limited (fuse or circuit breaker) circuit not controlled by a wall switch.

## Determine the Location of the Equipment Closets

Determine the location of the equipment closets where large cables can be connected out into smaller ones. Determine locations of terminating resisters for Basic Rate Interface (BRI) station circuits to be installed in equipment closets.

## Determine External Trunk Locations

Determine where external trunk lines come into the building and be routed to the equipment room. Determine where external trunk converters and adapters as well as sneak-current fuse panels will be installed in the switch room (preferably close or next to the cross connect fields).

## Create a Provisioning Plan

Determine an appropriate available port circuit on the DEFINITY System for each telephone, trunk, and peripheral connection needed, and, in addition, plan for auxiliary power for Basic Rate Interface (BRI) and certain display sets.

Create a provisioning plan to include the following (see the example on the following page):

- Station or trunk type or feature/service.
- Building location (floor/room/desk/information outlet).
- Extension number or trunk group and member number.
- Port circuit location on the switch for each endpoint (DEFINITY System Generic 3 cabinet/carrier/slot/circuit.
- Route from switch room through equipment closets to each endpoint.
- Auxiliary power supply, if required.

Table 2-2. Example of a Provisioning Plan
$\left.\begin{array}{l|l|l|l|l|l} & \begin{array}{l}\text { Building } \\ \text { Location } \\ \text { (floor/room/ } \\ \text { desk/ } \\ \text { information } \\ \text { outlet }\end{array} & \begin{array}{l}\text { Extension } \\ \text { Number or } \\ \text { Type or } \\ \text { Feature/Service }\end{array} & \begin{array}{l}\text { DEFINITY } \\ \text { and Member }\end{array} & \begin{array}{l}\text { G3 cabinet/ } \\ \text { carrier/slot// } \\ \text { circuit }\end{array} & \begin{array}{l}\text { Route } \\ \text { from } \\ \text { equipment } \\ \text { closets }\end{array}\end{array} \begin{array}{l}\text { Auxiliary } \\ \text { Power } \\ \text { Required? }\end{array}\right]$

## Unpack the Cabinet



This chapter describes the system unpacking procedures.
The DEFINITY System Generic 3 (G3) single-carrier cabinets are shipped in a polyethylene bag, packed in a cardboard container. The cabinet is fastened to a wood/Styrofoam pallet with two metal bands. The cardboard container is strapped to the pallet with another metal band.

## 1 DANGER:

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

## Unpack and Inspect for Damage

## Unpacking the Cabinets

To unpack the cabinets, complete the following steps:

1. Check the status of the SHOCKWATCH and/or TILTWATCH indicators on the cardboard container. These indicators are white under normal conditions. If the container has been shaken or tilted beyond specifications, the indicators will be red, indicating potential damage. Report any damage according to local shipping instructions.
2. Remove the cabinet from the cardboard container.

## 4 DANGER:

Take care to avoid injury while cutting and removing bands.
3. Remove all cardboard, tape, and plastic.

## 4 caution:

Deep knife penetration may damage the cabinet.
4. Open and remove the front door and back panels from cabinet. The screw location is shown in the following figures.


## Figure Notes:

1. Screw that opens front cabinet door

Figure 3-1. Front Cabinet Door Latch Screw Location

Figure 3-2 shows the back panel screw locations.


Figure Notes:

1. Screws to remove
2. Screws to loosen
3. Screws to remain

Figure 3-2. Back Cabinet Panel Screw Locations

1. Remove all packing material from inside the cabinet.

## Inspect Cabinet

2. Inspect cabinet for any damage that may have occurred during shipping. Report any damages according to local shipping instructions.
3. Verify the label near the circuit breaker on the power supply toward the rear of each cabinet corresponds to your local voltage type.

A DANGER:
If the label is different than the voltage type at your site, notify your A T \& Trepresentative immediately for a replacement power supply. Do not, under any circumstances, connect the system to power!

## Check Circuit Packs

4. 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 AT\&T representative.

## Install and Connect the Cabinets



This chapter describes how to install the Processor Port Network (PPN) and Expansion Port Network (EPN) single-carrier cabinets for DEFINITY System Generic 3. Directions are provided for the following configurations:

- Standard reliability
- High reliability
- Critical reliability

Refer to About This Book for a description of each configuration.
This chapter discusses single-carrier cabinets only. For information on multiplecarrier cabinets, refer to the DEFINITY Communications System Generic 1 and Generic 3 Installation and Test document.

To install the cabinets, complete the following steps as detailed in this chapter:

1. Install earthquake floor mounting (if earthquake protection is required)
2. Position and stack cabinets
3. Connect grounds and Connect AC power or DC power
4. Connect Time Division Multiplexing (TDM) cables
5. Connect inter-cabinet cables (ICC)
6. Verify address plug settings
7. Install back plates
8. Install ground plates
9. Install front cabinet clips or ground plates
10. Connect fibre-optic cables
11. Install doors

## Install Earthquake Mounting

If earthquake protection is required for your area, install earthquake floor mounting as directed in Appendix B.

## Position and Stack the Cabinets

Follow the diagram in the Customer Service Document (CSD) shipped with each cabinet, and stack the DEFINITY System Generic 3 cabinets using these steps:

1. Place the control cabinet in position at the location determined when room layout was planned.

NOTE:
Check 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 cross-connect field area.
2. Stack the single-carrier cabinets by letter, according to the serial numbers and lettered designation strips in the Customer Service Document (CSD), and as shown in Figure 4-1.


Figure 4-1. Cabinets Stacked by Letter
3. Remove the front cabinet door and back cabinet panel. See"Unpack and Inspect for Damage" on page 3-1 for more information.

## Connect System Cabinet Grounds

To connect ground, refer to Figure 4-2 on page 4-4 and perform the following:

1. At lower left rear of the Processor Port Network (PPN) cabinet (Control Cabinet A), connect a 6 AWG ground wire to the cabinet ground block. See Appendix Ffor international wire conversions for outside North America.

## $\equiv$ NOTE:

A screwdriver is required to loosen and tighten the screws securing the ground wire to the ground block.
2. Run the ground wire to an approved ground. Refer to Appendix A.
3. At the Expansion Port Network (EPN) cabinet(s) (as provided), connect a 6 AWG ground wire to the A-cabinet ground block.
4. Run the ground wire from the Expansion Port Network (EPN) to the Processor Port Network (PPN) cabinet and connect it to the cabinet ground block.

## 三 nOTE:

If the Expansion Port Network (EPN) cabinet is remotely located from the Processor Port Network (PPN) cabinet (in a separate room or building), run the 6 AWG cabinet ground wire to an approved protective ground.
5. At the Processor Port Network (PPN) cabinet, connect a 10-AWG wire to the cabinet ground block. At a later time, tie-wrap the ground wire (coupled bonding conductor) to the trunk cables, terminating it at the coupled bonding conductor terminal bar at the cross-connect field for the switch. Refer to Figure 4-9 on page 4-13for an illustration of the coupled bonding conductor.


Figure Notes:

1. Expansion Port Network (EPN) Control Cabinet A
2. Circuit breaker
3. Power supply
4. Power receptacle in power supply
5. Processor Port Network (PPN) Control Cabinet A
6. Cabinet-stack single-point ground block
7. Power cord 2.5 meters
8. National Electrical Manufacturer's Association (NEMA) 5-15 or National Electrical Manufacturer's Association (NEMA)5-20 receptacle or equivalent locally provided receptacles
9. 6 AWG ground wire to approved ground
10. Generic 3 Management Terminal (G3-MT)
11. 10 AWG Coupled Bonding Conductor
12. 6 AWG cabinet-stack ground conductor
13. Port cabinet

Figure 4-2. Typical AC Power and Grounding Arrangement for Single-Carrier Cabinet (Rear View)

## Connect Battery Leads

To prevent the batteries from discharging, the control cabinet is shipped with the battery lead disconnected. To connect the batteries, perform the following:

At cabinet(s):

1. Ensure the circuit breakers on each cabinet are OFF.

Each cabinet has its own power supply and the circuit breaker is located on the rear of each power supply. See Figure 4-3.
2. Connect the battery lead:

See Figure 4-3. The battery is near the top of the carrier toward the frontright. The battery leads should be immediately next to the battery, on the left side, and accessible from the front of the cabinet.


## Figure Notes:

1. Battery
2. Circuit Breaker
3. Ground block

Figure 4-3. Single Carrier Cabinet Control Cabinet Battery Location, Right Side View

## Connect Power

Connect either AC or DC power as described in this section.
Verify the label near the circuit breaker on the power supply toward the rear of each cabinet corresponds to your local voltage type.

4 danger:
If the label is different than the voltage type at your site, notify your A $T \& T$ representative immediately for a replacement power supply. Do not, under any circumstances, connect to power!

## Connect AC Power

Figure 4-2 applies to multiple Processor Port Networks (PPN) and Expansion Port Network (EPN) cabinet arrangements. If multiple Expansion Port Network (EPN) cabinets are required, you must provide the receptacles for the 4 -cabinet Processor Port Network (PPN) arrangement in addition to the receptacles for a 2-, 3-, or 4-cabinet Expansion Port Network (EPN) arrangement. Provide one receptacle per single-carrier cabinet.

1. Verify the circuit breakers are OFF .
2. Connect cabinet $A C$ line cords to the $A C$ power receptacles. The $A C$ line cords for the cabinets must first be connected to the cabinets and then to the $A C$ power receptacles.

## Connect DC Power

The following procedures apply to both the Processor Port Networks (PPN) and Expansion Port Networks (EPN).

Figure 4-4 shows a typical power and grounding layout for a DC-powered single-carrier cabinet. The size of the wire required for the -48 VDC and -48 volt return must ensure the -48 VDC supplied by the battery plant to the cabinets will be maintained between -42.5 and -52.5 volt DC. This ensures proper operation and prevents hardware damage.


## Figure Notes:

1. Ground plate (three required)
2. 3 Conductor No. 10 line cord (one per cabinet)
3. Plug (male)
4. J58890CG DC Distribution Unit
5. Receptacle (female)
6. Cabinet single-point ground block
7. 6 AWG wire
8. 25 Amp Fuse (4 required)
9. Coupled bonding conductor to terminal bar at cross-connect field
10. Ground discharge bar
11. 1 AWG wire
12. Approved ground
13. To cabinet single-point ground block in next port cabinet
14. To DC distribution unit for next port network
15. 676B DC Power Supply
16. Port Cabinet
17. Control Cabinet
18. Battery Plant

Figure 4-4. Typical Single-Carrier Cabinet System Direct
Current (DC) Power and Grounding Wiring


#### Abstract

1. CAUTION:

Grounding of the system 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 in your area. See Appendix G for more information.


Determine the approved ground in the building to be wired. See Appendix A. Connect your system to an approved ground as described below.

## Connect Power Plant Ground

To connect the power plant ground, complete the following steps:

1. At the DC power cabinet, connect a 1 AWG ground wire to the GROUND DISCHARGE bar.
2. Route the ground wire out of the cabinet and terminate it on the approved ground (see Figure 4-5). The approved ground must be identified with a grounding tag (AT\&T FORM 15657NR, or equivalent).


## Figure Notes:

1. 1 AWG wire
2. DC Power Cabinet
3. Approved ground. Must be connected to an approved ground using the correct to an approved ground using the corre
gauge cable, terminated with a listed clamp, and identified with an AT\&T clamp, and identified with
ground tag or equivalent.
4. Ground discharge bar

Figure 4-5. Power Plant Grounding

## Connect Frame Ground

Connect the 6 AWG frame ground cable to the cabinet frame by following these steps:

1. Measure and cut a length of 6 AWG cable. Use the provided cable or measure and cut a length of 6 AWG cable long enough to reach between the GROUND CONNECTION terminal in the DC Battery Cabinet and the GROUND DISCHARGE bar in the DC Power Cabinet.
2. Crimp terminal lugs on each end of the wire. Terminal lugs are furnished as part of D-181895, Kit of Parts.
3. At DC power cabinet, connect wire to the GROUND DISCHARGE bar.
4. Route the wire through one of the holes in the side of the cabinet and terminate it on the GROUND CONNECTION terminal in the DC Battery Cabinet (see Figure 4-6).


## Figure Notes:

1. 6 AWG wire
2. Ground connection terminal
3. Ground discharge bar
4. Power distribution unit
5. DC battery cabinet

Figure 4-6. Frame Ground Grounding

## Connect DC Power Distribution Box Grounding

Run the 6 AWG ground cable from the DC Power Cabinet to each DC Power Distribution Unit, using the following steps:

1. At the DC Power Cabinet, connect 6 AWG wire to the GROUND DISCHARGE bar. Route the cable to the DC Power Distribution Unit. Connect the cable to the GRD Terminal Block in the DC Power Distribution Unit (see Figure 4-6).
2. Repeat Step 1 for each remaining DC Power Distribution Unit.


## Figure Notes:

1. 6 AWG wire
2. Ground discharge bar
3. To additional J58890CG as provided
4. Power distribution unit
5. DC power cabinet
6. Ground terminal strip

Figure 4-7. DC Power Distribution Unit Grounding (J58890CG)

## Connect Single-Carrier Network Grounding

Each port cabinet must have a 6 AWG ground cable connected from the ground block of Control Cabinet A to the DC Power Cabinet.

Use the following instructions to connect each network ground:

1. At the DC Power Cabinet, connect a 6 AWG cable to the GROUND DISCHARGE bar. Route the cable to the port Cabinet Carrier A. Connect the cable to the single-point ground block in the Control Carrier (see Figure 4-7).
2. Repeat Step 1 for each port Cabinet Carrier A in the system.


## Figure Notes:

1. 6 AWG wire
2. Ground discharge bar
3. Ground plate
4. Port Cabinet D
5. Cabinet stack single point ground block
6. Port Cabinet C
7. To additional Port Cabinet as provided
8. Port Cabinet $B$
9. DC Power Cabinet
10. Port Cabinet A

Figure 4-8. Ground Connection for Single-Carrier Network

## Coupled Bonding Conductor (CBC)

The coupled bonding conductor (CBC) connects the cabinet single-point ground block to the approved protective ground located nearest the (telephone company owned) protector block at the building entrance facility. Follow these steps to connect the coupled bonding conductor:

1. Connect a 10 AWG wire to the power cabinet ground discharge bar. See Figure 4-9).
2. Repeat for each port network cabinet.

## $\equiv$ NOTE:

A Coupled Bonding Conductor (CBC) must be tie-wrapped to all trunk cables and terminated at the coupled bonding conductor terminal bar.


Figure Notes:

1. 25-Pair tip and ring cables to network cabinets.
2. Coupled bonding conductor terminal block
3. Tie wraps
4. Cable shield or six spare pairs
5. Ground on carbon block protector or equivalent
6. To external trunk interface
7. 10 AWG wire
8. Trunk cable
9. To network cabinets
10. Battery plant ground discharge bar for DC or AC system single point ground
11. Cross-connect ground block
12. Cross-connect field
13. To other cross-connect ground blocks
14. Approved Ground
15. Couple Bonding Conductor

Figure 4-9. Coupled Bonding Conductor

# 1. CAUTION: <br> 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 your applicable local electrical code. See Appendix Alfor a description of "approved ground." 

## Connect DC Power to Networks

Each port cabinet stack must have a DC Power Distribution Unit associated with it. Each DC Power Distribution Unit furnishes DC power for four single-carrier cabinets. The DC Power Distribution Unit comes equipped with four power cords. Each 10 foot (3 meter) cord is equipped with the appropriate connectors.

Perform the following to connect each network to the DC Power Distribution Unit:

1. Connect 1 AWG wire for -48 V and -48 V return from DC Battery Plant to each DC Power Distribution Unit.
2. At the J58890CG DC Power Distribution Unit, connect the power cable to an available receptacle. Route the cable to the rear of Cabinet A.
Connect the power cord to the DC connector on the rear of Cabinet A.
3. Repeat Step 1 for Cabinets B, C, and D as required.
4. Repeat Steps 1 and 2 for all remaining port cabinets.

## Connect AC Power to DC Power Cabinet

Connect the AC power to the DC Power Cabinet by performing the following:

1. Ensure the associated circuit breakers at the AC power panel 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.

## Test DC Power Plant

To test the DC power plant, refer to the Installation Test Procedure (ITP) in the LINEAGE 2000 ECS Power System Battery Plant Product Manual, 167-790-020.

## Connect Stand-by Power

An external, commercial Uninterruptible Power Supply (UPS) or a battery backup arrangement may be provided. Stand-by power is engineered to customer needs depending on the size and configuration of the system.

The AT\&T GBCS Power System is recommended; use the installation instructions provided. See your AT\&T representative for more information.

## Locate and Connect Time Division Multiplexing (TDM) Bus

Locate the white fabric-covered Time Division Multiplexing (TDM) bus cable. Refer to Table 4-1 for slot information.

Follow these instructions to connect the bus to the appropriate slots.

1. Remove the Time Division Multiplexing (TDM) bus terminator on Slot 22 of Control Cabinet $A$ and move it to the Time Division Multiplexing (TDM)/Local Area Network (LAN) pinfield at the equipment location (EQL) on the top port cabinet. See Figure 4-10.
2. Connect the bus cables as shown in Figure 4-10. The cable is located behind the lower panel when the cabinet is shipped.
Table 4-1. Time Division Multiplexing (TDM) Bus Connections

|  | Cabinet/Slot | Backplane Time Division <br> Multiplexing (TDM)/Local <br> Area Network (LAN) <br> Pinfield at EQL <br> Cabinet/Slot |
| :--- | :---: | :---: |
| Configuration | $\mathrm{A} / 22$ | $\mathrm{~B} / 02$ |
| Processor Port Network <br> (PPN), <br> High or Critical <br> Reliability | $\mathrm{B} / 22$ | $\mathrm{C} / 00$ |
| Expansion Port <br> Network (EPN), <br> Standard, High or <br> Critical Reliability | $\mathrm{C} / 17$ | $\mathrm{D} / 00$ |
| Processor Port Network   <br> (PPN), $\mathrm{A} / 18$ $\mathrm{~B} / 00$ <br> Standard Reliability $\mathrm{C} / 17$ $\mathrm{C} / 00$ <br>  $\mathrm{~A} / 22$ $\mathrm{D} / 00$ $\mathrm{~B} / 17$ | $\mathrm{~B} / 00$ |  |



Figure Notes:

1. Time Division Multiplexing (TDM) bus terminator AHF110 on Time Division Multiplexing)/Local Area Network pinfield (TDM/LAN)
2. Time Division Multiplexing/Local Area Network pinfield (TDM/LAN) at equipment location (EQL) (see Table 4-1 on page 4-15)
3. Time Division Multiplexing (TDM) bus cable WP91716 L3
4. Port cabinet (standard reliability), or duplicate control cabinet (high or critical reliability)
5. Control cabinet
[^0]
## Locate and Connect Inter-Cabinet <br> Cables (ICC)

Connect the Inter-Cabinet Cables (ICC) using these steps:

1. Remove the Inter-Cabinet Cable (ICC) from the lower back shelf of the cabinet.
2. Connect the cables as shown in Figure 4-11 and Table 4-2.

Table 4-2. 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 |



Figure Notes:

1. Pinfield perTable 4-2
2. Backplane
3. Cabinet in Position B
4. Control Cabinet A Position
5. Inter-Cabinet Cables

- Rear of Cabinets Shown

Figure 4-11. Inter-Cabinet Cable (ICC) Connections for Standard Reliability Expansion Port Network (EPN) Cabinet Stack

## Install Fibre-Optic Cables

This section discusses the hardware and methods required to connect and route fibre-optic cables.

The Expansion Port Network (EPN) cabinet is normally positioned next to the Processor Port Network (PPN) cabinet(s), but may also be installed in a different room or a different building. Fibre-optic cables connect the cabinets together.

## Fibre-Optic Cable Operation

Fibre-optic cables carry signals between the cabinets that compose your switch. To do this, the electronic signals at the connectors on the back of a cabinet are converted into optical signals. The optical signals from another cabinet are then converted back into electronic signals. AT\&T provides optoelectronic devices, the 9823-type lightwave transceivers, that perform this task.

A completed signal from one cabinet goes through a transceiver, a fibre-optic cable, and another transceiver to reach another cabinet. If the two cabinets are close together, the optical signal may go through a single, directly connected fibre-optic cable. If the two cabinets are far apart, it may be convenient to connect the cabinets through the cross-connect field.

Figure 4-13 shows how to connect fibre-optic cables for direct connections.
Figure 4-14 shows how to connect fibre-optic cables through a cross-connect field. .

## Locate Fibre-Optic Cable Connections

Packed with the system is a Customer Service Document (CSD) that includes an "Inter-Cabinet Cable Running List." Each row on the list represents a fibre-optic cable connection.

The list includes the AT\&T comcode of the cable to be used, its length (in feet) and the addresses of each cable's source and destination. These addresses include the numbers of the cabinets, carrier positions, and slots to which you are to connect the cables. Use the information from the Running List to determine where to connect each fibre-optic cable.

Figure 4-12illustrates an example Running List.

| Connection <br> From <br> SD67975-01 | Cable <br> Code | Length |  |  |  |  | From |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Cabinet | Position | Slot | Cabinet | Position | Slot |  |  |  |
| CAD3 | 104266465 | 20 ft. | 01 | C | 02 | 02 | B | 02 |  |  |  |
| CAD3 | 104266465 | 20 ft. | 01 | D | 02 | 02 | A | 01 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |

Figure 4-12. Typical Fibre-Optic Cable Running List
In the example Running List in Figure 4-12, connect a cable labeled 104266465 (20 feet long) from Cabinet 1, Carrier C, Slot 2, to Cabinet 2, Carrier B, Slot 2.

NOTE:
The following tasks refer to the Running List and offer typical installation instructions. If any conflict between specific details in the Running List and the instructions given in the following procedures arise, cable your system according to the Running List provided with your system.

## General Rules and Recommendations for

 Connecting Fibre-Optic CablesAlthough fibre-optic cables withstand some misuse, it does require careful handling and routing.

Follow these rules and recommendations when installing fibre-optic cables:

## Rule 1

Cross-connect the fibre-optic cable between two 9823-type lightwave transceivers. That is, run the cable from the connector marked TX on one transceiver to the connector marked RX on the other transceiver, and in reverse for the other cable.

Do this for each connection (row) on the Running List contained in the Customer Service Document (CSD) shipped with your system. See Figure 4-12 for a sample Running List.

## Rule 2

Use the 9823A (shortwave) transceiver for distances of up to 4900 feet. Use the 9823B (longwave) transceiver for distances of up to 25,000 feet. Ensure all 9823As are connected to 9823As and all 9823Bs are connected to the corresponding 9823Bs.

## Rule 3

Route fibre-optic cables away from groups of other cables where they may be stretched by the weight of metal cable bundles, as fibre-optic cables are quite flexible.

## Rule 4

Avoid bending fibre-optic cables to a radius smaller than 1-1/2 inches ( 4 cm ), to prevent mechanical stress on the cables, as they are rather delicate. Plan your use of cable ties to avoid crimping the cable or creating a fixed stress point where, at a later time, movement of the cable causes it to exceed the minimum bend radius.

## Rule 5

Ensure fibre-optic cables are not pressed against any sheet metal edges by subsequently installed cables.

## Recommendation

In some such systems it may be required to run fibre-optic cables with the input/output cables, such as in the cable slack manager or under a raised floor. In these situations, protect the cable by running it in a dedicated area if possible. When you must run the cable with other cabling, protect it by running it through flexible conduit.

In the following illustration, the slot locations are for example purposes only.


## Figure Notes:

1. Processor Port Network (PPN) Cabinet A Slot 2A01 / 9823-Type lightwave transceiver
2. FL2P-P-20 Fiber optic cable
3. Expansion Port Network(EPN) Cabinet A Slot 1A01 / 9823-Type lightwave transceiver
4. Fiber optic cable sheath, containing two fibers, each labeled 1 and 2, respectively

Figure 4-13. Fibre-Optic Cable Installation Between Shortwave Transceivers, Direct Connection


## Figure Notes:

1. Processor Port Network (PPN) Cabinet $A$ Slot 2A01 / 9823-Type lightwave transceiver
2. FL2P-P-20 Fiber optic cable
3. Expansion Port Network (EPN) Cabinet A Slot 1A01 / 9823-Type lightwave transceiver
4. Fiber optic cable sheath, containing two fibers, each labeled 1 and 2, respectively
5. 100A LIU
6. Cross connect field

Figure 4-14. Fibre-Optic Cable Installation Between Longwave Transceivers Through Fibre-Optic Cross-Connect Field

## Raised Floor or Cable Slack Managers

Figure 4-15 shows the recommended fibre-optic cable routing for a singlecarrier cabinet system with a cable slack manager or on a raised floor.

In these situations, use the following steps to route the cable:

1. Route the fibre-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.
2. Dress the cable running up the back of the cabinets by tie wrapping the cable to the outside of the B25A cable clamp (do not put the cable inside the clamp holding the B25A cables).

## A CAUTION:

Do not route fibre-optic cables and the B25A cables together.


Figure Notes:

1. B25A Cables
2. Loop and Drape Excess Fiber Optic Cable. Do Not Route Fiber Optic Cable and B25A Cables Together.
3. Fiber Optic Cable Sheath
4. Port Cabinet
5. Control Cabinet

Figure 4-15. Single-Carrier Cabinet Fibre Routing

## Cable Connections

When routing fibre-optic cables, connect the cables (according to the Running List provided in the Customer Service Document (CSD)) to the transceiver, and plug the transceiver into the appropriate slot on the back of the cabinet, as illustrated in Figure 4-16 through Figure 4-18.

## Standard Reliability Fibre-Optic Cable

## Connections

For Standard Reliability system configuration, route the fibre-optic cable as illustrated below.


Figure 4-16. Fibre-Optic Cable Connections for Standard Reliability Single-Carrier Cabinet System

## High Reliability Fibre-Optic Cable Connections

For High-Reliability system configuration, route the fibre-optic cables as illustrated below.


Figure 4-17. Fibre-Optic Cable Connections for High Reliability Single-Carrier Cabinet System

## Critical Reliability Fibre-Optic Cable

## Connections

For Critical Reliability system configuration, route the fibre-optic cables as illustrated below.


Figure 4-18. Expansion Port Network Fibre-Optic Cable Connections for Single-Carrier Cabinet with Critical-Reliability Switch

## Verify Port Cabinet Address Plugs

The Cabinet Address Plug is a jumper and is required for single-carrier port cabinets only.

On the backplane of a port cabinet, to the right of slot 00, a group of six pins is marked for the cabinet (carrier) address plug jumper connections. Verify the address plug for each port carrier is in the correct location (see Figure 4-19).


## Figure Notes:

1. Address Plug
2. Jumper
3. Right side at back of cabinet
4. Jumper
5. Back plane of slot 00

## Install Back Panels

Install the back panels, tightening the screws when all panels are in place. Allow the screws labeled callout 4 in Figure 4-21 on page 4-31 to remain loose.

## Install Ground Plates

The ground plate (Figure 4-20) provides the ground connection for the cabinets and stabilizes the cabinets.


## Figure Notes:

1. Front Ground Plate
2. Back Ground Plate
3. Battery

- Side View of 2-Cabinet Port Network

Figure 4-20. Ground Plate

See Figure 4-22 and Figure 4-23for illustrations of the ground plate and cable clamp positions.

## Install Ground Plates on Systems with Earthquake Protection

Refer to Appendix Bfor earthquake protection procedures.

## Install Ground Plates on Systems without Earthquake Protection

A ground plate is required to connect each cabinet together (see the following figures). To install the ground plate, complete the following steps:

1. At the back of the cabinets, replace the upper and lower panels (allowing the screws labelled with callout 4 to remain loose). See Figure 4-21.


## Figure Notes:

1. Cabinet in A position
2. Cabinet in B position
3. Ground plate to attach between cabinets
4. Screws to loosen

Figure 4-21. Back Panel Screw Locations
2. At the upper cabinet, place the top of the ground plate over the bottom of the lower-back panel so the four screws at the bottom of the lower-back panel fit through the four ground plate keyhole slots. The bottom edge of the ground plate should overlap at the top edge of the lower back panel.
3. Slide the ground plate down over the top of the upper-back panel of the lower cabinet so the four screws attaching the upper-back panel fit through the four lower ground plate slots.
4. Ensure the exposed portion of the Time Division Multiplexing (TDM) bus cable and inter-cabinet cables (ICC) do not get pinched between the cabinets.
5. Tighten all screws.
6. Repeat this procedure for each cabinet.


Figure Notes:

1. Cabinet Clip
2. Back Ground Plate
3. Battery

- Side View of 2-Cabinet Port Network

Figure 4-22. Single-Carrier Cabinet Ground Plate, Cabinet Clip, and Battery Locations

## Install Cable Clamps

At the back of the cabinets, on each ground plate, install two cable clamps using the screws provided (see Figure 4-23). These clamps hold the 25-pair input/output or cross-connect field cables in place.


## Figure Notes:

1. Cable Clamp
2. Cabinet Trough for Port Cables
3. Cable Slack Manager
4. Spare Center Troughs
5. Switch Cabinet

Figure 4-23. Location of Cable Clamps

## Install Front Plates

The front plates provide electromagnetic radiation and radio frequency (RF) shielding and earthquake protection.

If you do not have a requirement for electromagnetic radiation shielding, radio frequency shielding, or earthquake protection, use the cabinet clips as described in this section.

## Install Front Plates on Systems with Earthquake Protection

Refer to Appendix B to install the front plates to help provide earthquake protection and radiation shielding.

Front plates are used in place of cabinet clips (as described in Appendix B), for earthquake protection.

## Install Cabinet Clip On Systems without Earthquake Protection

A cabinet clip is required between each cabinet to stabilize the cabinets.


Figure 4-24. Cabinet Clip
At the front of the cabinets, install a cabinet clip (Figure 4-24) between each cabinet 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 4-25).


## Figure Notes:

1. Port Cabinet $D$
2. Port Cabinet $B$
3. Port Cabinet C
4. Basic Control Cabinet A
5. Cabinet clips

Figure 4-25. Location of Cabinet Clips

## Install Telecommunications Cabling



This chapter describes how to install telecommunications cables and crossconnect equipment.

The specific equipment being installed varies on what was ordered for your site. Use the material presented in this chapter as an example.

## Install the Cross-Connect Field

This section describes how to connect to the cross-connect field.

## Typical Cross-Connect Field Using 110-Type Hardware

The cross-connect field is normally located directly behind the switch cabinet. Figure 5-1 shows a typical cross-connect field installation using 110A-type terminal blocks. Allow at least 3 feet (1 meter) between the back of cabinet and the 110-type hardware.


## Figure Notes:

1. D Ring
2. Station cables
3. Trunk auxiliary field
4. Switch cabinet
5. Port distribution field
6. Z113A cable slack manager
7. Station distribution field
8. 25-pair cable to switch cabinet

## Figure 5-1. Typical Cross-Connect Field Installation: 110A-Type Terminal Blocks

In Figure 5-1, approximately 576 4-Pair or 768 3-Pair Station Capacity is illustrated.

## Hardware Installation

These hardware installation instructions are written so one system technician can install the following equipment:

- Cross-connect field
- Cable slack managers
- Sneak current protector (507B)

The preferred cross-connect field location is directly behind the switch cabinet.

## Install Cable Slack Managers

To install the cable slack managers (Figure 5-2), proceed as follows:

1. Place the Z113A cable slack manager against the wall under the crossconnect field, aligning the left side of the cable slack manager with the first terminal block of the trunk/auxiliary field.
2. Place the next cable slack manager beside the previous cable slack manager. Align the tabs and interlocks and snap the cable slack managers together.
3. Repeat Step 2 until all cable slack managers are installed.

## NOTE:

Nine holes (1/4-inch or 0.6 cm ) are provided in a cable slack manager base for earthquake mounting. Also, if a cable slack manager base is mounted on an uneven floor, shims may be required to level it and insure proper fit of the covers. Holes are provided in the sides of the base for bolting cable slack managers together. Bolts and shims are not provided.

## Route Cables from Cabinet to CrossConnect Field

Use the following guidelines when routing cables from the cabinet to the crossconnect field.

- When cable routing is to the top/bottom of the cross-connect field, each port cable is connected at the cabinet and routed along the front trough of the cable slack manager to the connecting/terminal block. The cable is then terminated.
- Enough slack must be left at the cabinet end of the cable to allow for proper dressing of the cables (Figure 5-3).
- Route the cable from the cabinet to the wall. Place the cable beside one of the rows of columns in the cable slack manager (see following note).


## NOTE:

Retainers mounted on the columns keep the cable from protruding above the top of the base of the cable slack manager.

- Determine the length of the cable required to reach from the cable slack manager to the assigned connecting/terminal block.
- The cable must be supported on the wall.
- Cable slack is stored by coiling the cable around the columns in the cable slack manager. The first run should always go across the full length of the five columns in the cable slack manager.
- Connect the cable to the assigned connecting/terminal block.



## Figure Notes:

1. Cable Clamp
2. Switch Cabinet
3. Trunk Auxiliary Field
4. Cabinet Trough for Port Cables
5. Spare Center Troughs

Figure 5-2. Cable Routing Through Cable Slack Manager for Single Cabinet Installation


Figure Notes:

1. B25A cables
2. Loop and Drape Excess Fibre-Optic Cable. Do Not Route Fibre-Optic Cable and B25A Cables Together.
3. Fibre-Optic Cable Sheath
4. Port Cabinet
5. Control cabinet

Figure 5-3. Typical Port Cable Installation at Switch Cabinet

## Connect Control Carrier Outputs Cable

Plug the connector cable in the AUX connector on the rear of the control carrier. Route the connector cable through the cable slack manager to the assigned connecting block in the yellow field of the trunk/auxiliary field.

Refer to Table 9-9for pinout information.
The output wiring connections for the Initialization Administration System (INADS) trunk interface are described in "Install Initialization and Administration System (INADS) Interface" on page 9-21.

## Label Cables

Label the cables as described in this section.

The port label shown in the next figure is installed on both ends of the 25-pair cables connecting to the trunk/auxiliary field and/or the distribution field. See Table 5-1 for the cable label and colour code. The building and floor labels connect from the equipment room to a site/satellite location on another floor or in another building. The auxiliary circuits connect to the trunk/auxiliary field.


Figure 5-4. Equipment Room Cabling Labels

Table 5-1. Cable Labels

| Number | Label Name | Range | Colour |
| :--- | :--- | :--- | :--- |
| 1 | Port Label | 1A1-1A10, 1B1-1B20, 1C1-1C20, <br> 1D1-1D20, 1E1-1E20 | Purple |
| 2 | Building | Field Identified | Blue/Yellow |
| 3 | Floor | Field Identified | Blue/Yellow |
| 4 | Auxiliary Cable | Field Identified | Yellow |
| 5 | Site or Satellite | A-F and/or Field Identified | Blue/Yellow |

## Install Trunk Cables Among Network Interface, Sneak Current Protector, and <br> Switch Cabinet

The 1-pair external trunks are installed by the local telephone company in the trunk auxiliary field. Tie trunks also appear in the trunk auxiliary field. Refer to callout 2 on Figure 5-1 on page 5-2.

Route the incoming trunk cables through the lightning protector and then to the Sneak Current Protector (507B). The 25-pair cable then goes through the trunk cross-connect field and then to the port.

## Install Generic 3 Management Terminal

This chapter contains Generic 3 Management Terminal (G3-MT) requirements. Also detailed is:

- How to directly connect a terminal to the switch
- How to set up the terminal
- Alternative procedure to remotely connect a terminal to the switch.

The Generic 3 Management Terminal (G3-MT) shipped with the system is a 715 Management Terminal ( 715 MT ). See the documentation packed with the terminal for information not contained in this chapter.

## Generic 3 Management Terminal (G3-MT) Requirements

One Generic 3 Management Terminal (G3-MT) should be located in the same equipment room as the cabinet or in sight of the cabinet and must be within 50 feet ( 18 meters) of the cabinet. It is strongly recommended the terminal be connected directly to the switch cabinet with the shortest possible cable. If desired, another terminal can be connected remotely.

## CAUTION:

When the terminal is being installed to support a DC-powered system or a system requiring electromagnetic shielding, a 116A Electronic Industries Association (EIA) ground isolator (comcode 106005 242) must be installed at the back of the switch cabinet as shown in the schematic in Figure 6-2 and as described in this chapter.

Mains power for the terminal must be obtained from a standard voltage source in the range of 115 to 230 volts AC in the equipment room. The terminal is auto-sensing and automatically adjusts to receive the type of AC power at the site.

An optional printer may be used with the terminal to provide hard copies of administration data. A parallel printer should be connected to the printer or PAR port. A serial printer should be connected to the Data Communication Equipment (DCE) port.

Always connect the terminal cable to the Data Terminal Equipment (DTE) port on the back of the terminal. See Table 6-1.


## Figure Notes:

1. Parallel port to which optional parallel printer is connected.
2. Data Communication Equipment (DCE) port to which optional serial printer is connected.
3. Data Terminal Equipment (DTE) port to which cable from switch is always connected. No matter what the position of the Data Terminal Equipment (DTE) port, always connect the cable from the switch to the port.

Figure 6-1. Partial Rear View of one version of the 715 Management Terminal (715 MT)

## Connect Generic 3 Management Terminal (G3-MT)

1. Unpack the terminal and inspect for damage.
2. If you have a DC-powered switch control cabinet or if you need electromagnetic shielding, locate the 116A Electronic Industries Association (EIA) Ground Isolator (comcode 106005 242) and install it in the TERMINAL connector on the rear of the switch control cabinet (for standard reliability, unduplicated systems); or in the DUPLICATION OPTION TERMINAL connector (for high and critical reliability, duplicated systems), and skip to Step 4 below. See Figure 6-3 for the position of these two connectors at the rear of the switch cabinet.

If you do not have a DC-powered switch control cabinet, go directly to Step 3 below.
3. Use an M25B Electronic Industries Association (EIA) shielded cord (cable code $\mathrm{H} 600-426$ ) or an equivalent to connect between the terminal DTE connector and the TERMINAL connector (unduplicated systems) or the DUPLICATION OPTION TERMINAL (duplicated systems) on the rear of the switch control carrier and skip to Step 5 below.
4. For DC-powered cabinets or for electromagnetic shielding, use an M25B (Electronic Industries Association) shielded cord (cable code H600-426) or an equivalent to connect between the terminal DTE port and a 116A Electronic Industries Association (EIA) ground isolator (comcode 106005 242) mounted in the TERMINAL connector (unduplicated systems) or the DUPLICATION OPTION TERMINAL connector (duplicated systems) position on the rear of the control carrier.


## Figure Notes:

1. TN786B Circuit Pack (Processor Board)
2. Rear Connection Panel "A" Carrier Position, labeled "TERMINAL" for unduplicated systems or "DUPLICATION OPTION TERMINAL" for duplicated systems.
3. In a DC-powered system and for systems needing electromagnetic shielding, a 116 Electronic Industries Association (EIA) Ground Isolator (comcode 106005 242) is required
4. M25B Cable
5. Generic 3 Management Terminal (G3-MT)
6. TN775 Circuit Pack (Maintenance Board)
7. Processor Port Network (PPN)
8. Expansion Port Network (EPN)
9. Distance between units not to exceed 50 feet (18 meters)

Figure 6-2. Direct Connections to Generic 3-Management Terminal (G3-MT) and Electronic Industries Association (EIA) Ground Isolator
5. Connect the keyboard cord to the KBD jack on the terminal.
6. If ordered, connect the optional printer to the appropriate place at the back of the terminal. Connect a parallel printer to the printer or PAR port or a serial printer to the Data Communication Equipment (DCE) port.
7. Connect AC power cord of the terminal to the selected AC receptacle in the equipment room and turn on the terminal.


Figure 6-3. Duplication Optional Terminal and Terminal Connectors on the Control Cabinets

Figure 6-3 shows the two possible positions on the back of the switch control cabinet for connecting the M25B cord between the switch and the terminal; or, for DC powered systems and for electromagnetic shielding, for installing the 116A Electronic Industries Association (EIA) Ground Isolator: the DUPLICATION OPTION TERMINAL connector for high and critical reliability (duplicated) systems in the top illustration and the TERMINAL connector for standard reliability (unduplicated) systems in the bottom illustration.

## Set Up G3 Management Terminal <br> (G3-MT)

Use the following procedures to set up the 715 Management Terminal options:

## NOTE:

These procedures may change as the model of 715 Management Terminal (G3-MT) shipped with DEFINITY System Generic 3 changes. Consult the documentation shipped with the terminal for set up instructions.

1. Hold down the CTRL key while pressing F1 and verify the terminal setup screen is shown.

Function keys (F1, etc.) are located at the top of the keyboard of the terminal. Lighted rectangles (windows) appear at the bottom of the screen and correspond to the function keys across the top of the keyboard.
2. Press $\mathrm{F7}$ to make sure the default values are set.
3. Using the up/down arrow keys on the keypad, position the cursor at the Keyboard Options (per window) field and press RETURN.
4. Using the up/down arrow keys on the keypad, position the cursor at the Enter Key field. Then under Primary/Window 1 press the ESC key, then hold down the SHIFT key and type $s$ and then $B$. This will enter escapeSB in this field.
5. Press F5-SAVE to save the changes then press F1 SETUP MENU and exit the Setup Menu screen.

Table 6-1. Required Settings for 715 Management Terminal to Communicate with Switch

| Terminal Option | Value |
| :--- | :--- |
| Font Size | Large (default) |
| Autowrap | Off (default) |
| Baud Rate | 9600 (default) |
| Stop Bit | 1 (default) |
| Data Bits | 7 (default) |
| Parity | Space (default) |
| Check Parity | Yes (default) |
| Transmission Flow Control | X on, X off (default) |
| Enter Key | escapeSB (must be set) |

## Remotely Connect Generic 3 Management Terminal (G3-MT)

A secondary (and optional) terminal used for purposes other than maintenance can be installed at some distance from the switch. Typical remote connections are shown in the schematic in Figure 6-4 below.


## Figure Notes:

1. External modem pool
2. 7400 A data module
3. Line Cord
4. Cross Connect Field
5. B25A Cable
6. TN754 Circuit Pack
7. Public Network
8. 103A or Modular Wall Jack
9. Modem
10. When a DB9 is used on the back of a personal computer (PC), use ED3-1-70, G115 to convert DB9 to DB25.
11. Call Detail Recording Utility, CAS+, Property Management System, Basic Call Management System, Remote Management Terminal, System Journal Printers, Cost Allocator
12. Remote Management Terminal or Monitor 1
13. M25A Cable
14. This circuit pack can be any of the following: TN747, TN753, TN760, TN767, TN464, TN2147, TN465, etc.
15. This circuit pack can be any analog circuit pack: TN769, TN742, TN746, TN2183 etc.
16. DEFINITY System Generic 3 switch

Figure 6-4. Typical Remote Connections from Generic 3 Across Public Network to Terminal and Other Remote Devices

## Activate the System

## 7

This chapter contains procedures for activating the system and bringing the switch up to a non-alarm (no red lights) state. This chapter details:

- Powering up the switch
- Installing translation flash-memory card
- Powering up AC-powered switch
- Powering up DC-powered switch
- Verifying messages on management terminal
- Logging in to the system
- Setting required country options
- Changing craft password
- Setting date and time
- Setting system maintenance parameters
- Saving translations

After the system is activated, the telephones and other equipment need to be installed (see Chapter 9, "Install and Wire Telephones and Other Equipment"). The system is administered by adding the customer data to match the wiring, telephones, and other equipment (see the reference to the book at the end of Chapter 9, "Install and Wire Telephones and Other Equipment".) The telephones and other equipment are tested (see Chapter 10, "Test Telephones and Other Equipment").

## A caution:

While performing these procedures, you may need to reseat circuit packs. To prevent damage from static electricity, always wear an Electromagnetic

Compatibility (EMC) wrist strap (comcode 900698 226) when handling circuit packs or other switch components.

## Power Up Switch

To power up the switch, do the following:

## Install Translation Flash-Memory Card

1. Verify the write switch on the white Translation Flash-Memory Card (Translation Card) shipped with the system is positioned so the card can be written. The write switch is shown in the correct position in Figure 7-1.
2. Install the Translation Card in the TN777B network control circuit pack. Insert the card into the slot in the direction indicated by the arrow on the card's label as shown in Figure 7-1.


Figure Notes:

1. Insert card in direction of arrow into the slot.
2. Slot on TN777B circuit pack
3. Write switch positioned correctly

Figure 7-1. Write Switch on DEFINITY Memory Card

## Power up AC－Powered Switch

1．Ensure the associated circuit breakers on the AC power panel are ON．

## $\equiv$ NOTE：

If the system is configured for High or Critical Reliability，power－up the Expansion Port Network（EPN）cabinet first，then the Processor Port Network（PPN）cabinet．Always power up the Control Cabinet last in any multi－cabinet configuration．

2．At the rear of each cabinet，set the circuit breaker to ON．Go to＂Verify Messages．＂

## 三 NOTE：

This action starts the system initialization and test．All red lights on the circuit packs go on and then off．

## Power up DC－Powered Switch

1．At the DC Battery Cabinet，set circuit breaker to $\mathbf{O N}$ ．

## $\equiv$ NOTE：

If the system is configured for High or Critical Reliability，power－up the Expansion Port Network（EPN）cabinet first，then the Processor Port Network（PPN）cabinet．Always power up the Control Cabinet last in any multi－cabinet configuration．

2．At DC Power Cabinet，set the circuit breaker（s）on the associated rectifiers ON．

3．At the rear of each Power Distribution Unit，set the circuit breaker to ON．

## 三 nOTE：

This action starts the system initialization and test．All red lights on the circuit packs go on and then off．Some red lights may come back on in a few seconds or a few minutes and will be turned off by other procedures in this chapter．

## Verify Messages on Terminal

1．After several minutes，verify all tests pass．

## 三 NOTE：

If any of the terminal messages indicate a test has failed or the message＂spe down mode＂is displayed，refer to DEFINITY Communications System Generic 1 and Generic 3i／s／vs Maintenance，555－204－105，to clear the trouble，or call your AT\＆T representative．

```
TN786 FLMM Release 1.8.0
INVOKING EMERGENCY TRANSFER
    ROM CHECKSUM TEST ( = 9CAE ) PASSED
        SOFT INT TEST PASSED
        NMI TEST PASSED
        READ_WRITE MEMORY PASSED
        MEMORY BOARD 1 PARITY BIT TEST PASSED
        MEMORY FUNCTIONAL TEST PASSED
    FLASH TEXT CHECKSUM ( = EF3E ) PASSED
RESET 4 (REBOOT) PERFORMED
```

PASSED
PASSED
PASSED
PASSED
PASSED
PASSED

Screen 7-1. Typical Turn-On Messages for Systems with FLASH Memory
2. About 2 minutes after REBOOT PERFORMED is displayed, verify the terminal screen displays:

Login:
NOTE:
Most red lights will come on and go off again at this point. Some red lights will stay on until the country options are administered in the next pages.

## Introduction to Terminal 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 switch to perform a specific function. The commands are arranged in hierarchy of keywords; that is, enter one command to take you 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 you want to do. Examples of permissible entries include add, duplicate, change, remove, display, list, and save.
- OBJECT is the second part of the command and specifies the particular object you want to administer. 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 acceptable. However, typing the entire command will always work.

## NOTE:

The craft login may not be allowed to perform some of the steps needed to initialize the switch. If access is denied to some of these procedures, contact your AT\&T representative for assistance.

## Getting Help

Use the HELP key for a list of options and the CANCEL key to back out of any command.

## Log in to the System

To log on the system, do the following:

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 will display the software version.
5. Verify the screen display is similar to:

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

6. Type the number of your management terminal and press ENTER.
7. Verify the screen displays:
command:

## Set Required Country Options

Certain country options need to be set to turn red failure indication lights off on the circuit packs.

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

The following screen is displayed. The cursor is set on Companding Mode line.

```
Change system-parameters country-options Page 1 of 21
SYSTEM PARAMETERS COUNTRY-OPTIONS
            Companding Mode: A-Law Base Tone Generator Set: 1
        440Hz PBX-dial Tone? n 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
TONE DETECTION PARAMETERS
Tone Detection Mode: 5
Dial Tone Validation Timer
(msec) :
Interdigit Pause:
```

3. The default is Mu-Law. If your country uses A-Law companding, type A-Law. If it uses Mu-Law and Mu-Law is displayed, go to Step 4 below.

Companding mode can be A-law or Mu-law. The switch should have been shipped with the correct Tone Detector circuit packs for your country. If you have TN420C you must use A-law. If you have TN748 or TN756 you must use Mu-law. If you have TN2182, then your companding mode is dictated by your local practices. Administering the correct companding mode will turn off any red lights on these circuit packs or on the tone-clock boards (for example TN780).
4. 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 indication lights off. Refer to Table 7-1 for a list of the country codes.

Table 7-1. Country Codes

| Country | Country Code | Country | Country Code |
| :--- | :--- | :--- | :--- |
| global | 0 | Spain | 11 |
| 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 |

5. If all the red lights do not go off, reseat (unplug and reinsert) any purple-labeled circuit packs displaying red lights.

## 1. CAUTION:

To avoid a disk crash, never reseat 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 DEFINITY AUDIX assembly. See Appendix C, "DEFINITY AUDIX System Power Procedures"for the procedure for manually shutting down and powering up DEFINITY AUDIX System.

## A. CAUTION:

Before attempting to reseat white-labeled control circuit packs or the purple-labeled tone detector/generator circuit pack (in the single-carrier cabinet only), first power down the switch.
6. If the red lights still do not go off, read the note below and then refer to DEFINITY Communications System Generic 1 and Generic 3i/s/vs Maintenance, 555-204-105, to resolve the trouble, if necessary.

三 NOTE:
Ignore the red alarm indication light on the TN767 or TN464 DS1 circuit pack until after the Digital Service Level 1 (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.

## A caution:

After the "craft" 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 7-2). To change the "craft" password, perform the following.

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 7-2. Typical Change Password Screen
3. Verify the screen displays Change Password Screen.

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.
Cursor is positioned on "Login's Password:".
5. Enter selected new password (see note below).

## NOTE:

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.

Cursor is positioned on "Reenter Login's Password:".
7. Type new password again.
8. Press ENTER.
9. Verify the screen displays:
command successfully completed
command:

## Set Date and Time

The system date and time are set using the Set Date and Time Screen (see Screen 7-3). This screen is displayed on the terminal screen and is changed with the terminal keyboard. To set the system time and date, perform the following:

1. Verify the screen displays:
command:
2. Type set time. Then press ENTER.
3. Verify the screen displays Set Date and Time Screen (shown below).

Cursor is positioned on Day of the Week: field.

```
set time
Page 1 of 1
DATE AND TIME
DATE
    Day of the Week:
```

$\qquad$

``` Month:
``` \(\qquad\)
```

Day of the Month

``` \(\qquad\)
Year: \(\qquad\)
```

TIME

```
\(\qquad\)
```

Hour:
Minute:
Second: $x x$

```

Screen 7-3. Typical Date and Time Screen
4. Type day of week in English (Sunday through Saturday) and press TAB to move to next field. SeeTable 7-2 for English day of the week names.

Cursor is positioned on Month : field.

Table 7-2. English Day of the Week Names
\begin{tabular}{l|l}
\hline Day Number & Day Name \\
\hline 1 & Sunday \\
\hline 2 & Monday \\
\hline 3 & Tuesday \\
\hline 4 & Wednesday \\
\hline 5 & Thursday \\
\hline 6 & Friday \\
\hline 7 & Saturday
\end{tabular}
5. Type current month in English (January through December) and press TAB to move to next field. See Table 7-3 for English month names.
Cursor is positioned on Year: field.

Table 7-3. English Month Names
\begin{tabular}{l|l}
\hline Month Number & English Month Name \\
\hline 1 & January \\
\hline 2 & February \\
\hline 3 & March \\
\hline 4 & April \\
\hline 5 & May \\
\hline 6 & June \\
\hline 7 & July \\
\hline 8 & August \\
\hline 9 & September \\
\hline 10 & October \\
\hline 11 & November \\
\hline 12 & December
\end{tabular}

Cursor is positioned on Day of the Month: field.
6. Type day of month (1 through 31) and press TAB to move to next field.

Cursor is positioned on Year: field.
7. Type current year (for example, 1995) and press TAB to move to next field.

Cursor is positioned on Hour : field.
8. Type current hour for 24 -hour clock (see Table 7-4) and press TAB to move to the next field.

Cursor is positioned on Minute : field.
9. Type current minute ( 0 through 59).

Seconds cannot be set.
10. Press ENTER when the information is correct..

Table 7-4. Conversion to \(\mathbf{2 4 - H o u r ~ C l o c k ~}\)
\begin{tabular}{llll}
\hline \begin{tabular}{lll} 
Standard Time \\
12-Hour
\end{tabular} & 24-Hour & Standard Time & \\
\hline 12:00 midnight & 0000 & 12-Hour & 24-Hour \\
1:00 am & 0100 & \(1: 00\) noon & 1200 \\
2:00 am & 0200 & \(2: 00 \mathrm{pm}\) & 1300 \\
3:00 am & 0300 & \(3: 00 \mathrm{pm}\) & 1400 \\
4:00 am & 0400 & \(4: 00 \mathrm{pm}\) & 1500 \\
5:00 am & 0500 & \(5: 00 \mathrm{pm}\) & 1600 \\
6:00 am & 0600 & \(6: 00 \mathrm{pm}\) & 1700 \\
7:00 am & 0700 & \(7: 00 \mathrm{pm}\) & 1900 \\
8:00 am & 0800 & \(8: 00 \mathrm{pm}\) & 2000 \\
9:00 am & 0900 & \(9: 00 \mathrm{pm}\) & 2100 \\
10:00 am & 1000 & \(10: 00 \mathrm{pm}\) & 2200 \\
11:00 am & 1100 & \(11: 00 \mathrm{pm}\) & 2300 \\
\hline
\end{tabular}
1. Verify the screen displays:
```

"command successfully completed"
"command:"

```
2. Type display time, and press ENTER to verify date/time data.

\section*{NOTE:}

The Set Date and Time Screen is displayed showing all data entered in the previous steps followed by:
command:

\section*{Set System Maintenance Parameters}
\(\equiv\) NOTE:
If you do not have a TN778 circuit pack, skip this procedure and proceed to "Save Translations" on page 7-15.
1. Verify the terminal screen displays:
command:
2. Type change system-parameters maintenance and press ENTER.
\(\equiv\) NOTE:
Verify the screen displays Maintenance-Related System Parameters Screen (see Screen 7-4). The screen displays the default values and the cursor is positioned on Product Identification: line.
display system-parameters maintenance Page 1 of 2
MAINTENANCE-RELATED SYSTEM PARAMETERS
OPERATIONS SUPPORT PARAMETERS
Product Identification:
OSS Telephone Number:
Alarm Origination Activated? n
Cleared Alarm Notification? n
Restart Notification? n
Test Remote Access Port? \(n\)
CPE Alarm Activation Level: none
Packet Bus Activated? n
Customer Access to INADS port? n
SCHEDULED MAINTENANCE
Start Time: 01 : 00
Daily Maintenance: dail y
Save Translation: dail y
Control Channel Interchange: no
System Clocks Interchange: no
SPE Interchange: no
EXP-LINK Interchange: no

Screen 7-4. Typical Display System-Parameters Maintenance Screen (Page 1)
3. Move the cursor by pressing TAB to move down the screen from field to field and enter \(\mathbf{y}\) in the Packet Bus Activated? field to indicate you have a TN778 circuit pack.

This is the only field needing change on this screen to turn the red lights off.
4. Press ENTER when the information is correct.
5. Verify the screen displays:
```

command successfully completed

```
command:

\section*{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 are required. For high or critical-reliability systems, two translation cards plus two backups are required.

\section*{A 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 can 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, the screen displays something like this:


Screen 7-5. Typical Save Translation Screen
4. Verify a \(\mathbf{0}\) is displayed in the Error Code column for each switch processing element in the system. A 0 indicates the save translation was successfully completed for the translation card. If a 0 did not appear, the save translation did not complete. Record the "error code number" and the "error message" and notify your AT\&T representative.
5. Remove the original translation card(s) from the TN777B(s) and replace it or them 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 it or them with the original translation card(s).
8. Label the backup card(s) with the date and time of the backup. A special notation should be put on the cards to clearly distinguish them from other such devices.
9. Store the backup in a secure place.

\section*{Logoff}

Log off the system to prevent unauthorized changes of the data. To log off:
1. Type logoff and press ENTER.
2. Verify the screen displays:

Login:

\section*{\(\Longrightarrow\) NOTE:}

The login prompt indicates you have logged off the system and it is ready for another person to log on.

\section*{Test the System}

The following tests provide verification of the Time Division Multiplexing (TDM) cables and terminators, and fibre-optic inter-cabinet cables (ICC). If a FAIL Result code is seen or other problems are indicated, check these cables. If problems persist, refer to the U.S. English book, DEFINITY Communications System Generic 1 and Generic 3i Maintenance, 555-104-205.

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). Then test expansion interfaces, tone-clock(s), Time Division Multiplexing (TDM) buses, and duplication in the Expansion Port Networks (EPNs).

\section*{NOTE:}

Circuit pack positions are usually given by cabinet, carrier (within cabinet), and slot (within carrier). They may also be given by port (within slot). 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.

\section*{Check the 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 the example shown below:


Screen 8-1. Example System Status Screen for Cabinet 1

\section*{NOTE:}

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

\section*{NOTE:}

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

三 NOTE:
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 8-1 refers to cabinet 01, carrier A, and slot 01.

NOTE:
Refer to the U.S. English book, DEFINITY Communications System Generic 1 and Generic 3i Maintenance, 555-104-205, for a detailed interpretation of this screen.


Screen 8-2. Example System Status Screen for Cabinet 2

\section*{三 note:}

See the notes associated with Screen 8-1 on the previous page.


Screen 8-3. Example System Status Screen for Cabinet 3

\section*{三 NOTE:}

See the notes associated with Screen 8-1 on the previous page.
三 NOTE:
In the example of Screen 8-3, cabinet 3 (the second Expansion Port Network (EPN)) is not connected to the system.

\section*{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 screens similar to the example shown below. Check the report on the screen with the equipment installed and 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: BOARD NOT PRESENT Or CONFLICT.


Screen 8-4. Example System Configuration Screen - Page 1

\section*{NOTE:}

Under Assigned Ports, a "u" indicates unassigned ports and a number indicates the port has been translated.


Screen 8-5. Example System Configuration Screen — Page 2


Screen 8-6. Example System Configuration Screen - Page 3


Screen 8-7. Example System Configuration Screen — Page 4


Screen 8-8. Example System Configuration Screen - Page 5

\section*{Test Time Division Multiplexor (TDM) Bus in Processor Port Network (PPN)}
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 as shown in the example on the following page.


Screen 8-9. Example Test Results for Time Division Multiplexing (TDM) 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.

\section*{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 the example shown on the following page:


Screen 8-10. Example Test Results for Tone-Clock 1A

\section*{Test Switch Processing Element (SPE) \\ Duplication Memory Shadowing Link}

For High and Critical Reliability systems, test the Switch Processing Element (SPE) duplication; memory shadowing link.
1. Verify the screen displays:
command:
2. Type test shadow-link and press ENTER.
3. Verify the screen displays test results similar to the example shown on the following page:


Screen 8-11. Example Test Results for Switch Processing Element Duplication Memory Shadowing Link
4. If result is FAIL for any test, check the Inter-Cabinet Cables (ICC) in the Processor Port Network (PPN).

\section*{Test Duplicated Switch Processing Element (SPE) Interchange}

For High and Critical Reliability systems, check the Switch Processing Element (SPE) interchange.
1. Verify the screen displays:
command:
2. Type status system all-cabinets and press ENTER.
3. Verify the screen displays test results similar to the example shown on the following page:


Screen 8-12. Example System Status Report for All Cabinets
4. Note the MODE of SPE 1A and 1B.
5. Type refresh spe and press ENTER.

Command successfully completed should be displayed.
6. Type reset system interchange and press ENTER.

This causes the terminal to log off.
7. Log in as craft again. See Chapter 7, "Activate the System"for more information. Remember to use the new password established for craft.
8. Type status system cabinets-all and press ENTER.
9. A screen similar to the following should be displayed:


Screen 8-13. Example System Status Report for All Cabinets after Reset
10. Note the MODE for SPE 1 A and 1 B should have changed from that noted in Step 4.

\section*{Test Expansion Interface Boards}

Check each expansion interface board in the system.
1. Verify the screen displays:
command:
2. Type test board \(\mathbf{x x x}\) where \(\mathbf{x x x}\) is the cabinet, carrier, and slot (see note on page 8-1) for an expansion interface board in the system, and press ENTER.

\section*{三 NOTE:}

Labels on the port network and carrier containing the board and the label on the strip under the board contain this information.
3. Verify the screen displays test results similar to the example shown below: This example is for board 2 a 01 .


Screen 8-14. Example Test Results for Expansion Interface Board 2A01

If any result is FAIL, check the connections for the associated fiber optic link.
4. Repeat Steps 2 and 3 for each expansion interface board in the system.

\section*{Test Time Division Multiplexer (TDM) for each Expansion Port Network (EPN)}

Check each Time Division Multiplexer (TDM) for each Expansion Port Network (EPN) in the system.
1. Verify the screen displays:
command:
2. Type test tdm port-network \(\mathbf{2}\) and press ENTER.
3. Verify a test results screen similar to the one below is displayed:


Screen 8-15. Example Test Results for Time Division Multiplexing (TDM) 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.

\section*{Test Tone-Clock for each Expansion Port Network (EPN)}

Check each Tone-Clock for each Expansion Port Network (EPN) in the system.
1. Verify the screen displays:
command:
2. Type test tone-clock 2A where 2A is the cabinet (see note on page 8-1) and carrier number for one of the Tone-Clocks installed, and press ENTER.

If any Result is FAIL, check the associated time division multiplexing bus cables and intercabinet cables in the Expansion Port Network.
3. Repeat Step 2 for each installed Tone-Clock board.

\section*{Test Tone-Clock Interchange for each Expansion Port Network (EPN)}

If the system is set up with 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 \(\mathbf{x x}\) where \(\mathbf{x x}\) 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).

\section*{Test Expansion Interface Exchange for Each Expansion Port Network (EPN)}

If the system is set up with 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.
```

status system all-cabinets
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:

```

\section*{Screen 8-16. Example of System Status before Expansion Link is Set}
3. Type set expansion-link \(\mathbf{x x x x}\) where \(\mathbf{x x x x}\) is the either one of the cabinet, carrier, and port (see note on page 8-1) locations of the standby expansion link.
4. Verify the screen displays:

Command successfully completed
Command:
5. Type status system all-cabinets and press ENTER.


Screen 8-17. Example 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).

\section*{Check Circuit Pack Configuration \\ Again}

Review the circuit packs contained in the system to ensure all circuit packs are displayed on the screen.
1. Verify the screen displays:
command:
2. Type list configuration all and press ENTER.
3. Verify all circuit packs installed in the system are listed in the reports.

Refer to the U.S. English book, DEFINITY Communications System Generic 1 and Generic 3i Maintenance, 555-104-205, to resolve any discrepancies.

\section*{Save Translations, if Required}

If any administration changes have been made, save and make a back up copy of the translations. See Chapter 7, "Activate the System"for detailed instructions.

\section*{Re-install Front Doors}

Put the doors back on the cabinets after all the system installation and test procedures are completed.

\section*{Next Steps}

After the basic switch hardware is installed and tested, three more steps must be completed:
1. Install telephones and other equipment

These procedures are in Chapter 9, "Install and Wire Telephones and Other Equipment".
2. Administer features, telephones, and other equipment according to customer data found on the provisioning plan.

The data for system and telephone features can be administered using implementation procedures provided in the U.S. English book, DEFINITY Communications System Generic 3 Implementation, (555-230-655).
3. Test telephones and other equipment.

These procedures are in Chapter 10, "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 9, "Install and Wire Telephones and Other Equipment", administer it using the procedures in the book listed above, and test it using the procedures in Chapter 8, "Test the System".

\section*{Install and Wire Telephones and Other Equipment}


The wiring procedures are the same for most of the DEFINITY System Generic 3 telephones and other equipment.

This section provides wiring examples. These are examples only and wiring procedures may differ at each site. This section provides the following examples:
- 302B Attendant Console with Adjunct Power
- Analog Station
- Analog Tie Trunk
- Digital Tie Trunk

These examples use port circuit board positions relating to those shown in Chapter 8, "Test the System", Figure 8-4 and Figure 8-5.

Steps 1-3 of each of the following examples should have been completed in the Provisioning Plan in Chapter 2, "Plan and Prepare the Site".

\section*{Telephone Connection Example}

The 302B Attendant Console is used in this section to describe a typical telephone connection. This connection information is typical of the 603E, \(84 x x\) (4-wire), \(94 x x\) telephones. Refer to Appendix Efor more information on wiring telephone connections.

The 302B Attendant Console always requires auxiliary power (-48VDC). Power is connected to the console through Pins 7 and 8 of the information outlet shown in Figure 9-3. Only three consoles can be powered by the cabinet through the
auxiliary connector. When possible, the primary console should be powered from the system cabinet so it has the same power failure backup as the system itself.

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

The general steps to connect a telephone are as follows:
1. Choose a telephone or peripheral to connect such as Attendant Console 302B.
2. Choose the port circuit pack to use (from circuit pack information provided in Table 9-7 on page 9-13) and its carrier and slot number. (TN754, Cabinet 1, Carrier C, Slot 02).
3. Choose a port circuit on the port circuit pack (such as Port 05).
4. Install cross-connect jumpers to wire the named pinouts on the terminal to the like-named pinouts on the port board, as shown in Table 9-1 and Figure 9-1.
This pinout information is taken from Table 9-7 for the 302B (4-wire) and Table 9-8 and Table 9-9 for the TN754B circuit pack.
5. Administer on the console screen of the Management Terminal (G3MT).

The wiring designations are listed in Table 9-1 and are illustrated in Figure 9-1.

Table 9-1. 302B to TN754 Wiring Designations
\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{2}{|l|}{302B, 4-wire} & \multicolumn{2}{|r|}{TN754 (position 1C02)} \\
\hline \[
\begin{gathered}
\text { Pin } \\
\text { (from Table 9-7) }
\end{gathered}
\] & Name & Port 5 Name & 4-wire Connector Pin Number (from Table 9-9) \\
\hline 1 & txt & txt5 & 39 \\
\hline 2 & txr & txr5 & 14 \\
\hline 3 & pxt & pxt5 & 40 \\
\hline 6 & pxr & pxr5 & 15 \\
\hline
\end{tabular}

The following diagram illustrates these wiring designations.


\section*{Figure Notes:}
1. 302B, 4-Wire
4. Name
2. TN754, Position 1C02
5. Port 5 Name
3. Pin Number

Figure 9-1. 302B to TN754 Wiring Example

\section*{Connect Adjunct Power}
1. For terminals needing adjunct power (such as Attendant Console 302B), wire -48 V and ground to appropriate pinouts on the terminal, as shown in Table 9-2 and in Figure 9-2. See the section titled"Install Power Adapters" on page 9-47for more information:

Table 9-2. Adjunct Power Wiring Examples (302B)
\begin{tabular}{c|c|c}
\hline \multicolumn{2}{c|}{ 302B } & Power Supply \\
Pin & Name & \\
\hline 7 & -48 V & -48 V \\
\hline 8 & GND & GND \\
\hline
\end{tabular}

The following diagram illustrates these wiring designations.


\section*{Figure Notes:}
1. 302 B
3. Name
2. Pin Number
4. Power Supply

Figure 9-2. Adjunct Power Wiring Example (302B)
2. The 400B2 adapter is convenient for connecting local power to a modular plug. See Figure 9-3.


\section*{Figure Notes:}
1. Flush mounted information outlet
4. 400B2 Adapter
2. Surface mounted information outlet
5. To telephone
3. To individual power unit
6. Destination Service Access Point (DSAP) power cord

Figure 9-3. 400B2 Adapter Connecting to a Modular Plug

Adjunct power can be provided from the equipment room or equipment closet with 1145B1 power unit. See "Install the 1145B1 Power Supply" on page 9-26 for more information.

Each DEFINITY System 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 the Auxiliary Power pinout information in Table 9-6 on page 9-11.
Adjunct power can be provided locally at the telephone or console by the MSP-1 Power Supply. See"Install the MSP-1 Power Supply" on page 9-34.

\section*{Analog Station or 2-Wire Digital Station Example}

Steps 1-3 of each example should have been completed in the Provisioning Plan found in Chapter 2, "Plan and Prepare the Site" step 8.

This example is typical of the 2-wire digital stations (603E, 84xx, 94xx, 302B), 2-wire analog stations (500, 2500, 71xx), analog Central Office (CO) trunks, direct inward dialed (DID) trunks, and external alarms.
1. Choose a peripheral to connect (such as analog station or 2-wire digital station).
2. Choose the port circuit pack to use and its carrier and slot number (from Table 9-7 on page 9-13).(e.g., 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 named pinouts from the analog station or 2-wire digital station to the like-named pinouts on the port circuit pack. This pinout information is taken from Table 9-9for the analog station and Table 9-8 to Table 9-9for the TN2183 circuit pack.
5. Administer on the G3 Management Terminal (G3MT). See the DEFINITY G3 Implementation Guide for more details.

The wiring designations for this example are listed in Table 9-4, and are illustrated in Figure 9-4.

Table 9-3. Wiring Example of Analog Station 2500 to TN2183 Analog Line
\begin{tabular}{c|c|c|c}
\hline \multicolumn{2}{c|}{ Analog Station 2500 } & \multicolumn{2}{c}{ TN2183 Analog Line, } \\
Position 1C01 \\
Pin (2-pair modular) & Name & \multicolumn{2}{c}{ Port 3 Name }
\end{tabular} Pin \begin{tabular}{cccc}
\hline 2 & T & \(\mathrm{T3}\) & 28 \\
\hline 3 & R & R 3 & 03 \\
\hline
\end{tabular}

The following diagram illustrates these wiring designations.


\section*{Figure Notes:}
1. Analog Station 2500
2. TN2183 Analog Line, position 1C01
3. Pin Number
4. Name
5. Port 3 Name

Figure 9-4. Analog Station 2500 to TN2183 Analog Line Wiring Example

\section*{Analog Tie Trunk Example}

Steps 1-3 of each example should have been completed in the Provisioning Plan in Chapter 2, "Plan and Prepare the Site", Step 8.

This example shows how to connect analog tie trunk wiring from one DEFINITY System Generic 3 to another DEFINITY System Generic 3:
1. Choose a peripheral to connect (such as Tie Trunk).
2. Choose the port circuit pack to use and its carrier and slot number. (such as TN760, Cabinet 1, Carrier C, Slot 05).
3. Choose a port circuit on the port circuit pack (such as Port 02).
4. Set option switches on the port board (TN760 tie trunk) as described in Appendix H, "Option Switch Settings".
5. Install cross-connect jumpers to connect the named pinouts 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 9-5 and Table 9-4 shows a DEFINITY System Tie trunk connected to a DEFINITY System tie trunk. For tie trunk TN760, refer to Table 9-8 and Table 9-9.
6. Administer on the Trunk Group Screen of the terminal. See the DEFINITY G3 Implementation Guide for more details.

The wiring designations for this example are listed in Table 9-4 and are illustrated in Figure 9-5.

Table 9-4. Analog Tie Trunk Wiring Designations (TN760)
\begin{tabular}{c|c|c|c}
\hline \multicolumn{2}{c|}{\begin{tabular}{c} 
External Trunk or Adapter \\
Pin
\end{tabular}} & Port 1 Name & \multicolumn{2}{c}{ TN760, Position 1C05 } \\
Port 2 Name & Pin \\
\hline 26 & T1 & T12 & 30 \\
\hline 1 & R1 & R12 & 5 \\
\hline 27 & T11 & T2 & 29 \\
\hline 2 & R11 & R2 & 4 \\
\hline 28 & E1 & M2 & 6 \\
\hline 3 & M1 & E2 & 31 \\
\hline
\end{tabular}

The following diagram illustrates these wiring designations.


\section*{Figure Notes:}
1. External Trunk or Adapter
3. Pin Number
2. TN760, Position 1 C 05
4. Port 2 Name

Figure 9-5. Analog Tie Trunk Wiring Example (TN760)

In Figure 9-5, the following abbreviations apply:
\begin{tabular}{ll} 
T,R & \begin{tabular}{l} 
Private Branch \\
Exchange (PBX) voice \\
transmit
\end{tabular} \\
\hline T1,R1 & \begin{tabular}{l} 
Private Branch \\
Exchange (PBX) voice \\
receive
\end{tabular} \\
\hline M & \begin{tabular}{l} 
Private Branch \\
Exchange (PBX) signal \\
send
\end{tabular} \\
\hline E & \begin{tabular}{l} 
Private Branch \\
Exchange (PBX) signal \\
receive
\end{tabular}
\end{tabular}

\section*{Digital Tie Trunk Example}

Steps 1-3 of each example should have been completed in the Provisioning Plan in Chapter 2, "Plan and Prepare the Site", Step 8.

This example shows how to connect digital tie trunk wiring from one DEFINITY System Generic 3 to another DEFINITY System Generic 3:
1. Choose a peripheral to connect (such as DS1/E1)
2. Choose the port board to use and its carrier and slot number (such as TN464, Cabinet 1, Carrier C, Slot 06).
3. Choose a port circuit on the port board (such as Port 03).
4. Install cross-connect jumpers to connect the named pinouts from the Digital Trunk circuit pack to like-named pinouts on the manufacturer's or supplier's external digital trunk as shown in the following example. This pinout information is taken from Table 9-8 on page 9-16 and Table 9-9 on page 9-17.
5. Set option switches on the port circuit pack (TN464 digital trunk) according to Appendix H, "Option Switch Settings".
6. Administer on the Digital Service Level 1 (DS1) and Trunk Group Screens of the G3 Management Terminal. See the DEFINITY G3 Implementation Guide for more details.
The wiring designations for this example are listed in Table 9-5, and are illustrated in Figure 9-6.

Table 9-5. Digital Tie Trunk Wiring Designations (TN464)
\begin{tabular}{l|l|l}
\hline \multirow{2}{*}{\begin{tabular}{l} 
External Trunk \\
Circuit Name
\end{tabular}} & \multicolumn{2}{|c}{ TN464, Position 1C06 } \\
& Name & Pin Number \\
\hline LI (Line In) & LO (Line Out) & 48 \\
\hline LI* \(^{*}\) (Line In) & LO* (Line Out) & 23 \\
\hline LO* (Line Out) \(^{\text {LI }}\) (Line In) & 47 \\
\hline LO (Line Out) & LI (Line In) & 22 \\
\hline
\end{tabular}

LI* Balanced Input Pair.
LO* Balanced Output Pair.
The following diagram illustrates these wiring designations.


\section*{Figure Notes:}
1. External Trunk
4. Pin Number
2. TN464, Position 1C06
- LI* Balanced Input Pair
3. Name
- LO* Balanced Output Pair

Figure 9-6. TN464 Wiring Example

\section*{Auxiliary Connector Outputs}

The control carrier outputs cable pinouts are shown in Table 9-6 on page 9-11. The control carrier AUX connector outputs include the following:
- Alarm monitoring for the auxiliary cabinet
- Seven -48VDC power sources for emergency transfer units
- Three -48VDC power sources for remotely powering three attendant consoles or telephone adjuncts.
- The INADS (remote system management terminal interface) trunk connection location.
- Access to a relay contact is available to actuate a light, bell, or similar type customer-provided alarm device. The relay can be administered to make contact when a major, minor or warning alarm condition occurs in the switch. The circuitry required for this feature must be provided by the customer. The device connected to the alarm leads must not exceed a rating of 100 volts at \(3 / 4 \mathrm{amps}\). The pinouts for an external alarm are shown in Table 9-6 on page 9-11.

A connector labeled \(A U X\) is provided on the back of the control carrier. Connect a 25 -pair cable from this connector to a connecting block of the trunk/auxiliary field designated by callout 2 in Figure 5-1 on page 5-2.

Table 9-6. Auxiliary Lead Appearances at AUX Connector on Cabinet Back
\begin{tabular}{|c|c|c|c|c|c|}
\hline Color \({ }^{1,2}\) & \[
\begin{gathered}
\text { Pin } \\
\text { Number }
\end{gathered}
\] & \multicolumn{2}{|l|}{Single-Carrier Auxiliary Connection Outputs} & \begin{tabular}{l}
808A \\
Emergency \\
Transfer Unit Outputs
\end{tabular} & \begin{tabular}{l}
574-5 \\
Power \\
Transfer Unit \\
Outputs
\end{tabular} \\
\hline W-BL BL-W & \[
\begin{gathered}
26 \\
1
\end{gathered}
\] & & jor* & TC & TC \\
\hline \[
\begin{aligned}
& \text { W-O } \\
& \text { O-W }
\end{aligned}
\] & \[
\begin{gathered}
27 \\
2
\end{gathered}
\] & & nor* & TK & TK \\
\hline \[
\begin{aligned}
& \text { W-G } \\
& \text { G-W }
\end{aligned}
\] & \[
\begin{gathered}
28 \\
3 \\
\hline
\end{gathered}
\] & & D & LC & LC \\
\hline W-BR BR-W & \[
\begin{gathered}
29 \\
4
\end{gathered}
\] & & D & ST & ST \\
\hline \[
\begin{aligned}
& \text { W-S } \\
& \text { S-W }
\end{aligned}
\] & \[
\begin{gathered}
30 \\
5
\end{gathered}
\] & & D & TC & TC \\
\hline \[
\begin{aligned}
& \text { R-BL } \\
& \text { BL-R }
\end{aligned}
\] & \[
\begin{gathered}
31 \\
6 \\
\hline
\end{gathered}
\] & & D & TK & TK \\
\hline \[
\begin{aligned}
& \text { R-O } \\
& \text { O-R }
\end{aligned}
\] & \[
\begin{gathered}
32 \\
7
\end{gathered}
\] & & D & LC & LC \\
\hline \[
\begin{aligned}
& \text { R-G } \\
& \text { G-R }
\end{aligned}
\] & \[
\begin{gathered}
33 \\
8
\end{gathered}
\] & & nnected & ST & ST \\
\hline \[
\begin{aligned}
& \text { R-BR } \\
& \text { BR-R } \\
& \hline
\end{aligned}
\] & \[
\begin{gathered}
34 \\
9 \\
\hline
\end{gathered}
\] & & nected & TC & TC \\
\hline \[
\begin{aligned}
& \mathrm{R}-\mathrm{S} \\
& \mathrm{~S}-\mathrm{R}
\end{aligned}
\] & \[
\begin{aligned}
& 35 \\
& 10
\end{aligned}
\] & & nected & TK & TK \\
\hline \[
\begin{aligned}
& \text { BK-BL } \\
& \text { BL-BK }
\end{aligned}
\] & \[
\begin{aligned}
& 36 \\
& 11 \\
& \hline
\end{aligned}
\] & \[
\begin{gathered}
-48 \\
\text { GND }
\end{gathered}
\] & Emergency Transfer & LC & LC \\
\hline \[
\begin{aligned}
& \mathrm{BK}-\mathrm{O} \\
& \mathrm{O}-\mathrm{BK}
\end{aligned}
\] & \[
\begin{aligned}
& 37 \\
& 12
\end{aligned}
\] & \[
\begin{gathered}
-48 \\
\text { GND }
\end{gathered}
\] & \begin{tabular}{l}
Relay \\
Power
\end{tabular} & ST & ST \\
\hline \[
\begin{aligned}
& \text { BK-G } \\
& \text { G-BK }
\end{aligned}
\] & \[
\begin{aligned}
& 38 \\
& 13
\end{aligned}
\] & \[
\begin{gathered}
-48 \\
\text { GND }
\end{gathered}
\] & & TC & TC \\
\hline BK-BR BR-BK & \[
\begin{aligned}
& 39 \\
& 14
\end{aligned}
\] & \[
\begin{gathered}
-48 \\
\text { GND }
\end{gathered}
\] & & TK & TK \\
\hline \[
\begin{aligned}
& \text { BK-S } \\
& \text { S-BK }
\end{aligned}
\] & \[
\begin{aligned}
& 40 \\
& 15 \\
& \hline
\end{aligned}
\] & \[
\begin{gathered}
-48 \\
\text { GND }
\end{gathered}
\] & & LC & LC \\
\hline \[
\begin{aligned}
& \mathrm{Y}-\mathrm{BL} \\
& \mathrm{BL}-\mathrm{Y} \\
& \hline
\end{aligned}
\] & \[
\begin{aligned}
& 41 \\
& 16 \\
& \hline
\end{aligned}
\] & \[
\begin{gathered}
-48 \\
\text { GND }
\end{gathered}
\] & & ST & ST \\
\hline Y-O
O-Y & \[
\begin{aligned}
& 42 \\
& 17
\end{aligned}
\] & \[
\begin{gathered}
-48 \\
\text { GND }
\end{gathered}
\] & & TC & TC \\
\hline
\end{tabular}

Table 9-6. Auxiliary Lead Appearances at AUX Connector on Cabinet Back
\begin{tabular}{|c|c|c|c|c|c|}
\hline Color \({ }^{1,2}\) & \[
\begin{gathered}
\text { Pin } \\
\text { Number }
\end{gathered}
\] & \multicolumn{2}{|l|}{\begin{tabular}{l}
Single-Carrier \\
Auxiliary Connection Outputs
\end{tabular}} & 808A
Emergency
Transfer Unit
Outputs & \begin{tabular}{l}
574-5 \\
Power \\
Transfer \\
Unit \\
Outputs
\end{tabular} \\
\hline Y-G & 43 & \multicolumn{2}{|r|}{\multirow[t]{2}{*}{Not Connected}} & TK & TK \\
\hline G-Y & 18 & & & & \\
\hline Y-BR & 44 & \multirow[t]{2}{*}{\[
\begin{gathered}
\text { GND } \\
-48 \\
\hline
\end{gathered}
\]} & \multirow[t]{6}{*}{Aux Power \(\varnothing\)} & LC & LC \\
\hline BR-Y & 19 & & & & \\
\hline Y-S & 45 & \multirow[t]{2}{*}{\[
\begin{gathered}
\text { GND } \\
-48 \\
\hline
\end{gathered}
\]} & & ST & ST \\
\hline S-Y & 20 & & & & \\
\hline V-BL & 46 & \multirow[t]{2}{*}{\[
\begin{gathered}
\text { GND } \\
-48 \\
\hline
\end{gathered}
\]} & & COM1 & COM1 \\
\hline BL-V & 21 & & & NO1 & N01 \\
\hline V-O & 47 & \multicolumn{2}{|r|}{Not Connected} & NC2 & NC2 \\
\hline O-V & 22 & \multicolumn{2}{|l|}{} & NC1 & NC1 \\
\hline V-G & 48 & \multicolumn{2}{|r|}{Ext Alarm A**} & COM2 & COM2 \\
\hline G-V & 23 & \multicolumn{2}{|l|}{Ext Alarm Return} & N02 & N02 \\
\hline V-BR & 49 & \multicolumn{4}{|c|}{Not Connected} \\
\hline BR-V & 24 & & & & \\
\hline V-S & 50 & \multicolumn{2}{|r|}{\multirow[t]{2}{*}{INADS Tip INADS Ring}} & GRD & GRD \\
\hline S-V & 25 & & & -48V & -48V \\
\hline
\end{tabular}
* External alarm, with signal incoming to switch.
** External alarm, with signal outgoing from switch.
1 Color designation is AA-BB, where AA is the main wire color, and BB is the color of the short stripe on the wire.
2 For translation purposes, the following wire colors apply in the above table:
\begin{tabular}{ll} 
\\
W & White \\
BL & Blue \\
O & Orange \\
G & Green \\
BR & Brown \\
S & Slate (Grey) \\
R & Red \\
BK & Black \\
Y & Yellow \\
V & Violet \\
\hline
\end{tabular}

Table 9-7. Port Board and Telephone Pin Designations
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline Pin on Modular plug & \begin{tabular}{l}
4-wire; \\
302B, 8403, \\
8410, 8434, \\
603E, 9403, \\
9434
\end{tabular} & \begin{tabular}{l}
2-wire; \\
302B, 8403, \\
8410, 8434, \\
603E, 9403, \\
9410, 9434
\end{tabular} & 8510T Basic Rate Interface (BRI) (with adjunct speaker phone) & Analog Station, Modem & NT1 & \begin{tabular}{l}
Z3A1 \& Z3A2 \\
Asynchronous Data Units (ADU), Processor Data Module (PDM)
\end{tabular} \\
\hline 1 & TXT & & & & & TXT \\
\hline 2 & TXR & & & T & & TXR \\
\hline 3 & PXT & & TXT & R & & PXT \\
\hline 4 & & T & PXR & & T & \\
\hline 5 & & R & PXT & No & R & \\
\hline 6 & PXR & & TXR & Connection & & PXR \\
\hline 7 & -48VDC & (-48VDC) & (-48VDC) & & -48VDC & \\
\hline 8 & GRD & GRD & GRD & modular jack) & GRD & \\
\hline Circuit Pack & TN754 4-wire digital & TN2181 2-wire digital & TN556, integrated services digital network basic rate interface line & \begin{tabular}{l}
TN2183 \\
Analog line
\end{tabular} & \begin{tabular}{l}
TN2198 \\
2-wire \\
basic \\
rate \\
interface \\
line
\end{tabular} & TN726 Data Line \\
\hline \[
\begin{aligned}
& \text { PX } \\
& \mathrm{TX}
\end{aligned}
\] & private branch exchang Terminal transmit & \[
\text { ransmit } \begin{array}{ll}
T \\
&
\end{array}
\] & \[
\begin{array}{ll}
\text { Tip } & \text { (A) } \\
\text { Ring } & \text { (B) }
\end{array}
\] & & & \\
\hline
\end{tabular}
\(\qquad\) 1 \(\qquad\)


Figure Notes:
1. Station Wiring
8. Blue or white field
2. Attendant Console
9. 100P6A patch cord or jumpers
3. Information Outlet
10. Purple field
4. Satellite site, or adapter location
11. TN754 circuit pack port
5. Part or cross-connect field
12. 4-pair line cord
6. Station side
13. -48 VDC power source
7. Switch side

Figure 9-7. Connections for Attendant Console


Figure Notes:
1. Cable connection

Figure 9-8. 302B1 Attendant Console

\section*{APP Connector and Cable Diagrams (Pinout Charts)}

See Table 9-9for lead designations. The circuit packs and auxiliary equipment are classified as follows:
Table 9-8. Circuit Pack and Auxiliary Equipment Classifications
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline & & & & & & & & & & & & & \\
\hline Analog Line (8) & 2-Wire Digital \& Analog Line (16) & \[
\begin{aligned}
& \text { Data } \\
& \text { Line } \\
& \hline
\end{aligned}
\] & \begin{tabular}{l}
Digital \\
Line 4- \\
Wire
\end{tabular} & Hybrid Line & \begin{tabular}{l}
MET \\
Line
\end{tabular} & Auxiliary Trunk & \begin{tabular}{l}
Central \\
Office \\
Trunk
\end{tabular} & Central Office Trunk 3-Wire & \begin{tabular}{l}
DID/ \\
DIOD \\
Trunk
\end{tabular} & Tie Trunk & \begin{tabular}{l}
DS1 \\
Tie \\
Trunk
\end{tabular} & \begin{tabular}{l}
ISDN BRI \\
Line 4- \\
wire
\end{tabular} & ISDN BRI Line 2wire \\
\hline TN467 & TN2149 & \[
\begin{aligned}
& \text { TN72 } \\
& 6
\end{aligned}
\] & TN413 & TN762 & TN735 & TN417 & TN429 & & TN429 & TN478 & TN483 & TN556 & TN2198 \\
\hline TN432 & TN2135 & & TN754B & TN762B & & TN763 & TN493 & & TN2139 & TN458 & TN722 & & \\
\hline TN431 & TN468 & & TN564B & & & TN763D & TN422 & & TN459 & TN449 & TN767B & & \\
\hline TN411B & TN448 & & & & & & TN421 & & TN436 & TN434 & TN722B & & \\
\hline TN742 & TN746 & & & & & & TN438 & & TN414 & TN415 & TN464D & & \\
\hline TN769 & TN746B & & & & & & TN447 & & TN2146 & TN760 & & & \\
\hline & & & & & & & TN465 & & TN753 & TN760D & & & \\
\hline & & & & & & & TN747B & & & & & & \\
\hline & & & & & & & TN2138 & & & & & & \\
\hline & & & & & & & TN2147 & & & & & & \\
\hline & & & & & & & TN2148 & & & & & & \\
\hline
\end{tabular}

\footnotetext{
4. ISDN means Integrated Services Digital

Network
5. BRI means Basic Rate Interface
6. MET means Multibutton Electronic Telephone
}
1. DID means Direct Inward Dialing
2. DIDO means Direct Inward Outward Dialing
3. DS1 means Digital Services Level 1
Table 9-9. Circuit Pack and Auxiliary Equipment Leads (Pinout
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline Color \({ }^{1,2}\) & \begin{tabular}{l}
Conn. \\
Pin \\
Numbers
\end{tabular} & Analog Line 8 ports & \begin{tabular}{l}
2-Wire \\
Digital \\
Line and \\
Analog \\
Line \\
16 ports
\end{tabular} & \begin{tabular}{l}
Data \\
Line
\end{tabular} & Digital Line 4-wire & Hybrid Line & \begin{tabular}{l}
MET \\
Line
\end{tabular} & \[
\begin{aligned}
& \text { AUX } \\
& \text { Trk. }
\end{aligned}
\] & \[
\begin{aligned}
& \text { CO } \\
& \text { Trk. }
\end{aligned}
\] & \begin{tabular}{l}
CO \\
Trk. \\
3-wire
\end{tabular} & \begin{tabular}{l}
DID/ \\
DIOD \\
Trk.
\end{tabular} & Tie Trk. & \[
\begin{aligned}
& \text { DS1 } \\
& \text { Tie } \\
& \text { Trk. }
\end{aligned}
\] & \begin{tabular}{l}
ISDN \\
BRI \\
Line \\
4-wire
\end{tabular} & \begin{tabular}{l}
ISDN \\
BRI \\
Line \\
2-wire
\end{tabular} \\
\hline W-BL & 26 & T1 & T1 & & & V1T1 & T1 & T1 & T1 & A1 & T1 & T1 & & PXR1 & T1 \\
\hline BL-W & 01 & R1 & R1 & & & V1R1 & R1 & R1 & R1 & B1 & R1 & R1 & & PXT1 & R1 \\
\hline W-O & 27 & & T2 & TXT1 & TXT1 & CT1 & TXT1 & SZ1 & & & & T11 & & TXT1 & T2 \\
\hline O-W & 02 & & R2 & TXR1 & TXR1 & CR1 & TXR1 & SZ11 & & & & R11 & & TXR1 & R2 \\
\hline W-G & 28 & & T3 & PXT1 & PXT1 & P-1 & PXT1 & S1 & & & & E1 & & PXR2 & T3 \\
\hline G-W & 03 & & R3 & PXR1 & PXR1 & P+1 & PXR1 & S11 & & C1 & & M1 & & PXT2 & R3 \\
\hline W-BR & 29 & T2 & T4 & & & V1T2 & T2 & T2 & T2 & A2 & T2 & T2 & & TXT2 & T4 \\
\hline BR-W & 04 & R2 & R4 & & & V1R2 & R2 & R2 & R2 & B2 & R2 & R2 & & TXR2 & R4 \\
\hline W-S & 30 & & & TXT2 & TXT2 & CT2 & TXT2 & SZ2 & & & & T12 & & PXR3 & T5 \\
\hline S-W & 05 & & & TXR2 & TXR2 & CR2 & TXR2 & SZ12 & & & & R12 & & PXT3 & R5 \\
\hline R-BL & 31 & & & PXT2 & PXT2 & P-2 & PXT2 & S2 & & & & E2 & & TXT3 & T6 \\
\hline BL-R & 06 & & & PXR2 & PXR2 & P+2 & PXR2 & S12 & & C2 & & M2 & & TXR3 & R6 \\
\hline R-O & 32 & T3 & & & & V1T3 & T3 & T3 & T3 & A3 & T3 & T3 & & PXR4 & T7 \\
\hline O-R & 07 & R3 & & & & V1R3 & R3 & R3 & R3 & B3 & R3 & R3 & & PXT4 & R7 \\
\hline R-G & 33 & & & TXT3 & TXT3 & CT3 & TXT3 & SZ3 & & & & T13 & & TXT4 & T8 \\
\hline G-R & 08 & & & TXR3 & TXR3 & CR3 & TXR3 & SZ13 & & & & R13 & & TXR4 & R8 \\
\hline R-BR & 34 & & T5 & PXT3 & PXT3 & P-3 & PXT3 & S3 & & & & E3 & & PXR5 & T9 \\
\hline BR-R & 09 & & R5 & PXR3 & PXR3 & \(\mathrm{P}+3\) & PXR3 & S13 & & C3 & & M3 & & PXT5 & R9 \\
\hline R-S & 35 & T4 & T6 & & & V1T4 & T4 & T4 & T4 & A4 & T4 & T4 & & TXT5 & T10 \\
\hline S-R & 10 & R4 & R6 & & & V1R4 & R4 & R4 & R4 & B4 & R4 & R4 & & TXR5 & R10 \\
\hline BK-BL & 36 & & 77 & TXT4 & TXT4 & CT4 & TXT4 & SZ4 & & & & T14 & & PXR6 & T11 \\
\hline
\end{tabular}
Table 9-9. Circuit Pack and Auxiliary Equipment Leads (Pinout Charts) - Continued
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline Color \({ }^{1,2}\) & \begin{tabular}{l}
Conn. \\
Pin \\
Numbers
\end{tabular} & Analog Line 8 ports & \begin{tabular}{l}
2-Wire \\
Digital \\
Line and \\
Analog \\
Line \\
16 ports
\end{tabular} & \begin{tabular}{l}
Data \\
Line
\end{tabular} & Digital Line 4-wire & Hybrid Line & MET Line & \[
\begin{aligned}
& \text { AUX } \\
& \text { Trk. }
\end{aligned}
\] & \[
\begin{aligned}
& \text { CO } \\
& \text { Trk. }
\end{aligned}
\] & \begin{tabular}{l}
CO \\
Trk. \\
3-wire
\end{tabular} & \begin{tabular}{l}
DID/ \\
DIOD \\
Trk.
\end{tabular} & Tie Trk. & \[
\begin{aligned}
& \text { DS1 } \\
& \text { Tie } \\
& \text { Trk. }
\end{aligned}
\] & \begin{tabular}{l}
ISDN \\
BRI \\
Line \\
4-wire
\end{tabular} & \begin{tabular}{l}
ISDN \\
BRI \\
Line \\
2-wire
\end{tabular} \\
\hline BL-BK & 11 & & R7 & TXR4 & TXR4 & CR4 & TXR4 & SZ14 & & & & R14 & & PXT6 & R11 \\
\hline BK-O & 37 & & T8 & PXT4 & PXT4 & P-4 & PXT4 & S4 & & & & E4 & & TXT6 & T12 \\
\hline O-BK & 12 & & R8 & PXR4 & PXR4 & P+4 & PXR4 & S14 & & & & M4 & & TXR6 & R12 \\
\hline BK-G & 38 & T5 & T9 & & & V1T5 & & & T5 & & T5 & & & PXR7 & \\
\hline G-BK & 13 & R5 & R9 & & & V1R5 & & & R5 & & R5 & & & PXT7 & \\
\hline BK-BR & 39 & & T10 & TXT5 & TXT5 & CT4 & & & & & & & & TXT7 & \\
\hline BR-BK & 14 & & R10 & TXR5 & TXR5 & CR4 & & & & & & & & TXR7 & \\
\hline BK-S & 40 & & T11 & PXT5 & PXT5 & P-5 & & & & & & & & PXR8 & \\
\hline S-BK & 15 & & R11 & PXR5 & PXR5 & P+5 & & & & & & & & PXT8 & \\
\hline Y-BL & 41 & T6 & T12 & & & V1T6 & & & T6 & & T6 & & & TXT8 & \\
\hline BL-Y & 16 & R6 & R12 & & & V1R6 & & & R6 & & R6 & & & TXR8 & \\
\hline Y-O & 42 & & & TXT6 & TXT6 & CT6 & & & & & & & & PXR9 & \\
\hline O-Y & 17 & & & TXR6 & TXR6 & CR6 & & & & & & & & PXT9 & \\
\hline Y-G & 43 & & & PXT6 & PXT6 & P-6 & & & & & & & & TXT9 & \\
\hline G-Y & 18 & & & PXR6 & PXR6 & P+6 & & & & & & & & TXR9 & \\
\hline Y-BR & 44 & T7 & & & & V1T7 & & & T7 & & T7 & & & PXR10 & \\
\hline BR-Y & 19 & R7 & & & & V1R7 & & & R7 & & R7 & & & PXT10 & \\
\hline Y-S & 45 & & & TXT7 & TXT7 & CT7 & & & & & & & & TXT10 & \\
\hline S-Y & 20 & & & TXR7 & TXR7 & CR7 & & & & & & & & TXR10 & \\
\hline V-BL & 46 & & T13 & PXT7 & PXT7 & P-7 & & & & & & & & PXR11 & \\
\hline BL-V & 21 & & R13 & PXR7 & PXR7 & \(\mathrm{P}+7\) & & & & & & & & PXT11 & \\
\hline V-O & 47 & T8 & T14 & & & V1T8 & & & T8 & & T8 & & LI* & TXT11 & \\
\hline O-V & 22 & R8 & R14 & & & V1R8 & & & R8 & & R8 & & LI & TXR11 & \\
\hline
\end{tabular}
Continued on next page
Table 9-9. Circuit Pack and Auxiliary Equipment Leads (Pinout
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline Color \({ }^{1,2}\) & \begin{tabular}{l}
Conn. \\
Pin \\
Numbers
\end{tabular} & Analog Line 8 ports & \begin{tabular}{l}
2-Wire \\
Digital \\
Line and \\
Analog \\
Line \\
16 ports
\end{tabular} & Data Line & Digital Line 4-wire & Hybrid Line & \begin{tabular}{l}
MET \\
Line
\end{tabular} & \[
\begin{aligned}
& \text { AUX } \\
& \text { Trk. }
\end{aligned}
\] & \[
\begin{aligned}
& \mathrm{CO} \\
& \text { Trk. }
\end{aligned}
\] & \begin{tabular}{l}
CO \\
Trk. \\
3-wire
\end{tabular} & \begin{tabular}{l}
DID/ \\
DIOD \\
Trk.
\end{tabular} & Tie Trk. & \[
\begin{aligned}
& \text { DS1 } \\
& \text { Tie } \\
& \text { Trk. }
\end{aligned}
\] & \begin{tabular}{l}
ISDN \\
BRI \\
Line \\
4-wire
\end{tabular} & \begin{tabular}{l}
ISDN \\
BRI \\
Line \\
2-wire
\end{tabular} \\
\hline V-G & 48 & & T15 & TXT8 & TXT8 & CT8 & & & & & & & LO & PXR12 & \\
\hline G-V & 23 & & R15 & TXR8 & TXR8 & CR8 & & & & & & & LO* & PXT12 & \\
\hline V-BR & 49 & & T16 & PXT8 & PXT8 & P-8 & & & & & & & LBACK2 & TXT12 & \\
\hline BR-V & 24 & & R16 & PXR8 & PXR8 & P+8 & & & & & & & LBACK1 & TXR12 & \\
\hline
\end{tabular}
Continued on next page
Table 9-9. Circuit Pack and Auxiliary Equipment Leads (Pinout Charts) - Continued
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline Color \({ }^{1,2}\) & \begin{tabular}{l}
Conn. \\
Pin \\
Numbers
\end{tabular} & Analog Line 8 ports & \begin{tabular}{l}
2-Wire \\
Digital \\
Line and \\
Analog \\
Line \\
16 ports
\end{tabular} & Data Line & \begin{tabular}{l}
Digital Line \\
4-wire
\end{tabular} & Hybrid Line & \begin{tabular}{l}
MET \\
Line
\end{tabular} & \[
\begin{aligned}
& \text { AUX } \\
& \text { Trk. }
\end{aligned}
\] & \[
\begin{aligned}
& \mathrm{CO} \\
& \text { Trk. }
\end{aligned}
\] & \begin{tabular}{l}
CO \\
Trk. \\
3-wire
\end{tabular} & \begin{tabular}{l}
DID/ \\
DIOD \\
Trk.
\end{tabular} & Tie Trk. & \begin{tabular}{l}
DS1 \\
Tie \\
Trk.
\end{tabular} & \begin{tabular}{l}
ISDN \\
BRI \\
Line \\
4-wire
\end{tabular} & \begin{tabular}{l}
ISDN \\
BRI \\
Line \\
2-wire
\end{tabular} \\
\hline V-S & 50 & & & & & & & & & & & & & & \\
\hline S-V & 25 & & & & & & & & & & & & & & \\
\hline
\end{tabular}
+ The wire colors in this pinout chart apply only to B25A and A25B cables. H600-307,60 cable colors are not shown.


\(\begin{array}{llll}\text { T } & \text { Tip } & \text { (A) } & \text { Gee } \\ \text { R } & \text { Ring } & \text { (B) } & \text { Red } \\ \text { S } & \text { Sleeve } & & \end{array}\)
Color designation is AA-BB, where AA is the main wire color, and BB is the color of the short
stripe on the wire.
stripe on the wire.
2 For translation purpo
W White


\section*{Install Initialization and \\ Administration System (INADS) \\ Interface}

The Initialization and Administration System (INADS) provides a 1200 Bits Per Second (bps) modem connection for the remote management terminal for DEFINITY System Generic 3.

Figure 9-9 shows a typical Initialization and Administration System (INADS) installation, where the analog port is connected from the switch directly to the connectors on the auxiliary cable pins.


\section*{Figure Notes:}
1. Initialization and Administration System (INADS) interface on AUX connector (see Table 9-6 on page 9-10)
2. Auxiliary cable
3. External analog Central Office (CO) trunk
4. Cross-connect field

Figure 9-9. Analog Port Connection

As an alternative, Figure 9-10 illustrates a switched connection to the Initialization and Administration System (INADS) interface.


\section*{Figure Notes:}
1. Digital Central Office (CO) trunk (TN464)
2. Analog line (TN2183)
3. Initialization and Administration System (INADS) Interface (T,R)
4. Analog extension (T,R)
5. Auxiliary cable
6. Pin 26-50 (refer to pinout chart)
7. Cross-connect field
8. Processor (TN786)
9. External digital Central Office (CO) trunk

Figure 9-10. Initialization and Administration System (INADS) Installation for Digital Trunk Access

\section*{Install Emergency Transfer Units and Associated Telephones}

Emergency transfer capability is provided by a transfer unit mounted on the wall next to the trunk/auxiliary cross-connect field.

Analog telephones can be used for emergency transfer. The 500-and 2500-type telephones can also be used as normal extensions. Emergency transfer capability may be provided on Central Office (CO) trunks.

The following transfer units are available:
- The 808A Emergency Transfer Panel provides emergency trunk bypass or power-fail transfer for up to five incoming analog Central Office (CO) trunk loops to five selected private branch exchange analog single line telephones. When a power failure or other system problem interrupts service, the sets are automatically and directly connected to the Central Office trunks and are available for emergency use outside the private branch exchange service environment.

When a telephone connected to the 808A goes off-hook during bypass, circuitry inside the panel places signalling on the Central Office (CO) trunk causing the Central Office (CO) to return dial tone. Each 808A bypass circuit can be switched to either loop start or ground start signalling.
- The 574-5 power transfer unit serves up to five power failure transfer telephones. The unit provides automatic ground start.

At the cross-connect field, the transfer units are connected to a yellow terminal row/connecting block in the trunk/auxiliary field. The units are powered (-48VDC) from the EM TRANS RELAY PWR terminals. Refer to Figure 9-6 for pinout information. There are seven EM TRANS RELAY PWR terminal pairs to provide power to up to seven transfer units.

\section*{Install the 808A Emergency Transfer Panel}

The 808A is connected to the cross-connect field through a B25A or A25B cable. Install the 808A Emergency Transfer Panel according to the instructions packed with the unit.

\section*{Install External Ringing}

\section*{Requirements}

Figure 9-11 on page 9-25shows the connections for external ringing provided by a device, such as a gong, chime, or bell, connected to an information outlet. The switch side of the cross-connect field is connected to an analog line circuit pack (such as a TN2183) located in a port carrier. A maximum of three devices can be connected to one TN2183 circuit pack port.

\section*{Installation}

Install ringing device as follows:
1. Determine port assignment of "External Alert Port (trunk answer any station)" feature from Console Parameters Form:
\begin{tabular}{l|l|l|l|l} 
EXAMPLE: Port Number & 2 & B & 02 & 01 \\
\hline & Cabinet & Carrier & Slot & Circuit
\end{tabular}
2. Install patch cord/jumper wires at cross-connect field.
3. Mount the ringing device at the location specified in the Provisioning Plan. Refer to "Plan and Prepare the Site" on page 1-3.
4. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the ringing device (Figure 9-3).
5. Connect red \((R)\) and green ( \(T\) ) leads to the ringing device.
6. Administer according to the instructions found in the U.S. English book, DEFINITY Communications System Generic 3 Implementation, 555-230655.


Figure Notes:
1. AC lamp or ringing device
8. Patch cord or jumpers
2. Information outlet
9. Blue or white field
3. Satellite site or adapter location
10. Station wiring
4. Station side
11. Line cord
5. Switch side
12. Part of cross connect field
6. Analog line port circuit pack (TN2183 or
13. Red TN746B circuit pack)
14. Green
7. Purple field

Figure 9-11. Connections for External Ringing or Queue Warning Indicator

\section*{Install Queue Warning Indicator}

\section*{Requirements}

Figure 9-11 shows the connections for the queue warning indicator. An AC indicator (lamp) such as a 21 C 49 is optional for use as a queue warning indication in a Uniform Call Distribution (UCD)/Direct Departmental Calling (DDC) queue. The lamp is connected to an information outlet. The switch side of the cross-connect field is connected to an analog line circuit pack (such as a TN2183) located in a port carrier.

\section*{Installation}

Install queue warning indicator as follows:
1. Determine port assignment for queue warning indicator from Hunt Group Form:
\begin{tabular}{l|l|l|l|l} 
EXAMPLE: Port Number & 2 & B & 02 & 01 \\
\hline & Cabinet & Carrier & Slot & Circuit
\end{tabular}
2. Install patch cord/jumper wires at cross-connect field.
3. Mount indicator at specified location.
4. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the indicator. See Figure 9-3.
5. Connect red \((R)\) and green \((T)\) leads to the indicator.
6. Administer per DEFINITY Communications System Generic 3 V2 Implementation, 555-230-655.

\section*{Install the 1145B1 Power Supply}

The 1145B1 closet power arrangement provides an uninterruptible -48VDC power source with battery and 1145B1 distribution unit for Integrated Services Digital Network (ISDN)/digital communications protocol terminal equipment, terminal adjuncts, and other customer provided equipment. During AC power interruptions, batteries automatically provide continuous power to the load.

During normal operation, the power supply/charger provides DC power to the load via the distribution unit while maintaining the battery in a fully charged condition. A manual switch on the distribution unit allows the user to redirect reserve power to outputs 1 through 8 or 1 through 32 , with the switch set to the 1 through 32 setting, all outputs will be provided battery reserve power.

The \(1145 \mathrm{~B} 1 / 1146 \mathrm{~B} 1\) is a -48 V power supply with 200 watt total output. This unit is a 110 -type distribution unit with 32 output circuits. Each output is current limited by a positive temperature coefficient thermistor (PTC). The thermistor limits the maximum output to 12 watts and prevents excessive current from causing hazards. If the thermistor is current limiting, there is a short across the power pair. Each 1145B1 output has an individual light emitting diode to indicate the status of the thermistor. If the light emitting diode 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 \(1145 B 1\) is designed to power one integrated services digital network terminal or digital communications protocol adjunct per output. The maximum number of terminals or adjuncts is
32. The 1145B1 (not 1145A1) is required for installation outside the United States.

Auxiliary power (local or bulk) is always required in the following situations:
- Attendant console 302B.
- Any 8520 terminal.
- Any 7500-series or 8500-series terminal with an asynchronous data module.
- Any 7500-series terminal (whether in passive bus, or point to point, that is, one per basic rate interface port).
- Any 8510 terminal in passive bus or with an asynchronous data module. (Provide auxiliary power to an 8510 unless you are certain it will never be used to support such applications as data or video.)

This section tells how to install the 1145B1 Power Supply, 1146B1 Power Distribution Unit, and 2.5 amp hour (AH) back-up batteries. All units are mounted on wall-mounting plates. The wall-mounting plates should be installed first. The rest of the hardware can be mounted in any desired order. The next illustration shows how the power supply and wall-mounting plates fit together.

\section*{Wall-Mounting Plates}

Two wall mounting plates are provided for easy assembly and to provide correct spacing between units for cooling. The top plate is needed for mounting the back-up battery. The bottom plate is needed to mount the Power Supply and Distribution Units. The plates can also be used for rack mounting the hardware by means of standard rack-mounting brackets.
1. Locate one plate directly below the other one such that the AC power cord (6-1/2 feet or 2 meters) reaches the desired electrical outlet from a power supply mounted on the bottom plate. Both plates should be located so the raised letters are right side up.

\section*{\(\Longrightarrow\) NOTE:}

A maximum of four Power Supplies can be powered from one dedicated 110VAC, 20 amp (or 230VAC, 15A) feeder. Use only unswitched receptacles. In other words, 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 \#10x1/2-inch wood screws.


Figure Notes:
1. Wall mounting plate
7. 1145B Power Supply
2. 2.5 Amp Hour Battery
8. Power cable
3. Battery bracket
9. Battery backup switch settings
4. AC power cord
5. 1146B power distribution unit
6. Unswitched outlet 120 VAC, 20 Amp or 230 VAC, 15 Amp)
10. Inset
- Wall must be at least \(3 / 4^{\prime \prime}(1.9 \mathrm{~cm})\) wood

Figure 9-12. 1145B1/1146B1 Mounting Arrangement

\section*{Mount the 1145B1 Power Supply}

The 1145B1 Power Supply unit is snap-fitted onto the bottom wall mounting plate without tools.
1. Perform this step using a "place, rotate, then snap" motion. The holes used for 1145B1 Power Supply mounting are indicated on the wallmounting plate. The preceding illustration shows a side view of the mounting arrangement.
To dismount the unit, push the bottom of the power unit toward the mounting plate while pressing the two snaps on the bottom. Rotate upward and lower the unit.


\section*{Figure Notes:}
1. \(3 / 4\) inch \((2 \mathrm{~cm})\) Plywood
6. Snap
2. AC Receptacle
7. To Approved Ground
3. 1145B1 Power Unit
8. Wall Mounting Plate
4. Frame Ground
9. Power Cord Snap-in Clips
5. 16 AWG Installer Wiring

Figure 9-13. Side View of 1145B1 Power Supply Mounting
2. 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 Power Supply frame ground screw is located next to the \(A C\) receptacle to the left of the unit. The ground screw and the AC receptacle are shown in the preceding illustration.
3. Mark the Unit Number and Connectivity information on the front label next to the light emitting diodes.

\section*{Mount the 1146B1 Power Distribution Unit}

The Power Distribution Unit is mounted onto the bottom wall mounting plate with three screws.
1. Insert and securely tighten the two \#8-32x1/2-inch shoulder screws (they have an unthreaded section at the top) into the top holes designated for 1146B1 Power Distribution Unit on the wall mounting plate. Mount the unit on these two shoulder screws, using the key holes on the back of the unit. Secure the unit by inserting the \#8-32x1-inch screw through the bottom of the unit (just above the wire clips) into the wall mounting plate and tighten.
2. Select the desired battery back-up switch option. The switch is preset to 1-32 (down position) option to provide battery back-up to all outputs. The up position provides battery back-up to outputs 1-8 only.
3. Connect the Power Distribution Unit to the Power Supply with the power cable. Bend and connect the cable. Refer to the Power Supply's righthand label to locate the output power connection.

\section*{Battery Mounting/Wiring}

The back-up battery is placed in the battery bracket mounted onto the top wallmounting plate using the four \#10-32x1/2-inch screws.
1. Insert (do not tighten) two \#10-32x1/2-inch screws into the top designated battery bracket holes on the wall mounting plate.
2. Place the battery bracket on these two screws and tighten the screws.
3. Insert the remaining two \#10-32x1/2-inch screws into the battery bracket bottom holes and tighten.
4. Place the battery in the bracket. The battery cord exits from the right of the bracket. Make sure the label on the battery is visible.
5. Plug the battery cord into the Power Supply's right rear receptacle. The rear receptacle is indicated on the Power Supply's right label.

\section*{Power Up and Test}

Powering up and testing should be performed only after all the hardware is properly mounted. The following table describes the meaning of the Power Supply light emitting diodes when lit.
\begin{tabular}{l|l}
\begin{tabular}{l} 
Light Emitting \\
Diode Colour
\end{tabular} & Meaning \\
\hline Green & Power Supply is providing power \\
\hline Yellow & Battery is charging \\
\hline Red & Power Supply is on battery reserve
\end{tabular}
1. Connect the AC power cord to Power Supply and route the cord to an appropriate AC outlet using the clips provided on the unit.

\section*{\(\Longrightarrow\) NOTE:}

A maximum of four Power Supplies can be powered from one dedicated 110VAC, 20A feeder. Use only unswitched receptacles.
2. Plug the cord into the outlet. This powers up the Power Supply (no ON/OFF switch).
3. Check AC operation of the 1145B1 Power Supply by monitoring the light emitting diodes (LED):
PASS: Green and yellow light emitting diodes (LED) 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 light emitting diode (LED) should go out.

FAIL: If either green or yellow light emitting diode (LED) is not lit after powering up, check the connections. Test the AC outlet. If power is available to the Power Unit 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 1145B1 Power Supply by monitoring the light emitting diodes (LED):
PASS: The red and green light emitting diodes (LED) should be lit together. Red means the Power Supply is on battery back-up.

FAIL: If either green or red light emitting diode (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. The green and yellow light emitting diodes (LED) should light as described before.

\section*{Wire the 1146B1 Power Distribution Unit}

It may be better to wire endpoints to the 1146B1 while power from the 1145B1 is on. This way, a red light emitting diode (LED) on the distribution unit lights if you connect its associated circuit to shorted building wiring or to a shorted terminal.
1. Install cross-connect jumpers to wire from the Distribution 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 light emitting diode (LED) is on, see the next section Reset light emitting diodes (LED) on Power Distribution Unit. The following illustration shows a typical connection.
2. Mark lead destination on the label next to each connector on the Distribution Unit. Also mark the Unit Number and Connectivity information on the label.


\section*{Figure Notes:}
1. Alternating Current (AC)
8. Private branch exchange Port Circuit
2. Installer-provided ground wire
9. Tip and Ring
3. Circuits 1-32
10. Pins 7 \& 8
4. Power supply kit
11. Cross-Connect
5. Battery
6. 1145B1 Power Supply
12. Integrated Services Digital Network (ISDN)/ Display System Protocol (DSP) Terminal
7. 1146B1 Distribution Unit

Figure 9-14. Typical Wiring to a Terminal

\section*{Reset Light Emitting Diodes (LED) on Power Distribution Unit}

A lit red light emitting diode (LED) next to any of the 32 power output connectors on the Power Distribution Unit indicates a short circuit in the building wiring or the terminal equipment. To reset the light emitting diode (LED), perform the following:
1. Disconnect the terminal equipment from the wall jack.
2. If the light emitting diode (LED) goes off, the terminal equipment is faulty and must be replaced. If the light emitting diode (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.

\section*{A. 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 1145B1 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.

\section*{Install the MSP-1 Power Supply}

\section*{Underwriter's Laboratories (UL) Information}

The MSP-1 Power Supply has been tested and found to comply with the Underwriters Laboratories (UL) Standard Underwriter's Laboratories 1459, second edition. This standard requires that you be advised of certain safety instructions regarding the use of the power supply. These safety instructions follow the table of certifications.
\begin{tabular}{l|l} 
Complies & Underwriter's Laboratories (UL) 1459 \\
\hline Certified & Canadian Safety Association (CSA) 22.2 \\
\hline Approved & IEC 950
\end{tabular}

\section*{Important Safety Instructions}

The most careful attention has been devoted to safety standards in the manufacture of this power supply. Safety is a major factor in the design of every power supply. But, safety is your responsibility too.

Please read carefully the helpful tips listed below and on the next page. These suggestions will enable you to take full advantage of this product. Then, retain these tips for later use.

\section*{1. CAUTION:}

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 cause dangerous shock if immersed in water. To avoid the possibility of electrical shock, do not use near water.
- To reduce the risk of electric shock, do not disassemble this product. There are no user serviceable parts inside.
- 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 \(A C\) 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 does not operate normally by following the operating instructions.
- If the product has been dropped or the housing has been damaged.
- If the product exhibits a distinct change in performance.

\section*{Description of the MSP-1 Power Supply}

The MSP-1 (WP92464L1) Power Supply can be used to supply local power to Attendant Console 302B, Integrated Services Digital Network (ISDN) -T 75xx, and 85 xx series telephones connected to an AT\&T DEFINITY Communications System and to telephones needing auxiliary power for their vacuum fluorescent display. The MSP-1 can also supply auxiliary power to adjunct equipment such as the S201A and CS201A speaker phones or a 500A Headset Adapter attached to any currently manufactured analog, digital communications protocol, or Integrated Services Digital Network (ISDN)-T telephone equipped with an Adjunct jack.

\section*{CAUTION:}

The MSP-1 Power Supply can be used only with telecommunications equipment, indoors, and in a controlled environment.

The MSP-1 Power Supply has a single output of -48VDC, 0.4 amperes, and can operate from either a 120 VAC 60 Hz Power source ( 105 to 129 VAC ) or a 230 VAC 50 Hz Power source ( 198 to 264 VAC). Input voltage selection is automatic; that is, the power supply adjusts itself for the type of input voltage. The output capacity is 19.2 watts.

\section*{Locate the MSP-1 Power Supply}

You may set the MSP-1 power supply on a flat surface such as a desk. Adhesive fastener strips are packed with the MSP-1. These are used to mount it on a vertical surface such as a wall.

\section*{A. CAUTION:}

Do not locate the MSP-1 within six inches of the floor. Experience has proven that the MSP-1 will not survive the hazards of locating it near the floor.

\section*{Mount the MSP-1 Power Supply}

The double-sided adhesive fastener strip allows you to mount the power supply on a flat vertical surface, such as on the wall or on the side of the desk.

Use the following procedure to mount the power supply near the telephone.
1. Locate a clean flat vertical surface on which to mount the power supply.
2. Peel the paper backing from one of the adhesive strips.
3. Firmly press the strip to the mounting surface. The fastener side of the strip should be directed outward.
4. Peel the paper backing from the remaining adhesive strip.
5. Place the adhesive side on the top of the MSP-1 and press the strip down so it adheres to the surface. Do not place the strip on the bottom of the power supply where the rubber feet are located.
6. Carefully align the fastener surface on the top of the power supply with the fastener surface on the wall or desk and press the two surfaces together firmly.

\section*{Connect the Power Supply}

One power supply will support one telephone with or without an adjunct.
The maximum loop range between the telephone and the power supply is 250 feet (76 meters).

The power output is provided through 3 modular jacks on the power supply. These jacks are labelled as shown:
\begin{tabular}{l|l|l} 
PHONE & OTHER & LINE \\
\(-7+8\) & \(-2+5\) & \\
\hline
\end{tabular}

The - and + numbers refer to the pins on which power is present and the polarity of that power.

The PHONE and LINE jacks are 8-pin female non-keyed 657-type jacks that can accept D4, D6, and D8 modular plug cables. The OTHER jack is a 6-pin female non-keyed 657-type jack.

The powering arrangements shown in the following figures can be used with the MSP-1 Power Supply.
- Figure 9-15shows the local powering arrangement for Integrated Services Digital Network (ISDN) telephones, the Digital Communications Protocol (DCP) 7444 telephone voice frequency (VF) display, 84xx telephones, and adjuncts connected to all telephones except the 8102.
- Figure 9-16 shows the local powering arrangement for adjuncts connected to the 8102 telephone.

The type of cord(s) needed to make these connections are designated in each figure.


\section*{Figure Notes:}
1. MSP-1 Power supply
5. Adjunct jack
2. D8W cord
6. Line jack
3. D4BU cord (For analog telephones) or D8W cord (For Digital Communications Protocol (DCP) and Integrated Services Digital Network (ISDN-T) telephones)
7. Bottom of Voice Terminal/Telephone (7444 Shown)
8. "PHONE" Jack
4. Wall jack
9. "OTHER" Jack
10. "LINE" Jack

Figure 9-15. MSP-1 Connections for -48V Powered Telephones and their Adjuncts (Except the 8102)


\section*{Figure Notes:}
1. MSP-1 Power Supply
7. Wall Jack
2. D4BU Cord
8. Bottom of 8102 Telephone
3. Adjunct jack (on rear of telephone)
9. "PHONE Jack
4. Power Jack
10. "OTHER" JAck
5. Line Jack
11. "LINE" Jack
6. D4BU Cord or 2-Wire Cord

Figure 9-16. MSP-1 Connections for Adjuncts Connected to the 8102 Analog Telephone

\section*{Install the Basic Rate Interface (BRI) Terminating Resistor}

A terminating resistor is always required when the Basic Rate Interface (BRI) T-type interface card (TN556 circuit pack) is used (see \#5ESS Switch Integrated Services Digital Network Customer Premises Planning Guide Issue 7, 533-700100.

The resistors balance the cable plant between the receiver and the transmitter on the T-type interface. 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 Integrated Services Digital Network (ISDN) terminal. The resistor value is controlled from the NT1. In some cases, a terminating resistor (TR) adapter is needed and can be placed in the satellite closet or work location.

三 NOTE:
The 440A4 terminating resistor and 110RA1-12 terminating resistor block are Underwriters Laboratories (UL) listed. Most new installations will be of the 110RA1-12 terminating resistor block. The following installation instructions should be observed and heeded when installing a terminating resistor (TR) or any telephone equipment.
- 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.

\section*{Terminating Resistor Adapter}

Figure 9-17 shows an 8-pin 440A4 terminating resistor (TR) adapter. The adapter is three inches long with plugs at both ends and a short cord to connect the 8 -conductor jack. When is connected, a small screwdriver is needed for removal.

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

Figure 9-17. 8-Pin Terminating Resistor Adapter (440A4)

\section*{Closet Mounted (110RA1-12)}

The 110RA1-12 terminating resistor block is designed to mount in the telecommunications wire closet. It consists of 12 (2-pair) circuits and provides the 100 Ohm termination used for Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) circuits. Figure 9-18 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.


\section*{Figure Notes:}
1. Circuit 1
2. Circuit 2
3. Output row " \(A\) "
4. Output row "B"
5. Input row "C"
6. Only first circuit shown to all 12 circuits (2APR) per block
7. 110D-4 connector block
8. Printed circuit board mounted on standard 110A, 100APR block

Figure 9-18. Terminating Resistor Block (110RA1-12)

Figure 9-19 shows the wiring connections for the 110RA1-12 terminal block. The TN556 Basic Rate Interface (BRI) switch port is terminated to the bottom row C.

For point-to-point applications, the top row is connected to the blue station field. Notice 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.


\section*{Figure Notes:}
\begin{tabular}{ll} 
1. Part terminating resistor block & 8. Part of 4-pair blue field \\
2. 2-pair cross-connect & 9. 4-pair horizontal cables \\
3. Row "A" & 10. To Integrated Services Digital Network \\
4. Row "B" & (ISDN) S/T-interface terminals \\
5. Row "C" & 11. White or purple field \\
\begin{tabular}{ll} 
6. Basic multipoint option & 12. From Integrated Services Digital \\
7. 2-pair cross-connect & Network (ISDN) T-interface circuit \\
(2-pair)
\end{tabular}
\end{tabular}

Figure 9-19. Typical Installation of Terminating Resistor Block (110RA1-12)

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

\section*{Install Multipoint Adapters}

Multipoint Adapters are used to provide signal fan-out of the T-interface. Fan-out can be performed at the work station by the BR851-B or the 367A. These adapters support more than one Integrated Services Digital Network (ISDN) terminal per horizontal 4-pair D-Inside Wire (DIW). To support multiple horizontal runs, fan-out must be performed in the satellite closet by a cross-connected field with multiple common rows (or blades).

The 110RA1-12 provides fan-out for two horizontal runs and also contains the 100 Ohm terminating resistor. This can be used for Basic Multipoint or point-topoint with terminating resistor in the closet. Other fan-out blocks include the 110AB1-025M and the 110AB1-050M.

\section*{BR851-B Adapter (T-Adapter)}

The BR851-B supports two terminals on one multipoint Basic Rate Interface (BRI) at the workstation. It is a T -shaped device used to fan-out transmission and power. The BR851-B is an 8-position device with a single plug and two jacks. Figure 9-20 shows the wiring diagram of the BR851-B.


\section*{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 9-20. Diagram of BR851-B
367A Adapter
The 367A Adapter (Figure 9-21) provides fan-out for up to seven terminals. The 367 A is an 8 -conductor adapter and is used at the work location for bridging three to seven terminals. Order D8W cord for input when using the 367A. It can be adhesive mounted or screw mounted.


Figure Notes:
1. Jack 1
3. Jack 8
2. Jack 2
4. 367A Adapter

Figure 9-21. Diagram of 367A

\section*{Basic Multipoint Installation Distances}

Figure 9-22, Table 9-11 and Table 9-12 provide cabling distances for fan-out of Integrated Services Digital Network Basic Rate Interface (ISDN-BRI) multipoint installations. Cabling distances are abbreviated in the figure as follows:

Table 9-10. Cabling Distances for Figure 9-22
Abbreviation Description
\begin{tabular}{ll} 
A & Distance from the T-interface source to the work location \\
\hline B & Distance from the closet to the work location \\
\hline C & Less than 33 feet (10 meters) of cord
\end{tabular}

In Table 9-10, the terminating resistor (TR) is located in the closet. All distances assume 24-gauge D-Inside Wire (DIW).


\section*{Figure Notes:}
1. T-interface source (TN556)
6. Work location
2. Satellite closet
A The distance from T-interface source to work location
3. Terminating Resistor
B Distance from closet to work location
4. TE1
C Less than 33 feet ( 10 m ) of cord

\section*{Figure 9-22. Basic Multipoint with One Work Location}

Table 9-11 shows basic multipoint cabling distances for terminals.

Table 9-11. Basic Multipoint Cabling Distances
\begin{tabular}{c|c|c}
\hline NUMBER OF & & \\
TERMINALS & A & C \\
\hline 2 & \(1900 \mathrm{ft}(579 \mathrm{~m})\) & \(33 \mathrm{ft}(10 \mathrm{~m})\)
\end{tabular}

Table 9-12 shows basic multipoint cabling distances to use when the resistor is in a closet.

Table 9-12. Basic Multipoint Cabling Distances (Resistor in Closet)
\begin{tabular}{c|c|c|c}
\hline \begin{tabular}{l} 
NUMBER OF \\
TERMINALS
\end{tabular} & A & B & C \\
\hline 2 & \(1600 \mathrm{ft}(488 \mathrm{~m})\) & \(250 \mathrm{ft}(76 \mathrm{~m})\) & \(33 \mathrm{ft}(10 \mathrm{~m})\)
\end{tabular}

\section*{Install Power Adapters}

The T-type adapters contain one modular plug and two modular jacks. The piggyback arrangement allows for insertion into adjacent jacks in manifold-type jack arrangements. The 400B2 and 400F2 are power adapters. Figure 9-23 shows the side-by-side adapters.


Figure 9-23. Side View of Adapter
400B2
This piggyback adapter (Figure 9-24) provides power from the KS-22911 to PR4 of the T-interface or American National Standards Institute (ANSI) U-interface. It consists of the following:
- One 8-position, 6-conductor plug
- One 8-position, 8-conductor jack
- One 6-position, 2-conductor jack


\section*{Figure Notes:}
1. To Private Branch Exchange (PBX)
2. To Power Supply
3. To Telephone Station Set

Figure 9-24. Diagram of 400B2 Adapter

This piggyback adapter (Figure 9-25) provides auxiliary power from the KS-22911 to PR3 of the Alternate Mark Inversion (AMI) U-Interface. It consists of the following:
- One 8-position, 7-conductor modular plug
- One 8-position, 8-conductor jack
- One 6-position, 2-conductor jack


\section*{Figure Notes:}
1. To Private Branch Exchange (PBX)
2. To Power Supply
3. To Telephone Station Set

Figure 9-25. Diagram of 400F2 Adapter

\section*{Install Auxiliary Equipment}

This section describes how to install auxiliary equipment that may be used with the DEFINITY System Generic 3 switch.

\section*{Auxiliary Equipment Description}

The following optional equipment is available for use with the system.
- Processor Data Modules (PDMs) — Provide an interface to the following:
- AUDIX
- Call Management System (CMS)
- Distributed Communications System (DCS)
- Property Management System (PMS)
- Customer-provided terminals and computers

\section*{- Station Message Detailed Recording (SMDR)}
- Asynchronous Data Units (ADU)— Provide an interface between the system data line circuit pack and the customer's asynchronous data terminals and host computers. Asynchronous Data Units (ADU) can also be used to provide an interface to the Property Management System (PMS) or Station Message Detail Recording (SMDR) equipment.

\section*{Install Loudspeaker Paging and Music-on-Hold}

The Loudspeaker Paging feature provides a connection from the TN763B/C/D auxiliary trunk to a customer-provided paging amplifier. Other Auxiliary-Trunk circuit packs may be required in some countries. All attendants and telephone users have access to the voice paging equipment.

The Music-on-Hold feature provides a connection from the analog line (TN2183) or auxiliary trunk (TN763) to a customer-provided music source. Other AuxiliaryTrunk circuit packs may be required in some countries. If music-on-hold is administered, all calls on hold, waiting in a queue, or parked receive music to let the waiting party know the connection is still in active.

\section*{Install Loudspeaker Paging Access without \(\underline{\text { Paging Adapter }}\)}

\section*{Requirements}

Figure 9-26shows 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 loudspeaker interface equipment is located in the equipment room, the connections do not have to be routed through the wall jack. The connections are for one zone. Repeat connections for each paging zone.


\section*{Figure Notes:}
1. Loudspeaker system
5. 103A or wall jack
2. Green
6. Cross connect field
3. Red
7. Auxiliary Trunk (TN763 circuit pack)
4. 4-pair line cord
8. Generic 3 Cabinet

Figure 9-26. Connections for Loudspeaker Paging without Universal Coupler

\section*{Install Loudspeaker Paging Access}

Install loudspeaker paging access as follows:
1. Determine port assignment of paging zone(s) from Loudspeaker Paging Form:
\begin{tabular}{l|l|l|l|l} 
EXAMPLE: Port Number & 2 & B & 02 & 01 \\
\hline & Cabinet & Carrier & Slot & Circuit
\end{tabular}
2. Connect as shown in Figure 9-26.

Refer to Table 9-9 on page 9-17 for pinout information.

\section*{Install Music-on-Hold Access}

\section*{Requirements}

An information outlet provides access to the music source. If the music source is Federal Communications Commission (FCC) registered, the switch side of the cross-connect field is connected directly to the switch cabinet.

If the music source is not Federal Communications Commission (FCC) registered to meet United States requirements, the switch side of the crossconnect field is connected to a 909A/B universal coupler. The 909A/B universal coupler is mounted in an auxiliary cabinet, if one is available.

If an auxiliary cabinet is not available, a connectorized wiring block must be locally engineered to replace the auxiliary cabinet ED-1E443-10 intraconnection panel.

The switch side of the cross-connect field is connected by the Tand R leads to a TN763B/C/D auxiliary trunk circuit pack located in a port carrier. Other AuxiliaryTrunk circuit packs may be required in some countries.

Figure 9-27 shows the connections for the Music-on-Hold feature when the loudspeaker equipment is Federal Communications Commission (FCC) registered. Figure 9-28 shows the connections for the Music-on-Hold feature when the loudspeaker equipment is not Federal Communications Commission (FCC) registered.

The connections shown in Figure 9-27 and Figure 9-28 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 crossconnect field.


\section*{Figure Notes:}
1. Dial Dictation Equipment or music
6. R Source
7. T
2. Red (R)
8. Analog Line Circuit Pack (TN2183)
3. Green (T)
9. Generic 3i Cabinet
4. 103A or Wall Jack
10. Cross-Connect Field
5. Cross-Connect Field
11. 122A Music Adapter

Figure 9-27. Music-on-Hold/Dial Dictation, Federal Communications Commission (FCC) Registered Equipment (Auxiliary Access)

\section*{Install Federal Communications Commission (FCC) Registered Music Source}

To install Federal Communications Commission (FCC) registered music source:
1. Determine music feature port assignment from Feature-Related System Parameters Form:

2. Connect as shown Figure 9-27.

Install Recorded Announcement Equipment
This section describes how to install Recorded Announcement equipment.

\section*{Requirements}

Recorded Announcement is available from external equipment, or internally from TN-750-type circuit packs. Connect external equipment as shown in Figure 9-28.

\section*{NOTE:}

To get the benefit of battery holdover for the TN750B circuit pack, install it in an Expansion Port Network (EPN) carrier position A.


Figure Notes:
1. Recorded Announcement
5. 103A or wall jack
2. Green
6. Cross-connect field
3. Red
4. Line cord
7. Analog Line (TN2183) or Auxiliary Trunk (TN763)
8. Generic 3 Cabinet

Figure 9-28. Connections for non- Federal Communications Commission (FCC) Registered Recorded Announcement/Dial Dictation (Analog Access)

\section*{Install Processor Data Modules \\ (PDMs)}

\section*{Requirements}

The interface between the system and many types of data equipment is provided by a TN754B digital line circuit pack connected to a Processor Data Module (PDM). Other digital-line circuit packs may be required in some countries. The following types of data equipment can be connected by a Processor Data Module (PDM):
- AUDIX/Adjunct
- AUDIX/Terminal
- Call Management System (CMS)
- Distributed Communications System (DCS)
- Property Management System (PMS)
- Journal Printer
- Customer-provided terminals and host computers
- Station message detail recording (SMDR)/ Call Detail Recording (CDR)

Processor Data Modules (PDMs) are connected to TN754B digital line circuit packs and are mounted individually or in a 71A data mounting. Other digital-line circuit packs may be required in some countries. Each 71A data mounting can contain up to eight modules. This document contains only the information required to connect the modules to the switch. Module installation and testing information is contained in AT\&TSystem 75 User's Guide-Processor Data Module, 999-700-028.

The data mounting is connected by an A25D/B25A cable through the crossconnect field to a TN754B digital line circuit pack. The modules can also be mounted and connected individually through the cross-connect field.

\section*{Installation}

\section*{Connection to Data Mounting}
1. From the Data Module Form, determine port assignment of the processor data modules (PDMs):
\begin{tabular}{l|l|l|l|l} 
EXAMPLE: Port Number & 2 & B & 02 & 01 \\
\hline & Cabinet & Carrier & Slot & Circuit
\end{tabular}
2. Connect an A25D or B25A cable to the DIGITAL COMMUNICATIONS PROTOCOL-LINE connector on the rear of the data mounting.
3. Route the cable from the data mounting to the station side of the crossconnect field.
4. Write the lead designations on the connecting block with a felt-tipped pen.
5. Connect patch cords/jumper wires at cross-connect field Figure 5-1).
6. Administer according to the instructions in the following United States. English book:
- DEFINITY Communications System Generic 3 Implementation, 555-230-655


Figure Notes:
1. Processor Data Module
5. Switch side
2. Part of 25 -pair connector in 71 A multiple
6. Yellow field data mounting
7. Purple field
3. Cross-connect field
8. Digital line circuit pack (TN754)
4. Station side

Figure 9-29. Connections for Processor Data Modules (PDMs) in Data Mounting

Connection to Individual Processor Data Modules (PDMs)
1. Determine port assignment of the Processor Data Module (PDM) from the Data Module Form:
\begin{tabular}{l|l|l|l|l} 
EXAMPLE: Port Number & 2 & B & 02 & 01 \\
\hline & Cabinet & Carrier & Slot & Circuit
\end{tabular}
2. Install the module per instructions in AT\&T System 75 User's GuideProcessor Data Module, 999-700-028.
3. Install patch cord/jumper wires at cross-connect field.
4. Administer according to the instructions in the following United States English book:
- DEFINITY Communications System Generic 3 V2 Implementation, 555-230-655


Figure Notes:
1. Z3A1 or Z3A2 Asynchronous Data Unit
6. Blue or white field (ADU)
7. Purple field
2. Information outlet
8. Cross-connect field
3. Satellite site, or adapter location
9. Digital line circuit pack (TN754)
4. Station side and blue or white field
5. Switch side and purple field
- Other digital-line circuit packs may be used in some countries.

Figure 9-30. Connections for Individual Processor Data Modules (PDM)

\section*{Install Call Management System \\ (CMS) Interface}

The interface between the switch and the Call Management System (CMS) is through Processor Data Modules (PDMs). The DEFINITY System G3i uses the processor interface (TN765) as the required control circuit pack.

Connections between the Call Management System (CMS) interface and the switch are covered in"Install Processor Data Modules (PDMs)" on page 9-55.

Information for connecting the Processor Data Modules (PDMs) to the Call Management System (CMS) and setting the Processor Data Module (PDM)
option switches is contained in the 3B2 Messaging Server Installation and Maintenance Service Manual, 585-205-110.

The Call Management System (CMS) connection is illustrated below.


Figure Notes:
1. B 25 A
2. See PS6
8. Modular Processor Data Module
3. DSW-87
9. TN754 circuit pack
4. M25B
5. See note 3
6. Cross-connect field
10. CMSAG 6386 PC
7. 103A or wall jack
11. Generic \(3 i\)
7. 103 A or wall jack
12. 5000 Feet ( 1524 Meters)
13. 50 Feet (15 Meters)

Figure 9-31. Typical Call Management System (CMS) Connections to DEFINITY System G3i Using Mode Conversion

\section*{Install Property Management System (PMS) Interface}

This section describes how to install the Property Management System (PMS) interface.

\section*{Requirements}

The interface between the switch and the customers Property Management System (PMS) can be through Processor Data Modules (PDMs). Such connection is covered in "Install Processor Data Modules (PDMs)" on page 9-55.

Refer to the vendor's documentation for connecting to the Property Management System (PMS). The option switches on the Processor Data Module (PDM) must be set in accordance with the requirements for the customers Property Management System (PMS).

A journal printer can be used. The connections for the printer are the same as for the Property Management System (PMS). Refer to the vendor's documentation for connecting the Processor Data Modules (PDMs) to the printer and for setting the option switches. The switches must be set according to the requirements for the printer.

The Property Management System (PMS) interface and the journal printers can be installed using Asynchronous Data Unit (ADUs). The connections are the same as for a customer-provided data terminal (Figure 9-32 on page 9-61).

Connections to a G3i switch can be switched connections through an Asynchronous Data Unit (ADU), through a modem or through the 7400A/B or 7500 data modules.+


\section*{Figure Notes:}
1. Processor Data Module PDM)
2. Information outlet
3. Satellite site, or adapter location
4. Station side
5. Switch side
6. Digital Line Circuit Pack (TN754)
7. Purple field
8. Patch cord or jumpers
9. Blue or white field
10. Four pair line cord
11. Four pair line cord
12. Part of Cross-connect field
- Other data-line circuit packs may be used in some countries.

Figure 9-32. Connections to Asynchronous Data Unit (ADU) for Data Terminal Equipment (DTE)

\section*{Install Customer-Provided Terminal Using Asynchronous Data Unit (ADU)}

\section*{Requirements}

The interface between the switch and the customer's data terminals and host computer can be through Processor Data Modules (PDMs). Refer to section on installing Processor Data Modules (PDMs) for details.

Asynchronous data terminals, however, can be connected through a Z3A Asynchronous Data Unit (ADU) to a TN726B data line circuit pack (Figure 9-32). 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 equipped with a 248B adapter. Data units connected to receive-only printers always require external power. The need for external power must be determined experimentally for data units connected to other devices. For more information on data unit installation, refer to the Z3A Asynchronous Data Unit User's Manual, 555-401-701.

\section*{Installation}
1. Determine data unit port assignment from Data Module Form:

2. Connect the RS-232 plug on the data unit to the data terminal.
3. Refer to Figure 9-32 for an illustration.

\section*{Install Station Message Detail}

Recording (SMDR)/Call Detail Recording Unit (CDRU) Interface

The interface between the switch and Station Message Detail Recording (SMDR) can be through a Processor Data Module (PDM), Trunk Data Module (TDM), or 212-type modem.

For connections between the switch and the Processor Data Module (PDM) or Trunk Data Module (TDM), refer to the section on installing Processor Data Modules (PDMs).

The connection between the switch and the 212-type modem is the same as for external ringing (Figure 9-11). When a 212 -type modem is used, an external pooled modem circuit pack must be provided. One of the pooled modem's conversion resources is dedicated to the Station Message Detail Recording (SMDR) output device.

Connections between the G3i switch and an Asynchronous Data Unit (ADU) or data module are the same as for remote administration devices such as the Generic 3 Management Terminal (G3MT). These connections are shown in Figure 9-32 and Figure 9-33. All such connections require the mode 2 to mode 3 conversion resource shown in these figures.

Administer your connections as described in DEFINITY Communications System Generic 3 V2 Implementation, 555-230-655.

A TN726B data line circuit pack may also be used. If so, Processor Data Modules (PDMs), Trunk Data Modules (TDMs), or 212-type modems are not required for the data terminal equipment (DTE). Connections between the switch and the Station Message Detail Recording (SMDR) output receiving device is the same as a customer-provided data terminal (Figure 9-33).

The Station Message Detail Recording (SMDR) output device can be connected directly to the data communications equipment (DCE) connector on the rear of the control carrier. This connection is made using a RS-232 cable. A Processor Data Module (PDM) or Trunk Data Module (TDM), modem, or Asynchronous Data Unit (ADU) is required.

\section*{Interface Cabling to Station Message Detail Recording (SMDR) Output Device}

Figure 9-33 shows the cabling required to connect the TELESEER unit, printer, or customer-provided data terminal equipment (DTE) for an AC-powered singlecarrier cabinet. The M25B/RS-232 cable connects to the PI connector on the TELESEER unit.

\begin{abstract}
A CAUTION:
All peripherals connected to a DC-powered switch through the asynchronous Electronic Industries Association (EIA) RS-232 data terminal equipment interface on the Processor Port Network (PPN) A or B carrier or the Expansion Port Network (EPN) maintenance circuit pack require an Electronic Industries Association (EIA) 116A ground isolator. Plug the 116A ground isolator into the RS-232 interface connector (labelled DTE on the back of cabinet). The cable from the peripheral equipment is then plugged into the opto-isolator. Figure 9-33 shows the connections for a DC-powered single-carrier cabinet.
\end{abstract}

The apparatus code for the isolator is 116 A ground isolator and the AT\&T Comcode is 106005242.


Figure Notes:
1. 25 -pin RS232 cable
6. M25B
2. Digital line circuit pack (TN754)
7. M10M null modem
3. Analog line circuit pack TN746)
8. Trunk data module (TDM)
4. RS232 data terminal equipment (DTE) connector on back of cabinet
5. 94A local storage unit (LSU) or Printer, or customer-provided data communications equipment (DCE)
9. Processor Data Module (PDM)
10. Modem
11. Generic 3i

Figure 9-33. Station Message Detail Recording (SMDR) Cabling for On-Premises Data Communications Equipment (DCE) from AC Powered Single-Carrier Cabinet

Figure 9-34 shows the connections for a remote host connected by a private line.


\section*{Figure Notes:}
1. Analog Line or Central Office (CO) Trunk
2. Modem or Digital Service Unit (DSU)
3. 25-Pin Cable
4. Trunk Data Module (TDM)
5. M25B Cable

Figure 9-34. Station Message Detail Recording (SMDR) Cabling for Remote Host

Switch Settings for Processor Data Module (PDM), Trunk Data Module (TDM), or 212-Type Modem

Set the option switches for the Processor Data Module (PDM) and the Trunk Data Module (TDM) as follows:
\begin{tabular}{l|l} 
Switch & Setting \\
\hline SELF TEST & OFF \\
\hline LOC LOOP/REM LOOP & OFF \\
\hline 1200 & ON \\
\hline \begin{tabular}{l} 
AANS (Processor Data \\
Module (PDM) Only)
\end{tabular} & ON \\
\hline SIGLS & ON \\
\hline PRTY & ON \\
\hline 1/OD & ON \\
\hline All Others & OFF
\end{tabular}

\section*{212-Type Modem Switch Setting}

Set the option switches for the 212-type modem as follows:
\begin{tabular}{l|l} 
Switch & Setting \\
\hline AL & OFF \\
\hline ST & OFF \\
\hline RDL & OFF \\
\hline DL & OFF \\
\hline HS & ON
\end{tabular}

\section*{Implement and Administer System \\ Data}

After the hardware is installed and the system is activated, the data for system and telephone features can be administered. The implementation procedures are provided in the United States English book, DEFINITY Communications System Generic 3 Implementation, 555-230-655.

三 NOTE:
For easier reference, installation steps and test steps are grouped in separate chapters. It may be more efficient to install each hardware component, administer it, and then test it before going on to install another component. As an example, install the attendant console using the procedures in Chapter 9, "Install and Wire Telephones and Other Equipment", administer it using the procedures in the book listed above, and test it using the procedures in Chapter 10, "Test Telephones and Other Equipment".

\section*{Test Telephones and Other Equipment}

This chapter describes how to test the telephones and other equipment. The following tests are included in this chapter:
1. Make test calls (single-cabinet switch)
2. Make test calls (two-cabinet switch)
3. Make test calls (three-cabinet switch)
4. Test the attendant console
5. Test the selector console
6. Test External Ringing
7. Test Queue Warning Indicator
8. Test Integrated Announcement
9. Test Music-on-Hold
10. Test Emergency Transfer
11. Test remote access interface (known as Initialization and Administration System (INADS))
12. Test Basic Rate Interface (BRI)

\section*{NOTE:}

The tests in this chapter are performed after the equipment has been wired to the switch and after the customer's data for that equipment has been administered.

For easier reference, installation steps and test steps are grouped in separate chapters. It may be more efficient to install each hardware component, administer it, and then test it before going on to install another component. As an example, install the attendant console using the procedures in Chapter 9, "Install
and Wire Telephones and Other Equipment", administer it using the procedures in the United States English book, DEFINITY Communications System Generic 3 Implementation, 555-230-655, and test it using the procedures in this chapter.

The following tests are acceptance tests or sanity tests and they 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 the United States English book, DEFINITY Communications System Generic 1 and Generic 3i/s/vs Maintenance, 555-204-105.

\section*{Make Test Calls (Single-Cabinet \\ Switch)}

\section*{Description}

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).

\section*{Procedure}
1. Select a working telephone and pick up the receiver. Dial tone is heard.
2. Dial the extension number of another working telephone. Ringback is heard through the earpiece of the test telephone.
3. Answer the call at the called telephone. The conversation must be satisfactory.
4. Hang up both telephones.
5. At the test telephone, pick up the receiver. Dial tone is heard.
6. Dial the trunk access code. Dial tone is heard.
7. Dial a listed directory number (LDN) for a working telephone. Ringback is heard through the earpiece of the test telephone.
8. At the called telephone, answer the call. The conversation must be satisfactory.
9. Hang up both telephone.

\section*{Make Test Calls (Two-Cabinet Switch)}

\section*{Description}

To test a two-cabinet switch, you will make the following calls:
- Make a call from a telephone associated with a line port in the Processor Port Network (PPN) to a telephone associated with another line port in the Processor Port Network (PPN).
- Make a call from a telephone associated with a line port in the Processor Port Network (PPN) to a telephone associated with a line port in the Expansion Port Network (EPN).
- Make a call from a telephone associated with a line port in the Processor Port Network (PPN) to a listed directory number (LDN).
- Make a call from a telephone associated with a line port in the Expansion Port Network (EPN) to a telephone associated with a line port in the Expansion Port Network (EPN).
- Make a call from a telephone associated with a line port in the Expansion Port Network (EPN) to a associated with a line port in the Processor Port Network (PPN).
- Make a call from a telephone associated with a line port in the Expansion Port Network (EPN) to a listed directory number (LDN).

\section*{Procedure}
1. Select a working telephone associated with a line port in the Processor Port Network (PPN) as the test telephone and lift the receiver. Dial tone is heard.
2. Dial the extension number of a working telephone associated with a line port in the Processor Port Network (PPN). Ringback is heard through the earpiece of the test telephone.
3. At the called telephone, answer the call. Conversation must be satisfactory.
4. Hang up both telephones.
5. At the test telephone, lift the receiver.
6. Dial the extension number of a working telephone associated with a line port in the Expansion Port Network. Ringback is heard through the earpiece of the test telephone.
7. At the called telephone, answer the call. Conversation must be satisfactory.
8. Hang up both telephones.
9. At the test telephone, lift the receiver. Dial tone is heard.
10. Dial the trunk access code. Dial tone is heard.
11. Dial a listed directory number (LDN) for a working telephone. Ringback is heard through the earpiece of the test telephone.
12. At the called telephone, pick up the receiver. Conversation must be satisfactory.
13. Hang up both telephones.
14. Select a working telephone associated with a line port in the Expansion Port Network (EPN) as the test telephone and lift the receiver. Dial tone is heard.
15. Dial the extension number of a working telephone associated with a line port in the Expansion Port Network (EPN) cabinet. Ringback is heard through the earpiece of the test telephone.
16. At the called telephone, answer the call. Conversation must be satisfactory.
17. Hang up both telephones.
18. At the test telephone, pick up the receiver.
19. Dial the extension number of a working telephone associated with a line port in the Processor Port Network (PPN). Ringback is heard through the earpiece of the test telephone.
20. At the called telephone, pick up the receiver. Conversation is satisfactory; hang up the receiver at both telephones.
21. At the test telephone, pick up the receiver. Dial tone is heard.
22. Dial the trunk access code. Dial tone is heard.
23. Dial the listed directory number (LDN) for a working telephone. Ringback is heard through the earpiece of the test telephone.
24. At the called telephone, pick up the receiver. Conversation must be satisfactory.
25. Hang up both telephones.

\section*{Make Test Calls (Three-Cabinet Switch)}

\section*{Description}

To test a three-cabinet switch, make the following calls:
- Make a call from a telephone associated with a line port in the Processor Port Network (PPN) to a telephone associated with a line port in the Processor Port Network (PPN) .
- Make a call from a telephone associated with a line port in the Processor Port Network (PPN) to a telephone associated with a line port in the Expansion Port Network1 (EPN).
- Make a call from a telephone associated with a line port in the Processor Port Network (PPN) to a telephone associated with a line port in the Expansion Port Network2 (EPN).
- Make a call from a telephone associated with a line port in the Processor Port Network (PPN) to a listed directory number (LDN).
- Make a call from a telephone associated with a line port in the Expansion Port Network1 (EPN) to a telephone associated with a line port in the Expansion Port Network1 (EPN).
- Make a call from a telephone associated with a line port in the Expansion Port Network1 (EPN) to a telephone associated with a line port in the Expansion Port Network2 (EPN).
- Make a call from a telephone associated with a line port in the Expansion Port Network1 (EPN) to a telephone associated with a line port in the Processor Port Network (PPN).
- Make a call from a telephone associated with a line port in the Expansion Port Network1 (EPN) to a listed directory number (LDN).
- Make a call from a telephone associated with a line port in the Expansion Port Network2 (EPN) to a telephone associated with a line port in the Expansion Port Network2 (EPN).
- Make a call from a telephone associated with a line port in the Expansion Port Network2 (EPN) to a telephone associated with a line port in the Expansion Port Network1 (EPN).
- Make a call from a telephone associated with a line port in the Expansion Port Network2 (EPN) to a telephone associated with a line port in the Processor Port Network (PPN).
- Make a call from a telephone associated with a line port in the Expansion Port Network2 (EPN) to a listed directory number (LDN).

\section*{Procedure}
1. Select a working telephone associated with a line port in the Processor Port Network (PPN) as the test telephone, and pick up the receiver. Dial tone is heard.
2. Dial the extension number of a working telephone associated with a line port in the Processor Port Network (PPN). Ringback is heard through the earpiece of the test telephone.
3. At the called telephone, pick up the receiver. Conversation must be satisfactory.
4. Hang up both telephones.
5. At the test telephone, pick up the receiver.
6. Dial the extension number of a working telephone associated with a line port in Expansion Port Network1 (EPN) . Ringback is heard through the earpiece of the test telephone.
7. At the called telephone, pick up the receiver. Conversation must be satisfactory.
8. Hang up both telephones.
9. At the test telephone, pick up the receiver.
10. Dial the extension number of a working telephone associated with a line port in Expansion Port Network2 (EPN). Ringback is heard through the earpiece of the test telephone.
11. At the called telephone, pick up the receiver. Conversation must be satisfactory.
12. Hang up both telephones.
13. At the test telephone, pick up the receiver. Dial tone is heard.
14. Dial a trunk access code. Dial tone is heard.
15. Dial the listed directory number (LDN) for a working telephone. Ringback is heard through the earpiece of the test telephone.
16. At the called telephone, pick up the receiver. Conversation must be satisfactory.
17. Hang up both telephones.
18. Select a working telephone associated with a line port in Expansion Port Network1 (EPN) as the test telephone and pick up the receiver. Dial tone is heard.
19. Dial the extension number of a working telephone associated with a line port in Expansion Port Network1 (EPN) cabinet. Ringback is heard through the earpiece of the test telephone.
20. At the called telephone, pick up the receiver. Conversation must be satisfactory.
21. Hang up both telephones.
22. At the test telephone, pick up the receiver.
23. Dial the extension number of a working telephone associated with a line port in the Expansion Port Network2 (EPN). Ringback is heard through the earpiece of the test telephone.
24. At the called telephone, pick up the receiver. Conversation must be satisfactory.
25. Hang up both telephones.
26. At the test telephone, pick up the receiver.
27. Dial the extension number of a working telephone associated with a line port in the Processor Port Network (PPN). Ringback is heard through the earpiece of the test telephone.
28. At the called telephone, pick up the receiver. Conversation must be satisfactory.
29. Hang up both telephones.
30. At the test telephone, pick up the receiver. Dial tone is heard.
31. Dial trunk access code. Dial tone is heard.
32. Dial the listed directory number (LDN) for a working telephone. Ringback is heard through the earpiece of the test telephone.
33. At the called telephone, pick up the receiver. Conversation must be satisfactory.
34. Hang up both telephones.
35. Select a working telephone associated with a line port in Expansion Port Network2 (EPN) as the test telephone and pick up the receiver. Dial tone is heard.
36. Dial the extension number of a working telephone associated with a line port in Expansion Port Network2 (EPN) cabinet. Ringback is heard through the earpiece of the test telephone.
37. At the called telephone, pick up the receiver. Conversation must be satisfactory.
38. Hang up both telephones.
39. At the test telephone, pick up the receiver.
40. Dial the extension number of a working telephone associated with a line port in the Expansion Port Network1 (EPN). Ringback is heard through the earpiece of the test telephone.
41. At the called telephone, pick up the receiver. Conversation must be satisfactory.
42. Hang up both telephones.
43. At the test telephone, pick up the receiver.
44. Dial the extension number of a working telephone associated with a line port in the Processor Port Network (PPN). Ringback is heard through the earpiece of the test telephone.
45. At the called telephone, pick up the receiver. Conversation must be satisfactory.
46. Hang up both telephones.
47. At the test telephone, pick up the receiver. Dial tone is heard.
48. Dial the trunk access code. Dial tone is heard.
49. Dial the listed directory number (LDN) for a working telephone. Ringback is heard through the earpiece of the test telephone.
50. At the called telephone, pick up the receiver. Conversation must be satisfactory.
51. Hang up both telephones.

\section*{Test the Attendant Console}

Description
Check all lamps are operational and call another telephone in the system.

Procedure
1. Open front panel of console, press and hold Test or Self-Test switch.
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.
Atnd or green lamp associated with idle call appearance button lights.
Pos Avail or Avail 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.
Atnd or green lamp goes dark.
Pos Avail or Avail lamp lights.

\section*{Test the Selector Console}

\section*{Description}

Check that all selector console lamps are operational. Make call to a telephone in the system.

\section*{Procedure}
1. Open front panel of attendant console, press and hold Test or Self-Test switch.
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.

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.

\section*{Test External Ringing}

\section*{Description}

Make test call to attendant console to verify ringing device sounds when Night lamp on console is lighted. If ringing device has not yet been installed by customer, connect spare telephone to information outlet reserved for ringing device and make test call.

\section*{Procedure-Ringing Device Installed}
1. On G1, press the Night key.
2. Verify the Night lamp lights.
3. Select a working telephone as a test telephone.
4. At the test telephone, pick up the receiver, dial a trunk access code and the listed directory number (LDN) for the attendant console.
5. Verify the ringing device sounds.
6. At the test telephone, hang up the receiver.
7. On the attendant console, press Night key.
8. Verify Night lamp goes dark.

\section*{Procedure-Ringing Device Not Installed}
1. Connect a spare 2500-type telephone to the information outlet indicated on the console parameters screen.
2. On the attendant console, press Night key.
3. Verify Night lamp lights.
4. Select a working telephone as the test telephone.
5. At the test telephone, pick up the receiver, dial a trunk access code and the listed directory number for the attendant console.
6. Verify ringing is heard on the spare telephone.
7. At the test telephone, hang up the receiver.
8. Disconnect the spare telephone from the information outlet.
9. Press the Night key on the attendant console.
10. Verify the Night lamp goes off.
11. Notify the customer that installation is complete and the external ringing device can be installed.

\section*{Test Queue Warning Indicator}

\section*{Description}

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 yet been installed by customer, connect a spare telephone to the information outlet reserved for queue warning indicator and make a test call.

\section*{Procedure-Queue Warning Indicator Installed}
1. Administer Queue Warning Indicator number to 0 on Hunt Group Screen. Record old number.
2. Make sure all telephones in the group are disconnected or are "busy."
3. Select a working telephone as the test telephone.
4. At the test telephone, pick up the receiver and dial the number associated with a uniform call distribution (UCD) or a direct department calling (DDC) group.
5. Verify the lamp lights (see the following note).

\section*{\(\equiv\) NOTE:}

Delay Recorded Announcement is heard if it is administered for this group. The delay announcement is followed by music if Music-on-Hold is administered.
6. At the test telephone, hang up the receiver.
7. Administer queue warning threshold number to number changed in Step 1.
8. Restore service to all telephones made busy or disconnected in Step 2.

\section*{Procedure-Queue Warning Indicator Not Installed}
1. Administer Queue Warning Indicator number to 0 on Hunt Group Screen. Record old number.
2. Make sure all telephones in the group are disconnected or are "busy."
3. Connect a spare 2500 -type telephone to an information outlet.
4. Select a working telephone as the test telephone.
5. At the test telephone, pick up the receiver and the dial number associated with a uniform call distribution (UCD) or a direct department calling (DDC) group.
6. Verify ringing is heard on the spare telephone (see the following note).

\section*{\(\equiv\) NOTE:}

Delay Recorded Announcement is heard at the test telephone if it is administered for this group. The delay announcement is followed by music if Music-on-Hold is administered.
7. At the test telephone, hang up the receiver.
8. Disconnect the spare telephone from the information outlet.
9. Administer queue warning threshold number to number changed in Step 1.
10. Restore service to all telephones made busy or disconnected in Step 2. Notify customer that installation is complete and that queue warning indicator lamp can be installed.

\section*{Test Integrated Announcement}

\section*{Description}

The TN750 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.

\section*{Procedure - 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.
4. Speak the announcement into the telephone.
5. When you have finished recording the announcement, dial "\#" or hang up. Recording stops and dial tone is heard.

\section*{Procedure - 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.

\section*{Procedure -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.

\section*{Test Music-on-Hold}

\section*{Description}

Verify music is provided to a held party during any hold interval.

\section*{Procedure}
1. Select a working telephone as the test telephone.
2. At the test telephone, pick up the receiver and dial 0 for the attendant console.
3. At attendant console, answer call by pressing call appearance button (a through f) associated with the flashing Atnd lamp. The audible alert stops. Atnd lamp lights steadily.
4. Press Hold at attendant console. The Hold lamp associated with the call appearance button lights.
5. Verify music is heard at the test telephone.
6. Hang up the test telephone.

\section*{Test Emergency Transfer}

\section*{Description}

Put system in emergency transfer mode and make call using emergency transfer telephone.

There may be one, two, three, or 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, and the switch is located on the Maintenance circuit pack in the Expansion Port Network (EPN) control carrier.

The Expansion Port Network (EPN) cabinets may be tested separately from the Processor Port Network (PPN) cabinets in any system, but the Processor Port Network (PPN) cabinets in a high or critical-reliability system must have both switches set to the ON position to invoke Emergency Transfer.
1. At control carrier, set Emergency Transfer switch(es) to ON position. See Note.

\section*{NOTE:}

Pull out on Switches to overcome detents.
2. At emergency transfer telephone connected to the port network being tested, pick up the receiver and press Ground Start key, if so equipped. Dial tone is heard.
3. Dial number associated with an outside number. Audible ringing or busy tone is heard.
4. Hang up the test telephone.
5. At control carrier, set Emergency Transfer switch(es) to AUTO position.

\section*{Test Remote Access Interface (known as Initialization and Administration System)}

\section*{Description}

Test the communication link between the switch and Initialization and Administration System (INADS) and verify the alarm notification process. Make a remote test from Initialization and Administration System (INADS) to the system and a local test from the system to Initialization and Administration System (INADS).

三 NOTE:
In some countries, this remote access interface is not allowed. Check with your AT\&T representative.

\section*{Procedure-Remote Test}
1. Call outside personnel who will be accessing the switch remotely to perform administration, maintenance, and testing.
2. Ask remote access personnel to call system and login and display System Parameters Maintenance screen. The login must be successful.

NOTE:
Requirement: Product Identification on the System Parameters screen must match the Product Identification administered by the local technician.
3. Remote access personnel enters test inads-link command, terminates login, and disconnects.
4. Remote access 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 access personnel. There may be additional text in the description field if other resolved alarms were reported.
5. Remote access personnel make second call and login to system and checks the error log to verify no problems. See DEFINITY Communications System Generic 1 and Generic 3i/s/vs Maintenance, 555-204-105, or DEFINITY Communications System Generic 3r Maintenance, 555-230-105, for error log and error code information.
6. Remote access personnel terminate login and disconnects.

\section*{Procedure-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.

\section*{Test Basic Rate Interface (BRI)}

\section*{Description}

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 G3 Management Terminal (G3-MT).

\section*{Procedure-Dial Tone}
1. Lift handset of Basic Rate Interface (BRI) telephone and listen for dial tone.

\section*{Procedure-Make and Receive Calls}
1. Select a working telephone with display and dial that telephone's extension number from the Basic Rate Interface (BRI) test telephone. The called telephone rings.
2. At the called telephone, pick up the receiver. Conversation must be satisfactory.
3. Verify the extension number of the calling telephone is displayed on the display of the called telephone. The extension must be correct.
4. Hang up both telephones.
5. Call the Basic Rate Interface (BRI) test telephone from the other telephone. The Basic Rate Interface (BRI) test telephone rings.
6. Verify the name and extension of the called Basic Rate Interface (BRI) test telephone is correct as displayed on the calling telephone.
7. Hang up both telephones.

\section*{Procedure-Checking the Service Profile Identifier (SPID)}

This test requires a display telephone at the test telephone station.
1. Use appropriate procedures to display the Service Profile Identifier (SPID) on the test telephone. Procedures differ depending on the model of telephone being used. The Service Profile Identifier (SPID) must be correct.

\section*{Approved Grounds}

\section*{A}

This chapter describes the approved grounds appropriate for the single-carrier cabinets.

\section*{Definition of Approved Ground}

An approved ground is the closest acceptable medium for grounding the building entrance protector, entrance cable shield, or single-point ground of electronic Private Branch Exchange (PBX) 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 (NEC), or the applicable code in your country.

\section*{Acceptable Mediums for Protective}

Ground

The following protective ground types are acceptable:
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 \((1.3 \mathrm{~cm})\) in diameter, in direct contact with the earth for at least 10 feet ( 3 meters). 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 ( 1.6 cm ) (solid rod) or \(3 / 4\) inch \((1.9 \mathrm{~cm})\) (conduit or pipe) electrode driven to a minimum depth of 8 feet ( 2.5 meters)
- Plate electrodes - Must have a minimum of 2 square feet ( 0.6 sq. meter) of metallic surface exposed to the exterior soil

Concrete Encased Ground. - An electrode encased by at least 2 inches \((5 \mathrm{~cm})\) 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 meters) of one or more steel reinforcing bars or rods \(1 / 2\) inch \((1.3 \mathrm{~cm})\) in diameter, or at least 20 feet ( 6 meters) of bare, solid copper, 4 AWG wire.

Ground Ring. - A buried ground that encircles a building or structure at a depth of at least 2-1/2 feet ( 0.8 meter) below the earth's surface. The ground ring must be at least 20 feet ( 6 meters) of 2-AWG, bare, copper wire.

\section*{Approved Floor Grounds}

Approved floor grounds are those grounds on the floor of each high-rise building suitable for connection to the ground terminal in the riser closet and to the Private Branch Exchange (PBX) 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

\section*{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.

\section*{三 NOTE:}

All protective grounds must be electrically connected together to form a single grounding electrode system.

\section*{Earthquake Protection Procedures}


This appendix describes earthquake protection installation procedures to perform if your site experiences earthquake activity.

Use the following procedures to install earthquake protection for your cabinets.

\section*{Install Floor Mounting to Attach Cabinet to Floor}

Attach your DEFINITY System Generic 3 (G3) cabinets to the floor by completing the following steps:
1. Place the Front Mounting Angle at the location selected for the front of the control cabinet.
2. Using the angle as the template, mark the location of the mounting bolts.
3. Drill two holes \(1 / 2\)-inch \((1.3 \mathrm{~cm})\) in diameter and \(1-1 / 2(3.8 \mathrm{~cm})\) inches deep at the spot marked in Step 2.
4. Mount the Front Mounting Angle to the floor (see Figure B-1).


\section*{Figure Notes:}
1. Screw
5. Nylon insulating washer
2. Cabinet
6. Floor
3. Mounting angle
7. Concrete anchor
4. Bolt

Figure B-1. Front Mounting Angle-Concrete Floor
5. Move the cabinet back into place and attach the cabinet to the angle with two \#12-24x1/2-inch \((1.3 \mathrm{~cm})\) thread-forming screws.
6. Insert a pencil or marker through holes in the lower back of the cabinet and mark the floor directly beneath each hole.
7. Move the cabinet out of the way.
8. Drill two holes \(1 / 2\)-inch \((1.3 \mathrm{~cm})\) in diameter and \(1-1 / 2\)-inches ( 3.8 cm ) deep at the spot marked in Step 6.
9. Move the cabinet back into place.
10. Attach the cabinet to the front mounting angle using four \#12-24 by \(1 / 2-\) inch ( 1.3 cm ) thread forming screws.
11. In the back of the cabinet, lay the stiffener on the bottom of the cabinet, aligning the stiffener with the holes in the bottom of the cabinet.
12. Fasten the cabinet to the floor (see Figure B-2).


\section*{Figure Notes:}
1. Cabinet
2. Nylon Insulating Washer (2 Required)
5. Cabinet Foot
3. Hex Bolt (2 Required)
7. Concrete Anchor
4. Stiffener

Figure B-2. Cabinet Earthquake Mounting-Concrete Floor Side View

If critical reliability is provided, Cabinet \(B\) will be another control cabinet.

\section*{Install Ground Plates on Cabinet \\ Backs}

The ground plate provides the ground connection between cabinets, provides radio frequency (RF) radiation protection, and also stabilizes the cabinets.

A ground plate is required between each cabinet (see Figure B-3). Complete the following steps to attach the ground plate.
1. At the back of the cabinets, put in all the screws on the upper and lower panels, except for the screws that run along the top and bottom of each cabinet.
2. At the upper cabinet, place the top of the ground plate over the bottom of the lower-back panel. Align the four holes in the ground plate with the four holes at the bottom of the lower back cover of the cabinet and insert the screws. Do not tighten the screws yet.
3. At the top of the cabinet below the cabinet referred to in Step 2, align the bottom of the ground plate with the top four holes in the upper back cover of the lower cabinet. Insert the four screws. Do not tighten the screws yet.
4. Repeat Steps 2 and 3 until the earthquake ground plates are installed between all cabinets.
5. Tighten all screws.

\section*{Install Front Plates}

For earthquake protection and electromagnetic shielding (as required by CISPR 22 regulations), use the front plate instead of the cabinet clip to attach the cabinets to each other. Use one front plate between each cabinet.(Figure B-3).

Complete the following steps to install the front plates to the cabinet:
1. At the front of the cabinets, align the holes in the top of the earthquake front plate with the holes at the bottom of the upper cabinet, and insert the four screws. Do not tighten the screws yet.
2. At the front of the cabinets, align the holes in the bottom of the earthquake front plate with the holes at the top of the lower cabinet, and insert the four \#12-24 by \(1 / 2\)-inch ( 1.27 cm ) thread-forming screws. Do not tighten the screws yet.
3. Repeat Steps 1 and 2 until all the cabinets are fastened together with the earthquake front plate.
4. Tighten all screws.


Figure Notes:
1. Front Plate
2. Battery
3. Back Plate
- Side View of 2-Cabinets Port Network

Figure B-3. Single-Carrier Cabinet Ground Plate, Front Plate, and Battery Locations

\section*{DEFINITY AUDIX System Power Procedures}

\section*{Manually Power Down DEFINITY AUDIX System}

A yellow caution sticker is placed on the switch's power unit telling technicians to shut down the DEFINITY AUDIX System prior to powering down the switch.

To shutdown the DEFINITY AUDIX system, do the following:
1. Using a pointed object, such as a paper clip or pen (do not use a pencil), press the Boot/Shutdown button (See A on Figure C-1).
2. Hold Boot/Shutdown button in until Liquid Crystal Display (LCD) (see B in Figure C-1) flashes the message: MSHUT.
3. Release Boot/Shutdown button.

\section*{\(\equiv\) NOTE:}

DEFINITY AUDIX System takes approximately five minutes to shut down. The following sequence of events will happen during shutdown:
- Display (See B on Figure C-1) flashes the message: mShut.
- About two and a half minutes into shutdown, the display flashes the message, TEST, and the red light emitting diode (LED) (See C on Figure C-1) is steady on.
- The DEFINITY AUDIX System is now powered down.

\section*{\# NOTE:}

Even though the DEFINITY AUDIX System is shutdown, the "heartbeat" indication on the display continues to flash.

\section*{三 NOTE:}

Upon the switch powering up, DEFINITY AUDIX System will automatically reboot. This sequence may show an MD or MJ ADX alarm in the display until the switch has powered up. When the switch has completed its power up sequence, the DEFINITY AUDIX System display will read: ADX.


Figure Notes:
1. Boot/Shutdown Button
3. Red Light Emitting Diode (LED)
2. Liquid Crystal Display (LCD)

Figure C-1. DEFINITY AUDIX System

\section*{Manual Power Up DEFINITY AUDIX System}

To power up the DEFINITY AUDIX System, do the following:
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 Boot/Shutdown button in until the display indicates the message, BTEST, steady on.
3. Release Boot/Shutdown button.

\section*{NOTE:}

DEFINITY AUDIX System takes approximately five minutes to power up. The following occurs during power up:
- Display indicates the message, BTEST, steady on and red light emitting diode (LED) is steady on.
- About 30 seconds into power up, the display indicates the message, воот, and the red light emitting diode (LED) goes off.
- The display has the following sequence of steady on messages:
- OSINIT
- OS
- AINIT
- ADX
- The DEFINITY AUDIX System is now powered up.

三 NOTE:
When DEFINITY AUDIX System is in the active state, the display indicates a steady on message, ADX, and the red light emitting diode (LED) is off.

\section*{Country Differences}

\section*{United States to United Kingdom and France Terminology Translations}
\begin{tabular}{|c|c|c|}
\hline United States & United Kingdom & France \\
\hline Trunk & Exchange Line & \\
\hline Station & Extension Line & \\
\hline Attendant & Operator's console & \\
\hline Digital Service
\[
1(\mathrm{DS} 1) / \mathrm{T} 1
\] & E1 & \\
\hline CO (Central Office) & Public exchange or Public Switched Telephone Network (PSTN) & \\
\hline Tip/Ring & A/B & \\
\hline Direct Inward Dialed (DID) & Direct Dial Inward (DDI) & \\
\hline ground & earth & \\
\hline & & \\
\hline
\end{tabular}

\section*{Country-Specific Hardware}

The following pages contain tables of country-specific hardware. Please see the table for your country required hardware.

This information is volatile and is, therefore, dated. If you are reading this document more than six months after the date of this document, please check with AT\&T personnel in your country for the most recent information.

Table D-1. United States and Canada

*PPM means Periodic Pulse Metering.

Table D-2. Argentina
\begin{tabular}{l|l|l|l|l|l}
\hline & \multicolumn{3}{|l|}{ Argentina } & & \\
\hline & & & & & \\
\hline Tone Detector & & TN744C & TN2182 & TN748D & TN748C \\
\hline Tone-Clock & & TN2182 & TN780 & & \\
\hline Call Classifier & & TN744C & TN2182 & TN744B & \\
\hline R2MFC Circuit & & TN744C & TN2182 & TN744B & \\
\hline Speech Synthesizer & & TN725B & & &
\end{tabular}

Table D-2. Argentina
\begin{tabular}{l|l|l|l|l|l}
\hline & \multicolumn{2}{|l|}{ Argentina } & & \\
\hline Announcement & & TN750C & TN750B & & \\
\hline Auxiliary Trunk & TN763D & & & \\
\hline Analog Direct Inward Dialed (DID) Trunk & \begin{tabular}{l} 
Not \\
Applicable
\end{tabular} & & & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & & TN747B & & & \\
\hline Analog Central Office (CO) Trunk (w/PPM *) & & \begin{tabular}{l} 
Not \\
Applicable
\end{tabular} & & & \\
\hline 4 Wire Tie Trunk & & TN760Dv15 & & & \\
\hline 2 Wire Tie Trunk & \begin{tabular}{l} 
Not \\
Applicable
\end{tabular} & & & \\
\hline \begin{tabular}{l} 
Digital Central Office (Co)/Direct Inward \\
Dialed (DID) Trunk
\end{tabular} & TN464F & TN464E & TN464D & \\
\hline Digital Tie Trunk & TN464F & TN464E & TN464D & \\
\hline \begin{tabular}{l} 
Digital Integrated Services Digital Network \\
(ISDN) Central Office (CO) Trunk
\end{tabular} & TN464F & TN464E & TN464D & \\
\hline 8 port Analog Line & TN742 & & & \\
\hline 16 port Analog Line & TN746B & & & \\
\hline 4 Wire Digital Line & TN754B & & & \\
\hline 2 Wire Digital Line & TN2136 & & & \\
\hline Data Line & TN726B & & & \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-3. Australia
\begin{tabular}{l|l|l|l|l|l}
\hline & & \multicolumn{3}{|l}{ Australia } \\
\hline & & & & & \\
\hline Tone Detector & & TN744C & TN2182 & TN420C & TN420B \\
\hline Tone-Clock & TN2182 & TN780 & TN419B & \\
\hline Call Classifier & & TN744C & TN2182 & TN744B & \\
\hline R2MFC Circuit & \begin{tabular}{l} 
Not \\
Applicable
\end{tabular} & & & \\
\hline Speech Synthesizer & & TN457 & & & \\
\hline Announcement & & TN750C & TN750B & & \\
\hline Auxiliary Trunk & TN763D & TN417 & & \\
\hline Analog Direct Inward Dialed (DID) Trunk & & TN436B & TN436 & & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & & TN2147C & TN2147 & & \\
\hline Analog Central Office (CO) Trunk (w/PPM *) & & TN465C & TN438B & & \\
\hline 4 Wire Tie Trunk & TN437B & TN437 & & \\
\hline 2 Wire Tie Trunk & TN439 & & & \\
\hline
\end{tabular}

Table D-3. Australia
\begin{tabular}{l|l|l|l|l|l}
\hline & & \multicolumn{3}{l}{} \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-4. Belgium
\begin{tabular}{l|l|l|l|l|l}
\hline & \multicolumn{3}{|l|}{ Belgium } & & \\
\hline & & & & & \\
\hline Tone Detector & & TN744C & TN2182 & TN420C & \\
\hline Tone-Clock & & TN2182 & TN780 & & \\
\hline Call Classifier & & TN744C & TN2182 & TN744B & \\
\hline R2MFC Circuit & & TN744C & TN2182 & TN744B & \\
\hline Speech Synthesizer & & TN457 & & & \\
\hline Announcement & & TN750C & TN750B & & \\
\hline Auxiliary Trunk & TN763D & & & \\
\hline Analog Direct Inward Dialed (DID) Trunk & & TN2146 & & & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & & TN2147C & TN2147 & & \\
\hline Analog Central Office (CO) Trunk (w/PPM *) & & TN465C & TN465B & & \\
\hline 4 Wire Tie Trunk & & TN760Dv11 & & & \\
\hline 2 Wire Tie Trunk & Not & & & \\
\hline Digital Central Office(CO)/Direct Inward & TN464F & TN464E & TN464D & \\
\hline Dialed (DID) Trunk & & & & \\
\hline Digital Tie Trunk & TN464F & TN464E & TN464D & \\
\hline \begin{tabular}{l} 
Digital Integrated Services Digital Network \\
(ISDN) Central Office (CO) Trunk
\end{tabular} & TN464F & TN464E & TN464D & \\
\hline 8 port Analog Line & TN2183 & TN2149 & & \\
\hline 16 port Analog Line & & & & \\
\hline
\end{tabular}

Table D-4. Belgium
\begin{tabular}{l|l|l|l|l|l}
\hline & \multicolumn{3}{|l|}{ Belgium } & & \\
\hline 4 Wire Digital Line & TN754B & & & \\
\hline 2 Wire Digital Line & TN2181 & TN2136 & & \\
\hline Data Line & TN726B & & &
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-5. China
\begin{tabular}{l|l|l|l|l|l} 
& \multicolumn{3}{l}{} \\
\hline & China \\
\hline Tone Detector & & & & \\
\hline Tone-Clock & TN744C & TN2182 & & \\
\hline Call Classifier & TN2182 & & & \\
\hline R2MFC Circuit & & TN744C & TN2182 & TN744B & \\
\hline Speech Synthesizer & TN744C & TN2182 & & \\
\hline Announcement & & & & \\
\hline Auxiliary Trunk & & TN750C & TN750B & & \\
\hline Analog Direct Inward Dialed (DID) Trunk & & & & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & & TN465C & & & \\
\hline Analog Central Office (CO) Trunk (w/PPM*) & & & & & \\
\hline 4 Wire Tie Trunk & & & & \\
\hline 2 Wire Tie Trunk & & & & \\
\hline \begin{tabular}{l} 
Digital Central Office/Direct Inward Dialed \\
(DID) Trunk
\end{tabular} & & TN464F & & & \\
\hline Digital Tie Trunk & & & & \\
\hline \begin{tabular}{l} 
Digital Integrated Services Digital Network \\
(ISDN) Central Office (CO) Trunk
\end{tabular} & TN464F & TN464E & & \\
\hline 8 port Analog Line & TN464F & & & \\
\hline 16 port Analog Line & TN2183 & & & \\
\hline 4 Wire Digital Line & TN754B & & & \\
\hline 2 Wire Digital Line & TN2181 & & & \\
\hline Data Line & & & & \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-6. Czech Republic, Slovakia, and Ecuador
\begin{tabular}{|c|c|c|c|c|c|}
\hline & \multicolumn{2}{|l|}{Czech Republic \& Slovakia} & & \multicolumn{2}{|l|}{Ecuador} \\
\hline Tone Detector & TN744C & TN2182 & TN420C & & \\
\hline Tone-Clock & TN2182 & TN780 & & & \\
\hline Call Classifier & TN744C & TN2182 & TN744B & & \\
\hline R2MFC Circuit & \begin{tabular}{l}
Not \\
Applicable
\end{tabular} & & & & \\
\hline Speech Synthesizer & TN457 & & & & \\
\hline Announcement & TN750C & TN750B & & TN750C & TN750B \\
\hline Auxiliary Trunk & TN763D & & & TN763D & \\
\hline Analog Direct Inward Dialed (DID) Trunk & TN753v17 & & & & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & TN747Bv12 & & & & \\
\hline Analog Central Office (CO) Trunk (w/PPM *) & TN465C & TN465B & & & \\
\hline 4 Wire Tie Trunk & TN760Dv11 & & & & \\
\hline 2 Wire Tie Trunk & & & & & \\
\hline Digital Central Office (CO)/Direct Inward Dialed (DID) Trunk & TN464F & TN464E & & & \\
\hline Digital Tie Trunk & TN464F & TN464E & & & \\
\hline Digital Integrated Services Digital Network (ISDN) Central Office (CO) Trunk & Not Applicable & & & & \\
\hline 8 port Analog Line & & & & & \\
\hline 16 port Analog Line & TN746B & & & & \\
\hline 4 Wire Digital Line & TN754B & & & TN754B & \\
\hline 2 Wire Digital Line & TN2136 & & & TN2136 & \\
\hline Data Line & TN726B & & & TN726B & \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-7. France and Germany
\begin{tabular}{l|l|l|l|l|l|l|l} 
\\
& & \multicolumn{2}{|c|}{ France } & & \multicolumn{2}{|c}{ Germany } \\
\hline & & & & & & & \\
\hline Tone Detector & & TN744C & TN2182 & & & TN744C & TN2182 \\
\hline TN420C \\
\hline Tone-Clock & & TN2182 & & & & TN2182 & TN780 \\
\hline Call Classifier & & TN744C & TN2182 & TN744B & & TN744C & TN2182 \\
\hline
\end{tabular}

Table D-7. France and Germany


\section*{\(\Longrightarrow\) NOTE:}

All systems in France require France-specific carriers provided by AT\&T GBCS Barphone.
*PPM means Periodic Pulse Metering.
~ Become RON/TRON with modifications.

Table D-8. Greece
\begin{tabular}{l|l|l|l|l|l}
\hline & & \multicolumn{2}{l|}{} \\
\hline \multicolumn{2}{l|}{} \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-9. Hong Kong
\begin{tabular}{l|l|l|l|l|l}
\hline \multirow{6}{l}{} \\
& & \multicolumn{4}{l}{ Hong Kong } \\
\hline & & & & & \\
\hline Tone Detector & & TN744C & TN2182 & TN748D & \\
\hline Tone-Clock & TN2182 & TN780 & TN756 & \\
\hline Call Classifier & & TN744C & TN2182 & TN744B & \\
\hline R2MFC Circuit & \begin{tabular}{l} 
Not \\
Applicable
\end{tabular} & & & \\
\hline Speech Synthesizer & & TN725B & & &
\end{tabular}

Table D-9. Hong Kong
\begin{tabular}{l|l|l|l|l|l}
\hline & \multicolumn{3}{l|}{ Hong Kong } & \multicolumn{1}{l}{} \\
\hline Announcement & & TN750C & TN750B & TN750 & \\
\hline Auxiliary Trunk & TN763D & TN763C & & \\
\hline Analog Direct Inward Dialed (DID) Trunk & & TN753 & & & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & & TN747B & TN465 & & \\
\hline Analog Central Office (CO) Trunk (w/PPM *) & \begin{tabular}{l} 
Not \\
Applicable
\end{tabular} & & & \\
\hline 4 Wire Tie Trunk & & TN760D & & & \\
\hline 2 Wire Tie Trunk & & \begin{tabular}{l} 
Not \\
Applicable
\end{tabular} & & & \\
\hline \begin{tabular}{l} 
Digital Central Office (CO)/Direct Inward \\
Dialed (DID) Trunk
\end{tabular} & TN464F & TN464E & TN464D & TN464C \\
\hline Digital Tie Trunk & \begin{tabular}{l} 
Not \\
Applicable
\end{tabular} & & & \\
\hline \begin{tabular}{l} 
Digital Integrated Services Digital Network \\
(ISDN) Central Office (CO) Trunk
\end{tabular} & TN742 & & & \\
\hline 8 port Analog Line & TN746B & & & \\
\hline 16 port Analog Line & TN754B & & & \\
\hline 4 Wire Digital Line & TN2181 & & & \\
\hline 2 Wire Digital Line & TN726B & & & \\
\hline Data Line & & & & \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-10. Hungary
\begin{tabular}{l|l|l|l|l|l} 
& \multicolumn{2}{|l|}{ Hungary } & & \\
\hline & & & & & \\
\hline Tone Detector & TN744C & TN2182 & TN748D & TN748C \\
\hline Tone-Clock & TN2182 & TN780 & TN756 & \\
\hline Call Classifier & TN744C & TN2182 & TN744B & \\
\hline R2MFC Circuit & & TN744C & TN2182 & TN744B & \\
\hline Speech Synthesizer & & TN725B & & & \\
\hline Announcement & TN750C & TN750B & & \\
\hline Auxiliary Trunk & TN763D & & & \\
\hline Analog Direct Inward Dialed (DID) Trunk & TN753 & & & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & TN747B & & & \\
\hline Analog Central Office Trunk (w/PPM *) & & TN465C & TN465B & & \\
\hline 4 Wire Tie Trunk & & TN760D & & & \\
\hline 2 Wire Tie Trunk & TN2140B & & & \\
\hline Digital Central Office (CO)/Direct Inward & & TN464F & TN464E & TN464D & \\
\hline Dialed (DID) Trunk & & & & \\
\hline Digital Tie Trunk & TN464E & TN464D & \\
\hline \begin{tabular}{l} 
Digital Integrated Services Digital Network \\
(ISDN) Central Office (CO) Trunk
\end{tabular} & & Not & & & \\
\hline 8 port Analog Line & Applicable & & & \\
\hline 16 port Analog Line & TN742 & & & \\
\hline 4 Wire Digital Line & TN746B & & & \\
\hline 2 Wire Digital Line & TN2181 & TN2136 & & \\
\hline Data Line & & & & \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-11. Italy
\begin{tabular}{l|l|l|l|l|l|l|l}
\hline & & \multicolumn{1}{|l|}{ Italy } \\
\hline & & & & & & \\
\hline Tone Detector & & TN744C & TN2182 & TN420C & & \\
\hline Tone-Clock & & TN2182 & TN780 & TN419B & & \\
\hline Call Classifier & & TN744C & TN2182 & TN744B & & & \\
\hline R2MFC Circuit & & \begin{tabular}{l} 
Not \\
Applicable
\end{tabular} & & & & \\
\hline Speech Synthesizer & & TN433 & & & & \\
\hline Announcement & & TN750C & TN750B & & & & \\
\hline
\end{tabular}

Table D-11. Italy
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline & \multicolumn{5}{|l|}{Italy} & \\
\hline Auxiliary Trunk & TN763D & TN417 & & & & \\
\hline Analog Direct Inward Dialed (DID) Trunk & TN2139 & & & & & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & Not Applicable & & & & & \\
\hline Analog Central Office (CO) Trunk (w/PPM *) & TN2138 & & & & & \\
\hline 4 Wire Tie Trunk & TN2140B & TN2140 & & & & \\
\hline 2 Wire Tie Trunk & TN497 & & & & & \\
\hline Digital Central Office (CO)/Direct Inward Dialed (DID) Trunk & TN464F & TN464E & TN464D & TN464C & TN464B & \\
\hline Digital Tie Trunk & TN464F & TN464E & TN464D & TN464C & TN464B & \\
\hline Digital Integrated Services Digital Network (ISDN) Central Office (CO) Trunk & Not Applicable & & & & & \\
\hline 8 port Analog Line & & & & & & \\
\hline 16 port Analog Line & TN2183 & TN2135 & & & & \\
\hline 4 Wire Digital Line & TN754B & TN413 & & & & \\
\hline 2 Wire Digital Line & TN2181 & TN2136 & & & & \\
\hline Data Line & TN726B & & & & & \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-12. Japan
\begin{tabular}{|c|c|c|c|c|c|}
\hline & \multicolumn{5}{|l|}{Japan} \\
\hline Tone Detector & TN744C & TN2182 & TN748D & & \\
\hline Tone-Clock & TN2182 & TN780 & TN756 & & \\
\hline Call Classifier & TN744C & TN2182 & TN744B & & \\
\hline R2MFC Circuit & \begin{tabular}{l}
Not \\
Applicable
\end{tabular} & & & & \\
\hline Speech Synthesizer & TN725B & & & & \\
\hline Announcement & TN750C & TN750B & TN750 & & \\
\hline Auxiliary Trunk & TN763D & TN763C & & & \\
\hline Analog Direct Inward Dialed (DID) Trunk & TN429 & & & & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & TN429 & TN465 & & & \\
\hline Analog Central Office (CO) Trunk (w/PPM *) & Not Applicable & & & & \\
\hline 4 Wire Tie Trunk & TN760D & & & & \\
\hline 2 Wire Tie Trunk & TN439 & & & & \\
\hline Digital Central Office (CO)/Direct Inward Dialed (DID) Trunk & TN464F & TN464E & TN464D & TN464C & TN767 \\
\hline Digital Tie Trunk & TN464F & TN464E & TN464D & TN464C & TN767 \\
\hline Digital Integrated Services Digital Network (ISDN) Central Office Trunk & TN464F & TN464E & TN464D & TN464C & \\
\hline 8 port Analog Line & TN742 & & & & \\
\hline 16 port Analog Line & TN746B & TN479 & & & \\
\hline 4 Wire Digital Line & TN754B & & & & \\
\hline 2 Wire Digital Line & TN2181 & & & & \\
\hline Data Line & TN726B & & & & \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.
\(\qquad\)

Table D-13. Mexico
\begin{tabular}{l|l|l|l|l|l}
\hline & & \multicolumn{5}{l}{ Mexico } & \\
\hline & & & & & \\
\hline Tone Detector & & TN744C & TN2182 & TN748D & \\
\hline Tone-Clock & & TN2182 & TN780 & TN756 & \\
\hline Call Classifier & & TN744C & TN2182 & TN744B & \\
\hline R2MFC Circuit & & TN744C & TN2182 & TN744B & \\
\hline Speech Synthesizer & & TN725B & & & \\
\hline
\end{tabular}

Table D-13. Mexico
\begin{tabular}{l|l|l|l|l|l}
\hline & \multicolumn{3}{l|}{ Mexico } \\
\hline Announcement & & TN750C & \multicolumn{1}{l}{} \\
\hline \multicolumn{2}{l}{ TN750B } & TN750 & \\
\hline Auxiliary Trunk & TN763D & TN763C & & \\
\hline Analog Direct Inward Dialed Trunk (DID) & \begin{tabular}{l} 
Not \\
Applicable
\end{tabular} & & & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & & TN747B & & & \\
\hline Analog Central Office (CO) Trunk (w/PPM *) & & TN465C & TN465B & & \\
\hline 4 Wire Tie Trunk & & TN760D & & & \\
\hline 2 Wire Tie Trunk & & & & & \\
\hline \begin{tabular}{l} 
Digital Central Office (CO)/Direct Inward \\
Dialed (DID) Trunk
\end{tabular} & TN464F & & & \\
\hline Digital Tie Trunk & TN464F & TN464E & TN464D & TN464C \\
\hline \begin{tabular}{l} 
Digital Integrated Services Digital Network \\
(ISDN) Central Office (CO) Trunk
\end{tabular} & TN464F & & & \\
\hline 8 port Analog Line & TN742 & & & \\
\hline 16 port Analog Line & TN746B & & & \\
\hline 4 Wire Digital Line & TN754B & & & \\
\hline 2 Wire Digital Line & & & & \\
\hline Data Line & TN726B & & & \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-14. Netherlands
\begin{tabular}{l|l|l|l|l}
\hline & \multicolumn{2}{|l}{ Netherlands } \\
\hline & & & & \\
\hline Tone Detector & & TN744C & TN2182 & TN420C \\
\hline Tone-Clock & TN2182 & TN780 & \\
\hline Call Classifier & & TN744C & TN2182 & TN744B \\
\hline R2MFC Circuit & & TN457 \\
Applicable & & \\
\hline Speech Synthesizer & & TN750C & TN750B & \\
\hline Announcement & & TN763D & & \\
\hline Auxiliary Trunk & TN2146 & & \\
\hline Analog Direct Inward Dialed (DID) Trunk & TN2147C & & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & & \begin{tabular}{l} 
Not \\
Applicable
\end{tabular} & & \\
\hline Analog Central Office (CO) Trunk (w/PPM *) & TN760Dv11 & & \\
\hline 4 Wire Tie Trunk & & & \\
\hline 2 Wire Tie Trunk & & & \\
\hline
\end{tabular}

Table D-14. Netherlands
\begin{tabular}{l|l|l|l|l}
\hline & & \multicolumn{2}{l}{ Netherlands } \\
\hline \begin{tabular}{l} 
Digital Central Office (CO)/Direct Inward Dialed \\
(DID) Trunk
\end{tabular} & & TN464F & TN464E & TN464D \\
\hline Digital Tie Trunk & & TN464F & TN464E & TN464D \\
\hline \begin{tabular}{l} 
Digital Integrated Services Digital Network (ISDN) \\
Central Office (CO) Trunk
\end{tabular} & TN464F & TN464E & TN464D \\
\hline 8 port Analog Line & & & & \\
\hline 16 port Analog Line & & TN2183 & TN2144 & \\
\hline 4 Wire Digital Line & & TN2136 & & \\
\hline 2 Wire Digital Line & TN726B & & \\
\hline Data Line & & &
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-15. Poland and Russia
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline & \multicolumn{3}{|l|}{Poland} & & \multicolumn{3}{|l|}{Russia} \\
\hline Tone Detector & TN744C & TN2182 & TN748D & TN748C & TN744C & & TN420C \\
\hline Tone-Clock & TN2182 & TN780 & TN756 & & TN2182 & TN780 & \\
\hline Call Classifier & TN744C & TN2182 & TN744B & & & & \\
\hline R2MFC Circuit & TN744C & TN2182 & TN744B & & TN744C & TN2182 & TN744Bv2 \\
\hline Speech Synthesizer & TN725B & & & & TN457 & & \\
\hline Announcement & TN750C & TN750B & & & TN750C & TN750B & \\
\hline Auxiliary Trunk & TN763D & & & & TN763D & & \\
\hline Analog Direct Inward Dialed (DID) Trunk & TN753 & & & & TN753v17 & TN2199 & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & TN747B & & & & TN747Bv12 & TN2199 & \\
\hline Analog Central Office (CO) Trunk (w/PPM *) & & & & & TN465C & TN465B & TN465 \\
\hline 4 Wire Tie Trunk & TN760D & & & & TN760Dv11 & & \\
\hline \multicolumn{8}{|l|}{2 Wire Tie Trunk} \\
\hline Digital Central Office (CO)/Direct Inward Dialed (DID) Trunk & & & & & TN464F & & \\
\hline Digital Tie Trunk & TN464F & TN464E & TN464D & & TN464F & & \\
\hline Digital Integrated Services Digital Network (ISDN) Central Office (CO) Trunk & Not Applicable & & & & Not Applicable & & \\
\hline 8 port Analog Line & TN742 & & & & & & \\
\hline 16 port Analog Line & TN746B & & & & TN746B & & \\
\hline
\end{tabular}

D-14 Issue 1 September 1995

Table D-15. Poland and Russia
\begin{tabular}{l|l|l|l|l|l|l|l|l}
\hline \multicolumn{9}{l|}{} \\
& \multicolumn{3}{|l|}{ Poland } & & \multicolumn{2}{l}{ Russia } \\
\hline 4 Wire Digital Line & & TN754B & & & & & TN754B & \\
\hline 2 Wire Digital Line & & TN2181 & TN2136 & & & & TN2181 & TN2136 \\
\hline Data Line & TN726B & & & & TN726B & & \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-16. Saudi Arabia
\begin{tabular}{|c|c|c|c|c|c|}
\hline & \multicolumn{5}{|l|}{Saudi Arabia} \\
\hline Tone Detector & TN744C & TN2182 & TN748D & & \\
\hline Tone-Clock & TN2182 & TN780 & TN756 & & \\
\hline Call Classifier & TN744C & TN2182 & TN744B & & \\
\hline R2MFC Circuit & TN744C & TN2182 & TN744B & & \\
\hline Speech Synthesizer & TN725B & & & & \\
\hline Announcement & TN750C & TN750B & & & \\
\hline Auxiliary Trunk & TN763D & TN763C & & & \\
\hline Analog Direct Inward Dialed (DID) Trunk & TN753 & & & & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & TN747B & & & & \\
\hline Analog Central Office (CO) Trunk (w/PPM *) & & & & & \\
\hline 4 Wire Tie Trunk & TN760D & & & & \\
\hline 2 Wire Tie Trunk & & & & & \\
\hline Digital Central Office (CO)/Direct Inward Dialed (DID) Trunk & TN464F & & & & \\
\hline Digital Tie Trunk & TN464F & TN464E & TN464D & TN464C & TN464B \\
\hline Digital Integrated Services Digital Network (ISDN) Central Office (CO) Trunk & TN464F & & & & \\
\hline 8 port Analog Line & TN742 & & & & \\
\hline 16 port Analog Line & TN746B & & & & \\
\hline 4 Wire Digital Line & TN754B & & & & \\
\hline 2 Wire Digital Line & TN2181 & & & & \\
\hline Data Line & TN726B & & & & \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-17. Singapore
\begin{tabular}{l|l|l|l|l|l} 
& & \multicolumn{1}{|l}{} \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-18. Spain and Taiwan
\begin{tabular}{l|l|l|l|l|l|l|l|l|l} 
\\
& & \multicolumn{2}{|c|}{ Spain } & & \multicolumn{1}{l|}{\begin{tabular}{l} 
Taiwan \\
\hline
\end{tabular}} & & & & \\
\hline
\end{tabular}

Table D-18. Spain and Taiwan
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline & \multicolumn{2}{|l|}{Spain} & & \multicolumn{5}{|l|}{Taiwan} \\
\hline Speech Synthesizer & TN457 & & & TN725B & & & & \\
\hline Announcement & TN750C & TN750B & & TN750C & TN750B & & & \\
\hline Auxiliary Trunk & TN763D & & & TN763D & TN763C & & & \\
\hline Analog Direct Inward Dialed (DID) Trunk & Not Applicable & & & TN753 & & & & \\
\hline \begin{tabular}{l}
Analog Central Office (CO) \\
Trunk (no PPM *)
\end{tabular} & TN2147C & & & TN747B & & & & \\
\hline Analog Central Office (CO) Trunk (w/PPM *) & TN465C & & & & & & & \\
\hline 4 Wire Tie Trunk & Not Applicable & & & TN760D & & & & \\
\hline 2 Wire Tie Trunk & \begin{tabular}{l}
Not \\
Applicable
\end{tabular} & & & & & & & \\
\hline Digital Central Office (CO)/Direct Inward Dialed (DID) Trunk & TN464F & TN464E & & & & & & \\
\hline Digital Tie Trunk & TN464F & & & TN464F & TN464E & TN464D & TN464C & TN767 \\
\hline \begin{tabular}{l}
Digital \\
Integrated \\
Services Digital Network (ISDN) Central Office (CO) Trunk
\end{tabular} & TN464F & TN464E & & Not Applicable & & & & \\
\hline 8 port Analog Line & & & & TN742 & & & & \\
\hline 16 port Analog Line & TN2183 & TN2180 & & TN746B & & & & \\
\hline 4 Wire Digital Line & TN754B & & & TN754B & & & & \\
\hline 2 Wire Digital Line & TN2181 & & & TN2181 & & & & \\
\hline Data Line & TN726B & & & TN726B & & & & \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-19. United Kingdom
\begin{tabular}{|c|c|c|c|c|}
\hline & \multicolumn{4}{|l|}{United Kingdom} \\
\hline Tone Detector & TN744C & TN2182 & TN420C & TN420B \\
\hline Tone-Clock & TN2182 & TN780 & TN419B & \\
\hline Call Classifier & TN744C & TN2182 & TN744B & \\
\hline R2MFC Circuit & \begin{tabular}{l}
Not \\
Applicable
\end{tabular} & & & \\
\hline Speech Synthesizer & TN457 & & & \\
\hline Announcement & TN750C & TN750B & & \\
\hline Auxiliary Trunk & TN763D & TN417 & & \\
\hline Analog Direct Inward Dialed (DID) Trunk & TN459B & TN459 & & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & TN2147C & TN2147 & & \\
\hline Analog Central Office (CO) Trunk (w/PPM *) & TN447 & & & \\
\hline 4 Wire Tie Trunk & TN458 & & & \\
\hline 2 Wire Tie Trunk & & & & \\
\hline Digital Central Office (CO)/Direct Inward Dialed (DID) Trunk & TN464F & TN464E & TN464D & \\
\hline Digital Tie Trunk & TN464F & TN464E & TN464D & TN464C \\
\hline Digital Integrated Services Digital Network (ISDN) Central Office (CO) Trunk & TN464F & TN464E & TN464D & \\
\hline 8 port Analog Line & TN467 & & & \\
\hline 16 port Analog Line & TN2183 & TN468B & TN468 & \\
\hline 4 Wire Digital Line & TN754B & TN413 & & \\
\hline 2 Wire Digital Line & TN2181 & & & \\
\hline Data Line & TN726B & & & \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

Table D-20. Venezuela
\begin{tabular}{|c|c|c|c|c|}
\hline & \multicolumn{4}{|l|}{Venezuela} \\
\hline Tone Detector & TN744C & TN2182 & TN748D & \\
\hline Tone-Clock & TN2182 & TN780 & TN756 & \\
\hline Call Classifier & TN744C & TN2182 & TN744B & \\
\hline R2MFC Circuit & TN744C & TN2182 & TN744B & \\
\hline Speech Synthesizer & TN725B & & & \\
\hline Announcement & TN750C & TN750B & TN750 & \\
\hline Auxiliary Trunk & TN763D & TN763C & & \\
\hline Analog Direct Inward Dialed (DID) Trunk & TN753 & & & \\
\hline Analog Central Office (CO) Trunk (no PPM *) & TN747B & & & \\
\hline Analog Central Office (CO) Trunk (w/PPM *) & TN465C & TN465B & & \\
\hline 4 Wire Tie Trunk & TN760D & & & \\
\hline 2 Wire Tie Trunk & TN439 & & & \\
\hline Digital Central Office (CO)/Direct Inward Dialed (DID) Trunk & \begin{tabular}{l}
Not \\
Applicable
\end{tabular} & & & \\
\hline Digital Tie Trunk & TN464F & TN464E & TN464D & TN464C \\
\hline Digital Integrated Services Digital Network (ISDN) Central Office (CO) Trunk & \begin{tabular}{l}
Not \\
Applicable
\end{tabular} & & & \\
\hline 8 port Analog Line & TN742 & & & \\
\hline 16 port Analog Line & TN746B & & & \\
\hline 4 Wire Digital Line & TN754B & TN413 & & \\
\hline 2 Wire Digital Line & TN2181 & & & \\
\hline Data Line & TN726B & & & \\
\hline
\end{tabular}
*PPM means Periodic Pulse Metering.

\section*{Installing the 9400-Series Telephones}

\section*{\(\mathbf{E}\)}

\section*{Installing the 9400-Series Telephones}

The following figures provide the basic information to install the 9400 -series telephones.

\begin{abstract}
CAUTION:
When this product is located in a separate building from the DEFINITY Communications System, a line current protector MUST be installed at the entry/exit points of all buildings through which the line passes. However, there is a difference between 4-wire and 2-wire installations.
\end{abstract}

The following are the ONLY acceptable devices for use in a 4-wire installation (note that two protectors are needed at each installation point):
- AT\&T 4-type protectors
- ITW LINX \({ }^{\text {TM }}\) LP-type protectors

For 2-wire installations, the following is recommended (only one protector is needed at each installation point):
- AT\&T 4-type protectors
- ITW LINX \({ }^{\text {TM }}\) LP-type protectors

However, if the above two protectors are not used, the following is acceptable in a 2-wire installation:
- AT\&T 3BIC (Carbon block) or AT\&T 3BEW (gas tube) protectors

三 NOTE:
The 3BIC and 3BEW protectors can be used only for 2-wire installations. They cannot be used for 4 -wire installations.

These telephones are not for residential use. They are for business systems applications only. Use in a residential environment could result in an electrical short circuit when the telephone wiring is set up to provide other applications, for example, for appliance control or power transformers. The AC power used in these applications may create a safety hazard by placing a direct short circuit across the telephone wiring.

\section*{Wiring Information}

The 9403 and the 9434 telephones work in both 2-wire and 4 -wire configurations. The 9410 telephone works only in the 2-wire digital communications protocol (DCP) configuration. Wiring is also discussed in Chapter 9, "Install and Wire Telephones and Other Equipment".

Figure E-1 and Figure E-2 show an enlargement of a telephone 8-pin line jack in a 2-wire and a 4-wire configuration, respectively. Table E-1 below these figures describes the pins on this jack.

Figure E-1 shows power requirements in a 2-wire installation. Switch connections must be on pair 1 (Pins 4 and 5).


Figure E-1. A Telephone Line Jack in a 2-Wire Configuration
Figure E-2 shows power requirements in a 4-wire installation. Switch connections must be on pair 2 (Pins 1 and 2) and pair 3 (Pins 3 and 6).


Figure E-2. A Telephone Line Jack in a 4-Wire Configuration

Table E-1. Pinouts on 8-Pin Line Jack
\begin{tabular}{l|l|l|l}
\hline \multicolumn{3}{l}{\begin{tabular}{l} 
Modular Wall Jack Wiring \\
Pin
\end{tabular}} & Pair \\
Color & Description \\
\hline 1 & 2 & W-O & 4-Wire Output \\
\hline 2 & 2 & O-W & 4-Wire Output \\
\hline 3 & 3 & W-G & 4-Wire Input \\
\hline 4 & 1 & BL-W & 2-Wire (Tip) \\
\hline 5 & 1 & W-BL & 2-Wire (Ring) \\
\hline 6 & 3 & G-W & 4-Wire Input \\
\hline 7 & 4 & W-BR & Adjunct Power -48V \\
\hline 8 & 4 & BR-W & Adjunct Power Common \\
\end{tabular}

\section*{三 note:}

Regardless of configuration, all wiring between the switch and the wall jack must consist of twisted-pairs. Use the supplied line cord with the telephone, or use an AT\&T approved equivalent. An 8-wire modular cord must be used for all 4 -wire and 2 -wire installations requiring auxiliary power for adjuncts such as a hands-free speaker/microphone.

\section*{NOTE:}

Do not change any settings on the telephone for 2 -wire or 4 -wire installations. The telephone is able to detect whether it is in a 2 -wire or a 4 -wire configuration.

\section*{Distance Limitations}

The following are the maximum distances allowed between the system and the 9400 -series telephones.

Table E-2. Maximum Distances between system and 9400-Series Telephones
\begin{tabular}{l|l|l|l|l}
\hline & 22-gauge & 24-gauge & 26-gauge & \begin{tabular}{l}
\(\mathbf{0 . 6 ~} \mathbf{~ m m}\) \\
(Europe)
\end{tabular} \\
\hline 4-wire & 1,500 meters & 1,500 meters & 1,200 meters & 1,500 meters \\
& \((5,000\) feet \()\) & \((5,000\) feet \()\) & \((4,000\) feet \()\) & \((5,000\) feet \()\) \\
\hline 2-wire & 1,650 meters & 1,050 meters & 650 meters & 1,350 meters \\
& \((5,500\) feet \()\) & \((3,500\) feet \()\) & \((2,220\) feet \()\) & \((4,500\) feet \()\) \\
& & & \\
\hline
\end{tabular}


\section*{Figure Notes:}
\begin{tabular}{ll} 
1. Routing channel for line cord and adjunct & 5. Handset cord routing channel \\
cord & 6. Handset jack on the 9410 \\
2. LIne Jack & 7. Desktop stand \\
3. Adjunct jack & \\
4. Handset jack &
\end{tabular}

Figure E-3. Line, Adjunct, and Handset Cord Routing for Desktop Installation on the 9403 and 9410 Telephones


Figure Notes:
1. Routing channel
4. Expansion Module Jack
2. Adjunct jack
5. HandsetJjack
3. LIne Jack
6. Bottom of 9434 Telephone

Figure E-4. Line, Adjunct, Handset, and Expansion Module Cord Routing on the 9434 Telephone

\section*{Wall Mounting}

Only the 9403 and the 9410 can be wall mounted, as shown below in Figure E-4, Figure E-5, Figure E-6, Figure E-7, and Figure E-8.


\section*{Figure Notes:}
1. Hand Retainer in Place
2. Press to Release and Remove Handset Retainer
3. Rotate Handset 180 Degrees
4. Replace Handset Retainer

Figure E-5. Reversing the Handset Hook for Wall Mounting


\section*{Figure Notes:}
1. Desktop stand
2. Desk mount tab slot

Figure E-6. Removing the Desktop Stand for Wall Mounting


Figure Notes:
1. Line cord routing channel for wall mount
2. Line jack
3. Handset jack
4. Handset cord routing channel

Figure E-7. Line Cord Routing for Wall Mount


Figure E-8. Placing the Telephone onto Wall Jack Mounting Studs

\section*{Using the Test Feature}

When the telephone is initially powered up, the green light next to the TEST button flashes if the telephone is not (or not yet) able to communicate with the switch. The light changes to steady green when the switch link is operational. After a short period of time, the light turns off in order to conserve power.

\section*{ב NOTE:}

If the light next to TEST does not come on, the telephone is not receiving power from the switch.

\section*{The Test Feature}

To test the lights and the display on your telephone:
5. While on-hook, press and hold down TEST.
- Green light next to TEST goes on.

NOTE:
If the green light next to TEST flashes rather than going on steadily, it means that the telephone is not able to communicate with the switch.
- The button lights on your telephone go on (and, if the terminal has a display, all the display segments fill in):
- On the 9403, all the lights go on together.
- On the 9410, the lights go on in two groups, and the display fills in all the segments.
- On the 9434, the lights go on in four groups, and the display fills in all the segments.
6. Release TEST to end the test.
- Lights return to pretest state.
- Green light next to TEST goes off.

\section*{NOTE:}

You can test the tone ringer on your telephone by pressing either side of the volume control button when the handset is on-hook and the speaker is not in use.

\section*{Button Labels}

The following buttons appear on the 9400-series telephones. The button labels in this table are provided in English and French.

Table E-3. Button Labels for 9400-Series Telephones.
\begin{tabular}{l|l}
\hline English Button Labels & French Button Labels \\
\hline Volume & \\
\hline Shift/Feature & 2nd F \\
\hline Test & Test \\
\hline Mute & Secret \\
\hline Speaker & \\
\hline Transfer & Trans \\
\hline Conf & Conf \\
\hline Drop & Lib \\
\hline Hold & Attente
\end{tabular}

\section*{Wire Conversion Information}

This appendix provides some wire conversion information that may be useful when following the installation instructions provided in this book.

\section*{Common Wire Colours}

Table F-1 lists common wires types and colours for power (AC Mains):

Table F-1. Standard Wire Colours for Power (AC Mains)
\begin{tabular}{lll}
\hline Wire Type & United States & Europe \\
\hline \begin{tabular}{l} 
Neutral or \\
Telecommunications \\
Ground
\end{tabular} & White & Blue \\
\hline Hot & Black & Black or Brown \\
\hline Ground & \begin{tabular}{l} 
Green, or Green with \\
Yellow Stripe
\end{tabular} & \begin{tabular}{l} 
Green with Yellow \\
Stripe
\end{tabular} \\
\hline Tip & Green & \\
\hline Ring & Red & \\
\hline
\end{tabular}

\section*{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 F-2. Stranded Wire Conversion (AWG to SWG to metric)
\begin{tabular}{|c|c|c|}
\hline Square Millimeters & Number and Diameter of Strands Millimeters & Corresponding
AWG \\
\hline 0.014 & \(7 \times 0.05\) & -- \\
\hline 0.035 & \(7 \times 0.08\) & -- \\
\hline 0.047 & \(24 \times 0.05\) & -- \\
\hline 0.049 & \(1 \times 0.25\) & -- \\
\hline 0.055 & \(7 \times 0.10\) & -- \\
\hline 0.079 & \(10 \times 0.10\) & 28 \\
\hline 0.079 & \(7 \times 0.12\) & 28 \\
\hline 0.080 & \(1 \times 0.32\) & 28 \\
\hline 0.093 & \(7 \times 0.13\) & -- \\
\hline 0.094 & \(12 \times 0.10\) & -- \\
\hline 0.094 & \(48 \times 0.05\) & -- \\
\hline 0.096 & \(19 \times 0.08\) & -- \\
\hline 0.113 & \(10 \times 0.12\) & -- \\
\hline 0.118 & \(60 \times 0.05\) & -- \\
\hline 0.118 & \(15 \times 0.10\) & -- \\
\hline 0.124 & \(7 \times 0.15\) & -- \\
\hline 0.126 & \(1 \times 0.40\) & 26 \\
\hline 0.149 & \(19 \times 0.10\) & -- \\
\hline 0.177 & \(10 \times 0.15\) & -- \\
\hline 0.188 & \(24 \times 0.10\) & -- \\
\hline 0.196 & \(1 \times 0.50\) & -- \\
\hline 0.212 & \(27 \times 0.10\) & -- \\
\hline 0.212 & \(12 \times 0.15\) & -- \\
\hline 0.220 & \(7 \times 0.20\) & -- \\
\hline 0.251 & \(32 \times 0.10\) & -- \\
\hline 0.252 & \(19 \times 0.13\) & -- \\
\hline 0.283 & \(1 \times 0.60\) & -- \\
\hline 0.291 & \(37 \times 0.10\) & -- \\
\hline 0.314 & \(40 \times 0.10\) & -- \\
\hline 0.322 & \(1 \times 0.64\) & 22 \\
\hline 0.336 & \(19 \times 0.15\) & 22 \\
\hline 0.344 & \(7 \times 0.25\) & -- \\
\hline 0.377 & \(12 \times 0.20\) & -- \\
\hline
\end{tabular}

Table F-2. Stranded Wire Conversion (AWG to SWG to metric)
\begin{tabular}{|c|c|c|}
\hline Square Millimeters & Number and Diameter of Strands Millimeters & Corresponding AWG \\
\hline 0.377 & \(48 \times 0.10\) & -- \\
\hline 0.389 & \(22 \times 0.15\) & -- \\
\hline 0.442 & \(1 \times 0.75\) & -- \\
\hline 0.459 & \(26 \times 0.15\) & -- \\
\hline 0.491 & \(10 \times 0.25\) & -- \\
\hline 0.495 & \(7 \times 0.30\) & -- \\
\hline 0.503 & \(16 \times 0.20\) & -- \\
\hline 0.515 & \(1 \times 0.81\) & 20 \\
\hline 0.563 & \(7 \times 0.32\) & -- \\
\hline 0.597 & \(19 \times 0.20\) & -- \\
\hline 0.636 & \(36 \times 0.15\) & -- \\
\hline 0.754 & \(24 \times 0.20\) & -- \\
\hline 0.785 & \(16 \times 0.25\) & -- \\
\hline 0.817 & \(1 \times 1.02\) & 18 \\
\hline 0.848 & \(12 \times 0.30\) & -- \\
\hline 0.880 & \(7 \times 0.40\) & -- \\
\hline 0.933 & \(19 \times 0.25\) & -- \\
\hline 0.990 & \(56 \times 0.15\) & -- \\
\hline 1.005 & \(32 \times 0.20\) & -- \\
\hline 1.276 & \(26 \times 0.25\) & -- \\
\hline 1.327 & \(1 \times 1.30\) & 16 \\
\hline 1.343 & \(19 \times 0.30\) & -- \\
\hline 1.374 & \(7 \times 0.50\) & -- \\
\hline 1.473 & \(30 \times 0.25\) & -- \\
\hline 1.508 & \(12 \times 0.40\) & -- \\
\hline 1.828 & \(19 \times 0.35\) & -- \\
\hline 1.885 & \(60 \times 0.20\) & -- \\
\hline 1.909 & \(27 \times 0.30\) & -- \\
\hline 1.979 & \(7 \times 0.60\) & -- \\
\hline 2.011 & \(16 \times 0.40\) & -- \\
\hline 2.013 & \(41 \times 0.25\) & -- \\
\hline 2.087 & \(1 \times 1.63\) & 14 \\
\hline 2.454 & \(50 \times 0.25\) & -- \\
\hline
\end{tabular}

Table F-2. Stranded Wire Conversion (AWG to SWG to metric)
\begin{tabular}{lll} 
Square Millimeters & \begin{tabular}{l} 
Number and \\
Diameter of \\
Strands \\
Millimeters
\end{tabular} & \begin{tabular}{l} 
Corresponding \\
AWG
\end{tabular} \\
\hline 3.022 & \(19 \times 0.45\) & -- \\
\hline 3.142 & \(16 \times 0.50\) & -- \\
\hline 3.181 & \(45 \times 0.30\) & -- \\
\hline 3.191 & \(65 \times 0.25\) & -- \\
\hline 3.393 & \(48 \times 0.30\) & 12 \\
\hline 3.958 & \(56 \times 0.30\) & -- \\
\hline 4.650 & \(37 \times 0.40\) & -- \\
\hline 4.714 & \(7 \times 7 \times 0.35\) & -- \\
\hline 5.154 & \(105 \times 0.25\) & -- \\
\hline 5.160 & \(73 \times 0.30\) & 10 \\
\hline 5.300 & \(75 \times 0.30\) & 10
\end{tabular}

\section*{Wire Gauge Comparison} (Solid Conductor)

Table F-3 provides information for converting American Wire Gauge (AWG) to British Standard Wire Gauge (Imperial), in addition to metric wire gauge.

Table F-3. Solid Conductor Wire Gauge Comparison (AWG to SWG to metric)
\begin{tabular}{|c|c|c|c|c|}
\hline Diameter (Mils) & \begin{tabular}{l}
Gauge \\
Numbers \\
(mm)
\end{tabular} & American Wire Gauge (AWG) & British Standard Wire Gauge (Imperial) & Metric Wire Gauge \\
\hline 460.1 & 11.68 & 4/0 & -- & -- \\
\hline 432 & 11.0 & -- & 5/0 & -- \\
\hline 409.6 & 10.40 & 3/0 & -- & -- \\
\hline 400 & 10.2 & -- & 4/0 & -- \\
\hline 393.7 & 10.0 & -- & -- & 100 \\
\hline 372 & 9.45 & -- & 3/0 & -- \\
\hline 364.8 & 9.266 & 2/0 & -- & -- \\
\hline 354 & 9.00 & -- & -- & 90 \\
\hline 348 & 8.84 & -- & 2/0 & -- \\
\hline 324.9 & 8.252 & 1/0 & -- & -- \\
\hline 324 & 8.23 & -- & 1/0 & -- \\
\hline 315 & 8.00 & -- & -- & 80 \\
\hline 300 & 7.62 & -- & 1 & -- \\
\hline 289.3 & 7.348 & 1 & -- & -- \\
\hline 276 & 7.01 & -- & 2 & -- \\
\hline 276 & 7.00 & -- & -- & 70 \\
\hline 257.6 & 6.543 & 2 & -- & -- \\
\hline 252 & 6.40 & -- & 3 & -- \\
\hline 236 & 6.00 & -- & -- & 60 \\
\hline 232 & 5.89 & -- & 4 & -- \\
\hline 229.4 & 5.827 & 3 & -- & -- \\
\hline 212 & 5.38 & -- & 5 & -- \\
\hline 204.3 & 5.189 & 4 & -- & -- \\
\hline 197 & 5.00 & -- & -- & 50 \\
\hline 192 & 4.88 & -- & 6 & -- \\
\hline 181.9 & 4.620 & 5 & -- & -- \\
\hline 177.2 & 4.50 & -- & -- & 45 \\
\hline 176 & 4.47 & -- & 7 & -- \\
\hline 162.0 & 4.115 & 6 & -- & -- \\
\hline 160 & 4.06 & -- & 8 & -- \\
\hline 157 & 4.00 & -- & -- & 40 \\
\hline 144.3 & 3.665 & 7 & -- & -- \\
\hline 144 & 3.66 & -- & 9 & -- \\
\hline
\end{tabular}

Table F-3. Solid Conductor Wire Gauge Comparison (AWG to SWG to metric)
\begin{tabular}{|c|c|c|c|c|}
\hline Diameter (Mils) & \begin{tabular}{l}
Gauge \\
Numbers \\
(mm)
\end{tabular} & American Wire Gauge (AWG) & British Standard Wire Gauge (Imperial) & Metric Wire Gauge \\
\hline 138 & 3.50 & -- & -- & 35 \\
\hline 128.5 & 3.264 & 8 & -- & -- \\
\hline 128 & 3.25 & -- & 10 & -- \\
\hline 118 & 3.00 & -- & -- & 30 \\
\hline 116 & 2.95 & -- & 11 & -- \\
\hline 114.4 & 2.906 & 9 & -- & -- \\
\hline 104 & 2.64 & -- & 12 & -- \\
\hline 101.9 & 2.588 & 10 & -- & -- \\
\hline 98.4 & 2.50 & -- & -- & 25 \\
\hline 92 & 2.34 & -- & 13 & -- \\
\hline 90.7 & 2.30 & 11 & -- & -- \\
\hline 80.8 & 2.05 & 12 & -- & -- \\
\hline 80.0 & 2.03 & -- & 14 & -- \\
\hline 78.7 & 2.00 & -- & -- & 20 \\
\hline 72.0 & 1.83 & 13 & 15 & -- \\
\hline 70.9 & 1.80 & -- & -- & 18 \\
\hline 64.1 & 1.63 & 14 & -- & -- \\
\hline 64 & 1.63 & -- & 16 & -- \\
\hline 63 & 1.60 & -- & -- & 16 \\
\hline 57.1 & 1.45 & 15 & -- & -- \\
\hline 56 & 1.42 & -- & 17 & -- \\
\hline 55.1 & 1.40 & -- & -- & 14 \\
\hline 50.8 & 1.29 & 16 & -- & -- \\
\hline 48 & 1.22 & -- & 18 & -- \\
\hline 47.2 & 1.20 & -- & -- & 12 \\
\hline 45.3 & 1.15 & 17 & -- & -- \\
\hline 40.3 & 1.02 & 18 & -- & -- \\
\hline 40 & 1.02 & -- & 19 & -- \\
\hline 39.4 & 1.00 & -- & -- & 10 \\
\hline 36 & 0.914 & -- & 20 & -- \\
\hline 35.9 & 0.912 & 19 & -- & -- \\
\hline 35.4 & 0.90 & -- & -- & 9.0 \\
\hline 32.0 & 0.813 & 20 & 21 & -- \\
\hline 31.5 & 0.800 & -- & -- & 8.0 \\
\hline 28.5 & 0.724 & 21 & -- & -- \\
\hline
\end{tabular}

Wire Gauge Comparison (Solid Conductor)

Table F-3. Solid Conductor Wire Gauge Comparison (AWG to SWG to metric)
\begin{tabular}{lllll}
\hline \begin{tabular}{l} 
Diameter \\
(Mils)
\end{tabular} & \begin{tabular}{l} 
Gauge \\
Numbers \\
(mm)
\end{tabular} & \begin{tabular}{l} 
American \\
Wire Gauge \\
(AWG)
\end{tabular} & \begin{tabular}{l} 
British Standard \\
Wire Gauge \\
(Imperial)
\end{tabular} & \begin{tabular}{l} 
Metric Wire \\
Gauge
\end{tabular} \\
\hline 28 & 0.711 & -- & 22 & -- \\
\hline 27.6 & 0.70 & -- & -- & 7.0 \\
\hline 25.3 & 0.643 & 22 & -- & -- \\
\hline 24 & 0.610 & -- & 23 & -- \\
\hline 23.6 & 0.60 & -- & -- & 6.0 \\
\hline 22.6 & 0.574 & 23 & -- & -- \\
\hline 22 & 0.559 & -- & -- \\
\hline 20.1 & 0.511 & 24 & -- & -- \\
\hline 20 & 0.508 & -- & 25 & 5.0 \\
\hline 19.7 & 0.50 & -- & -- & -- \\
\hline 18 & 0.457 & -- & 26 & 4.5 \\
\hline 17.9 & 0.455 & 25 & -- & -- \\
\hline 17.7 & 0.45 & -- & -- & -- \\
\hline 16.4 & 0.417 & -- & 27 & - \\
\hline 15.9 & 0.404 & 26 & & - \\
\hline
\end{tabular}

\section*{Electrical Code Equivalencies}

This appendix lists electrical code information that applies to countries outside of North America.

\section*{North American Electrical Code}

In North America, the standard electrical code that must be followed is called the National Electrical Code (NEC). When installing DEFINITY System G3, you must determine the equivalent code in your country.

\section*{International Electrical Codes}

The following chart lists the regulatory electrical codes in applicable countries:

Table G-1. International Electrical Codes
\begin{tabular}{l|l}
\hline Country & Electrical Code/Regulations \\
\hline \hline Australia & \\
\hline Belgium & \\
\hline China & \\
\hline France & \\
\hline Germany & DIN/VDE Bestimmungen \\
\hline Italy & \\
\hline Japan & \\
\hline Macedonia & \\
\hline Malaysia & \\
\hline Netherlands & \\
\hline Spain & \\
\hline Thailand & \\
\hline United Kingdom & \\
\hline United States & National Electrical Code (NEC) \\
\hline
\end{tabular}

\section*{Option Switch Settings}


Some of the interface units used between the single-carrier and multi-carrier cabinets and other types of equipment require specific option switch settings for each application. This section lists the option switch settings required for modular processor data modules, modular trunk data modules, modems, printers, etc., when these units are used with the switch. Only the option switch settings for use with single-carrier or multi-carrier cabinets are shown. Refer to the User Guide on each type of equipment for information on how to locate and set the option switches.

\section*{Distributed Communications System (DCS) Option Settings for G3i Systems}

The distributed communications system (DCS) is sometimes connected to the switch through the processor interface circuit pack. The first circuit on the processor interface can be connected directly to the distributed communications system (DCS) through the PROCESSOR INTERFACE 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 modular processor data module serving as the interface link. The option settings for the modular processor data module (MPDM) in this application are shown in Table H-1.

Table H-1. Option Switch Settings on the Modular Processor Data Module for the Distributed Communications System
\begin{tabular}{l|l}
\hline Switch & Setting \\
\hline 9600 BAUD & ON \\
\hline SYNC & ON \\
\hline INT & ON \\
\hline KYBD & ON \\
\hline AANS & ON \\
\hline All Others & OFF
\end{tabular}

\section*{Modem Pooling (Combined) Option Settings}

Combined Modem Pooling requires option switch settings on different modems and modular trunk data modules. The following paragraphs describe the option settings for each application.

\section*{103JR Modem Option Settings}

When the 103JR modem is used with a modular trunk data module, set the options on the modular trunk data module as shown in Table H-2. Options for the 103JR modem are shown in Table H-3. When used for modem pooling, all factory-furnished options on the modem are used.

Table H-2. Option Switch Settings on the Modular Trunk Data Module Used With 103JR Modem
\begin{tabular}{l|l}
\hline Switch & Setting \\
\hline 300 baud & ON \\
\hline SW & ON \\
\hline SIGLS & ON \\
\hline CN25 & ON \\
\hline All Others & OFF
\end{tabular}

H-2 September 1995 Issue 1

Table H-3. Option Switch Settings for 103JR Modem
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|}
\hline \multicolumn{2}{|l|}{\multirow[b]{2}{*}{Feature}} & \multirow[b]{2}{*}{Option} & \multicolumn{7}{|l|}{Switch Setting S2 Switch on CM1 Contact Setting} \\
\hline & & & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\hline Receive Space Disconnect & YES & V* & -- & -- & 0 & -- & -- & -- & -- \\
\hline Send Space Disconnect & YES & T* & X & -- & -- & -- & -- & -- & -- \\
\hline Loss of Carrier Disconnect & YES & S* & -- & -- & -- & 0 & -- & -- & -- \\
\hline Country Code (CC) Indication & EARLY & ZD* & -- & -- & -- & -- & -- & -- & 0 \\
\hline CB and CF Indications & COMMON & A* & -- & X & -- & -- & -- & -- & -- \\
\hline Country Code (CC) Indication for Analog Loop & ON & ZF* & -- & -- & -- & -- & 0 & -- & -- \\
\hline Automatic Answer & YES & ZH* & -- & -- & -- & -- & -- & 0 & -- \\
\hline & & & \multicolumn{7}{|c|}{S3 Switch on CP1 Contact Setting} \\
\hline & & & 1 & 2 & 3 & & & & \\
\hline Fail Safe State of CN Circuit & OFF & J* & & 0 & & & & & \\
\hline Common Ringer & NO & ZA* & 0 & & & & & & \\
\hline Tip-Ring Make Busy & NO & E* & & & 0 & & & & \\
\hline Common Grounds & YES & Q* & \multicolumn{7}{|l|}{Close S1 Screw Switch on Data Mounting} \\
\hline
\end{tabular}
\begin{tabular}{ll}
\(*\) & \(=\) Factory Furnished \\
\(X\) & \(=\) Contact closed \\
\(O\) & \(=\) Contact open \\
-- & \(=\) Contact not applicable
\end{tabular}

\section*{201CR Modem Option Settings}

When the 201CR modem is used with a modular trunk data module, set the options on the modular trunk data module as shown in Table H-4. Options on the 201CR modem are shown in Table H-5. When used for modem pooling, all factory-furnished options are used except option YD must be selected instead of option YC and option YS must be selected instead of option YT.

Table H-4. Option Switch Settings on Modular Trunk Data Module Used With 201CR Modem
\begin{tabular}{l|l}
\hline Switch & Setting \\
\hline 2400 baud & ON \\
\hline SW & ON \\
\hline SIGLS & ON \\
\hline SYNC & ON \\
\hline HDX & ON \\
\hline CN18 & \\
\hline All Others & OFF
\end{tabular}

Table H-5. Options Switch Settings for 201 CR Modem
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multicolumn{3}{|c|}{Option} & \multicolumn{9}{|c|}{Line Control Board (TP1B)} \\
\hline \multicolumn{2}{|r|}{Description} & \multirow[b]{2}{*}{\begin{tabular}{l} 
Designation \\
\hline ZE \(^{*}\)
\end{tabular}} & \multicolumn{5}{|c|}{Strap In (Vertical)} & \multicolumn{4}{|r|}{Strap Out (Horizontal)} \\
\hline \multirow[t]{3}{*}{Transmit Line Signal Level} & \multirow[t]{3}{*}{-4 dBm} & & & & & & & \multicolumn{4}{|c|}{1,2,4,8} \\
\hline & & & \multicolumn{8}{|c|}{Switch Setting} & \multirow[t]{2}{*}{Digital Board (JB4B)} \\
\hline & & & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & \\
\hline Transmitter Timing & External & YD & & & & & 0 & & & & \\
\hline Automatic Answer & DTR-Controlled Only & YF* & & & & & & & & X & \\
\hline Grounding & Signal Ground Connected to Frame Ground & YK* & & & & & & & & & Install E1-E2 \\
\hline Function of Electronic Industries Association Interface Pin 18 & Initiates Analog Receiver & YS & & & & X & & & & & Install
E3-E4 \\
\hline Continuous Receiver Bit Clock & Out & YP* & & & & & & & X & & \\
\hline Satellite & In & YQ* & & & X & & & & & & \\
\hline
\end{tabular}
\begin{tabular}{ll}
\(*\) & \(=\) Factory furnished \\
\(X\) & \(=\) Closed \\
0 & \(=\) Open
\end{tabular}

\section*{202SR Modem Option Settings}

When the 202SR modem is used with a modular trunk data module, set the options on the modular trunk data module as shown in Table H-6. Options on the 202SR modem are shown in Table H-7. When used for modem pooling, all factory-furnished options are used except option YI must be selected instead of option YJ.

Table H-6. Option Switch Settings on Modular Trunk Data Module Used With 202SR Modem
\begin{tabular}{l|l}
\hline Switch & Setting \\
\hline 1200 baud & ON \\
\hline SW & ON \\
\hline SIGLS & ON \\
\hline HDX & ON \\
\hline All Others & OFF
\end{tabular}

Table H-7. Option Switch Settings for 202SR Modem
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multicolumn{2}{|c|}{\multirow[b]{2}{*}{Option}} & \multirow[b]{3}{*}{Output level dBm} & \multicolumn{14}{|c|}{S4 Switch Contact Setting On Transmitter-Receiver} \\
\hline & & & \multicolumn{7}{|c|}{Without Reverse Channel} & \multicolumn{7}{|c|}{With Reverse Channel} \\
\hline Description & Designation & & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\hline \multirow[t]{3}{*}{Transmit Line Signal Level} & ZO* & -4 & X & X & X & X & X & X & X & X & X & X & X & X & X & X \\
\hline & & \multirow[b]{2}{*}{\begin{tabular}{l}
Soft \\
Turnoff
\end{tabular}} & \multicolumn{4}{|c|}{\multirow[b]{2}{*}{Squelch}} & \multicolumn{10}{|c|}{S2 Switch Contact Setting On Transmitter-Receiver} \\
\hline & & & & & & & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 0 \\
\hline Soft Turnoff and Squelch Intervals & R* & \[
\begin{gathered}
24 \\
\text { milli- } \\
\text { seconds }
\end{gathered}
\] & & 15
illise & 6 ond & & -- & X & X & -- & -- & -- & -- & O & -- & O \\
\hline Fast Carrier Detection & \(\mathrm{N}^{*}\) & \multicolumn{5}{|l|}{Out (23 milliseconds)} & -- & -- & -- & -- & -- & -- & X & -- & -- & -- \\
\hline Clear to Send Interval & G* & \multicolumn{5}{|c|}{180 milliseconds} & -- & -- & -- & X & X & -- & -- & -- & -- & -- \\
\hline Automatic Answer & B* & \multicolumn{5}{|c|}{In} & X & -- & -- & -- & -- & -- & -- & -- & -- & -- \\
\hline Local Copy on Primary Channel & ZB* & \multicolumn{5}{|c|}{Out} & -- & -- & -- & -- & -- & X & -- & -- & -- & -- \\
\hline \multirow[t]{3}{*}{Condition of Country Code (Data Set Ready) During Analog Loopback} & Y & \multicolumn{5}{|c|}{On} & -- & -- & -- & -- & -- & -- & -- & -- & X & -- \\
\hline & & \multicolumn{15}{|c|}{S3 Switch Contact Setting} \\
\hline & & & & & & & 1 & 2 & 3 & 4 & 5 & 6 & & & & \\
\hline Reverse Channel & ZD* & \multicolumn{5}{|c|}{Out} & X & X & -- & -- & -- & -- & & & & \\
\hline
\end{tabular}
\begin{tabular}{ll} 
X & \(=\) Contact closed \\
-- & \(=\) Contact not applicable \\
O & \(=\) Contact open \\
* & \(=\) Factory furnished
\end{tabular}

Table H-7. Option Switch Settings for 202SR Modem - Continued
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|}
\hline \multicolumn{2}{|c|}{Option} & & \multicolumn{7}{|r|}{S3 Switch Contact Setting} \\
\hline Description & Designation & & 1 & 2 & 3 & 4 & 5 & 6 & \\
\hline Transmit Only & YH* & Out & -- & -- & 0 & -- & -- & -- & \\
\hline \begin{tabular}{l}
Echo \\
Suppressor \\
Enable
\end{tabular} & YR* & Out & -- & -- & -- & X & -- & -- & \\
\hline Carrier Controlled Turnaround & YS* & In & -- & -- & -- & -- & -- & 0 & \\
\hline \begin{tabular}{l}
Early \\
Country Code (Data Set Ready) Indication
\end{tabular} & \(\mathrm{W}^{*}\) & Out & -- & -- & -- & - & X & -- & \\
\hline \multirow[t]{2}{*}{Grounding Option} & & & \multicolumn{7}{|r|}{Screw Switch Setting On Interface Circuit} \\
\hline & ZG* & Signal Ground Connected to Frame Ground & \multicolumn{7}{|r|}{Screw Switch S1 Closed on Data Mounting} \\
\hline
\end{tabular}
```

X =Contact closed
-- = Contact not applicable
O = Contact open

* = Factory furnished

```

\section*{208BR Modem Option Settings}

When the 208BR modem is used with a modular trunk data module, set the options on the modular trunk data module as shown in Table H-8. Options for the 208BR modem are shown in Table H-9. When used for modem pooling, all factory-furnished options are used except option YD must be selected instead of option YC, and option YM must be selected instead of option YN.

Table H-8. Option Switch Settings on Modular Trunk Data Module Used With 208BR Modem
\begin{tabular}{l|l}
\hline Switch & Setting \\
\hline 4800 baud & ON \\
\hline SW & ON \\
\hline SIGLS & ON \\
\hline SYNC & ON \\
\hline HDX & ON \\
\hline All Others & OFF
\end{tabular}

Table H-9. Option Switch Settings for 208BR Modem
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline \multicolumn{2}{|l|}{Option} & \multirow[b]{2}{*}{Output Level dBm} & \multicolumn{4}{|c|}{Switch} \\
\hline Description & Designation & & S1A & S1B & S1C & S2A \\
\hline Transmit Line Signal Level & ZE* & -4 & DOWN & UP & DOWN & UP \\
\hline & & Switch & \multicolumn{4}{|c|}{Option Strap Position} \\
\hline \multirow[t]{2}{*}{Compromise Equalizer (4-dB Slope)} & \multirow[t]{2}{*}{WU*} & S2B & \multicolumn{4}{|l|}{Up} \\
\hline & & S2C & \multicolumn{4}{|l|}{Up} \\
\hline Data Set Ready (DSR) on for Analog Loop Mode & YM & S3A & \multicolumn{4}{|l|}{Up} \\
\hline Automatic Answer & YP* & S3B & \multicolumn{4}{|l|}{Down} \\
\hline \multirow[t]{5}{*}{Transmitter Externally Timed} & YD & S3C & \multicolumn{4}{|l|}{Up} \\
\hline & & \multirow[t]{2}{*}{S4A**} & \multicolumn{4}{|l|}{Up} \\
\hline & & & \multicolumn{4}{|l|}{Down*} \\
\hline & & \multirow[t]{2}{*}{S4B**} & \multicolumn{4}{|l|}{Up} \\
\hline & & & \multicolumn{4}{|l|}{Down*} \\
\hline RS-CS Interval of 50 milliseconds & \multirow[t]{2}{*}{(Customer Switch)} & \multirow[t]{2}{*}{50} & \multicolumn{4}{|l|}{In} \\
\hline RS-CS Interval of 150 milliseconds & & & \multicolumn{4}{|l|}{Out} \\
\hline
\end{tabular}
\[
\text { * Factory installed } \quad * * \text { Down position must be selected }
\]

\section*{Asynchronous 212AR Modem Option}

\section*{Settings}

When the asynchronous 212AR modem is used with a modular trunk data module, set the options on the modular trunk data module as shown in Table H-10. Options on the asynchronous 212AR modem are shown in Table H-11. When used for modem pooling, all factory-furnished options are used with the following exceptions:
- Select option XJ instead of option XK.
- Select option YE instead of option YF.
- Select option XL instead of option XM.
- Select option YQ instead of option YR.
- Select option XR instead of option XO.

Table H-10. Option Switch Settings on Modular Trunk Data Module (MTDM) Used With 212AR Modem
\begin{tabular}{l|l}
\hline Switch & Setting \\
\hline 300 baud & ON \\
\hline 1200 baud & ON \\
\hline SW & ON \\
\hline SIGLS & ON \\
\hline Cl12 & ON \\
\hline TM25 & ON \\
\hline CN18 & ON \\
\hline CH23 & ON \\
\hline RL21 & \\
\hline All Others \\
\hline
\end{tabular}

Table H-11. Option Switch Settings for Asynchronous 212AR
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow[b]{3}{*}{Feature} & \multirow[b]{3}{*}{Option} & \multirow[b]{3}{*}{Description} & \multicolumn{11}{|c|}{Switch Setting} \\
\hline & & & \multicolumn{11}{|c|}{S1 Switch Controls} \\
\hline & & & 1 & 2 & 3 & & & & & & & & \\
\hline Tip, Ring, Make Busy & E* & OUT & 0 & -- & -- & & & & & & & & \\
\hline \multirow[t]{4}{*}{Country Code (CC) Indication for Analog Loop} & ZF* & ON & -- & -- & X & & & & & & & & \\
\hline & & & \multicolumn{11}{|c|}{Switch Contacts} \\
\hline & & & \multicolumn{9}{|c|}{S2} & \multicolumn{2}{|c|}{S5} \\
\hline & & & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 1 & 2 \\
\hline Speed Control & XJ & INTERFACE & 0 & -- & -- & -- & -- & -- & -- & -- & -- & & \\
\hline \begin{tabular}{l}
Interface- \\
Controlled \\
Make Busy/ \\
Analog \\
Loop-CN
\end{tabular} & YE & IN & -- & 0 & -- & -- & -- & -- & -- & -- & -- & & \\
\hline Transmitter Timing & YC* & INTERNAL & -- & -- & 0 & 0 & -- & -- & -- & -- & -- & & \\
\hline \begin{tabular}{l}
1200-bps \\
Operation
\end{tabular} & YG* & ASYNCHRONOUS/ START-STOP & -- & -- & -- & -- & 0 & -- & - & -- & -- & 0 & 0 \\
\hline \begin{tabular}{l}
Character \\
Length (Use \\
With YG)
\end{tabular} & YJ* & 10-BIT & -- & -- & -- & -- & -- & X & -- & -- & -- & & \\
\hline Receiver Responds to Digital Loop & YK* & IN & -- & -- & -- & -- & -- & -- & O & -- & -- & & \\
\hline \begin{tabular}{l}
Interface \\
Controlled \\
Remote Digital Loop
\end{tabular} & XL & IN & -- & -- & -- & -- & -- & -- & -- & X & -- & & \\
\hline & & & \multicolumn{11}{|c|}{S3 Switch Contacts} \\
\hline & & & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & & & \\
\hline Loss of Carrier Disconnect & \(\mathrm{S}^{*}\) & IN & X & -- & -- & -- & -- & -- & -- & -- & & & \\
\hline Receive Space Disconnect & V* & IN & -- & X & -- & -- & -- & -- & -- & -- & & & \\
\hline
\end{tabular}
\begin{tabular}{lll}
\(*=\) Factory furnished & \(X\) & \(=\) Contact closed \\
\(O=\) Contact open & -- & \(=\) Contact not applicable
\end{tabular}

Contan ontant

Table H-11. Option Switch Settings for Asynchronous 212AR Modem - Continued
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow[b]{3}{*}{Feature} & \multirow[b]{3}{*}{Option} & \multirow[b]{3}{*}{Description} & \multicolumn{9}{|c|}{Switch Setting} \\
\hline & & & \multicolumn{9}{|c|}{S3 Switch Contacts} \\
\hline & & & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & \\
\hline CB and CF Indications & A* & COMMON & -- & -- & X & -- & -- & -- & -- & -- & \\
\hline Send Space Disconnect & T* & IN & -- & -- & -- & X & -- & -- & -- & -- & \\
\hline \begin{tabular}{l}
Automatic \\
Answer
\end{tabular} & ZH* & IN & -- & -- & -- & -- & X & -- & -- & -- & \\
\hline Answer Mode Indication & \(\mathrm{W}^{*}\) & CE OFF & -- & -- & -- & -- & -- & 0 & -- & -- & \\
\hline Speed Mode & YP* & DUAL & -- & -- & -- & -- & -- & -- & 0 & -- & \\
\hline \begin{tabular}{l}
Interface \\
Speed Indication Clock Input
\end{tabular} & YQ & IN & -- & -- & -- & -- & -- & -- & -- & X & \\
\hline & & & \multicolumn{9}{|c|}{Strapping Options} \\
\hline CN and Test Mode Assignments & XR & CN 18, TM 25 & \multicolumn{9}{|l|}{INSTALL E2-E3, E4-E5} \\
\hline Signal Ground to Frame Connection & Q* & IN & \multicolumn{9}{|l|}{S1 CLOSED} \\
\hline
\end{tabular}
* = Factory furnished
X = Contact closed
O = Contact open
-- = Contact not applicable

\section*{Synchronous 212AR Modem Option}

Settings
When the synchronous 212AR modem is used with a modular trunk data module (MTDM), set the options on the modular trunk data module (MTDM) as shown in Table H-10. Options on the synchronous 212AR modem are shown in Table \(\mathrm{H}-12\). When used for modem pooling, all factory-furnished options are used with the following exceptions:
- Select option YH instead of option YG.
- Select option YO instead of option YP.
- Select option YD instead of option YC
- Select option YE instead of option YF.
- Select option XL instead of option XM.
- Select option XR instead of option XO.

Table H-12. Option Switch Settings for Synchronous 212AR Modem
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow[b]{3}{*}{Feature} & \multirow[b]{3}{*}{Option} & \multirow[b]{3}{*}{Description} & \multicolumn{11}{|c|}{Switch Setting} \\
\hline & & & \multicolumn{11}{|c|}{S1 Switch Contacts} \\
\hline & & & 1 & 2 & 3 & & & & & & & & \\
\hline Tip, Ring, Make Busy & E* & OUT & 0 & -- & -- & & & & & & & & \\
\hline \multirow[t]{4}{*}{Country Code (CC) Indication for Analog Loop} & ZF* & ON & -- & -- & X & & & & & & & & \\
\hline & & & \multicolumn{11}{|c|}{Switch Contacts} \\
\hline & & & \multicolumn{9}{|c|}{S2} & \multicolumn{2}{|c|}{S5} \\
\hline & & & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 1 & 2 \\
\hline Speed Control & XK* & HS BUTTON & X & -- & -- & -- & -- & -- & -- & -- & -- & & \\
\hline \begin{tabular}{l}
Interface- \\
Controlled \\
Make Busy/ \\
Analog \\
Loop-CN
\end{tabular} & YE & IN & -- & 0 & -- & -- & -- & -- & -- & -- & -- & & \\
\hline \begin{tabular}{l}
Transmitter \\
Timing
\end{tabular} & YD & EXTERNAL & -- & -- & 0 & X & -- & -- & -- & -- & -- & & \\
\hline 1200-bps Operation & YH* & SYNCHRONOUS & -- & -- & -- & -- & X & -- & -- & -- & -- & X & X \\
\hline Character Length (Use With YG) & YJ* & 10-BIT & -- & -- & -- & -- & -- & x & -- & -- & -- & & \\
\hline Receiver Responds to Digital Loop & YK* & IN & -- & -- & -- & -- & -- & -- & 0 & -- & -- & & \\
\hline \begin{tabular}{l}
Interface \\
Controlled \\
Remote Digital Loop
\end{tabular} & XL & IN & -- & -- & -- & -- & -- & -- & -- & X & -- & & \\
\hline & & & \multicolumn{11}{|c|}{S3 Switch Settings} \\
\hline & & & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & & & \\
\hline Loss of Carrier Disconnect & \(\mathrm{S}^{*}\) & IN & x & -- & -- & -- & -- & -- & -- & -- & & & \\
\hline Receive Space Disconnect & \(\mathrm{V}^{*}\) & IN & -- & X & -- & -- & -- & -- & -- & -- & & & \\
\hline
\end{tabular}
\begin{tabular}{lll} 
* \(=\) Factory furnished & X \(=\) Contact closed \\
O \(=\) Contact open & -- & \(=\) Contact not applicable
\end{tabular}

Table H-12. Option Switch Settings for Synchronous 212AR Modem - Continued
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow[b]{3}{*}{Feature} & \multirow[b]{3}{*}{Option} & \multirow[b]{3}{*}{Description} & \multicolumn{10}{|c|}{Switch Setting} \\
\hline & & & \multicolumn{10}{|c|}{S3 Switch Contacts} \\
\hline & & & 1 & 2 & 3 & 4 & 5 & & 6 & 7 & 8 & \\
\hline CB and CF Indications & \(\mathrm{A}^{*}\) & COMMON & -- & -- & x & -- & - & & -- & -- & -- & \\
\hline Send Space Disconnect & T* & IN & -- & -- & -- & x & - & & -- & -- & - & \\
\hline Automatic Answer & Z \({ }^{*}\) & IN & -- & -- & -- & -- & x & & -- & -- & -- & \\
\hline Answer Mode Indication & W* & CE OFF & -- & -- & -- & -- & - & & - & -- & -- & \\
\hline Speed Mode & yo & HUGH & -- & -- & -- & -- & - & & -- & X & -- & \\
\hline \begin{tabular}{l}
Interface \\
Speed \\
Indication \\
Clock Input (CI)
\end{tabular} & YR* & OUT & -- & -- & -- & -- & - & & -- & -- & - & \\
\hline & & & \multicolumn{10}{|c|}{Strapping Options} \\
\hline CN and Test Mode (TM) Assignments & XR & CN 18, TM 25 & \multicolumn{10}{|l|}{INSTALL E2-E3, E4-E5} \\
\hline Signal Ground to Frame Connection & Q* & IN & \multicolumn{10}{|l|}{S1 CLOSED} \\
\hline
\end{tabular}
* = Factory furnished

O = Contact open
X = Contact closed
-- = Contact not applicable

\section*{Asynchronous 2224A Modem Option}

\section*{Settings}

When the asynchronous 2224A modem is used with a modular trunk data module (MTDM), set the options on the modular trunk data module (MTDM) as shown in Table H-13. The asynchronous 2224A modem can also be used for modem pooling.

All factory-furnished options should be set on the 2224A modem with the following exceptions:
- Interface speed indication-TRIPLE
- Interface speed selection-TRIPLE
- Analog (AL) and Test Mode interface assignments-AL-18 and TM-25
- Interface control remote digital loopback-IN

Table H-13. Option Switch Settings on Modular Trunk Data Module (MTDM) Used with Asynchronous 2224A Modem
\begin{tabular}{l|l}
\hline Switch & Setting \\
\hline 300 baud & ON \\
\hline 1200 baud & ON \\
\hline 2400 baud & ON \\
\hline SW & ON \\
\hline SIGLS & ON \\
\hline CI12 & ON \\
\hline TM25 & ON \\
\hline CN18 & ON \\
\hline CH23 & ON \\
\hline RL21 & ON \\
\hline CI13 & ON \\
\hline CH19 & \\
\hline All Others & \\
\hline
\end{tabular}

\section*{Synchronous 2224A Modem Option}

\section*{Settings}

When the synchronous 2224A modem is used with a modular trunk data module, set the options on the modular trunk data module as shown in Table H-14.All factory-furnished options should be set on the 2224A modem with the following exceptions:
- Interface speed indication-DUAL-1200/2400
- Interface speed selection-DUAL-1200/2400
- Analog (AL) and Test Mode interface assignments-AL-18 and TM-25
- Interface control remote digital loopback-IN
- 1200/2400 bps operation-SYNC
- Transmitter timing-EXT

Table H-14. Option Switch Settings on Modular Trunk Data Module (MTDM) Used with Synchronous 2224A Modem
\begin{tabular}{l|l}
\hline Switch & Setting \\
\hline 1200 baud & ON \\
\hline 2400 baud & ON \\
\hline SW & ON \\
\hline SIGLS & ON \\
\hline CI12 & ON \\
\hline TM25 & ON \\
\hline CN18 & ON \\
\hline CH23 & ON \\
\hline RL21 & ON \\
\hline SYNC & ON \\
\hline CH19 & OFF
\end{tabular}

\section*{7400A Option Settings}

Determine if the 7400A will be interfacing with D-lead modems or attention control modems. Use Table H-15to set the options to interface with D lead modems and Table \(\mathrm{H}-16\) to set the options to interface with attention control modems.

Table H-15. 7400A Options for D Lead Modems
\begin{tabular}{l|l|l}
\hline Set Option Display & Option & Desired Setting \\
\hline Set 300 Speed? & 300 & Note 1 \\
\hline Set 1200 Speed? & 1200 & Note 1 \\
\hline Set 2400 Speed? & 2400 & Note 1 \\
\hline Set 4800 Speed? & 4800 & Note 1 \\
\hline Set 9600 Speed? & 9600 & Note 1 \\
\hline Set 19200 Speed? & 19200 & Note 1 \\
\hline Set AT Control? & AT & OFF \\
\hline Set CI Lead? & CI & Note 2 \\
\hline Set CI2 Lead? & CI2 & Note 2 \\
\hline Set CH Lead? & CH & Note 2 \\
\hline Set CH2 Lead? & CH2 & Note 2 \\
\hline Set LL Lead? & LL & Note 2 \\
\hline Set REMOTE Loop? & REMLOOP & Grant \\
\hline Set RL Lead? & RL & Note 2 \\
\hline Set SIGLS Disc? & SIGLS DISC & ON \\
\hline Set TM Lead? & TM & Note 2
\end{tabular}

\section*{Notes:}
1. Set speed to match remote modem. At least one speed must be set to ON .
2. Set to match remote modem.

Table H-16. 7400A Options-Attention Control Modems
\begin{tabular}{l|l|l}
\hline \begin{tabular}{l} 
Set Option \\
Display
\end{tabular} & Option & Desired Setting \\
\hline Set 300 Speed? & 300 & Note 1 \\
\hline Set 1200 Speed? & 1200 & Note 1 \\
\hline Set 2400 Speed? & 2400 & Note 1 \\
\hline Set 4800 Speed? & 4800 & Note 1 \\
\hline Set 9600 Speed? & 9600 & Note 1 \\
\hline Set 19200 Speed? & 19200 & Note 1 \\
\hline Set AT Control? & AT & ON \\
\hline Set CI Lead? & CI & Note 2 \\
\hline Set CI2 Lead? & CI2 & Note 2 \\
\hline Set CH Lead & CH & Note 2 \\
\hline Set CH2 Lead? & CH2 & Note 2 \\
\hline Set LL Lead? & LL & Note 2 \\
\hline Set REMOTE Loop? & REMLOOP & Grant \\
\hline Set RL Lead? & RL & Note 2 \\
\hline Set SIGLS Disc? & SIGLS DISC & ON \\
\hline Set TM Lead? & TM & Note 2 \\
\hline
\end{tabular}

\section*{Notes:}
1. Set speed to match remote modem. At least one speed must be set to ON.
2. Set to match remote modem.

\section*{Printer Option Settings}

Printers can be used with a DEFINITY System G3 Management Terminal, as journal printers for the hospitality feature, and also as an output receiving device for Station Message Detail Recording (SMDR). The printers covered are the 470, \(471,475,476\), and 572 . The 475 printer is currently being replaced by the 572.

\section*{475 Printer Connected to a G3 Management Terminal}

The 475 printer can be connected to a G3 Management Terminal to provide hard copies of administration data. It can also be used as an output receiving device for station message detail recording. In each case, the printer option switch settings are the same. Table H-17 shows the option switch settings for the 475 printer when it is used in these applications.

\section*{475 Printer Used as System Printer}

The 475 printer can be connected to the DEFINITY System G3 as the system printer to be used by the Report Scheduler. Table H-18 shows the option switch settings for the 475 printer as a system printer.

\section*{475 or 476 Printer Used as Journal Printer for Hospitality Feature}

The 475 or 476 printer can also be used as a journal printer to support the hospitality feature. Table \(\mathrm{H}-19\) shows the option switch settings for the 475 and 476 printers in this application.

When modular processor data module or modular trunk data module are used with the 475 or 476 journal printers, the option switches on the modular processor data module or modular trunk data module must be set as shown Table H-20.

Table H-17. Option Switch Settings for 475 Printer Connected to Management Terminal or used for Station Message Detail Recording (SMDR)
\begin{tabular}{c|c|c}
\hline Section & Setting & Description \\
\hline \multicolumn{2}{|c}{ Switch 1 } \\
\hline 1 & OFF & Character Set \\
\hline 2 & ON & \\
\hline 3 & OFF & \\
\hline 4 & OFF & \\
\hline 5 & OFF & DC1 and DC3 \\
\hline 6 & ON & Line Feed \\
\hline 7 & ON & Print Command Mode \\
\hline 8 & OFF & LF on CR \\
\hline
\end{tabular}
\begin{tabular}{c|c|c}
\multicolumn{2}{l}{} & \multicolumn{2}{c}{ Switch 2 } \\
\hline 1 & OFF & Numeric Display of Zero \\
\hline 2 & OFF & Buffer Selection \\
\hline 3 & OFF & TOF-to-TOF \\
\hline 4 & OFF & Power on Line Feed Pitch \\
\hline 5 & OFF & Power on Character Pitch \\
\hline 6 & ON & Selection on 7 or 8 Bit Data \\
\hline 7 & ON & Power on Off-Line or Ready \\
\hline 8 & OFF & Uni- or Bi-Directional Printing \\
\hline 1 & OFF & \multicolumn{2}{c}{ Switch 21 } \\
\hline 2 & OFF & Number of Stop Bits \\
\hline 3 & OFF & Select SD \\
\hline 4 & ON & Parity \\
\hline 5 & OFF & Not Ready \\
\hline 6 & OFF & 7-Bit or 8-Bit Data \\
\hline 7 & OFF & X/ON X/OFF \\
\hline 8 & ON & \\
\hline
\end{tabular}

Continued on next page

* The Baud Rate Default is 1200 baud. Any speed can be used, but the speed of the printer and any connection device used must match.

Table H-18. Option Switch Settings for 475 Printer Connected as System Printer
\begin{tabular}{c|c|c}
\hline Section & Setting & Description \\
\hline \multicolumn{2}{|c}{ Switch \(\mathbf{1}\)} \\
\hline 1 & ON & Character Set \\
\hline 2 & ON & \\
\hline 3 & OFF & \\
\hline 4 & ON & \\
\hline 5 & ON & DC1 and DC3 \\
\hline 6 & OFF & Line Feed \\
\hline 7 & OFF & Print Command Mode \\
\hline 8 & ON & LF on CR \\
\hline
\end{tabular}

Switch 2
\begin{tabular}{c|c|c}
\hline 1 & OFF & Numeric Display of Zero \\
\hline 2 & OFF & Buffer Selection \\
\hline 3 & OFF & TOF-to-TOF \\
\hline 4 & OFF & Power on Line Feed Pitch \\
\hline 5 & OFF & Power on Character Pitch \\
\hline 6 & OFF & Selection on 7 or 8 Bit Data \\
\hline 7 & ON & Power on Off-Line or Ready \\
\hline 8 & OPEN & Uni- or Bi-Directional Printing \\
\hline \multicolumn{2}{|c}{ Switch 21 } \\
\hline 1 & OFF & Number of Stop Bits \\
\hline 2 & OFF & Select SD \\
\hline 3 & OFF & Parity \\
\hline 4 & OFF & \\
\hline 5 & ON & Not Ready \\
\hline 6 & ON & 7-Bit or 8-Bit Data \\
\hline 7 & ON & X/ON X/OFF \\
\hline 8 & OFF & \\
\hline
\end{tabular}
\(\qquad\)
Continued on next page

Table H-18. Option Switch Settings for 475 Printer Connected as System Printer -
\begin{tabular}{c|c|c} 
Section & Setting & Description \\
\hline \multicolumn{2}{|c}{ Switch 22 } \\
\hline 1 & OFF & Baud Rate* \\
\hline 2 & ON & \\
\hline 3 & ON & \\
\hline 4 & OFF & Not Used \\
\hline
\end{tabular}

Switch 23
\begin{tabular}{c|c|c}
\hline 1 & ON & RS232 \\
\hline 2 & OFF & \\
\hline 3 & OFF & Use of DSR \\
\hline 4 & OFF & \\
\hline 5 & ON & \\
\hline 6 & OFF & Not Used \\
\hline
\end{tabular}

Switch 24
\begin{tabular}{c|c|c}
\hline 1 & ON & Select DTR Timing \\
\hline 2 & ON & \\
\hline 3 & OFF & Select RTS Timing \\
\hline 4 & ON & \\
\hline 5 & ON & \\
\hline 6 & OFF & \\
\hline 7 & OFF & \\
\hline 8 & ONe of CTS & \\
\hline
\end{tabular}
* The Baud Rate Default is 1200 baud. Any speed can be used, but the speed of the printer and any connection device used must match.

Table H-19. Option Switch Settings for a 475 or 476 Journal Printer
\begin{tabular}{c|c|c}
\hline Section & Setting & Description \\
\hline \multicolumn{2}{|c}{ Switch 1 } \\
\hline 1 & OFF & Character Set \\
\hline 2 & ON & \\
\hline 3 & OFF & \\
\hline 4 & OFF & \\
\hline 5 & OFF & DC1 and DC3 \\
\hline 6 & ON & Line Feed \\
\hline 7 & ON & Print Command Mode \\
\hline 8 & OFF & LF on CR \\
\hline
\end{tabular}

Switch 2
\begin{tabular}{c|c|c}
\hline 1 & OFF & Numeric Display of Zero \\
\hline 2 & OFF & Buffer Selection \\
\hline 3 & OFF & TOF-to-TOF \\
\hline 4 & OFF & Power on Line Feed Pitch \\
\hline 5 & OFF & Power on Character Pitch \\
\hline 6 & ON & Selection on 7 or 8 Bit Data \\
\hline 7 & ON & Power on Off-Line or Ready \\
\hline 8 & OFF & Uni- or Bi-Directional Printing \\
\hline 1 & OFF & Number of Stop Bits \\
\hline 2 & OFF & Select SD \\
\hline 3 & OFF & Parity \\
\hline 4 & ON & \\
\hline 5 & OFF & Not Ready \\
\hline 6 & OFF & 7-Bit or 8-Bit Data \\
\hline 7 & OFF & X/ON X/OFF \\
\hline 8 & ON & \\
\hline 1
\end{tabular}
\(\qquad\)
Continued on next page

Table H-19. Option Switch Settings for a 475 or 476 Journal Printer - Continued
\begin{tabular}{l|l|l}
\hline Section & Setting & Description \\
\hline
\end{tabular}

\section*{Switch 22}
\begin{tabular}{c|c|c}
\hline 1 & OFF & Baud Rate \\
\hline 2 & OFF & \\
\hline 3 & OFF & \\
\hline 4 & OFF & Not Used \\
\hline
\end{tabular}

Switch 23
\begin{tabular}{c|c|c}
\hline 1 & ON & RS232 \\
\hline 2 & OFF & \\
\hline 3 & OFF & \multirow{2}{*}{ Use of DSR } \\
\hline 4 & OFF & \\
\hline 5 & ON & \\
\hline 6 & OFF & Not Used \\
\hline
\end{tabular}

Switch 24
\begin{tabular}{c|c|c}
\hline 1 & OFF & Select DTR Timing \\
\hline 2 & ON & \\
\hline 3 & ON & \multirow{2}{*}{ Select RTS Timing } \\
\hline 4 & OFF & \\
\hline 5 & OFF & Use of CTS \\
\hline 6 & ON & \\
\hline 7 & OFF & \\
\hline 8 & ON & \\
\hline
\end{tabular}

Table H-20. Option Switch Settings on Modular Processor Data Module (MPDM) or Modular Trunk Data Module (MTDM) for 475 or 476 Journal Printer
\begin{tabular}{l|l}
\hline Switch & Setting \\
\hline SELF TEST & OFF \\
\hline \begin{tabular}{l} 
LOC LOOP/REM \\
LOOP
\end{tabular} & OFF \\
\hline 1200 BAUD & ON \\
\hline \begin{tabular}{l} 
AANS (modular \\
processor data \\
module only)
\end{tabular} & ON \\
\hline SIGLS & ON \\
\hline PRTY & ON \\
\hline I/OD & ON \\
\hline DISC & ON \\
\hline KYBD & ON \\
\hline AlI Others & OFF \\
\hline
\end{tabular}

\section*{470 or 471 Printer Used as Journal Printer for Hospitality Feature}

A printer can be connected to the switch to provide hard copy of hospitality related data. Table H-21 shows the option switch settings for the 470 or 471 printers when they are used in this application.

Table H-21. Option Switch Settings for a 470 or 471 Journal Printer
\begin{tabular}{c|c|c}
\hline Section & Setting & Description \\
\hline \multicolumn{2}{|c}{ Switch \(\mathbf{1}\)} \\
\hline 1 & OFF & Character Set \\
\hline 2 & ON & \\
\hline 3 & OFF & \\
\hline 4 & OFF & \\
\hline 5 & OFF & DC1 and DC3 \\
\hline 6 & ON & Line Feed \\
\hline 7 & ON & Print Command Mode \\
\hline 8 & OFF & LF on CR \\
\hline
\end{tabular}

Switch 2
\begin{tabular}{c|c|c}
\hline 1 & OFF & Numeric Display of Zero \\
\hline 2 & OFF & Buffer Selection \\
\hline 3 & OFF & TOF-to-TOF \\
\hline 4 & OFF & Power on Line Feed Pitch \\
\hline 5 & OFF & Power on Character Pitch \\
\hline 6 & ON & Selection on 7 or 8 Bit Data \\
\hline 7 & ON & Power on Off-Line or Ready \\
\hline 8 & OFF & Uni- or Bi-Directional Printing \\
\hline
\end{tabular}

Switch 3
\begin{tabular}{c|c|c}
\hline 1 & ON & Input-Busy to Pin 36 \\
\hline 2 & OFF & Not Used \\
\hline 3 & ON & Logic Ground on Pin 14 \\
\hline 4 & OFF & Not Used
\end{tabular}
\(\qquad\)

\section*{572 Printer}

A 572 printer can function as a G3 Management Terminal, station message detail recording (SMDR), system printer, or journal printer. The options on the 572 printer are set with function keys rather than dual in-line package switches. Figure \(\mathrm{H}-1\) shows the arrangement of the function keys on the printer control panel.


\section*{Figure Notes:}
1. Power On
4. On Line
2. Alarm
5. Line Feed
3. Print Quality
6. Form Feed

Figure H-1. Control Panel for 572 Printer

\section*{NOTE:}

Before attempting to set the printer options, ensure that the printer is loaded with paper.

To set the options:
1. Depress Power On and Print Quality buttons simultaneously. 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
2. If the printer is to be used with the G3 Management Terminal, station message detail recording (SMDR), or as a Journal printer, set the options as shown in Table H-22. If the printer is being used as the system printer, set the options as shown in Table H-23.
- Use Line Feed button to step forward through the list of functions or use Form Feed button to step backward

Table H-22. 572 Printer Used with G3 Management Terminal, Station Message Detail Recording (SMDR) or Journal Printer
\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{4}{|c|}{572 Printer Option Settings} \\
\hline Function Number & \begin{tabular}{l}
Function \\
Name
\end{tabular} & \begin{tabular}{l}
Menu \\
Number
\end{tabular} & \begin{tabular}{l}
Menu \\
Status
\end{tabular} \\
\hline 01 & FORM LENGTH & 09 & 11 \\
\hline 02 & LPI & 01 & 6 \\
\hline 03 & CPI & 01 & 10 \\
\hline 04 & LQ or NLQ & 01 & LQ \\
\hline 05 & BUZZER & 01 & ON \\
\hline 06 & FONT & 02 & FONTCART \\
\hline 07 & RESOLUTION & 01 & 144 \\
\hline 11 & BUFFER & 02 & N-LINE \\
\hline 13 & PW ON MODE & 01 & ON-LINE \\
\hline 14 & DIRECTION & 01 & B1-DIR. 1 \\
\hline 15 & BUFF FULL & 02 & LF + CR \\
\hline 16 & P.E. & 01 & ACTIVE \\
\hline 17 & AUTO CARRIAGE RETURN (CR) & 01 & CR + LF \\
\hline 18 & ZERO & 01 & 0 \\
\hline 22 & AUTO LINE FEED & 01 & CR ONLY \\
\hline 31 & 1" SKIP & 01 & OFF \\
\hline 32 & CHAR.SET (GO, GL) & 02 & USA \\
\hline 33 & CHAR.SET (G1, GR) & 01 & UK \\
\hline 34 & CHAR SET (G2) & 03 & GE \\
\hline 35 & CHAR SET (G3) & 07 & LINE DRAWING \\
\hline 81 & OFF-LINE STATE & 01 & ALL RECEIVE \\
\hline 82 & DSR & 02 & OFF \\
\hline 83 & REQUEST TO SEND TIMING & 01 & RTS \\
\hline 84 & CD & 02 & OFF \\
\hline 85 & CLEAR TO SEND (CTS) & 02 & OFF \\
\hline 91 & OVER RUN & 02 & 256 \\
\hline 92 & DATA BIT & 02 & 8 \\
\hline
\end{tabular}

Table H-22. 572 Printer Used with G3 Management Terminal, Station Message Detail Recording (SMDR) or Journal Printer
\begin{tabular}{l|l|l|l}
\hline & \multicolumn{3}{c}{\begin{tabular}{c} 
572 Printer Option Settings \\
Function \\
Number
\end{tabular}} \\
\multicolumn{1}{c}{\begin{tabular}{c} 
Function \\
Name
\end{tabular}} & \begin{tabular}{c} 
Menu \\
Number
\end{tabular} & \multicolumn{1}{|c}{\begin{tabular}{c} 
Menu \\
Status
\end{tabular}} \\
\hline 93 & PROTOCOL & 03 & XON/XOFF \\
\hline 94 & STOP BIT & 01 & 1 \\
\hline 95 & PARITY & 01 & NONE \\
\hline 96 & PBS & 01 & 9600
\end{tabular}

Table H-23. 572 Printer used as System Printer
\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{4}{|c|}{572 Printer Option Settings} \\
\hline \begin{tabular}{l}
Function \\
Number
\end{tabular} & \begin{tabular}{l}
Function \\
Name
\end{tabular} & \begin{tabular}{l}
Menu \\
Number
\end{tabular} & \begin{tabular}{l}
Menu \\
Status
\end{tabular} \\
\hline 01 & FORM LENGTH & 09 & 11 \\
\hline 02 & LPI & 01 & 6 \\
\hline 03 & CPI & 01 & 10 \\
\hline 04 & LQ or NLQ & 01 & LQ \\
\hline 05 & BUZZER & 01 & ON \\
\hline 06 & FONT & 02 & FONTCART \\
\hline 07 & RESOLUTION & 01 & 144 \\
\hline 11 & BUFFER & 02 & N-LINE \\
\hline 13 & PW ON MODE & 01 & ON-LINE \\
\hline 14 & DIRECTION & 01 & B1-DIR. 1 \\
\hline 15 & BUFF FULL & 02 & LF + CR \\
\hline 16 & P.E. & 01 & ACTIVE \\
\hline 17 & AUTO CARRIAGE RETURN (CR) & 01 & CR + LF \\
\hline 18 & ZERO & 01 & 0 \\
\hline 22 & AUTO LINE FEED & 01 & CR ONLY \\
\hline 31 & 1" SKIP & 01 & OFF \\
\hline 32 & CHAR.SET (GO, GL) & 02 & USA \\
\hline 33 & CHAR.SET (G1, GR) & 01 & UK \\
\hline 34 & CHAR SET (G2) & 03 & GE \\
\hline 35 & CHAR SET (G3) & 07 & LINE DRAWING \\
\hline 81 & OFF-LINE STATE & 01 & ALL RECEIVE \\
\hline 82 & DSR & 02 & OFF \\
\hline 83 & REQUEST TO SEND (RTS) TIMING & 01 & RTS \\
\hline 84 & CD & 02 & OFF \\
\hline 85 & CLEAR TO SEND (CTS) & 02 & OFF \\
\hline 91 & OVER RUN & 02 & 256 \\
\hline 92 & DATA BIT & 02 & 8 \\
\hline 93 & PROTOCOL & 03 & XON/XOFF \\
\hline
\end{tabular}

Table H-23. 572 Printer used as System Printer
\begin{tabular}{l|l|l|l}
\hline & \multicolumn{2}{c}{ 572 Printer Option Settings } \\
\begin{tabular}{c} 
Function \\
Number
\end{tabular} & \multicolumn{2}{c}{\begin{tabular}{c} 
Function \\
Name
\end{tabular}} & \begin{tabular}{c} 
Menu \\
Number
\end{tabular} \\
\hline 94 & STOP BIT & \multicolumn{1}{c}{\begin{tabular}{l} 
Menu \\
Status
\end{tabular}} \\
\hline 95 & PARITY & 01 & 1 \\
\hline 96 & PBS & 01 & NONE \\
\hline
\end{tabular}
- When the function to be changed is reached, press the On Line button. This activates the menu (available option settings) for the function. Use the Line Feed and Form Feed buttons to step through the options for the function.
- When a desired option is located, press the Print Quality button.
- Each time an option is set, the function and setting is printed.
1. Repeat Step 3 for each option to be set.
2. When the options are set, depress Print Quality button. The printer is now in the normal print mode.

\section*{Station Message Detail Recording (SMDR) Interface Option Settings}

The interface between the G1 switch and station message detail recording equipment may be one of the following:
- Modular processor data module (MPDM) or modular trunk data module (MTDM)-The recommended option settings are shown in the following table.
- 212-type modem-The recommended option settings for the 212-type modem are shown in Table \(\mathrm{H}-25\).
- TN726 Data Line circuit pack and an Asynchronous Data Unit - modular processor data module (MPDM), modular trunk data modules (MTDM), or 212-type modems are not required.
- Connected directly to the DATA COMMUNICATIONS EQUIPMENT connector (Electronic Industries Association (EIA) Port) located on the back of the Control Carrier-modular processor data modules (MPDM), modular trunk data modules MTDM), or 212 modems are not required.
- 7400A - The recommended option settings for the 7400A Data Module are given in this chapter under the heading: "7400A Option Settings" on page \(\mathrm{H}-19\).

Refer to"Interface Cabling to Station Message Detail Recording (SMDR) Output Device" on page 9-63 for connection information.

The 475 or 572 printers can be used as an output receiving device for station message detail recording (SMDR). The recommended option settings for these printers are shown in the following tables. Also, a TELESEER, station message detail recording (SMDR), 94A Local Storage Unit (LSU), or Customer Premises Equipment (CPE) can be used as the output receiving device. Administration procedures for station message detail recording (SMDR) (MPDM) equipment are provided in DEFINITY Communications System Generic 3 Implementation, 555-230-653.

Table H-24. Option Switch Settings on Modular Processor Data Module (MPDM) or Modular Trunk Data Module (MTDM) for Station Message Detail Recording (SMDR)
\begin{tabular}{l|l} 
Switch & Setting \\
\hline SELF TEST & OFF \\
\hline LOC LOOP/REM LOOP & OFF \\
\hline 1200 BAUD & ON \\
\hline \begin{tabular}{l} 
AANS (modular \\
processor data module \\
Only)
\end{tabular} & ON \\
\hline SIGLS & ON \\
\hline PRTY & ON \\
\hline I/OD & ON \\
\hline All Others & OFF
\end{tabular}

Table H-25. Option Switch Settings on 212-Type Modem for Station Message Detail Recording (SMDR)
\begin{tabular}{l|l}
\hline Switch & Setting \\
\hline AL & OFF \\
\hline ST & OFF \\
\hline RDL & OFF \\
\hline DL & OFF \\
\hline HS & ON
\end{tabular}

\section*{Audio Information Exchange (AUDIX) Interface Option Settings for G3i \\ Systems}

AUDIX is sometimes connected to the switch through the processor interface circuit pack. The first circuit on the processor interface can be connected directly to the AUDIX through the PROCESSOR INTERFACE 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 modular processor data module (MPDM) serving as the interface link for AUDIX. The option settings recommended for the modular processor data module (MPDM) in this application are shown in Table H-26.

Table H-26. Option Switch Settings on Modular Processor Data Module for AUDIX
\begin{tabular}{l|l}
\hline Switch & Setting \\
\hline 9600 BAUD & ON \\
\hline SYNC & ON \\
\hline INT & ON \\
\hline AANS & ON \\
\hline All Others & OFF
\end{tabular}

\section*{TN760 Tie Trunk Circuit Pack Option Settings}

The TN760 circuit pack interfaces between four 6-wire 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. The \(E\) and \(M\) pair 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 H-30 and Table H-31), set switches on the TN760 circuit pack and administer the port per Figure \(\mathrm{H}-2\) and Table H-29.

\section*{1. CAUTION:}

To prevent damage from static electricity, always wear an EMC wrist strap (comcode 900698 226) when handling circuit packs or other switch components.

Table H-27. Signaling Formats for TN760
\begin{tabular}{l|c}
\hline Mode & Type \\
\hline E \& M & Type I Standard (unprotected) \\
\hline E \& M & Type I Compatible (unprotected) \\
\hline Protected & Type I Compatible, Type I Standard \\
\hline Simplex & Type V \\
\hline E\&M & Type V \\
\hline E\&M & Type V Revised
\end{tabular}
\(\qquad\)

Table H-28. Signaling Type Summary
\begin{tabular}{l|c|c|c|c}
\hline \multicolumn{1}{c}{\begin{tabular}{c} 
Signaling \\
Type
\end{tabular}} & \multicolumn{2}{c}{ Transmit (M Lead) } & \multicolumn{2}{c}{ Receive (E Lead) } \\
On-Hook & Off-Hook & On-Hook & Off-Hook \\
\hline \begin{tabular}{l} 
Type I \\
Standard
\end{tabular} & grd & bat & open \(^{*} /\) bat & grd \\
\hline \begin{tabular}{l} 
Type I \\
Compatible
\end{tabular} & open \(^{*} /\) bat & grd & grd & open \(^{*} /\) bat \\
\hline Type V & open/bat \(^{*}\) & grd & open & grnd \\
\hline \begin{tabular}{l} 
Type V \\
Reversed
\end{tabular} & grd & open & grd & open \\
\hline
\end{tabular}
* An open circuit is preferred over voltage.


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

Table H-29. TN760D Option Switch Settings and Administration
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline \multicolumn{2}{|l|}{\begin{tabular}{l}
G3 \\
Installation Situation
\end{tabular}} & \multicolumn{2}{|l|}{\begin{tabular}{l}
Preferred \\
Signaling Format
\end{tabular}} & \multirow[t]{2}{*}{Set E\&M/SMPLX Option Switch} & \multirow[t]{2}{*}{\begin{tabular}{l}
Set \\
Prot/ Unprot Option Switch
\end{tabular}} & \multirow[b]{2}{*}{Administered Port} \\
\hline Circumstance & To & G3 & Far-End & & & \\
\hline \multirow[t]{2}{*}{Co-Located} & Sys75/G1 & Simplex & Simplex & SMPLX & Either & Type 5 \\
\hline & & Type 5 & Type 5 & & & \\
\hline \multirow[t]{2}{*}{Inter-Building} & Sys75/G1 & Simplex & Simplex & SMPLX & Either & Type 5 \\
\hline & & Type 5 & Type 5 & & & \\
\hline \multirow[t]{2}{*}{Co-Located} & Sys85/G2 & Simplex & Simplex & SMPLX & Either & Type 5 \\
\hline & & Type 5 & Type 5 & & & \\
\hline \multirow[t]{2}{*}{Inter-Building} & Sys85/G2 & Simplex & Simplex & SMPLX & Either & Type 5 \\
\hline & & Type 5 & Type 5 & & & \\
\hline \multirow[t]{2}{*}{Co-Located} & DIMENSION & E\&M Type 1 & E\&M Type 1 & E\&M & Unprotected & Type 1 \\
\hline & PBX & Compatible & Standard & & & Compatible \\
\hline \multirow[t]{2}{*}{Inter-Building} & DIMENSION & Protected Type 1 & Protected Type 1 & E\&M & Protected & Type 1 \\
\hline & PBX & Compatible & Standard & & & Compatible \\
\hline \multirow[t]{2}{*}{Co-Located} & Other & E\&M Type 1 & E\&M Type 1 & E\&M & Unprotected & Type 1 \\
\hline & & Compatible & Standard & & & Compatible \\
\hline \multirow[t]{4}{*}{Inter-Building} & Other & Protected Type 1 & Protected Type 1 & E\&M & Protected & Type 1 \\
\hline & & Compatible & Standard Plus & & & Compatible \\
\hline & & & Protection & & & \\
\hline & & & Unit & & & \\
\hline \multirow[t]{2}{*}{Co-Located} & Net Integrated & E\&M Type 1 & Any PBX & E\&M & Unprotected & Type 1 \\
\hline & & Standard & & & & \\
\hline
\end{tabular}

\section*{TN464C, D, E, F Option Settings}

The TN464 circuit pack interfaces between a 24 or 32 channel Central Office (CO)/Integrated Services Digital Network (ISDN) or tie trunk and the Time Division Multiplex (TDM) bus.

The TN464C and TN464D act as Digital Service Level 1 (DS1)/E1 interfaces and Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) interfaces and have the following attributes:
- 1,544-megabits per second (Mbps) Digital Service Level 1 (DS1) (24 channel integrated services digital network (ISDN)) and 2.048 megabits per second Mbps) E1 (32-channel Integrated Services Digital Network (ISDN)) transmission rates
- Administrable A-law companding and Mu-law companding
- Cyclical redundancy checking (CRC) 4 check
- Stratum 3 clock compatibility
- D-channel connectivity for Integrated Services Digital Network (ISDN) primary rate interface (PRI)

The TN464D is a superset of the TN464C and has the following additional attributes: supports digital release link tie trunks and MFC, R2 Direct Inward Dialed (DID) signaling. In addition to supporting tie trunk, Central Office (CO) trunk, and Direct Inward Dialed (DID) trunk protocols, the TN464D supports bit-oriented signaling protocols and bit-oriented Direct Inward Dialed (DID) signaling protocols.

The TN464C and TN464D have the following signal leads: LBACK2, LBACK1, LO, LO (out), LI, LI (in to Private Branch Exchange (PBX)).

\section*{TN464C/D Option Settings}

To choose the bit rate and the line impedance match, set plugs (TN464 C \& D) on the circuit pack. Insert the jumper blocks into the pins to join the center row of pins and the row designating the desired options.

Set the impedance and bit rate as follows:

Table H-30. Option Switch and/or Plug Settings on TN464C/D
\begin{tabular}{l|l}
120 Ohms & Twisted Pair \\
\hline 75 Ohms & Coaxial requiring 888A adapter \\
\hline 32 Channel & 2.048 megabits per second \\
\hline 24 Channel & 1.544 megabits per second
\end{tabular}


\section*{Figure Notes:}
1. Backplane Connectors
6. 120 Ohm
2. \(24 / 32\) Channel Selector
7. 75 Ohm (shown selected)
3. \(75 / 120\) Ohm Selector
8. Faceplate
4. 24 Channel
9. Connector
5. 32 Channel (shown selected)
10. TN464C/D

Figure H-3. Selection of 75 Ohm and 32 Channel Settings on TN464

\section*{TN464E/F Option Settings}

The TN464 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 switches E and F on the circuit pack to select bit rate and impedance match.

Set the impedance and bit rate as follows:

Table H-31. Option Switch Settings on TN464E/F
\begin{tabular}{c|l}
\hline 120 Ohms & Twisted pair \\
\hline 75 Ohms & Coaxial requiring 888A adapter \\
\hline 32 Channel & 2.048 megabits per second \\
\hline 24 Channel & 1.544 megabits per second
\end{tabular}


\section*{Figure Notes:}
1. Backplane Connectors
6. 120 Ohm (shown selected)
2. \(24 / 32\) Channel Selector
7. 24 Channel (shown selected)
3. \(75 / 120\) Ohm Selector
8. 75 Ohm
4. Faceplate
9. Connector
5. 32 Channel
10. TN464E/F

Figure H-4. TN464E/F Option Settings

\section*{References}


The following is a list of DEFINITY Generic 3 documents including a brief description of each document.

To order copies, refer to the address on the inside front cover. For additional DEFINITY documents, refer to the GBCS Publications Catalog, 555-000-010 available from the AT\&T Customer Information Center.

Basic
The following are basic documents for anyone using DEFINITY.

\section*{An Introduction to DEFINITY Communications 555-230-023 System Generic 3, Issue 1}

Provides a detailed overview of the system including descriptions of many of the major features, applications, hardware, system capabilities, and the AT\&T support provided with the system. This document reflects Generic 3 Version 2 software, but still contains relevant information.

DEFINITY Communications System Generic 3
555-230-601 Planning and Configuration, Issue 2

Provides step-by-step procedures for the account team in determining the customer's equipment and hardware requirements to configure a system according to the customer specifications. Includes detailed requirements and
block diagrams. This document reflects Generic 3 Version 2 software, but still contains relevant information.

\section*{DEFINITY Communications System Generic 3 555-230-204}

Feature Description, Issue 2
Provides comprehensive technical descriptions of system features and parameters. Includes the applications and benefits, feature interactions, administration requirements, hardware and software requirements, and a brief discussion of data communications and private networking configurations.

\section*{DEFINITY Communications System Generic 3 555-230-655 Version 4 Implementation, Issue 1}

Provides step-by-step procedures for preparing the hardcopy forms that correspond to the screens and are required to implement the features, functions, and services of the system. Includes procedures for completing a communications survey. Includes a complete set of blank forms (555-230-653B).

\section*{DEFINITY Communications System Generic 3}

555-230-653B Version 4 Implementation Blank Forms, Issue 1

Provides additional blank hardcopy forms that correspond to the screens and are required to implement the features, functions, and services of the system.

Copies of these forms are automatically included with the DEFINITY Communications System Generic 3 Version 4 Implementation, Issue 1, 555-230-653. Use this order number to purchase additional forms.

\section*{DEFINITY Communications System Generic 3}

555-230-206 System Description and Specifications, Issue 3

Provides a technical description of the systems and is intended for service personnel, sales personnel, and customers needing a comprehensive overview of the system. Includes descriptions of hardware, software features, technical specifications, environment requirements, maintenance requirements, and illustration of components.

DEFINITY Communications System Generic 3
555-230-511 Version 4 Traffic Reports, Issue 2

Provides detailed descriptions of all the measurement, status, and security reports available in the system and is intended for administrators who validate traffic reports and evaluate system performance. This document was titled System Reports for earlier systems. Includes corrective actions for potential problems.

\section*{DEFINITY Communications System Generic 1 and Generic 3 Installation and Test, Issue 5}

555-230-104

Provides descriptions of the procedures for installing and testing the system's common equipment and adjuncts. Includes set up procedures for the system management terminal, power and grounding requirements, and testing steps. Includes compete details on system wiring. Provides both domestic and international information.

\section*{DEFINITY Communications System Generic 3s and Generic 3i Installation, Issue 1}

555-230-894 UK English
555-230-895 German
555-230-896 French
555-230-897 Spanish
555-230-900 Chinese

Provides procedures and information for hardware installation and initial testing of the DEFINITY Communications System Generic 3, models Generic 3i and Generic 3 single-carrier cabinet switches only. The United Kingdom version will be shipped with all single-carrier cabinet systems domestically.

\section*{DEFINITY Communications System Generic 3s \\ 555-230-104 and Generic 3i Installation (for Global Market), Issue 1}

Provides descriptions of the procedures for installing and testing the system's common equipment and adjuncts. Includes set up procedures for the system management terminal, power and grounding requirements, and testing steps. Includes compete details on system wiring. Provides both domestic and international information for single carrier cabinets only. This document reflects Generic 3 Version 4.

\begin{abstract}
DEFINITY Communications System Generic 3 555-230-107 Version 1.1 - Version 4 Upgrades and Additions, Issue 2

Provides procedures for an installation technician to convert an existing DEFINITY Generic 1, Generic 2, Generic 3 Version 1, Generic 3 Version 2, Generic 3 Version 4, or System 75 R1V3 to Generic 3 Version 4. Included are upgrade considerations, lists of required hardware, and step-by-step upgrade procedures. Also included are procedures to add control carriers, switch node carriers, port carriers, circuit packs, auxiliary cabinets, and other equipment.
\end{abstract}

DEFINITY Communications System Generic 3r
555-230-105 Maintenance, Issue 4
DEFINITY Communications System Generic 555-204-105 3i/s/vs Maintenance, Issue 7

Provide detailed descriptions of the procedures for monitoring, testing, and maintaining the systems. Included are maintenance commands, step-by-step trouble-clearing procedures, the procedures for using all tests, and explanations of the system's error codes.

\section*{AT\&T GBCS Products Security Handbook, Issue 4}

555-025-600

Provides information about the risks of telecommunications fraud and measures for addressing those risks and preventing unauthorized use of GBCS products. This document is intended for telecommunications managers, console operators, and security organizations within companies.

DEFINITY Communications System and System 555-015-201 75 and System 85 Terminals and Adjuncts Reference, Issue 7

Provides descriptions of the peripheral equipment that can be used with System 75 , System 85, and DEFINITY Communications System. This document is intended for customers and AT\&T account teams for selecting the correct peripherals to accompany a system.

DEFINITY Communications System Generic 1
and Generic 3 Voice Terminal Operations, Issue 1
Provides detailed operating instructions for the system features on each type of voice terminal. Included are definitions of the voice features and user requirements.

\section*{DEFINITY Communications System Generic 1 \\ 555-230-500 and Generic 3 System Management, Issue 1}

Provides operating procedures for the Generic 1 Management Terminal and the G3 Management Terminal for Generic 3 Version 1 systems. This document is intended for the System Administrator. Also included is information on administrative tasks and system backup procedures.

\section*{DEFINITY Communications System Generic 1, 555-230-755 Generic 3, and System 75 Voice Terminal Guide Builder, Issue 1}

Provides capability to produce laser-printed documentation for specific voice terminals. The software is supported by a comprehensive user's guide and on-line help. This product requires a 386 PC , minimum of 6MB disk space, minimum of 4MB RAM, a printer supported by Microsoft GDI printer drive, and Microsoft Windows 3.1 or higher. A mouse is recommended.

\section*{Call Center}

The following list of documents are Call Center specific. Refer also to the Basic DEFINITY documents.

DEFINITY Communications System Generic 3 585-230-520 Call Vectoring/EAS Guide, Issue 4

Provides information on how to write, use, and troubleshoot vectors. Vectors are command sequences that process telephone calls in an Automatic Call Distribution (ACD) environment. It is provided in two parts: tutorial and reference.

The tutorial provides step-by-step procedures for writing and implementing basic call vector scripts.

The reference includes detailed descriptions of the call vectoring features, vector management, vector administration, adjunct routing, troubleshooting, and interactions with management information systems (including the Call Management System).

\section*{DEFINITY Communications System Generic 3 \\ 555-230-704 \\ Basic Call Management System (BCMS) Operations, Issue 4}

Provides detailed instructions on how to generate reports and manage the system and is intended for telecommunications managers wishing to use BCMS reports and system managers responsible for maintaining the system.

If Issue 4 is unavailable, use Issue 3.

\section*{Networks}

The following list of documents are network specific. Refer also to the Basic DEFINITY documents.

\section*{DEFINITY Communications System Generic 3 \\ 555-230-230 Wideband Technical Reference, Issue 1}

Provides detailed information regarding the Wideband Switching feature for the system and is intended for users and technical support personnel involved with the installation, administration, and operation of this feature. This feature provides high speed end-to-end connectivity between customer endpoints where dedicated facilities are not economical or appropriate. The primary function is to support high speed video-conferencing and data applications.

\section*{DEFINITY Communications System Generic 2.2 \\ 555-025-107 and Generic 3 Version 2 DS1/CEPT1/ISDN PRI Reference Manual, Issue 1}

Provides a technical description of digital trunks in the DEFINITY Communication Systems. This includes trunks conforming to the DS1 (Digital Service Level 1) standard ( 1.544 Mbps ) and the CEPT1 standard and all other methods of signaling, including bit oriented signaling as well as Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) signaling. This document includes background information on these topics, information on how digital trunk capabilities have been designed into the DEFINITY systems and information for field personnel and customers on how to provision and administer digital trunk capabilities and features. Provides both domestic and international information.

\section*{Application Specific}

The following list of documents are application specific. Refer also to the Basic DEFINITY documents.

\section*{DEFINITY Communications System Generic 2 to 555-230-636 Generic 3 Version 4 Transition Reference, Issue 1}

Provides detailed descriptions of the difference between features and administrative forms for systems Generic 2 to Generic 3 Version 4 and is intended for AT\&T personnel and customers involved in planning upgrades and migrations from an older system. Includes descriptions of new administrative commands.

\section*{DEFINITY Communications System Generic 3 \\ 555-230-222 CallVisor ASAI Planning Guide, Issue 4}

Provides procedures and directions for the account team and customer personnel for planning and implementing the CallVisor Adjunct/Switch Application Interface (ASAI) PBX-Host environment. The CallVisor ASAI is a communications interface allowing adjunct processors to access switch features and to control switch calls. It is implemented using an Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI). Included are hardware and software requirements.

\section*{DEFINITY Communications System Generic 3 CallVisor ASAI Protocol Reference, Issue 4}

555-230-221

Provides detailed layer 3 protocol information regarding the CallVisor Adjunct/Switch Application Interface (ASAI) for the systems and is intended for the library or driver programmer of an adjunct processor to create the library of commands used by the applications programmers. Describes the Integrated Services Digital Network (ISDN) message, Facility Information Elements, and information elements.

\section*{DEFINITY Communications System Generic 3 CallVisor ASAI Technical Reference, Issue 4}

555-230-220

Provides detailed information regarding the CallVisor Adjunct/Switch Application Interface (ASAI) for the systems and is intended for the application designer responsible for building and/or programming custom applications and features.

DEFINITY Communications System Generic 3 555-230-223
CallVisor LAN Gateway Installation, Administration, and Maintenance, Issue 1

Provides procedures for installation, administration, and maintenance of the CallVisor LAN Gateway application and is intended for system administrators, telecommunications managers, Management Information System (MIS) managers, LAN managers, and AT\&T personnel. The LAN Gateway application provides ASAI functionality using 10Base-T Ethernet rather than BRI as a transport media.

\section*{DEFINITY Communications System Generic 3 555-230-722 Automatic Call Distribution (ACD) Agent Instructions, Issue 4}

Provides information for use by agents after they have completed Automatic Call Distribution (ACD) training. Includes descriptions of features and the procedures for using them.

DEFINITY Communications System Generic 3 555-230-724 Automatic Call Distribution (ACD) Supervisor Instructions, Issue 4

Provides information for use by supervisors after they have completed Automatic Call Distribution (ACD) training. Includes descriptions of features and the procedures for using them.

DEFINITY Communications System Generic 1 555-230-700 and Generic 3 Console Operation, Issue 2

Provides operating instructions for the attendant console. Included are descriptions of the console control keys and functions, call-handling procedures, basic system troubleshooting information, and routine maintenance procedures.

\section*{DEFINITY Communications System Generic 1} and Generic 3 Console Quick Reference, Issue 1

555-230-890 UK English
555-230-891 German
555-230-892 French
555-230-893 Spanish
555-230-920 Chinese

Provides operating instructions for the attendant console. Included are descriptions of the console control keys and functions, call handling, basic system troubleshooting information, and routine maintenance procedures.

\section*{An Introduction to DEFINITY Communications \\ 555-230-021 System Generic 3 Hospitality Services, Issue 1}

Provides an overview of the features available for use by the lodging and health industries to improve their property management and to provide assistance to their employees and clients. Included are brief definitions of many of the system features, descriptions of the hardware, planning considerations, and list of the system capabilities.

DEFINITY Communications System Generic 1
555-230-723 and Generic 3 User's Guide Hospitality Operations, Issue 2

Provides step-by-step procedures for using the features available for use by the lodging and health industries to improve their property management and to provide assistance to their employees and clients. Includes detailed descriptions of reports.

\section*{Abbreviations}

cm
Centimeter

\section*{CMS}

Call Management System
CO
Central Office
CR
Carriage Return
CTS
Clear To Send

\section*{D}

DC
Direct Current
DCE
Data Communications Equipment
DCS
Distributed Communications System
DDC
Direct Department Calling
DOD
Direct Inward Dialing
DIW
D-inside wire
DS1
Data Services 1
DSR
Data Set Ready
DTE
Data Terminal Equipment

E

EI
Expansion Interface
EIA
Electronics Industry Association
EPN
Expansion Port Network
\begin{tabular}{|c|}
\hline \multirow[t]{2}{*}{\begin{tabular}{l}
F \\
FCC \\
Federal Communications Commission (U.S.A.)
\end{tabular}} \\
\hline \\
\hline G \\
\hline \begin{tabular}{l}
G3MT \\
Generic 3 Management Terminal
\end{tabular} \\
\hline H \\
\hline \[
{ }_{\text {Hertz }}
\] \\
\hline I \\
\hline I/O Input/Output \\
\hline \begin{tabular}{l}
in \\
inch
\end{tabular} \\
\hline \begin{tabular}{l}
INADS \\
Initialization and Administration System
\end{tabular} \\
\hline \begin{tabular}{l}
ISDN \\
Integrated Services Digital Network
\end{tabular} \\
\hline L \\
\hline \begin{tabular}{l}
LCD \\
Liquid Crystal Display
\end{tabular} \\
\hline \begin{tabular}{l}
LED \\
Light Emitting Diode
\end{tabular} \\
\hline \begin{tabular}{l}
LSU \\
Local Storage Unit
\end{tabular} \\
\hline
\end{tabular}

\section*{M}

\section*{MPDM}

Modular Processor Data Module
MT
Management Terminal
MTDM
Modular Trunk Data Module

N

NEC
National Electrical Code (U.S.A.)

\section*{P}

PBX
Private Branch Exchange
PDM
Processor Data Module
PDU
Power Distribution Unit
PPN
Processor Port Network

\section*{PMS}

Property Management System
PRI
Primary Rate Interface
PX
PBX transmit

R
RTS
Request To Send

ABB-2 Issue 1 September 1995

S

SCC
Single Carrier Cabinet
SMDR
Station Message Detail Recording
SPE
Switch Processor Element
SPID
Service Profile Identifier
SWG
Standard Wire Gauge (United Kingdom)

T

TDM
Time Division Multiplexer
TM
Test Mode
TX
Terminal transmit

\section*{U}

\section*{UCD}

Uniform Call Distribution
UPS
Uninterruptible Power Supply

\section*{W}

WATS
Wide Area Telecommunications System (U.S.A.)

\section*{Index}

\section*{Numerics}

103A wall jack, 6-7
103JR modem
switch settings, \(\mathrm{H}-2\)
10-AWG wire, 4-3
110 SYSTIMAX, 2-2
116A EIA ground isolator, installation procedure, 6-3
201CR modem
switch settings, H-4
202SR modem
switch settings, H-6
208BR modem
switch settings, H-9
212AR modem switch settings, \(\mathrm{H}-11, \mathrm{H}-14\)
212-type modem option settings, H-35
2224A modem switch settings, \(\mathrm{H}-17, \mathrm{H}-18\)
24-hour clock
conversion table 7 7-13
25-pair I/O cables, 4-34
2-wire analog sta, 9-5
2-wire digital station wiring example, 19-5
2-wire telephones, installation procedure, E -1
302B Attendant Console
connectionillustration. 9-14
example, 9-2
illustration, 9-14
400B2 power adapter, 9-3
475 printer, H-21
option settings. \(\mathrm{H}-35\)
476 printer, H-21
4-wire telephones, installation procedure, E-1
572 printer, H-30
option settings, H-35
6-AWG ground wire, 4 4-3, \(\mathrm{A}-2\)
7400A data module, 6-7
option settings, \(\mathrm{H}-19\)
8-pin line jack
figures, E-2, E-3
pinouts, E-3
9400-series telephones
cord routing for desktop, E-5
cord routing for wall mount. \(\mathrm{E}-8\)
distance limitations, E-4
installation procedure, E -1
testing, E-9
9403
wall mounting. E-6
wiring, E-2
9410
wall mounting, E-6

\section*{9434}
wiring, E-2
94A Local Storage Unit,
9823A transceiver, 4-19, 4-20
9823B transceiver, 4-19, 4-20

\section*{A}

AC power
check power, 2-6
connect cabinet cords. 4 4-6
grounding, 2-8
receptacle location, 4-2
AC-powered switch
turn on procedure, 7-3
activate system, overview, 1-5
adapters
400B2, 9-3
address plugs, 4-29
adjunct power, 9-5
connecting, 9-3
administer system
data, 9-66
overview, 1-7
ADX
message on AUDIX LCD display, C-2, C-4
AINIT
message on AUDIX LCD display, C-4
alarm
wiring example, 9-5
alarms
\(\log\) of, 7-9
A-Law companding, 7-7.| \(\mathrm{H}-41\)
American Wire Gauge, F-1
analog station
wiring example, 9-5
analog tie trunk wiring example, 9-6
announcement
delete procedure, 10-12
integrated test procedure, 10-12
playback procedure. 10-12
record procedure, 10-12
APP connector information, 9-15, 9-17+9-20
approved ground, A-1
Argentina
country code, 7-8
required hardware, D-2
AT control modem, H-19
attendant console, 9-2
connection illustration, 9-14
maximum cabling distance, \(9-2\)
test procedure, 10-8
AUDIX
important caution about powering down, \(\sqrt{7-8}\)
power down procedure, \(\mathrm{C}-1\)
power up procedure, \(\mathrm{C}-1\)
trademark information, xvii
Australia
country code, 7-8
required hardware, D-3
Autowrap
required setting for G3MT, 6-6
Aux Conn outputs, 9-11
AUX connector
pin designations, 9-10, 9-15
auxiliary connector outputs, 9-10
auxiliary equipment pin designations. 9-15, 9-17+9-20
availability, system, 1-1
AWG to SWG wire conversion, F -1
AWG wire conversion, F-1

\section*{B}

B25A cable, 6-7
backplane, port cabinet, 14-29
backup translations, 7-16
basic rate interface
see alsoBRI
test procedure, 10-15
battery
backup power, 4-14
connecting, 4-5
Baud Rate, required setting for G3MT, 6-6
BCMS, for remote connection, 6-7
Belgium
country code, 7-8
required hardware, D-4
bit rate
setting, H-41, \(\mathrm{H}-42\)
bit-oriented signaling, H-41
books, ordering related documents, xvi
BOOT message on AUDIX LCD display, C-4 BRI
multipoint cabling distances, 9-45
terminating resistor, 9-39
test procedure, 10-15
BTEST message on AUDIX LCD display. \(\mathrm{C}-4\)
buried ground, A-2

\section*{C}
cabinet
address plugs, 4-29
attaching to floor, B-1
aux conn outputs, 9-11
backplane, 4-29
cable clamps. 14-34
clip, 4-35
definition of, 8-1
earthquake protection, \(\mathrm{B}-1\)
fastening together, B-4
ground bar, 4-3
ground plate, 4-30
installation overview, 1-3
position, 4-2
slots, 4-29
stabilizing, 4-35
stabilizing for earthquake, \(\quad\) B-4. \(\mid\) F-1
unpacking overview, 1-3
cable clamps, 4-34
cable label and colour code.. 5 5-7
Cable Labels, 5-7
cable slack manager, 5-3
floor plan including, 2-2
floor plan requirements, |2-4
illustration, 5-5
cables
25-pair I/O, 4-34
diagrams, 9-15. 9-17+9-20
external trunk, 15-7
fiber-optic, 4-19
installation overview, 1-4
inter-cabinet, 4-15, 4-17
labeling, 5-7
outputs for control carrier, \(9-10\)
routing guidelines, 5-3
TDM bus, 4-15, 4-17, 4-32
wallfield, 4-34
cabling systems, 2-2
Canada
required hardware, \(\mathrm{D}-2\)
carriage bolts, B-2
CAS+, for remote connection, 6-7
caution
always wear EMC wrist strap when handling circuit packs or switch components. \(7-2 . \mid \mathrm{H}-38\)
avoiding disk crash, 7-8
do not route fiber-optic cables and B25A cables
together, 4-24
grounding compliance with electrical codes, 4-14
grounding must comply with electrical codes, 4-8
installing G3MT with DC-powered system or electromag-
netic shielding, 6-1
regarding 116A EIA ground isolator, 6-1
regarding 9400-series telephones, E-1
regarding location of MSP-1 power supply, 19-36
regarding MSP-1 power supply, 9-36
reseating purple-labled tone detector/generator circuit pack, 7-8
reseating white-labeled control circuit packs, 7 7-8
safeguarding craft password, 7-9
safety precautions for power supply, 9-35
saving translations on white translation card, 7 7-15
shut down AUDIX system before reseating, 7-8
take care when opening carton, 3 -2
CDRU, for remote connection, 6-7
changing
password, 7-9
system-parameters country options, 7-6 system-parameters maintenance, 7-14
Check Parity, required setting for G3MT, 6-6
China
country code, 7-8
required hardware. D-5
circuit breaker, 4-5
circuit pack
pin, 9-13
circuit pack configuration
test procedure, 8-4
test procedure, circuit packs
configuration test procedure, 8-19
circuit packs
configuration test procedure, 8-4
ISDN wiring, 9-13
NT1 wiring, 9-13
pin designations, 9-15, 9-17+9-20
required by country, D-1-D-19
TN2198
wiring, 9-13
circuit, power arrangements, 2 2-6
clamps, cable, 4-34
clip, cabinet, 4-35
CO trunk, \(\mathrm{H}-41\)
wiring example, 9-5
code
grounding requirements, \(\mathrm{A}-1\)
section 250-81, A-1
colors, of wire, F-1
commands
G3MT introduction, 7-4
list configuration, 8-19
refresh spe, 8-13
reset system interchange, 8 -13
set expansion-link, 8-18
set tone-clock, 8-17
status system all-cabinets, 8 -12, 8 -17, 8 -18
status system cabinets-all, 8-13
test board, 8-14
test inads-link, 10-15
test shadow-link, 8-11
test tdm port-network, 18-15
test tone-clock 1a, 8-10
companding
A-Law, \(\mathrm{H}-41\)
mode, 7-6
Mu-Law, H-41
concrete encased ground, A-2
conductor, coupled bonding, 2-8
conduit, as ground, A-2
connecting
battery, 4-5
grounds, A-2
connectors
data communications equipment, \(\mathrm{H}-35\)
RX, 4-19
TX, 4-19
console
attendant, test procedure, 10-8
selector, test procedure, 10-9
control carrier outputs cable, 19-10
copper wire, A-2
Cost Allocator, 6-7
country codes, 7-8
country options, setting, 7-6
country-specific hardware, D-1+D-19
coupled bonding conductor, \(4-3\)
connecting, 2-8
description, 2-8
craft password, changing, 7-9
critical reliability, 1-1, 1-2
testing systems, 8-11, 8-12, 8-17
cross-connect field, 2-2., 2-8
cable slack manager, 15-3
connecting to, 5-1
connection, 4-19
coupled-bonding conductor, 2-8
fiber-optic cable. 4-19
illustration, 5-3
limitations, 4-2
location, 5-2, 5-3
recommended hardware, 2-2
Czechoslovakia
country code, 7-8
required hardware, D-6

\section*{D}
danger
handling cabinet requires two people, as it weighs 130 \(\mathrm{lbs} / 60 \mathrm{kgs}\), 3-1
if label is different than voltage type at your site, do not connect - get a replacement power supply, 3-4, 4-6
take care when cutting and removing bands on packing, 3-1
Data Bits
required setting for G3MT, 6-6
data communications equipment connector, \(\mathrm{H}-35\)
date, set procedure, 7-11
day of the week
table of English names, 7 7-12
DB9 (on back of PC), 6-7
DC power
connecting G3MT to a switch, 6-3
signaling leads, H-37
DC-powered switch
turn on procedure, \(7-3\)
DCS switch settings, H-2
DEFINITY, C-1
trademark information, xvii
DEFINITY AUDIX System power down procedure, \(\sqrt{\mathrm{C}-1}\) power up procedure, C -1
designations
auxiliary leads at AUX connector, 9-10, 9-15 port board and telephone. 9-13
DID signaling, H-41
DID trunk
protocols, H-41
wiring example, 9-5
digital station wiring example (2-wire), 9-5
digital tie trunk, wiring example. 9-9
direct connect systems, 4-19
direct department calling
testing queue warning indicator, \(10-10\)
D-lead modem, H-19
documents, ordering additional, xvi
DS1
connection, 9-9
interface, \(\mathrm{H}-41\)
duplication of systems, 1-1
DUPLICATION OPTION TERMINAL
connecting G3MT procedure, 6-3

\section*{E}

E1 interface, H-41
earthquake front plate, \(\bar{B}-4\)
earthquake protection procedures. \(\mid \mathrm{B}-1+\mathrm{B}-6\)
EIA port, H-35
electrical codes
international, G-1
North America, G-1
electromagnetic shielding, 4 -35, \(\mathrm{B}-4\)
emergency power, 4-14
emergency transfer, test procedure, 10-13
English day names
table of, 7-12
English month names
table of, 7-12
Enter Key, required setting for G3MT, 6-6
Equador
country code, 7-8
required hardware, D-6
equipment closets
determine location, 2-9
equipment room floorplan, 2-2
examples
2-wire digital station wiring, 9-5
302B Attendant Console, 9-2
analog station wiring, 9-5
analog tie trunk wiring, 9-6
CO trunk wiring, 9-5
DID trunk wiring, 9-5
digital tie trunk wiring, 9-9
telephone connection wiring, 9 -2
expansion interface
boards, test procedure, 8-14
exchange, test procedure, 8-17
expansion links, service state, 8-2
expansion port network
duplication, 1-1
testing systems, 8-15, 8-16
external alarm
wiring example, 9-5
external ringing, test procedure, \(10-9\)
external trunk, 5-7
F
fiber-optic cable
direct connect systems, 4-19
duplication, 1-1
installation, 4-19
lightwave tranceiver, 4-19
floor ground, A-2
floorplan, equipment room, 2-2
Font Size, required setting for G3MT, 6-6
France
country code, 7-8
required hardware, D-6
front mounting angle, \(\mathrm{B}-1\)
front plate, B-4

\section*{G}

G3 Management Terminal
installation procedures, 6-1
see also G3MT
G3MT
commands, introduction, 7-4
floorplan requirements, 2-2
install procedure, 6-1
installation overview, 1-4
printers, 6-2
\begin{tabular}{l|l|l} 
procedure to connect remote, & \(6-7\)
\end{tabular}
required settings, 6-6
requirements, 6-1
set up procedure, 6-6
Germany
country code, 7-8
required hardware, D-6
global country code, 7-8
Greece
country code, 7-8
required hardware. D-8
ground plate, 4-34, B-4., F-1
installing, 4-29, 4-30
ground ring, \(A-2\)
grounding
6-AWG wire, \(\sqrt{4-3}\)
AC power, 2-8
acceptable mediums, A-1
approved, 2-8
building steel frame, \(\mathrm{A}-1\)
concrete encased. A-2
connecting, A-2
floor, A-2
ground plate, \(\mathrm{B}-4, \mathrm{~F}-1\)
ground ring, \(\mathrm{A}-2\)
layout, 2-6
planning. 2-8
rules, 2-8
terminal, \(\mathrm{A}-2\)
warning, A-2
water pipe, A-2

\section*{H}
hardware
fiber-optic, 4-19
required by country, D-1+D-19
high reliability, 1-1, 1-2
testing systems, 8-11, 8-12
Hong Kong
country code, 7-8
required hardware, D-8
hospitality feature
journal printer, \(\mathrm{H}-28\)
Hungary
country code, 7-8
required hardware, D-10

\section*{I}
impedance, setting, \(\mathrm{H}-41, \mathrm{H}-42\)
Imperial Wire Ga, F-1
INADS
test procedure, 10-14
install PPN cabinet, 4-2
integrated announcement
test procedure, 10-12
inter-cabinet cables, 4-15, 4-17
international electrical codes, \(\quad\) G-1
ISDN, H-41
2-wire BRI line, wiring, 9-13
BRI
fanout of multipoint installations, 9-45
multipoint cabling distances, 9-46
port board and telephone pin designations, 9 9-13
terminating resistor, 9-39
test procedure, 10-15
PRI interface, H-41 isolator

116A EIA ground, 6-1
installation procedure, 6-3

Italy
country code, 7-8
required hardware, D-10

\section*{J}
jack, wiring, E-3
Japan
country code, 7-8
required hardware, D-12
journal printer, H-28
option settings, H-21

\section*{L}
label
\[
\text { on power supply, warning, } \sqrt{\text { 3-4 }}
\]
labeling cables, 5-7
layout
grounding, \(\sqrt{2-6}\)
power, 2-6
lead designations, 19-15
8-pin line jack, E-3
port board, 9-13
port board and telephone, 9 -13
telephones, 9-13
lightwave transceiver, for fiber-optic cables, 4 4-19
line impedance, setting, \(\mathrm{H}-41\)
LINX trademark information, xvii
list configuration all

> command, 8-4
screens, 8-5-8-9
list configuration command, 8 -19
Local Storage Unit (LSU), H-35
log in procedure, 7-5
logoff procedure, 7-17
LSU (Local Storage Unit), H-35

\section*{M}

M25A cable, 6-7

\section*{M25B cable}
using to connect G3MT, 6-3
Macedonia
country code, 7-8
manual power up and down procedures for AUDIX, \(\operatorname{C-1}\)
metric wire conversion, F -1
Mexico
country code, 7-8
required hardware, D-12
modem
212-type option settings, H-35

AT control. \(\mathrm{H}-19\)
D-lead, H-19
pooling, 6-7
pooling, switch settings, \(\mathrm{H}-2\)
modular
plug, 9-3
trunk data modules, \(\mathrm{H}-1\)
month names
table of English, 7 7-12
mounting bolts, \(\mathrm{B}-1\)
MPDM (modular processor data modules), \(\mathrm{H}-1\)
MSHUT
message on AUDIX LCD display, C-1
MSP-1 power supply, 9-5, 9-34
MTDM, H-1
Mu-Law companding, [7-7, H-41
multiple-carrier cabinets, see DEFINITY Communications
System Generic 1 and Generic 3 Installation and Test
manual, \#555-230-104, comcode 107009417
multipoint
figure, 9-46
tables of cabling distances, 19-46
music on hold, test procedure, 10-13

\section*{N}

National Electrical Code
grounding rules, 2-8
Section 250-81, A-1
NEC, see National Electrical Code
Netherlands
country code, 7-8
required hardware, D-13
night ringing, test procedure, 10-9
North American electrical code, \(\mathrm{G}^{\text {G-1 }}\)
NT1 wiring, 9-13

\section*{0}

\section*{option switch settings, \(\mathrm{H}-1\)}
ordering related DEFINITY books, xvi
OS message on AUDIX LCD display, C-4
OSINIT message on AUDIX LCD display, \(\mathrm{C}-4\)

\section*{outputs}
aux conn, 9-11
outputs cable for control carrier, 9-10

\section*{P}
packet bus administration, 7-14
parallel printers, 6-2
Parity, required setting for G3MT, 6-6
parts
10-AWG wire, 4-3
6-AWG ground wire, 4 -3
carriage bolts, \(B-2\)
earthquake front plate, \(\mathrm{B}-4\)
front mounting angle, \(\mathrm{B}-1\)
mounting bolts, \(\mathrm{B}-1\)
stiffener, B-3
thread-forming screws, \(\mid\) B-2. \(\mid\) B-4
password, 7-6
changing, 7-9
craft, changing, 7-9
requirements for valid, \(7-10\)
PBX cross-connect field, 2-8
pin designations, 9-15
auxiliary equipment, \(19-15, \mid 9-17+9-20\)
auxiliary leads, 9-10, 9-15
circuit packs, 9-15, 9-17+9-20
telephones, 9-13
pinout information
port board, 9-13
telephones, 9-13
pinouts, 9-15
8-pin line jack. \(\mathrm{E}-3\)
auxiliary, 9-17+9-20
circuit packs, 9-17+9-20
plan and prepare site, procedure, 2-1
playback announcement, test procedure, 10-12
plugs, address, 4-29
PMS, for remote connection, 6-7
Poland
country code, 7-8
required hardware, D-14
port board and telephone pin designations, 19-13
port board pin designations, 9-13
port cabinet backplane, 4-29
port labels, 5-7
port network
definition, 8-1
positioning cabinet, 4-2
power
circuit, 2-6
connecting for adjuncts, 9-3
connecting local to modular plug, 19-3
emergency, 4-14
for adjuncts, 9-5
layout arrangement, 2-6
planning, 2-6
receptacle location, 4-2
standby, 4-14
supply, 4-5, 9-5
transformer, A-2
warning for voltage type, 3-4
power down AUDIX, procedure, \(\mathrm{C}-1\)
power supply
1145B-48V, 9-26
1146 B-48V, 9-26
label not matching voltage type at your site, 3 3-4, 4-6
MSP-1, 9-34
```

power up
AC-powered switch,procedure, 7-3
AUDIX procedure, C-1
DC-powered switch, procedure, 7-3
PPN cabinet
installing, 4-2
printer
4 7 5 switch settings, H-21
572 option settings, H-30
connecting to G3MT, 6-2
journal option settings, H-21
option settings. H-20
parallel, 6-2
serial, 6-2
processor interface circuit pack
AUDIX connections, H-36
switch settings, H-2
processor port network, duplication, 1-1
protection
earthquake, B-1
electromagnetic, B-4
provisioning plan, 2-9

```

\section*{Q}
queue warning indicator, test procedure, \(10-10\)

\section*{R}

REBOOT PERFORMED, 7-4
recorded announcement, test procedure, 10-12 red lights
what to do about, 7-8
refresh spe command, 8-13
reliability
critical, 1-1, 1-2
testing systems, 8 -11, 8 -12, 8 -17
high, 1-1. 1-2
testing systems, 8 -11, 8-12
overview, 1-1
standard, 1-1, 1-2
remote access, test procedure, 10-14
Report Scheduler, system printer, H-21
required hardware
by country, D-1+D-19
requirements
country hardware for grounding. A-1
protective grounding, A-1
reset system interchange command, 8-13
RF shielding, 4-35, B-4
ringing
external, test procedure, \(10-9\)
night, test procedure, 10-9
routing cables, 5-3

Russia
country code, 7-8
required hardware, D-14
RX connector, 4-19

\section*{S}

Saudi Arabia
country code, 7-8
required hardware, \(\mathrm{D}-15\)
save translations, 7-15
screens
G3MT introduction, 7-4
screws, thread-forming, B-2, B-4
selector console, test procedure, 10-9
serial printers, 6-2
set expansion-link command, 18-18
set tone-clock command, 8-17
setting
bit rate, \(\mathrm{H}-41, \mathrm{H}-42\)
line impedance, \(\mathrm{H}-41, \mathrm{H}-42\)
setting date and time, procedure, 7-11
shadow link
test procedure, 8-11
shielding, electromagnetic, \(4-35, \mid \mathrm{B}-4\)
Shockwatch
trademark information, xvii
signaling leads, DC power. \(\mathrm{H}-37\)
signaling, bit-oriented, H-41
Singapore
country code, 7-8
required hardware, D-16
single-point ground terminal, \(\mathrm{A}-2\)
site planning and preparation
overview, 1-3
procedure, 2-1
slack manager
floor plan including, 2-2
Slovakia
required hardware, D-6
SMDR, H-20
option settings, H-34
output receiving device. \(\mathrm{H}-35\)
printer, H-30
Spain
country code, 7-8
required hardware, D-16
SPID
test procedure for, 10-16
stabilizing cabinets, 4-35
for earthquakes, \(\mathrm{B}-4, \mathrm{~F}-1\)
standard reliability, 1-1, 1-2
standby power, 4-14
Station Message Detail Recording (SMDR), \(\mathrm{H}-20\)
status system all-cabinets
command, 8-1, 8-12, 8-17, 8-18
screens, 8-2†8-4
status system cabinets-all command. 8 -13
stiffener, B-3
Stop Bit, required setting for G3MT, 6 6-6
Styrofoam, trademark information, xvii
SWG wire conversion, F-1
switch processing element
interchange test procedure, 8-12
test procedure, 8-11
switch settings
103JR modem, H-2
201CR modem, H-4
202SR modem, H-6
208BR modem, H-9
212-type modem, H -35
470 printer, \(\mathrm{H}-28\)
471 printer, \(\mathrm{H}-28\)
475 printer, \(\mathrm{H}-21, \mathrm{H}-35\)
476 printer, \(\mathrm{H}-21\)
572 printer, \(\mathrm{H}-30, \mathrm{H}-35\)
7400A, \(\mathrm{H}-19\)
asynchronous 212AR modem, H -11
asynchronous 2224A modem, \(\mathrm{H}-17\)
DCS, H-2
journal printer, \(\mathrm{H}-21, \mathrm{H}-28\)
modem pooling, \(\mathrm{H}-2\)
modular processor data modules (MPDM). H -1
printer, \(\mathrm{H}-20\)
processor interface, \(\mathrm{H}-2\)
SMDR, H-34
synchronous 212AR modem, \(\mathrm{H}-14\)
synchronous 2224A modem, \(\mathrm{H}-18\)
system printer, H-21
TN464 circuit pack, \({ }^{\mathrm{H}}-41, \mathrm{H}-42\)
TN760 tie trunk, H-37
system printer, \(\mathrm{H}-30\)
option settings, \(\mathrm{H}-21\)
system-parameters maintenance, 17-14
SYSTIMAX, 2-2 trademark information, xvii

\section*{T}

Table 5-1, 5-7
Taiwan
country code, 7-8
required hardware, D-16
TDM bus, H-41
cable, 4-32
cables, 4-15. 4-17
service state, 8-2
terminator, 4-15, 4-17
telecommunications cables
installing, 5-1
telephone
pin designations, 9-13
telephone calls
making test calls, \(10-2+10-8\)
making test calls for single-cabinet switch, 1 10-2
making test calls for three-cabinet switch. 10-4
making test calls for two-cabinet switch, 10-3
telephone connection example, 9-2
telephones
9400
cord routing for desktop, E-5
cord routing for wall mount, \(\mathrm{E}-8\)
testing, E-9

\section*{9403}
wiring, E-2
9434
wiring, \(\mathrm{E}-2\)
button labels, E-10
install and wire overview, 1-6
test overview, 1-7
test procedures, 10-1
wiring, E-2
TELESEER, H-35
template, mounting, B-1
terminal
location, 2-8
type, 7-6
TERMINAL connector
connecting G3MT, 6-3
terminating resistor, 9-39
terminator, TDM bus, 4-15, 4-17
terminology translations, D-1
test
system overview, 1-5. 8-1
telephones, overview, 1-7
test board command, 8-14
test inads-link command, 10-15
TEST message on AUDIX LCD display, \(\mathrm{C}-1\)
test shadow-link command, 8-11
test tdm port-network 1 command, 8-9
test tdm port-network 2 command, 8-15
test tone-clock 1a command, 8 -10
test tone-clock command, 8-16
Thailand
country code, 7-8
thread-forming screws, \(\mathrm{B}-2, \mathrm{~B}-4\)
tie trunk
analog wiring example, 9-6
circuit pack option settings. \(\mathrm{H}-37\)
digital wiring example, 9-9
Tiltwatch trademark information, xvii
time division multiplexor
see also TDM
test procedure, 8-9,8-15
time, set procedure, 7-11
TN2147 circuit pack, 6-7
TN2181 circuit pack
pin designations, 9-13
TN2182 circuit pack, 7-7
TN2183 circuit pack, 6-7

TN2198
wiring, 9-13
TN420C circuit pack, 7-7
TN464 circuit pack, 6-7
option settings, \(\mathrm{H}-41, \mathrm{H}-42\)
TN465 circuit pack, 6-7
TN742 circuit pack, 6-7
TN746 circuit pack, 6-7
TN747 circuit pack, 6-7
TN748 circuit pack, 7-7
TN753 circuit pack, 6-7
TN754 circuit pack, 6-7
TN760 circuit pack, 6-7
option settings, \(\mathrm{H}-37\)
TN767 circuit pack, 6-7
TN769 circuit pack, 6-7
TN777B circuit pack, 7-2, 7-16
TN778 circuit pack administration required, 7-14
tone clock duplication, 1-1 interchange, test procedure, 8 -17 test procedure, 8-16
tone clock boards, test procedure, \(88-10\)
tone clocks service state, 8-2
tone detector circuit pack administering, 7-7
tools needed to install switch, 2-4
transceiver, for fiber-optic cables, 4-19
transfer, emergency
test procedure, 10-13
translations
backup procedure, 7-16
save procedure, 7-15
Transmission Flow Control required setting for G3MT, 6-6
trunk aux field, 5-7
TX connector, 4-19

\section*{U}
uniform call distribution
testing queue warning indicator, \(10-10\)
Uninterruptible Power Supply, 4-14
United Kingdom
country code, 7-8
required hardware, D-18
United States
country code, 7-8
required hardware, D-2
UPS, 4-14
MSP-1 power supply. 19-5
USA, country code, 7-8

\section*{V}

Venezuela
country code, 7-8
required hardware, D -19
voltage warning, 3-4

\section*{W}
wall mounting
9403 and 9410 telephones, E-6
wall switch, 4-2
warning
connections to ground inside power equipment room
should be done by licensed electrician, \(\mathrm{A}-2\)
ground, A-2
safety instructions for power supply, 19-33
water pipe grounding, A-2
wire
bare copper, A-2
colors, F-1
grounding, \(\mathrm{A}-2\)
wire conversion
common wire colors, F-1
solid conductor
AWG to metric, F-4
AWG to SWG, F-4
SWG to metric, F-4
stranded wire
AWG to metric, F-1
AWG to SWG, F-1
SWG to metric, F-1
wiring
2-wire digital station example, 9-5
9403 telephones, E-2
analog station wiring example. \(9-5\)
analog tie trunk example, 9-6
CO trunk example, 9-5
DID trunk example, 9-5
digital tie trunk example. 19-9
ISDN BRI 2-wire line, 9-13
NT1, 9-13
pin designations, \(9-10\), 9-15, 9-17+9-20
procedures, 9-1
telephone connection example, 9
telephone jack, E-3
telephones, E-2```


[^0]:    Figure 4-10. Time Division Multiplexing (TDM) Bus Connections for Standard-Reliability Processor Port Network (PPN)

