



AT&T 555-230-104
Issue 5
January 1992

DEFINITY® Communications System Generic 1 and Generic 3

Installation and Test

Copyright © 1995 AT&T
All Rights Reserved
Printed in U.S.A.

Notice

While reasonable efforts were made to ensure that the information in this document was complete and accurate at the time of printing, AT&T can assume no responsibility for any errors. Changes and corrections to the information contained in this document may be incorporated into future reissues.

Your Responsibility for Your System's Security

You are responsible for the security of your system. AT&T does not warrant that this product is immune from or will prevent unauthorized use of common-carrier telecommunication services or facilities accessed through or connected to it. AT&T will not be responsible for any charges that result from such unauthorized use. Product administration to prevent unauthorized use is your responsibility and your system administrator should read all documents provided with this product to fully understand the features available that may reduce your risk of incurring charges.

Federal Communications Commission Statement

Part 15: Class A Statement. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his or her own expense.

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

AS593M-14695-MA-E.

Trademarks

AUDIX is a registered trademark of AT&T.
DEFINITY is a registered trademark of AT&T.

Refer to the Trademarks and Service Marks section near the front of this manual for additional trademarks.

Ordering Information

The ordering number for this document is 555-230-104. To order this document, call the GBCS Publications Fulfillment Center at 1-800-457-1235 (International callers use 1-317-361-5353). For more information about AT&T documents, refer to the *Global Business Communications Systems Publications Catalog* (555-000-010).

Comments

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

Acknowledgment

This document was prepared by the AT&T Product Documentation Development Department, Denver, CO 80234-2703.

Contents

	About This Document	xxxvii
	■ Organization	xxxix
	■ Trademarks	xl
1	Overview of the Installation	1-1
2	Tools and Test Equipment	2-1
3	Install Cabinets	3-1
	■ Install Multi-Carrier Cabinets	3-1
	■ Slack Manager	3-16
	■ Cable Ductwork	3-16
	■ Install Single-Carrier Cabinets	3-16
	■ Install Wall-Mounted Cabinet	3-38
	■ Install Auxiliary Cabinet (Optional)	3-41
	■ Install External Synchronization Stratum 3 Clock Cabinet	3-48
	■ Install LINEAGE ECS Power System (DC-Powered Switch)	3-51
	■ Install DC Power Distribution Unit	3-53
4	Connect Power	4-1
	■ Connect AC Power to Multi-Carrier Cabinets	4-1
	■ Connect DC Power to Multi-Carrier Cabinets	4-9
	■ Connect AC Power to Single-Carrier Cabinets	4-20
	■ Connect DC Power to Single-Carrier Cabinets	4-26
	■ Connect AC Power to Clock Cabinet	4-36
	■ Connect DC Power to Clock Cabinet	4-37

Contents

5	Install Administration and Test Device	5-1
	■ G3 Management Terminal Requirements	5-1
	■ Connect G3 Management Terminal	5-4
	■ Set Up G3 Management Terminal	5-5
	■ Remotely Connect G3 Management Terminal	5-17
	■ Installing the G3 Management Applications	5-18

6	Interconnect Switch Elements	6-1
	■ Locate Fiber-Optic Cable Connections	6-1
	■ General Rules for Fiber-Optic Installation	6-2
	■ Fiber Optic Cable Connections for Direct Connect Systems	6-4
	■ Fiber-Optic Cable Connections for G3r Center-Stage Switch Systems	6-23
	■ DS1C Remoting	6-40

7	Activate System	7-1
	■ Activate a G1 or G3i/s/vs System	7-1
	■ Install Attendant Console	7-29
	■ Installing the 302B1 Attendant Console	7-32
	■ Activate a G3r System	7-33

8	Install Auxiliary Equipment	8-1
	■ Auxiliary Equipment Description	8-1
	■ Installing Loudspeaker Paging and Music-on-Hold	8-3
	■ Installing Recorded Announcement Equipment	8-22
	■ 15A Digital Announcer	8-26
	■ Cook Digital Announcer	8-31
	■ Installing Audichron Wake-Up Announcement System	8-34

Contents

■ Installing Dial Dictation Equipment	8-40
■ Installing 3270 Data Modules	8-40
■ Installing Processor Data Modules (PDMs)	8-43
■ Installing AUDIX Interface	8-46
■ Installing CMS Interface	8-49
■ Installing DCS	8-52
■ Installing PMS Interface	8-61
■ Installing Customer-Provided Terminal Using ADUs	8-62
■ Installing SMDR/CDRU Interface	8-62
■ Installing ISN Interface	8-68
■ Installing STARLAN NETWORK Interface	8-70
■ Installing Premises Lightwave System (PLS) Interface	8-72
■ Installing Stratum 3 External Synchronizing Clock	8-74
■ Installing the Adjunct-Switch Application Interface (ASAI) Link	8-81
■ Installing the 808A Emergency Transfer Panel	8-81
■ Malicious Call Trace	8-88
■ Installing Adjuncts to the DEFINITY AUDIX System	8-91
■ Installing Wideband Endpoints	8-106
■ Installing the PassageWay Interface	8-108
■ Installing a Two-Wire DCP Endpoint	8-109
■ Installing the Callmaster 603 Digital Console	8-112
■ Installing Constellation Terminals	8-112
■ Install Integrated CSU Module	8-113
■ PRI Over PACCON	8-120
■ Installing Wireless Telephones	8-121
■ Installing Cordless Telephones	8-122

9

Connect to the Trunk/Aux and Distribution Fields

	9-1
■ Hardware Equipment Room Applications	9-1
■ Trunk/Auxiliary Field	9-1
■ Distribution Field	9-4
■ Cross-Connect Field	9-12

Contents

■ Wall Space Requirements	9-16
■ Equipment Requirements	9-17
■ Equipment Room Hardware and Cabling Installation	9-21
■ Hardware Installation	9-21
■ Installing Cable Slack Managers	9-28
■ Labeling the Cross-Connect Field	9-29
■ Connect External Alarms	9-60
■ Installing Sneak Fuse Panels	9-61
■ Cable Installation	9-61
■ Station Wiring Design	9-83
■ Station Circuit Distribution from Equipment Room	9-89
■ Layout	9-96

10	Wiring Your Network	10-1
	■ Installation of Station Wiring and Associated Hardware	10-1
	■ Installing 110-Type Hardware at Satellite Locations	10-3
	■ Installing 66-Type Hardware at Satellite Locations	10-6
	■ Installing 4-Pair Station Cables	10-7
	■ Installing Information Outlets	10-7
	■ Adjunct Powering	10-9
	■ Patch Cord/Jumper Installation And Administration	10-13
	■ Equipment Room Cross-Connect Field	10-15
	■ Satellite Locations	10-17
	■ Installing System Management Tool	10-18
	■ Installing Attendant Console	10-18
	■ Installing Selector Console	10-22
	■ Installing INADS Interface	10-23
	■ Installing DS1 Tie Trunks	10-25
	■ Installing Customer-Provided Alarm	10-27
	■ Installing Off-Premises Station Wiring	10-28
	■ Installing Out-of-Building Campus Stations	10-29
	■ Installing Emergency Transfer Units and Associated Telephones	10-36
	■ Installing External Ringing	10-45

Contents

■ Installing Queue Warning Indicator	10-47
■ Installing the 1145A1 Power Supply	10-47
■ Installing the MSP-1 Power Supply	10-57
■ Installing the BRI Terminating Resistor	10-61
■ Installing Multipoint Adapters	10-65
■ Installing Power Adapters	10-66
■ Basic Multipoint Installation Distances	10-69

11	Test the System	11-1
	■ Make Test Call (Single-Cabinet Switch)	11-1
	■ Make Test Call (Two-Cabinet Switch)	11-2
	■ Make Test Call (Three-Cabinet Switch)	11-5
	■ Test the DEFINITY AUDIX System	11-9
	■ Test Attendant Console	11-11
	■ Test Selector Console	11-11
	■ Test External Ringing	11-12
	■ Test Queue Warning Indicator	11-13
	■ Test Recorded Intercept Announcement	11-15
	■ Test Integrated Announcement	11-15
	■ Test Recorded Telephone Dictation Access	11-17
	■ Test Loudspeaker Paging	11-17
	■ Test Loudspeaker Paging—Deluxe	11-18
	■ Test Code Calling	11-19
	■ Test Music-on-Hold	11-20
	■ Test Emergency Transfer	11-20
	■ Test INADS Interface	11-21
	■ Test Basic Rate Interface (BRI)	11-23
	■ Test ASAI Link to Host	11-24
	■ Test Tie Trunks	11-25
	■ Procedure—Dial Repeating Outgoing Tie Trunk	11-26
	■ Test Direct Inward Dialing (DID) Trunks	11-28
	■ Test Central Office (CO) Trunk	11-28
	■ Test Duplication Option Processing Element (PE) Interchange	11-30
	■ Terminating Trunk Transmission Test	11-31
	■ Test Stratum 3 Clock	11-32

Contents

■ Test Center-Stage Switching	11-38
■ Compare Administration and Wiring	11-41
■ Perform Final Test	11-54

A	66-Type and 110-Type Hardware Description	A-1
	■ 110-Type Hardware Description	A-3
	■ 110-Type Wiring Blocks	A-3
	■ Index Strips and Connecting Blocks	A-4
	■ 110A-Type Hardware	A-8
	■ 110P-Type Hardware	A-11
	■ 188-Type Backboards	A-17
	■ Cords	A-18
	■ Jumpers	A-21
	■ Tools	A-21
	■ F Clip Terminal Insulator	A-22
	■ Designation Strips	A-23
	■ 66-Type Hardware Description	A-24
	■ 66M1-50 Connecting Block	A-24
	■ Connectorized 66-Type Connecting Blocks	A-25
	■ Multiple-Mounted 66-Type Connecting Blocks	A-26
	■ 183-Type Backboards	A-27
	■ 187B1 Backboard	A-28
	■ Power Adapter Cords	A-29
	■ Jumpers	A-30
	■ Tools	A-30
	■ Bridging Clips	A-31
	■ Cable Slack Managers	A-31
	■ Network Interfaces	A-34
	■ Sneak Fuse Panels	A-34
	■ Emergency Transfer Units	A-37
	■ Trunk Concentrator Cables	A-37
	■ 16-Port Analog Line Circuit Pack Adapter Cable (For 110-Type Hardware Only)	A-43
	■ 4-Port MET Line Circuit Pack Concentrator Cable	A-44
	■ Adjunct Power Units	A-44

Contents

B	Option Switch Settings	B-1
	■ Distributed Communications System (DCS) Option Settings for G3i Systems	B-1
	■ Modem Pooling (Combined) Option Settings	B-2
	■ 103JR Modem Option Settings	B-2
	■ 201CR Modem Option Settings	B-4
	■ 202SR Modem Option Settings	B-6
	■ 208BR Modem Option Settings	B-9
	■ Asynchronous 212AR Modem Option Settings	B-11
	■ Synchronous 212AR Modem Option Settings	B-14
	■ Asynchronous 2224A Modem Option Settings	B-17
	■ Synchronous 2224A Modem Option Settings	B-18
	■ 7400A Option Settings	B-19
	■ Printer Option Settings	B-20
	■ 475 Printer Connected to a G3 Management Terminal	B-21
	■ 475 Printer Used as System Printer	B-21
	■ 475 or 476 Printer Used as Journal Printer for Hospitality Feature	B-21
	■ 470 or 471 Printer Used as Journal Printer for Hospitality Feature	B-29
	■ 572 Printer	B-30
	■ Station Message Detail Recording (SMDR) Interface Option Settings	B-33
	■ Audio Information Exchange (AUDIX) Interface Option Settings for G3i Systems	B-35
	■ TN760B,C,D Tie Trunk Circuit Pack Option Settings	B-36

C	The Hardware Group Tests	C-1
	■ Available Tests	C-1
	■ Test Modes	C-2
	■ Command Reference	C-3

Contents

D	Cable Ductwork	D-1

E	Connecting and Handling Fiber-Optic Cables	E-1
	■ Cable-Routing Recommendations	E-1
	■ Optical Cross-Connect Hardware	E-8
	■ Labels for Fiber Optic Cables	E-15
	■ Administering Fiber Optic Cables	E-16
	■ Making Changes at an Optical Cross-Connect Field	E-16
	■ Making Circuit Changes on an Optical Interconnect Field	E-17

F	Connector and Cable Diagrams	F-1

G	Approved Grounds	G-1

ABB	Abbreviations	ABB-1

GL	Glossary	GL-1

About This Document

This document provides procedures and information for installing and initially testing the DEFINITY® Communications System Generics 1 and 3. Also covered is the related power and peripheral equipment that connects directly to the communications systems. The following convention is used to describe the systems referred to in this document.

- DEFINITY Communications System, multi-carrier cabinet will be referred to as a multi-carrier cabinet.
- DEFINITY Communications System, single-carrier cabinet will be referred to as a single-carrier cabinet.



NOTE:

DEFINITY is a registered trademark of AT&T. In this document DEFINITY Communications System Generic 1 is abbreviated to G1, DEFINITY Communications System Generic 3 is abbreviated to G3.

This document describes installation and wiring of all the switches above including:

- Placing and interconnecting the various cabinets that house the switch and its adjuncts.
- Power connections to the switch and its adjuncts.
- Wiring from the telephone company network interface up to and including the 25-pair cables that connect directly to the switch.
- The main equipment room cross-connect field and the associated cabling from this cross-connect field to the switch cabinet and/or 8-pin modular wall jacks (information outlets).
- Testing of the completed installation.

All information in this document applies to both multi-carrier and single-carrier cabinet switches except when it is noted that a topic is strictly for a specific cabinet style. Furthermore, this information applies equally to G1 and G3 switches unless otherwise stated.

This issue replaces all previous issues of this document. Furthermore, this issue replaces all previous issues of *DEFINITY Communications System Generic 1 Installation and Test*, 555-204-104, *DEFINITY Communications System Generic 1 and Generic 3i Installation and Test*, 555-230-104, and *DEFINITY Communications System Generic 1 and Generic 3i Wiring*, 555-204-111. Reasons for reissue include the following:

- Add information about new hardware.
- Add information about new system adjuncts.

In addition to this document, appropriate editions of the following documents may be required to install and initialize the system. These documents are:

- *DEFINITY Communications System Generic 1 and Generic 3 System Description and Specifications*, 555-230-200

Provides a technical description of the system and its hardware, environmental and space requirements, and parameters. Also provides a brief description of features and services.

- *DEFINITY Communications System Generic 1 and Generic 3 System Management*, 555-230-500

Describes Management Terminal terminal types, function keys, and other Management Terminal operations. Also describes various administrative tasks such as logon/logoff, changing of password, remote administration, etc.

- *DEFINITY Communications System Generic 1 and Generic 3i—System Reports*, 555-204-510; and *DEFINITY Communications System Generic 3r—System Reports*, 555-230-510

Explains switch-based measurement, traffic, performance, and summary reports. Descriptions include the overall purpose and uses for each report, complete definitions for each field, correlations with other reports, and possible actions that can be taken to further diagnose situations and remedy unsatisfactory conditions.

- *DEFINITY Communications System Generic 1 Implementation*, 555-204-654 and *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653

Provides the procedures and associated forms for collecting system and terminal software information for the covered systems. Also describes various administration commands and error messages. This information is used to initialize the system.

-
- *DEFINITY Communications System Generic 3r — Blank Forms* 555-230-651B.

Provides blank screens that can be reproduced and used as working copies of forms.

- *DEFINITY Communications System Generic 1 and Generic 3i Upgrades and Additions*, 555-204-106; and *DEFINITY Communications System Generic 3r Upgrades and Additions*, 555-230-106.

Provides procedures and information required to upgrade an existing system to a more capable system and to make additions to an operational system after the initial switch installation.

- *LINEAGE 2000 Standby Power Systems, Product Manual*, 167-790-020 (required for some DC-powered switches).

Organization

This document is organized into 11 chapters:

- Chapter 1 — “Overview of the Installation”

Presents an overview of the work that must take place to effect an installation.

- Chapter 2 — “Tools and Test Equipment”

Lists the tools and test equipment required for installing the switch.

- Chapter 3 — “Install Cabinets”

Tells how to place and secure each of the many configurations of cabinets.

- Chapter 4 — “Connect Power”

Covers AC or DC power connections to system and clock cabinets.

- Chapter 5 — “Install Administration and Test Device”

Tells how to install and bring up each of the many types of G3 Management Terminal. Refers you to the proper procedures for installation of the G3 Management Applications.

- Chapter 6 — “Interconnect Switch Elements”

Covers the fiber-optic cabling between carriers that is required to assemble the various system configurations.

- Chapter 7 — “Activate System”

Covers preliminary system administration, installation of the attendant console, and other steps necessary to activate the system.

- Chapter 8 — “Install Auxiliary Equipment”

Describes auxiliary equipment that can be used with the system and tells how to install auxiliary equipment.

- Chapter 9 — “Connect to the Trunk/Aux and Distribution Fields”

Describes how to connect your system’s ports to the Trunk/Aux and Distribution fields.

- Chapter 10 — “Wiring Your Network”

Describes how to connect from your equipment room to the various terminals of your network.

- Chapter 11 — “Test the System”

Offers test procedures that you can use to make sure the system functions.

- Appendices

This document also includes an abbreviations reference and a glossary.

Trademarks

This book contains references to the following trademarked products.

- Audichron® is a registered trademark of Audichron Company
- AUDIX® is a trademark of AT&T
- DEFINITY® is a registered trademark of AT&T
- DIMENSION® is a registered trademark of AT&T
- LINEAGE® is a registered trademark of AT&T
- PagePac® is a registered trademark of Harris Corporation, Dracon Division
- PORTA Systems is a trademark of PORTA Systems Corporation
- Shockwatch® is a registered trademark of Media Recovery, Inc.
- Styrofoam® is a registered trademark of Styrofoam Corporation
- SYSTIMAX™ is a trademark of AT&T
- TELESEER® is a registered trademark of AT&T
- Tiltwatch® is a registered trademark of Media Recovery, Inc.
- VELCRO® is a registered trademark of VELCRO U.S.A. Incorporated

Overview of the Installation

1

This chapter lists, in general terms, the steps required to install a DEFINITY Generic 1 or Generic 3 system.

1. Unpack the equipment.
2. Position the cabinets and verify that cable-management hardware will work with the positions you have chosen.
3. Level the cabinets and, if required, install earthquake hardware.
4. Install cable management hardware.
5. Connect ground and power.
6. Install administration and test device.
7. Power-up the system.
8. Perform an initial or power-up test.
9. Interconnect the switch elements.
10. Install auxilliary equipment.
11. Wire the system.
12. Fully test the system.

Tools and Test Equipment

2

Table 2-1 lists the tools and test equipment required for installing the switch.
See Note.



NOTE:

Tools required to install a DC power supply are separately listed with the DC supply installation instructions.

Table 2-1. Tools and Test Equipment Inventory

Tasks	Equipment Required	Recommended Type
Unpacking Cabinet	Tin Snips Utility Knife Adjustable Wrench	6- or 8-inch
Installing Cabinets *	Electric Drill Masonry Bit Drill Bit (for Computer Floors only) Drift Punch Chalk Line Rule Adjustable Wrench Ratchet Sockets Nut driver Screwdriver Allen Wrench† Bubble Level‡	Impact type 1/2-inch 5/8-inch Length as required to reach from computer floor to concrete floor 30-inch 6- or 8-inch 1/2-inch 5/16-, 1/2-, and 3/4-inch 1/4-inch 8-inch flat blade 1/8-inch
Checking Commercial Power	Digital Multimeter	KS-20599
Circuit Pack Voltage Check	Voltage Tester	TN2036
Initializing Switch	Generic 3-MT (also for G1) G3-MA	715 MT, 4425, 4410, PC6300, 610 BCT, or 513 BCT Authorized PC

* Electric drill and drill bits are required for earthquake mounting.

† Required when installing an AC powered switch.

‡ Required when installing cabinet-top ductwork

Install Cabinets

3

Install Multi-Carrier Cabinets

G1 and G3 multi-carrier cabinets offer a variety of configurations. Figure 3-1 shows typical switch Processor Port Network (PPN) and Expansion Port Network (EPN) cabinets.

The floor plans shown for the switch installation procedures are typical floor plans. The floor plan arrangements may vary depending on the size and shape of the equipment room. There may be several equipment rooms if the EPNs are located remotely from the PPN.

Install PPN Cabinet

Typical floor plans for AC- and DC-powered multi-carrier cabinets are shown in Figures 3-2 through 3-7.

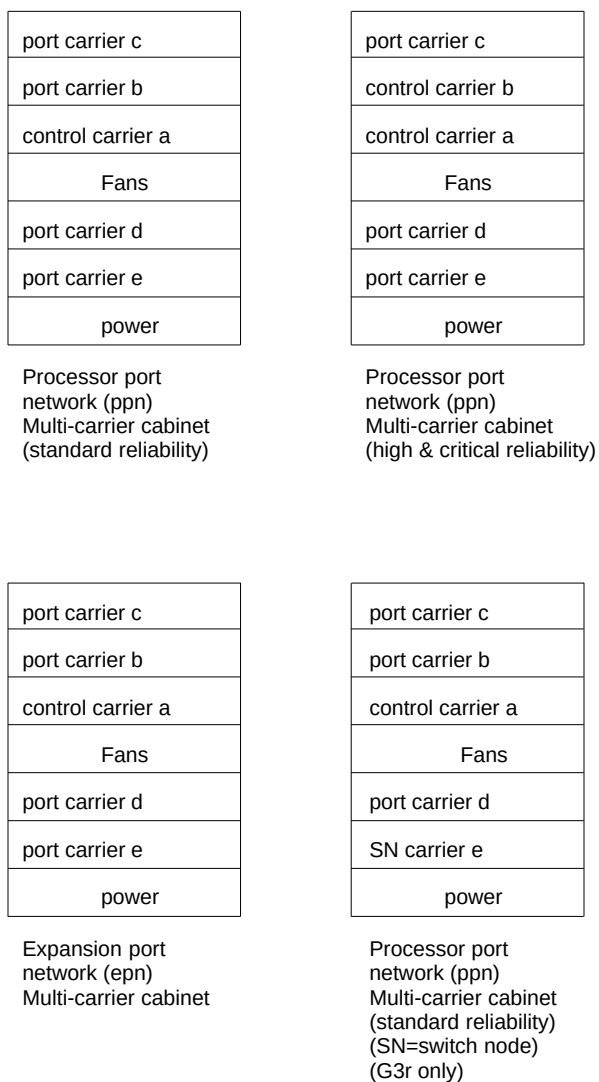
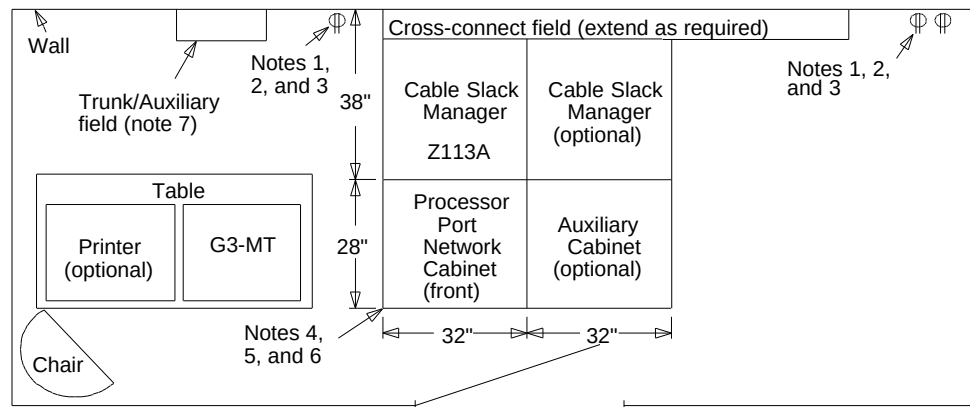


Figure 3-1. Typical Multi-Carrier Cabinet Configurations

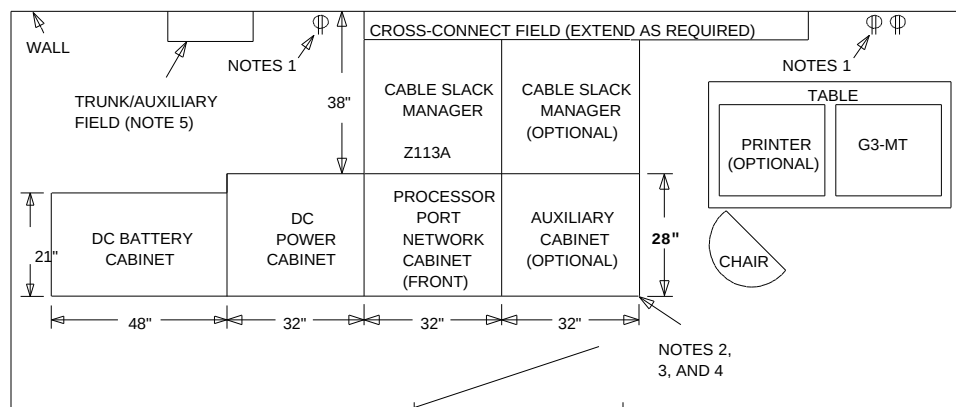
There are many cabinet configurations not shown among the examples illustrated above. See chapter 6 for much more detail.



Notes:

1. AC receptacles must be separately fused and not under control of a wall switch, receptacles must not be shared with other equipment, and should be located outside the cross-connect field area.
2. Processor port network cabinet requires a special 120-Volt, 60 hz, 50-amp ac receptacles (NEMA 5-50R receptacle or equivalent). or 250-Volt, 60 Hz, 30-Amp AC receptacles (NEMA L14-30R receptacle or equivalent).
3. Auxiliary cabinets require a special 120-Volt, 60 Hz, 20-Amp ac receptacle (NEMA 5-20R receptacle or equivalent).
4. Allow at least 36 inches of space in front of cabinet to let door swing open.
5. System must be grounded by one of the approved methods.
6. Earthquake protection may be required.
7. The trunk/auxiliary field may be located within the cross-connect field.

Figure 3-2. Typical Floor Plan for an AC-Powered Multi-Carrier Cabinet



NOTES:

1. AC RECEPTACLES MUST BE SEPARATELY FUSED AND NOT UNDER CONTROL OF A WALL SWITCH, RECEPTACLES MUST NOT BE SHARED WITH OTHER EQUIPMENT, AND SHOULD BE LOCATED OUTSIDE THE CROSS-CONNECT FIELD AREA.
2. ALLOW AT LEAST 36 INCHES OF SPACE IN FRONT OF CABINET TO LET DOOR SWING OPEN.
3. SYSTEM MUST BE GROUNDED BY ONE OF THE APPROVED METHODS.
4. EARTHQUAKE PROTECTION MAY BE REQUIRED.
5. THE TRUNK/AUXILIARY FIELD MAY BE LOCATED WITHIN THE CROSS-CONNECT FIELD.

Figure 3-3. Typical Floor Plan for a DC-Powered Multi-Carrier Cabinet

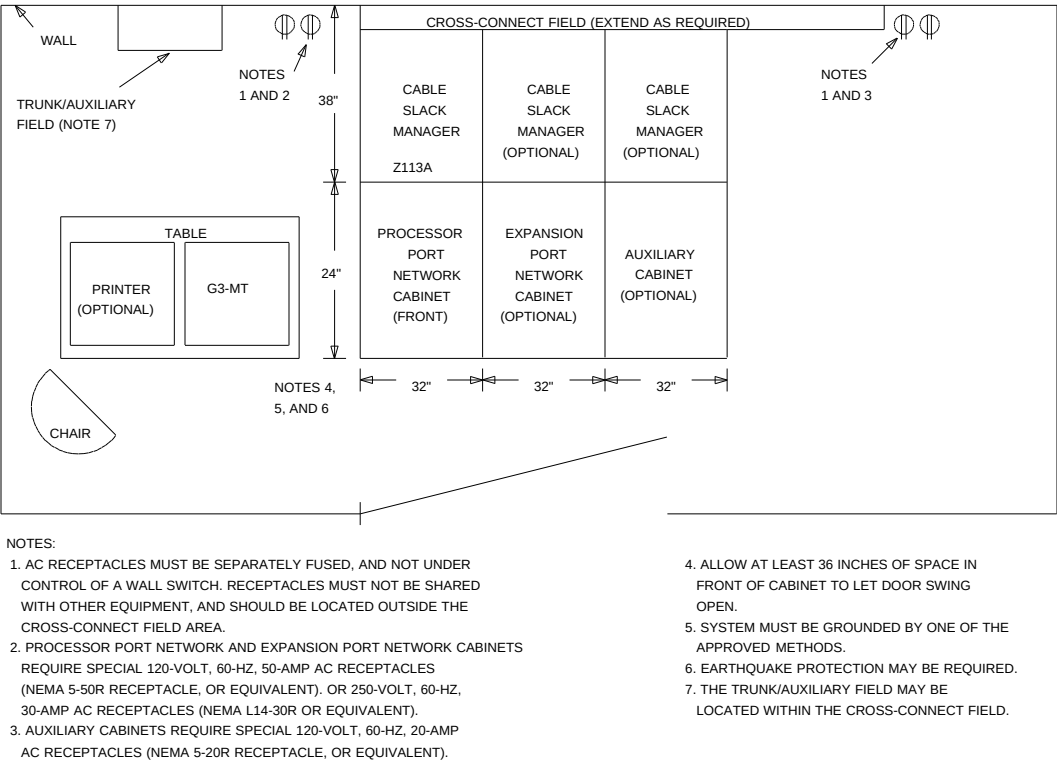
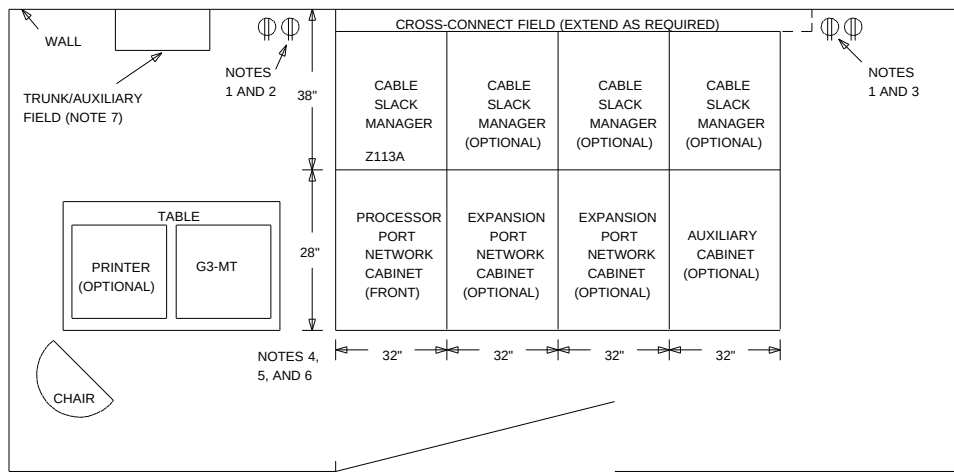


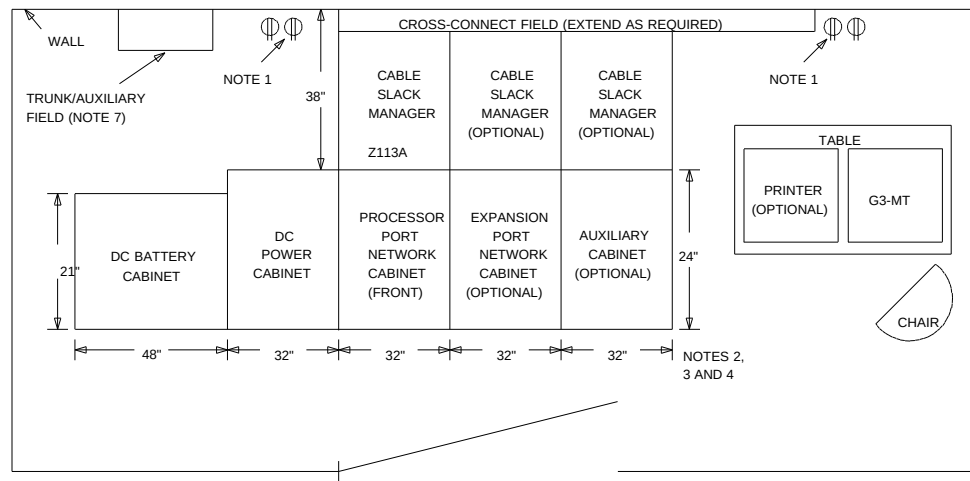
Figure 3-4. Typical Floor Plan for an AC-Powered Multi-Carrier Cabinet with EPN Cabinet



NOTES:

1. AC RECEPTACLES MUST BE SEPARATELY FUSED, AND NOT UNDER CONTROL OF A WALL SWITCH. RECEPTACLES MUST NOT BE SHARED WITH OTHER EQUIPMENT, AND SHOULD BE LOCATED OUTSIDE THE CROSS-CONNECT FIELD AREA.
2. PROCESSOR PORT NETWORK AND EXPANSION PORT NETWORK CABINETS REQUIRE SPECIAL 120-VOLT, 60-HZ, 50-AMP AC RECEPTACLES (NEMA 5-50R RECEPTACLE, OR EQUIVALENT), OR 250-VOLT, 60-HZ, 30-AMP AC RECEPTACLES (NEMA L14-30R OR EQUIVALENT).
3. AUXILIARY CABINETS REQUIRE SPECIAL 120-VOLT, 60-HZ, 20-AMP AC RECEPTACLES (NEMA 5-20R RECEPTACLE, OR EQUIVALENT).
4. ALLOW AT LEAST 36 INCHES OF SPACE IN FRONT OF CABINET TO LET DOOR SWING OPEN.
5. SYSTEM MUST BE GROUNDED BY ONE OF THE APPROVED METHODS.
6. EARTHQUAKE PROTECTION MAY BE REQUIRED.
7. THE TRUNK/AUXILIARY FIELD MAY BE LOCATED WITHIN THE CROSS-CONNECT FIELD.

Figure 3-5. Typical Floor Plan for an AC-Powered Multi-Carrier Cabinet with Two EPN Cabinets

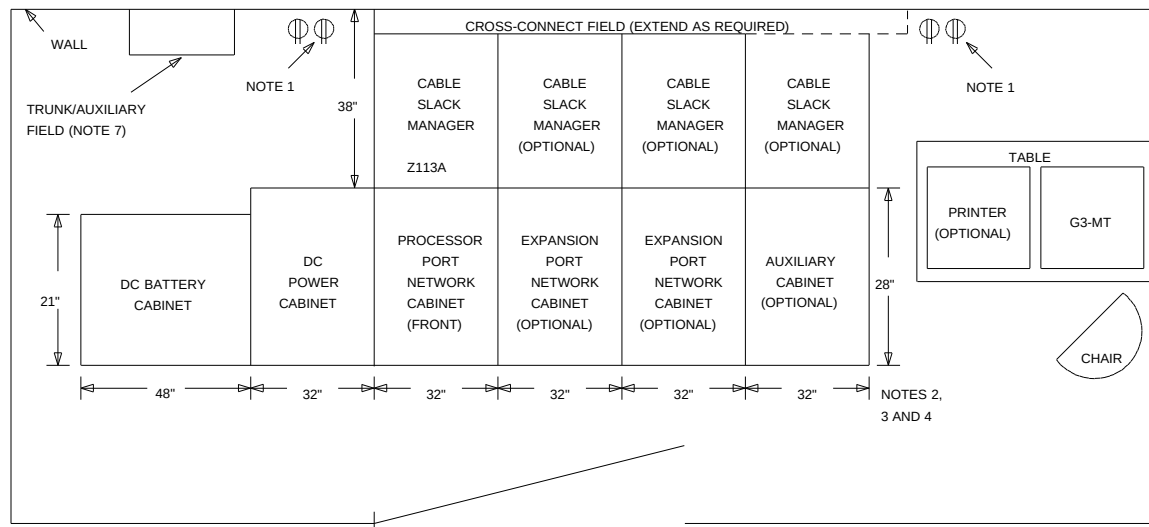


NOTES:

1. AC RECEPTACLES MUST BE SEPARATELY FUSED, AND NOT UNDER CONTROL OF A WALL SWITCH. RECEPTACLES MUST NOT BE SHARED WITH OTHER EQUIPMENT, AND SHOULD BE LOCATED OUTSIDE THE CROSS-CONNECT FIELD AREA.
2. ALLOW AT LEAST 36 INCHES OF SPACE IN FRONT OF CABINET TO LET DOOR SWING OPEN.

3. SYSTEM MUST BE GROUNDED BY ONE OF THE APPROVED METHODS.
4. EARTHQUAKE PROTECTION MAY BE REQUIRED.
5. THE TRUNK/AUXILIARY FIELD MAY BE LOCATED WITHIN THE CROSS-CONNECT FIELD.

Figure 3-6. Typical Floor Plan for a DC-Powered Multi-Carrier Cabinet with EPN Cabinet



NOTES:

1. AC RECEPTACLES MUST BE SEPARATELY FUSED, AND NOT UNDER CONTROL OF A WALL SWITCH. RECEPTACLES MUST NOT BE SHARED WITH OTHER EQUIPMENT, AND SHOULD BE LOCATED OUTSIDE THE CROSS-CONNECT FIELD AREA.
2. ALLOW AT LEAST 36 INCHES OF SPACE IN FRONT OF CABINET TO LET DOOR SWING OPEN.

3. SYSTEM MUST BE GROUNDED BY ONE OF THE APPROVED METHODS.
4. EARTHQUAKE PROTECTION MAY BE REQUIRED.
5. THE TRUNK/AUXILIARY FIELD MAY BE LOCATED WITHIN THE CROSS-CONNECT FIELD.

Figure 3-7. Typical Floor Plan for a DC-Powered Multi-Carrier Cabinet with Two EPN Cabinets

See Danger. The cabinet is shipped in a polyethylene bag packed in a cardboard container. The cabinet is fastened to a wood/Styrofoam¹ pallet by four carriage bolts. The cardboard container is strapped to the pallet by two metal bands.



DANGER:

The cabinet may weigh as much as 800 pounds and may be top heavy. Use extreme caution.

To install the cabinet, do the following:

Unpack and Inspect Cabinet for Damage

1. Check the status of the SHOCKWATCH and/or TILTWATCH² indicators on the cardboard container. These indicators are normally white. If the container has been jarred or tilted beyond specifications, the indicator will be red, indicating potential damage. Report any indication of damage per local instructions.
2. See Danger. Cut and remove bands.



DANGER:

Take care to avoid injury while cutting and removing bands.

3. Determine which cabinet contains the ramp and open it first. The carton containing the ramp will have a "ramp enclosed label" on it.
4. See Caution. Cut the tape holding the container together.



CAUTION:

Deep knife penetration may damage the cabinet.

5. Remove all cardboard, tape, and plastic from cabinet.
6. To open the cabinet doors, use a screwdriver to turn clockwise the screws located on the front and rear doors to release the door latches (Figures 3-8 and 3-9).
7. Lift off the front and rear doors (do not remove the screws from the door hinges).

1. Registered trademark of Styrofoam Corporation
2. Shockwatch and Tiltwatch are registered trademarks of Media Recovery, Inc.

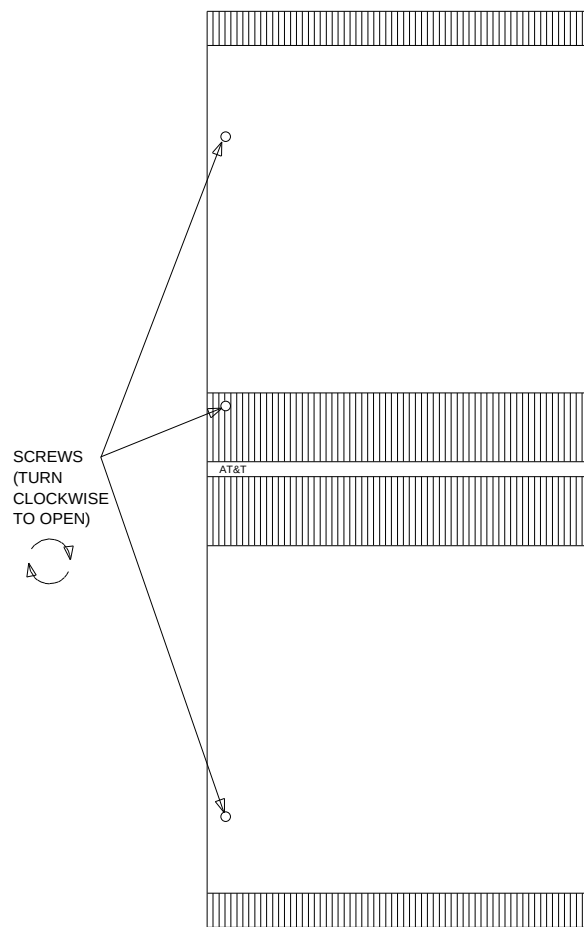


Figure 3-8. Location of Cabinet Door Latches (Front)

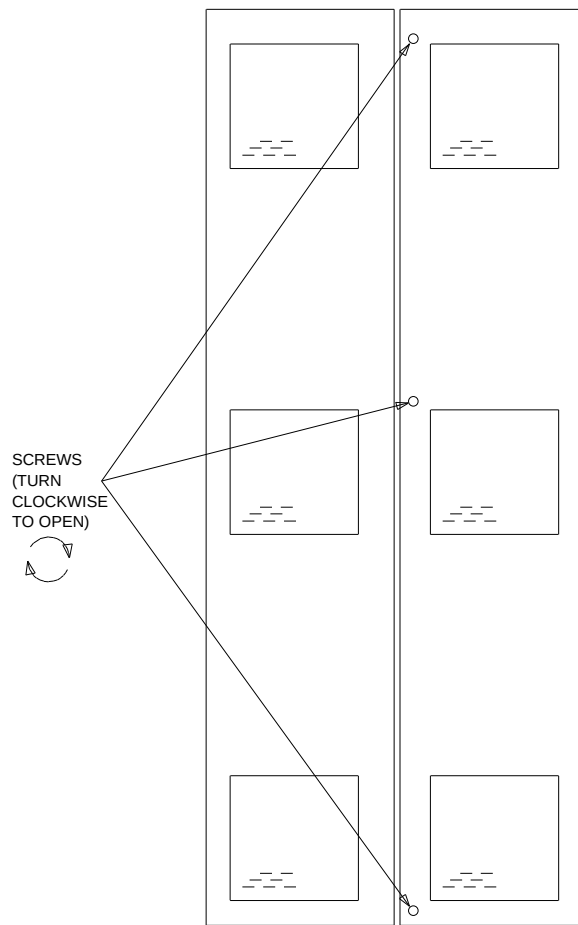


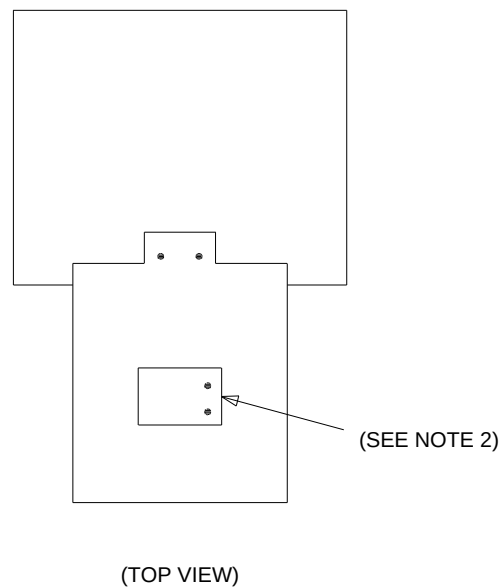
Figure 3-9. Location of Cabinet Door Latches (Rear)

8. Remove all packing material from inside cabinet.
9. Inspect cabinet for any damage caused during shipping. Report any damages per local instructions.
10. Use an adjustable wrench to remove the carriage bolt nuts located at each bottom corner of the cabinet.
11. Drive the carriage bolts downward until they clear the cabinet.
12. Remove the ramp from the side of the cabinet carton.
13. Remove the power cord stored under or inside the cabinet of AC-powered systems, and lay it over the top of cabinet.
14. Remove the supporting block of wood by raising the rear corner of the cabinet using a pry bar (if necessary). Repeat for the other rear corner of the cabinet.

15. Screw the cabinet stabilizing bolts all the way up to provide clearance between the cabinet and the pallet when the cabinet is rolled down the ramp.
16. Place the ramp as shown in Figure 3-10. Bolt into position using the bolts provided in the plastic bag attached to the ramp.
17. Hold both sides of the rear of the cabinet (it is recommended that another technician assist in moving the cabinet).
18. Roll the cabinet off the ramp and onto the floor.

Check Circuit Pack Configuration

19. Verify that all circuit packs are fully seated in proper slots according to the Customer Service Document (CSD) and Port Assignment Worksheet. Report any discrepancies in circuit pack type or quantity.



NOTES:

1. THE RAMP IS STORED IN THE SIDE OF THE SHIPPING CONTAINER OF ONE OF THE CABINETS. DETERMINE WHICH CABINET CONTAINS THE RAMP AND UNPACK IT FIRST.
2. THIS BAG CONTAINS THE RAMP MOUNTING HARDWARE (TWO BOLTS) AND FILLER BLOCKS.

Figure 3-10. Ramps Installed on Pallet

Position Cabinet

20. Roll cabinet into position at designated location (Figures 3-2 through 3-7). See Caution.



CAUTION:

If your system is supplied with cable ductwork, the cabinets must be spaced on 32-inch centers ($\pm 1/8$ -in.), they must be level, and they must be square with respect to one-another. These precautions are advised to prevent problems with ductwork installation.

If your system is supplied with slack managers, the cabinets must be placed far enough from the connection field to lay down the (32-inch) slack managers and to provide a little extra room for the cables to access the managers.

See Note.



NOTE:

Check location of the AC power receptacle. The receptacle must be on a separately fused circuit that is not controlled by a wall switch. It must be located within 10 feet of where the power cord leaves the base of the cabinet and should be located outside the cross-connect field area.

Add Earthquake Protection (If Provided)

21. If earthquake protection is required on concrete floor:
 - a. Insert a pencil or marker through the holes previously occupied by the carriage bolts (front and rear) in the bottom of the cabinet, and mark the floor directly beneath each hole.
 - b. Roll the cabinet out of the way and drill four 1/2-inch diameter holes (about 1-1/2 inches deep) at the spots marked in the previous step.
 - c. Insert anchors in the holes.
 - d. Roll the cabinet back into place, and align the cabinet holes over the holes in the floor.
 - e. Repeat this procedure from the beginning for each cabinet to be installed.
 - f. When all cabinets are in place, adjust their leveling legs until the cabinets are level. See Caution.



CAUTION:

If your system is supplied with cable ductwork, the cabinets must be level from front to rear and from side to side. They must be square with respect to one-another to within $\pm 1/8$ -in.

- g. Secure the cabinet(s) to the floor with a 3/8-16 X 4.5 inch bolt and flat washer.
22. If earthquake protection is required on a raised computer floor over a concrete subfloor:
- a. Insert a pencil or marker through the holes previously occupied by the carriage bolts (front and rear) in the bottom of the cabinet(s), and mark the floor directly beneath each hole.
 - b. See Caution. Drill four holes 5/8-inch in diameter through the floor panels marked in Step a.



CAUTION:

Take care while drilling the holes through the raised floor that the drill bit doesn't penetrate any cables beneath the raised floor that would cause damage to the cable or injury to the installer.

- c. Insert a long punch through the hole drilled in Step b and mark the concrete floor beneath the raised floor.
- d. Remove the raised floor panel(s) in which the holes were drilled in Step B.
- e. Drill four holes 1/2 inch in diameter and 1-1/2 inches deep at the spot marked in Step C.
- f. Insert the anchors in the holes.
- g. Replace the floor panel(s) removed in Step D.
- h. Repeat this procedure from the beginning for each cabinet to be installed.
- i. When all cabinets are in place, adjust their leveling legs until the cabinets are level. See Caution.



CAUTION:

If your system is supplied with cable ductwork, the cabinets must be level from front to rear and from side to side. They must be square with respect to one-another to within $\pm 1/8$ -in.

- j. Fasten the cabinet to the floor (see Figure 3-11).

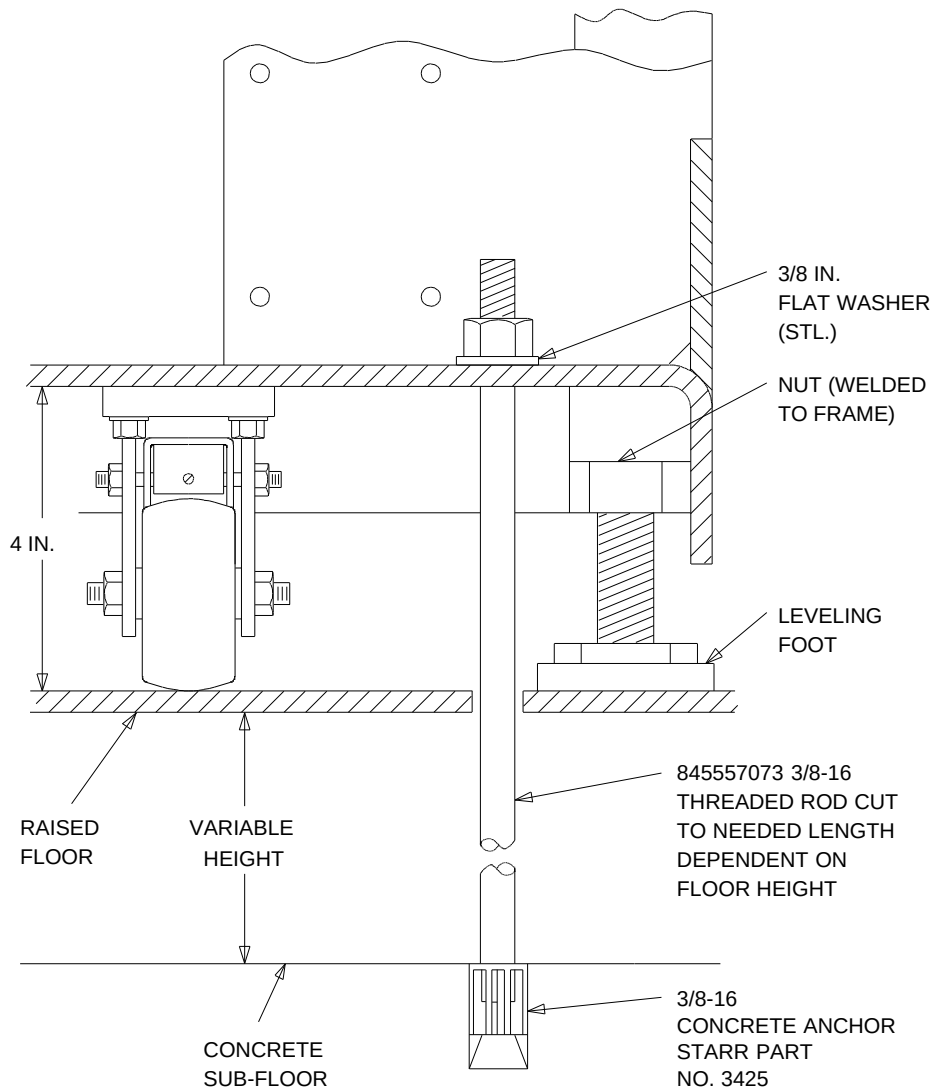


Figure 3-11. Earthquake Mounting—Computer Raised Floor

Complete Cabinet Installation—Earthquake Protection not Provided

23. Repeat this procedure from the beginning for each cabinet to be installed.
24. When all cabinets are in place, adjust their leveling legs until the cabinets are level. See Caution.

⚠ CAUTION:

If your system is supplied with cable ductwork, the cabinets must be level from front to rear and from side to side. They must be square with respect to one-another to within $\pm 1/8$ -in.

25. Adjust and lock the cabinet stabilizing bolts to keep the cabinet from moving.
26. At the bottom of the cabinet, install hole plugs (provided with cabinet) in the holes previously occupied by the four carriage bolts.

Install an EPN Cabinet

The EPN cabinets are normally positioned adjacent to the PPN cabinet (Figure 3-4, 3-5, 3-6, or 3-7), but they may be located remotely in a different room or even a different building.

The procedure for installing an EPN cabinet is the same as for the PPN cabinet except that fiber-optic cabinet interconnections are also required.

Slack Manager

Install the slack manager when you are ready to wire to the wall field. There are complete instructions for slack manager installation in “Installing Cable Slack Manager” of Chapter 9.

Cable Ductwork

Install the cable ductwork when you are ready to wire to the wall field. Complete instructions for cable ductwork installation are given in Appendix D.

Install Single-Carrier Cabinets

The single-carrier cabinet offers a variety of configurations. Figure 3-12 shows the Processor Port Network (PPN) and Expansion Port Network(s) (EPN) configured with standard or critical reliability.

The equipment-room floor plans shown for single-carrier cabinet installation procedures are typical floor plans. The floor plan arrangements may vary depending on the size and shape of the equipment room. There may be more than one equipment room if the system has remotely located EPNs.

Install PPN Single-Carrier Cabinet

Typical floor plans for a single-carrier cabinet are shown in Figures 3-13 and 3-14.

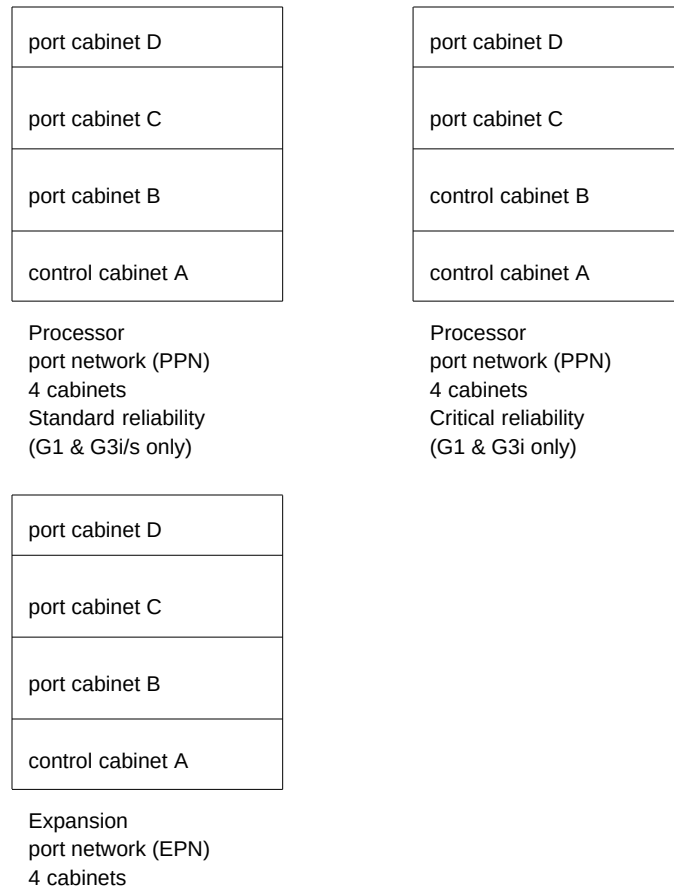


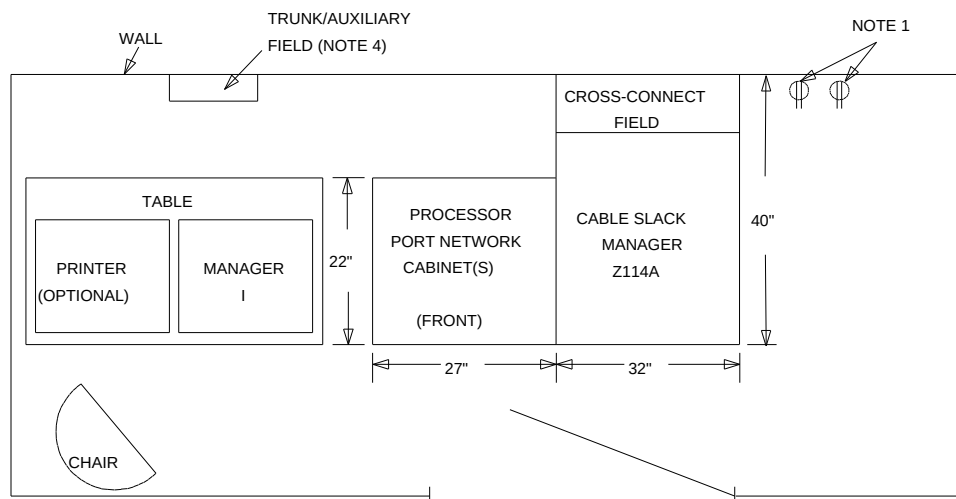
Figure 3-12. Typical G1 and G3 Single-Carrier Cabinet Configurations

See Danger. The cabinets are shipped in a polyethylene bag, packed in a cardboard container. The cabinet is fastened to a wood/Styrofoam pallet with two carriage bolts. The cardboard container is strapped to the pallet with a metal band.



DANGER:

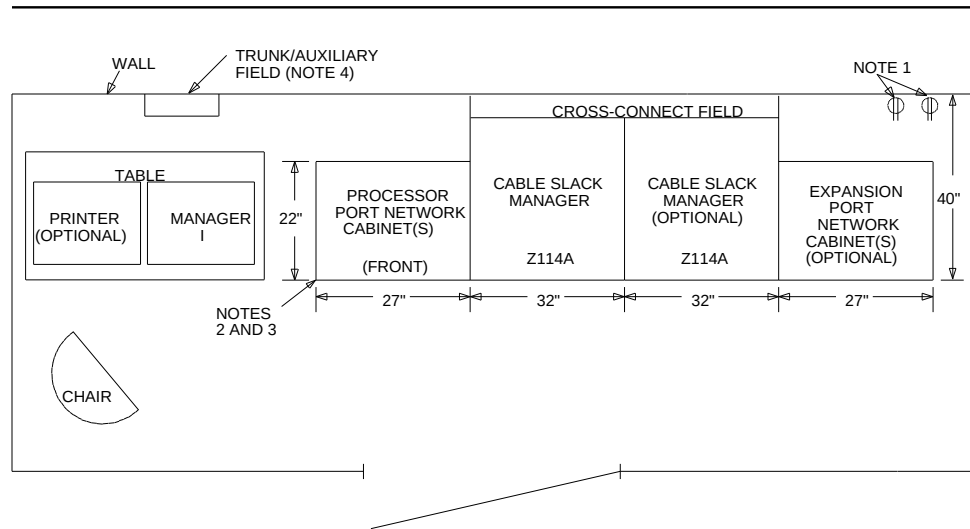
The cabinet may weigh as much as 130 pounds and requires two handlers. Use caution to avoid injury.



NOTES:

1. AC RECEPTACLES MUST BE SEPARATELY FUSED, AND NOT UNDER CONTROL OF A WALL SWITCH, RECEPTACLES MUST NOT BE SHARED WITH OTHER EQUIPMENT, AND SHOULD BE LOCATED OUTSIDE THE CROSS-CONNECT FIELD AREA.
2. SYSTEM MUST BE GROUNDED BY ONE OF THE APPROVED METHODS.
3. EARTHQUAKE PROTECTION MAY BE REQUIRED.
4. THE TRUNK/AUXILIARY FIELD MAY BE LOCATED WITHIN THE CROSS-CONNECT FIELD.

Figure 3-13. Typical Floor Plan for G1 and G3i/s Single-Carrier PPN



NOTES:

1. AC RECEPTACLES MUST BE SEPARATELY FUSED, AND NOT UNDER CONTROL OF A WALL SWITCH, RECEPTACLES MUST NOT BE SHARED WITH OTHER EQUIPMENT, AND SHOULD BE LOCATED OUTSIDE THE CROSS-CONNECT FIELD AREA.
2. SYSTEM MUST BE GROUNDED BY ONE OF THE APPROVED METHODS.
3. EARTHQUAKE PROTECTION MAY BE REQUIRED.
4. THE TRUNK/AUXILIARY FIELD MAY BE LOCATED WITHIN THE CROSS-CONNECT FIELD.

Figure 3-14. Typical Floor Plan for G1 and G3i Single-Carrier PPN with EPN

Unpack and Inspect for Damage

1. Check the status of the SHOCKWATCH and/or TILTWATCH indicators on the cardboard container. The SHOCKWATCH and TILTWATCH indicators are normally white. If the container has been jarred or tilted beyond specifications, the indicators will be red, indicating potential damage. Report any damage per local instructions.
2. Remove the cabinet from the cardboard container.
3. Remove all cardboard, tape, and plastic.
4. Open and remove front door and rear screw-on panels from cabinet.
5. Remove all packing material from inside cabinet.
6. Inspect cabinet for any damage caused during shipping. Report any damages per local instructions.

Check Circuit Pack Configuration

7. Ensure all circuit packs are fully seated in the proper slots according to the Customer Service Document (CSD) and Port Assignment Worksheet. Report any discrepancies in circuit pack type or quantity.

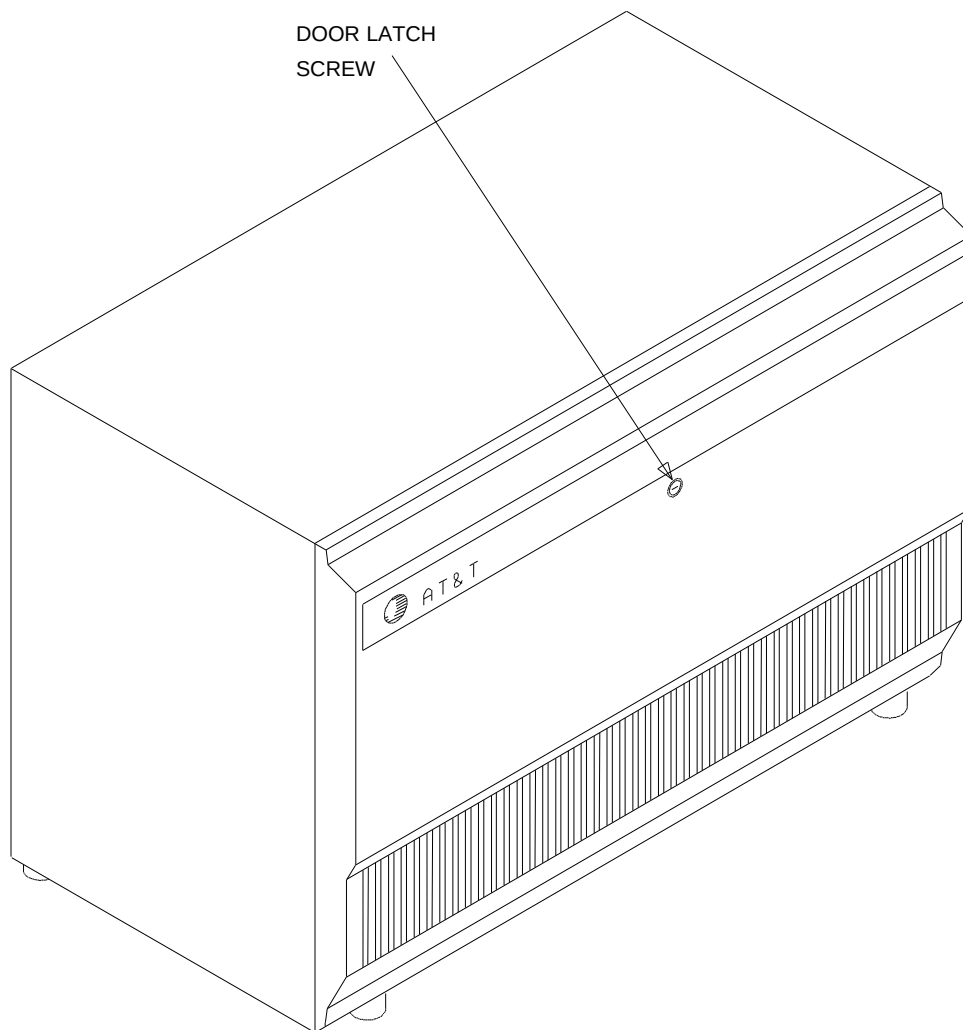


Figure 3-15. Cabinet Door Latch Screw Location

Position the Control Cabinet

8. Place cabinet in position at designated location. (see Figure 3-13 or 3-14). See Note.



NOTE:

Check location of the AC power receptacle. The receptacle must be on a separately fused circuit that is not controlled by a wall switch. It must be located within 10 feet of the cabinet and should be located outside the cross-connect field area.

9. If earthquake protection is not required, install hole plugs (provided with cabinet) in the holes previously occupied by the two carriage bolts at the bottom rear of the cabinet.

Add Earthquake Protection

10. If earthquake protection is required:
 - a. Place the Front Mounting Angle at the location selected for the front of the control cabinet.
 - b. Using the angle as the template, mark the location of the mounting bolts.
 - c. Drill two holes 1/2-inch in diameter and 1-1/2 inches deep at the spot marked in Step b.
 - d. Mount the Front Mounting Angle to the floor (see Figure 3-16).

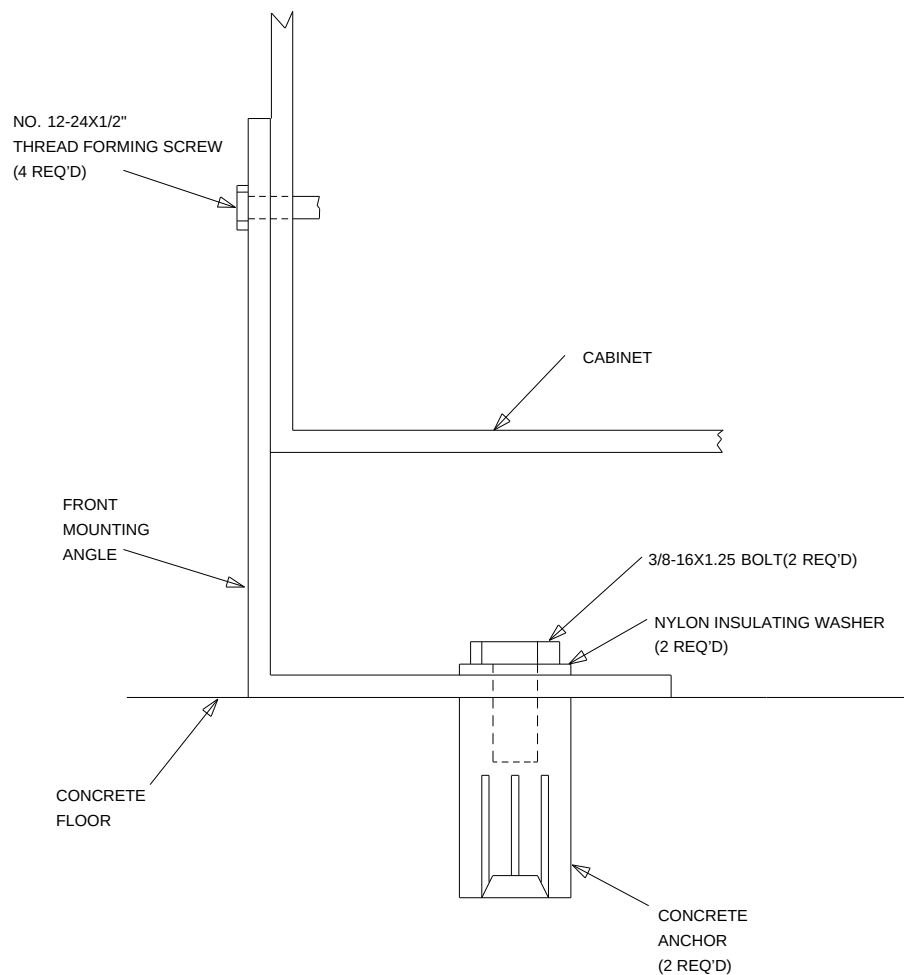


Figure 3-16. Front Mounting Angle—Concrete Floor

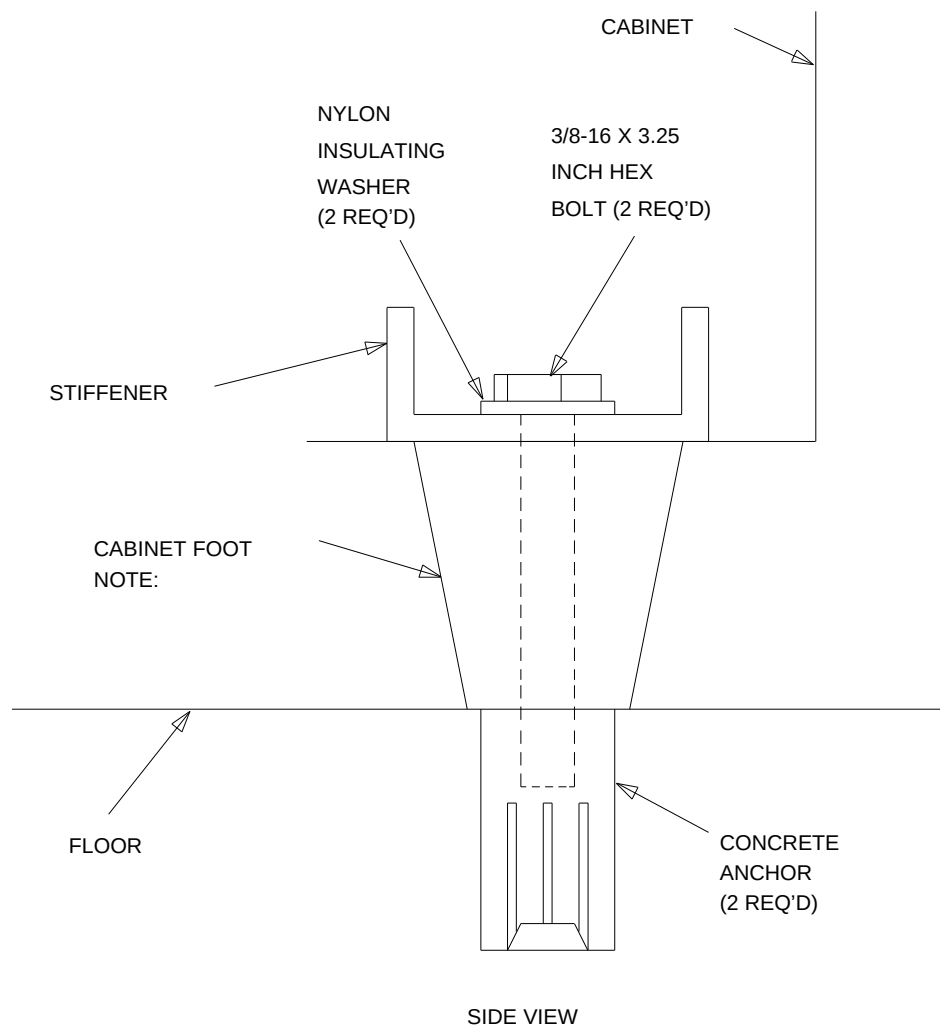
- e. Move the cabinet back into place and attach the cabinet to the angle with two No. 12-24 by 1/2-inch thread-forming screws.
- f. Insert a pencil or marker through holes previously occupied with the carriage bolts in the bottom rear of the cabinet and mark the floor directly beneath each hole.
- g. Remove the screws installed in Step e and move the cabinet out of the way.
- h. Drill two holes 1/2-inch in diameter and 1-1/2 inches deep at the spot marked in Step f.
- i. Move the cabinet back into place.
- j. Attach the cabinet to the front mounting angle using four No. 12-24 by 1/2 inch thread forming screws.

- k. In the rear of the cabinet, lay the stiffener on the bottom of the cabinet, aligning the stiffener with the holes in the bottom of the cabinet.
- l. Fasten the cabinet to the floor (see Figure 3-17).



NOTE:

This procedure is only a portion of the complete earthquake protection package. Instructions for adding the earthquake front plate and earthquake ground plate will be given at the appropriate location in this chapter to follow the logical installation sequence.



NOTE: BOLT RUNS BEHIND CABINET FOOT, NOT THROUGH IT

Figure 3-17. Cabinet Earthquake Mounting—Concrete Floor

If critical reliability is provided, cabinet B will be another control cabinet (see Figure 3-12). Use the instructions in the next paragraph—Position Port Cabinet—to position the second control cabinet.

Position Port Cabinet

See Danger. If there is more than one cabinet, the cabinets should be stacked on top of one another (Figure 3-18). Cabinet B should be on top of the control cabinet A, cabinet C on top of cabinet B, and cabinet D on top of cabinet C. The cabinets are labeled **A**, **B**, **C**, or **D**, on the front and back on the left side of the cabinet carrier labels.



DANGER:

Port cabinets may weigh as much as 125 pounds each and require two handlers to stack the cabinets. If third or fourth cabinets are being installed, remove the front door, power supply, and circuit packs to lighten the load. Make sure the two handlers are capable (size and strength) of lifting the cabinet into position.

Connect TDM Bus and Inter-Cabinet Cables

1. Remove the TDM bus terminator on slot 18 of control cabinet A and move it to slot 17 on the top port cabinet (Figure 3-19 or 3-20).
2. Connect TDM bus cables as shown in Figure 3-19 (standard reliability) or Figure 3-20 (critical reliability). The TDM bus cable is located behind the lower panel.

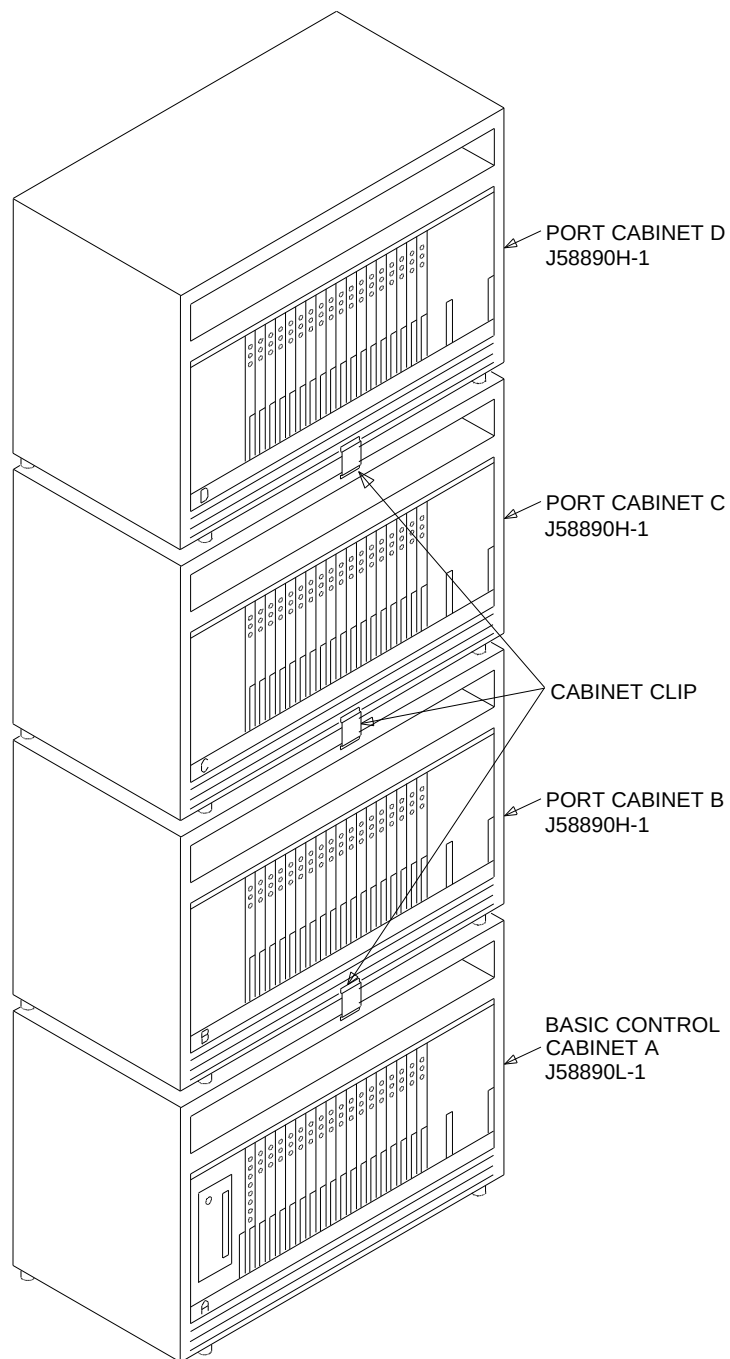


Figure 3-18. Single-Carrier Cabinets (4-Cabinet)—Front View, Doors Removed

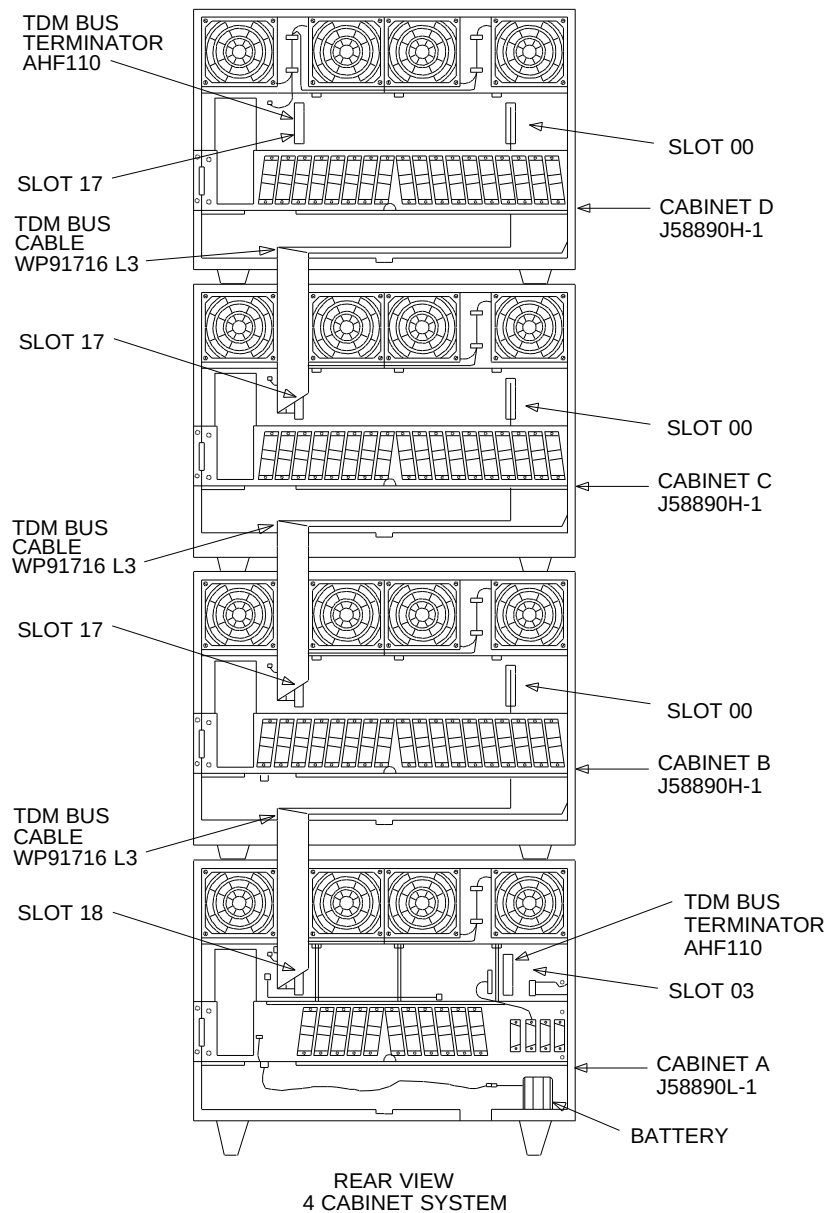


Figure 3-19. TDM Bus Connections for Standard-Reliability PPN

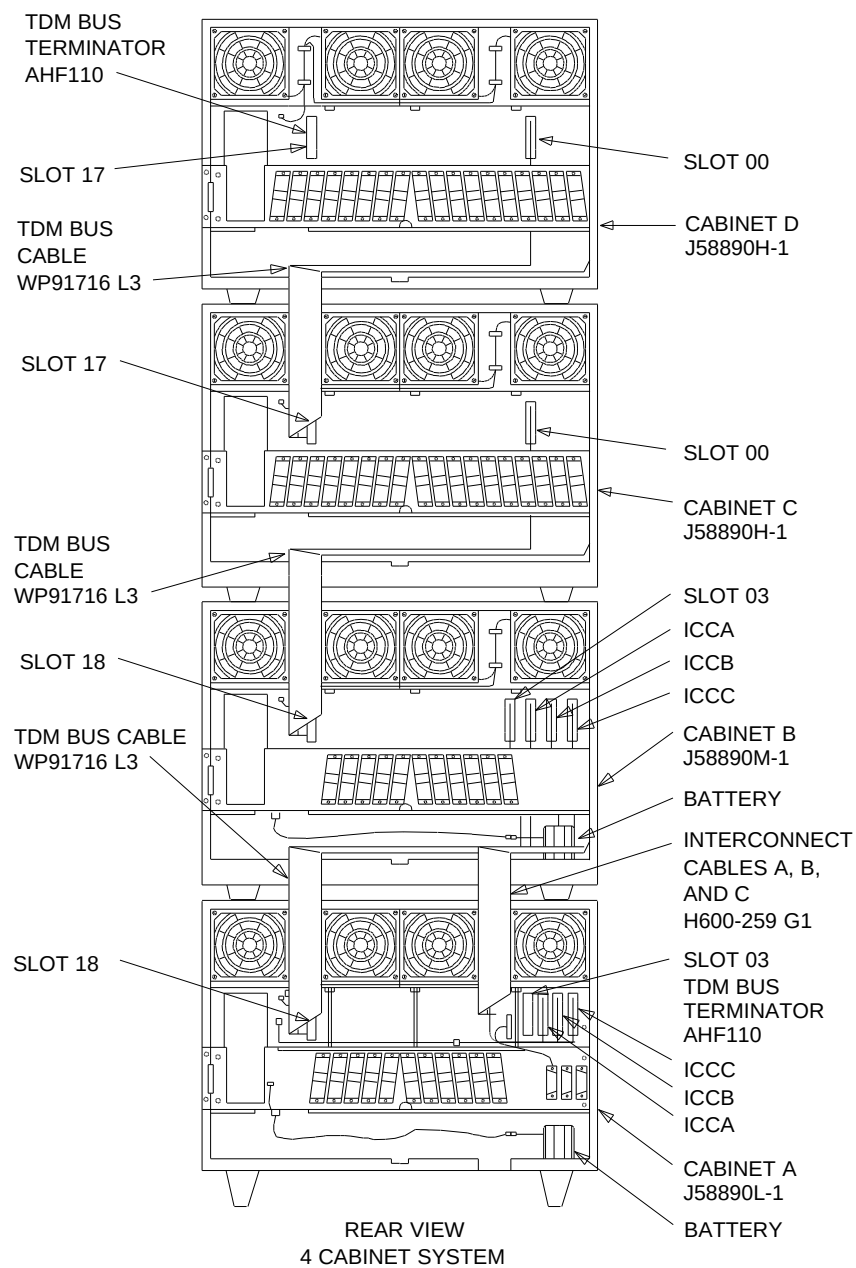


Figure 3-20. TDM Bus Connections for Critical-Reliability PPN

3. Connect Intercabinet cables for Critical-Reliability PPN cabinet as shown in Figure 3-20 and Table 3-1.

Table 3-1. Intercabinet Cable Connections

Connect Intercabinet Cables				
Cabinet	From		To	
	Carrier	Conn	Carrier	Conn
PPN	J58890L	ICCA ICCB ICCC	J58890M	ICCA ICCB ICCC
EPN	J58890N	ICCA ICCB	J58890H	ICCA ICCB

Install EPN Cabinet for Single-Carrier Cabinet

EPNs are usually positioned near the PPN, however, they may be located remotely in a different room or even in a different building. Single-carrier EPNs connected to a multiple-carrier PPN must be located remotely because it is not recommended that single-carrier cabinets be put in a line with multiple-carrier cabinets.

The procedure for installing the EPN is the same as for the PPN except for the TDM bus, intercabinet cables, and fiber-optic cable connections. See “Install PPN Single-Carrier Cabinet” earlier in this chapter.

Connect TDM Bus and Intercabinet Cables

1. Remove the TDM bus terminator on slot 18 of control cabinet A, and move it to slot 17 on the top port cabinet (see Figure 3-21 or 3-22).
2. Connect TDM bus cables as shown in Figure 3-21 (standard reliability) or Figure 3-22 (critical reliability). The TDM bus cable is located behind the lower panel.

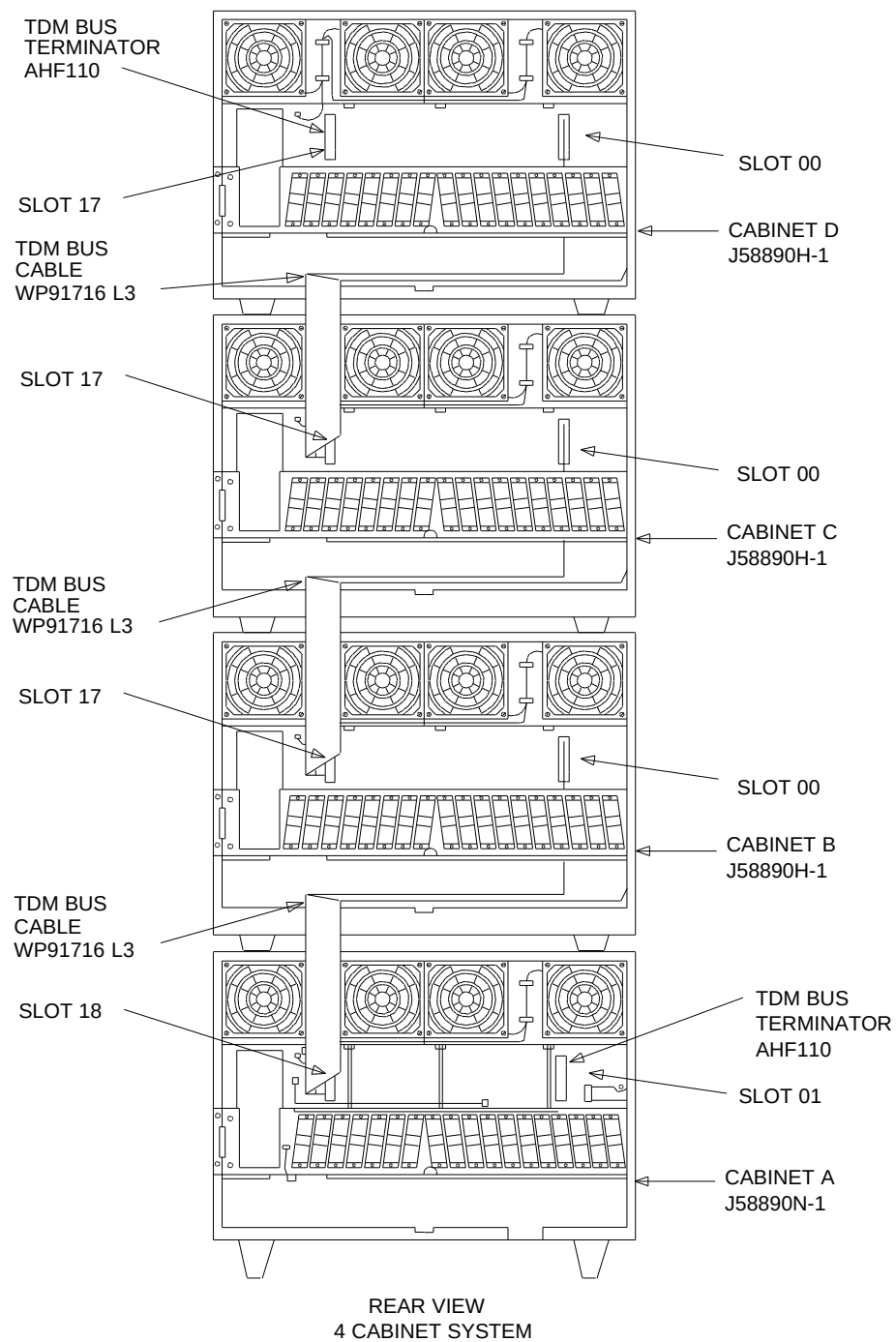


Figure 3-21. TDM Bus Connections for Standard-Reliability EPN

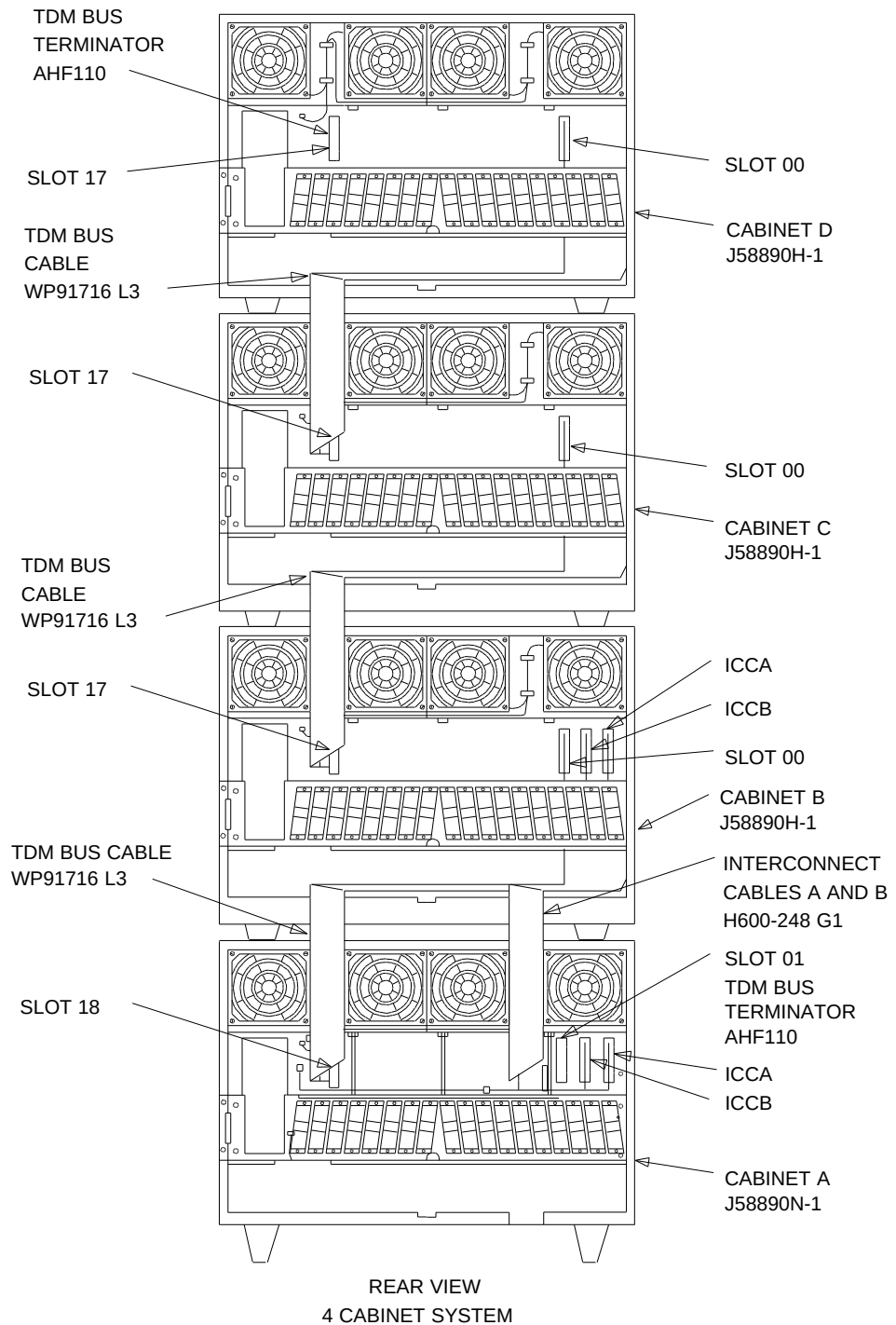


Figure 3-22. TDM Bus Connections for High or Critical-Reliability EPN

3. Connect intercabinet cables for high or critical-reliability EPN(s) as shown in Figure 3-22 and Table 3-1.

Verify Port Cabinet Address Plugs

Cabinet address plugs are 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 connections. Verify that the address plug for each port carrier is in the correct place (see the next figure).

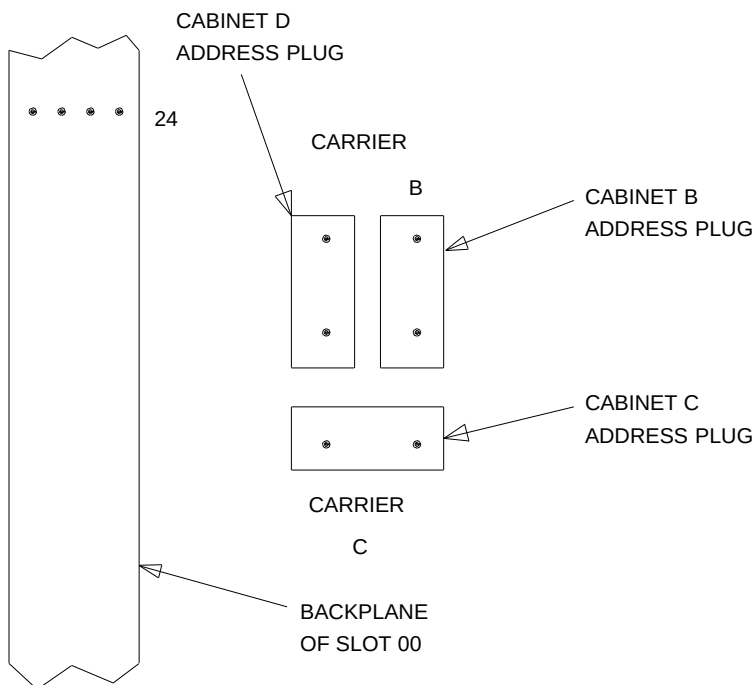


Figure 3-23. Port Cabinet Address Plug Location

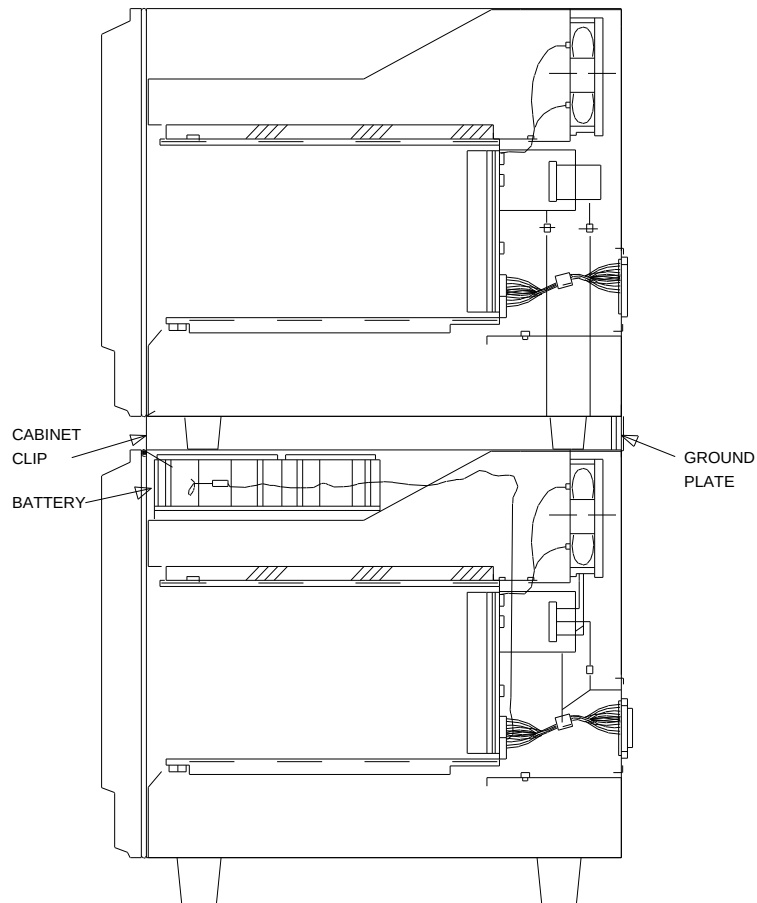
Install Ground Plates on Systems without Earthquake Protection

The ground plate provides the ground connection between cabinets and also stabilizes the cabinets.

A ground plate is required between each cabinet (see the following figures).

1. At the rear of the cabinets, replace the upper and lower panels (leave the screws loose).

2. At the upper cabinet, place the top of the ground plate over the bottom of the lower-rear panel so that the four screws at the bottom of the lower-rear panel go through the four ground plate keyhole slots.
 3. Slide the ground plate down over the top of the upper-rear panel of the lower cabinet so that the four screws that attach the upper-rear panel go through the four lower ground plate slots.
-



SIDE VIEW
2-CABINET PORT NETWORK

Figure 3-24. Single-Carrier Cabinet Ground Plate, Cabinet Clip, and Battery Locations

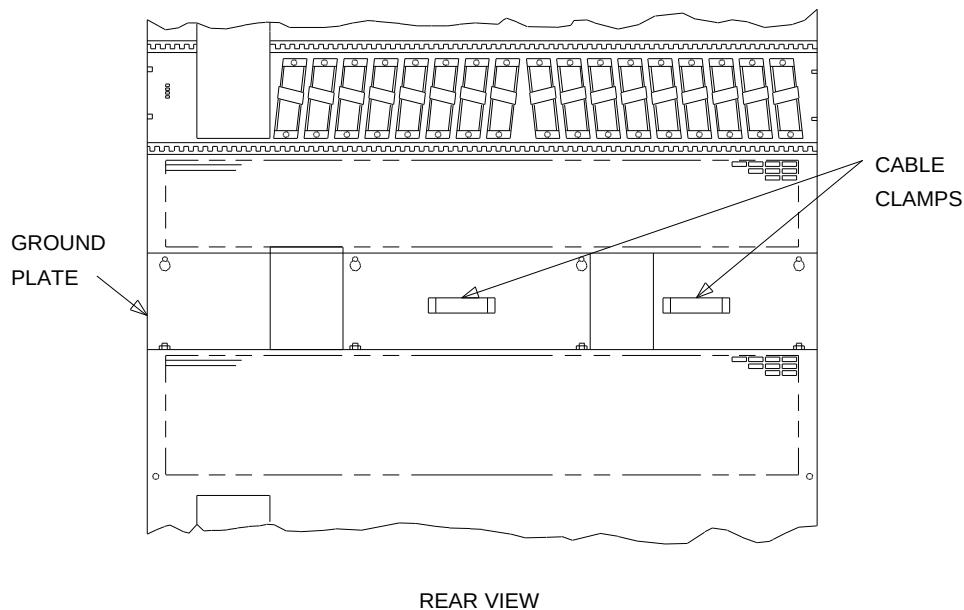


Figure 3-25. Single-Carrier Cabinet Ground Plate and Cable Clamp Locations

4. Ensure that the exposed portion of the TDM bus cable between the cabinets does not get pinched.
5. Tighten all screws.
6. Repeat procedure for each cabinet.

Install Ground Plates on Systems with Earthquake Protection

The ground plate provides the ground connection between cabinets, and also stabilizes the cabinets.

A ground plate is required between each cabinet (see Figures 3-26 and 3-27).

1. At the rear of the cabinets, replace the upper and lower panels with all the screws 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-rear panel. Line up the four holes in the ground plate with the four holes at the bottom of the lower rear cover of the cabinet and install the screws. Do not tighten them at this time.

3. At the top of the cabinet below the cabinet referred to in Step 2, line up the bottom of the ground plate with the top four holes in the upper rear cover of the lower cabinet. Install the four screws. Do not tighten at this time.
4. Repeat Steps 2 and 3 until the earthquake ground plates are installed between all cabinets.
5. Tighten all screws.

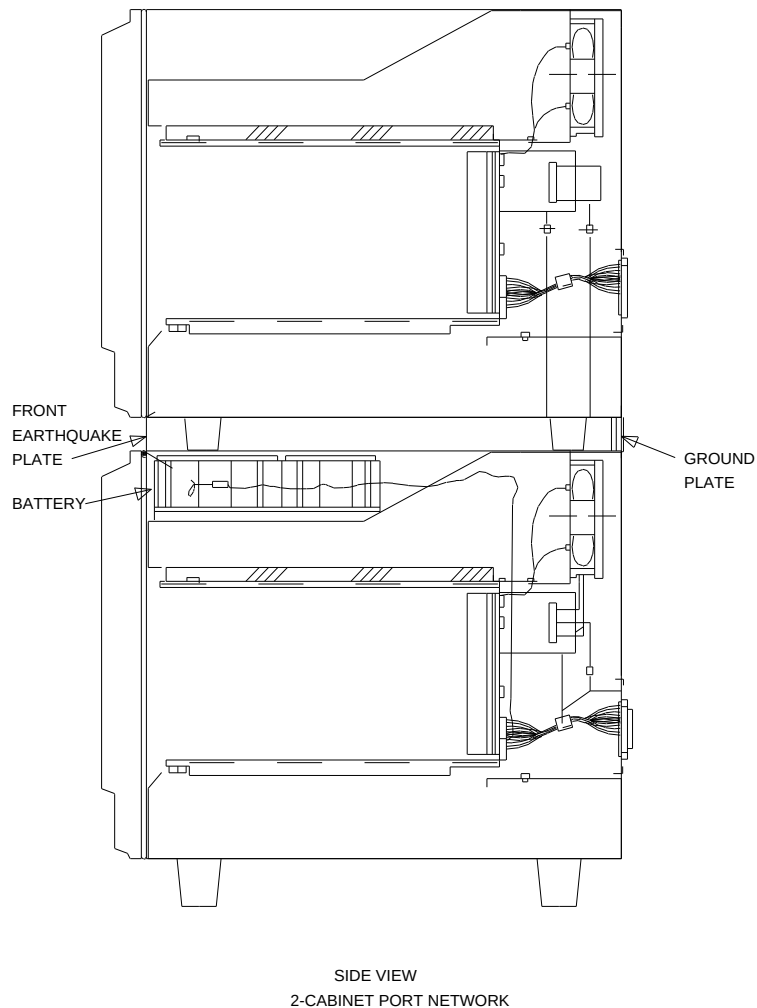


Figure 3-26. Single-Carrier Cabinet Ground Plate, Earthquake Front Plate, and Battery Locations

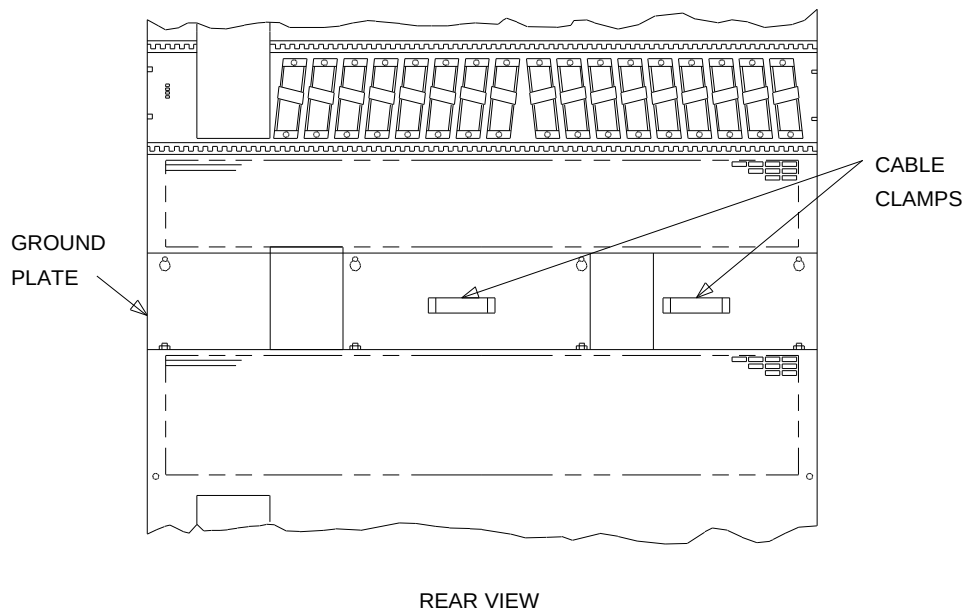


Figure 3-27. Single-Carrier Cabinet Ground Plate and Cable Clamp Locations

Install Cable Clamps

At the rear of the cabinets, on each ground plate, install two cable clamps using the screws provided (see Figure 3-27). (These clamps are used to hold the 25-pair I/O or wallfield cables in place.)

Install Cabinet Clip On Systems without Earthquake Protection

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

At the front of the cabinets, install a cabinet clip 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 3-24).

Install Earthquake Front Plates

The earthquake front plate replaces the cabinet clip for systems equipped with earthquake protection. An earthquake front plate is required between each cabinet (Figure 3-26).

1. At the front of the cabinets, line up 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 at this time.

2. At the front of the cabinets, line up the holes in the bottom of the earthquake front plate with the holes at the top of the lower cabinet and insert the four No. 12-24 by 1/2-inch thread forming screws. Do not tighten at this time.
3. Repeat Steps 1 and 2 until all the cabinets are fastened together with the earthquake front plate.
4. Tighten all screws.

Install Wall-Mounted Cabinet

The DEFINITY G3vs is designed for wall installation. The cabinet is attached by a hinge to a wall mount plate that is to be screwed to a plywood wall at your facility. (Screws are provided for the purpose.)

It is assumed (for the purposes of this document) that a wall with a surface of $\frac{3}{4}$ inch (19 mm) thick plywood has already been prepared for the installation.

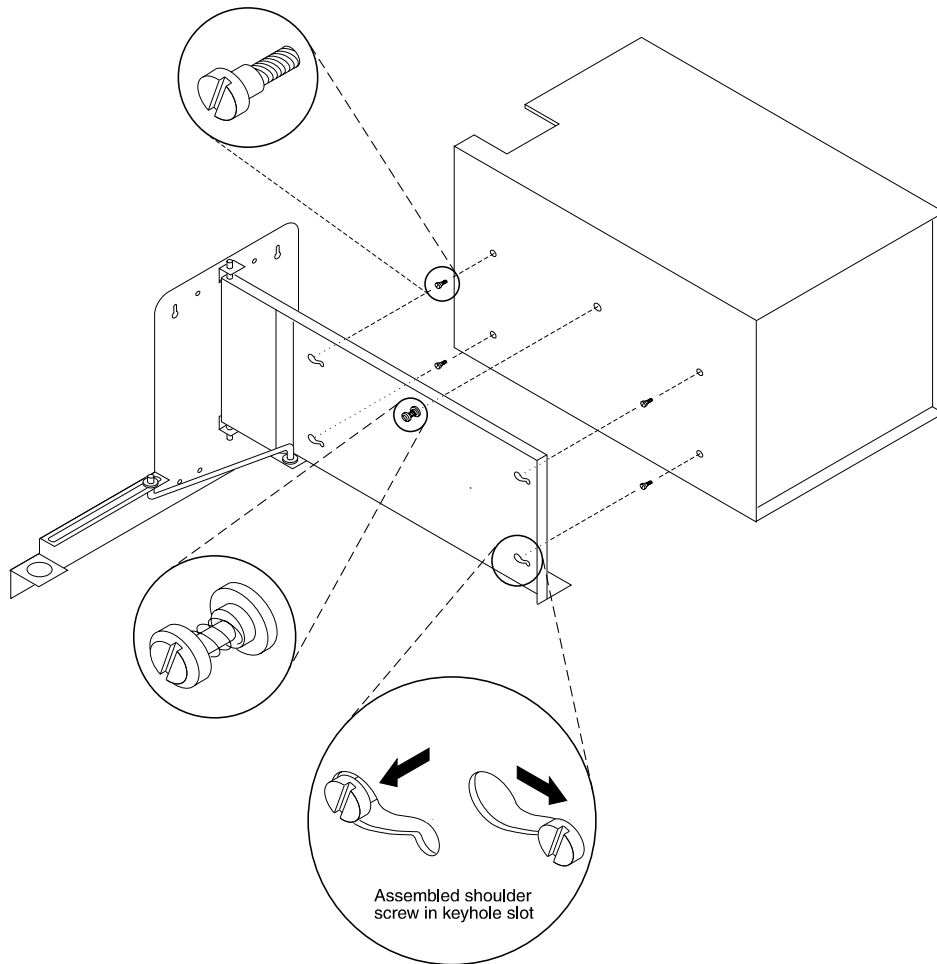


Figure 3-28. Exploded View of DEFINITY Generic 3vs

See the preceding illustration and install the cabinet as follows:

1. Install the four shoulder screws supplied with the wall mounting plate in the threaded holes nearest the corners on the side of the cabinet.
2. See Note. Hold the mounting plate to the plywood wall so that the hinge pin is to your right as you face the plate and so that the cabinet will be at a convenient height to handle, install, and service. (A good practice is to set the top of the hinge assembly at eye level).

Set the hinge so that a spirit level held to the top edge of the plate is horizontal.

 NOTE:

The bottom of the cabinet, as installed, must be at least six inches above the nearest possible obstruction to the air inlet of the cooling system.

3. Using the mounting plate as a template, mark the wall at the top of the two keyhole slots.
4. Select a pilot-hole drill of 0.125-inch (3.125mm) diameter. Drill pilot holes at the position just marked on the plywood wall. Install in these holes two of the (seven) screws that are provided with the switch so that the screw's heads are about 3/16in (5mm) from the wall.
5. Hang the mounting plate on the two screws just installed. Adjust the plate so the screws are at the top of the two keyhole slots and tighten the screws.
6. Using the mounting plate as a template, drill pilot holes at the places where the remaining screws will attach the plate to the wall.
7. Screw the mounting plate securely to the wall.
8. Close the hinge on the mounting plate.
9. If there is an end cap on the back of the cabinet, remove the end cap.
10. See Note. Raise the cabinet so that the four shoulder screws on its far surface face the wall. Lay the cabinet's bottom edge on top of the narrow shelf on the hinged plate.

 NOTE:

A fully loaded system weighs 48 lb (22 kg).

11. A decal on the mounting plate shows an arrow from a dashed line to a solid line. The dashed line is where the rear edge of the cabinet must be when you first put the cabinet on the mounting plate's shelf. The solid line is where the rear edge of the cabinet must be when the shoulder screws are seated in the mounting plate.

Move the cabinet so that the rear edge of the cabinet is at the dotted line.

12. Push the cabinet toward the wall so the shoulder screws on the cabinet go through the keyholes in the mounting plate that are cut to fit the heads of the shoulder screws.
13. Move the cabinet to your left (as you face it) to make the shafts of the shoulder screws on the cabinet engage the slots on the mounting plate.

Continue to move it to the left until the rear edge of the cabinet is at the solid line on the decal. (You will feel a slight, sudden change of level as the screws seat themselves in the keyholes of the mounting plate.)
14. See Caution. Install the housing locking screw (in the cabinet mounting plate) into the system cabinet.

**CAUTION:**

The locking screw must be securely fastened to the cabinet. Failure to do so may result in the system falling from the wall resulting in equipment damage and possible injury.

15. Make a final check of all screws to ensure that they are tight. In particular, check:
 - Seven wall mount wood screws
 - Four shoulder screws
 - One housing locking screw

Install Auxiliary Cabinet (Optional)

The auxiliary cabinet is normally positioned adjacent to the PPN cabinet or the EPN cabinet (Figures 3-2 through 3-7), if provided. The location of equipment in the auxiliary cabinet is specified in the Customer Service Drawing (CSD).

The auxiliary cabinet is shipped in a polyethylene bag packed in a cardboard container. The cabinet is fastened to a wood/Styrofoam pallet by four carriage bolts. The cardboard container is strapped to the pallet by two metal bands.

To install the cabinet, do the following:

Unpack and Inspect for Damage

1. Check the status of the SHOCKWATCH and/or TILTWATCH indicators on the cardboard container. The SHOCKWATCH and TILTWATCH indicators are normally white. If the container has been jarred or tilted beyond specifications, the indicators will be red, indicating potential damage.
2. See Danger. Cut and remove metal bands.



DANGER:

Take care to avoid injury while cutting and removing bands.

3. See Caution. Cut the tape holding the cardboard container together.



CAUTION:

Deep knife penetration may damage the cabinet.

4. Remove all cardboard, tape, and plastic.
5. To open the cabinet doors, use a screwdriver to turn (clockwise) the screws located on the front and rear doors.
6. Remove front and rear doors from cabinet.
7. Remove the lower rear panel from cabinet.
8. Remove all packing material from inside cabinet.
9. Inspect cabinet for any damage caused during shipping. Report any damages per local instructions.
10. Use an adjustable wrench to remove the carriage bolt nuts located at each bottom corner of the cabinet.
11. Drive the carriage bolts downward until they clear the cabinet.
12. Remove the ramps from the side of the cabinet carton.
13. If yours is an AC-powered system, remove the 120-volt power cord stored under the cabinet, and lay it over the top of cabinet.

14. Remove the supporting block of wood by raising the rear corner of the cabinet with a pry bar. Repeat for the other rear corner of the cabinet.
15. Screw the cabinet stabilizing bolts all the way up to provide clearance between the cabinet and the pallet when the cabinet is rolled down the ramp.
16. Place the ramp as shown in Figure 3-10. Bolt into position using the bolts provided in the plastic bag attached to the ramp.
17. Hold both sides of the rear of the cabinet (it is recommended that another technician assist in moving the cabinet).
18. Roll the cabinet off the ramp and onto the floor.

Position Cabinet

19. Roll cabinet into position at designated location (Figures 3-2 through 3-7). See Note.



NOTE:

Check location of the AC power receptacle. The receptacle must be on a separately fused circuit that is not controlled by a wall switch. It must be located within 10 feet of the cabinet and should be located outside the cross-connect field area.

Add Earthquake Protection (If Provided)

20. If earthquake protection is required on concrete floor:
 - a. Insert a pencil or marker through the holes previously occupied by the carriage bolts (front and rear) in the bottom of the cabinet, and mark the floor directly beneath each hole.
 - b. Roll the cabinet out of the way, and drill four 1/2-inch diameter holes (about 1-1/2 inches deep) at the spots marked in the previous step.
 - c. Insert anchors in the holes.
 - d. Roll the cabinet back into place and align the cabinet holes over the holes in the floor.
 - e. Secure the cabinet to the floor with a 3/8-16 X 4.5 inch bolt with flat washer.
21. If earthquake protection is required on a raised computer floor over a concrete subfloor:
 - a. Insert a pencil or marker through the holes previously occupied by the carriage bolts (front and rear) in the bottom of the cabinet(s), and mark the floor directly beneath each hole.
 - b. See Caution. Drill four holes 5/8 inch in diameter through the floor panels marked in Step a.



CAUTION:

Take care while drilling the holes through the raised floor that the drill bit doesn't penetrate any cables beneath the raised floor that would cause damage to the cable or injury to the installer.

- c. Insert a long punch through the hole drilled in Step b and mark the concrete floor beneath the raised floor.
- d. Remove the raised floor panel(s) in which the holes were drilled in Step b.
- e. Drill two holes 1/2 inch in diameter and 1-1/2 inches deep at the spot marked in Step c.
- f. Insert the anchors in the holes.
- g. Replace the floor panel(s) removed in Step D.
- h. Fasten the cabinet to the floor (see the next figure).

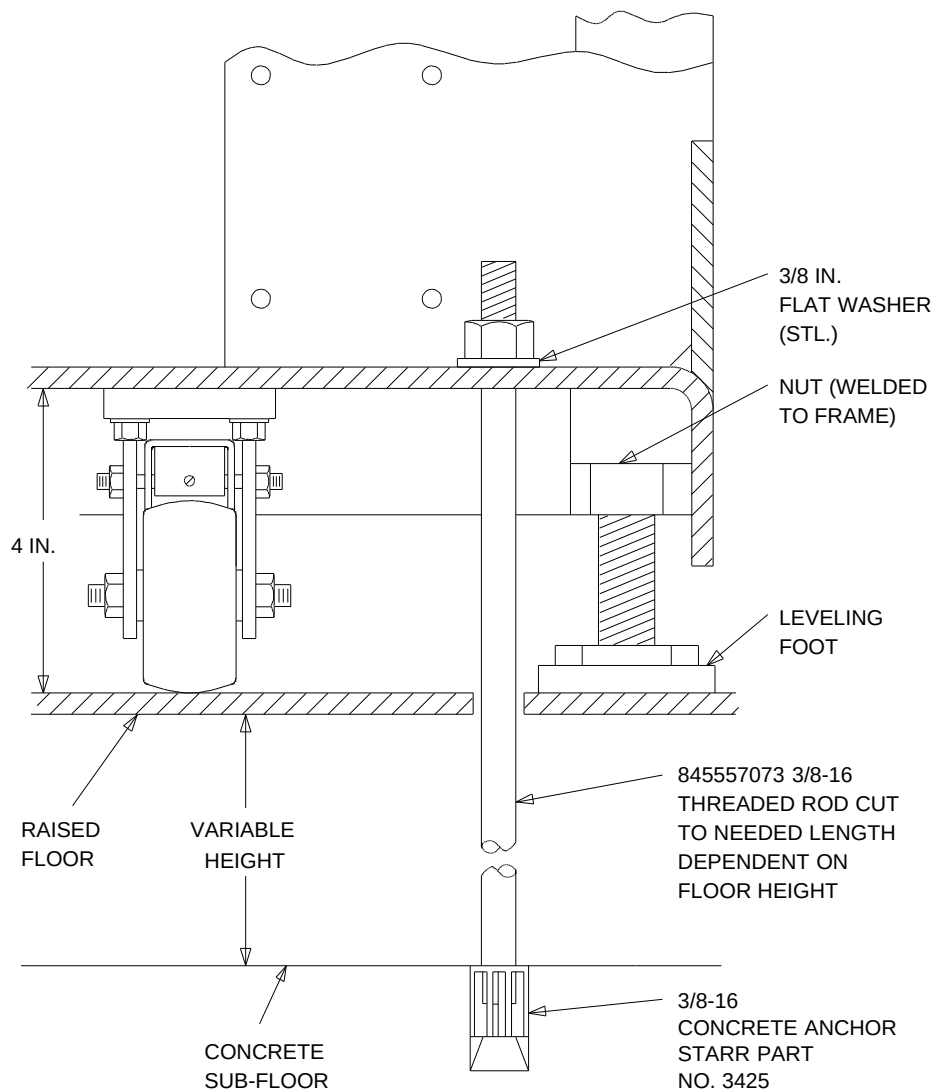


Figure 3-29. Earthquake Mounting—Computer Raised Floor

Complete Cabinet Installation—Earthquake Protection not Provided

22. Adjust and lock the four stabilizing bolts to level the cabinet to keep it from moving.
23. At the bottom of the cabinet, install hole plugs (provided with cabinet) in the holes previously occupied by the four carriage bolts.
24. Install auxiliary equipment in cabinet as specified in CSD.

The cabinet allows for carrier, rack (23 inches wide), or panel mounting of hardware.

The following equipment (next figure) is furnished with the cabinet:

- Fuse panel—Distributes -48 volt DC power to fused cabinet circuits.
- Power receptacle strip—Provides switched and nonswitched 120-volt AC receptacles.
- DC Connector Block—Required when the auxiliary cabinet is powered by an external DC source.
- AC to DC Power Supply—Converts AC power provided by the AC power strip switched outlet to the required DC.

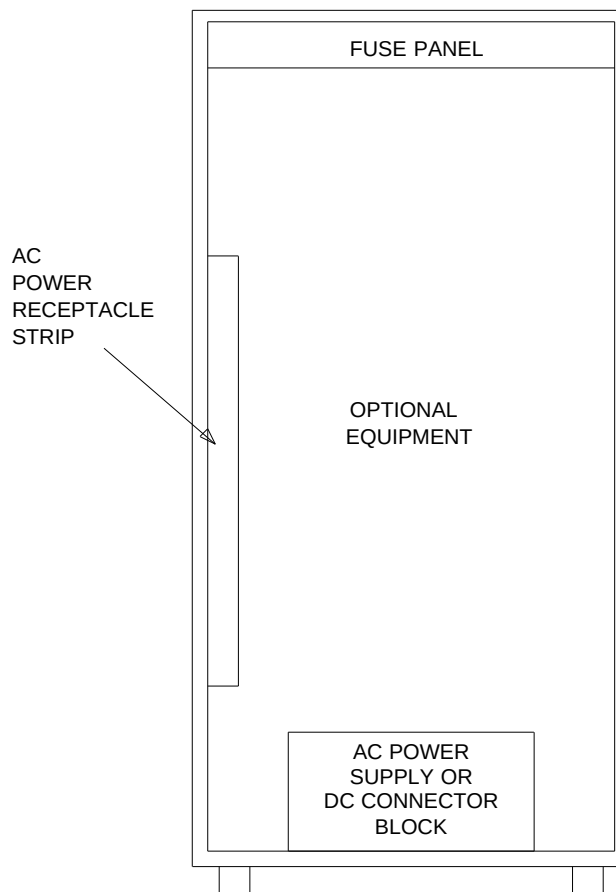


Figure 3-30. Auxiliary Cabinet

Install Equipment in Cabinet

The following optional equipment can be mounted in the cabinet:

- **PagePac³ Paging System**—Provides an amplifier system for Loudspeaker Paging feature. Three models are available:
 - **PagePac 20**—Provides a single paging zone with an input source for music. The unit can also be modified to provide 3, 9, or 39 paging zones.
 - **PagePac VS**—Provides 1 to 3 paging zones. It also permits all zone paging. Two optional feature cards are available to provide music or talk-back over paging.
 - **PagePac 50/100/200**—Provides 1 to 24 paging zones. Optional add-ons are available to provide music or talk-back over paging. It is also possible to use a customer-supplied music source.

All PagePac models require 120-volt AC power.

- Use the following PEC codes to access the indicated variations of the AT&T model 15A announcement system.

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

The BLD1 circuit pack provides 8 channels with up to 20 seconds of recording time on each channel. The BLD2 circuit pack provides 8 channels with up to 40 seconds of recording time on each channel. Each chassis can be populated with any combination of two BLD circuit packs.

(The 15A system is FCC registered and does not require a voice coupler.)

- **Audichron⁴ H9040 Wake-Up Announcement System**—Provides automatic wake-up announcements for use with the hospitality features. This unit requires a -48 volt DC power source rated at 1.2 amperes.
- **909 Universal Coupler**—Used between accessory equipment and the PBX to protect the PBX and the public network against longitudinal imbalance and hazardous voltages. It suppresses out-of-band frequencies, and it limits the power output to the PBX from the accessories. When used in loudspeaker paging applications, the UC prevents annoying clicks at the beginning and ending of pages and provides control circuitry to allow communication between the PBX and accessories.

3. Registered trademark of Harris Corporation, Dracon Division

4. Registered trademark of Audichron Company

- 278A Adapter—Provided an interface for customer-provided equipment for the Loudspeaker Paging feature. The 278A adapter required a -24 volt DC power source. However, it could be modified for -48 volt DC power with the addition of a D-181321, kit of parts. The 278A has been replaced by the 909 Universal Coupler.
- 89A Control Unit—Provided an interface to customer-provided equipment for the Loudspeaker Paging feature. A 2012D transformer was required to power the 89A control unit. The 89A has been replaced by the 909 Universal Coupler.
- 36A Voice Coupler—Provided an interface and system protection for unregistered customer-provided equipment for Intercept Treatment—Recorded Announcement, Music-on-Hold, and Recorded Telephone Dictation Access features. A 2012D transformer was required to power the 36A voice coupler. The 36A has been replaced by the 909 Universal Coupler.
- 3270C Data Module—Provides the interface (protocol conversion) for a cluster controller connected to a host computer. One data module can contain up to eight ports. The data module requires 120-volt AC power.
- 71A Multiple Data Mounting—Provides mounting space and power for up to eight processor data modules (PDMs), modular processor data modules (MPDMs), trunk data modules, or modular trunk data modules (MTDMs). The 71A data mounting requires 120-volt AC power.
- Fan Assembly—Required for cooling when two or more 71A data mountings are provided. The fan assembly requires 120-volt AC power.
- Information System Network (ISN) concentrator and Asynchronous Data Unit (ADU) Z3A3—Provides an interface to the ISN.
- 551-Type Channel Service Unit (CSU)—Provides an interface between DS1 tie trunks and the Digital Service Interface (DSI). One is required for each T1 carrier link.

Install External Synchronization Stratum 3 Clock Cabinet

To install the cabinet, do the following:

Unpack and Inspect for Damage

1. Check the status of the SHOCKWATCH and/or TILTWATCH indicators on the cardboard container. The SHOCKWATCH and TILTWATCH indicators are normally white. If the container has been jarred or tilted beyond specifications, the indicators will be red, indicating potential damage.
2. Remove the cabinet from the cardboard container.
3. Remove all cardboard, tape, and plastic.
4. Open and remove front door and rear screw-on panels from cabinet.
5. Remove all packing material from inside cabinet.
6. Inspect cabinet for any damage caused during shipping. Report any damages per local instructions.

Position Cabinet

7. Position cabinet into designated location. See Note.



NOTE:

Check location of the AC power receptacle. The receptacle must be on a separately fused circuit that is not controlled by a wall switch. It must be located within 10 feet of the cabinet and should be located outside the cross-connect field area.

Add Earthquake Protection (If Provided)

8. If earthquake protection is required on concrete floor:
 - a. Mark the locations where the four holes should be drilled to bolt the cabinet to the floor.
 - b. Using the supplied anchor bits, drill a hole at each of the locations marked in Step a. Stop drilling when the mark on the side of the bit reaches the floor level.
 - c. Insert a plug into the hole.
 - d. Drill the anchor into the hole until the mark on the bit reaches floor level again. Snap the top of the anchor bit off. Repeat for the other holes.
 - e. Place the cabinet in the designated position and bolt to the floor.

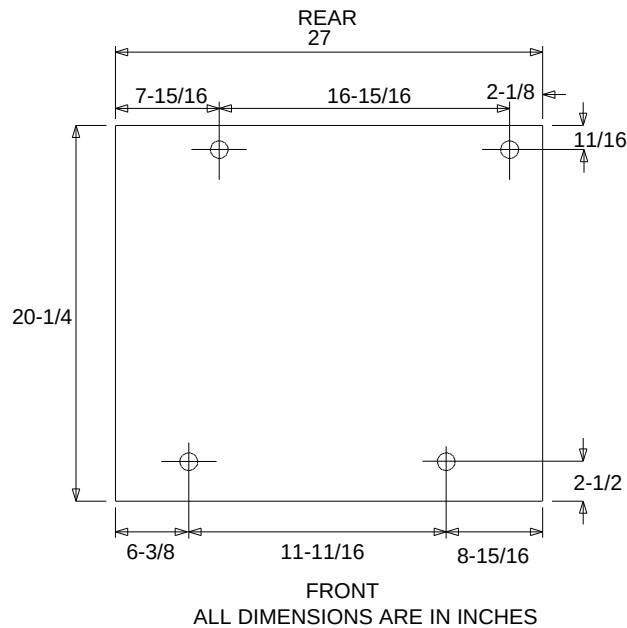


Figure 3-31. Anchor Hole Location

9. If earthquake protection is required on a raised computer floor over a concrete subfloor:
 - a. Mark the locations where the four holes should be drilled to bolt the cabinet to the floor.
 - b. See Caution. Drill four holes 5/8-inch in diameter through the floor panels marked in Step a.



CAUTION:

Take care while drilling the holes through the raised floor that the drill bit doesn't penetrate any cables beneath the raised floor that would cause damage to the cable or injury to the installer.

- c. Insert a long punch through the holes drilled in Step b and mark the concrete floor beneath the raised floor.
- d. Remove the raised floor panel(s) in which the holes were drilled in Step b.

- e. Using the supplied anchor bits, drill a hole at each of the locations marked in Step c. Stop drilling when the mark on the side of the bit reaches the floor level.
- f. Insert a plug into the hole.
- g. Drill the anchor into the hole until the mark on the bit reaches floor level again. Snap the top of the anchor bit off. Repeat for the other holes.
- h. Replace the floor panel(s) removed in Step d.
- i. Fasten the cabinet to the floor (see the next figure).

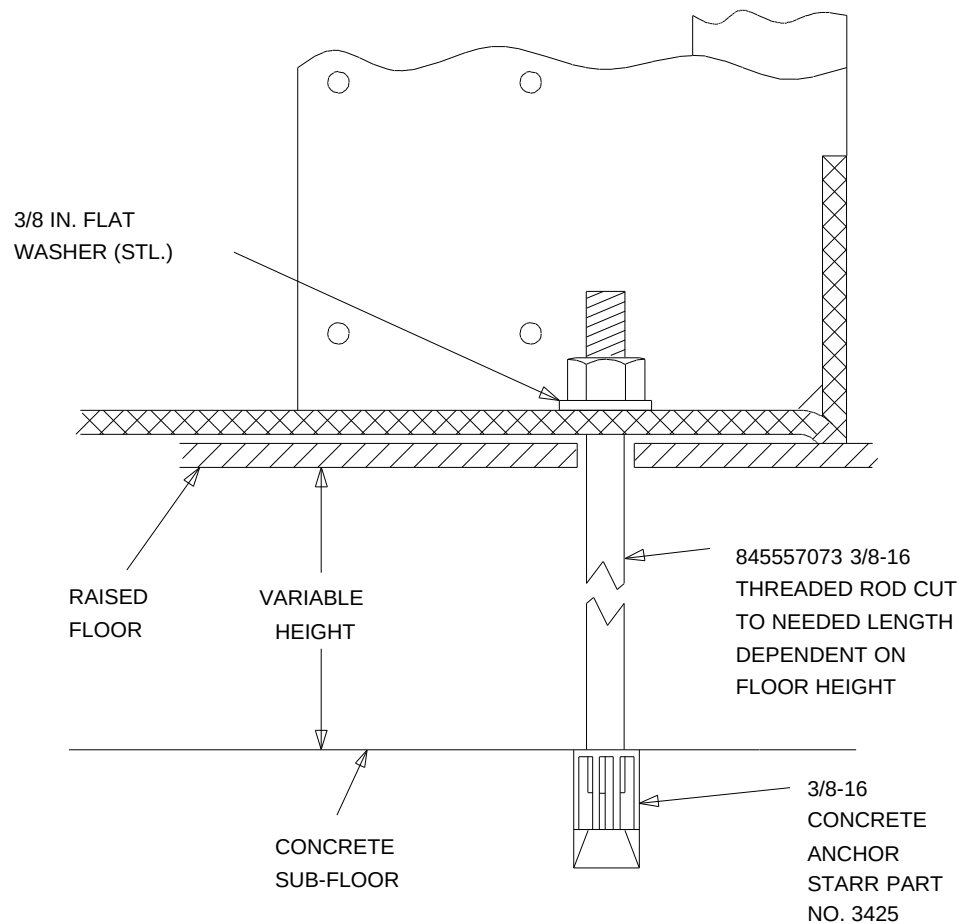


Figure 3-32. Earthquake Mounting—Computer Raised Floor

Install LINEAGE ECS Power System (DC-Powered Switch)

The Evolutionary Control System (ECS) provides control, alarm, power distribution, metering, rectifiers, and connect/disconnect capabilities for the -48 volt DC battery plant. It is a universal-style cabinet and fits in a standard cabinet line-up. The DC power cabinet can weigh up to 950 pounds (see Caution) depending on how it is equipped.



CAUTION:

The weight of the DC Power Cabinet may exceed normal floor loading limits. Consult with customer and local engineering.

The following tools and test equipment are required for battery plant installation and testing.

- Equipment to handle shipping containers, remove cabinet from shipping containers, and erect cabinet into final position. The required minimum lifting capacity is 475 lbs.
- Common electrician's hand tools.
- Proper crimping tools and dies for connectors used.
- Common mechanic's hand tools.
- A DMM (digital multimeter) with at least 0.95% accuracy on the dc scale (Fluke 8060A or equivalent).
- A DC dummy load bank rated for 75 amperes minimum at 60 VDC.
- A 3/16 inch allen wrench key (supplied with cabinet).

The DC battery cabinet contains maintenance-free batteries of the required amperage-hour configuration. The batteries are mounted in modular racks that fit inside a multiple-tier cabinet. The DC battery cabinet is designed to fit in a standard switch cabinet line-up. It is delivered with the batteries and intercell connectors in place. The cabinet can consist of from 1 to 4 tiers and a 4-tier cabinet can weigh up to 2600 pounds. See Caution. See Danger.



CAUTION:

The weight of the DC Power Cabinet may exceed normal floor loading limits. Consult with customer and local engineering.



DANGER:

Use appropriate equipment to ensure personnel safety and equipment protection during handling of crates and uncrated equipment. Move crated equipment to an area with adequate space and tools for unpacking and handling.

For a detailed description of the -48 VDC power plant, including DC power and battery cabinet installation and test procedures, refer to *LINEAGE 2000 ECS Power System Battery Plant Product Manual*, 167-790-020 (supplied with the product).

Install Battery and Power Cabinets

The DC battery and power cabinets are shipped in cardboard containers. The cabinets are fastened to wood/Styrofoam pallets by four carriage bolts. The cardboard containers are strapped to the pallets by two metal bands.

To install the cabinets, proceed as follows:

Unpack and Inspect for Damage

1. Check the status of the SHOCKWATCH and/or TILTWATCH indicators on the cardboard containers. The SHOCKWATCH and TILTWATCH indicators are normally white. If the containers have been jarred or tilted beyond specifications, the indicators will be red, indicating potential damage.
2. See Danger. Cut and remove metal bands.



DANGER:

Take care to avoid injury while cutting and removing bands.

3. See Caution. Cut the tape holding the cardboard container together.



CAUTION:

Deep knife penetration may damage the cabinet.

4. Remove all cardboard, tape, and plastic.
5. Open the cabinet doors.
6. Remove all packing material from inside each cabinet.
7. Inspect each cabinet for any damage caused during shipping. Report any damages per local instructions.
8. Use an adjustable wrench to remove the carriage bolt nuts located at each bottom corner of the cabinets.
9. Slide cabinets off the pallets and onto the floor.

Position Cabinets

10. Slide the DC power cabinet into position at designated location.
11. Slide the DC power cabinet into position beside the DC battery cabinet.



NOTE:

Instructions for all of the grounding connections are described in the “Grounding” section of the next chapter.

Install DC Power Distribution Unit

One J58890CG DC Power Distribution Unit will provide DC power for four single-carrier cabinets.

Use the following instructions to install and connect the DC Power Distribution Unit.

1. Mount the DC Power Distribution Unit to the wall using four No. 10 wood screws (see Figure 3-32). The unit should be mounted slightly to the right of the cabinets and a minimum of 12 inches from the floor.
2. At the DC Power Cabinet, connect a 1 AWG cable to the 75 AMP circuit breaker. Route the cable to the DC Power Distribution Unit. Connect the cable to the -48V fuse panel in the DC Power Distribution Unit. Dress the cables neatly and clamp to the wall.
3. At the DC Power Cabinet, connect a 1 AWG cable to the **DISCH GRD** bar. Route the cable to the DC Power Distribution Unit. Connect the cable to the -48V RTN terminal block in the DC Power Distribution Unit. Dress the cables neatly and clamp to the wall.
4. Repeat Steps 1 through 3 for each network.



NOTE:

Instructions for all of the grounding connections are described in the “Grounding” section of the next chapter.

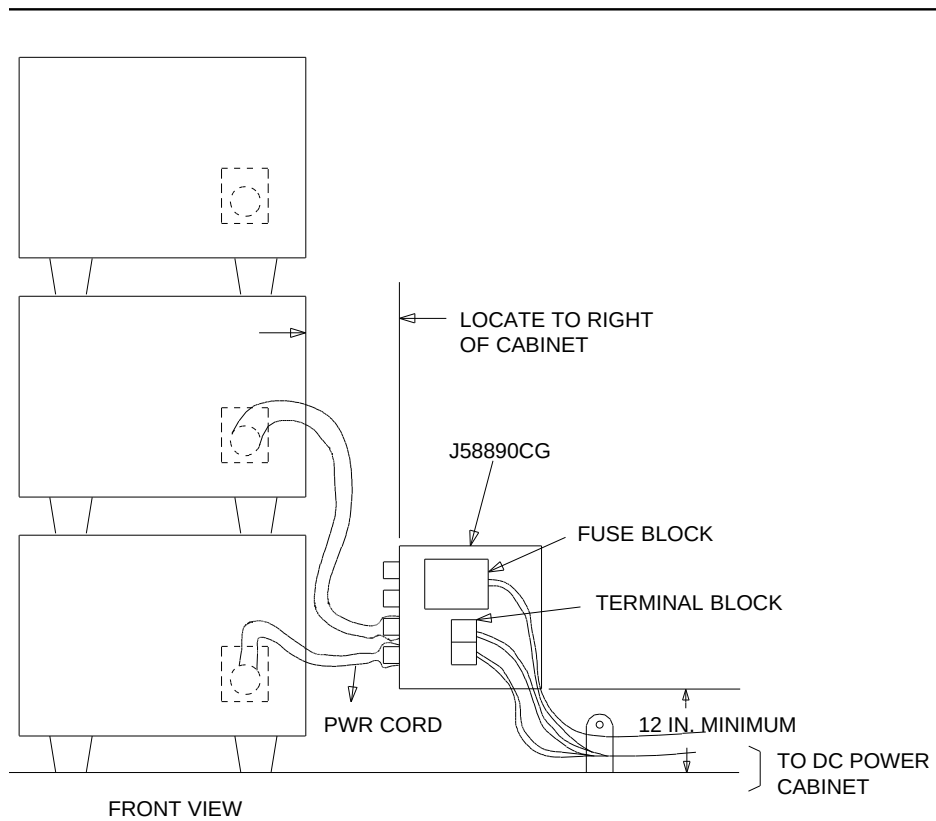


Figure 3-33. J58890CG DC Power Distribution Unit Mounting

Connect Power

4

Connect AC Power to Multi-Carrier Cabinets

The following procedures apply to the AC-powered PPN and EPN cabinets.

The following figure shows a typical AC power and grounding layout. The switch may be powered by a 120 volt, a 220 volt, a 208 volt, or a 240 volt AC source depending on which is required for the particular installation. The power circuit must be dedicated to the switch. It must not be shared with other equipment, and **must not be** controlled by a wall switch. The AC receptacle should not be located under the cross-connect field. (The coupled bonding connector shown in the illustration is described later in this chapter.)

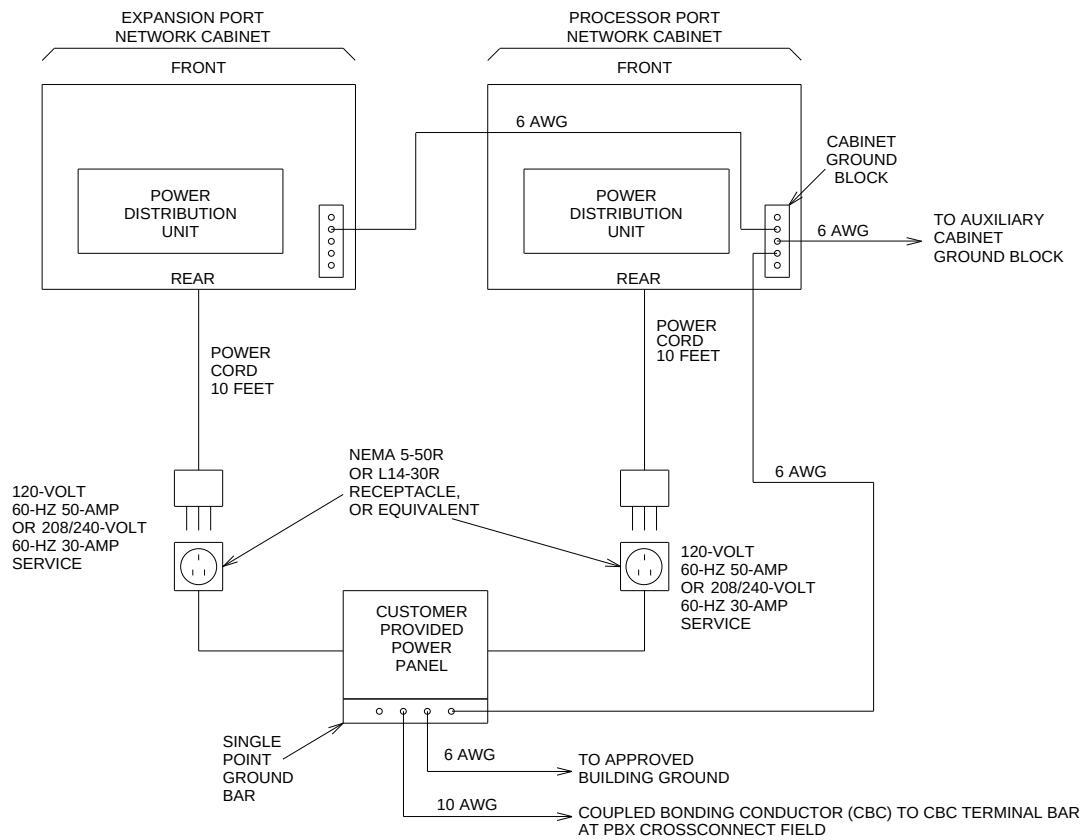


Figure 4-1. Typical AC Power and Grounding Arrangement for a Multi-Carrier Cabinet

It is necessary to note the difference between 208 volt and the other kinds of AC power. The most common power arrangements currently in use are single-phase 3-wire and three-phase 4-wire wye systems. Both arrangements are illustrated below. On a three-phase 4-wire system, 208 volt can be obtained from any two phases of the three phase system. Either method is satisfactory as long as 208 volt three-phase or 220 to 240 volt single-phase 50 to 60 Hz AC, centered around a neutral connection, is furnished at the correct amperage capacity and meets the national and local electrical codes.

The type of power required by a multi-carrier cabinet is given on its rear door.
The type of power required by a single-carrier cabinet is given on its rear cover.



CAUTION:

Certain older DEFINITY systems used 208 volt single-phase power. These are not wired as shown in the following illustrations. Be sure to use the installation documents that accompanied these systems when evaluating their power arrangements.

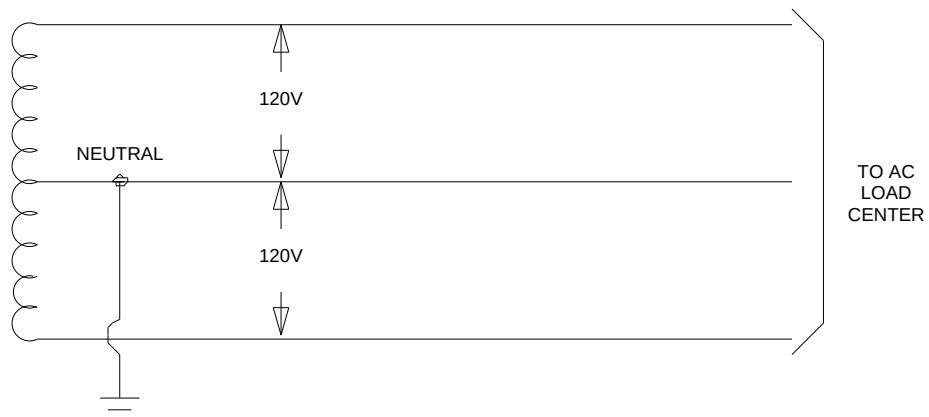


Figure 4-2. Single-Phase 3-Wire (220 to 240 VAC) System

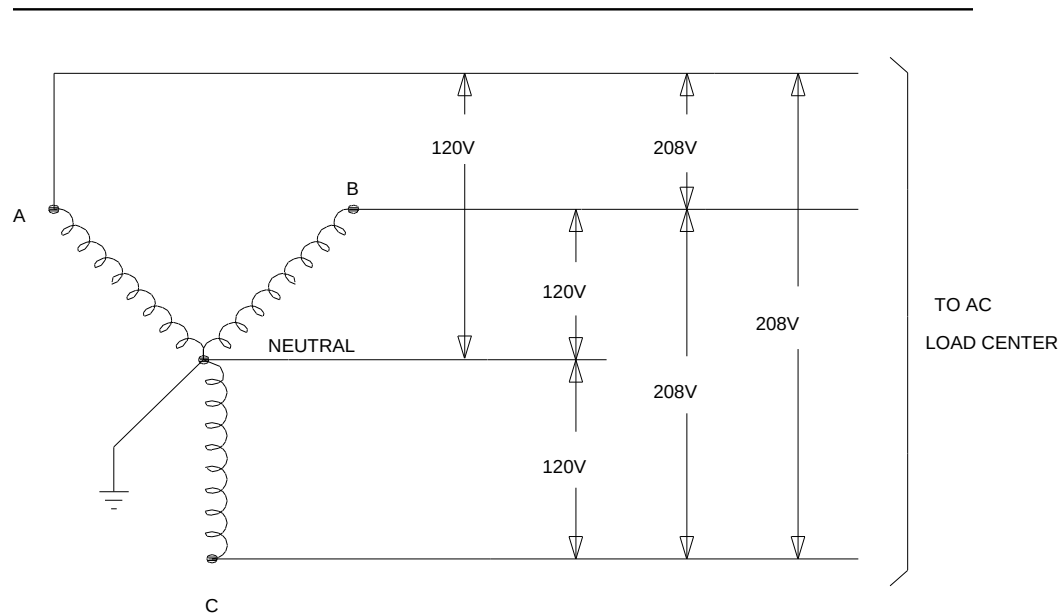


Figure 4-3. Three-Phase 4-Wire Wye 208 VAC System

Connect to 50Hz Power through a Customer-Provided Transformer

International 50Hz commercial power is often supplied without a centered neutral connection. In situations like this, the power must be transformed to work with the DEFINITY systems. Use a transformer with a single-phase tapped primary and a center-tapped secondary to provide compatible power. The following illustration shows an example of a properly wired transformer.

Transformers of several capacities are available. The size of transformer specified for your system depends on the current requirements of the system. The table below shows a selection of transformers available for use with multi-cabinet systems. (The **Square-D** part number 3S67F transformer, a 3KVA model, is adequate to power one typical cabinet.)

Capacity	Square-D Part No.
3.0 KVA	3S67F
5.0 KVA	5S67F
7.5 KVA	7S67F
10.0 KVA	10S67F
15.0 KVA	15S67H
25.0 KVA	25S67H

Grounding is relatively simple for an AC-powered switch. Basically, the cabinets are connected to each other. Then, a single ground wire is connected from the PPN to the single-point ground terminal (SPGT) bar at the AC load center (or

optional AC protector cabinet). The SPGT bar is connected to your approved ground by 6 AWG wire.

 CAUTION:

Grounding of the system shall comply with the general rules for grounding contained in Article 250 of the National Electrical Code, NFPA 70. See Appendix G for a description of “approved ground.”

Coupled Bonding Conductor

This is a conductor that is connected to the single-point-ground-terminal bar and run adjacent to pairs in an associated 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 is tie-wrapped to the inside wiring cable and terminated at the coupled-bonding-conductor-terminal bar at the PBX cross-connect field (see Figure 4-23).

 DANGER:

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.

All approved grounds must be bonded together to form a single grounding electrode system.

To connect ground, do the following.

1. At lower right rear of PPN cabinet, connect a 6 AWG ground wire to the cabinet ground bar (Figure 4-1). See the accompanying note.

 NOTE:

A 1/8-inch allen wrench is required to loosen and tighten the bolts that secure the ground wire to the ground bar.

2. Run the ground wire to the single-point-ground-terminal bar at the AC load center (shown as “power panel” in Figure 4-1).
3. At the first EPN cabinet (if provided), connect a 6 AWG ground wire to the cabinet ground bar (Figure 4-1).
4. Run the ground wire to the PPN cabinet, and connect it to the PPN cabinet ground bar (Figure 4-1).

 NOTE:

If EPN cabinet is located remote from the PPN cabinet (in a separate room or building), run the 6 AWG EPN cabinet ground wire to an approved ground.

5. At the second EPN cabinet (if provided), connect a 6 AWG ground wire to the cabinet ground bar (Figure 4-1).
6. Run the ground wire to the first EPN cabinet, and connect it to the EPN cabinet ground bar (Figure 4-1).
7. At the AC load center, connect a 10 AWG wire single-point-ground-terminal bar. This ground wire (coupled bonding conductor) will later be tie wrapped to the trunk cables and connected to the coupled bonding conductor ground bar at the cross-connect field and finally terminated at the customer-provided load center (Figure 4-1).

Connect Battery Leads

The battery holdover unit described under this heading is optional. It is not ordinarily supplied if the cabinet is powered by an uninterruptible power supply.

Multi-Carrier cabinets containing an optional battery holdover unit are shipped with two of the six battery leads disconnected to prevent the batteries from discharging. To connect the batteries, do the following:

1. Verify that the main circuit breaker is in the off position (see the following figure).
2. Remove the battery cover.
3. Connect the battery leads.
4. Replace the battery cover.

Check Commercial Power

Before powering up system, check the AC power.

1. Set KS-20599, list 4 digital voltmeter (VM), or equivalent, to AC voltage range scale greater than 250 VAC.
2. See Danger. Measure voltage at receptacle (Figure 4-6).



DANGER:

High voltage present.

3. Is switch being powered by a 120 volt, a 208 volt, or a 240 volt source? If a 120 volt source, verify that meter reads 104 to 129VAC. If your source is 208 or 220/240VAC, verify that the meter reads 104 to 129VAC between neutral and either hot line. If the power source is not within tolerance, correct the problem, then recheck the power levels.

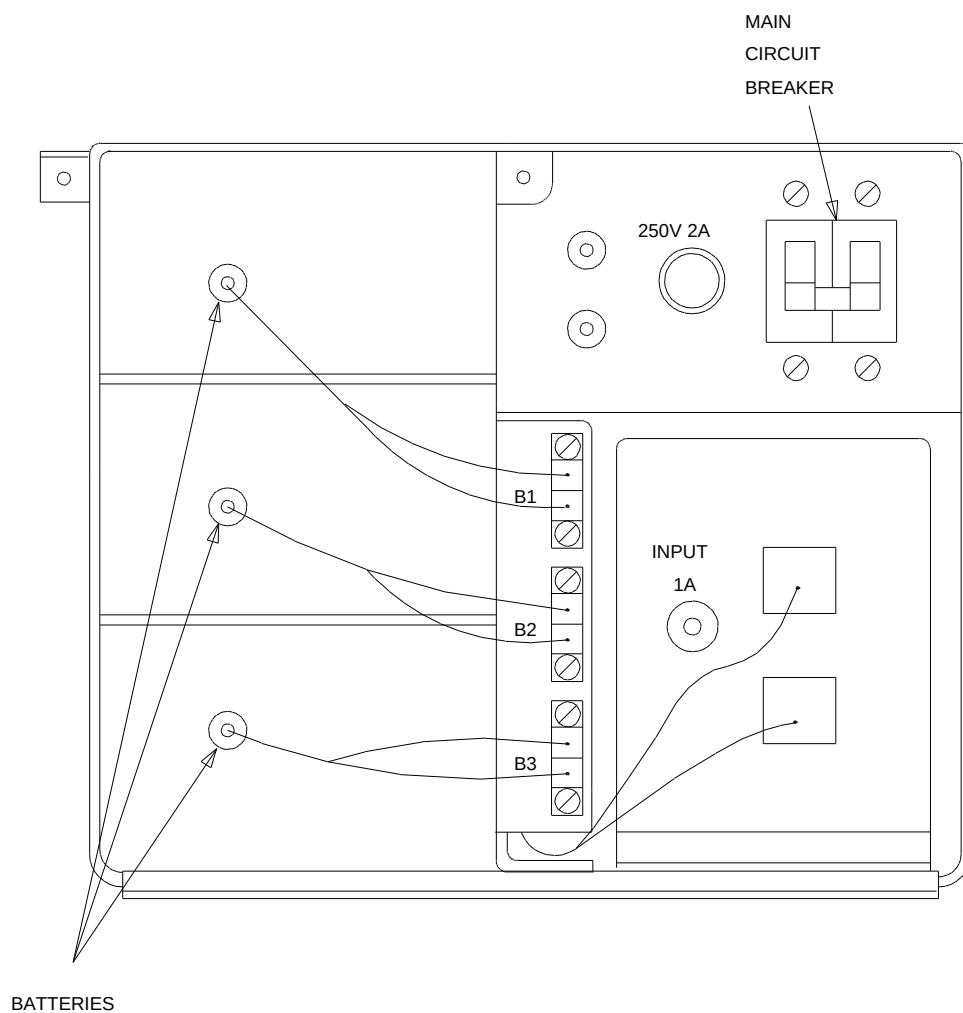


Figure 4-5. Optional Multi-Carrier Cabinet Power Distribution Unit, Front View with Battery Cover Removed

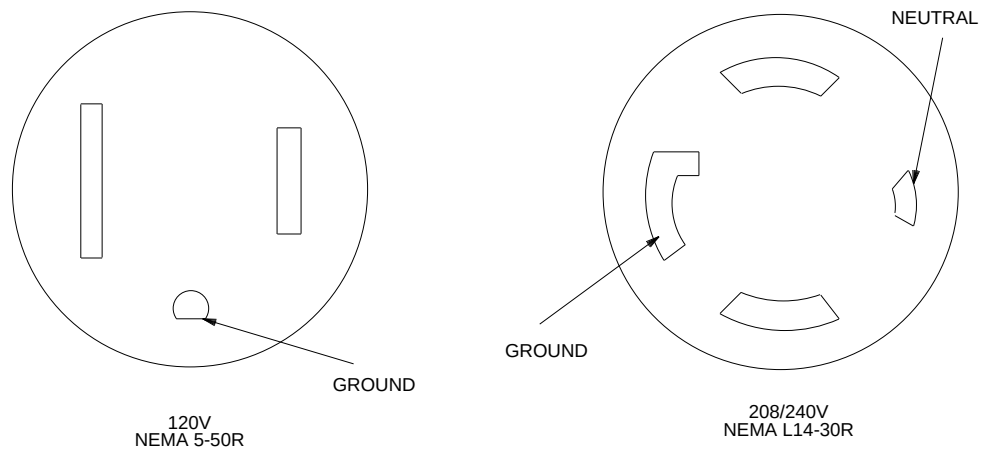


Figure 4-6. AC Receptacle

Connect AC Power

The main circuit breaker on a multi-carrier cabinet is located on the front of the AC/DC power distribution unit (Figure 4-5).

1. Verify that the circuit breakers are in the **OFF** position.
2. Connect cabinet AC line cords to AC power receptacles (Figure 4-1).

Connect DC Power to Multi-Carrier Cabinets

Table 4-2 lists the input parameters required for multi-carrier cabinets powered by a -48VDC battery plant.

Table 4-2. -48 VDC Input Power Requirements

Parameter	Requirements
Static Voltage	-48 VDC nominal, -42.5 VDC minimum, -52.5 VDC maximum (measured at input to System cabinet) under normal operating conditions
Dynamic Voltage	Transient change in voltage— +/- 5% of steady state voltage Allowed transient duration—Up to 200 milliseconds
AC Ripple Voltage	Maximum wideband AC ripple— 450 mvpp in the 3 kHz to 20 MHz band.
Low Voltage Disconnect	Automatic disconnect—Occurs when input voltage becomes less than -42.5 VDC (control provided with battery plant).
Overvoltage Protection	Input voltage at switching cabinets shall not exceed -52.5 VDC.
Voltage Drop	Maximum drop—Must not exceed 0.5 VDC one way on feeder cables between the power board and the System cabinet. Feeders must be UL approved and CSA certified. Recommended -48 VDC feeder cable— <i>Royal Electric #X4905 or equivalent.</i> No. 1 AWG is required for distances up to 50 feet. Cable resistance must be equal to or less than 0.1290 ohms per 1000 feet.

Continued next page

Table 4-2. -48 VDC Input Power Requirements *Continued*

Parameter	Requirements
Current Draw	The battery plant rectifiers must be capable of providing current for the System including that required for System holdover and for charging the batteries. In addition, this may include DC current required for an inverter that provides AC power to peripheral equipment if it is installed and for future growth.
Circuit Breaker	A UL listed and CSA certified circuit breaker must be provided at the battery plant power board for each System cabinet feeder. The recommended circuit breakers are 75 ampere Airpax UPL-1-1REC2-52-753 or Heinemann AM1-B2-A-75-2.
Redundancy	Redundancy of the battery chargers/rectifiers should be considered. This would also provide the additional current necessary to recharge the batteries after being fully discharged.
Electrical Noise	Voice band noise from the battery plant to the System must be less than 32 dBnC.
Grounding	A single point ground must be maintained. A ground conductor must be installed from the battery plant GROUND DISCHARGE BAR to the closest "Approved Ground" via the shortest and most direct route as required by the NEC. The gauge must be no smaller than the largest conductor in the System and larger than 6 AWG. Grounding between the system cabinet and the battery plant should be connected using the procedures given later in this Chapter.
Lightning Protection	There must be adequate lightning protection in the battery plant to insure that the System will not be damaged.

The following illustration shows a typical power and grounding layout for a DC-powered multi-carrier cabinet. The size of the wire required for the -48 volt DC and -48 volt return must be engineered to ensure ***the -48 volt DC supplied by the battery plant to the cabinets will be maintained between -42.5 and -52.5 volt DC at all times*** to ensure proper operation and to prevent hardware damage. This procedure applies to both PPN and EPN cabinets.

The illustration also shows a power and grounding layout for a mixed AC/DC-powered multi-carrier cabinet configuration in the same equipment room with the PPN being DC powered and the EPN being AC powered. If a second EPN is part of the system, the same basic connections depicted below should be used.

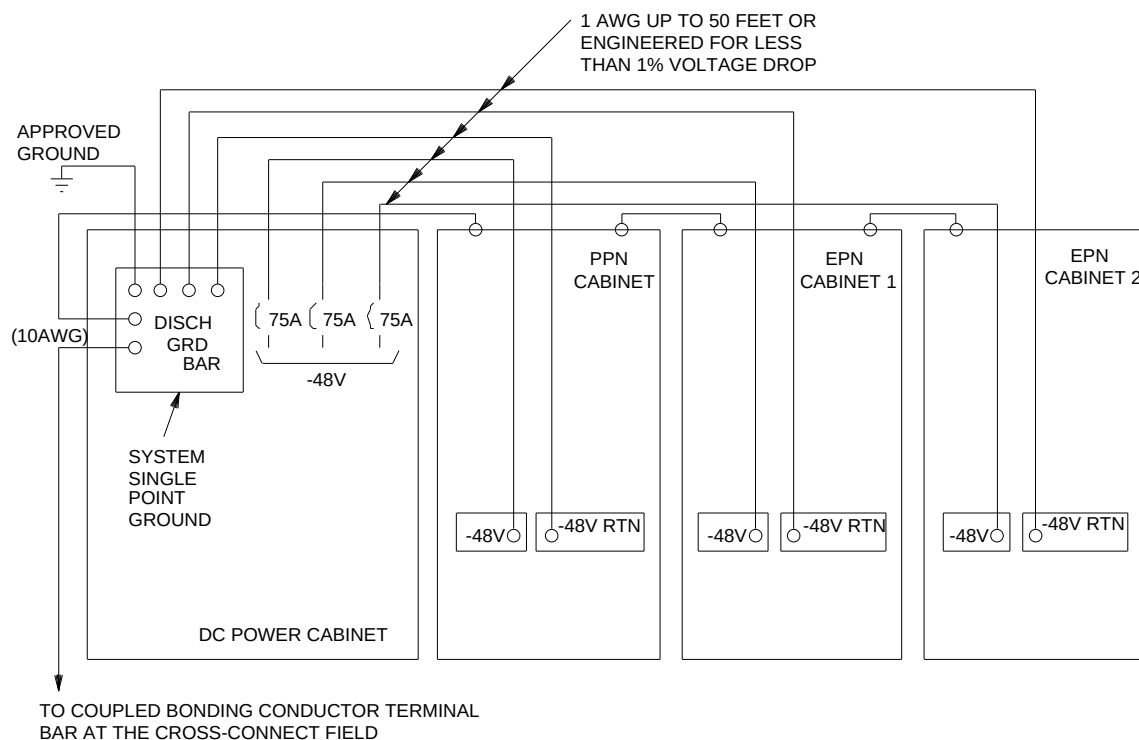


Figure 4-7. Typical Power and Grounding Arrangement for a DC-Powered Multi-Carrier Cabinet

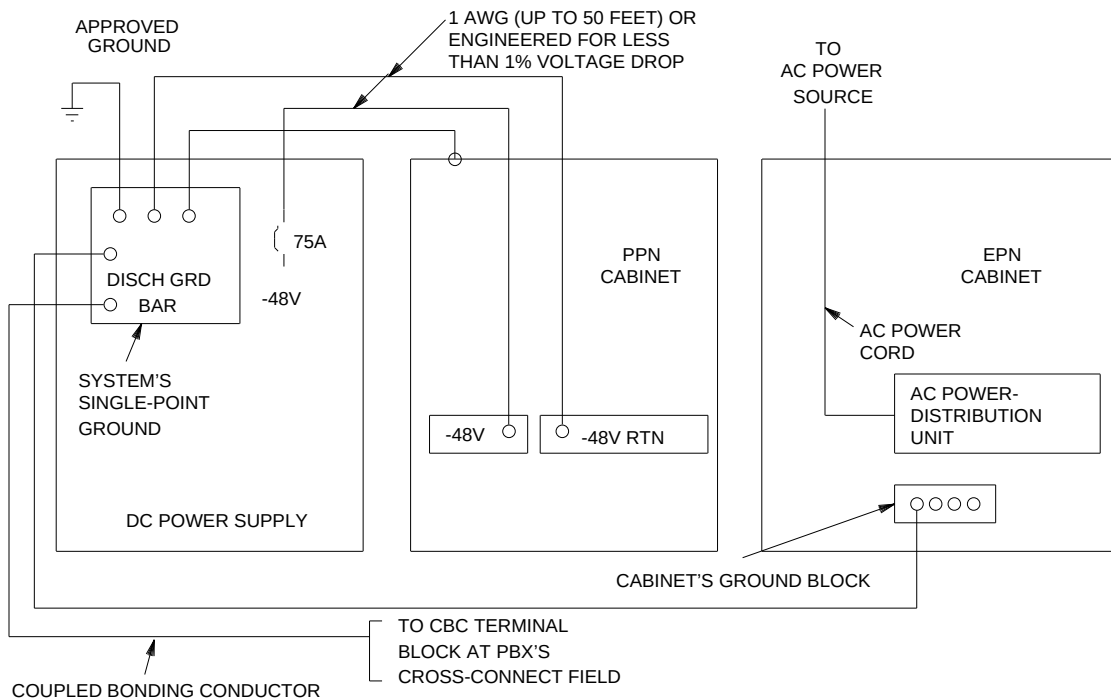


Figure 4-8. Typical Power and Grounding Arrangement for a Mixed AC/DC-Powered Multi-Carrier Cabinet Configuration

Connect Grounding

The grounding scheme for the DC-powered switch is more complex than that of an AC-powered switch.



CAUTION:

Grounding of the system shall comply with the general rules for grounding contained in Article 250 of the National Electrical Code, NFPA 70. See Appendix G for a description of "approved ground."

COUPLED BONDING CONDUCTOR

This is a conductor that is connected to the single-point-ground-terminal bar and run adjacent to pairs in an associated 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 is tie-wrapped to the inside wiring cable and terminated at the coupled-bonding-conductor-terminal bar at the PBX cross-connect field.

Connect DC Battery and Power Cabinet Frame Grounds

1. Measure and cut a piece of 6 AWG wire (comcode 846 110 971) long enough to reach between the **GROUND CONNECTION** terminal in the DC battery cabinet and the **DISCH GRD** bar in the DC power cabinet.
2. Crimp terminal lugs on each end of the wire.



NOTE:

Terminal lugs are furnished as part of D-181895, Kit of Parts.

3. At DC power cabinet, connect wire to the **DISCH GRD** bar.
4. Route the wire through one of the holes in the side of the cabinets and terminate it on the **GROUND CONNECTION** terminal in the DC battery cabinet (Figure 4-20).

Connect Power Plant Ground

1. At the DC power cabinet, connect a 1 AWG ground wire to the **DISCH GRD** bar.
2. Route the ground wire out of the cabinet and terminate it on the approved ground as shown below. The approved ground must be identified with an AT&T supplied grounding tag (FORM 15657NR or equivalent).

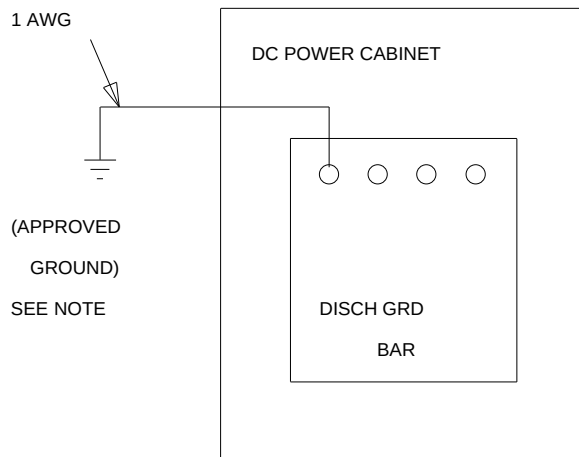


Figure 4-9. Power Plant Grounding

Connect AC Power to DC Power Cabinet

1. Have electrician connect AC power leads to 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.
2. Ensure that the associated circuit breakers at the AC power panel are in the **OFF** position.

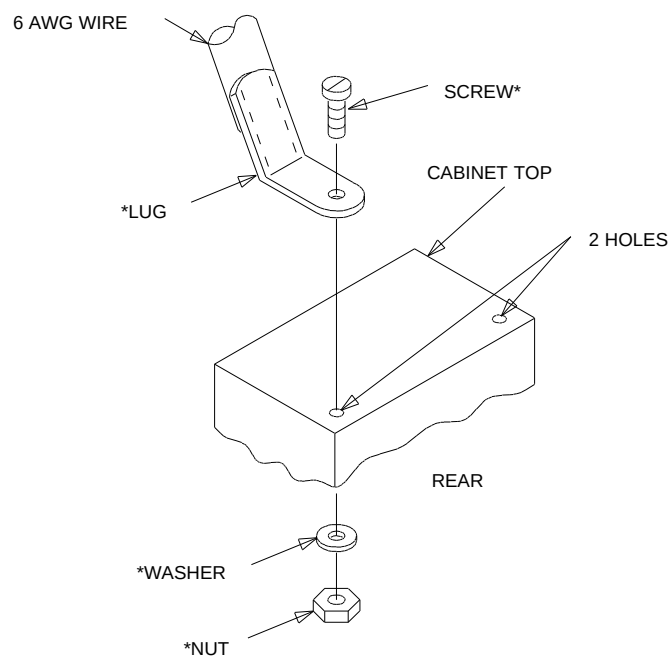
Connect System Cabinet Ground Wires

There are two approved methods of grounding the system cabinets. Either of the methods is sufficient. The element common to both methods is that the cabinets that make up the system are wired in a series from the most distant cabinet to the DC power cabinet. You can either wire the tops of the cabinets together or wire the cabinet's ground blocks together. Determine which method the system has been engineered for and then follow the appropriate instructions below.

Connect Top-Mounted Cabinet Grounds

1. Measure and cut a piece of 6 AWG wire long enough to reach from the **DISCH GRD** bar in the DC power cabinet to the top rear corner of the PPN cabinet as shown in the next illustrations.
2. Crimp terminal lugs on each end of the wire.

 **NOTE:**
Terminal lugs are furnished as part of D-181895, Kit of Parts.
3. At DC power cabinet, connect wire to the **DISCH GRD** bar. Route wire out of DC power cabinet and up to the top rear corner of the PPN cabinet.
4. On top of PPN cabinet, terminate the 6 AWG ground wire as shown in the next illustration.



* INCLUDED IN D-181895, KIT OF PARTS
(COMCODE 105434559)

Figure 4-10. Cabinet Frame Ground Connections

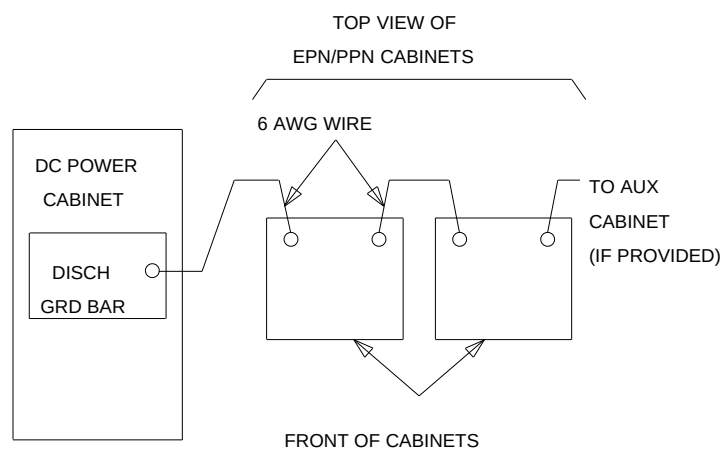


Figure 4-11. Frame Ground Attachment

5. If the switch is not equipped with an EPN but is equipped with an auxiliary cabinet, proceed to Step 15. If the switch is not equipped with EPN or aux cabinets, the cabinets are grounded and the job is done.
6. If the switch is equipped with an EPN cabinet, cut a piece of 6 AWG wire long enough to reach between the PPN and EPN cabinets (see the previous figure).
7. Crimp terminal lugs on each end of the wire.
8. Connect wire at top rear corner of PPN cabinet (see the previous figures).
9. Terminate other end of wire at top rear corner of EPN cabinet.
10. If the switch is equipped with a second EPN, proceed to Step 11, if the switch does not have a second EPN but does have an auxiliary cabinet, proceed to step 15.
11. If the switch does not have a second EPN or a auxiliary cabinet, the cabinets are grounded and the job is done.
12. If the switch is equipped with a second EPN, cut a piece of 6 AWG wire long enough to reach between the PPN and EPN cabinet.
13. Crimp terminal lugs on each end of the wire.
14. Connect the wire at the top rear corner of the first EPN cabinet.
15. Terminate the other end of the wire at the top rear corner of second EPN cabinet (see the previous figure).
16. If the switch is equipped with an aux cabinet, cut a piece of 6 AWG wire long enough to reach between the EPN and aux cabinets.
17. Crimp terminal lugs on each end of the wire.
18. Connect wire at top rear corner of EPN cabinet (per the previous figures).
19. Terminate other end of wire at top rear corner of aux cabinet.

Connect to Cabinet's Ground Blocks

1. At the bottom rear of the PPN cabinet (shown in the next figure), use an allen wrench to connect a 6 AWG wire to the cabinet ground block.
2. Route the wire out of the cabinet and into the DC power cabinet.
3. At the DC power cabinet, terminate the wire on the **DISCH GRD** bar.
4. If the switch is equipped with EPN cabinets or AUX cabinets, wire from the PPN's ground block to the next cabinet's ground block.
5. Continue to wire serially from ground block to ground block until all of the cabinets are connected through a series of ground blocks to the discharge ground bar at the DC power cabinet.

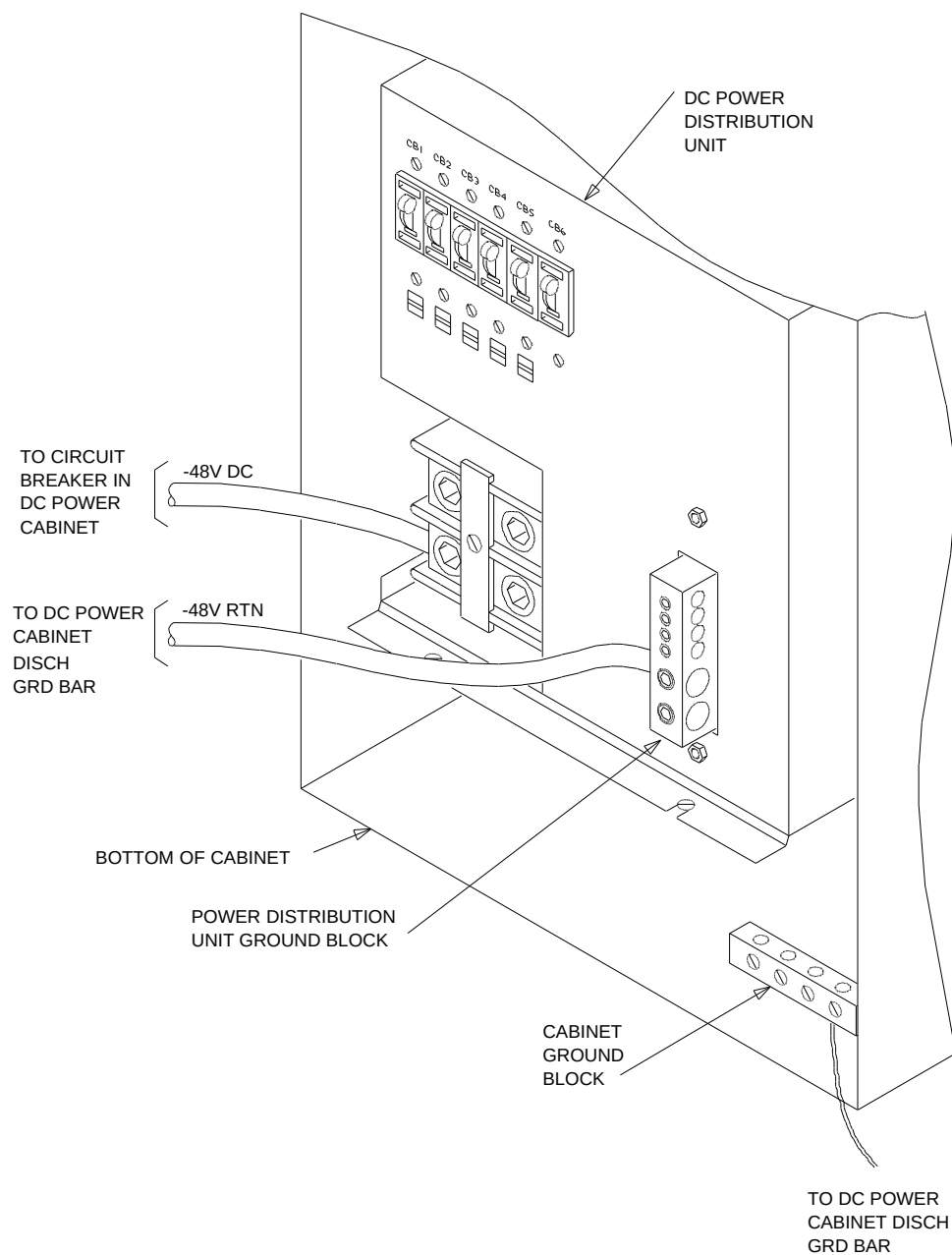


Figure 4-12. Power and Ground Connections for a DC-Powered Multi-Carrier Cabinet

Connect DC Power to Cabinet



NOTE:

Check the DC power plant's documentation to find out if the power plant must be tested before it is connected to your system. If so, perform these tests in the suggested sequence.

The main circuit breaker on a DC-powered PPN/EPN multi-carrier cabinet is located on the front of the DC power distribution unit (shown in the following figure).

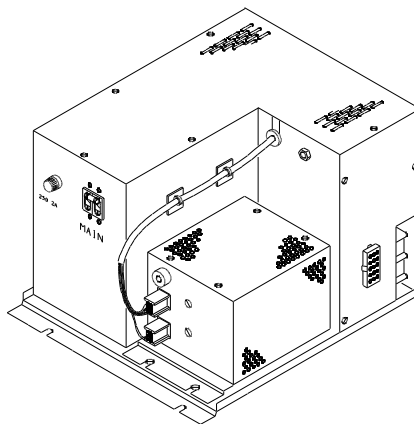


Figure 4-13. Multi-Carrier Cabinet DC Power Distribution Unit, Front View

The circuit breakers on the rear of the DC power distribution unit, **CB1** through **CB6**, control the power to the individual carriers. The following table shows the circuit breaker to carrier relationship.

Table 4-3. Circuit Breaker Definition

Circuit Breaker	Associated Carrier
CB1	Carrier A
CB2	Carrier B
CB3	Carrier C
CB4	Carrier D
CB5	Carrier E
CB6	Filter

Connect power to cabinet as follows:

1. Set the main circuit breaker to **OFF**.
2. At the cabinet:
 - Using a 3/8-inch allen wrench, connect the -48 volt DC lead as shown in Figure 4-12.
 - Using a 3/16-inch allen wrench, connect the -48 volt RTN lead as shown in Figure 4-12.
3. Route the leads out of the cabinet through the mouse hole in the of the lower rear cover and over to the DC power cabinet.
4. At the DC power cabinet:
 - Terminate the -48VDC lead on a **DC OUTPUT** circuit breaker.
 - Terminate the -48V RTN lead on the **DISCH GRD** bar.
5. Repeat procedure for each cabinet.

Test DC Power Plant

To test the DC power plant, refer to the appropriate installation test procedure (ITP) in the *LINEAGE 2000 ECS Power System Battery Plant Product Manual*, 167-790-020.

Connect AC Power to Single-Carrier Cabinets

The following procedures apply to both the PPN, and EPN(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 for multiple cabinet systems. The power circuit must be dedicated to the single-carrier cabinet only. It must not be shared with other equipment, and **must not be** under control of a wall switch. The AC receptacle **must not be** located under the cross-connect field.

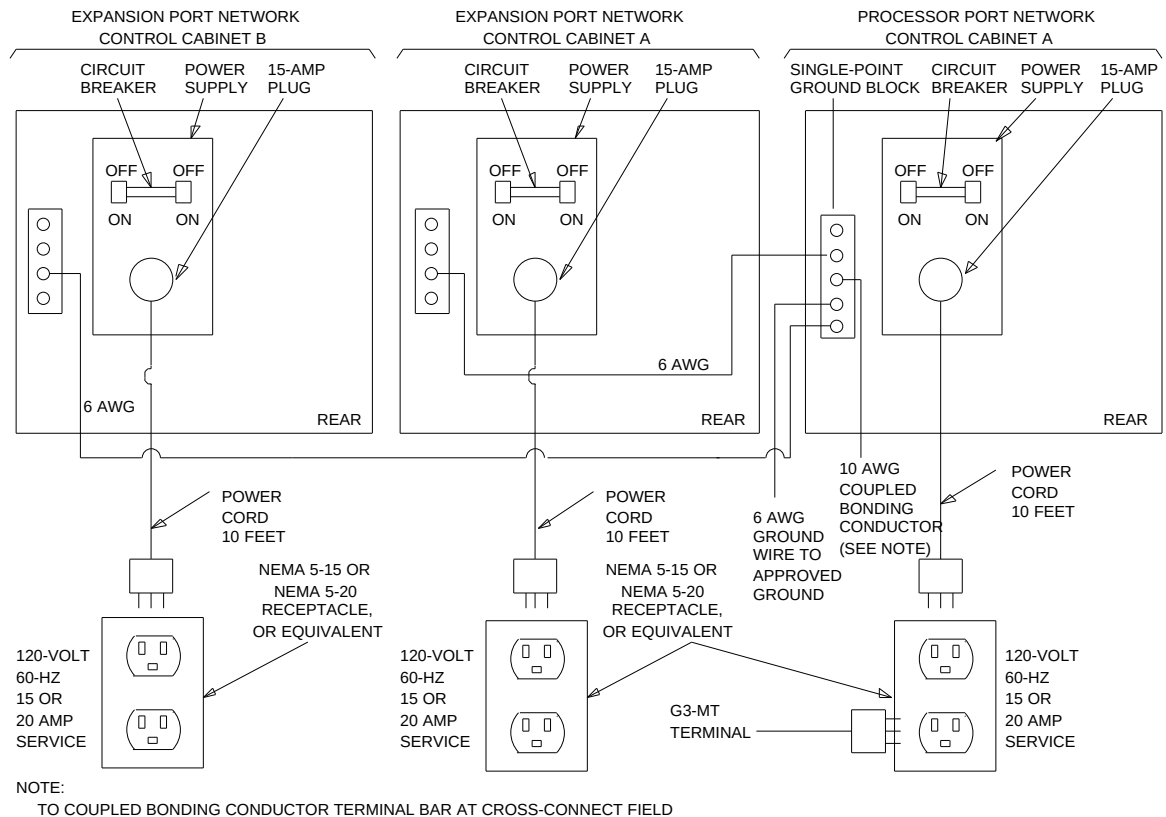


Figure 4-14. Typical Power and Grounding Arrangement for Single-Carrier Cabinet

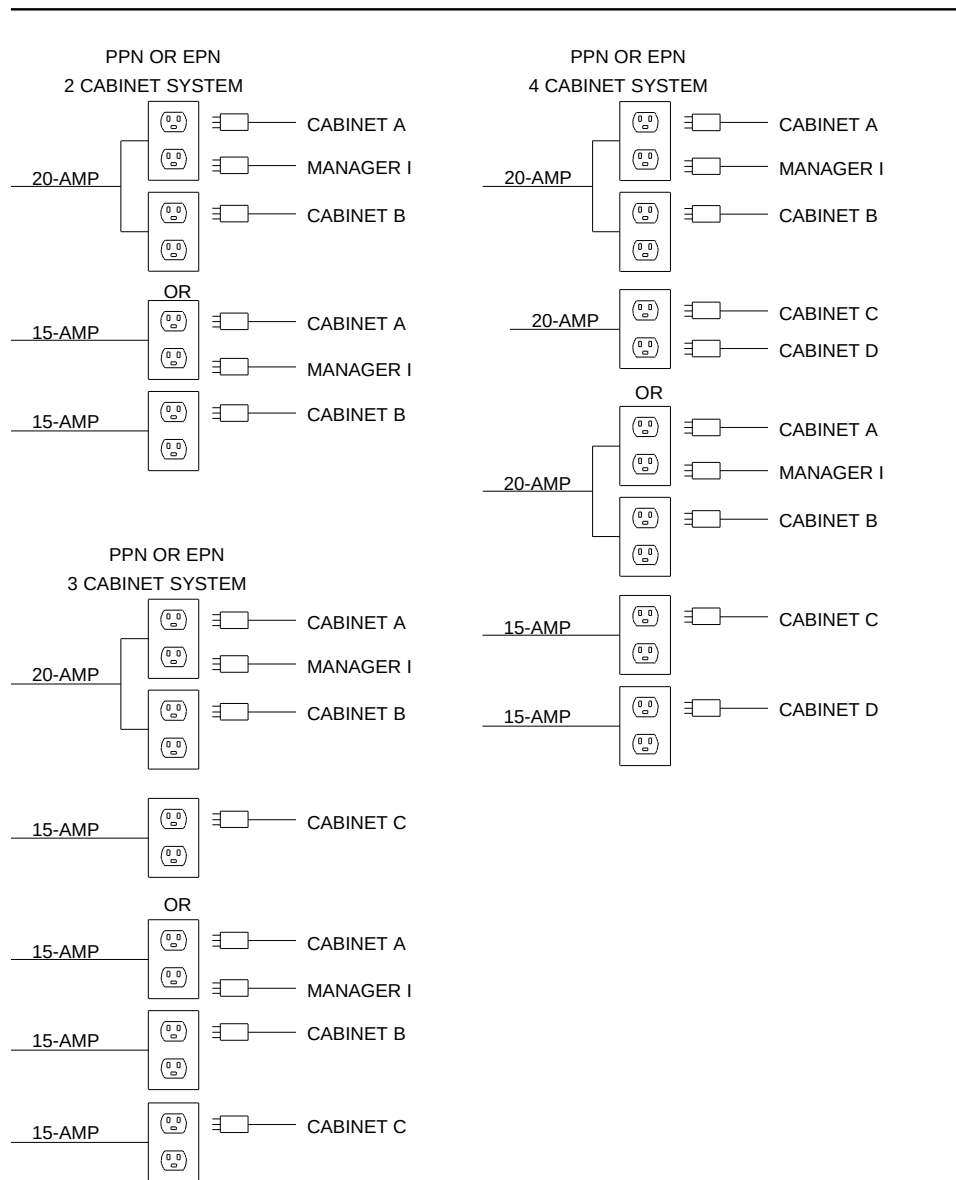


Figure 4-15. Typical AC Power Receptacle Requirements for Multiple Cabinet Arrangements

Connect Grounding

Grounding is relatively simple for an AC-powered switch. Basically, the cabinets are connected to each other. Then, a single ground wire is connected from the PPN to the approved ground.



CAUTION:

Grounding of the system shall comply with the general rules for grounding contained in Article 250 of the National Electrical Code, NFPA 70. See Appendix G for a description of “approved ground.”

A Note Regarding the G3vs

Ground the G3vs in the way described below for any other single-carrier-cabinet PPN.

Coupled Bonding Conductor

This is a conductor that is connected to the single-point-ground-terminal bar and run adjacent to pairs in an associated 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 is tie-wrapped to the inside wiring cable and terminated at the coupled-bonding-conductor-terminal bar at the PBX cross-connect field.



DANGER:

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

Connect System Cabinet Grounds

All approved grounds must be bonded together to form a single grounding electrode system.

To connect ground, refer to Figure 4-14 and do the following:

1. At lower left rear of the PPN cabinet (control cabinet A), connect a 6 AWG ground wire to the cabinet ground bar. See the accompanying note.



NOTE:

A screwdriver is required to loosen and tighten the bolts that secure the ground wire to the ground bar.

2. Run the ground wire to an approved ground.
3. At EPN cabinet(s) (as provided), connect a 6 AWG ground wire to the cabinet ground bar.
4. Run the ground wire to the PPN cabinet and connect it to the cabinet ground bar.



NOTE:

If EPN cabinet is remotely located from the PPN cabinet (in a separate room or building), run the 6 AWG EPN cabinet ground wire to an approved ground.

5. At PPN cabinet, connect a 10 AWG wire to the cabinet ground bar. This ground wire (coupled bonding conductor) will later be tie wrapped to the trunk cables and terminated at the coupled-bonding-conductor-terminal bar at the PBX's cross-connect field (see Figure 4-23).

Connect Battery Leads

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

At cabinet(s):

1. Ensure that the circuit breakers on each cabinet are in the **OFF** position.
2. To gain access to the battery leads: Remove the front panel.
3. Connect the battery lead:

See the next figure. The battery is on the top of the carrier towards the right. The battery leads should be immediately next to the battery to the left of the battery.

4. Close up the control cabinet:
Replace the front panel.

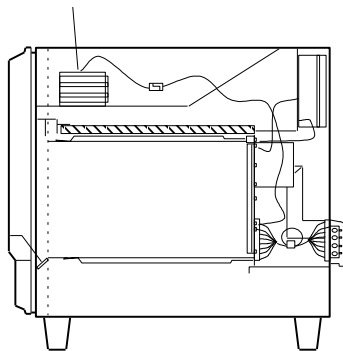


Figure 4-16. G3s Control Cabinet Battery Location

Check Commercial Power

Before powering up system, check the AC power.

1. Set KS-20599, list 4 digital voltmeter (VM), or equivalent, to AC voltage range scale greater than 250VAC.
2. See Danger. Measure voltage between hot side and neutral side of receptacle (illustrated below).

⚠ DANGER:
High voltage present.

3. Verify that meter reads 106 to 128VAC. If it does not, correct power problem. Then return to Step 2.
4. Measure voltage between neutral side of receptacle and receptacle ground (Figure 4-15).
5. Verify that meter reads 0 volt AC. If it does not, correct grounding problem. Then return to Step 2.

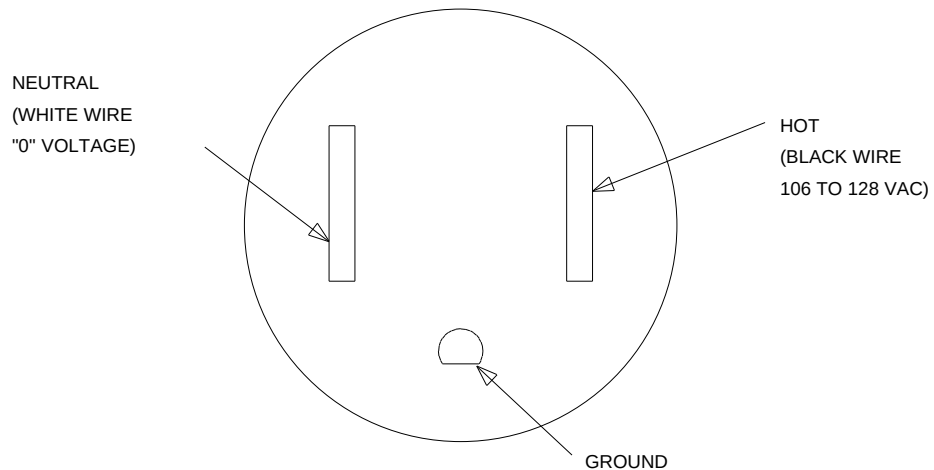


Figure 4-17. 3-Prong 120VAC Receptacle

Connect AC Power

Each cabinet has its own power supply, and the circuit breaker is located on the rear of each power supply (see Figure 4-14).

Figure 4-15 applies to multiple PPN and EPN cabinet arrangements. In other words, if multiple EPN cabinets are required, the customer must provide the receptacles for the 4-cabinet PPN arrangement in addition to the receptacles for a 2-, 3-, or 4-cabinet EPN arrangement.

1. Verify that the circuit breakers are in the **OFF** position.
2. Connect cabinet AC line cords to the AC power receptacles. The AC line cords for the cabinets must first be connected to the cabinets, and then to the AC power receptacles (Figures 4-14 and 4-15).

A Note Regarding the G3vs

The G3vs power supply automatically adjusts itself to voltages of about 120V or 240V. It will work with frequencies of between 50 and 60Hz.

Connect the provided power cord to the G3vs and to your power source (whether commercial or from a standby power unit). Having connected the G3vs to power in this way, you need only press the “ON” side of the power switch to turn on the system.

Standby Power

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

Connect DC Power to Single-Carrier Cabinets

The following procedures apply to both the PPN, and EPN(s) if provided except where noted.

Table 4-4 shows the input DC requirements for the system. Figure 4-18 shows a typical power and grounding layout for DC powered Single Cabinet Carrier systems.

Table 4-4. -48 VDC Input Power Requirements

Parameter	Requirements
Static Voltage	-48 VDC nominal, -42.5 VDC minimum, -52.5 VDC maximum (measured at input to System cabinet) under normal operating conditions
Dynamic Voltage	Transient change in voltage— +/- 5% of steady state voltage Allowed transient duration—Up to 200 milliseconds
AC Ripple Voltage	Maximum wideband AC ripple— 450 mvpp in the 3 kHz to 20 MHz band.
Low Voltage Disconnect	Automatic disconnect—Occurs when input voltage becomes less than -42.5 VDC (control provided with battery plant).
Overvoltage Protection	Input voltage at switching cabinets shall not exceed -52.5 VDC.
Voltage Drop	Maximum drop—Must not exceed 0.5 VDC one way on feeder cables between the power board and the System cabinet. Feeders must be UL approved and CSA certified. Recommended -48 VDC feeder cable— <i>Royal Electric #X4905 or equivalent.</i> No. 1 AWG is required for distances up to 50 feet. Cable resistance must be equal to or less than 0.1290 ohms per 1000 feet.

Continued next page

Table 4-4. -48 VDC Input Power Requirements *Continued*

Parameter	Requirements
Current Draw	The battery plant rectifiers must be capable of providing current for the System including that required for System holdover and for charging the batteries. In addition, this may include DC current required for an inverter that provides AC power to peripheral equipment if it is installed and for future growth.
Circuit Breaker	A UL listed and CSA certified circuit breaker must be provided at the battery plant power board for each System cabinet feeder. The recommended circuit breakers are 75 ampere Airpax UPL-1-1REC2-52-753 or Heinemann AM1-B2-A-75-2.
Redundancy	Redundancy of the battery chargers/rectifiers should be considered. This would also provide the additional current necessary to recharge the batteries after being fully discharged.

Continued next page

Table 4-4. -48 VDC Input Power Requirements *Continued*

Parameter	Requirements
Electrical Noise	Voice band noise from the battery plant to the System must be less than 32 dBmC.
Grounding	A single point ground must be maintained. A ground conductor must be installed from the battery plant GROUND DISCHARGE BAR to the closest "Approved Ground" via the shortest and most direct route as required by the NEC. The gauge must be no smaller than the largest conductor in the System and larger than 6 AWG. Grounding between the system cabinet and the battery plant should be connected using the procedures given later in this chapter.
Lightning Protection	There must be adequate lightning protection in the battery plant to insure that the System will not be damaged.

Figure 4-18 shows a typical power and grounding layout for a DC-powered single-carrier cabinet. The size of the wire required for the -48VDC and -48 volt return must be engineered to ensure ***the -48 VDC supplied by the battery plant to the cabinets will be maintained between -42.5 and -52.5 volt DC*** to ensure proper operation and to prevent hardware damage. This procedure applies to both PPN and EPN(s).

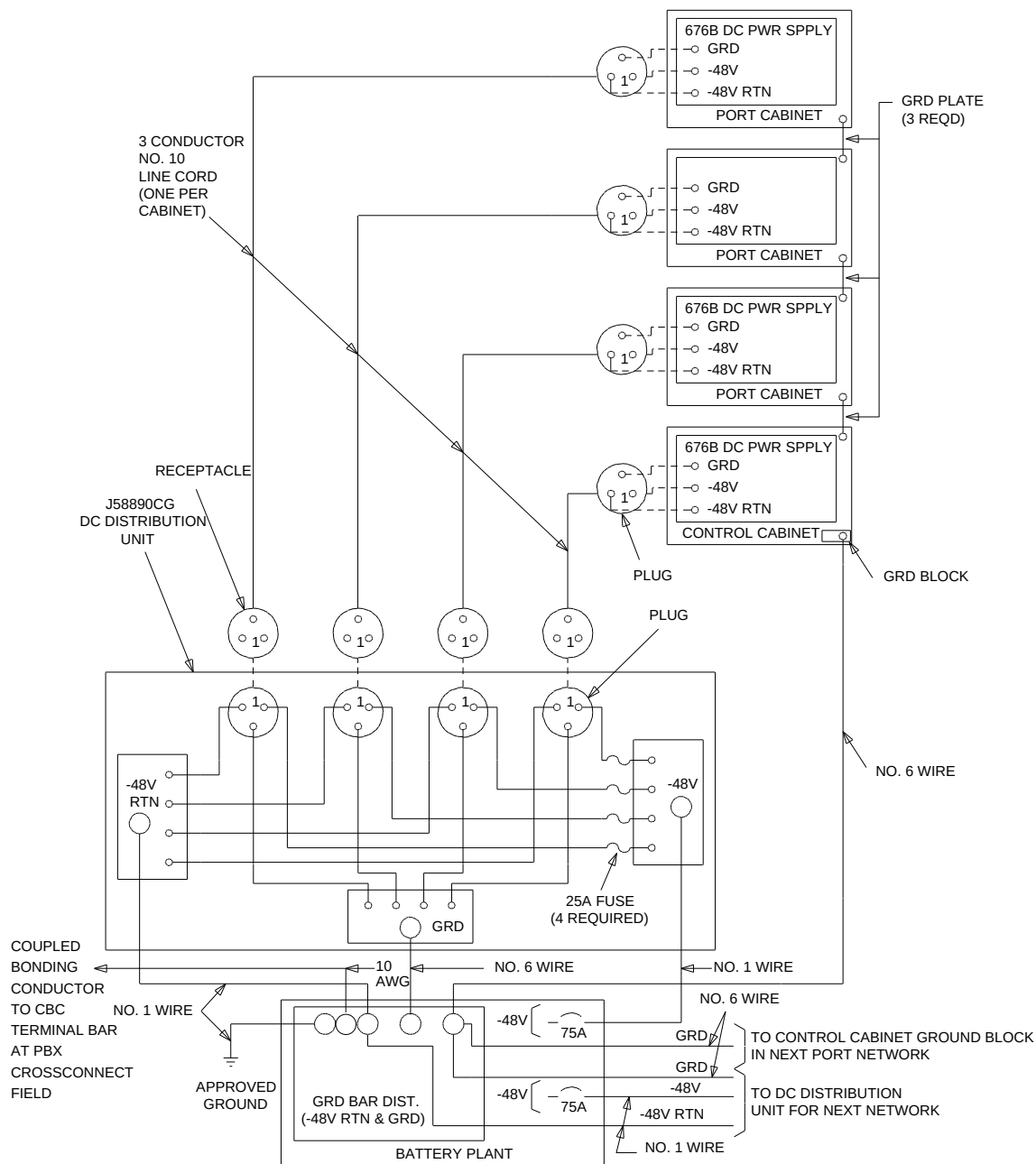


Figure 4-18. Typical Single-Carrier Cabinet System DC Power and Grounding Wiring

Grounding



CAUTION:

Grounding of the system shall comply with the general rules for grounding contained in Article 250 of the National Electrical Code, NFPA 70.

Discover the approved ground in the building to be wired. An approved ground has the characteristics given in appendix G of this document. Connect your system to approved ground as set out below.

Connect Power Plant Ground

1. At the DC power cabinet, connect a 1 AWG ground wire to the **DISCH GRD** bar.
2. Route the ground wire out of the cabinet and terminate it on the approved ground (see Figure 4-19). The approved ground must be identified with an AT&T supplied grounding tag (FORM 15657NR or equivalent). See Note.

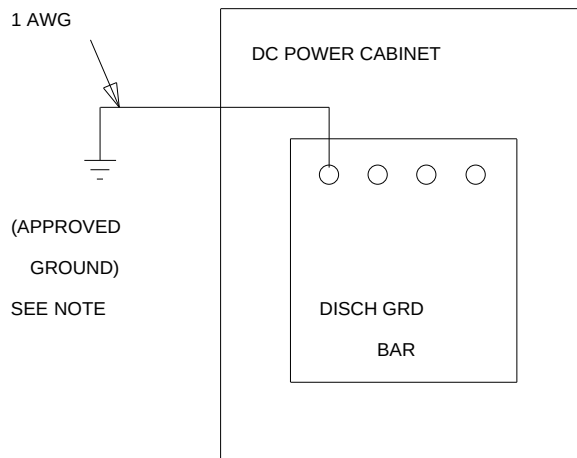


Figure 4-19. Power Plant Grounding



NOTE:

Must be connected to an approved ground using the correct gauge cable terminated with a listed clamp and identified with an AT&T ground tag or equivalent.

Connect Frame Ground

1. Measure and cut a piece of 6 AWG cable. Use the provided cable or measure and cut a piece of 6 AWG cable long enough to reach between the **GROUND CONNECTION** terminal in the DC battery cabinet and the **DISCH GRD** bar in the DC power cabinet.
2. Crimp terminal lugs on each end of the wire. See Note.



NOTE:

Terminal lugs are furnished as part of D-181895, Kit of Parts.

3. At DC power cabinet, connect wire to the **DISCH GRD** bar.
4. Route the wire through one of the holes in the side of the cabinets and terminate it on the **GROUND CONNECTION** terminal in the DC battery cabinet (see Figure 4-20).

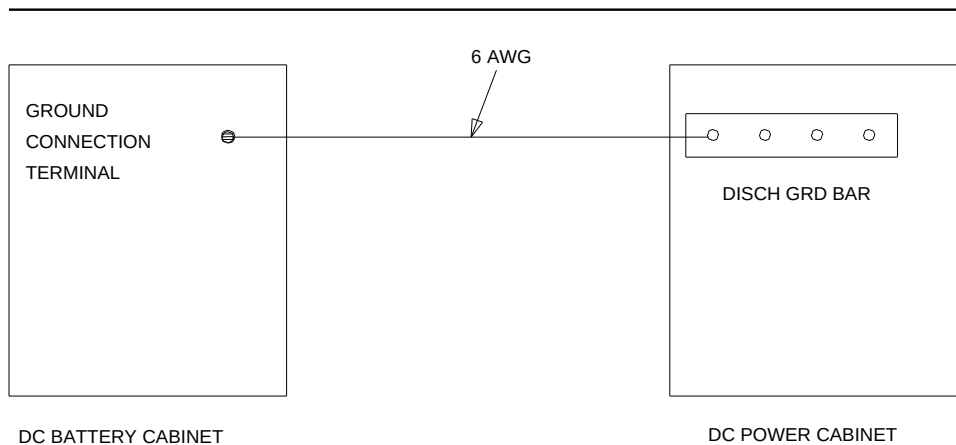


Figure 4-20. Frame Ground Grounding

Connect DC Power Distribution Box Grounding

A 6 AWG ground cable must be run from the DC Power Cabinet to each DC Power Distribution Unit. Use the following instructions to connect this ground.

1. At the DC Power Cabinet, connect 6 AWG cable to the **DISCH GRD** 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 4-21).
2. Repeat Step 1 each remaining DC Power Distribution Unit.

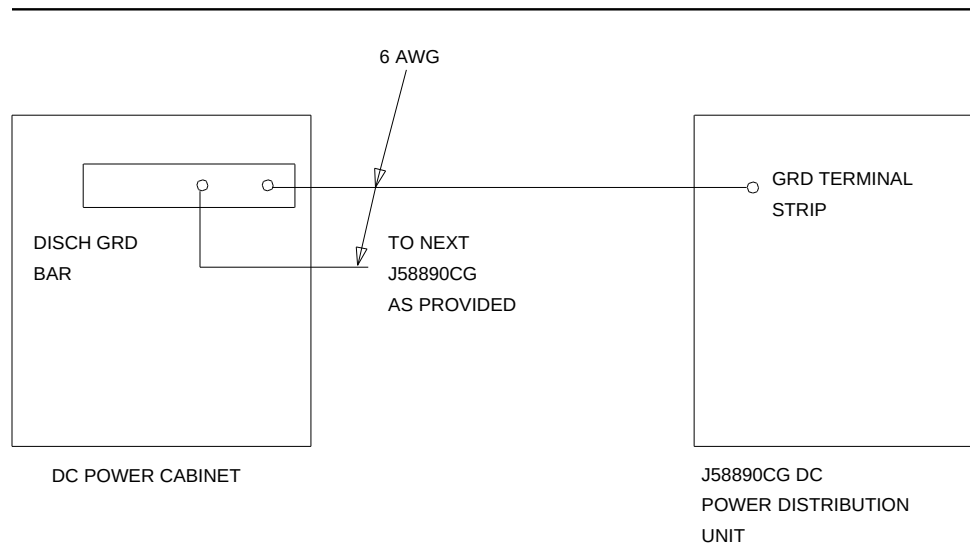


Figure 4-21. J58890CG DC Power Distribution Unit Grounding

Connect Single-Carrier Network Grounding

Each single-carrier network must have a 6 AWG ground cable connected from the ground block of the Control cabinet in position “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 **DISCH GRD** bar. Route the cable to the DC Power Distribution Unit. Connect the cable to the single-point ground block in the Control Carrier (see Figure 4-22).
2. Repeat Step 1 for each network in the system.

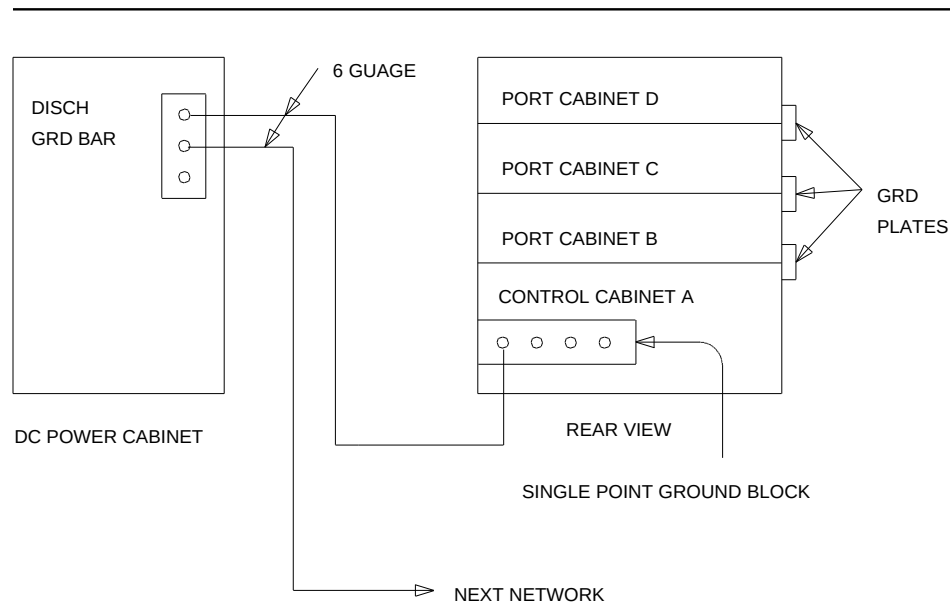


Figure 4-22. Ground Connection for Single-Carrier Network

Coupled Bonding Conductor

1. At the power cabinet ground discharge bar, connect a 10 AWG wire to the ground bar. This ground wire (coupled bonding conductor) will later be tie wrapped to the trunk cables and terminated at the coupled-bonding-conductor-terminal bar (see the next figure).
2. Repeat for all remaining networks.



1. 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.
2. Repeat Step 1 for cabinets B, C, and D as required.
3. Repeat Steps 1 and 2 for all remaining networks.

- 4-35

Test DC Power Plant

To test the DC power plant, refer to the appropriate installation test procedure (ITP) in the *LINEAGE 2000 ECS Power System Battery Plant Product Manual*, 167-790-020.

Connect AC Power to Clock Cabinet

The clock cabinet requires a 120VAC 15 AMP receptacle. The green wire ground provided by the receptacle is sufficient. The clock cabinet does not require a ground connection back to the single-point ground.

Connect Clock Cabinet Grounding

The green wire grounding is sufficient; no other grounds are required.

Check Commercial Power

Before powering up system, check the AC power.

1. Set KS-20599, list 4 digital voltmeters (VM), or equivalent, to AC voltage range scale greater than 250VAC.
2. See Danger. Measure voltage between hot side and neutral side of receptacle (Figure 4-24).



DANGER:

High voltage present.

3. Verify that meter reads 106 to 128VAC. If it does not, correct power problem. Then return to Step 2.
4. Measure voltage between neutral side of receptacle and receptacle ground (Figure 4-24).
5. Verify that meter reads 0VAC. If it does not, correct grounding problem. Then return to Step 2.

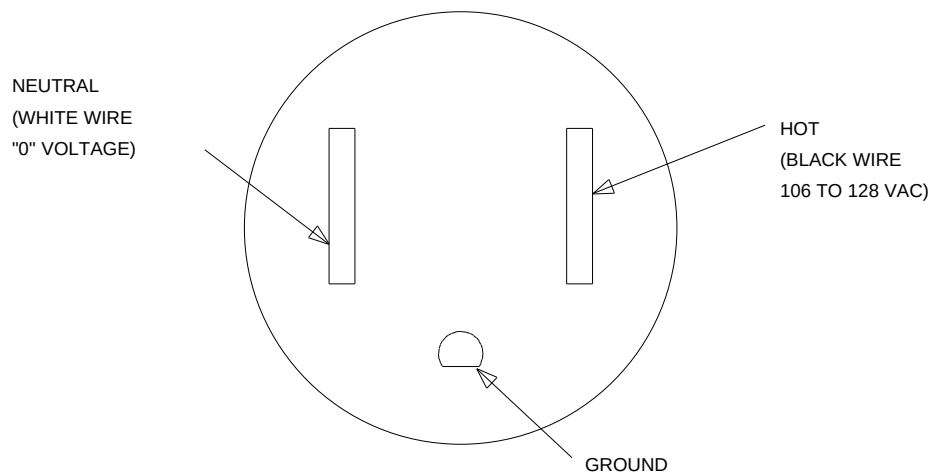


Figure 4-24. 3-Prong 120VAC Receptacle

Connect AC Power

1. Verify all cabinet power modules are turned OFF.
2. Plug the cabinet power cable into the desired receptacle.

Connect DC Power to Clock Cabinet

The clock cabinet should be powered from the same DC Power Plant as the DEFINITY communications system. The clock cabinet must be grounded to the DC Power Plant.

Connect Clock Cabinet Grounding

The clock cabinet is grounded by running a 6 AWG wire from the clock cabinet to the Ground discharge bar of the DC Power Cabinet.

1. Measure and cut a piece of 6 AWG wire long enough to reach from DC Power Cabinet to the clock cabinet (Figure 4-25).
2. At the end of the cable to be attached to the clock cabinet, insert the ground wire into the lug and tighten the lug screw.
3. Attach the lug to the receptacle cover on the clock cabinet. Ensure the lug and the cabinet ground wire are connected to separate screws on the receptacle cover. See Figure 4-25.
4. Route the 6 AWG ground wire to the DC Power Cabinet.
5. Connect the wire to the **DISCH GRD** in the DC Power Cabinet. See Figure 4-26.

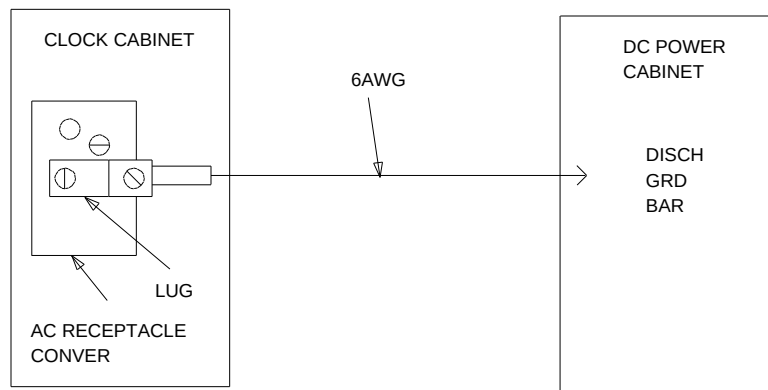


Figure 4-25. Clock Cabinet DC Grounding

Connect Clock DC Power

Connect power to cabinet as follows:

1. Set the clock cabinet circuit breaker at the DC Power Cabinet to **OFF**.
2. At the clock cabinet:
 - Connect a minimum of 6 AWG wire (good for 600 feet) to the **-48V** terminal on the clock cabinet terminal strip as shown in Figure 4-26.
 - Connect a minimum of 6 AWG wire (good for 600 feet) to the **48VRTN** terminal on the clock terminal strip as shown in Figure 4-26.
3. Route the leads out of the cabinet and over to the DC power cabinet.
4. At the DC power cabinet:
 - Terminate the -48VDC lead on a **DC OUTPUT** circuit breaker as shown in Figure 4-26.
 - Terminate the -48V RTN lead on the **DISCH GRD** bar as shown in Figure 4-26.

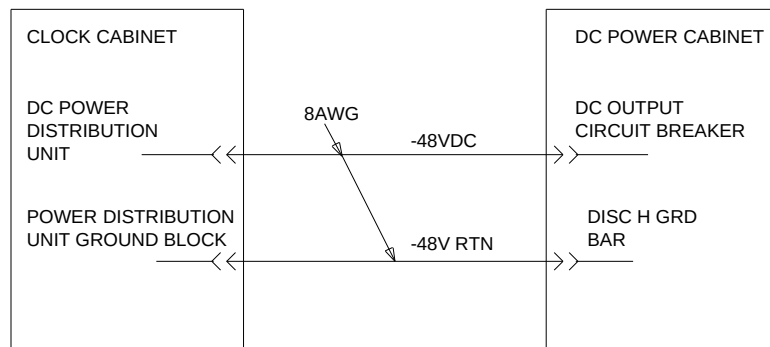


Figure 4-26. Clock Cabinet DC Connections

Install Administration and Test Device

5

G3 Management Terminal Requirements

The DEFINITY Communications System Generic 3 Management Terminal (Formerly known as Manager I) must be located within 50 feet of the cabinet. However, it may be necessary to reduce the maximum distance limitation if higher gauge wire is used or if the capacitive load on the line is increased. In general, the G3 Management Terminal must be directly connected to the cabinet with the shortest possible cable. For maintenance purposes, the G3 Management Terminal must be located in the same equipment room as the cabinet, or in sight of the cabinet.

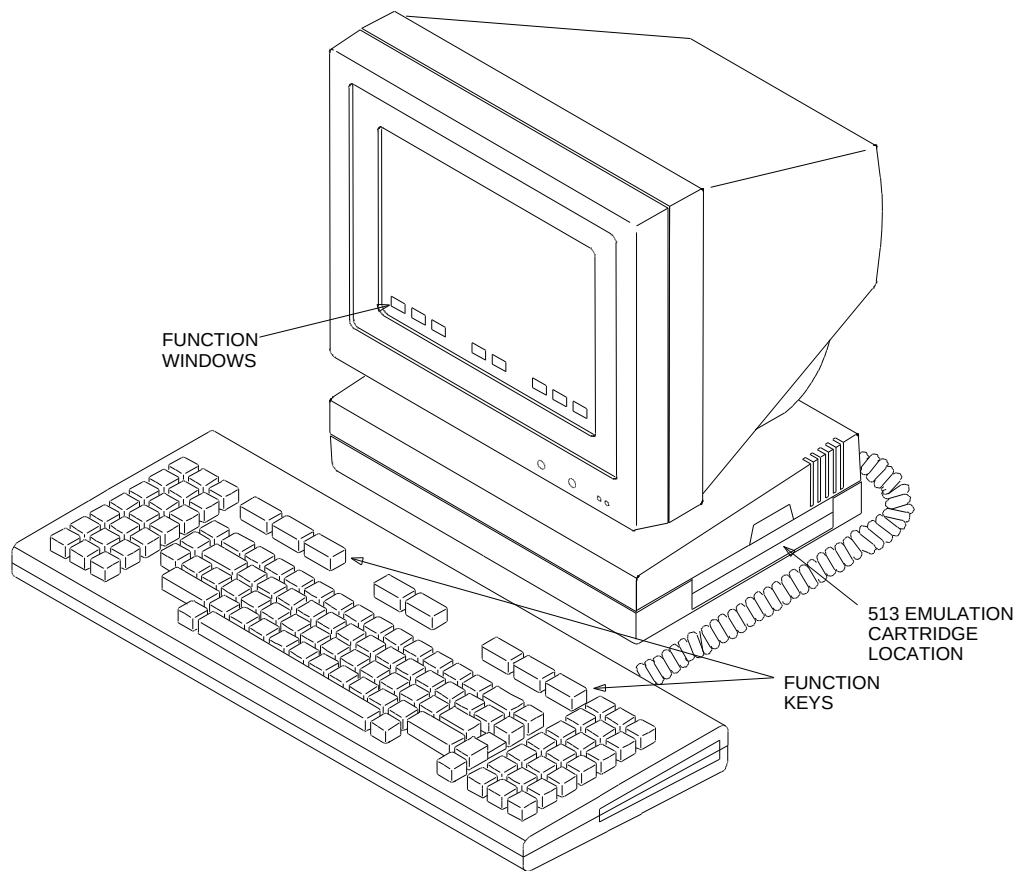


Figure 5-1. G3 Management Terminal and Keyboard

When the G3 Management Terminal is being installed to support a DC-powered system, a 116A isolator (comcode 106 005 242) must be installed as shown in Figure 5-2.

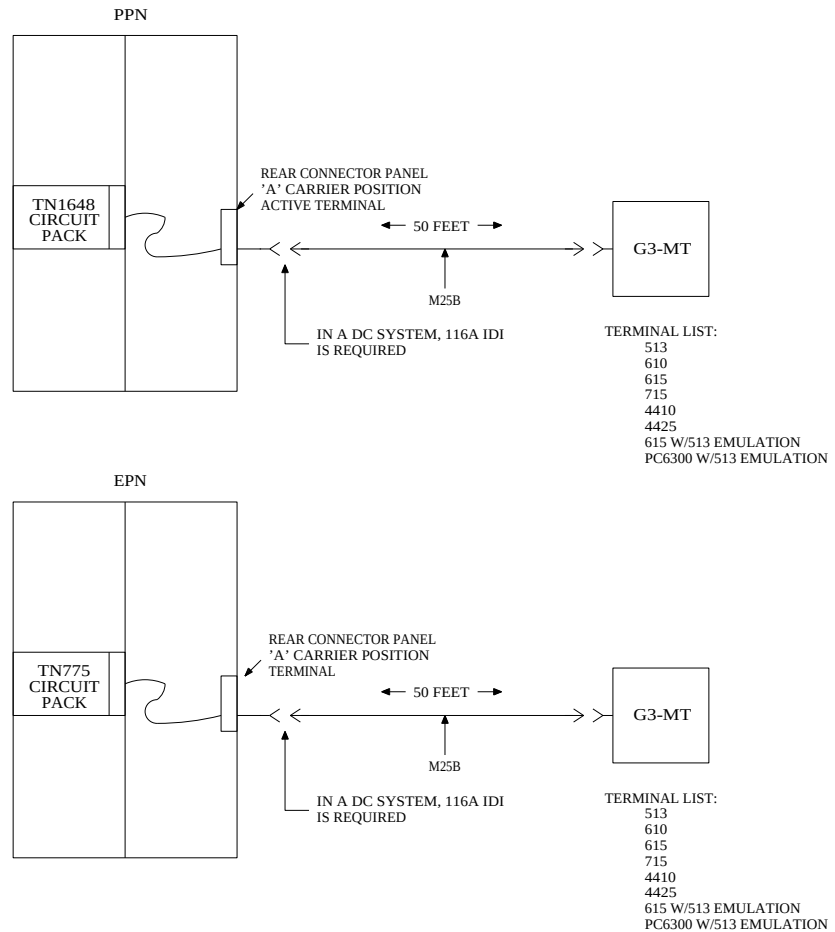


Figure 5-2. Direct Connections to G3-MT (SAT)

Power for the G3 Management Terminal must be obtained from a 120-volt 60-Hz 20-ampere AC receptacle in the equipment room.

An optional printer may be used with the G3 Management Terminal to provide hard copies of administration data. The printer is connected to the **AUX PORT** connector on the rear of the G3 Management Terminal with an EIA cord. See appendix B for the printer option switch settings.

Procedures in this section cover the following types of G3 Management Terminal:

- 615 Multi-Tasking Terminal
- 715 BCS
- 513 Business Communications Terminal (BCT)
- 610 Business Communications Terminal (BCT)
- 4425 Terminal
- 4410 Terminal
- AT&T 6000-series PC with AT&T 513, 4410, or 4425 emulation software package

Connect G3 Management Terminal

1. Unpack G3 Management Terminal and inspect for damage.
2. *For G1 or G3i critical-reliability switch*, use an M25B (EIA) cord (or equivalent) to connect between the G3 Management Terminal **MAIN PORT** or **P2 (DTE)** connector and the **TERMINAL** connector on the rear of the control carrier.

For G1 or G3i critical-reliability switch, use an M25B (EIA) cord (or equivalent) to connect between the G3 Management Terminal **MAIN PORT** or **P2 (DTE)** connector and the **DUPLICATION OPTION TERMINAL** connector on the rear of the control carrier.

For G3r switch, use an M25B (EIA) cord (or equivalent) to connect between the G3 Management Terminal **MAIN PORT** or **P2 (DTE)** connector and whichever **TERMINAL** connector on the back of the A carrier goes to the appropriate processor. The **ACTIVE** connector is always connected to the on-line SPR. The **STANDBY** connector is always connected to the off-line (standby) SPR.

A D8W cord connecting two 355B adapters can be used to substitute for the M25B cord specified above.

3. Connect keyboard cord to **KBD** jack located on the rear of the G3 Management Terminal.
4. *For a multi-carrier cabinet*, connect AC power cord of the associated G3 Management Terminal to the AC receptacle located at the bottom rear of the cabinet, or to the selected AC receptacle. *For a single-carrier cabinet*, or any DC-powered cabinet, connect AC power cord of the associated G3 Management Terminal to the selected AC receptacle in the equipment room.
5. Set the power switch located on the rear of G3 Management Terminal to the **ON** position.

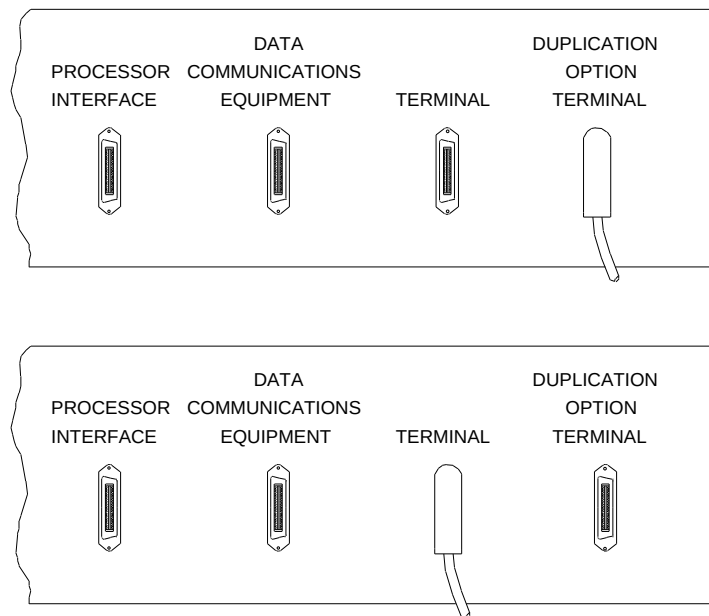


Figure 5-3. G1/G3i/G3s Connections for G3 Management Terminal

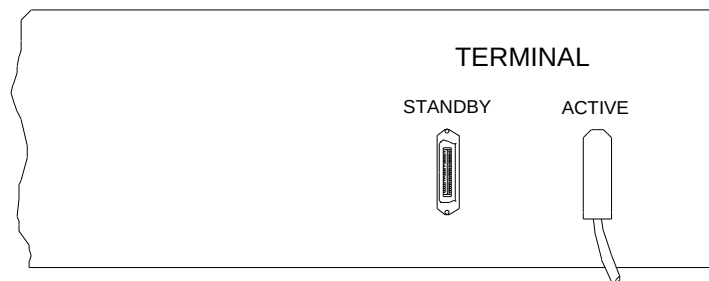


Figure 5-4. G3r Connections for G3 Management Terminal

Set Up G3 Management Terminal

Each of the terminals commonly used for G3 Management Terminal requires a different setup procedure. Procedures are given below for each of these terminals.

Set Up 615 Terminal

The 615 terminal may or may not be equipped with a 513 emulation cartridge, and the following setup applies to either. However, after login, if a 513 emulation cartridge is used with the terminal, the keys function the same as the 513 terminal keys. If a 513 emulation cartridge is not used with the terminal, the keys function the same as the 4410 terminal keys. To determine the presence of the 513 emulation cartridge, look on the right side of the terminal base. The cartridge should stick out a little (Figure 5-1).

1. Press **CTRL** and function key **SET UP f1**. Verify that the terminal set up screen is shown with default values (Figure 5-5).



NOTE:

Function keys are located at the top of the G3 Management Terminal keyboard (Figure 5-5). Windows are the lighted rectangles located across the bottom of the screen that correspond to the function keys located across the top of the keyboard.

2. Using the up (↑) or down (↓) arrow keys on the keypad, position the cursor at the Speed field.
3. Press function key corresponding to the CHANGE OPTION window until the speed is set at 9600.
4. Position cursor at fields on screen, and set options to agree with those listed in the following table (see the note that follows the table).

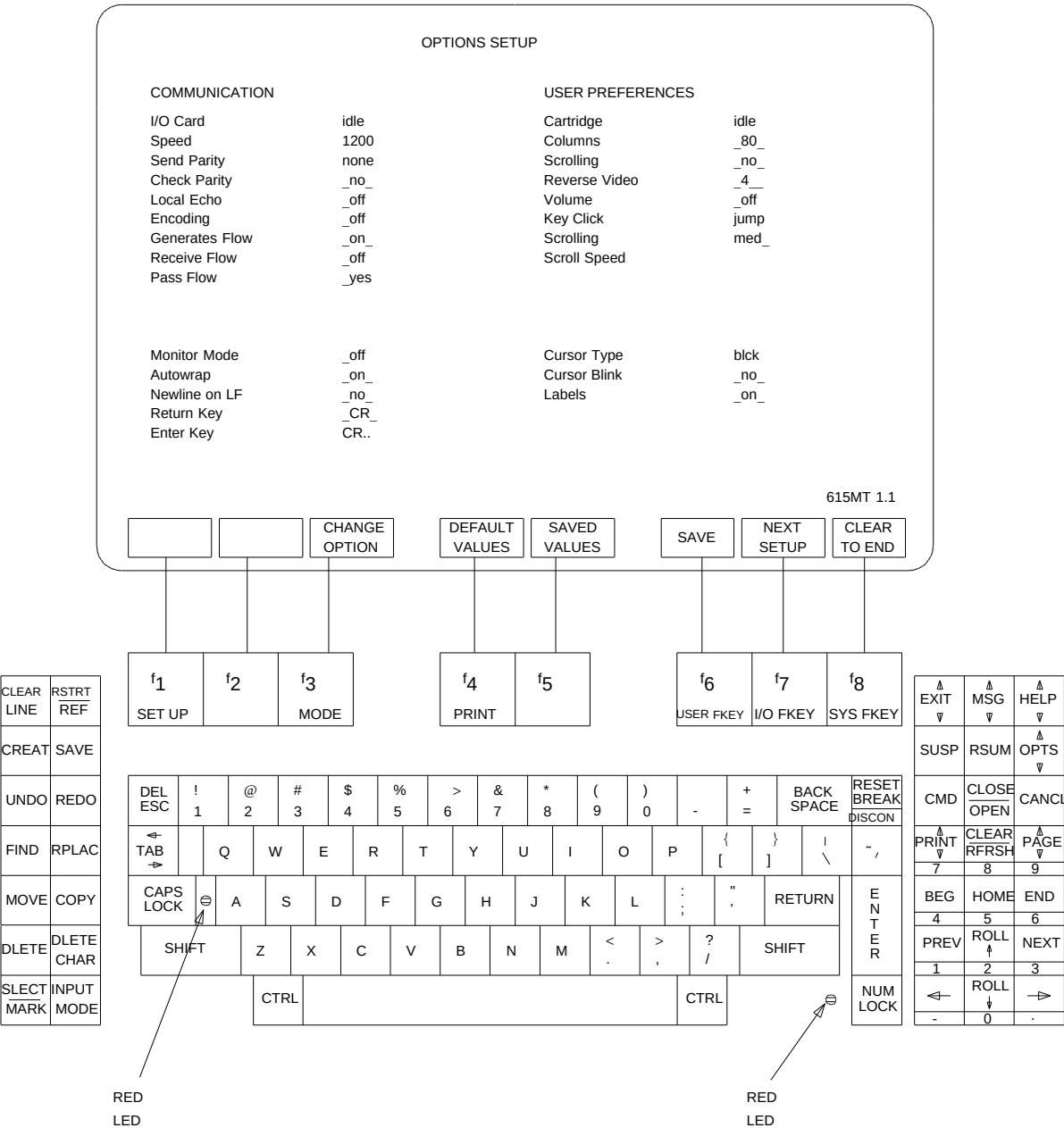


Figure 5-5. 615 Terminal G3 Management Terminal Keyboard and Options Screen with Default Values

Table 5-1. G3 Management Terminal Options for 615 Terminal

Option	Setting
SPEED	9600
SEND PARITY	SPAC
AUTOWRAP	OFF
NEWLINE ON LF	YES
ENTER KEY	<ESC>SB*

* Press **ESC** key and then the two letters **S** and **B**.

**NOTE:**

Only the options included in Table 5-1 are critical to terminal operation.

5. Press function key corresponding to the SAVE window to save the options.

Set Up 715 BCS Terminal

Use the following procedures to set up the terminal options.

1. Hold down the **Ctrl** key while pressing **F1** and verify that the terminal setup screen is shown with default values.

**NOTE:**

Function keys (F1, etc.) are located at the top of the keyboard of the 715 BCS Terminal. Lighted rectangles (windows) appear at the bottom of the screen. These windows correspond to the function keys located across the top of the keyboard.

2. Using the up/down arrow keys on the keypad, position cursor at the User Preference field and press **Return**.
3. Using the up/down arrow keys to position the cursor at fields on the screen and using **F4-CHANGE OPTION** change the Font Size option from normal to large.
4. Press **F1** to get back to the **SETUP** menu.
5. Using the up/down arrow keys on the keypad, position cursor at the Display Options (Per Window) field and press **RETURN**.
6. Using the up/down arrow keys on the keypad to position the cursor on fields on the screen, and using **F4-CHANGE OPTION** change the Autowrap option from on to off in both the PRIMARY/WINDOW 1 and WINDOW 2 fields.
7. Press **F1** to get back to the **SETUP** menu.

- Using the up/down arrow keys on the keypad, position the cursor at the Keyboard Options (per window) field and press **RETURN**
- Using the up/down arrow keys on the keypad, position the cursor at the Enter Key field. Then under Primary/Window 1 type in **escapeSB** (for hit esc key, shift sb).
- Press **F5-SAVE** to save the changes then press **F1 SETUP MENU** and exit the Setup Menu screen.

Set Up 513 BCT Terminal

- See Note. Press **SHIFT** and function key **LCL MENU f5**. Verify that screen windows display:

TERMINAL SET UP		USER PF SET UP		LABELS OFF	TESTS	TABS/ MARGINS	ENHANCED VIDEO



NOTE:

Function keys are located at the top of the G3 Management Terminal keyboard. Windows are the lighted rectangles located across the bottom of the screen that correspond to the function keys located across the top of the keyboard.

- Press the function key that corresponds to the *TERMINAL SET UP* window.
- Verify that the terminal set up screen appears and that the cursor is positioned at the Speed field.
- Press the function key corresponding to the STEP window until the speed is set at 9600.
- See Note. Position the cursor at fields on the screen by pressing function keys corresponding to the PREVIOUS FIELD and NEXT FIELD windows. Set options using the function key corresponding to the STEP window until they agree with those listed in the next table.



NOTE:

Only the options included in the next table are critical to terminal operation in the system.

- Press the function key corresponding to the SAVE ALL window.

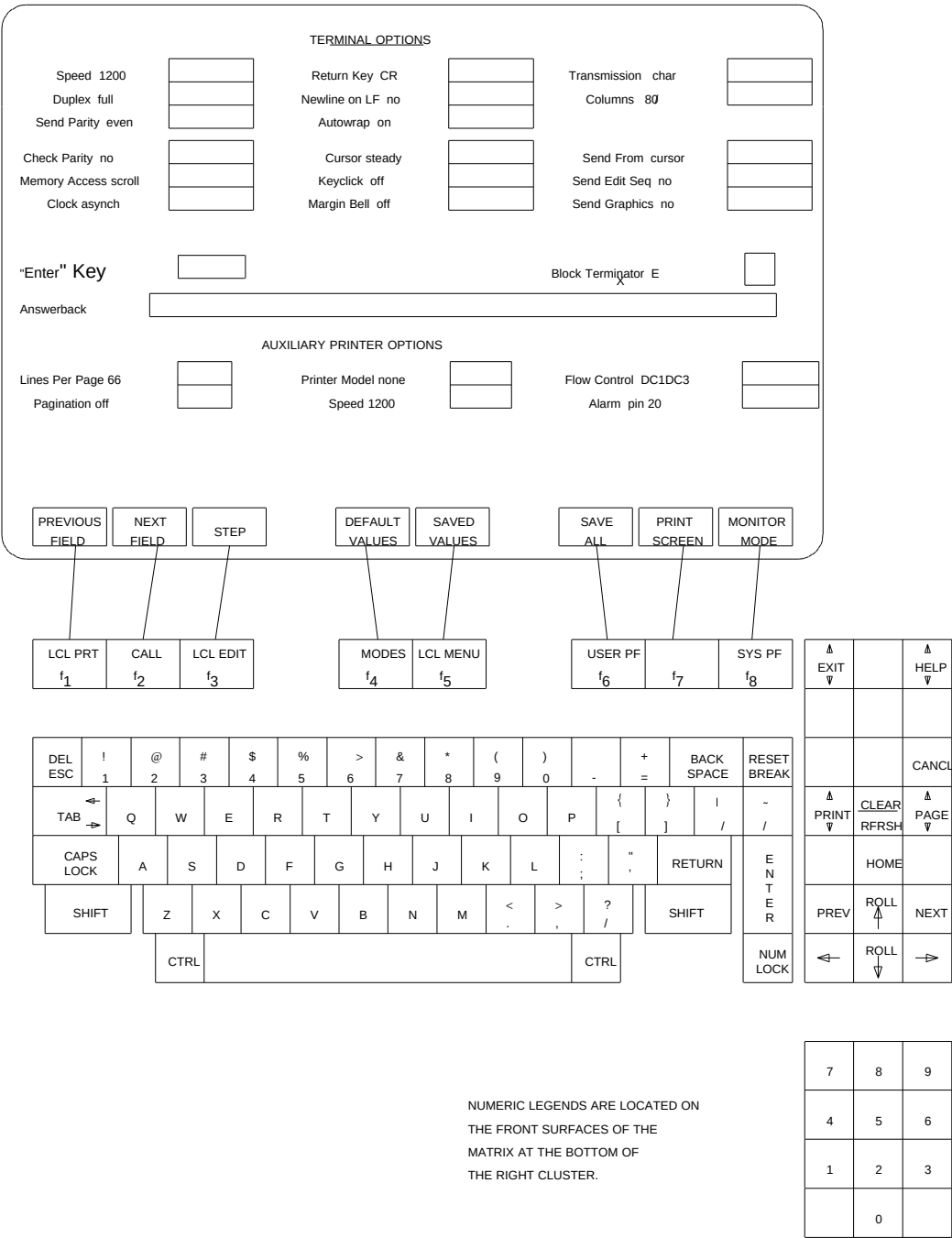


Figure 5-6. 513 BCT G3 Management Terminal Keyboard and Options Screen with Default Values

Table 5-2. G3 Management Terminal Options for 513 BCT and 4425

Option	Setting
Speed	9600
Duplex	full
Send Parity	space
Check Parity	no
Clock	asynch
Transmission	char
Return Key	CR
Send Graphics*	no
Send Attributes**	no
Enter Key*	<ESC>SB‡

* 513 BCT only

** 4425 only

‡ Press **ESC** key and then the letters **S** and **B**.

Set Up 4425 Terminal

1. Press **SHIFT** and function key **SET-UP f1**. Verify that the terminal set up screen is shown with default values (Figure 5-7) and the cursor is positioned at the Speed field.



NOTE:

Function keys are located at the top of the G3 Management Terminal keyboard (Figure 5-7). Windows are the lighted rectangles located across the bottom of the screen that correspond to the function keys located across the top of the keyboard.

CURRENT OPTIONS
Version

Speed	1200	Return Key	CR	Transmission	char
Duplex	full	Newline on LF	no	Line Send	keyed
Send Parity	even	Autowrap	on	Block Send	unprot
Check Parity	no	Cursor	steady	Send From	cursor
132 Columns	off	Keyclick	off	Edit Keys	local
Memory Access	scroll	Margin Bell	off	Send Attributes	no
Clock	asynch	Dialer	no	Autoanswer	no
Wait for DSR	no	Answer on Connect	no	VT 52	no

Enter Key <
Field Separator >
Block terminator Ex

Answerback

AUXILIARY PRINTER OPTIONS

Printer Model	none
Speed	9600
Flow Control	DC1DC3
Alarm	pin 20

PREVIOUS FIELD
NEXT FIELD
STEP
DEFAULT VALUES
SAVED VALUES
SAVE ALL
row xxx
PRINT SCREEN
col xxx
MONITOR MODE *

CLEAR	CLEAR LINE	SET-UP F1	DIAL F2	PRINT F3	MODES F4	MENU F5	USER PF F6	SYS PF F7	SYS PF F8	↑	↓	←	→
F1 DEL CHAR	F2 DEL LINE									PF1	PF2	PF3	PF4
F3 INS CHAR	F4 INS LINE	ESC RESET	1	2	3	4	5	6	7	8	9	0	BACK SPACE
F5 TOP	F6 STM	TAB	Q	W	E	R	T	Y	U	I	O	P	DISCON BREAK HERE IS
F7 SCROLL	F8 HOME	CTRL	A	S	D	F	G	H	J	K	L	RETURN	DELETE
F9 SCROLL	F10 NO SCROLL	SHIFT	Z	X	C	V	B	N	M	<	>	?	SHIFT
F11												LINE FEED	PRINT ENTER

CAPS LOCK
CTRL

Figure 5-7. 4425 G3 Management Terminal Keyboard and Options Screen with Default Values

2. Press function key corresponding to the STEP window until speed is set at 9600.
3. Position cursor at fields on screen by pressing function keys corresponding to PREVIOUS FIELD and NEXT FIELD windows. Set options using function key corresponding to STEP window until they agree with those listed in Table 5-2 (see the below note).

**NOTE:**

Only the options included in Table 5-2 are critical to terminal operation.

4. Press function key corresponding to SAVE ALL window.

Set Up 4410 Terminal

1. Press **SET UP** key on keypad. Verify that the terminal set up screen is shown with default values (Figure 5-8) and the cursor is positioned at the SPEED field.
2. Using the “space bar,” set speed to 9600.
3. Using the up (↑) or down (↓) keys on the keypad, position cursor at fields on screen. Set options to agree with those listed in Table 5-3 (see the below note).

**NOTE:**

Only the options included in Table 5-3 are critical to terminal operation.

4. Press **SET UP** key again to save the options.

Table 5-3. G3 Management Terminal Options for 4410

<u>Option</u>	<u>Setting</u>
SPEED	9600
PARITY	NONE
DUPLEX	FULL
RETURN KEY	CR
BUILT-IN MODEM	NO

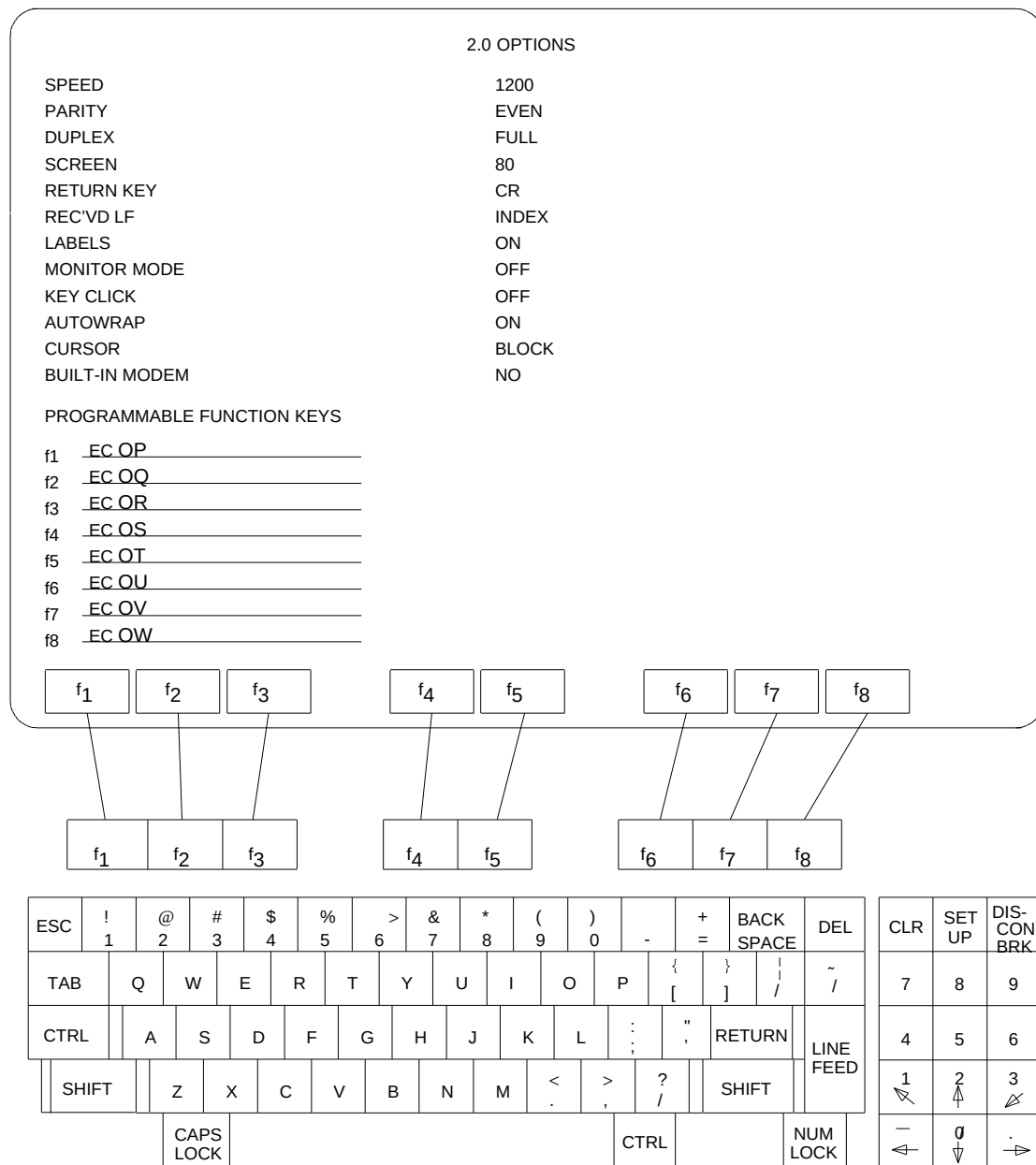


Figure 5-8. 4410 G3 Management Terminal Keyboard and Options Screen with Default Values

Set Up 610 BCT Terminal

The 610 BCT may or may not be equipped with a 513 emulation cartridge, and the following setup applies to either. However, after login, if a 513 emulation cartridge is used with a 610, the terminal keys will function the same as the 513 terminal keys. If a 513 emulation cartridge is not used with a 610, the terminal keys will function the same as the 4410 terminal keys. To determine the presence of the 513 emulation cartridge, look on the right side of the 610 base. The cartridge should stick out a little (see Figure 5-1).

1. Press **CTRL** and function key **SET UP f1** and verify that the terminal set up screen is shown with default values (see Figure 5-9).

**NOTE:**

Function keys are located at the top of the G3 Management Terminal keyboard (see Figure 5-9). Windows are lighted rectangles that correspond to the function keys and are located across the bottom of the screen.

2. Using the up (↑) or down (↓) arrow keys on the keyboard, position cursor at the **SPEED** field.
3. Press function key corresponding to the **CHANGE OPTION** window until the speed is set at 9600.
4. Position cursor at fields on screen and set options to agree with those listed in Table 5-4 (see the below note).

**NOTE:**

Only the options included in Table 5-4 are critical to terminal operation in the system.

5. Press function key corresponding to the **SAVE** window to save the options.

Table 5-4. G3 Management Terminal Options for 610 BCT

Option	Setting
SPEED	9600
SEND PARITY	SPAC
AUTOWRAP	OFF
NEWLINE ON LF	YES
ENTER KEY	<ESC>SB*

* Press ESC key and then the letters S and B.

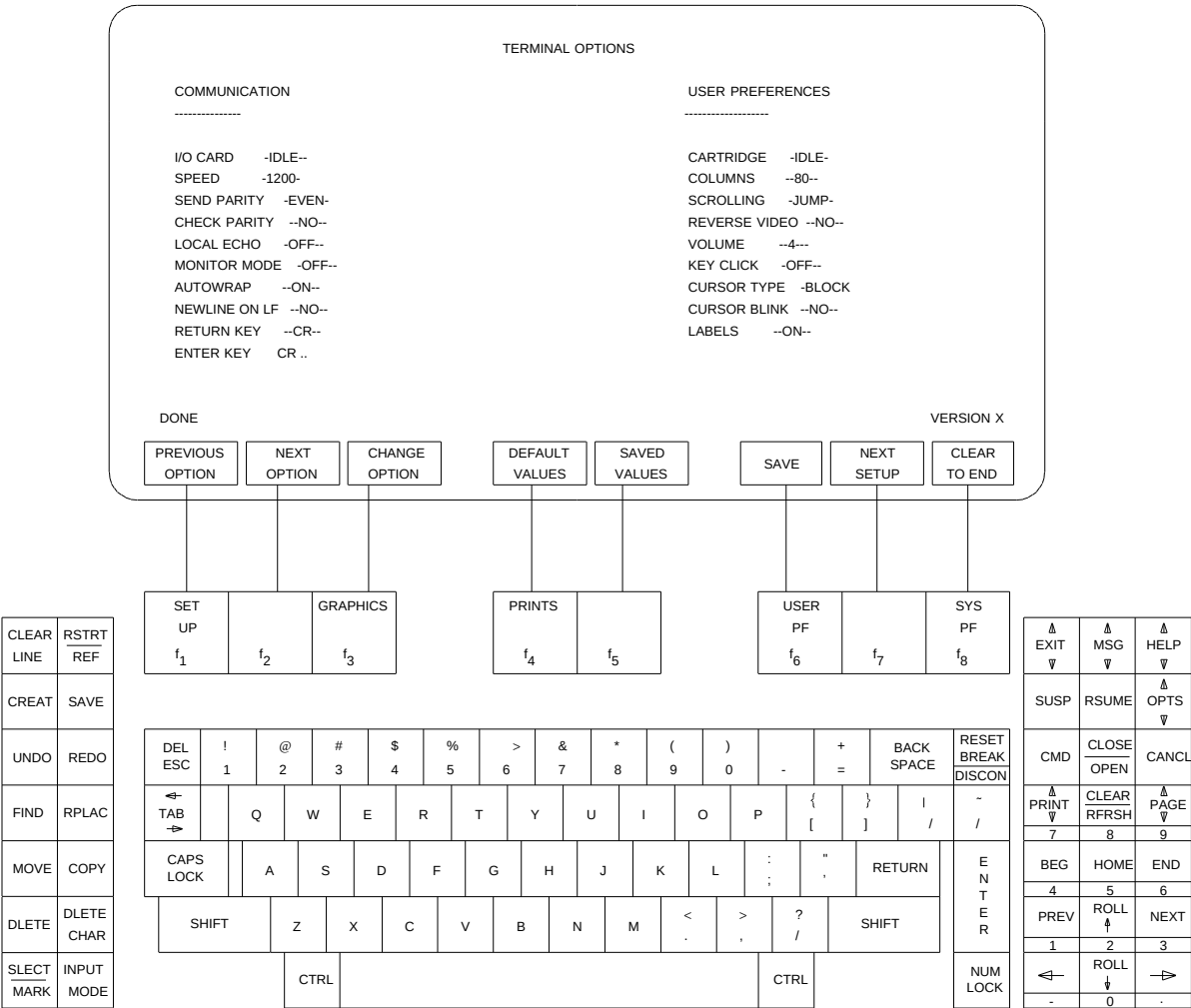
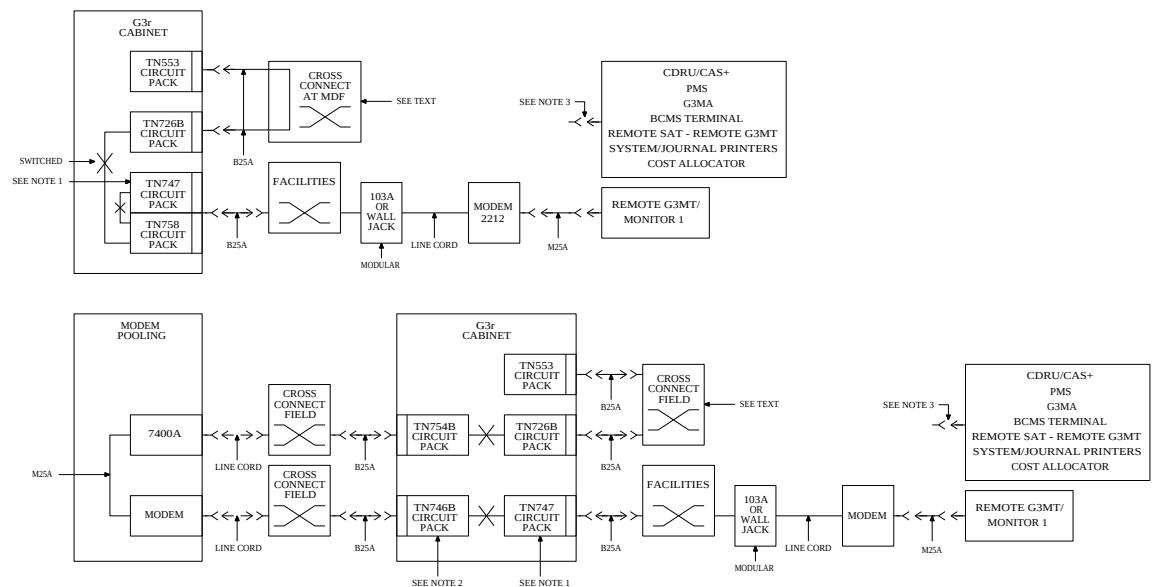


Figure 5-9. 610 BCT G3 Management Terminal Keyboard and Options Screen with Default Values

Remotely Connect G3 Management Terminal

A Management Terminal used for purposes other than maintenance can be installed at some distance from the switch. Use the documents that accompanied the switch to make such connections. Typical remote connections are shown in the accompanying illustration.



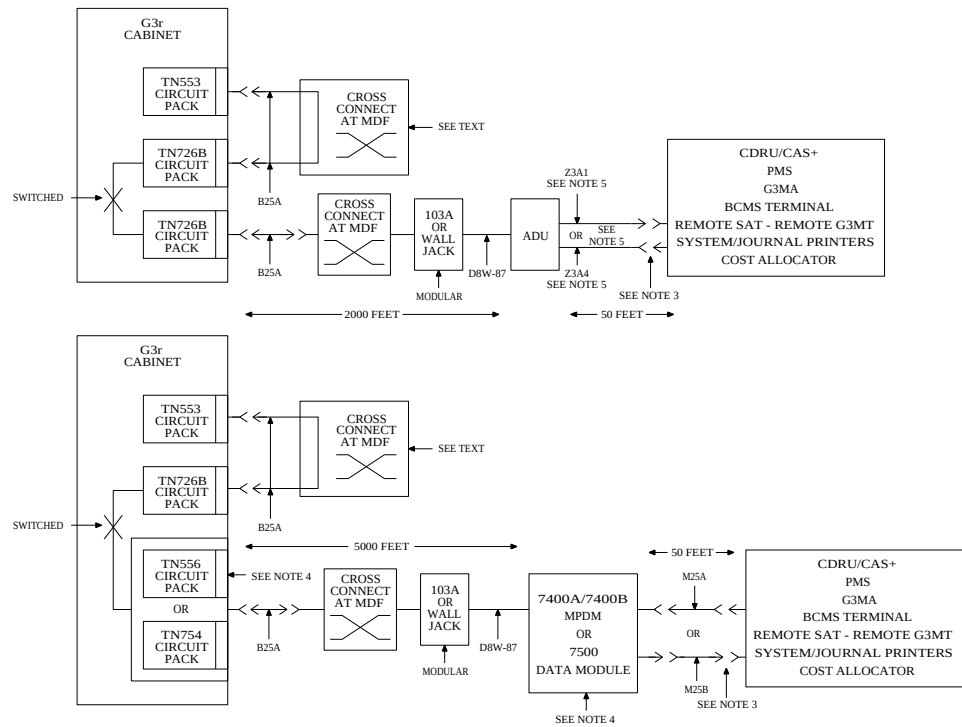
NOTES:

1. THIS CIRCUIT PACK CAN BE ANY OF THE FOLLOWING TRUNK PACKS:
TN747, TN753, TN760, TN767, OR TN464.
2. THIS CIRCUIT PACK CAN BE ANY ANALOG LINE PACK:
TN769, TN742, TN746, ETC.
3. WHEN A DB9 IS USED ON THE BACK OF A PC, USE A ED3P001-70,
G115 TO CONVERT DB9 TO DB25.

Figure 5-10. Typical Remote Connections to G3-MA/MT (and Other Devices)

Installing the G3 Management Applications

The PC-based DEFINITY Communications System Generic 3 Management Applications (formerly sometimes known as PC-SAT) are installed according to the complete installation instructions given in the *Generic 3 Management Applications Operations*, 585-229-202. Wiring diagrams of typical installations are given in the preceding figure and the following figure.



NOTES:

1. USE Z3A4 AND M25A ON CDRU/CAS+, PMS, SAT PC, BCMS TERMINAL AND REMOTE SAT.
2. USE Z3A1 AND M25B ON SYSTEM/JOURNAL PRINTERS.
3. WHEN A DB9 IS USED ON THE BACK OF A PC, USE A ED3P001-70, G115 TO CONVERT DB9 TO DB25.
4. A TN556 ISDN BRI CIRCUIT PACK IS USED IWHT THE 7500 DATA MODULE.
5. Z3A1 AND Z3A4 ARE CODES OF SPECIFIC AT&T ADU'S WITH CONNECTIVITY (PLUG OR SOCKET) AS INDICATED.

Figure 5-11. Remote Dialup Connections to G3-MA and G3-MT

Pinouts for the TN553 and TN726B circuit packs shown cross-connected in the preceding figure are given in the table below.

Table 5-5. Pinouts of TN553 and TN726 Circuit Packs

Pinouts					
TN553 (12 Ports)			TN726B (8 Ports)		
1	26	1	1	26	Blank
2	27		2	27	1
3	28	2	3	28	
4	29		4	29	Blank
5	30	3	5	30	2
6	31		6	31	
7	32	4	7	32	Blank
8	33		8	33	3
9	34	5	9	34	
10	35		10	35	Blank
11	36	6	11	36	4
12	37		12	37	
13	38	7	13	38	Blank
14	39		14	39	5
15	40	8	15	40	
16	41		16	41	Blank
17	42	9	17	42	6
18	43		18	43	
19	44	10	19	44	Blank
20	45		20	45	7
21	46	11	21	46	
22	47		22	47	Blank
23	48	12	23	48	8
24	49		24	49	
25	50	G	25	50	Blank

EXAMPLE CROSS CONNECT

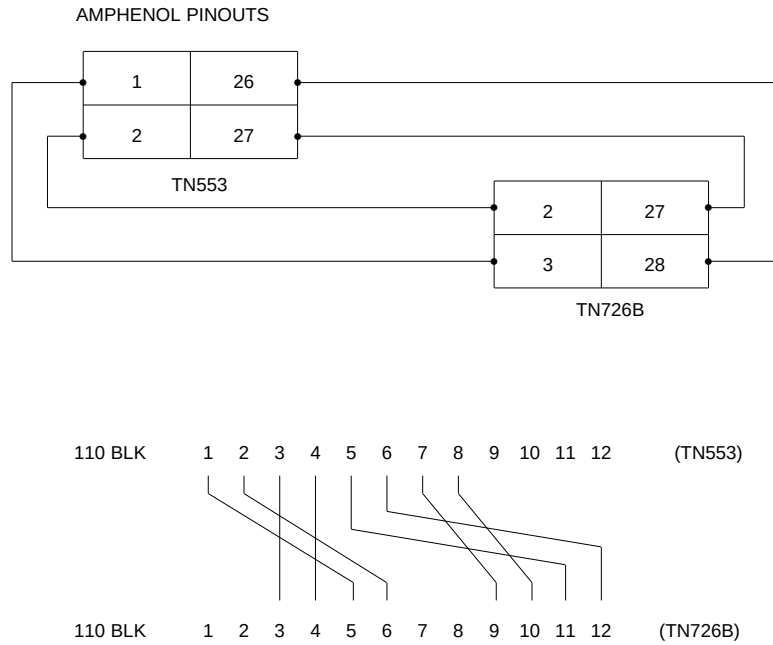


Figure 5-12. Example of Cross Connect Between TN553 and TN726B

Interconnect Switch Elements

6

Signals between the cabinets that compose your switch are carried by fiber-optic cables. To accomplish this, the electronic signals at the connectors on the back of a cabinet must be converted into optical signals and optical signals from another cabinet must be converted back into electronic signals. AT&T provides opto-electronic devices, the 9823-type lightwave transceivers, that provide this interface.

A completed signal from one cabinet to another, therefore, goes through a transceiver, then through a fiber-optic cable, and through another transceiver to its destination. If the two cabinets are close together, the optical signal may go through a single, directly connected fiber-optic cable. If the two cabinets are further apart, it may be convenient to connect the cabinets by way of your cross-connect field. Methods for handling fiber-optic cable within cross-connect fields are set out in Appendix E (in the rear of this document). This chapter discloses the connections you will have to make to complete your system.

Locate Fiber-Optic Cable Connections

Packed with the system you are installing, you will find documentation that includes an "Inter Cabinet Cable Running List." This running 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 the cables are to be connected. The following figure illustrates such a running list.

INTER CABINET CABLE RUNNING LIST								
CONNECTION FROM SD67975-01	CABLE CODE	LENGTH (FT)	FROM			TO		
			CAB	POS	SLOT	CAB	POS	SLOT
CAD3	104266465	20	01	C	02	02	B	02
CAD3	104266465	20	01	D	02	02	A	01

Figure 6-1. Typical Intercabinet Cable Running List

In the example given, you are to run a 104266465 cable (that is 20 feet long) from cabinet 1, carrier C, slot 2 to cabinet 2, carrier B, slot 2. So, following the instructions given below, transceivers should be installed in the indicated slots, then the transceivers should be connected by the indicated cables.



NOTE:

The procedures that follow refer to the running list and offer typical installation instructions besides. If there is any conflict between specifics in the running list and the instructions given in the following procedures, wire your system according to the running list.

General Rules for Fiber-Optic Installation

Be sure to cross-connect the fiber-optic cable between two 9823-type lightwave transceivers. That is, run the fiber-optic cable from the connector marked TX on one transceiver to the connector marked RX on the other. The illustrations given below show how to do this for direct connections and for connection through a cross-connect field. (The mechanics of running fiber-optic cables through a cross-connect field are given in Appendix E in the rear of this document.)



NOTE:

Use the 9823A for distances of up to 4900 feet. Use the 9823B for distances of up to 25,000 feet. All 9823As must be connected to 9823As and all 9823Bs must be connected to 9823Bs.

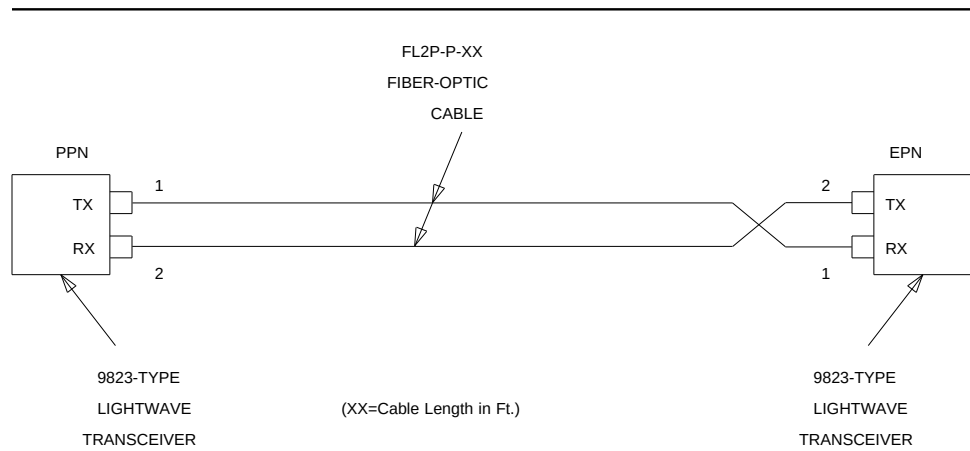


Figure 6-2. Local Fiber-Optic Cable Connections Between 9823-Type Transceivers

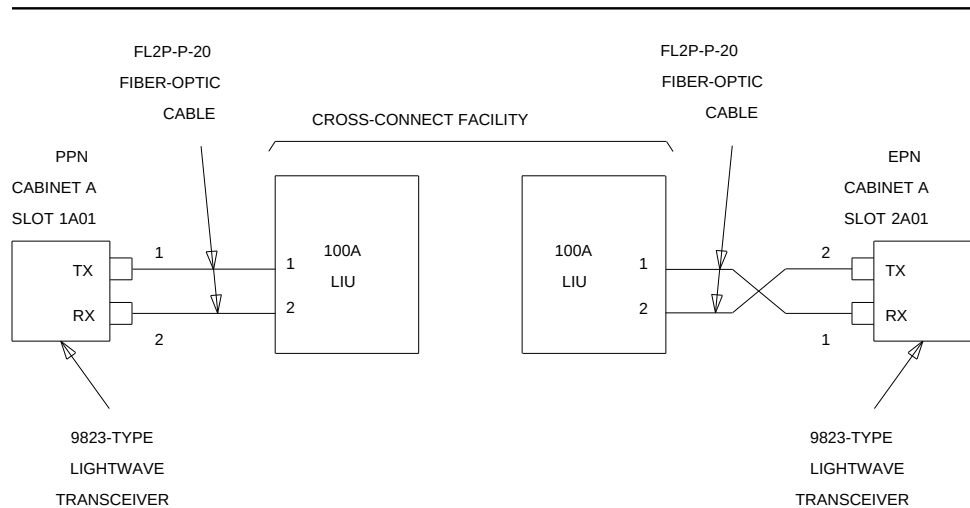


Figure 6-3. Remote Fiber-Optic Cable Connections Between 9823-Type Transceivers

Fiber Optic Cable Connections for Direct Connect Systems

The EPN cabinet is normally positioned adjacent to the PPN cabinet, but it may be located remotely in a different room or even a different building. Fiber optic cables are used to connect the PPN and EPN cabinets together.

Connect Fiber-Optic Cables for Standard-Reliability Systems

Use the running list that accompanies your system to indicate which cable is to be connected where. The following procedures amount to an example of how a system should be wired, therefore, rather than a prescription for all system wiring.

When the EPN and PPN cabinets are located side-by-side, one FL2P-P-xx fiber-optic cable and two 9823-type lightwave transceivers are required per EPN. (Here, "xx" is the length of the cable in feet.)

When the EPN cabinet is installed remotely from the PPN cabinet, two FL2P-P-xx fiber-optic cables and two 9823-type lightwave transceivers are required per EPN. Generally, use the 9823A for distances of up to 4900 feet. The 9823B may be used for distances of up to 25,000 feet. (The two fiber cables are required so one may go to each side of the fiber cross-connect field.)

1. If yours is a G1 or G3i system:
 - a. Install a 9823-type lightwave transceiver on the connector at slot 1A01 of the control carrier (carrier A). If you are to install a second EPN, install a transceiver at slot 1A02 of the same control carrier.
 - b. Connect one of the connectors at the end of the fiber-optic cable required by the running list to each connector on the 9823-type lightwave transceivers just installed. The fiber connected to each connector is numbered 1 or 2. The connector on the 9823 is marked TX or RX. You must keep track of which fiber is connected to which 9823 connector. Figures 6-2 and 6-3 offer the suggested way to order these connections.

See the following figures for the location of these connections.
 - c. If this is a multicarrier cabinet, route the fiber-optic cables from the transceiver and out of the cabinet as recommended in Appendix E. (Secure the cables to the cable-tie rack.)

2. If yours is a G3r system:
 - a. Install a 9823-type lightwave transceiver on the connector at slot 1B02 of carrier B. If you are to install a second EPN, install a transceiver at slot 1C02 of carrier C.
 - b. Connect one end of a fiber-optic cable to each connector on the 9823-type lightwave transceivers just installed. The fiber connected to each connector is numbered 1 or 2. The connector on the 9823 is marked TX or RX. You must keep track of which fiber is connected to which 9823 connector. Figures 6-2 and 6-3 offer the suggested way to make these connections.

See the next figure for the location of these connections.

 NOTE:

Label both ends of these cables as described in Appendix E.

- c. Route the fiber-optic cables as described in Appendix E.
3. If the EPN cabinets are located remotely from the PPN cabinet, connect to the EPN by way of your distribution field (as described in Appendix E).
4. Then, route the cables from the PPN down into the cable trays of each EPN cabinet.

 NOTE:

Route the cables according to the illustration that applies.

5. Install a 9823-type lightwave transceiver on the connector at slot 01 of the expansion control carrier of each EPN cabinet.
6. Connect the fiber-optic cables from the PPN cabinet to the 9823-type lightwave transceiver just installed.

 NOTE:

Connect the cable that comes from the transmit (TX) connector of the PPN transceiver to the receive (RX) connector of the EPN transceiver. (Use the labels attached when you connected to the PPN transceiver to identify the cables for connection.) Connect the remaining cable to the remaining connector. See Figures 6-2 and 6-3 for illustration of these connections.

7. Route the fiber-optic cables through the cabinet and through such cable organizers and cross-connects as are provided for them. Use the methods set out in Appendix E. (Secure the cables to the cable-tie rack.)
8. If your system has two EPN cabinets, use the techniques set out above to connect fiber-optic cables between the connectors at slots 2 of their expansion control carriers (carriers A of multi-carrier cabinets).

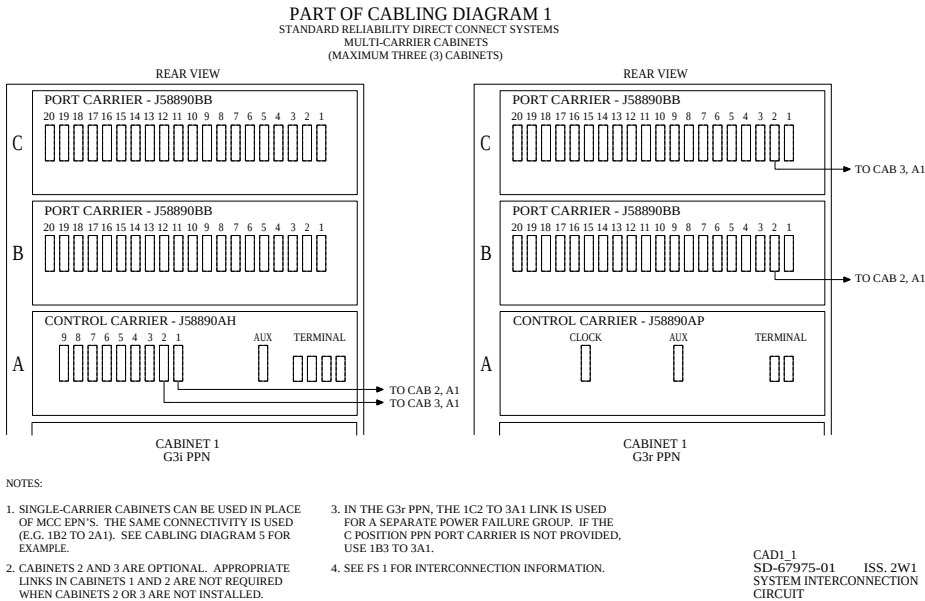


Figure 6-4. Fiber-Optic Cable Connections for Standard-Reliability Multi-Carrier Cabinet

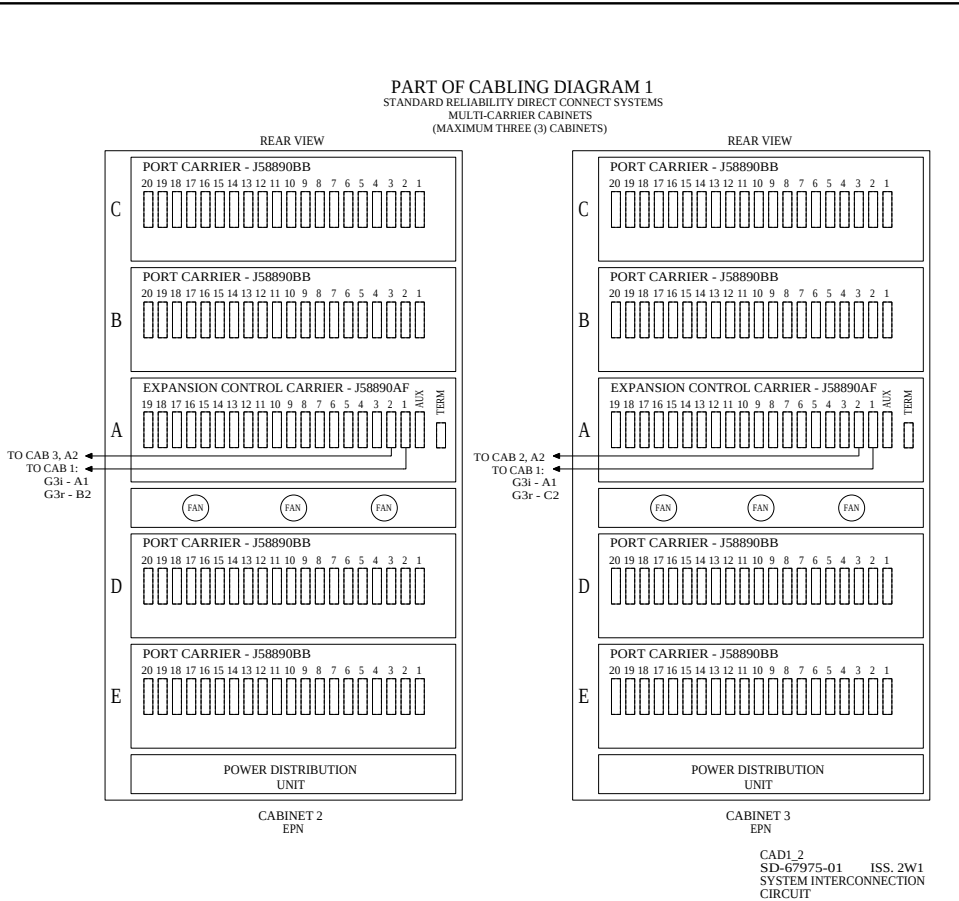


Figure 6-4. Fiber-Optic Cable Connections for Standard-Reliability Multi-Carrier Cabinet *Continued*

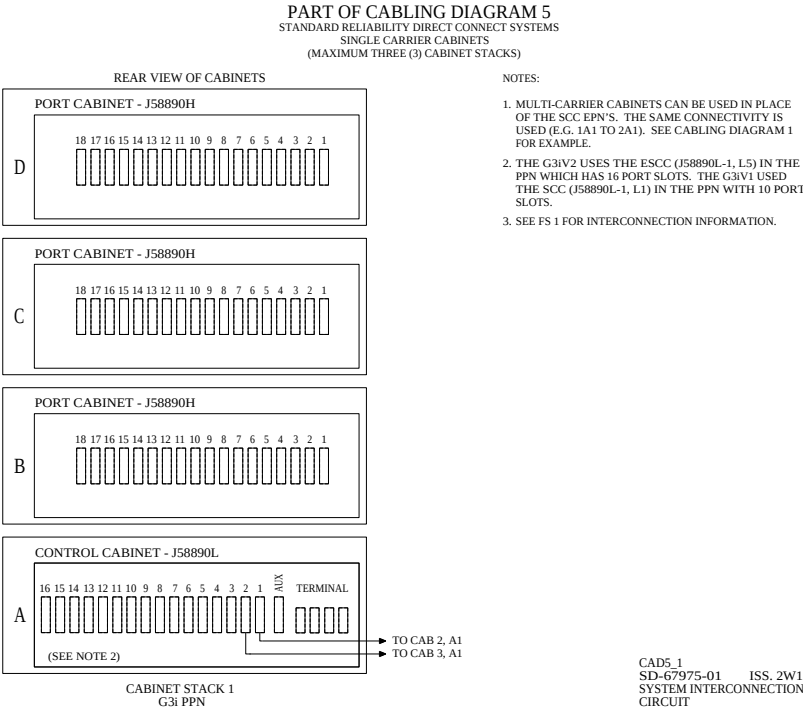


Figure 6-5. Fiber-Optic Cable Connections for Standard-Reliability Single-Carrier Cabinet

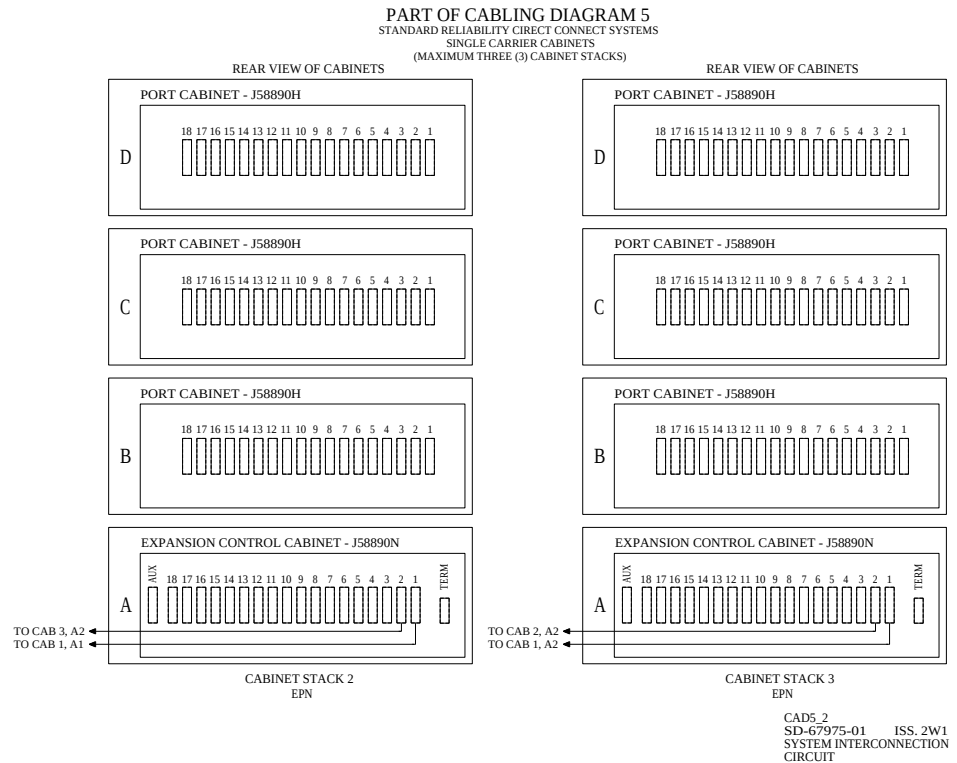


Figure 6-5. Fiber-Optic Cable Connections for Standard-Reliability Single-Carrier Cabinet *Continued*

Connect Fiber-Optic Cables for High-Reliability Systems

Use the running list that accompanies your system to indicate which cable is to be connected where. The following procedures are just an *example* of how a system should be wired rather than a prescription for all system wiring.

1. If yours is a G3i system:
 - a. Install a 9823-type lightwave transceiver on the connector at slot 1A01 on carrier A. If you are to install a second EPN, install a transceiver at slot 1A02 on carrier A.
 - b. See Note. Connect one end of a fiber-optic cable to each connector on the 9823-type lightwave transceivers just installed. The fiber connected to each connector is numbered 1 or 2. The connector on the 9823 is marked TX or RX. You must keep track of which fiber is connected to which 9823 connector. Figures 6-2 and 6-3 offer the suggested way to make these connections.

**NOTE:**

Label both ends of these cables as described in Appendix E.

- c. Route the fiber-optic cables through the cabinet and through such cable organizers and cross-connects as are provided for them. Use the methods set out in Appendix E.
 - d. Connections to the EPNs are identical to connections for standard-reliability systems. To connect the cables (just installed) to the EPNs, therefore, follow the instructions given above (instructions for connections to standard-reliability systems).
2. If yours is a G3r system:
 - a. Install a 9823-type lightwave transceiver on the connector at slot 1C02 on carrier C. If you are to install a second EPN, install a transceiver at slot 1D02 on carrier D.
 - b. Connect one end of a fiber-optic cable to each connector on the 9823-type lightwave transceivers just installed. The fiber connected to each connector is numbered 1 or 2. The connector on the 9823 is marked TX or RX. You must keep track of which fiber is connected to which 9823 connector. Figures 6-2 and 6-3 offer the suggested way to make these connections.

The next illustration shows the location of these connections.

 NOTE:

Label both ends of these cables as described in Appendix E.

- c. Route the fiber-optic cables through the cabinet and through such cable organizers and cross-connects as are provided for them. Use the methods set out in Appendix E. (Secure the cables to the cable-tie rack.)
- d. Connections to the EPNs are identical to connections for standard-reliability systems. To connect the cables (just installed) to the EPNs, therefore, follow the instructions given above (instructions for connections to standard-reliability systems).

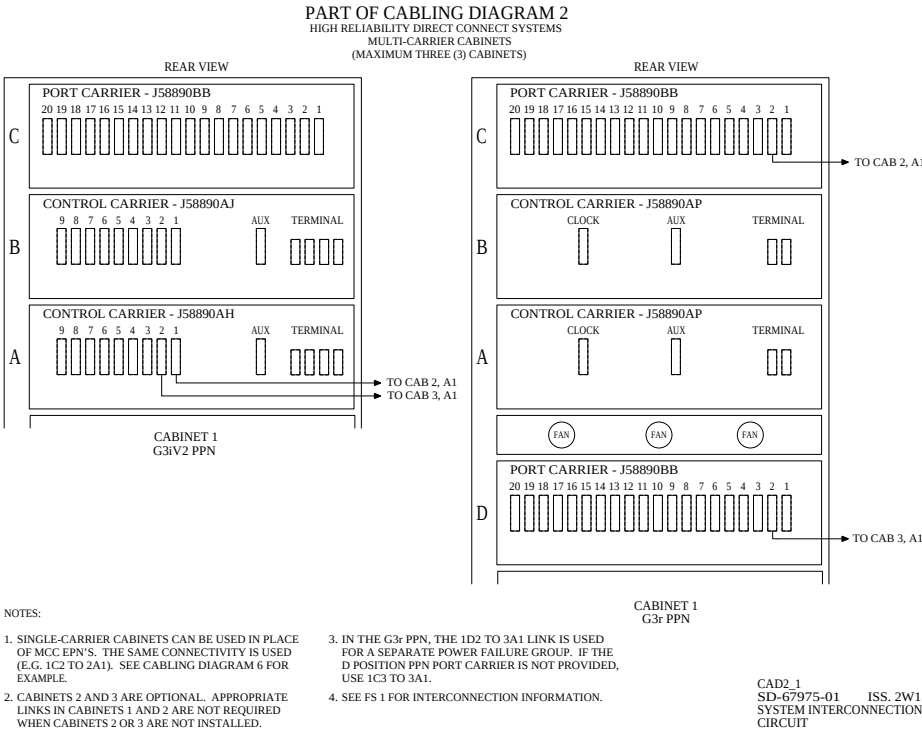


Figure 6-6. Fiber-Optic Cable Connections for High-Reliability MCC System

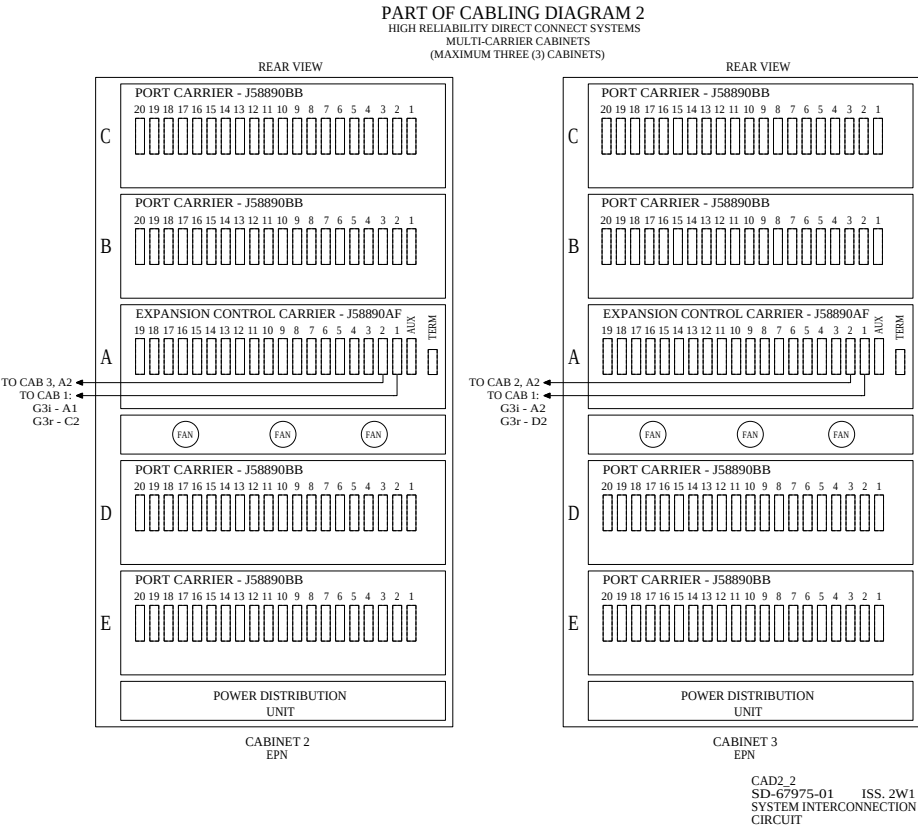


Figure 6-6. Fiber-Optic Cable Connections for High-Reliability MCC System
Continued

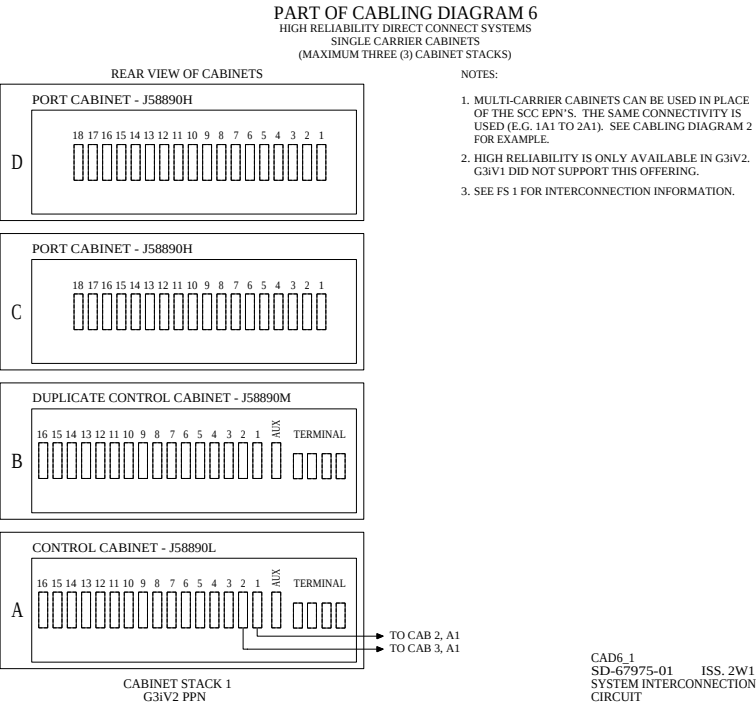


Figure 6-7. Fiber-Optic Cable Connections for High-Reliability SCC System

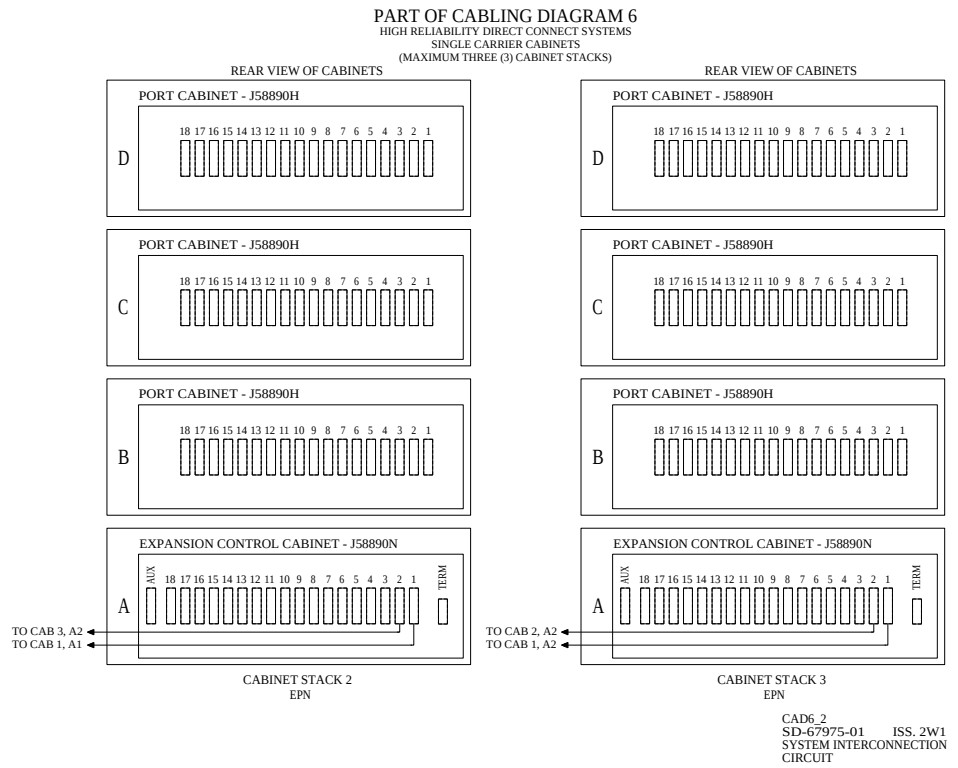


Figure 6-7. Fiber-Optic Cable Connections for High-Reliability SCC System
Continued

Connect Fiber-Optic Cables for Critical-Reliability Systems

Use the running list that accompanies your system to indicate which cable is to be connected where. (Use the following procedures as an example of how a system should be wired together, therefore, instead of as a prescription for all system wiring.)

When the EPN and PPN cabinets are located side-by-side, two FL2P-P-xx fiber-optic cables and four 9823-type lightwave transceivers are required. (Here, “xx” is the length of the cable in feet.) When the EPN cabinet is installed remotely from the PPN cabinet, four FL2P-P-xx fiber-optic cables and four 9823-type lightwave transceivers are required. (Here, “xx” is the length of the cable in feet.) Generally, use the 9823A for distances of up to 4900 feet. The 9823B may be used for distances of up to 25,000 feet.

1. If yours is a G1 or G3i system:
 - a. Install 9823-type lightwave transceivers on the connectors at slots 1A01 and 1B01 of the control carriers (carriers A and B). If you are to install a second EPN, install transceivers at slots 1A02 and 1B02 of the control carriers.
 - b. Connect one end of a fiber-optic cable to each connector on the 9823-type lightwave transceivers just installed. The fiber connected to each connector is numbered 1 or 2. The connector on the 9823 is marked TX or RX. You must keep track of which fiber is connected to which 9823 connector. Figures 6-2 and 6-3 offer the suggested way to make these connections.

The following illustrations show the location of these connections.
 - c. Route the fiber-optic cables through the cabinet and through such cable organizers and cross-connects as are provided for them. Use the methods set out in Appendix E. (Secure the cables to the cable-tie rack.)

2. If yours is a G3r system:
 - a. Install 9823-type lightwave transceivers on the connectors at slot 02 of port carriers C and D. If you are to install a second EPN, install a transceiver at slots 03 of carriers C and D.
 - b. Connect one end of a fiber-optic cable to each connector on the 9823-type lightwave transceivers just installed. The fiber connected to each connector is numbered 1 or 2. The connector on the 9823 is marked TX or RX. You must keep track of which fiber is connected to which 9823 connector. Figures 6-2 and 6-3 offer the suggested way to make these connections.

The next illustration shows the location of these connections.

 NOTE:

Label both ends of these cables as described in Appendix E.

- c. Route the cables as described in Appendix E.
- 3. If the EPN cabinets are located remotely from the PPN cabinet, connect to the EPN by way of your distribution field (as described in Appendix E).
- 4. Then, route the cables from the PPN down into the cable trays of each EPN cabinet.

5. Install a 9823-type lightwave transceiver on the connector at slot 01 of the expansion control carrier of each EPN cabinet.
6. Install a 9823-type lightwave transceiver on the connector at slot 02 of the port carrier nearest to the expansion control carrier of each EPN cabinet.
7. Connect the fiber-optic cables from the PPN cabinet to the 9823-type lightwave transceiver just installed.



NOTE:

Connect the cable that comes from the transmit (TX) connector of the PPN transceiver to the receive (RX) connector of the EPN transceiver. (Use the labels attached when you connected to the PPN transceiver to identify the cables for connection.) Connect the remaining cable to the remaining connector. See Figures 6-2 and 6-3 for illustration of these connections.

8. Route the fiber-optic cables through the cabinet and through such cable organizers and cross-connects as are provided for them. Use the methods set out in Appendix E. (Secure the cables to the cable-tie rack.)
9. If your system has two EPN cabinets, use the techniques set out above to connect fiber-optic cables between the connectors at slots 2 of their expansion control carriers (carriers A).
10. If your system has two EPN cabinets, use the techniques set out above to connect fiber-optic cables between the connectors at slots 3 of the B port carriers.

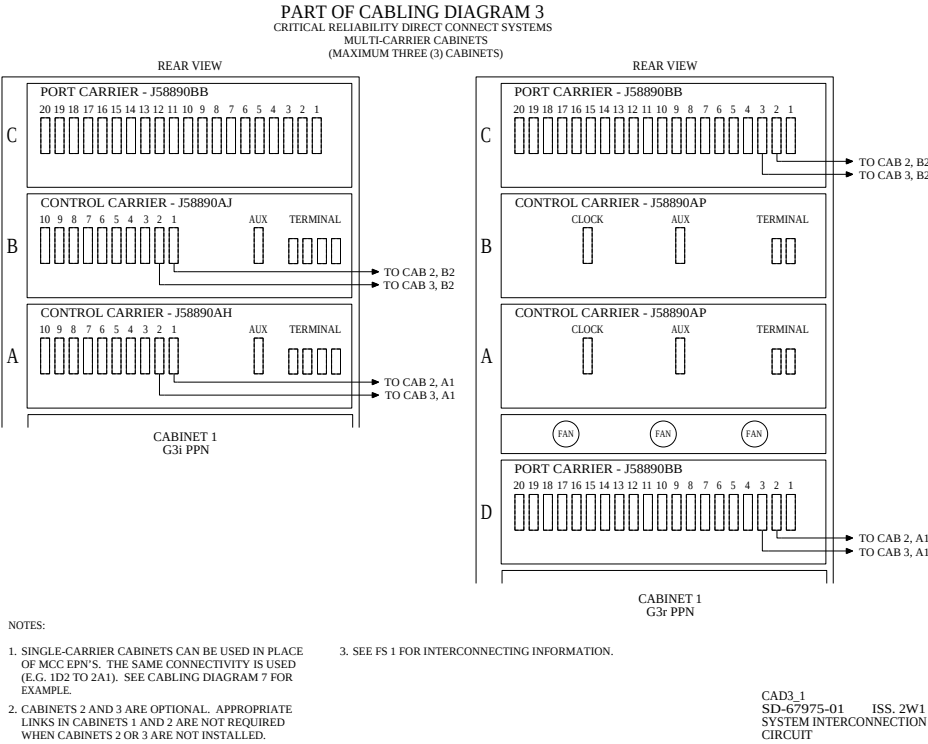


Figure 6-8. Fiber-Optic Cable Connections for Critical-Reliability Multi-Carrier Switch Cabinet

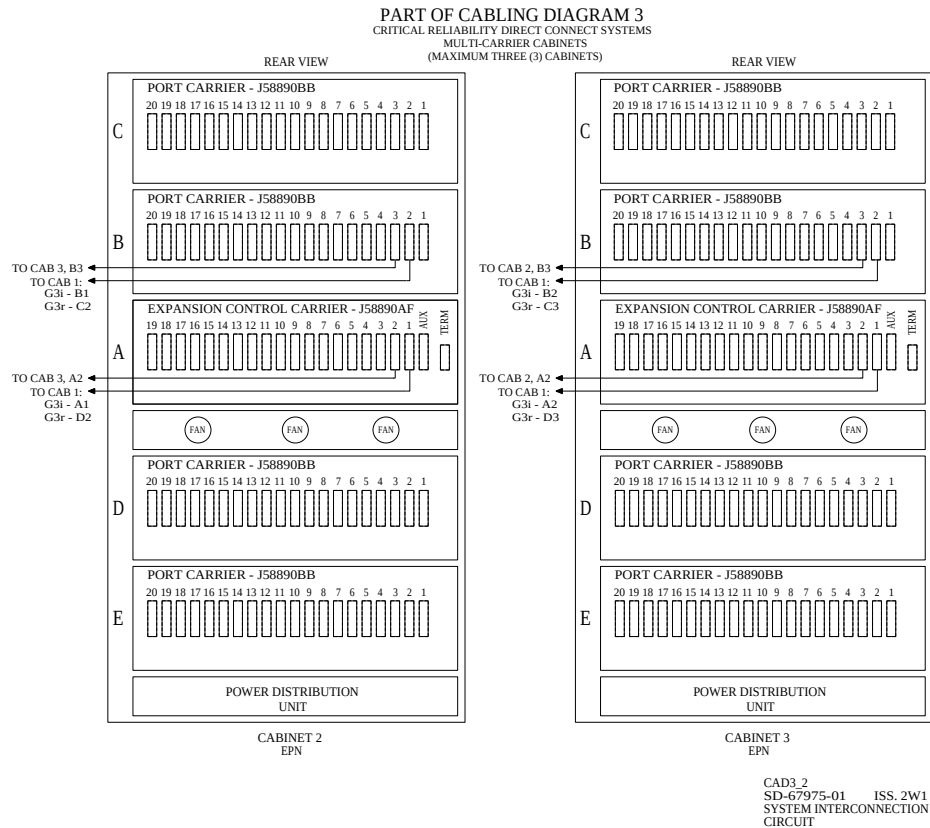


Figure 6-8. Fiber-Optic Cable Connections for Critical-Reliability Multi-Carrier Switch Cabinet Continued

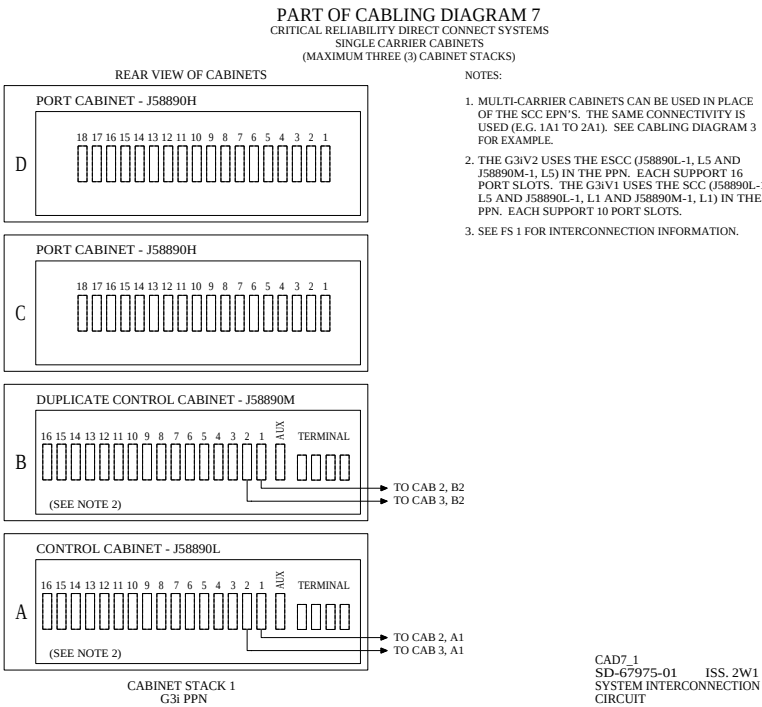


Figure 6-9. EPN Fiber-Optic Cable Connections for Single-Carrier Cabinet with Critical-Reliability Switch

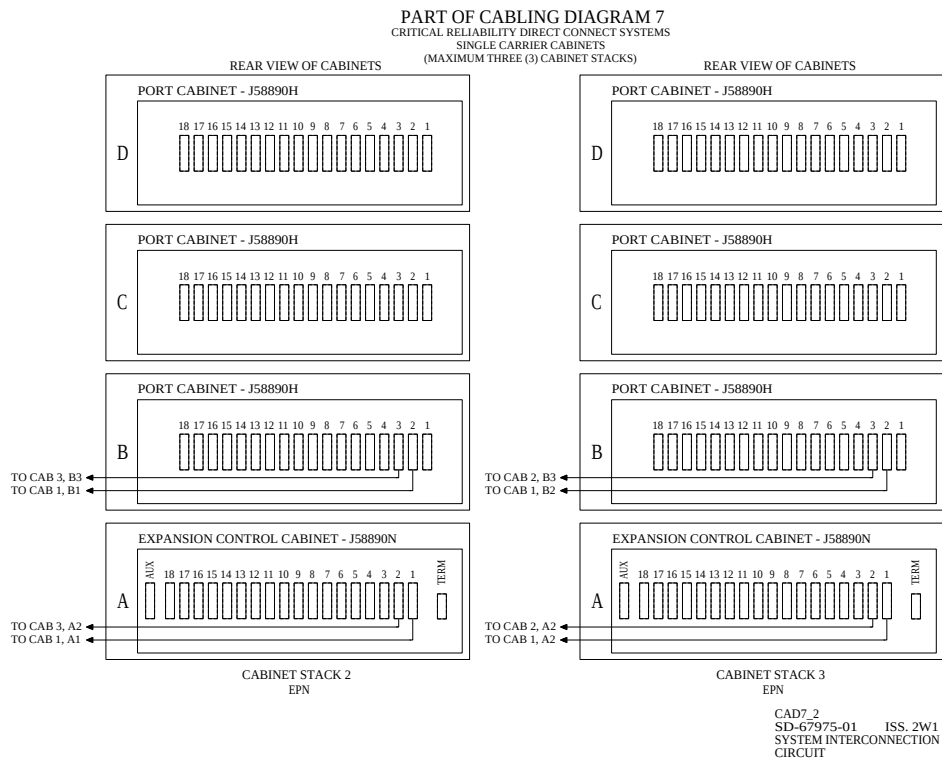


Figure 6-9. EPN Fiber-Optic Cable Connections for Single-Carrier Cabinet with Critical-Reliability Switch *Continued*

Fiber-Optic Cable Connections for G3r Center-Stage Switch Systems

Cabling Between Cabinets in Standard Reliability CSS-Connected Systems with One Switch Node

Use the running list that accompanies your system to indicate which cable is to be connected where. The following procedures constitute an example of how a system should be wired together, therefore, rather than a prescription for all system wiring.

The next illustration shows fiber-optic cabling between cabinets in simplex CSS-connected systems with one switch node carrier. Included in the figure are carrier positions, types of carriers, and TN570 EI and TN573 SNI port slots. The cable shown between the EI and SNI on the PPN cabinet is a preinstalled metallic cable (H600-278).

It is important to label all of the cables you install. Refer to the section named "Labels for Fiber Optic Cables" in Appendix E for details.

1. Discover, from the documents that accompany the system, how many cables are to be installed between the PPN and the EPNs. If the numbers of the SNI slots on the PPN that are to be used are not given in the documents, plan to use the outer slots first in alternating order. For example, the first two SNI slots to be connected should be 3 and 20 (the leftmost and rightmost of the unused slots). Next, you should use 4 and 19, and so forth.

Then, at the rear of the PPN cabinet, switch node carrier E (see the next illustration):

- Install a 9823-type lightwave transceiver on each SNI connector that is to be used.
 - Connect one end of a fiber-optic cable to each connector on the 9823-type transceivers just installed.
 - Route the cables from the PPN cabinet and through such cable organizers and cross-connects as are provided for these fiber-optics. Use the methods set out in Appendix E.
 - Finally route each fiber-optic cable into the cable tray of its assigned EPN cabinet.
2. At the rear of each EPN cabinet Expansion Control Carrier A:
 - Install a 9823-type lightwave transceiver on the connector at slot 1.
 - Connect the fiber-optic cables just routed from the PPN cabinet to the 9823-type lightwave transceiver just installed.

NOTE:
Remember that the transmitting connector of one transceiver is always connected to the receiving connector of the other.

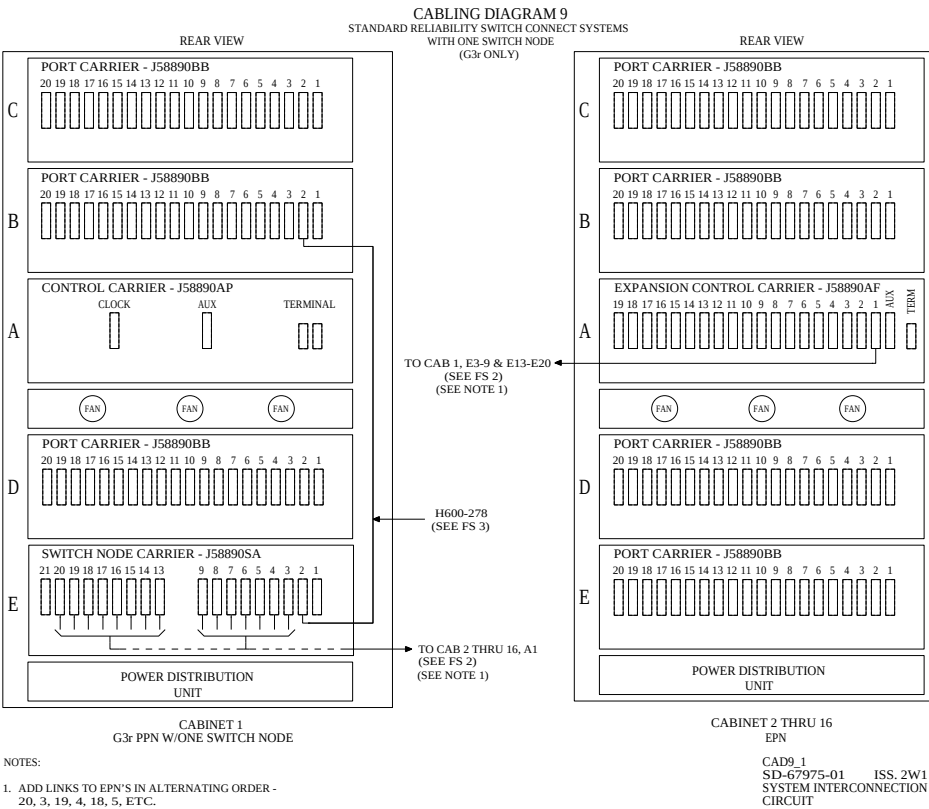


Figure 6-10. Fiber-Optic Cabling in a Standard Reliability CSS-Connected System with One Switch Node

Cabling Between Cabinets in Standard Reliability CSS-Connected Systems with Two Switch Nodes

Use the running list that accompanies your system to indicate which cable is to be connected where. The following procedures constitute an example of how a system should be wired together, therefore, rather than a prescription for all system wiring.

The next figure shows fiber-optic cabling between cabinets in simplex CSS-connected systems with two switch nodes. Included in the figure are carrier positions, types of carriers, and TN570 EI and TN573 SNI port slots. The cables shown between the EI and SNI on cabinets 1 and 2 are preinstalled metallic cables.

It is important to label all of the cables you install. Refer to the section named “Labels for Fiber Optic Cables” in Appendix E for details.

1. Discover, from the documents that accompany the system, how many fiber-optic cables are to be installed between the switch-node carrier in cabinet 1 and the switch-node carrier in cabinet 2, and between those cabinets and the other EPNs.

If the numbers of the SNI slots on the PPN that are to be used are not given in the documents:

- Plan to connect slots between two switch-node carriers in the order: 13, 9, 14, 8, and 15.
 - Plan to connect SNI slots to EI slots using the outer slots first in alternating order. The first two SNI slots to be connected should be 3 and 20 (the leftmost and rightmost of the unused slots). Next, you should use 4 and 19, and so forth.
2. Then, at the rear of the PPN cabinet, switch node carrier E (see the next figure):
 - Install a 9823-type lightwave transceiver on each SNI connector that is to be used.
 - Connect one end of two fiber-optic cables to each of the 9823-type transceivers just installed.
 - Route the cables from the PPN cabinet and through such cable organizers and cross-connects as are provided for these fiber-optics. Use the methods set out in Appendix E.
 - Finally route each fiber-optic cable into the cable tray of its assigned EPN cabinet.

3. At the rear of cabinet 2 Switch Node Carrier E:

- Install a 9823-type lightwave transceiver on each SNI connector that is to be used.
- Connect the fiber-optic cables from slot 13 of the PPN cabinet 1 to the lightwave-transceiver connector in slot 13 on cabinet 2.



NOTE:

Remember that the transmitting connector of one transceiver is always connected to the receiving connector of the other.

- Continue to connect corresponding SNI slots between cabinets 1 and 2.
- Connect cables to SNI slots 3-7 and 16-20 as necessary.
- Route these cables from cabinet 2 through such cable organizers and cross-connects as are provided for these fiber-optics. Use the methods set out in Appendix E.
- Finally route each fiber-optic cable into the cable tray of its assigned EPN cabinet.

4. At the rear of each EPN cabinet Expansion Control Carrier A:

- Install a 9823-type lightwave transceiver on the connector at slot 1. For example, if EPN cabinets 3, 4, and 5 are to be connected to the system, install transceivers at slots 3A01, 4A01, and 5A01.
- Connect the fiber-optic cables routed from cabinet 1 switch-node carrier or cabinet 2 switch-node carrier to the 9823-type lightwave transceiver just installed.

Fiber-Optic Cable Connections Among More than Two Switch Nodes

Use the Inter-Cabinet Cable Running List that accompanies your system to indicate which cable is to be connected where. The connections indicated on your Inter-Cabinet Cable Running List were designed to make possible particular traffic capacities between switch-node carriers. For this reason, you may find any of the following to be true:

- There may be one or several connections between any pair of switch-node carriers.
- Cables connected between switch-node carriers will tend to be alternated between switch-node circuit packs starting with packs 13 and 9 and alternating outwards.

- Cables connected from switch-node carriers to EPNs will tend to be alternated between switch-node circuit packs starting with packs 3 and 20 and alternating inwards.
- A cable from a switch-node circuit pack will be connected to the expansion-interface at port connector 1 of the expansion-control carrier of an EPN. (In a Critical-reliability system, a second cable will be connected from the second switch-node carrier to connector 2 of the nearest port carrier.)
- On PPNs, a (metallic) cable is connected between connector 2 of the switch-node carrier and connector 2 of the port carrier physically nearest the control carrier.

The principles set out above are illustrated in the following diagrams of systems with two or three switch nodes.

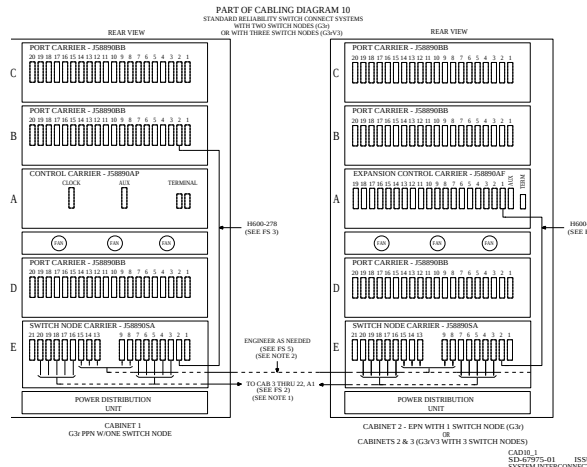


Figure 6-11. Fiber-Optic Cabling in a Standard Reliability CSS-Connected G3r with Two SNs (Part 1)

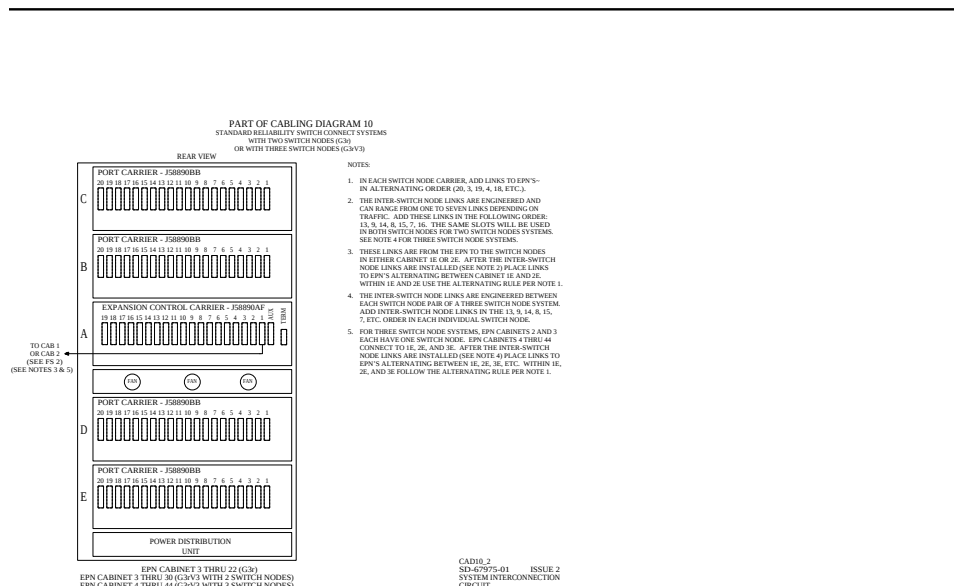


Figure 6-12. Fiber-Optic Cabling in a Standard Reliability CSS-Connected G3r with Two SNs (Part 2)

Cabling Between Cabinets in a High-Reliability CSS-Connected System with One Switch Node

Use the running list that accompanies your system to indicate which cable is to be connected where. The following procedures constitute an example of how a system should be wired together, therefore, rather than a prescription for all system wiring.

The next figure shows fiber-optic cabling between cabinets in high-reliability CSS-connected systems with one switch node carrier. Included in the figure are carrier positions, types of carriers, and TN570 EI and TN573 SNI port slots.

It is important to label all of the cables you install. Refer to the section “Labels for Fiber Optic Cables” in Appendix E for details.

The 1 to 14 cables shown in the figure are connected between the PPN cabinet and each EPN cabinet in an alternating port slot order: 3, 19; 4, 18; 5, 17; and so forth.

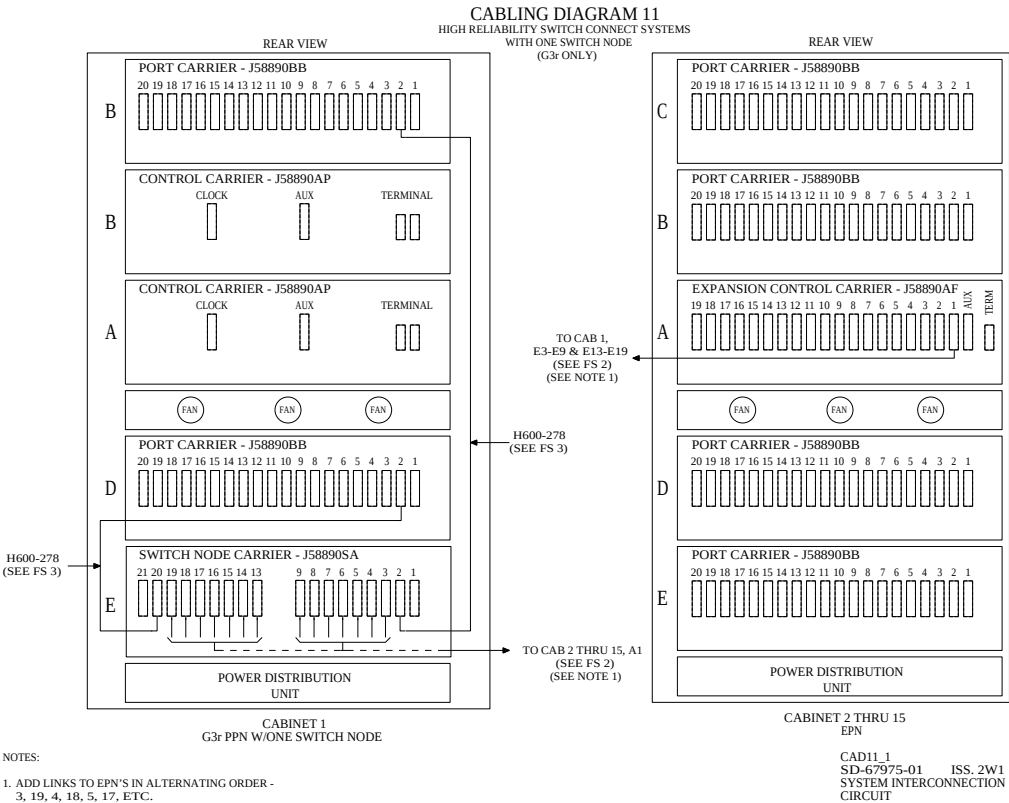


Figure 6-13. Fiber-Optic Cabling in a High-Reliability CSS-Connected System with One Switch Node

Cabling Between Cabinets in a High-Reliability CSS-Connected System with Two Switch Nodes

Use the running list that accompanies your system to indicate which cable is to be connected where. The following procedures constitute an example of how a system should be wired together, therefore, rather than a prescription for all system wiring.

The following figure shows fiber-optic cabling between cabinets in high-reliability CSS-connected systems with two switch node carriers. Included in the figure are carrier positions, types of carriers, and TN570 EI and TN573 SNI port slots.

It is important to label all of the cables you install. Refer to the section “Labels for Fiber Optic Cables” in Appendix E for details.

The following cables shown in the figure are connected in the following alternating port slot orders:

- 1 to 4 cables between the PPN cabinet and cabinet 2 — 13, 9, 14, and 8
- 1 to 10 cables between the PPN cabinet and cabinets 3 to 12 — 20, 3; 19, 4; and so forth
- 1 to 10 cables between the EPN cabinet and cabinets 13 to 22 — 20, 3; 19, 4; and so forth

Fiber-Optic Cable Connections Among More than Two Switch Nodes

Use the Inter-Cabinet Cable Running List that accompanies your system to indicate which cable is to be connected where. The connections indicated on your Inter-Cabinet Cable Running List were designed to make possible particular traffic capacities between switch-node carriers. For this reason, you may find any of the following to be true:

- There may be one or several connections between any pair of switch-node carriers.
- Cables connected between switch-node carriers will tend to be alternated between switch-node circuit packs starting with packs 13 and 9 and alternating outwards.
- Cables connected from switch-node carriers to EPNs will tend to be alternated between switch-node circuit packs starting with packs 3 and 20 and alternating inwards.
- A cable from a switch-node circuit pack will be connected to the expansion-interface at port connector 1 of the expansion-control carrier of an EPN. (In a Critical-reliability system, a second cable will be connected from the second switch-node carrier to connector 2 of the nearest port carrier.)
- On PPNs, a (metallic) cable is connected between connector 2 of the

switch-node carrier and connector 2 of the port carrier physically nearest the control carrier.

The principles set out above are illustrated in the following diagrams of systems with two or three switch nodes.

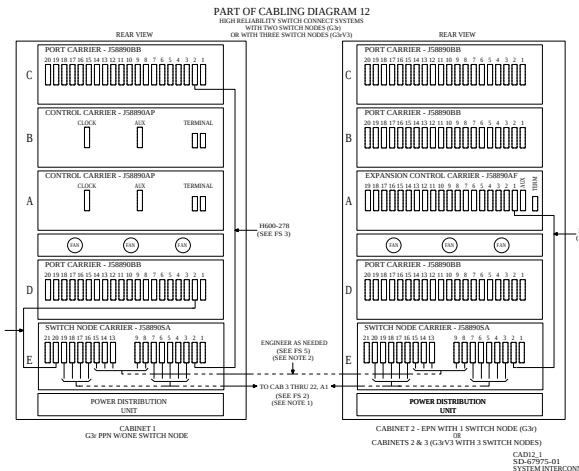


Figure 6-14. Fiber-Optic Cabling in a High Reliability CSS-Connected G3r with Two SNs (Part 1)

Fiber-Optic Cable Connections for G3r Center-Stage
Switch Systems

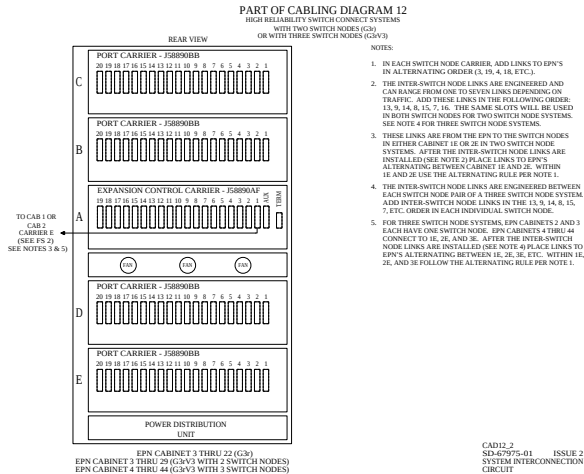


Figure 6-15. Fiber-Optic Cabling in a High Reliability CSS-Connected G3r with Two SNs (Part 2)

Cabling Between Cabinets in Critical-Reliability CSS-Connected Systems with One Switch Node

Use the running list that accompanies your system to indicate which cable is to be connected where. The following procedures constitute an example of how a system should be wired together, therefore, rather than a prescription for all system wiring.

The next figure shows fiber-optic cabling between cabinets in a critical-reliability CSS-connected system with one switch node carrier. The cable shown between port slots one and two on each switch node carrier is shielded metallic cable (H600-278). Included in the figure are carrier positions, types of carriers, and TN570 EI and TN573 SNI port slots.

It is important to label all of the cables you install. Refer to the section “Labels for Fiber Optic Cables” in Appendix E for details.

The two groups of 1 to 15 cables shown in the figure are connected between the PPN cabinet and each EPN cabinet in an alternating port slot order: 20, 3; 19, 4; 18, 5; and so forth.

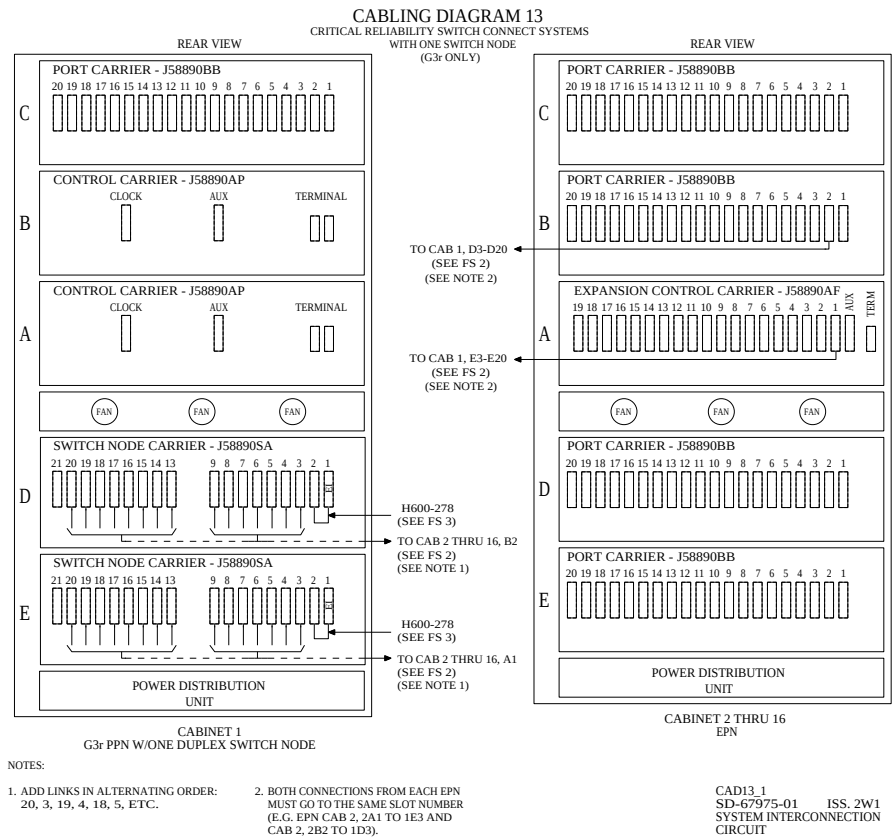


Figure 6-16. Fiber-Optic Cabling in a Critical-Reliability CSS-Connected System with One Switch Node

**Cabling Between Cabinets in Critical-Reliability
CSS-Connected Systems with One Switch Node
(Two Switch-Node Carriers)**

Use the running list that accompanies your system to indicate which cable is to be connected where. The following procedures constitute an example of how a system should be wired together, therefore, rather than a prescription for all system wiring.

The next figure shows fiber-optic cabling between cabinets in a critical-reliability CSS-connected system with two switch node carriers. The cable shown between port slots one and two on each switch node carrier is shielded metallic cable (H600-278). Included in the figure are carrier positions, types of carriers, and TN570 EI and TN573 SNI port slots.

It is important to label all of the cables you install. Refer to the section “Labels for Fiber Optic Cables” in Appendix E for details.

The following cables shown in the figure are connected in the following alternating port slot orders:

- 1 to 5 cables between switch node carrier D in the PPN cabinet and switch node carrier D in cabinet 2 — 13, 9, 14, 8, and 15.
1 to 5 cables between switch node carrier E in the PPN cabinet and switch node carrier E in cabinet 2 — 13, 9, 14, 8, and 15.

⇒ NOTE:

The above steps describe duplicated connections made for the sake of critical reliability. Connections between carriers 1D and 2D should match connections between carriers 1E and 2E.

- 1 to 10 cables between the switch node carrier in position D in the PPN cabinet and port carriers B in cabinets 3 to 12 — 20, 3; 19, 4; and so forth.
1 to 10 cables between the switch node carrier in position E in the PPN cabinet and expansion control carriers A in cabinets 3 to 12 — 20, 3; 19, 4; and so forth.

⇒ NOTE:

The above steps describe duplicated connections made for the sake of critical reliability. Connections from a given slot on PPN switch-node carriers D and E must be routed to the same cabinet. For example, if 1D20 is connected to 3B2, then 1E20 must be connected to 3A1.

- 1 to 10 cables between the switch node carrier in position D in EPN cabinet 2 and the port carriers in cabinets 13 to 22 — 20, 3; 19, 4; and so forth.
1 to 10 cables between the switch node carrier in position E in EPN cabinet 2 and the expansion control carriers in cabinets 13 to 22 — 20, 3; 19, 4; and so forth.

⇒ NOTE:

The above steps describe duplicated connections made for the sake of critical reliability. Connections from a given slot on EPN switch-node carriers D and E must be routed to the same cabinet. For example, if 2D20 is connected to 13B2, then 2E20 must be connected to 13A1.

Fiber-Optic Cable Connections Among More than Two Switch Nodes

Use the Inter-Cabinet Cable Running List that accompanies your system to indicate which cable is to be connected where. The connections indicated on your Inter-Cabinet Cable Running List were designed to make possible particular traffic capacities between switch-node carriers. For this reason, you may find any of the following to be true:

- There may be one or several connections between any pair of switch-node carriers.
- Cables connected between switch-node carriers will tend to be alternated between switch-node circuit packs starting with packs 13 and 9 and alternating outwards.
- Cables connected from switch-node carriers to EPNs will tend to be alternated between switch-node circuit packs starting with packs 3 and 20 and alternating inwards.
- A cable from a switch-node circuit pack will be connected to the expansion-interface at port connector 1 of the expansion-control carrier of an EPN. (In a Critical-reliability system, a second cable will be connected from the second switch-node carrier to connector 2 of the nearest port carrier.)
- On PPNs, a (metallic) cable is connected between connector 2 of the switch-node carrier and connector 2 of the port carrier physically nearest the control carrier.

The principles set out above are illustrated in the following diagrams of systems with two or three switch nodes.

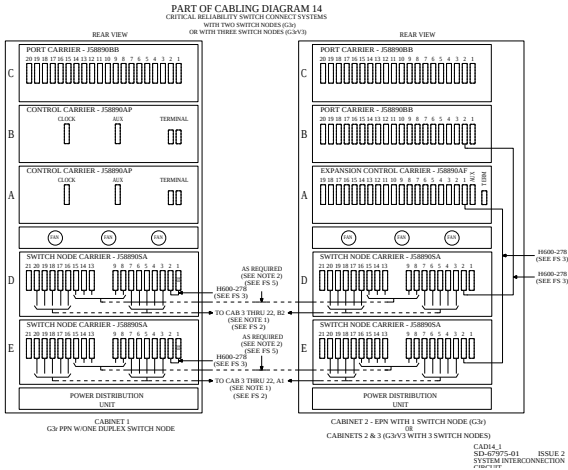


Figure 6-17. Fiber-Optic Cabling in a Critical Reliability CSS-Connected G3r with Two SNs (Part 1)

Fiber-Optic Cable Connections for G3r Center-Stage Switch Systems

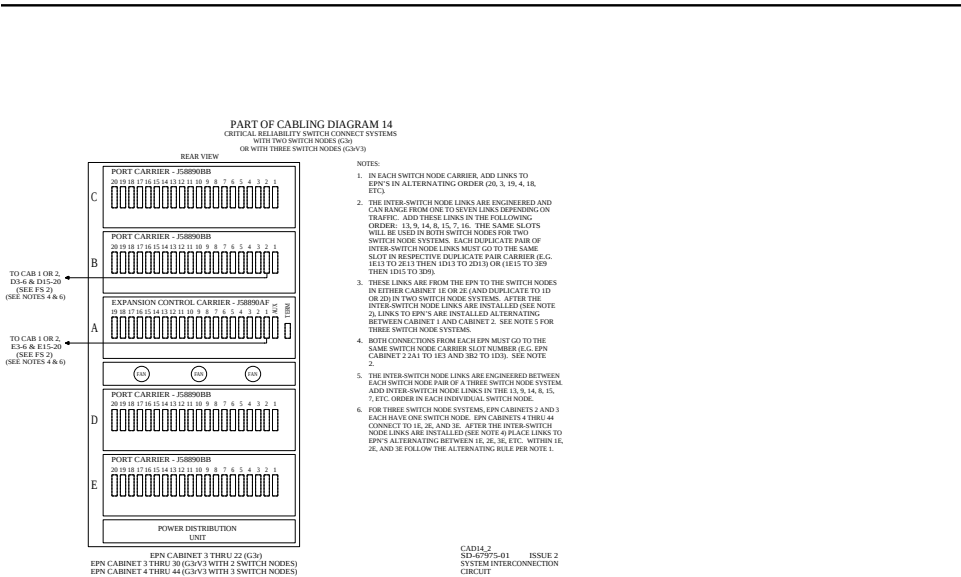


Figure 6-18. Fiber-Optic Cabling in a Critical Reliability CSS-Connected G3r with Two SNs (Part 2)

DS1C Remoting

DS1 connection between PNs can be used only to connect elements of a G3r system. Digital services (DS1) and associated cabling can be used to connect PNs that are less than 100 miles apart. (DS1 may be used where fiber optic cabling is not available to the remote site. Fiber remoted networks must be less than 25,000 feet from local port networks.) The DS1 cabling between the PNs involves connections from the PNs to a public network.

It is important to label all of the cables you install. Refer to the section “Labels for Fiber Optic Cables” in Appendix E for details.

A TN574 DS1 Converter (DS1C) circuit pack is used with the cabling. The DS1C can reside in the following carriers: port, switch node (port slot 1 or 21), and expansion control (any port slot).

DS1C Cabling On a Carrier

Use the running list that accompanies your system to indicate which cable is to be connected where. The following procedure is an example of how a system should be wired rather than a prescription for all system wiring.

As shown in a CSS-connected system in the next figure DS1 cabling on a carrier connects a DS1C to an appropriate EI or SNI and also provides a piggy-back connector to connect it to a public network. The DS1C to EI/SNI cable is a shielded cable held in place at the EI/SNI port connector by a 4B retainer and at the DS1C port connector by a 4C retainer. Table 6-1 lists the cable numbers and lengths for connections within the system.

It is important to label all of the cables you install. Refer to the section “Labels for Fiber Optic Cables” in Appendix E for details.

Table 6-1. TN574 DS1C Cable Lengths On a Carrier

Connection Type	Length	Comcode Number
On same carrier	1 ft.	846448637
Between two carriers in same cabinet	5.5 ft.	846448645
Between two adjacent cabinets	1 ft., used with 2 9823As, and 1 20-ft. fiber-optic cable	846448652, and 1 846885259 bracket

DS1C Cabling to a Public Network

Use the running list that accompanies your system to indicate which cable is to be connected where. The following procedures constitute an example of how a system should be wired together, therefore, rather than a prescription for all system wiring.

The next figure shows the cabling and the network between the remote PNs in a CSS-connected system. DS1C circuit packs are plugged into the expansion carrier in the EPN cabinet and in either a port carrier or a switch node carrier in the PPN cabinet, (as shown in the illustration).

A H600-348 cable is connected from each DS1C port to a channel service unit (CSU). The CSU is connected to a wall field. This cable provides from one to four DS1 connections. The H600-348 cable is plugged into the piggy-back connector on the 846448637-52 cable connected to the DS1C port connector. The other end of the H600-348 cable has four 15-pin sub-miniature D-type connectors each of which plugs into a CSU. (Refer to appendix F for a pinout of this cable.) The PNs communicate across the public network between the wall fields.

It is important to label all of the cables you install. Refer to Chapters 9 and 10 for details.

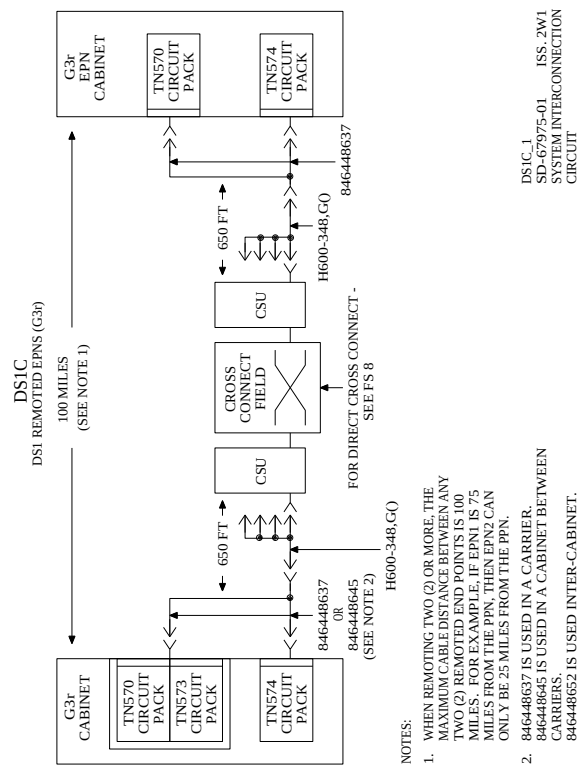


Figure 6-19. DS1C Connections Between Remote PNs

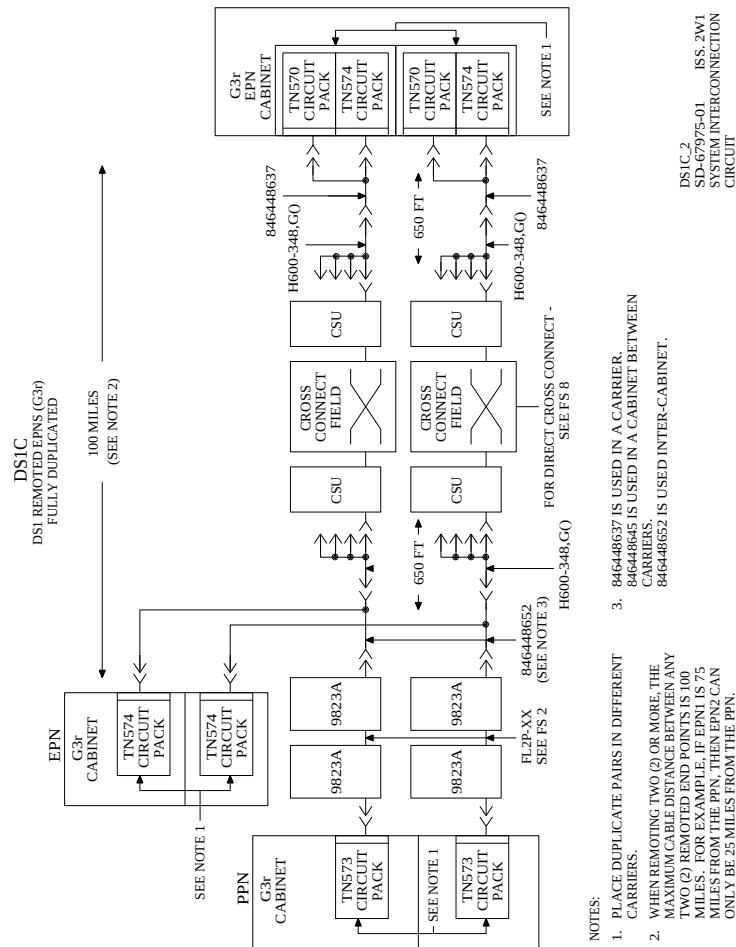


Figure 6-19. DS1C Connections Between Remote PNs *Continued*

Activate System

7

Activate a G1 or G3i/s/vs System

Instructions are given here to activate systems without a RISC processor.



NOTE:

To activate a Generic 3r system, one with the RISC processor, go to “Activate a G3r System” later in this chapter.

Power Up Switch

To activate the switch, do the following:

Install Flash-Memory

1. If your system does not use DEFINITY memory cards, go to the subheading, “Install Tape(s)”.
2. Verify that the slide on the translation card shipped with your system is positioned so that the card can be written. The write switch is shown in the correct position in the next illustration.
3. Install the translation card in the TN777B network control circuit pack. Insert the card into the slot in the TN777B in the direction indicated by the arrow on the card's label.

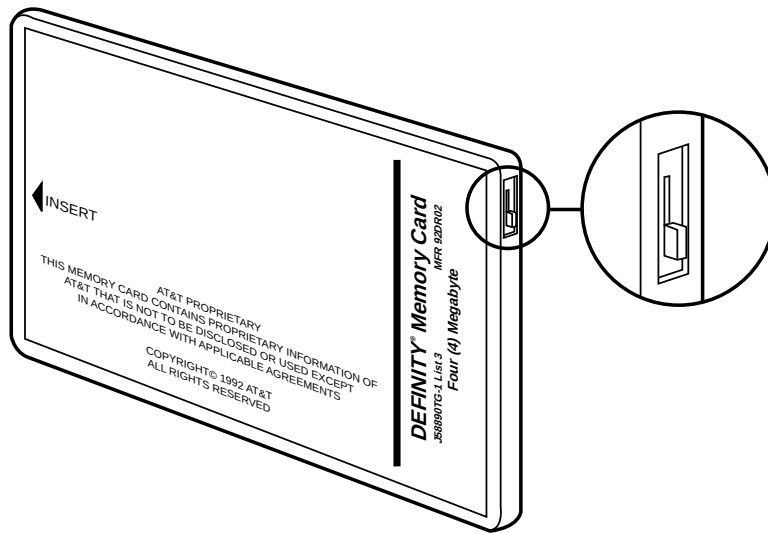


Figure 7-1. Write Switch on DEFINITY Memory Card

Install Tape(s)

4. Verify that the slide on the translation tape(s) shipped with the switch is in the **RECORD** position.
5. Install the translation tape(s) in the tape drive unit(s).

Operate Circuit Breaker(s)

6. Is the switch AC or DC powered?
 - DC powered—Skip two steps.
 - AC powered—Continue.

AC Powered Switch (Single- and Multi-Carrier Cabinets)

7. Ensure that the associated circuit breakers at the AC power panel are in the **ON** position.



NOTE:

If the system is High or Critical Reliability, power-up the EPN cabinet first, then the PPN cabinet.

8. Set main circuit breaker(s) to **ON**. (Turn on your system, if it is a G3vs.) Go to “Verify Messages.”



NOTE:

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

DC Powered Switch (Single- and Multi-Carrier Cabinets)

9. At DC battery cabinet, set circuit breaker to **ON**.
10. At DC power cabinet, set circuit breaker(s) on associated rectifiers to **ON**.
11. In each cabinet, at the front of the power distribution unit, set **MAIN** circuit breaker to **ON**.
12. In each cabinet, at the rear of the power distribution unit, set each of the circuit breakers to **ON**.



NOTE:

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

Verify Messages on G3 Management Terminal

13. Verify that screen displays:

KEYBOARD LOCKED, WAIT FOR LOGIN

14. After several minutes, verify that all tests pass (see the Note that follows the screen illustrations). The first screen that follows is typical of systems that use DEFINITY memory cards. The second screen that follows is typical of G1 systems that use tape cartridges. The third screen that follows is typical of G3i systems that use tape cartridges.

```

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

```

Figure 7-2. Typical Turn-On Messages (System with FLASH Memory)

```

LMM VERSION 4.3.2
INVOKING EMERGENCY TRANSFER
ROM CHECKSUM TEST ( = 28DE )      PASSED
DUAL PORT RAM TEST               PASSED
SOFT INT TEST                   PASSED
NMI TEST                       PASSED
RD_WR_MEM                      PASSED
MEMORY BOARD 1 DATA BIT TEST    PASSED
MEMORY BOARD 1 CHECK BIT TEST    PASSED
MEMORY BOARD 1 MEE SING BIT TEST PASSED
MEMORY BOARD 1 MEE DOUB BIT TEST PASSED
MEMORY FUNCTIONAL TEST           PASSED
TAPE INTERFACE TEST              PASSED
READING CORE                     PASSED
RAM CHECKSUM TEXT ( = 5387 )      PASSED
RAM CHECKSUM DATA ( = 2518 )    PASSED
RESET 4 (REBOOT) PERFORMED

```

Figure 7-3. Typical Turn-On Messages (Older G1 with Tape Storage)

```
LMM VERSION 4.3.2
INVOKING EMERGENCY TRANSFER
ROM CHECKSUM TEST ( = 28DE )      PASSED
DUAL PORT RAM TEST                PASSED
SOFT INT TEST                     PASSED
NMI TEST                          PASSED
RD_WR_MEM                         PASSED
MEMORY BOARD 1 DATA BIT TEST     PASSED
MEMORY BOARD 1 CHECK BIT TEST     PASSED
MEMORY BOARD 1 MEE SING BIT TEST  PASSED
MEMORY BOARD 1 MEE DOUB BIT TEST PASSED
MEMORY FUNCTIONAL TEST            PASSED
MEMORY BOARD 2 DATA BIT TEST     PASSED
MEMORY BOARD 2 CHECK BIT TEST     PASSED
MEMORY BOARD 2 MEE SING BIT TEST  PASSED
MEMORY BOARD 2 MEE DOUB BIT TEST PASSED
MEMORY FUNCTIONAL TEST            PASSED
TAPE INTERFACE TEST               PASSED
READING CORE                      PASSED
RAM CHECKSUM TEXT ( = 5387 )      PASSED
RAM CHECKSUM DATA ( = 2518 )    PASSED
RESET 4 (REBOOT) PERFORMED
```

Figure 7-4. Typical Turn-On Messages (Older G3i with Tape Storage)

⇒ NOTE:

If any of the 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.

15. About 2 minutes after REBOOT PERFORMED is displayed, verify that screen displays:

Login:

16. If all the red lights do not go off, reseal the purple-labeled circuit packs with the red lights on.

⚠ CAUTION:

To avoid a disk crash, **never** unplug the DEFINITY AUDIX System without first shutting it down. You need to shut down the DEFINITY AUDIX system (and allow the disk to completely spin down) before unplugging the DEFINITY AUDIX assembly. Refer to chapter 1 in *DEFINITY AUDIX System Maintenance*, 585-300-110, for a description of the shutdown procedure.



CAUTION:

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



CAUTION:

White-labeled control circuit packs and the purple-labeled TN756 tone detector/generator circuit pack (in the single-carrier cabinet only) may not be reseated without powering down first.

17. If the red lights still do not go off, refer to *DEFINITY Communications System Generic 1 and Generic 3i/s/vs Maintenance*, 555-204-105, to clear the trouble.

Alarms will appear in the Alarm Log (displayed on G3 Management Terminal) 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 packs, alarms associated with these ports can take up to 4 hours to come in, but will clear automatically after all equipment is installed and operating correctly.

Login and Change Passwords

Login

Table 7-1 contains the system logins and associated default passwords.

Table 7-1. System Logins

User	Login	Default Password
Local system technician	craft	crftpw
Local customer Administrator	cust	VOID
Remote customer Administrator	rcust	VOID
Display only	browse	VOID

To log on the system, do the following:

1. Verify that the screen displays:

Login:

2. Type **craft**, and press **ENTER**.

3. Verify that the screen displays:

password:

4. Type **crftpw**, and press **ENTER**. For security reasons, the password is not displayed as you type it. The system verifies that a valid login and password name were entered. If an invalid login or password name was entered, the screen displays:

login incorrect:

You must repeat the procedure.

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

5. Verify that the screen display is similar to:

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



NOTE:

The 513 in brackets [513] is the system default.

Do one of the following to identify the terminal type:

- If the system has an AT&T 6000-series PC, 610 BCT or 615 terminal with a 513 emulation software or cartridge, press **ENTER**.
- If the system has an AT&T 6000-series PC, 610 BCT or 615 terminal without 513 emulation software or cartridge, enter **4410**. Then press **ENTER**.
- If the system has an AT&T 6000-series PC or 4425 emulation software or cartridge, enter **4425**. Then press **ENTER**.
- If the system has a 513 G3 Management Terminal, press **ENTER**.
- Otherwise enter the type of terminal you are using or the type of terminal being emulated by your software.

6. Verify that screen displays:

command:

Change Passwords

The “craft” password must be changed by the installing technician to prevent unauthorized administration changes.



CAUTION:

Before you proceed, select a new “craft” password according to the guidelines given in GBCS Products Security Handbook, 555-025-600.

If it is necessary to void or deny access to a particular login, the login may be voided by changing the password of the login to VOID. After the login's password has been changed to VOID, the login is denied access to the system. The VOID password may then be changed or reinstated by a higher level login.



CAUTION:

After the "craft" password is changed, the new password must be safeguarded so that 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 Form (see Figure 7-5). To change the "craft" password (or any other password), do the following.

1. Verify that screen displays:

command:

2. Type **change password logname**. Then press **ENTER**.

```
change password system technician
                        PASSWORD ADMINISTRATION
Password of Login Making Change:
LOGIN BEING CHANGED
                        Login Name: system technician
LOGIN'S PASSWORD INFORMATION
                        Login's Password:
                        Reenter Login's Password:
```

Figure 7-5. Typical Change-Password Form

3. Verify that screen displays Change Password Form.



NOTE:

Cursor is positioned on "Password of Login Making Change:".

4. Type the password assigned to the login you are using (regardless of which password you are changing). Then press **ENTER**.



NOTE:

Cursor is positioned on "Login Name:".

Enter the name of the login whose password is to be changed.



NOTE:

Cursor is positioned on "Login's Password:".

5. Enter selected password (see Note).



NOTE:

Valid passwords consist of four to seven alpha and numeric characters, that is a combination of alpha or numeric characters.

6. Press **ENTER**.



NOTE:

Cursor is positioned on "Reenter Login's Password:".

7. Type password again.
8. Press **ENTER**.
9. Verify that screen displays:

command successfully completed

command:

Initialize Switch

In the USA, only Software Support at the FSAC can change the Administer Permissions field on the Permission Administration Form. However, the FSAC may allow other users to change the Permission Categories. Otherwise, users cannot change the defaulted permissions for themselves or other users.

In the USA, only the FSAC can set the optional features. Normally, the FSAC performs all these tasks in advance, except for setting the time and date. The translation tape is then delivered to the site or, in the USA, translations can be downloaded from the FSAC.

The following steps must be done by AT&T personnel to initialize the system:

1. Set date and time.
2. Set system maintenance parameters.
3. Save translations.

Screen Forms

The system is administered using screen forms displayed on the G3 Management Terminal. The forms are used to add, change, display, list data, and to remove system and telephone/voice terminal features. To access a form, enter a valid system command in response to command:

Commands

System commands are standard words and phrases that instruct the switch to do a specific function. The system commands are arranged in hierarchy of keywords; that is, you enter one command that takes you to a different level. The

commands contain three parts: ACTION, OBJECT, and QUALIFIER.

- ACTION is the first part of the command entered when command: appears on the screen. The ACTION part of the command 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 entered 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 entered. 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 the 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.

Change Administration Permissions

The Permission Administration Form (see Figure 7-6) is used to change the Command Permission Categories that a system user can access. The users are identified by login name (see Table 7-1). Typically, no changes are required when the system is installed.

In the USA, only the FSAC can change the Administer Permissions field.

The users cannot change the default permissions for themselves or other users unless the FSAC changes the Administer Permissions field to “y” for that user.

The default permissions “y” for each login are as follows:

1. craft—All permission categories except Administer Permissions.
2. cust—Display administration and maintenance data, administer stations, administer trunks, and administer features.
3. recust—Display administration and maintenance data, administer stations, administer trunks, and administer features.
4. browse—Display administration and maintenance data.

To access and change the form (with FSAC permission in the USA), do the following:

1. Verify that G3 Management Terminal screen displays:

command :

2. Type **change permission** (login name—**craft**). Then press **ENTER**.
3. Verify that screen displays Permission Administration Form (shown

below).



NOTE:

Cursor is positioned on Display Admin. and Maint. Data? line.

```

change permissions system technician          Page 1 of 3
                        COMMAND PERMISSION CATEGORIES

                        Login Name: system technician

COMMON COMMANDS

                        Display Admin. and Maint. Data? y
                        System Measurements? y

ADMINISTRATION COMMANDS

Administer Stations? y          Administer Features? y
Administer Trunks? y           Administer Permissions? n
Additional Restrictions? n

MAINTENANCE COMMANDS

Maintain Stations? y           Maintain Switch Circuit Packs? y
Maintain Trunks? y             Maintain Process Circuit Packs? y
Maintain System? y
  
```

Figure 7-6. Composite Display: Change Permissions Craft

4. Move cursor by pressing **(ENTER)** or **(TAB)** to move down the form, and enter **y** or **n** in the fields according to the customer order.
5. Press **(ENTER)**.
6. Verify that screen displays:

command successfully completed

command:

7. Verify data by entering **display permission** (login name—**craft**). Then press **(ENTER)**.



NOTE:

The Permission Administration Form is displayed showing all data entered in the above steps followed by:

command:

Set Date and Time

The system date and time are set using the Set Date and Time Form (see Figure 7-7). This form is displayed on the G3 Management Terminal screen and is changed with the G3 Management Terminal keyboard. To set the system time and date, do the following:

1. Verify that screen displays:

command :

2. Type **set time**. Then press **ENTER**.
3. Verify that screen displays Set Date and Time Form (shown below).



NOTE:

Cursor is positioned on "Day of the Week:" line.

4. Type day of week (Sunday through Saturday). Then press **ENTER**.



NOTE:

Cursor is positioned on "Month:" line.

set time
Page 1 of 1

DATE AND TIME

DATE

Day of the Week: _____

Day of the Month: ____

Month: _____

Year: ____

TIME

Hour: ____

Minute: ____

Second: xx

Figure 7-7. Typical Date and Time Form

5. Type current month (January through December). Then press **ENTER**.



NOTE:

Cursor is positioned on "Day of the Month:" line.

6. Type day of month (0 through 31). Then press **ENTER**.



NOTE:

Cursor is positioned on "Year :" line.

7. Type current year (for example, 1993). Then press **ENTER**.



NOTE:

Cursor is positioned on "Hour:" line.

8. Type current hour for 24-hour clock (see Table 7-2). Then press **ENTER**.



NOTE:

Cursor is positioned on "Minute:" line.

9. Type current minute (0 through 59).



NOTE:

Seconds cannot be set.

10. Press **ENTER**.

Table 7-2. Conversion to 24-Hour Clock

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

11. Verify that screen displays:

"command successfully completed"

"command:"

12. Type **display time**, and press **ENTER** to verify date/time data.



NOTE:

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

“command :”

Set System Maintenance Parameters

The Maintenance-Related System Parameters Form (see Figure 7-8) identifies system-related maintenance parameters and displays the default values.

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

SCHEDULED MAINTENANCE

Start Time: 01 : 00
 Daily Maintenance: daily
 Save Translation: daily
 Control Channel Interchange: no
 System Clocks Interchange: no
 SPE Interchange: no
 EXP-LINK Interchange: no

Figure 7-8. Typical Display System-Parameters Maintenance Form: Page 1

display system-parameters maintenance

Page 2 of 2

MAINTENANCE-RELATED SYSTEM PARAMETERS

MAINTENANCE THRESHOLDS (Before Notification)

Minimum Threshold for TTRs: 4 Minimum Threshold for CPTRs: 1

Minimum Threshold for Call Classifier Ports: 5

TERMINATING TRUNK TRANSMISSION TEST (extension)

Test Type 100: Test Type 102: Test Type 105:

ISDN MAINTENANCE:

ISDN-PRI Test Call Extension:

ISDN BRI Service SPID:

LOSS PLAN (Leave Blank if no Extra Loss is Required)

Minimum Number of Parties in a Conference Before Adding Extra Loss:

SPE OPTIONAL BOARDS

Disk? y Packet Intf1? y Packet Intf2? n Packet Intf3? n

Figure 7-9. Typical Display System-Parameters Maintenance Form: Page 2

The fields on the Maintenance-Related System Parameters form are defined in the following paragraphs. Specific entries must be obtained from the Technical Consultant (TC), and/or the customer.

Make assignments as required for the following fields:

- "Product Identification" — Identifies the switch to an Operations Support System (OSS). The number must start with one (1) and contain ten (10) digits. The last nine digits are the cabinet serial number.
- "OSS Telephone Number" — The number that the switch uses for alarm origination. The number must be obtained from the National Customer Support Organization (NCSO).
- "Alarm Origination Activated" — Indicates whether alarm origination is activated or not. If yes, all major and minor alarms will result in an automatic call to an OSS. If no, alarm origination is not activated. Warning alarms will not be reported to OSS.
- "Cleared Alarm Notification" — Indicates whether or not cleared alarm notification is activated. If yes, a call will be placed to an OSS when all previously reported major and minor alarms have been resolved. If no, cleared alarm notification is not active. This feature should be enabled whenever alarm origination is enabled.
- "Restart Notification" — Indicates whether switch restarts will be reported to an OSS. If yes, all WARM, COLD1, COLD2, REBOOT, and EXTENDED REBOOTS that occur will be automatically reported to the OSS. If not, switch restarts will not be reported.

- "Test Remote Access Port" — Indicates whether or not to test the remote access port on the processor board. If a trunk for remote access and alarm origination is not provided, then running tests on the remote access port (via the **test processor** or **test maintenance** commands) will result in tests failing. This will cause maintenance to be unnecessarily alarmed and additional, possibly destructive, tests to be run.
- "CPE Alarm Activation Level" — Indicates the level at which the Customer Premises Equipment (CPE) alarm is activated. If the level is "major," the CPE alarm is activated only on major alarms. If the level is "minor," the CPE alarm is activated for both major and minor alarms. If the level is "warning," then all alarms (major, minor, and warning) will activate the CPE alarm. If the level is "none," the CPE will not activate for any alarm. One exception is that the CPE alarm always activates if the switch goes into emergency transfer, regardless of where the CPE Alarm Activation Level is set.
- "Packet Bus Activated" — This field indicates the Control Circuit Pack (TN778) is inserted and the packet bus is activated.



NOTE:

Make this assignment to a G3s sold in the USA only if the customer has purchased the Advanced Business Package.

- "Start Time" — Indicates the hour and minute the daily scheduled maintenance actions will start. Enter a number from 0 through 23 for hours and 0 through 59 for minutes. The scheduled maintenance actions are: daily maintenance, save translation, control channel interchange, system clocks interchange, PE interchange, and EXP-Link interchange.
- "Daily Maintenance" — This field is a display only field with "daily" displayed to show that maintenance tests are automatically run each day.
- "Save Translation" — Indicates if the switch translation data should be automatically saved (on tape) on a particular day of the week. Enter one of the following: daily, no, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday.
- "Control Channel Interchange" — This field is displayed only in a high or critical-reliability switch. It shows when the control channel on a particular Time Division Multiplex (TDM) bus is switched over to the other bus of the TDM bus pair as part of scheduled maintenance. If the switch has an EPN, there is a second pair of TDM buses and the control channel on the EPN is also switched from one TDM bus to the other at about the same time. Enter one of the following: daily, no, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday.

- "System Clocks Interchange" — This field is displayed only in a high or critical-reliability switch. It shows when control of the switch clocks is temporarily switched from one tone/clock circuit pack to the other for each existing port network as part of scheduled maintenance. After a successful interchange, another interchange occurs to bring the switch back to its original state. Enter one of the following: daily, no, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday.
- "SPE Interchange" — This field is displayed only in a high or critical-reliability switch. It shows when there is an interchange between the active and standby PEs as part of scheduled maintenance. Enter one of the following: daily, no, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday.
- "EXP-Link Interchange" — This field is displayed only in a high or critical-reliability switch. It shows when there is an EXP-Link interchange with the EPN as part of scheduled maintenance. This interchange can induce errors into stable data calls on the EPN. Enter one of the following: daily, no Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday.
- "Minimum Threshold for TTRs" — Shows the number of touch-tone receivers in the switch. If fewer than this number are in service, a warning alarm is raised. Enter a number 1 through 80.
- "Minimum Threshold for CPTRs" — Shows the number of call progress tone receivers in the switch. If fewer than this number are in service, a warning alarm is raised. Enter a number from 1 through 40.
- "Minimum Threshold for Call Classifier" — Shows the number of class classifier ports within the system. If fewer than this number of call classifier ports are in service, an alarm is raised. Enter a number from 0 through 80.
- "Test Type 100" — Defines the extension number assigned to Test Type 100. This test allows a switch with originating test line capability to measure far- to near-end loss and C-message noise. Enter the extension number assigned to Test Type 100.
- "Test Type 102" — Defines the extension number assigned to Test Type 102. This test allows a switch with originating test line capability to measure far- to near-end loss. Enter the extension number assigned to Test Type 102.
- "Test Type 105" — Defines the extension number assigned to Test Type 105. This test allows a switch with originating test line capability to measure 2-way loss, gain slope, C-message noise, and C-notch noise. Enter the extension number assigned to Test Type 105.
- "ISDN TEST CALL extension" — Defines the extension number for an Integrated Services Digital Network (ISDN) test call. This test allows a far end ISDN node to test the ISDN-PRI trunks between the far end and the switch. Enter the extension number assigned to the ISDN test call.



NOTE:

Make this assignment to a G3s sold in the USA only if the customer has purchased the Advanced Business Package.

- "ISDN-BRI Service SPID" — The Spid is used to verify the operation of an ISDN-BRI endpoint.



NOTE:

Make this assignment to a G3s sold in the USA only if the customer has purchased the Advanced Business Package.

- "LOSS PLAN" — Minimum Number of Parties in a Conference Before Adding Extra Loss" Use this field only when extra loss is required to maintain quality of transmission on two-party or conference calls. Leave field blank if no extra loss is required. If extra loss is required, enter digits as shown in Table 7-3.

Table 7-3. Entries for Loss Plan

NO. OF PARTIES TO BE CONFERENCED	ENTER DIGIT
2,3,4,5,6	2
3,4,5,6	3
4,5,6	4
5,6	5
6	6

To access and change the form, do the following:

1. Verify that G3 Management Terminal screen displays:
command:
2. Type **change system-parameters maintenance**. Then press **ENTER**.
3. Verify that screen displays Maintenance-Related System Parameters Form (see Figure 7-8).



NOTE:

Cursor is positioned on "Product Identification:" line.

4. Position cursor, and enter information for each parameter as specified in the customer's order by pressing **ENTER** or **TAB**.



NOTE:

An entry must always be made in the Product Identification field and the OSS telephone number field.

5. Press **ENTER**.
6. Verify that screen displays:

"command successfully completed"

command:

7. Verify data by entering **display system-parameters maintenance** and pressing **ENTER**.



NOTE:

The Maintenance-Related System Parameters Form is displayed showing all data entered in the above steps followed by:

command:

Set Optional Features

The following features are part of the basic software package and do not need to be activated. They are defaulted to yes on the Optional Features Form (see the screen below).

- Automatic Route Selection Partitioning
- Emergency Access to the Attendant
- Hospitality
- Service Observing

change system-parameters customer-options
Page 1 of 2

OPTIONAL FEATURES

G3 Version: V3

Maximum Ports: 200

Logged-In ACD Agents: 500

Abbreviated Dialing Enhanced List? n	Call Work Codes? n
ACD? n	CAS Branch? n
AT&T Adjunct Links? n	CAS Main? n
Answer Supervision by Call Classifier? n	CPN/BN Adjunct? n
ARS? n	DCS (Basic)? n
ARS/AAR Partitioning? y	
ASAI Interface? n	Emergency Access to Attendant? y
ATMS? n	Expert Agent Selection (EAS)? n
Audible Message Waiting? n	Forced ACD Calls? n
Authorization Codes? n	Forced Entry of Account Codes? n
BCMS (Basic)? n	
BCMS/VuStats LoginIDs? n	
BCMS/VuStats Service Level? n	

(NOTE: You must logoff & login to effect the permission changes.)

Figure 7-10. Composite Display: System-Parameters Customer-Options Form: Page 1

change system-parameters customer-options
Page 2 of 2

OPTIONAL FEATURES

Hospitality (Basic)? y	Service Observing (Basic)? y
G3V3 Hospitality Enhancements? n	Service Observing (Remote/By FAC)? n
Hospitality Parameter Reduction? n	Service Observing (VDNs)? n
ISDN-PRI? n	Station and Trunk MSP? n
ISDN-PRI over PACCON? n	Terminal Trans. Init. (TTI)? n
Lookahead Interflow? n	Time of Day Routing? n
Malicious Call Trace? n	Uniform Dialing Plan? n
Multifrequency Signaling? n	Vectoring (Basic)? n
	Vectoring (Prompting)? n
Multiple Call Handling? n	
PNC Duplication? n	VDN of Origin Announcement? n
Premier Business Package? n	VDN Return Destination? n
Processor and System MSP? n	
Private Networking? n	Voice Mail Application Support? n
	VuStats? n
Restrict Call Forward Off Net? n	Wideband Switching? n
Secondary Data Module? n	

(NOTE: You must logoff & login to effect the permission changes.)

Figure 7-11. Composite Display: System-Parameters Customer-Options Form: Page 2

Find out from AT&T's technical consultant to the customer what is to be the maximum number of station and trunk ports available to the customer. Enter this number in the Maximum Ports field on the Optional Features Form. The other entries on the Optional Features Form (listed below) are used to activate or deactivate certain features of the switch. An n in a given field deactivates the associated feature. A y activates the associated feature.

Table 7-4. List of Optional Features

G3V3 (If G3V3 features have been purchased)	Maximum Ports (Station and trunk, combined)
Abbreviated Dialing Enhanced List	Authorization Codes
Automatic Call Distribution (ACD)	ARS/AAR Digit Conversion
ASAI Interface	Automatic Transmission Measurement System (ATMS)
Audible Message Waiting	Automatic Route Selection (ARS)
Automatic Route Selection Partitioning	Basic CMS Measurements
BCMS (Basic) Service Level	BCMS/VuStats Login IDs
BCMS/VuStats Service Level	Call Work Codes
Centralized Attendant Service (CAS) Main	Centralized Attendant Service (CAS) Branch
Distributed Communications System (DCS)	Emergency Access to the Attendant
Forced Entry of Account Codes	Expert Agent Selection (EAS)
G3V3 Hospitality Enhancements	Hospitality
Hospitality Parameter Reduction	ISDN-PRI
Lookahead Interflow	Malicious Call Trace
Multifrequency Signaling	OCM-SID/ANI (Outgoing Call Management-Station Identification/Automatic Number Identification)
Private Networking	Secondary Data Module
Service Observing	Terminal Trans. Init (TTI)
Time of Day Routing	Uniform Dialing Plan
Vectoring (Basic)	Vectoring (Prompting).
Wideband Switching	VuStats

A third screen offers ASAI capability groups for selection in cases where the ASAI interface has been enabled in the first screen. Use this screen in the same way as pages 1 and 2 of the customer options form.


```

change system-parameters customer-options      Page  3 of  3

                                ASAI CAPABILITY GROUPS

Adjunct Call Control Group? y
Adjunct Routing Group? y
Answering Machine Detection? y
AT&T-ASAI Links? n
Domain Control Group? y
Event Notification Group? y
Request Feature Group? y
Set Value Group? y
Switch Classified Calls/Predictive Dialing? y

(NOTE: You must logoff & login to effect the
permission changes.)
  
```

Figure 7-12. Composite Display: System-Parameters Customer-Options Form: Page 3

Save Translations

The “save translation” command copies the current system translation onto the magnetic tape(s) or flash memory. For standard-reliability systems, one system memory cartridge and one backup cartridge are required. For high or critical-reliability systems, two system memory cartridges and two backup cartridges are required. (Tape cassettes were used in certain older systems.)

For a Standard-Reliability Switch

The following procedure can be used to save system translations on the original tape or cartridge and to make a backup tape or cartridge:

1. Log in to the terminal.
2. Verify screen displays:

command :

3. Type **save translation** and press **ENTER**. This command instructs the system to take all translation information in memory and write it onto the cassette tape or cartridge.
4. Screen displays:

save translation		SPE A
SAVE TRANSLATION		
Processor	Command Completion Status	Error Code
SPE_A	Success	0
Command successfully completed		
command:		

Figure 7-13. Typical Save Translation Form

5. Verify a **0** is displayed in the Error Code column. A **0** indicates the save translation was successfully completed for the tape or cartridge. If a **0** did not appear, the save translation did not complete. Record the “error code number” and the “error message” and notify maintenance support.
6. If the system is equipped with a TN750B Announcement circuit pack, the recorded announcements can be saved using the save announcement commands. Type **save announcements** and press **(ENTER)**.
7. Screen displays:

save announcements		SPE A
SAVE ANNOUNCEMENTS		
Processor	Command Completion Status	Error Code
SPE_A	Success	0
Command successfully completed		
command:		

Figure 7-14. Typical Save Announcements Form

8. Verify a **0** is displayed for SPE_A in the Error Code column. A **0** indicates the save announcement was a success for the tape or cartridge. If a **0** did not appear, the save announcement did not complete. Record the “error code number” and the “error message” and notify maintenance support.
9. On older systems, remove the original cassette tape from the tape drive and insert the backup cassette tape into the tape drive. Otherwise remove the original flash memory cartridge from the TN777B and replace it with the backup cartridge.
10. Repeat steps 1 through 8 for the backup cartridge.
11. On older systems, remove the backup cassette tape from the tape drive and insert the original cassette tape into the tape drive. Otherwise remove the backup flash memory cartridge from the TN777B and replace it with the original cartridge.

12. Label the backup medium with the date and time it was updated. A special notation may be put on the medium to clearly distinguish it from other such devices.
13. Store the backup in a secure place.

For a High or Critical-Reliability Switch

The following procedure can be used to save system translations on the original cartridges or tapes and to make backups.

1. Log in to the terminal.
2. Verify screen displays:

command :
3. Type **save translations** and press **ENTER**. This command instructs the system to take all translation information in memory and write it onto the two cartridges or cassette tapes.
4. Screen displays:

save translation		SPE B	
	SAVE TRANSLATION		
Processor	Command Completion Status	Error	Code
SPE_B	Success	0	
SPE_A	Success	0	
Command successfully completed			
command:			

Figure 7-15. Typical Save Translation Form

Administration Note:

The Active SPE's completion status is always displayed first. During the save translation, as illustrated in the above screen, SPE B is displayed as the Active SPE in the upper right corner of the screen.

5. Verify a **0** is displayed for SPE_B and SPE_A in the Error Code column. A **0** indicates the save translation was a success for each storage device. If a **0** did not appear for SPE_B and SPE_A the save translation did not complete. Record the "error code number" and the "error message" for the SPE that did not have a **0** and notify maintenance support.
6. If the system is equipped with a TN750B Announcement circuit pack, the recorded announcements can be saved using the save announcement commands. Type **save announcements** and press **ENTER**.

7. Screen displays:

save announcements		SPE B
SAVE ANNOUNCEMENTS		
Processor	Command Completion Status	Error Code
SPE_B	Success	0
SPE_A	Success	0
Command successfully completed		
command:		

Figure 7-16. Typical Save Announcements Form

Administration Note:

The Active SPE's completion status is always displayed first. During the save announcement, as illustrated in the above screen, SPE B is displayed as the Active SPE in the upper right corner of the screen.

8. Verify a **0** is displayed for SPE_B and SPE_A in the Error Code column. A **0** indicates the save announcement was a success for each storage device. If a **0** did not appear for SPE_B and SPE_A, the save announcement did not complete. Record the "error code number" and the "error message" for the SPE that did not have a **0** and notify maintenance support.
9. On older systems, remove the two original cassette tapes from the tape drives and insert the two backup cassette tapes into the tape drives. Otherwise, remove the two original cartridges from their slots and insert the two backup cartridges.
10. Repeat steps 1 through 8 for the backups.
11. On older systems, remove the two original cassette tapes from the tape drives and insert the two backup cassette tapes into the tape drives. Otherwise, remove the two original cartridges from their slots and insert the two backup cartridges.
12. Label the two backup cartridges or tapes with the date and time they were updated. A special notation may be put them to clearly distinguish them from others.
13. Store the two backup cartridges or tapes in a secure place.

Verify Configuration

Ensure that the circuit pack configuration of the switch, as delivered from the factory, agrees with the configuration entered on the translation media. If it does not agree, make the necessary changes.



CAUTION:

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

Logoff

Log off the system to prevent unauthorized changes of the data that has been entered. To log off the system, do the following:

1. Type **logoff**. Then press **ENTER**.
2. Verify that screen displays:

Login:



NOTE:

The login prompt does not appear on the G3 Management Terminal until you have logged off the system.

Implement and Administer System Data

After the system is installed and initialized, administration data for system and voice terminal features can be assigned. The implementation procedures are provided in *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653 or *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653. The information required to enter the administration data into the system is given in the *DEFINITY Communications System Generic 1—Administration and Measurements Reports*, 555-200-500.

Install Attendant Console

Requirements

The 301B1-A attendant console (see Figure 7-17) or the 302A attendant console (see Figure 7-18) connects to an information outlet like any other voice terminal.

Only three attendant consoles can be powered by the cabinet through the auxiliary connections located in the trunk/auxiliary wall field. Whenever possible, the primary attendant console should be powered from the system cabinet. This procedure makes the primary console fully operational during short power outages. Additional attendant consoles can be powered from power units located at the cross-connect field through 258A-type adapters or information outlets.

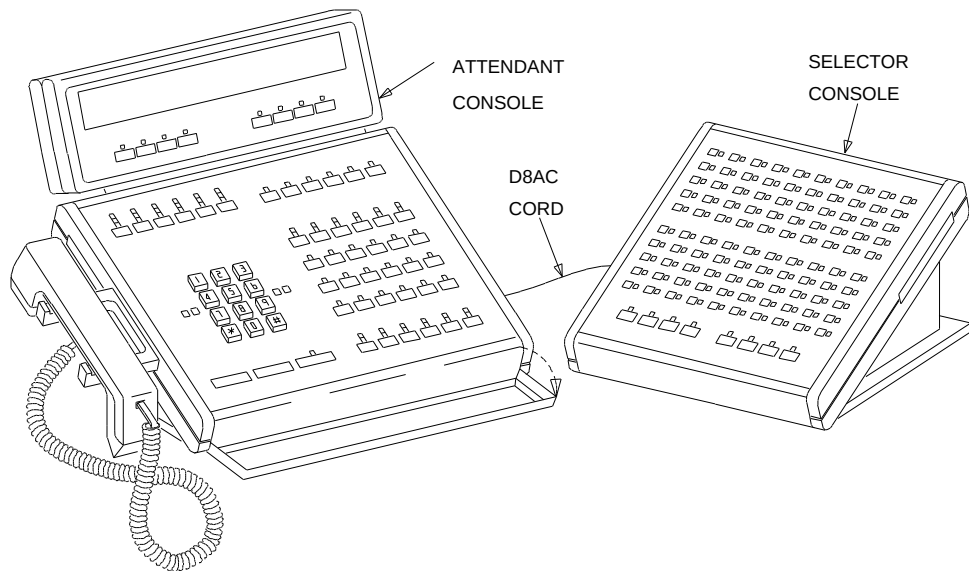


Figure 7-17. 301B1-A Attendant Console and 24A1 Selector Console

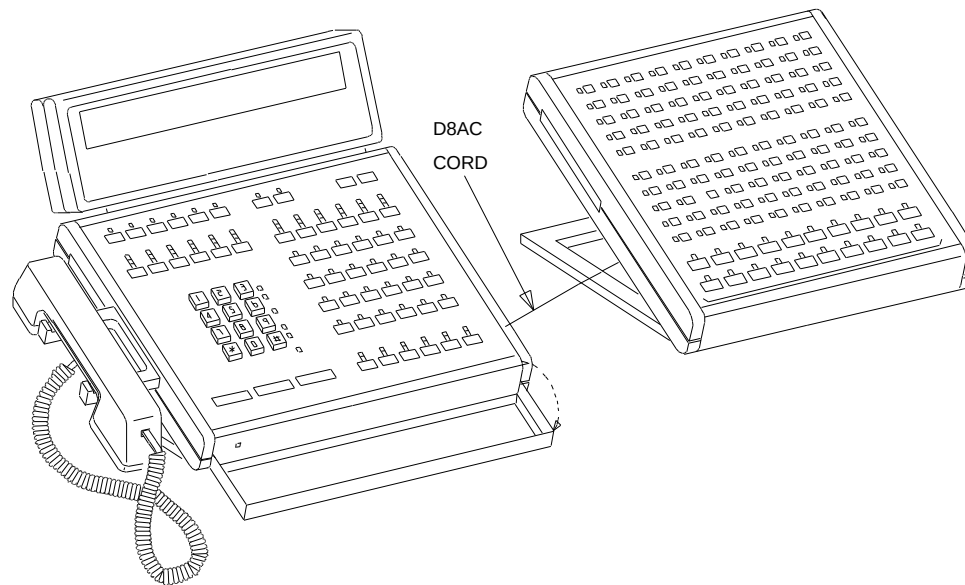


Figure 7-18. 302A Attendant Console and 26A1 Selector Console

The maximum cabling distance for the attendant console powered from the cabinet is 350 feet.

Installation

1. Unpack the attendant console and inspect it for damage.
2. Determine the console port assignment from the Attendant Console Form (see Example).

EXAMPLE: Port Number A
 Carrier Slot Circuit

3. Connect the console modular line cord to the designated information outlet.
4. If a remote power unit is required for the attendant console, refer to “Installing Attendant Console” in Chapter 10.

5. Install labels per Attendant Console Form and Display Module Form Assignments.
6. Install handset bracket on left or right side of console, as desired.
7. Insert handset adapter on same side of handset bracket.
8. Connect handset cord to jack on same side of console as handset bracket.
9. Insert headset plug on left or right side of console, as desired. (When terminals are being wired to the system, the console is to be wired per the instructions in Chapter 10).
10. Administer forms listed under Attendant Console in *DEFINITY Communications System Generic 1 Implementation*, 555-204-654 or *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653

Install Selector Console

Requirements

The 24A1 selector console connects to the attendant console with a D8AC cord that is furnished with the selector console (see Figure 7-17). The 26A1 selector console connects to the attendant console with a D8AC cord that is furnished with the selector console (see Figure 7-18).

Installation

1. Connect a D8AC cord between the **DXS/BLF** jack on bottom of attendant console and the modular jack on bottom of selector console.
2. Install labels per Attendant Console Form.
3. Administer forms as listed under “Attendant Direct Extension Selection With Busy Lamp Field” in *DEFINITY Communications System Generic 1 Administration and Measurements Reports*, 555-200-500.



CAUTION:

To avoid a disk crash, do not power down or power cycle a switch with a DEFINITY AUDIX System (for example, during switch acceptance tests) unless you have first shutdown the DEFINITY AUDIX system. Refer to chapter 1 in *DEFINITY AUDIX System Maintenance*, 585-300-110, for a description of the shutdown procedure.

Installing the 302B1 Attendant Console

The 302B1 attendant console (shown in the accompanying illustration) connects to an information outlet like any other voice terminal.

Power is connected to the console through pins 7 and 8 of the information outlet. Only three attendant consoles can be powered by the cabinet through the auxiliary connections located in the trunk/auxiliary wall field (only one from a G3vs). Whenever possible, the primary attendant console should be powered from the system cabinet. This procedure makes the primary console fully operational during short power outages. Additional attendant consoles can be powered at the attendant's location or at a remote location. The consoles may be powered by individual power supplies such as the MSP-1, or by bulk power supplies such as the 1145A1. (These power supplies are listed by model number in the index.)

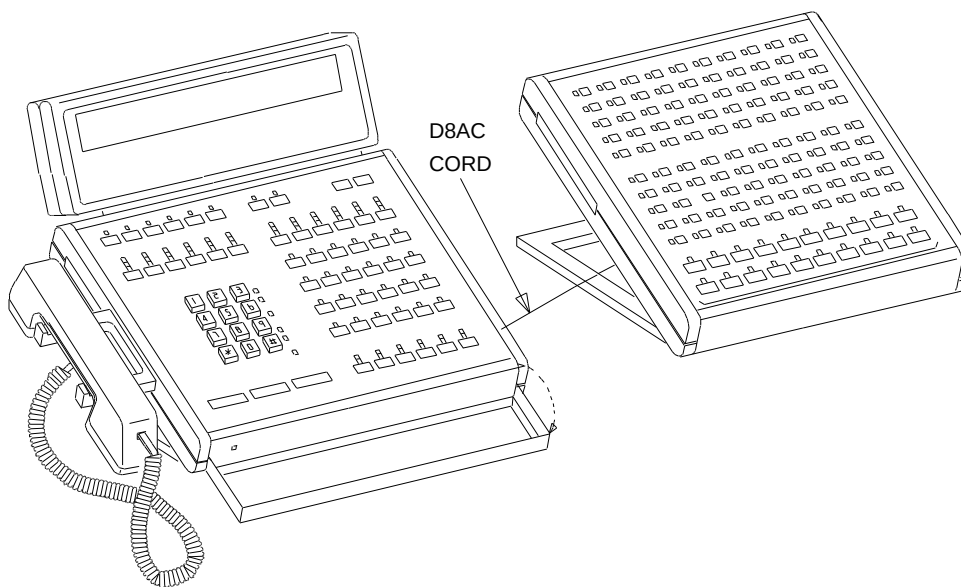


Figure 7-19. 302B1 Attendant Console and 26A1 Selector Console

Follow the instructions given for the installation of a 302A attendant console in chapter 7 of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104.

In those instructions, you are referred to a wiring procedure in chapter 10 of the same document. The wiring procedure is correct for installations where the console is to be connected to a 4-wire DCP interface. Furthermore, power connections are the same for 4-wire and 2-wire DCP circuits.

The wiring procedure just mentioned applies as well to a 2-wire DCP interface as to the 4-wire except for the considerations that follow.

- Wire the console to a TN2181 circuit pack rather than to the TN754 shown in chapter 10.
- Wire to tip and ring (T/R) connections on the TN2181 circuit pack. (See the TN2181 pinout in Appendix F.)

Connect T to pin 4 and R to pin 5 of the information outlet to which the console is to be connected. (The following table shows a pinout of the DCP interface connector on the console.)

(If the console is wired for two-wire DCP, it will sense the two-wire signal and automatically switch to two-wire operation.)

Table 7-5. DCP Information Outlet Pinout

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

Administer the console as described in:

- *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
- *DEFINITY Communications System Generic 3 Implementation*, 555-230-653

Activate a G3r System

Instructions are given here to activate systems with a RISC processor. To activate a Generic 1, 3i, 3s, or 3vs system, go to *Activate a G1 or G3i/s/vs System* at the beginning of this chapter.

Power Up Switch

To activate the switch, do the following:

Install Tape(s)

1. Verify that the slide on the translation tape(s), shipped with the switch, is in the *RECORD* position.
2. Install a translation tape in *each* tape drive unit.

Operate Circuit Breaker(s)

3. Is the switch AC or DC powered?
 - AC powered—Continue.
 - DC powered—Skip two steps.

AC Powered Switch (Single- and Multi-Carrier Cabinets)

4. Ensure that the associated circuit breakers at the AC power panel are in the **ON** position.



NOTE:

If the system is high or critical reliability, power-up the EPN cabinet first, then the PPN cabinet.

5. Set main circuit breaker(s) to **ON**. Go to Step 10.



NOTE:

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

DC Powered Switch (Single- and Multi-Carrier Cabinets)

6. At DC battery cabinet, set circuit breaker to **ON**.
7. At DC power cabinet, set circuit breaker(s) on associated rectifiers to **ON**.
8. In each cabinet, at the front of the power distribution unit, set **MAIN** circuit breaker to **ON**.
9. In each cabinet, at the rear of the power distribution unit, set each of the circuit breakers to **ON**.



NOTE:

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

Verify Messages on G3 Management Terminal

10. Verify that screen displays:

KEYBOARD LOCKED, WAIT FOR LOGIN

11. After several minutes, verify that all tests are passed (see Note). The following screen is a typical G3r display.

```

ICACHE TEST                                PASSED
WRITE BUFFER TEST                          PASSED
BUS TEST                                   PASSED
BUS CONFIG TEST                            PASSED
PARITY TEST                               PASSED
MEM CONFIG TEST                            PASSED
MEMORY FUNCTIONAL TEST                     PASSED
MEMORY BOARD 1 EDC TEST                    PASSED
MEMORY BOARD 1 BURST TEST                  PASSED
RESET PKTINTS
SYSAM TEST                                PASSED
MEMORY BOARD 2 STUCK BIT TEST              PASSED
MEMORY BOARD 2 EDC TEST                    PASSED
MEMORY BOARD 2 BURST TEST                  PASSED
TAPE INTERFACE TEST                        PASSED
READING CORE                              PASSED
RAM DATA CHECKSUM TEST                    PASSED
RAM TEXT CHECKSUM TEST                     PASSED
TAPE TEST                                  NOT TESTED
PKTINT 1 RESET TEST                        PASSED
RESET 4 (REBOOT) PERFORMED

```

Figure 7-20. Typical Turn-On Messages (G3r Display)



NOTE:

If any of the messages indicate a test has failed or if the message “spe down mode” is displayed, refer to *DEFINITY Communications System Generic 3r Maintenance*, 555-230-105, to clear the trouble.

12. Several minutes after REBOOT PERFORMED is displayed, verify that screen displays:
Login:
13. If all the red lights do not go off, reseal the purple-labeled circuit packs with the red lights on.



CAUTION:

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



CAUTION:

White-labeled control circuit packs and the purple-labeled TN756 tone detector/generator circuit pack (in the single-carrier cabinet only) may not be reseated without powering down first.

14. If the red lights still do not go off, refer to *DEFINITY Communications System Generic 3r Maintenance*, 555-230-105, to clear the trouble.

Alarms will appear in the Alarm Log (displayed on G3 Management Terminal) 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 packs, alarms associated with these ports can take up to 4 hours to come in, but will clear automatically after all equipment is installed and operating correctly.

Login

To log on the system, do the following:

1. After reboot the screen should display:

Login:

2. Enter **init**, and press **ENTER**.

3. Verify that the screen displays:

password:

4. Enter the default password, and press **ENTER**. For security reasons, the password is not displayed as you type it. The system verifies that a valid login and password name were entered. If an invalid login or password name was entered, the screen displays:

login incorrect:

You must repeat the procedure.

Change Passwords

You should change the "craft" password to prevent unauthorized administration changes. You should also change the "cust" password to allow the customer access to the system.

1. Change passwords as instructed under the heading "Change Passwords" in the G1/G3i/s/vs section at the beginning of this chapter.
2. Return to this point after changing passwords and continue work on the G3r.

Change Customer Options

The following features are part of the basic software package and do not need to be activated. They are defaulted to y (yes) on the Optional Features Form (see the following screen).

- Automatic Route Selection Partitioning
- Emergency Access to the Attendant
- Hospitality
- Service Observing

Use the following procedure to set your customer's optional features.

1. After login is successful, the Command : prompt appears on your screen. At the prompt, enter the **change system-parameters customer-options** command.

A display similar to the following illustration appears on your screen.

change system-parameters customer-options
Page 1 of 2

OPTIONAL FEATURES

Abbreviated Dialing Enhanced List? <u>n</u>	BCMS? <u>n</u>
ACD? <u>n</u>	BCMS Service Level? <u>n</u>
Answer Supervision by Call Classifier? <u>n</u>	Call Work Codes? <u>n</u>
ARS? <u>n</u>	CAS Branch? <u>n</u>
ARS/AAR Partitioning? <u>y</u>	CAS Main? <u>n</u>
ASAI Interface? <u>n</u>	CPN/BN Adjunct? <u>n</u>
ATMS? <u>n</u>	DCS? <u>n</u>
Audible Message Waiting? <u>n</u>	Emergency Access to Attendant? <u>y</u>
Authorization Codes? <u>n</u>	Expert Agent Selection (EAS)? <u>n</u>

(NOTE: You must logoff & login to effect the permission changes.)

Figure 7-21. Typical Display System-Parameters Customer-Options Form: Page 1

change system-parameters customer-options
Page 2 of 2

OPTIONAL FEATURES

Forced Entry of Account Codes? <u>n</u>	Private Networking? <u>n</u>
G3V2 <u>y</u>	Secondary Data Module? <u>n</u>
Hospitality? <u>n</u>	Service Observing? <u>y</u>
Hospitality Parameter Reduction? <u>n</u>	Terminal Trans. Init. (TTI)? <u>n</u>
ISDN-PRI? <u>n</u>	Time of Day Routing? <u>n</u>
Lookahead Interflow? <u>n</u>	Uniform Dialing Plan? <u>n</u>
Malicious Call Trace? <u>n</u>	Vectoring (Basic)? <u>n</u>
Multifrequency Signaling? <u>n</u>	Vectoring (Prompting)? <u>n</u>
PNC Duplication? <u>n</u>	
	Wideband Switching? <u>n</u>

(NOTE: You must logoff & login to effect the permission changes.)

Figure 7-22. Typical Display System-Parameters Customer-Options Form: Page 2

2. Find the *Customer Order* and enable the optional features that have been purchased by the customer (as shown by PEC codes on the Customer Order).

In V2 systems a third screen offers ASAI capability groups for selection in cases where the ASAI interface has been enabled. Use this screen in the same way as pages 1 and 2 of the customer options form.

change system-parameters customer-options
Page 3 of 3

ASAI CAPABILITY GROUPS

Adjunct Call Control Group? <u>y</u>
Adjunct Routing Group? <u>y</u>
Domain Control Group? <u>y</u>
Event Notification Group? <u>y</u>
Request Feature Group? <u>y</u>
Set Value Group? <u>y</u>

(NOTE: You must logoff & login to effect the permission changes.)

Figure 7-23. Typical Display System-Parameters Customer-Options Form: Page 3

Change and Logoff Critical Reliability System

If you are installing a critical reliability system (one with both processor and PNC duplicated), follow these steps before you continue. Otherwise, continue to "Change Site-Data".



NOTE:

Make sure that PNC Duplication was set to **y** on the customer-options form just filled in.

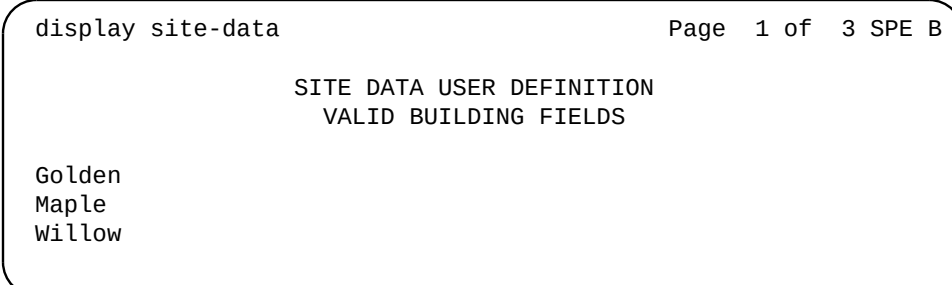
1. Issue the **logoff** command.
2. At the `login:` prompt, login to the system as *craft*.

Change Site-Data

Here you initialize building, floor, and color data to make them available to you later in help messages that refer to site information.

1. At the `Command:` prompt, enter the **change site-data** command.

The first of three pages of site data will appear:



```
display site-data                                     Page 1 of 3 SPE B

                                SITE DATA USER DEFINITION
                                VALID BUILDING FIELDS

Golden
Maple
Willow
```

Figure 7-24. Typical Display Site-Data Form

2. Enter names for the buildings that will be served by the switch. The example shows buildings *Golden*, *Maple*, and *Willow*.
3. Access the remaining site-data pages and fill them in appropriately.

Change Cabinet

This command is used to describe to the software the layout of a cabinet's hardware.

1. Enter **change cabinet 1** at the `command:` prompt.

A screen similar to the following illustration appears:

change cabinet 1
Page 1 of 1 SPE B

CABINET

CABINET DESCRIPTION

Cabinet: 1
 Cabinet Layout: five-carrier
 Cabinet Type: processor
 Number of Portnetworks: 1
 Room:
 Floor:
 Building:

CARRIER DESCRIPTION

Carrier	Carrier Type	Number	Duplicate
C	port	PN 01	
B	processor	PN 01	
A	processor	PN 01	
X	Fan		
D	dup-sw-node	PN 01	
E	switch-node	PN 01	

Figure 7-25. Typical Change Cabinet Form

2. Fill in the blanks as required by the location and nature of the cabinet. (If your system is critical reliability, verify that the B field is set to the **proces-sor** option, that the D field is set to the **dup-sw-node** option, and that the E field is set to the **sw-node** option.)

Reboot High Reliability System

If you are installing a high reliability system (one with only the processor duplicated), complete these steps before you continue. Otherwise, skip to the next procedure.

1. Enter **reset system 4** at the command : prompt.
2. When the login : prompt appears, login as *craft*.
3. About eight minutes after booting the system and at the command : prompt, enter the **status spe** command.
4. Verify that handshake, shadowing, and refreshed are all shown to be either yes or on.

Logoff Standard-Reliability System

If you are installing a standard-reliability system (one without duplication), complete these steps before you continue. Otherwise, skip to the next procedure.

1. Enter **logoff** at the command : prompt.

2. When `login:` appears on the screen, login as *craft*.

Enable Duplication and Boot Critical Reliability System

If you are installing a critical reliability system (one with both the processor and PNC duplicated), complete these steps before you continue. Otherwise, skip to the next procedure.

1. Enter **change system-parameters duplication** at the command: prompt.
2. Make sure that duplication of both SPE and PNC are enabled on the screen that follows your command. (Confirm that a y is contained in both fields.)
3. Enter **save translations** at the command: prompt.
4. Enter **reset system 4** at the command: prompt to reboot the system.
5. When `login:` appears on the screen, login as *craft*.
6. About eight minutes after booting the system and at the command: prompt, enter the **status spe** command.
7. Verify that handshake, shadowing, and refreshed are all shown to be either yes or on.

Save Translations on Critical Reliability System

If you are installing a critical reliability system (one with both processor and PNC duplicated), complete these steps before you continue. Otherwise, continue to the next procedure.

1. Enter the **save translations** command at the command: prompt.
2. Verify that the save completes to both disks and returns a result code of 0 (zero).

Add Translations

1. Use the *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653, to add to the system new terminals and so forth.
2. Enter the **save translations** command at the command: prompt to merge these translations with the contents of magnetic memory.
3. If you are installing a standard-reliability system, enter the **backup disk incremental** command. Otherwise enter the **backup disk incremental both** command at the command: prompt.



CAUTION:

To avoid a disk crash, do not power down or power cycle a switch with a DEFINITY AUDIX System (for example, during switch acceptance tests) unless you have first shutdown the DEFINITY AUDIX system. Refer to chapter 1 in DEFINITY AUDIX System Maintenance, 585-300-110, for a description of the shutdown procedure.

Install Auxiliary Equipment

8

Auxiliary Equipment Description

The following optional equipment is available for use with the system.

- The 909 Universal Coupler (UC) is used between accessory equipment and the PBX to protect the PBX and the public network against longitudinal imbalance and hazardous voltages. It suppresses out-of-band frequencies, and it limits the power output to the PBX from the accessories. When used in loudspeaker paging applications, the UC prevents annoying clicks at the beginning and ending of pages and provides control circuitry to allow communication between the PBX and accessories.

The 909 Universal Coupler replaces the 36A Voice Coupler, 89A Control Unit, and 278A Adapter in System 25, System 75, System 85, DEFINITY G1, G2, G3, and Int'l for the following applications:

- Music-On-Hold
- Deluxe Queuing
- Loudspeaker Paging Access
- Recorded Telephone Dictation Trunk
- Recorded Announcement Systems (if not FCC approved)
- AUX Trunk Paging (w/wo background music)
- Malicious Call Trace

- PagePac¹ paging system—Provides an amplifier system for the Loudspeaker Paging feature. Three models are available:
 - PagePac 20—Provides a single zone of paging with an input source for music. The unit can be modified to provide 9 or 39 paging zones.
 - PagePac VS—Provides one to three paging zones. It also permits all zone paging. Two optional feature cards are available to provide music or talk-back over paging.
 - PagePac 50/100/200—Provides 1 to 24 paging zones. Optional add-ons are available to provide music or talk-back over paging. Also, it is possible to use a customer-supplied music source.

All PagePac models require 120VAC power.

- Use the following PEC codes to access the indicated variations of the AT&T model 15A announcement system.

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

The BLD1 circuit pack provides 8 channels with up to 20 seconds of recording time on each channel. The BLD2 circuit pack provides 8 channels with up to 40 seconds of recording time on each channel. Each chassis can be populated with any combination of two BLD circuit packs.

(The 15A system is FCC registered and does not require a voice coupler.)

- Audichron² H9040 Wake-Up Announcement System—Provides automatic wake-up announcements for use with the hospitality features. This unit requires a power supply (to be provided locally) that is rated at -48VDC at 1.2 amps.

A model PK-1021 is also available with similar characteristics.

- 3270 data modules—Provide a family of protocol converters that allow 3270-type terminals to communicate with a host computer through the system.
- Processor data modules (PDMs)—Provide an interface to an AP, AUDIX, Call Management System (CMS), Distributed Communications System (DCS), Property Management System (PMS), customer-provided terminals and computers, and Station Message Detailed Recording (SMDR).

1. PagePac is a registered trademark of the Dracon division of Harris Corporation.
2. Registered trademark of Audichron Company.

- Asynchronous data units—Provide an interface between the system data line circuit pack and the customer's asynchronous data terminals and host computers. They also can be used to provide an interface to the PMS or SMDR equipment.
- Information system network (ISN) interface—Provides an interface to the ISN that interconnects computers and terminals on a customer's premises.
- Star-based local area network (STARLAN) interface—Provides an interface to the STARLAN network that interconnects personal computers, data terminals, resource units, and printers.
- (Premises lightwave system (PLS) interface—Provides an interface to the PLS that allows 3270-type terminals to be connected to a 3274 cluster controller.
- Stratum 3 Clock—Provides stratum 3 level timing consistency from the network. The clock contains either a dual power supply with battery backup for ac applications, or a connector with -48V and -48V RET terminals for DC applications.

Installing 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 Aux-Trunk circuit packs may be required in some countries.) All attendants and voice terminal users have access to the voice paging equipment.

The Music-on-Hold feature provides a connection from the TN763B/C/D auxiliary trunk to a customer-provided music source. (Other Aux-Trunk circuit packs may be required in some countries.) If music-on-hold is administered, all calls that are on hold, waiting in a queue, or parked will receive music to let the waiting party know that the connection is still in effect.

The music source for the Music-on-Hold feature can also be connected through a paging amplifier to provide background music over the loudspeakers.

Figure 8-1 is a block diagram that shows how the Loudspeaker Paging and Music-on-Hold features interact. Detailed installation procedures for these features are included in this guide.

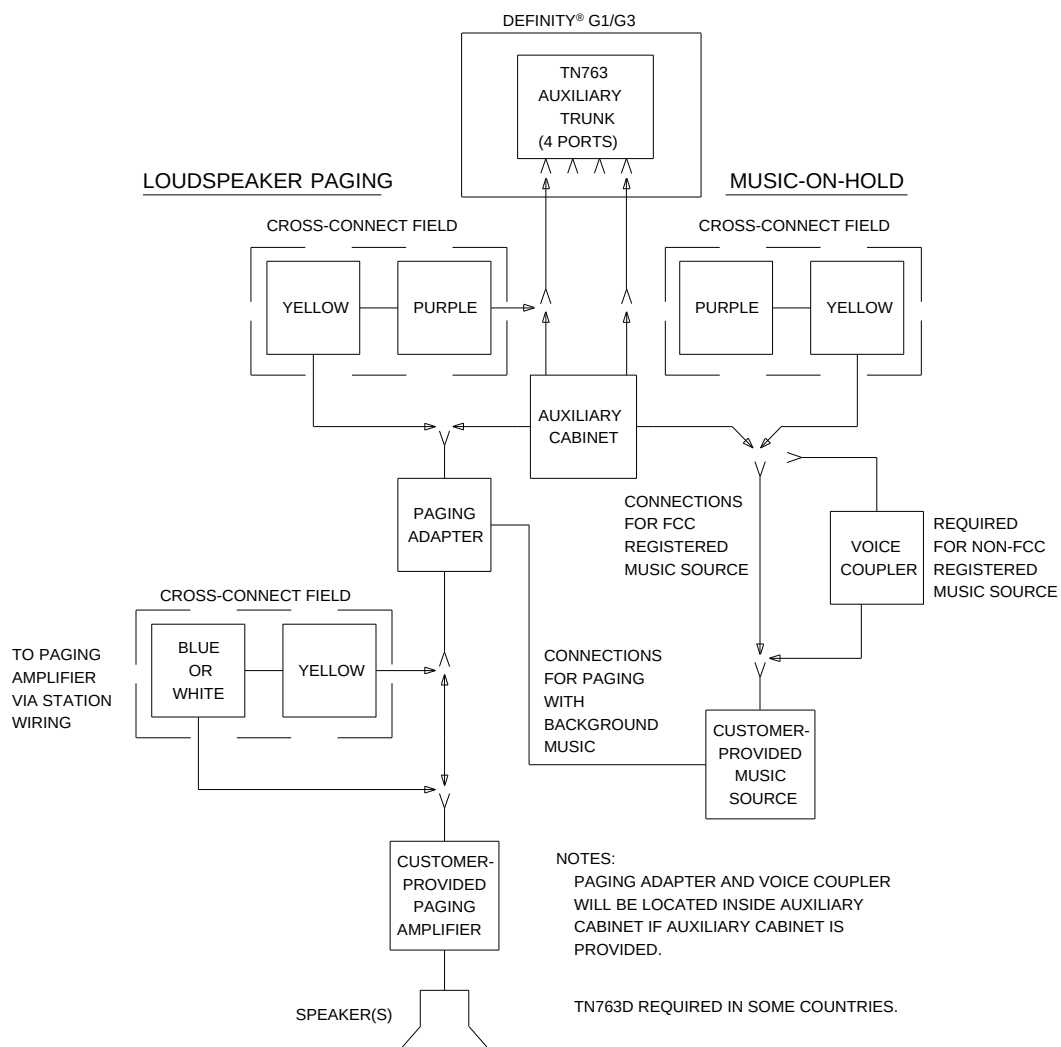
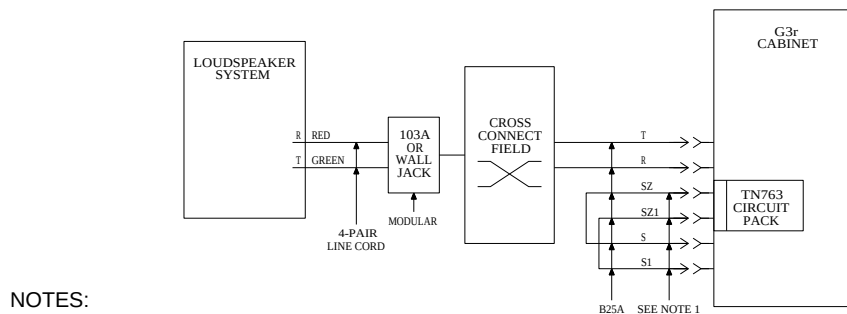


Figure 8-1. Block Diagram for Loudspeaker Paging and Music-on-Hold Features

Installing Loudspeaker Paging Access without Paging Adapter

Requirements

Figure 8-2 shows the connections for the Loudspeaker Paging feature. These connections are used when the loudspeaker interface equipment is not located in the equipment room. If the loudspeaker interface equipment is located in the equipment room, the connections do not have to be routed through the cross-connect field. The connections are for one zone. Repeat the connections for each paging zone.



NOTES:

1. STRAP SZ TO S AND SZ1 TO S1 ON THE CONNECTING BLOCK.
2. TN763D REQUIRED IN SOME COUNTRIES

Figure 8-2. Connections for Loudspeaker Paging: without Universal Coupler

Installation

Install loudspeaker paging access as follows:

1. Determine port assignment of paging zone(s) from Loudspeaker Paging Form:

EXAMPLE: Port Number 2 B 02 01
 Cabinet Carrier Slot Circuit

2. At cross-connect field, locate the connecting block assigned to the port selected in Step 1.
3. On the connecting block, find the terminals (Table 9-7) dedicated to the port selected in Step 1.
4. On the connecting block, place a strap between terminals S and SZ.
5. On the connecting block, place a strap between terminals S1 and SZ1.
6. Install patch cord/jumper wires at cross-connect field.
7. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the loudspeaker system (Figure 8-2).
8. Install loudspeaker equipment per the manufacturer's instructions.
9. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
 - *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653

Installing Loudspeaker Paging Access with 909A/B Universal Coupler

Requirements

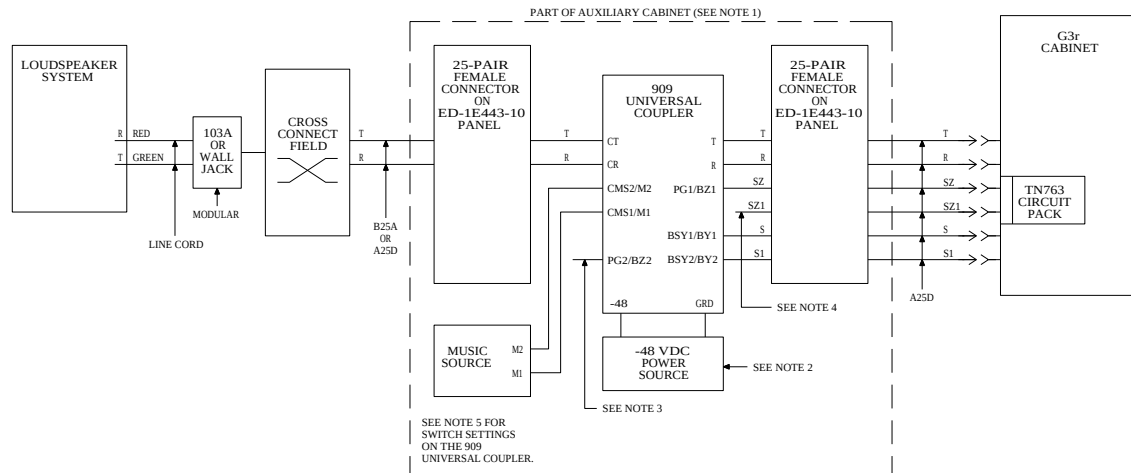
Access to loudspeaker paging is provided by an information outlet. The switch side of the cross-connect field is connected to a 909A/B Universal Coupler. The coupler is mounted in the auxiliary cabinet, if one is available.

If the 909A/B is not mounted in an auxiliary cabinet, provisions must be made for obtaining the DC power. If the coupler is being used with a Multi-Carrier Cabinet, -48 VDC can be obtained from the Auxiliary connector behind the common control carrier. If the adapter is being used with a Single-Carrier Cabinet or in a situation where using the -48 VDC from the Multi-Carrier Cabinet isn't feasible, use an MSP-1 or other approved -48V power supply. Switching voltage to the PG2/BZ2 connection can be from the 909's -48V supply.

If an auxiliary cabinet is not available, a connectorized wiring block must be locally engineered to replace the auxiliary cabinet ED-1E443-10 intra-connection panel. Six leads (T, R, SZ, SZ1, S, and S1) connect the adapter to a TN763B/C/D auxiliary trunk circuit pack located in a port carrier. (Other Aux-Trunk circuit packs may be required in some countries.)

Figure 8-3 shows the connections for the Loudspeaker Paging feature. These connections are used when the loudspeaker interface equipment is not located in the equipment room. If the loudspeaker interface equipment is located in the equipment room, the connections do not have to be routed through the cross-connect field. The connections are for one zone. Repeat the connections for each paging zone.

Installing Loudspeaker Paging and Music-on-Hold



OPTION DESCRIPTION	SWITCH POSITIONS					
	1	2	3	4	5	6
8 OHM BACKGROUND MUSIC INPUT	C	0	X	X	X	X
1.5K OHM BACKGROUND MUSIC INPUT	0	C	X	X	X	X
>50K OHM BACKGROUND MUSIC INPUT	0	0	X	X	X	X
-9dBm 600 OPTION	X	X	C	X	X	X
-15dBm 600 OPTION	X	X	0	X	X	X
COUPLER AVAILABLE	X	X	X	X	X	0
LOCAL BUSY-OUT	X	X	X	X	X	C

X - 'DON'T CARE'
O - OPEN
C - CLOSED

NOTES:

- AUXILIARY CABINET IS OPTIONAL.
- USE -48V AND -48VRET FROM THE CABINET OR WALL FIELD OR A KS-22911L2 OR OTHER APPROVED -48VDC POWER SUPPLY
- CONNECT PG2/BZ2 TO AN AVAILABLE DC POWER SOURCE OF -9.5 TO -60VDC.
- CONNECT SZ1 TO THE GROUND OF THE DC POWER SOURCE USED FOR PG2/BZ2.
- SET S1 TO THE C2 POSITION. SET S2 ACCORDING TO THE TABLE ABOVE.
- TN763D REQUIRED IN SOME COUNTRIES.

Figure 8-3. Connections for Loudspeaker Paging with 909A/B Universal Coupler

Installation

Install loudspeaker paging access as follows:

1. Determine port assignment of paging zone(s) from Loudspeaker Paging Form:

EXAMPLE: Port Number 2 B 02 01
 Cabinet Carrier Slot Circuit

2. Identify carrier slot and label both ends of an A25D cable.
3. Connect the A25D cable from the assigned port carrier slot to the 25-pair connector on the auxiliary cabinet's ED-1E443-10 intra-connection panel (Figure 8-3).
4. Connect an A25D (**for 110-type hardware**) or B25A **for 66-type hardware**) cable from the 25-pair connector on the ED-1E443-10 intra-connection panel to the switch side of the cross-connect field.
5. **For 110-type hardware**, install a yellow (auxiliary) label on the 110-type terminal block. **For 66-type hardware**, write the lead designations on the 66-type connecting block with a felt-tipped pen.
6. Install the 909A/B Universal Coupler on a vertical surface.
7. Using tables 8-1, 8-2, and 8-3 and figure 8-3 as your guide, make connections from the 909A/B Universal Coupler to the 110-type wiring blocks on the ED-1E443-10 intra-connection panel.

Table 8-1. Pin Assignments: 909A/B, J1 (Switch Connections)

Pin	Color	Designation	Description
5	W-BL	T	Tip Lead
4	BL	R	Ring Lead
3	W-G	PG1/BZ1	Seizure control lead, connected to -48Vdc from the system when P/P switch set to C2, or to -48Vdc on the UC when P/P switch set to C1
2	O	PG2/BZ2	Seizure control lead, connected to S lead from AUX trunk when P/P switch set to C2, or GRD on the UC when the P/P switch set to C1
7	W-BR	BSY1/BY1	Busy/Busy-Out lead, connected to GRD from system
6	G	BSY2/BY2	Busy/Busy-Out lead, connected to AL lead from AUX trunk
1	W-O	-	not used
8	BR	-	not used

Table 8-2. Pin Assignments: 909A/B, J2 (Accessory Connections)

Pin	Color	Designation	Description
5	W-BL	CT	Customer Tip lead
4	BL	CR	Customer Ring lead
1	W-O	CMS1/M1	Customer provided music source
2	O	CMS2/M2	Customer provided music source
3	W-G	COS1	Remote Busy-Out Control contact closure from CPE
6	G	COS2	Remote Busy-Out Control contact closure from CPE
7	W-BR	CBS1/C1	Seizure indication provided to CPE
8	BR	CBS2/C2	Seizure indication provided to CPE

Table 8-3. Pin Assignments: 909A/B, J3 (Power Connections)

Pin	Color	Designation	Description
1	none		No wire present
2	BLK	GRD	-48VRET or ground lead from system or from positive lead of AC-DC power supply
3	R		Not connected
4	G		Not connected
5	Y	-48Vdc	-48Vdc lead from system or from negative lead of AC-DC power supply
6	none		No wire present

8. On the 909A/B Universal Coupler:
 - Connect an approved -48VDC power source to the **-48** and **GRD** terminals (pins 5 and 2, respectively, of J3).
 - Connect seizure control voltage of from -9 to -60 volts to the PG2/BZ2 connection (pin 2 of J1). Switching voltage to the PG2/BZ2 connection can be from the 909's -48 volt supply.
9. Install patch cord/jumper wires at cross-connect field.
10. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the loudspeaker system.
11. Install loudspeaker equipment per the manufacturer's instructions.
12. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
 - *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653

Installing PagePac® Paging System

General

The PagePac³ paging systems use a single port to provide single or multi-zone loudspeaker paging. A PagePac system may be used in addition to the standard loudspeaker paging and code-calling capabilities of the system.

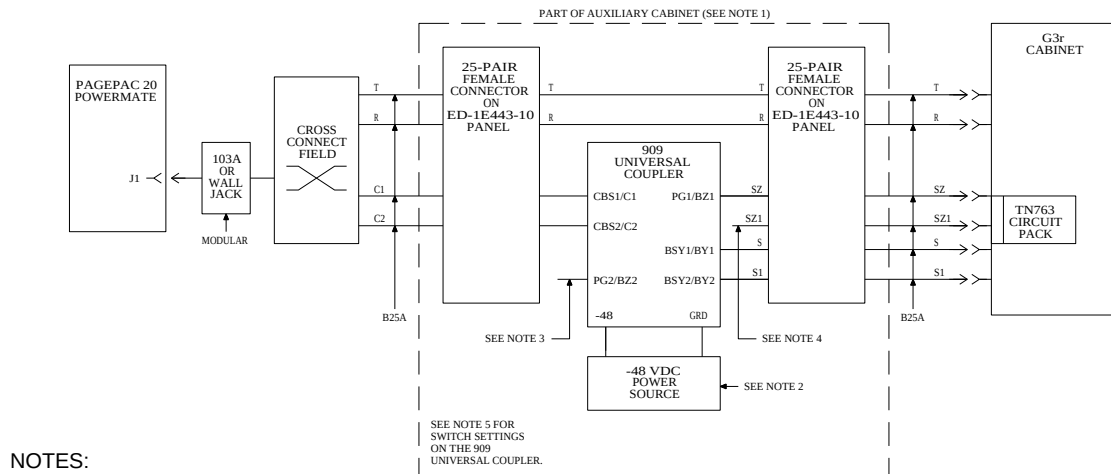
Three models are available:

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

PagePac 20

The PagePac 20 is a 20 watt amplifier that can be used alone to provide a single zone of paging (Figure 8-4). It can also be equipped with a Zone-Mate 9 or 39 to provide multiple paging zones (Figure 8-5). If the PagePac 20 is used alone, a 909A/B adapter is required.

3. Registered trademark of Harris Corporation, Dracon Division



NOTES:

1. AUXILIARY CABINET IS OPTIONAL.
2. USE -48V AND -48VRET FROM THE CABINET OR WALL FIELD OR A KS-22911L2 OR OTHER APPROVED -48VDC POWER SUPPLY
3. CONNECT PG2/BZ2 TO AN AVAILABLE DC POWER SOURCE OF -9.5 TO -60VDC.
4. CONNECT SZ1 TO THE GROUND OF THE DC POWER SOURCE USED FOR PG2/BZ2.
5. SET S1 TO THE C2 POSITION. SET S2 SWITCH POSITION 6 OPEN. ALL OTHER SWITCHES ARE 'DON'T CARE'.
6. TN763D REQUIRED IN SOME COUNTRIES.

Figure 8-4. Connections for PagePac 20 without Zone-Mate 9 or 39

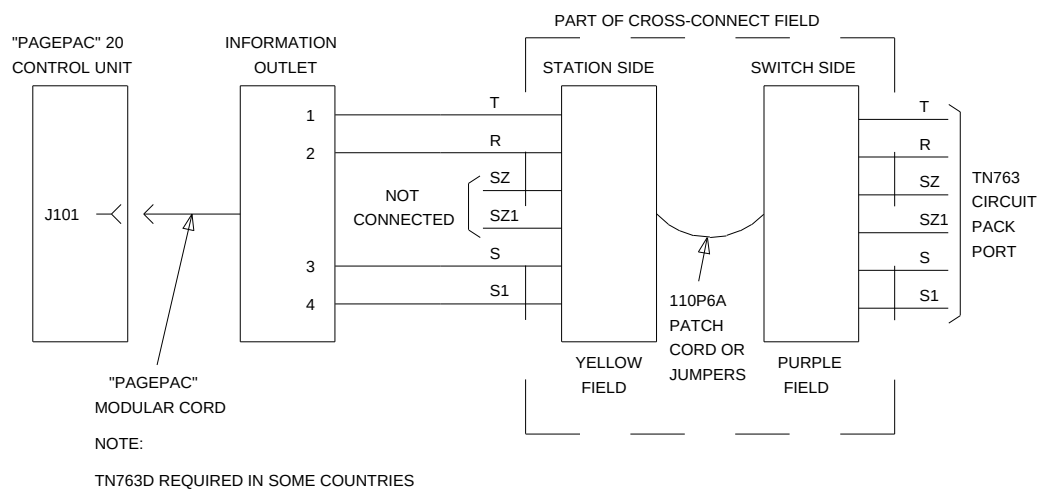
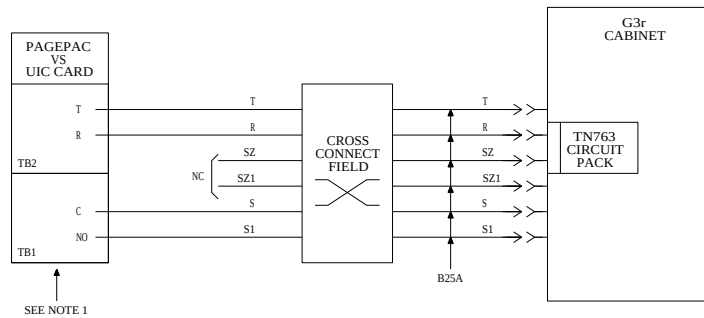


Figure 8-5. Connections for PagePac 20 with Zone-Mate 9 or 39

Installing PagePac VS

The PagePac VS is a 35 watt amplifier that provides up to 3 paging zones. The PagePac VS does not require a 909A/B adapter. Connect the PagePac VS as shown in Figure 8-6.



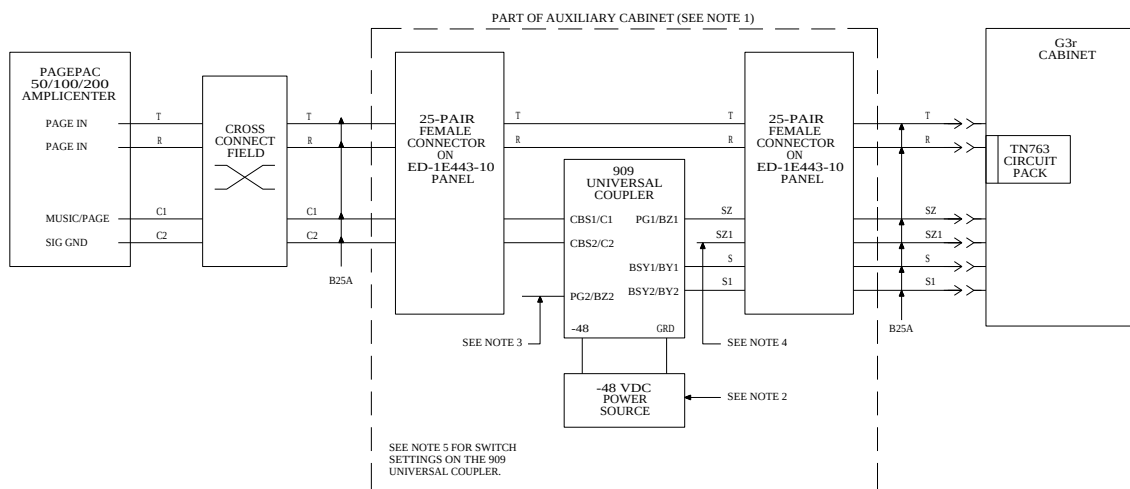
NOTES:

1. IF UIC CARD IS NOT PROVIDED, ALL CONNECTIONS ARE MADE TO THE TB2 ON THE PAGEPAC VS.
2. THIS CIRCUIT PACK CAN BE ANY ANALOG LINE PACK: TN769, TN742, TN746, ETC.
3. WHEN A DB9 IS USED ON THE BACK OF A PC, USE A ED3P001-70, G115 TO CONVERT DB9 TO DB25.
4. TN763D MAY BE REQUIRED IN SOME COUNTRIES

Figure 8-6. Connections for PagePac VS

Installing PagePac 50/100/200

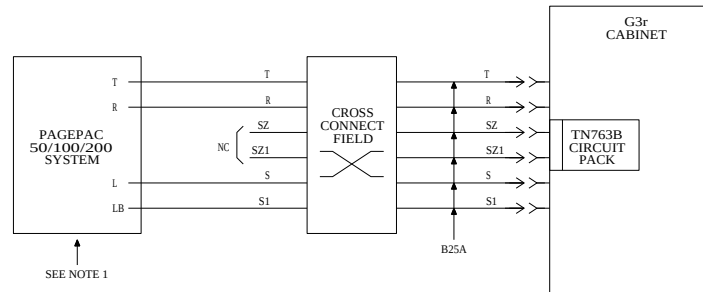
The 50/100/200 PagePac paging system mounts directly on a wall or on a 23-inch relay rack using the appropriate adapters. The unit provides 3 output wattages: 50, 100 and 200. The PagePac Amplicenter can be used alone to provide a single zone of paging (Figure 8-7) or add-on units can be provided to create a paging system with up to 24 paging zones (Figure 8-8). If the PagePac 50/100/200 Amplicenter is used alone, a 909A/B adapter is required.



NOTES:

1. AUXILIARY CABINET IS OPTIONAL.
2. USE -48V AND -48VRET FROM THE CABINET OR WALL FIELD OR A KS-22911L2 OR OTHER APPROVED -48VDC POWER SUPPLY
3. CONNECT PG2/BZ2 TO AN AVAILABLE DC POWER SOURCE OF -9.5 TO -60VDC.
4. CONNECT SZ1 TO THE GROUND OF THE DC POWER SOURCE USED FOR PG2/BZ2.
5. SET S1 TO THE C2 POSITION. SET S2 POSITION 6 OPEN. ALL OTHERS. ARE 'DON'T CARE'.
6. TN763D REQUIRED IN SOME COUNTRIES

Figure 8-7. Connections for PagePac 50/100/200 Amplicenter Only



NOTES:

1. OPTION C APPLIQUE FOR LOOP START WITH 24V BATTERY MUST BE PROVIDED.
2. TN763D REQUIRED IN SOME COUNTRIES

Figure 8-8. Connections for PagePac 50/100/200 System

Installing Music-on-Hold Access

Requirements

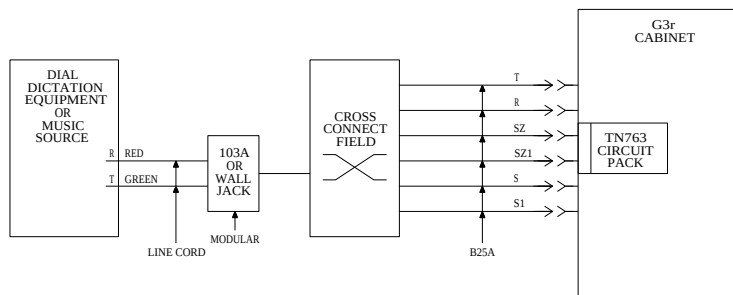
An information outlet provides access to the music source. If the music source is FCC registered, the switch side of the cross-connect field is connected directly to the switch cabinet. If the music source is not FCC registered, the switch side of the cross-connect field is connected to a 909A/B universal 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 intra-connection panel.

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

Figure 8-9 shows the connections for the Music-on-Hold feature when the loudspeaker equipment is FCC registered. Figure 8-10 shows the connections for the Music-on-Hold feature when the loudspeaker equipment is not FCC registered.

The connections shown in Figures 8-9 and 8-10 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 cross-connect field.

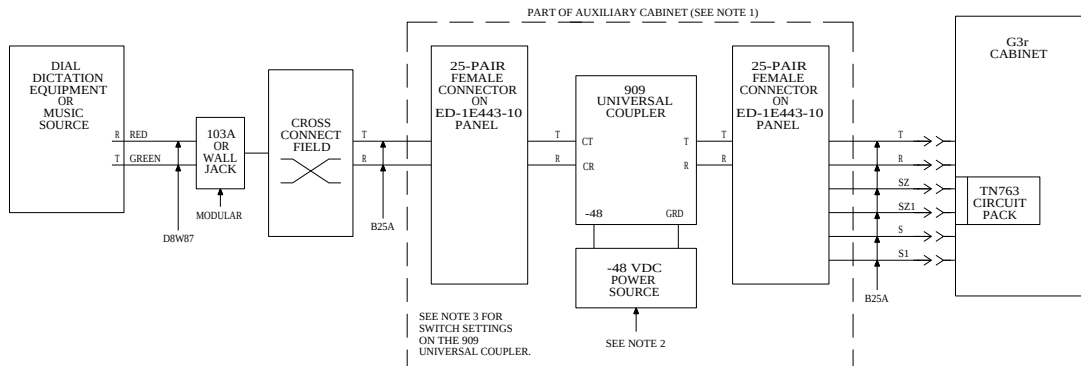
MUSIC-ON-HOLD/DIAL DICTATION EQUIPMENT (AUXILIARY ACCESS)



NOTE:

TN763D REQUIRED IN SOME COUNTRIES

Figure 8-9. Music-on-Hold/Dial Dictation, FCC-Registered Equipment (Auxiliary Access)



NOTES:

1. AUXILIARY CABINET IS OPTIONAL.
2. USE -48V AND -48VRET FROM THE CABINET OR WALL FIELD OR A KS-22911L2 OR OTHER APPROVED -48VDC POWER SUPPLY
3. SET S1 TO THE C1 POSITION. SET S2 SWITCH POSITION 3 TO -9dBm OR -15dBm AS REQUIRED BY THE CENTRAL OFFICE. SET S2 POSITION 6 OPEN. ALL OTHER SWITCHES ARE 'DON'T CARE'.
4. TN763D REQUIRED IN SOME COUNTRIES

Figure 8-10. Music-on-Hold/Dial Dictation, Non-FCC-Registered Equipment (Auxiliary Access)

Installation—FCC Registered Music Source

Install a FCC registered music source as follows:

1. Determine feature port assignment from Feature-Related System Parameters Form:

EXAMPLE: Port Number 2 B 02 01
 Cabinet Carrier Slot Circuit

2. Install music source per the manufacturer's instructions.
3. Connect a line cord (modular plug at one end) from the information outlet to the music source (Figure 8-9).
4. Install patch cord/jumper wires at the cross-connect field.
5. Administer per one of the following:

- *DEFINITY Communications System Generic 1 Implementation, 555-204-654*

- *DEFINITY Communications System Generic 3 V2 Implementation, 555-230-653*

Installation—Non-FCC Registered Music Source

Install a music source that is not registered with the FCC as follows:

1. Determine feature port assignment from Feature-Related System Parameters Form:

EXAMPLE: Port Number 2 B 02 01
 Cabinet Carrier Slot Circuit

2. Identify carrier slot and place a label on both ends of an A25D cable.
3. Connect the A25D cable from the assigned port carrier slot to the 25-pair connector on the auxiliary cabinet ED-1E443-10 intra-connection panel (Figure 8-10).
4. Connect an A25D (*for 110-type hardware*) or B25A (*for 66-type hardware*) cable from the 25-pair connector on the ED-1E443-10 intra-connection panel to the switch side of the cross-connect field.
5. *For 110-type hardware*, install a yellow (auxiliary) label on the 110-type terminal block. *For 66-type hardware*, write the lead designations on the 66-type connecting block with a felt-tipped pen.
6. Install music source per the manufacturer's instructions.
7. At the 909A/B universal coupler:
 - Connect the T-lead at pin 5 and the R-lead at pin 4 of J1 on the 909 to the corresponding leads from the TN763. (Other Aux-Trunk circuit packs may be required in some countries.)
 - Connect the CT-lead at pin 5 and the CR-lead at pin 4 of J2 on the 909 to the T and R terminals on the ED-1E443-10 connector panel.
8. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the music source (Figure 8-10).
9. Install patch cord/jumper wires at the cross-connect field.
10. Connect -48V to pin 5 and -48VRET to pin 2 of J3 on the 909A/B universal coupler. (The power source may be an MSP-1 or another approved power supply.)
11. Power-up the universal coupler.

12. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
 - *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653

Installing Loudspeaker Paging with Background Music

Install a music source that is not registered with the FCC as follows:

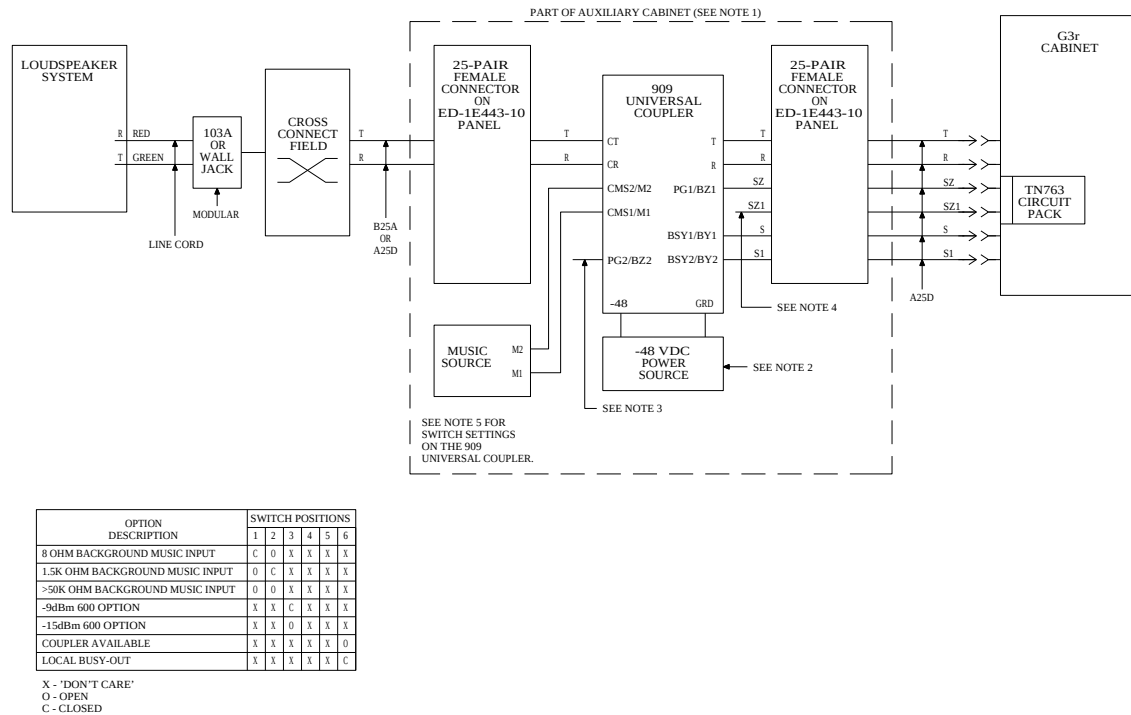
1. Determine feature port assignment from Feature-Related System Parameters Form:

EXAMPLE: Port Number 2 B 02 01
 Cabinet Carrier Slot Circuit

2. Identify carrier slot and place a label on both ends of an A25D cable.
3. Connect the A25D cable from the assigned port carrier slot to the 25-pair connector on the auxiliary cabinet ED-1E443-10 intra-connection panel (Figure 8-11).
4. Connect an A25D (*for 110-type hardware*) or B25A (*for 66-type hardware*) cable from the 25-pair connector on the ED-1E443-10 intra-connection panel to the switch side of the cross-connect field.
5. *For 110-type hardware*, install a yellow (auxiliary) label on the 110-type terminal block. *For 66-type hardware*, write the lead designations on the 66-type connecting block with a felt-tipped pen.
6. Install music source per the manufacturer's instructions.
7. At the 909A/B universal coupler:
 - Using the next figure and table 8-1 as a guide, connect J1 of the 909A/B to the switch as follows:
 - Connect the T-lead at pin 5 and the R-lead at pin 4 of J1 to the corresponding leads from the TN763. (Other Aux-Trunk circuit packs may be required in some countries.)
 - Connect the BSY1/BY1-lead at pin 7 of J1 to the S-lead from the circuit pack.
 - Connect the BSY2/BY2-lead at pin 6 of J1 to the S1-lead from the circuit pack.
 - Connect the PG1/BZ1-lead at pin 3 of J1 to the SZ-lead from the circuit pack.
 - Connect the PG2/BZ2-lead at pin 2 of J1 to a DC power source of from -9.5VDC to -60VDC. Switching voltage to the PG2/BZ2 connection can be from the 909's -48VDC supply.

- Using the next figure and Table 8-2 as a guide, connect J2 of the 909A/B to accessory equipment as follows:
 - Connect the CT-lead at pin 5 and the CR-lead at pin 4 of J2 on the 909 to the T and R terminals on the ED-1E443-10 connector panel.
 - Connect the CMS1/M1-lead at pin 1 and the CMS2/M2-lead at pin 2 of J2 to the music source provided for use with the system.
- 8. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the loudspeaker system.
- 9. Install patch cord/jumper wires at the cross-connect field.
- 10. Connect -48V to pin 5 and -48VRET to pin 2 of J3 on the 909A/B universal coupler. (The power source may be an MSP-1 or another approved power supply.)
- 11. Power-up the universal coupler.
- 12. Adjust music source level.
- 13. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
 - *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653

Installing Loudspeaker Paging and Music-on-Hold



NOTES:

- AUXILIARY CABINET IS OPTIONAL.
- USE -48V AND -48VRET FROM THE CABINET OR WALL FIELD OR A KS-22911L2 OR OTHER APPROVED -48VDC POWER SUPPLY
- CONNECT PG2/BZ2 TO AN AVAILABLE DC POWER SOURCE OF -9.5 TO -60VDC.
- CONNECT SZ1 TO THE GROUND OF THE DC POWER SOURCE USED FOR PG2/BZ2.
- SET S1 TO THE C2 POSITION. SET S2 ACCORDING TO THE TABLE ABOVE.
- TN763D REQUIRED IN SOME COUNTRIES.

Figure 8-11. Loudspeaker Paging with Background Music Connections—909A/B Universal Coupler

Installing Recorded Announcement Equipment

Requirements

Access to recorded announcement equipment is provided by an information outlet. If the recorded announcement equipment is FCC registered, the switch side of the cross-connect field is connected directly to the switch cabinet. If the recorded announcement equipment is not FCC registered, the switch side of the cross-connect 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 intra-connection panel.

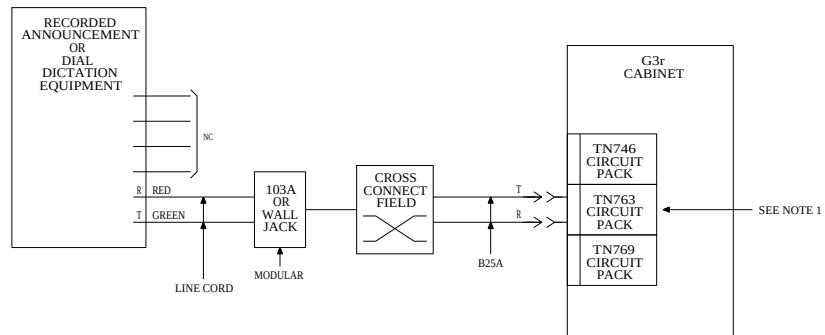
The switch side of the cross-connect field is connected by the T and R leads to a TN746B analog line circuit pack located in a port carrier. (Other analog-line circuit packs may be required in some countries.)

Figure 8-12 shows the connections for the Recorded Announcement feature when the recorded announcement equipment is FCC registered. Figure 8-13 shows the connections for the Recorded Announcement feature when the recorded announcement equipment is not FCC registered.

NOTE:

If the TN750B Announcement circuit pack is provided, it replaces all external announcement devices except the wake-up announcement unit.

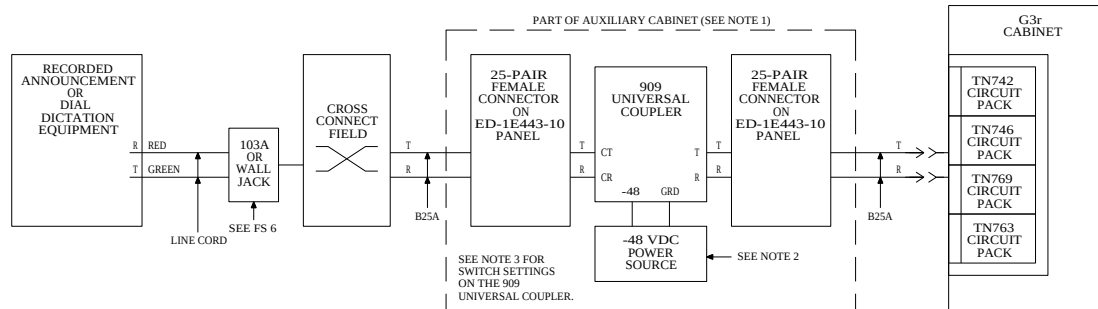
To get the benefit of battery holdover for the TN750B circuit pack, install it in an EPN "A" carrier position.



NOTES:

1. TN763 CAN BE USED ONLY FOR RECORDED TELEPHONE DICTATION.
2. OTHER ANALOG-LINE CIRCUIT PACKS MAY BE USED IN SOME COUNTRIES

Figure 8-12. Connections for FCC Registered Equipment Provided for Recorded Announcement/Dial Dictation (Analog Access)



NOTES:

1. AUXILIARY CABINET IS OPTIONAL.
2. USE -48V AND -48VRET FROM THE CABINET OR WALL FIELD OR A KS-22911L2 OR OTHER APPROVED -48VDC POWER SUPPLY
3. SET S1 TO THE C1 POSITION. SET S2 SWITCH POSITION 3 TO -9dBm OR -15dBm AS REQUIRED BY THE CENTRAL OFFICE. SET S2 SWITCH POSITION 6 OPEN. ALL OTHERS ARE 'DON'T CARE'.
4. OTHER ANALOG-LINE CIRCUIT PACKS MAY BE USED IN SOME COUNTRIES

Figure 8-13. Connections for Non-FCC Registered Equipment Provided for Recorded Announcement/Dial Dictation Equipment (Analog Access)

Installation of FCC Registered Recorded Announcement Equipment

Install FCC registered recorded announcement equipment as follows:

1. Determine feature port assignment from Announcement Form:

EXAMPLE: Port Number 2 B 02 01
 Cabinet Carrier Slot Circuit

2. Install recorded announcement equipment per the manufacturer's instructions.
3. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the recorded-announcement source (Figure 8-12).
4. Install patch cord/jumper wires at cross-connect field.
5. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
 - *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653

Installation of Non-FCC Registered Recorded Announcement Equipment

Install the Non-FCC registered recorded announcement equipment as follows:

1. Determine feature port assignment from Announcement Form:

EXAMPLE: Port Number 2 B 02 01
 Cabinet Carrier Slot Circuit

2. Identify carrier slot and place a label on both ends of an A25D cable.
3. Connect the A25D cable from the station side of the cross-connect field to a 25-pair connector on the auxiliary cabinet ED-1E443-10 intra-connection panel (Figure 8-13).
4. Connect an A25D (**for 110-type hardware**) or B25A (**for 66-type hardware**) cable from the 25-pair connector on the ED-1E443-10 intra-connection panel to the switch side of the cross-connect field (Figure 8-13).
5. **For 110-type hardware**, install a yellow (auxiliary) label on the 110-type terminal block. **For 66-type hardware**, write the lead designations on the 66-type connecting block with a felt-tipped pen.

6. At the 909A/B universal coupler:
 - Connect the T-lead at pin 5 and the R-lead at pin 4 of J1 on the 909 to the corresponding leads from the chosen circuit pack.
 - Connect the CT-lead at pin 5 and the CR-lead at pin 4 of J2 on the 909 to the T and R terminals on the ED-1E443-10 connector panel.
7. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the recorded announcement equipment.
8. Install patch cord/jumper wires at the cross-connect field.
9. Connect -48V to pin 5 and -48VRET to pin 2 of J3 on the 909A/B universal coupler. (The power source may be an MSP-1 or another approved power supply.)
10. Power-up the universal coupler.
11. Install recorded announcement equipment per manufacturer's instructions.
12. Install patch cord/jumper wires at the cross-connect field.
13. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
 - *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653

15A Digital Announcer

The 15A digital announcer is partitioned into two completely independent circuit packs that provide 8 channels each. Installation of a fully loaded announcer system involves wiring as many as 16 channels to Aux-Trunk circuit packs such as the TN763. Because of the jacks on the back of the 15A, you can make all connections to the switch through the cross connect field using standard telecommunication cables without wire wrapping.

The 15A is provided with mounting brackets and screws that make it possible to mount it in a 25 inch or 22³/₈ inch rack. If the digital announcer is mounted inside the auxiliary cabinet, it can be powered from the switch power plant through the fuse panel located in the cabinet. If the digital announcer is mounted outside the auxiliary cabinet, it can be powered using an MSP-1 power supply or equivalent.

The fuse value should be 1¹/₃ Amps. Each circuit pack in a 15A system should be fused separately. The 15A system is FCC registered, UL approved and CSA certified.

If the announcer is equipped with the Remote Record module then the module can be connected to an analog line to provide remote access. One such analog line is required per circuit pack (8 channels).

The following procedure assumes you will be connecting to the TN763 circuit pack. However, other Aux-Trunk circuit packs may be required in some countries. The following illustration offers a block diagram of the completed connection.

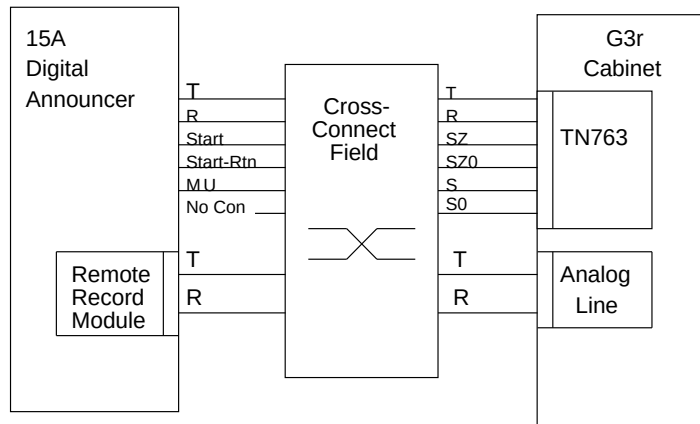


Figure 8-14. Connections for Digital Announcer

Use this illustration with the following tables of TN763 connections to help you through this installation.

1. Connect an A25D cable from the 25 pair connector on the back of the 15A system to the cross-connect field 25 pair connector. Label both ends of the cable.
2. Connect a pair of powering leads from the fuse panel to the terminal block on the back of the 15A. Connect the -48V to the terminal labeled -48V and the -48VRET to the terminal labeled -48VRTN. The 15A calls for a $1\frac{1}{3}$ Amp fuse, but leave the fuse out of the panel until all connections are made at the cross-connect field.
3. If the remote record module is provided, connect an analog line to each circuit pack equipped with the remote record module. This connection is done by using a modular telephone cable between the 15A and the cross-connect field. Connect one end of the cable to the modular jack on the back of the 15A labeled remote record. The other end can be connected to the cross connect field through a modular jack, if one is provided, or punched directly on the T-R appearance coming from the analog line circuit pack.

4. Connect an A25D cable from the TN763 equipment location to the cross-connect field.



NOTE:

If the cross-connect field is equipped with female connectors, use the A25D cables just specified. If, however, the cross-connect field is equipped with male connectors then use a B25A type. A male termination is always required at the 15A side.

5. Install a patch cord or jumper wires at the cross connect field. The connections are given in the following table.
6. Apply power by installing the 1¹/₃ Amp fuse in the fuse panel.
7. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
 - *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653

Table 8-4. 15A Digital Announcer Connections to First TN763

AT&T 15A			Wallfield	Switch			Announce ment Channel	TN763 Channel
15A	50 Pin Connector	110 Block		110 Block	50 Pin Connector	TN763		
T0	26	1	-----	1	26	T0	0	0
R0	1	2	-----	2	1	R0		
START0	27	3	-----	3	27	SZ-1		
START-RTN	2	4	-----	4	2	SZ0-1		
MU0	28	5	-----	5	28	S-1		
AL	3	6	no connect	6	3	S0-1	1	1
T1	29	7	-----	7	29	T1		
R1	4	8	-----	8	4	R1		
START1	30	9	-----	9	30	SZ-2		
START-RTN	5	10	-----	10	5	SZ0-2		
MU1	31	11	-----	11	31	S-2	2	2
AL-RTN	6	12	no connect	12	6	S0-2		
T2	32	13	-----	13	32	T2		
R2	7	14	-----	14	7	R2		
START2	33	15	-----	15	33	SZ-3		
START-RTN	8	16	-----	16	8	SZ0-3	3	3
MU2	34	17	-----	17	34	S-3		
ALTST	9	18	no connect	18	9	S0-3		
T3	35	19	-----	19	35	T3		
R3	10	20	-----	20	10	R3		
START3	36	21	-----	21	36	SZ-4		
START-RTN	11	22	-----	22	11	SZ0-4		
MU3	37	23	-----	23	37	S-4		
ALTST-RTN	12	24	no connect	24	12	S0-4		

1st
TN763
Interface

Table 8-5. 15A Digital Announcer Connections to Second TN763

AT&T 15A			Wallfield	Switch			Announcement Channel	TN763 Channel
15A	50 Pin Connector	110 Block		110 Block	50 Pin Connector	TN763		
T4	38	25	-----	1	26	T0	4	0
R4	13	26	-----	2	1	R0		
START4	39	27	-----	3	27	SZ-1		
START-RTN	14	28	-----	4	2	SZ0-1		
MU4	40	29	-----	5	28	S-1	5	1
-48VRTN	15	30	no connect	6	3	S0-1		
T5	41	31	-----	7	29	T1		
R5	16	32	-----	8	4	R1		
START5	42	33	-----	9	30	SZ-2	6	2
START-RTN	17	34	-----	10	5	SZ0-2		
MU5	43	35	-----	11	31	S-2		
	18	36	no connect	12	6	S0-2		
T6	44	37	-----	13	32	T2	7	3
R6	19	38	-----	14	7	R2		
START6	45	39	-----	15	33	SZ-3		
START-RTN	20	40	-----	16	8	SZ0-3		
MU6	46	41	-----	17	34	S-3		
-48VRTN	21	42	no connect	18	9	S0-3		
T7	47	43	-----	19	35	T3		
R7	22	44	-----	20	10	R3		
START7	48	45	-----	21	36	SZ-4		
START-RTN	23	46	-----	22	11	SZ0-4		
MU7	49	47	-----	23	37	S-4		
	24	48	no connect	24	12	S0-4		
-48V	50	49	no connect					
-48V RTN	25	50	no connect					

2nd
TN763
Interface

Cook Digital Announcer

The Cook Electric digital announcer can be mounted in the auxiliary cabinet on a 23-inch relay rack. The relay rack includes the side bracket kit that consists of two side brackets and four mounting screws. The vertical height is 1.75 inches. If the digital announcer is located outside the auxiliary cabinet, it is powered by a 120VAC adapter furnished by Cook Electric. If the digital announcer is mounted inside the auxiliary cabinet, -48VDC power is provided by a rectifier mounted at the base of the cabinet. The alarm panel is mounted at the top of the cabinet.

The digital announcer is connected to a TN746 or TN769 circuit pack through a 909A/B universal coupler. The digital announcer can be connected directly to a TN763 circuit pack. (Other analog-line and aux-trunk circuit packs may be required in some countries.)

⇒ NOTE:

If the TN750B announcement circuit pack is provided, it replaces all external announcement devices except the wake-up announcement unit.

Installation Through a Universal Coupler

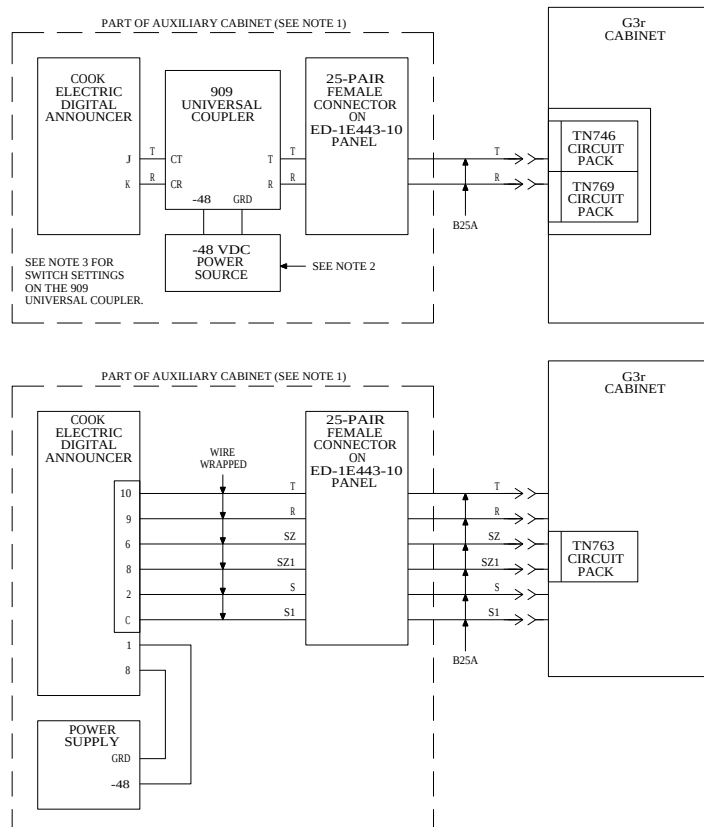
Install the digital announcer as follows:

1. Connect an A25D cable from the 25-pair connector on the ED-1E443-10 intra-connection panel to the circuit pack of your choice. Label both ends of the cable.
2. Connect a pair of wires from the alarm panel to the digital announcer connector **J2**, pins 1 and 8.
3. At the 909A/B universal coupler:
 - Connect the T-lead at pin 5 and the R-lead at pin 4 of J1 on the 909 to the corresponding leads from the circuit pack.
 - Connect the CT-lead at pin 5 and the CR-lead at pin 4 of J2 on the 909 to the J and K the digital announcer connector J1, pins J and K.
4. Connect -48V to pin 5 and -48VRET to pin 2 of J3 on the 909A/B universal coupler. (The power source may be an MSP-1 or another approved power supply.)
5. Power-up the universal coupler.
6. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
 - *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653

Installation by Direct Connection

Connect the digital announcer to a TN763 circuit pack as follows: (Other Aux-Trunk circuit packs may be required in some countries.)

1. Connect an A25D cable from the 25-pair connector on the ED-1E443-10 intra-connection panel to the TN763 circuit pack. (Other Aux-Trunk circuit packs may be required in some countries.) Label both ends of the cable.
2. Wire from the ED-1E443-10 intra-connection panel to the digital announcer as shown in the following illustration.



NOTES:

1. AUXILIARY CABINET IS OPTIONAL.
2. USE -48V AND -48VRET FROM THE CABINET OR WALL FIELD OR A KS-22911L2 OR OTHER APPROVED -48VDC POWER SUPPLY
3. SET S1 TO THE C1 POSITION. SET S2 SWITCH POSITION 3 TO -9dBm OR -15dBm AS REQUIRED BY THE CENTRAL OFFICE. SET S2 SWITCH POSITION 6 OPEN. ALL OTHERS ARE 'DON'T CARE'.
4. OTHER ANALOG-LINE CIRCUIT PACKS MAY BE USED IN SOME COUNTRIES
5. OTHER AUX-TRUNK CIRCUIT PACKS MAY BE USED IN SOME COUNTRIES

Figure 8-15. Connections for Digital Announcer Mounted in Auxiliary Cabinet

Installing Audichron Wake-Up Announcement System

Audichron Model H9040

The wake-up announcement system is available as a basic unit or with mounting ears for use in the auxiliary cabinet. A battery backup arrangement is also available. The following is a list of available equipment:

- Basic Unit—H9040 Group 8: provides the carrier and six plug-in circuit packs required for unit operation.
- Battery Pack Circuit—H9040 Group 10: provides battery backup to memory circuits during brief power outages.
- Mounting Ears—H9040 Group 13: provides mounting ears that allow the basic unit to be mounted in the auxiliary cabinet.

Access to an analog line circuit pack is provided by an information outlet. Access to an auxiliary trunk auxiliary trunk circuit pack is provided by the T and R leads through the cross-connect field. All four ports of this circuit pack are connected to the announcement unit.

Figures 8-15, 8-16, and 8-17 show the connections for the Audichron wake-up announcement systems. Figure 8-18 shows the power and ground connections. One analog line port and an auxiliary trunk circuit pack are required to connect the wake-up announcement unit.

Installation

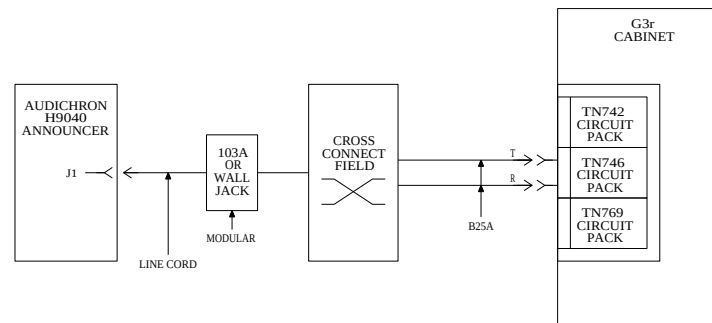
Install wakeup announcement system as follows:

1. Determine feature port assignment from Hospitality-Related System Parameters Form:

EXAMPLE: Port Number	2	B	02	01
	Cabinet	Carrier	Slot	Circuit

2. Connect a 2-pair line cord (modular plug on one end) from the information outlet (Figure 8-16) to the announcement unit.
3. Install patch cord at cross-connect field.
4. Identify the carrier slot for the auxiliary trunk circuit pack and place a label on both ends of a connector cable.
5. Connect the cable to the appropriate port carrier slot and dress it down the sides of the cabinet.

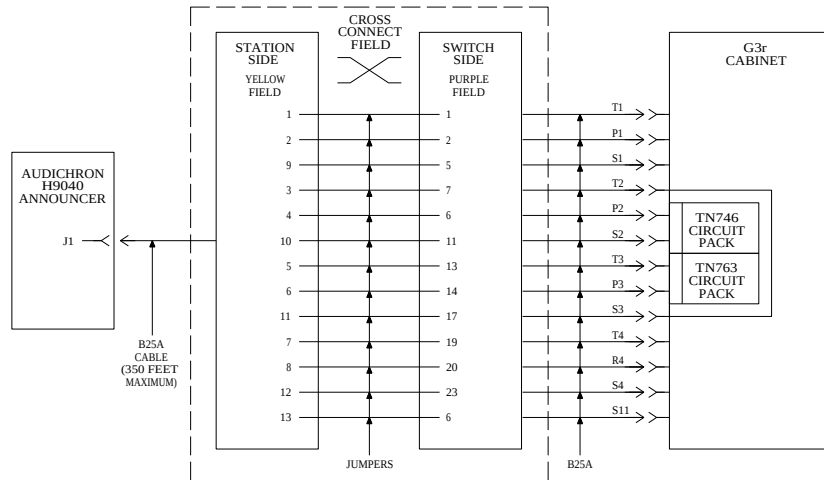
6. Connect the cable from the bottom of the switch cabinet through the cable slack manager, if provided, to the connector associated with the 110-type terminal block/66-type connecting block row in the purple cross-connect field.
7. Connect an A25D (*for 110-type hardware*) or B25A (*for 66-type hardware*) cable from the 25-pair connector associated with the second 110-type terminal block row/66-type connecting block in the yellow cross-connect field to connector J1 on the announcement unit.
8. *For 110-type hardware*, install a yellow (auxiliary) label on the 110-type terminal block. *For 66-type hardware*, write the lead designations on the 66-type connecting block with a felt-tipped pen.
9. Install jumpers between the 110-type terminal block rows/66-type connecting blocks.
10. Connect a -48VDC power source to the announcement unit (Figure 8-18). The power source must be supplied locally and be rated at -48VDC at 1.2 amps.
11. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
 - *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653



NOTE:

OTHER ANALOG-LINE CIRCUIT PACKS MAY BE USED IN SOME COUNTRIES

Figure 8-16. Connections for Analog Line Port to Wake-Up Announcement Unit



NOTE:

OTHER AUX-TRUNK CIRCUIT PACKS MAY BE USED IN SOME COUNTRIES

Figure 8-17. Connections for Auxilliary Trunk Circuit Pack to Wake-Up Announcement Unit

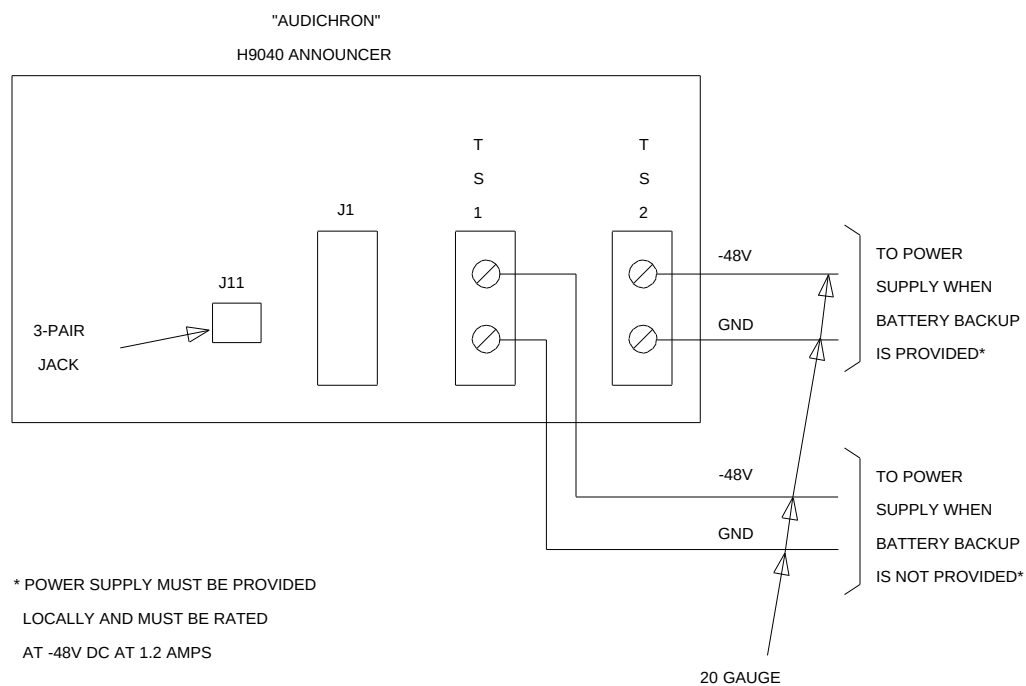


Figure 8-18. Connections for Power Unit to Wake-Up Announcement Unit

Audichron Model PK-1021

The Audichron PK-1021 System provides four announcement channels that can be used independently or can be combined for a single phased announcement. The PK-1021 uses two replaceable cards, an ETC-1064, and an ETC-1038 that are mounted within its two card files. It has similar characteristics to the H9040. The PK-1021, however, has only one signal connector: a 50-pin female connector that is wired as shown below.

Table 8-6. Connections to Audichron PK-1021-RAM03

Color	Pin	HQD 614 Signal Name	ETC-1064 Signal Name	Channel
WHT/BLU	26	TT1	4 OHM	CH1
BLU/WHT	1	RR1	COM	
WHT/ORN	27	TT2	4 OHM	CH2
ORN/WHT	2	RR2	COM	
WHT/GRN	28	TT3	4OHM	CH4
GRN/WHT	3	RR3	COM	
WHT/BRN	29	TT4	4 OHM	CH4
BRN/WHT	4	RR4	COM	
WHT/SLT	30	CP1	MC	CH1
SLT/WHT	5	CP2	MC	CH2
RED/BLU	31	CP3	MC	CH3
BLU/RED	6	CP4	MC	CH4
RED/ORN	32	CP COM	C/GND	
ORN/RED	7	TLP	NO CONNECTION	
RED/GRN	33	ALM OUT	A2	
GRN/RED	8	ALM COM	A3	
BLK/ORN	37	MB1	AL1	CH1
ORN/BLK	12	MB2	AL2	CH2
BLK/BRN	39	MB3	AL3	CH3
BRN/BLK	14	MB4	AL4	CH4
LAV/SLT	50	TIP	REMOTE ACCESS TIP	
SLT/LAV	25	RING	RING	

TT = Tip side of continuous audio
 RR = Ring side of continuous audio
 CP = 250ms Control Pulse — Grounded between cycles
 CP Com = Ground
 TLP = Not Used
 Alm Out = Alarm — Grounded when activated
 Alm Com = Ground
 MB = Make Busy — Grounded when activated
 Tip = To Telco for Remote Access
 Ring = To Telco for Remote Access

Installing Dial Dictation Equipment

The procedures and requirements for installing the Recorded Telephone Dictation feature is the same as for the Recorded Announcement feature for analog access (already described) and the same as Music-on-Hold for auxiliary trunk access.

The port assignment for the feature is on the Station Record Form when a TN746B circuit pack is used. (Other Aux-Trunk circuit packs may be required in some countries.) The port assignment for the feature is on the Trunk Group Form For Customer-Provided Equipment (CPE) when a TN763B/C/D auxiliary trunk circuit pack is used.

Installing 3270 Data Modules

Requirements

The 3270 data module consists of a family of protocol converters that allow terminals to communicate with a host computer through the switch. The three types of 3270 data modules are:

- 3270A—Asynchronous
- 3270C—Controller
- 3270T—Terminal

The 3270 data modules are connected directly to TN754B digital line circuit packs. (Other digital-line circuit packs may be required in some countries.)

⇒ NOTE:

This manual contains only the information required to connect the data modules to the switch. Installation and testing information for the data modules is contained in the *3270 DATA MODULE—Coaxial-to-DCP Protocol Converter—Product Guide*, 999-700-520.

Installation

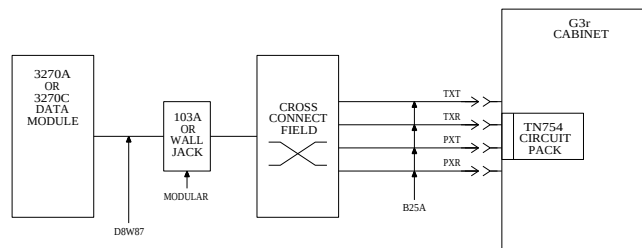
Connection to 3270A or 3270T Data Module (Figure 8-19)

1. Determine port assignment of 3270A or 3270T Data Module from Data Module Form:

EXAMPLE: Port Number 2 B 02 01
 Cabinet Carrier Slot Circuit

2. Connect a 4-pair line cord (modular plug on both ends) from the information outlet to the data module (Figure 8-19).

3. Install patch cord/jumper wires at cross-connect field.
 4. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
 - *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653
-



NOTE:

OTHER DIGITAL-LINE CIRCUIT PACKS MAY BE USED IN SOME COUNTRIES

Figure 8-19. Connections for 3270A or 3270T Data Module

Connections for 3270C Data Module

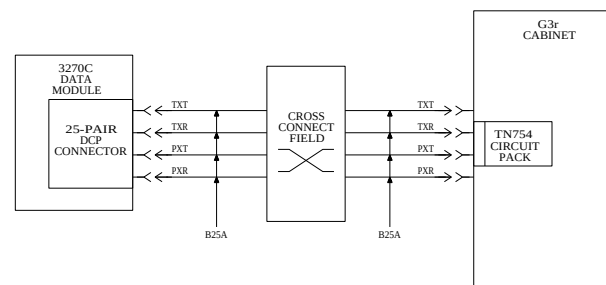
1. Identify the carrier slot for the data module and place a label on each end of a connector cable.
2. Connect the cable to the appropriate port carrier slot and dress it down the side of the cabinet.
3. Connect an A25D (**for 110-type hardware**) or B25A (**for 66-type hardware**) cable from the bottom of the switch cabinet through the cable slack manager, if provided, to the connector associated with a purple row/connecting block in the trunk/auxiliary field.
4. **For 110-type hardware**, install a yellow (auxiliary) label on the 110-type terminal block. **For 66-type hardware**, write the lead designations on the 66-type connecting block with a felt-tipped pen.
5. Connect an A25D (**for 110-type hardware**) or B25A (**for 66-type hardware**) cable from the connector associated with a yellow row/connecting block in the trunk/auxiliary field to location of 3270C data module (see the following note).



NOTE:

The data module is located in the auxiliary cabinet, if one is available.

6. Connect an A25D (**for 110-type hardware**) or B25A **for 66-type hardware**) cable to the DCP connector the on rear of the data module.
7. Install patch cord/jumper wires at cross-connect field.
8. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation, 555-204-654*
 - *DEFINITY Communications System Generic 3 V2 Implementation, 555-230-653*



NOTES:

1. THE DATA MODULE IS LOCATED IN THE AUXILIARY CABINET, IF ONE IS AVAILABLE.
2. OTHER DIGITAL-LINE CIRCUIT PACKS MAY BE USED IN SOME COUNTRIES

Figure 8-20. Connections for 3270C Data Module

Installing Processor Data Modules (PDMs)

Requirements

The interface between the system and many types of data equipment is provided by a TN754B digital line circuit pack connected to a PDM. (Other digital-line circuit packs may be required in some countries.) The following types of data equipment can be connected by a PDM:

- AUDIX/Adjunct
- AUDIX/Terminal
- CMS
- DCS
- PMS
- Journal Printer
- Customer-provided terminals and host computers
- SMDR

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 eight PDMs. This guide contains only the information required to connect the PDMs to the switch. PDM installation and testing information is contained in *AT&T System 75 User's Guide—Processor Data Module*, 999-700-028.

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

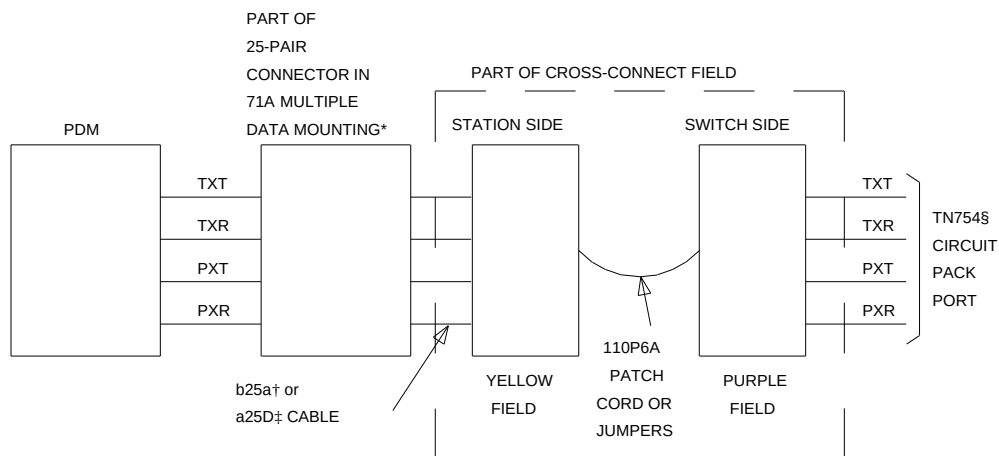
Installation

Connection to Data Mounting

1. From the Data Module Form, determine port assignment of PDMs:

EXAMPLE: Port Number	2	B	02	01
	Cabinet	Carrier	Slot	Circuit

2. Connect an A25D (for **110-type hardware**) or B25A for **66-type hardware**) cable to the **DCP-LINE** connector on the rear of the data mounting.
3. Route the cable from the data mounting to the station side of the cross-connect field.
4. **For 110-type hardware**, install a yellow (auxiliary) label on the 110-type terminal block. **For 66-type hardware**, write the lead designations on the 66-type connecting block with a felt-tipped pen.
5. Connect patch cords/jumper wires at cross-connect field (Figure 8-21).
6. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
 - *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653



* DATA MOUNTING IS LOCATED IN AUXILIARY CABINET, IF PROVIDED.

† Use with 66-type connecting block

‡ Use with 110-type terminal block

§ Other digital-line circuit packs may be used in some countries

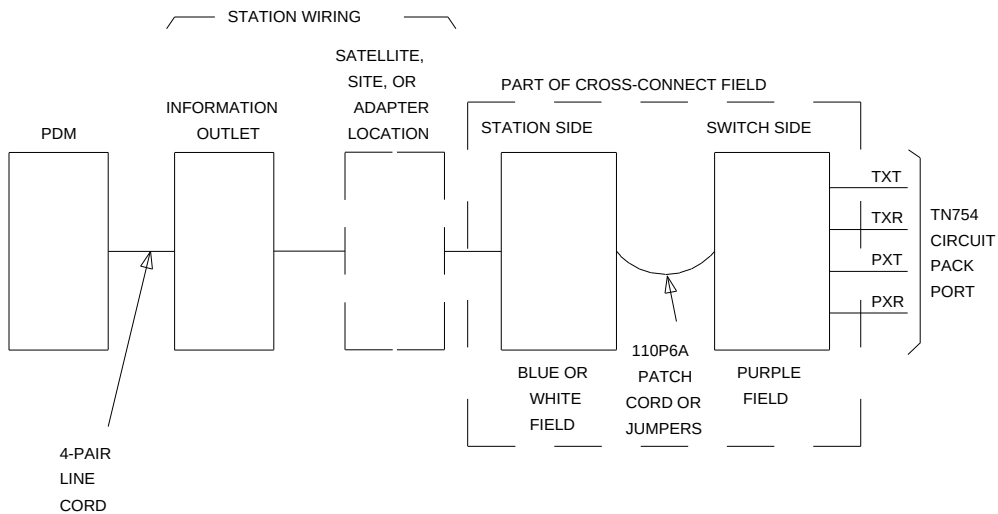
Figure 8-21. Connections for PDMs in Data Mounting

Connection to Individual PDMs

1. Determine port assignment of PDM from Data Module Form:

EXAMPLE: Port Number 2 B 02 01
 Cabinet Carrier Slot Circuit

2. Install PDM per instructions in *AT&T System 75 User's Guide—Processor Data Module*, 999-700-028.
3. Install patch cord/jumper wires at cross-connect field.
4. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
 - *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653



NOTE:

OTHER DIGITAL-LINE CIRCUIT PACKS MAY BE USED IN SOME COUNTRIES

Figure 8-22. Connections for Individual PDMs

Installing AUDIX Interface

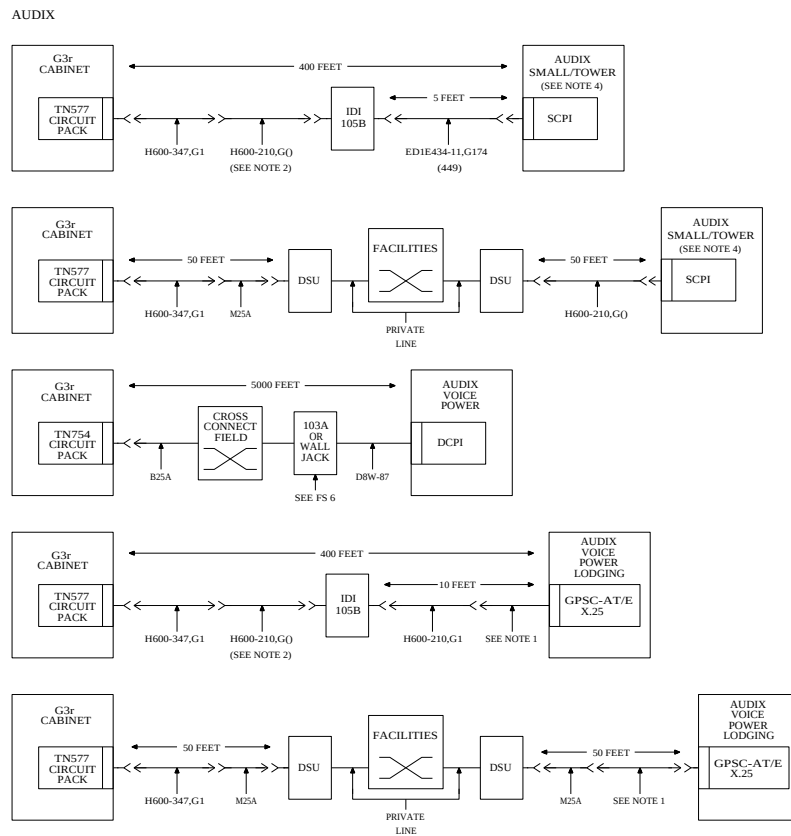
Audio Information Exchange (AUDIX) allows subscribers to originate, send, receive, and store messages. One version of AUDIX, DEFINITY AUDIX System, is built into the system. Installation of this version of AUDIX is covered under “Interconnect Switch Elements” elsewhere in this document.

The interface between the switch and an AUDIX adjunct or AUDIX terminal is through PDMs. AUDIX terminals can also be connected through the cross-connect field to the AUDIX. The *large* AUDIX is not supported by the G1 or the G3i switches. The DEFINITY G1 and G3i use the processor interface (TN765) as the required control circuit pack.

Connections between the AUDIX interface and the G1/G3i switches are covered in the section for installing PDMs. This AUDIX can require up to 16 analog circuit pack ports from the switch to be connected through the cross-connect field to the AUDIX.

Information for connecting the PDMs to the AUDIX and setting the PDM option switches is contained in the *AUDIX-M—Installation Service Manual*, 585-300-103.

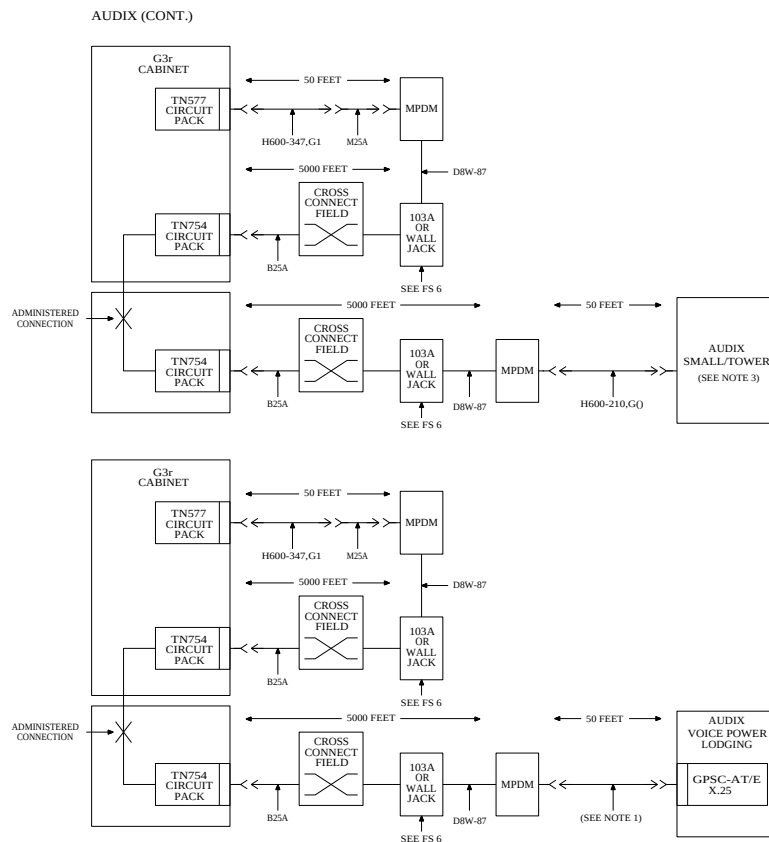
There are several ways of connecting the various types of AUDIX to a DEFINITY G3r system. These are illustrated in the next two figures. Both illustrations show ways of using the TN577 packet gateway to connect AUDIX to the G3r system.



NOTES:

1. USE GPSC-AT/EX.25 CONNECTION ON THE GPSC-AT/EX.25 BOARD IN THE 6386 TOWER.
2. WHEN USING H600-362, G(1) IN PLACR OF THE H600-210, USE ED1E434-11, G174 IF RS449 IS ON THE AUDIX SIDE OR ED1E434-11, G175 IF RS232 IS ON THE AUDIX SIDE
3. THERE ARE OPTIONAL ALARM LEADS FROM AUDIX TO G3r. USE CONNECTIONS TO AUX CONNECTOR (AUXMN, AUXMJ).
4. AUDIX SMALL IS ONE CABINET SYSTEM. AUDIX TOWER IS A TWO CABINET SYSTEM.
5. DIGITAL-LINE CIRCUIT PACKS OTHER THAN TN754 MAY BE USED IN SOME COUNTRIES

Figure 8-23. Typical AUDIX Connections to DEFINTY G3r



NOTES:

1. USE GPSC-AT/EX.25 CONNECTION ON THE GPSC-AT/EX.25 BOARD IN THE 6386 TOWER.
2. WHEN USING H600-362, G(1) IN PLACR OF THE H600-210, USE ED1E434-11, G174 IF RS449 IS ON THE AUDIX SIDE OR ED1E434-11, G175 IF RS232 IS ON THE AUDIX SIDE
3. THERE ARE OPTIONAL ALARM LEADS FROM AUDIX TO G3r. USE CONNECTIONS TO AUX CONNECTOR (AUXMN, AUXMJ).
4. AUDIX SMALL IS ONE CABINET SYSTEM. AUDIX TOWER IS A TWO CABINET SYSTEM.
5. DIGITAL-LINE CIRCUIT PACKS OTHER THAN TN754 MAY BE USED IN SOME COUNTRIES

Figure 8-24. Typical AUDIX Connections to DEFINITY G3r Using Mode Conversion

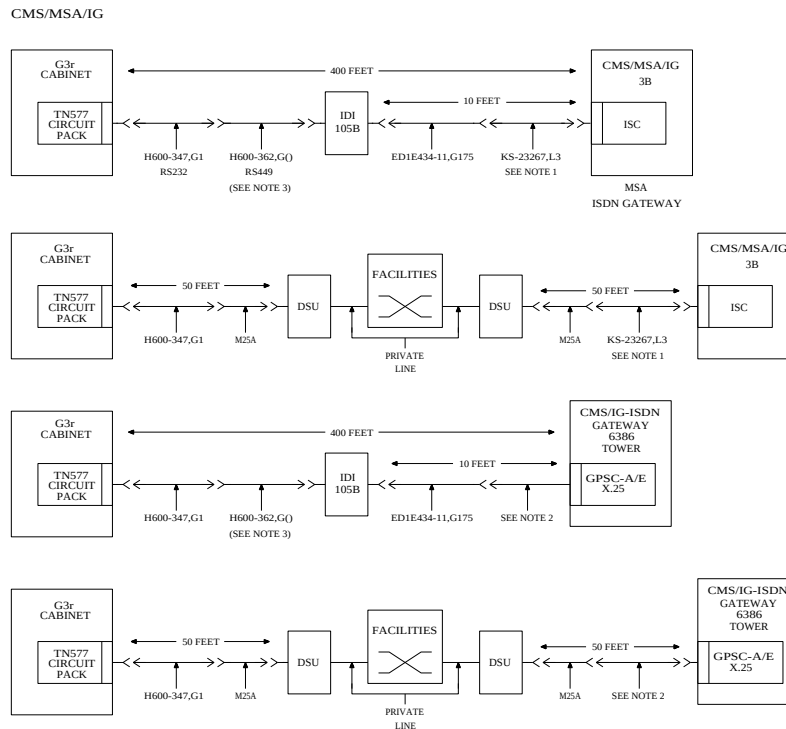
Installing CMS Interface

The interface between the switch and the CMS is through PDMs. The DEFINITY G1 and G3i use the processor interface (TN765) as the required control circuit pack.

For these systems, connections between the CMS interface and the switch are covered in the section for installing PDMs (Figures 8-21 and 8-22).

Information for connecting the PDMs to the CMS and setting the PDM option switches is contained in the *3B2 Messaging Server Installation and Maintenance Service Manual*, 585-205-110.

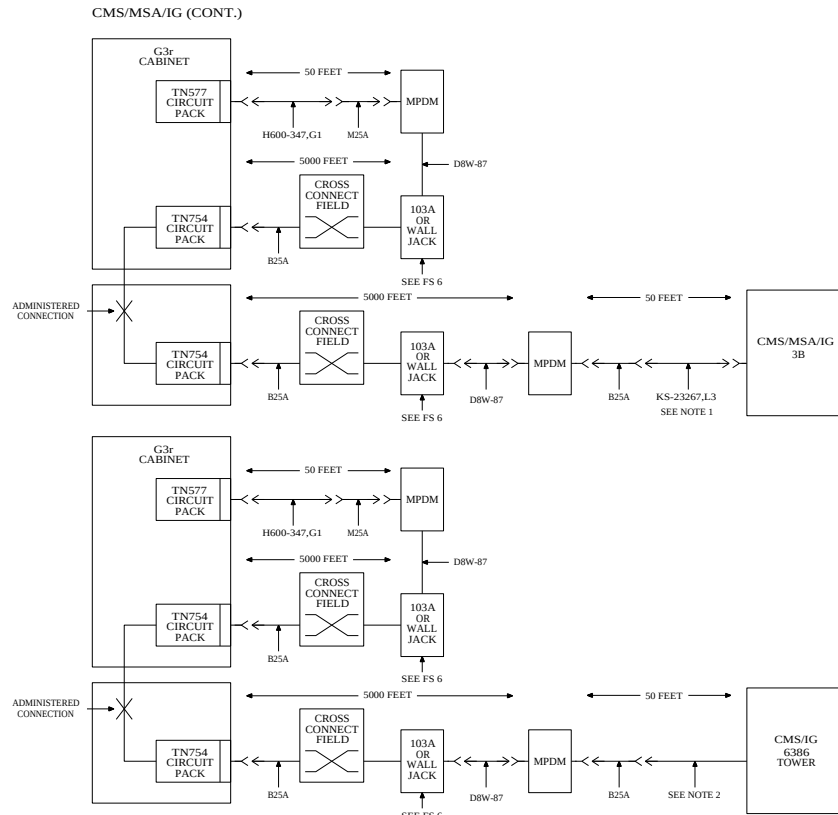
Connections between the CMS interface and the DEFINITY G3r switch is through the TN577 packet gateway. The ways of completing these connections are illustrated in the next two figures.



NOTES:

1. KS-23267,L3 COMES WITH THE ISC BOARD IN THE 3B.
2. USE GPSC-AT/EX.25 CONNECTION ON THE GPSC-AT/EX BOARD IN THE 6386 TOWER.
3. WHEN USING H600-210, G0 IN PLACE OF THE H600-362 USE H600-210 IF RS449 IS ON THE CMS SIDE.

Figure 8-25. Typical CMS Connections to DEFINITY G3r



NOTES:

1. KS-23267,L3 COMES WITH THE ISC BOARD IN THE 3B.
2. USE GPSC-AT/EX.25 CONNECTION ON THE GPSC-AT/EX BOARD IN THE 6386 TOWER.
3. DIGITAL-LINE CIRCUIT PACKS OTHER THAN TN754 MAY BE USED IN SOME COUNTRIES

Figure 8-26. Typical CMS Connections to DEFINTY G3r Using Mode Conversion

Installing DCS

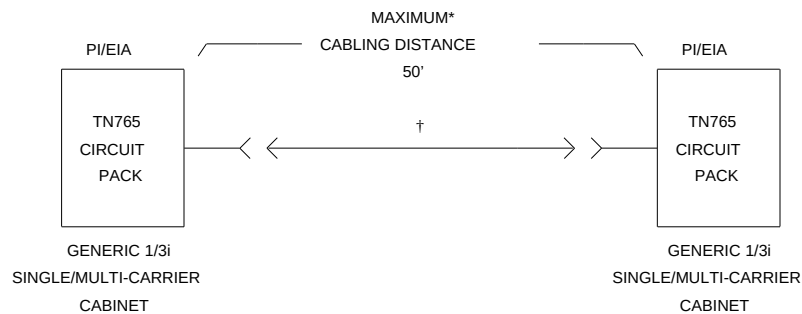
The DCS link to the switch can be provided by direct connection, by PDMs, or by a DS1 tie trunk. The DEFINITY G1 and G3i use the processor interface (TN765) as the required control circuit pack.

For these systems connections for the DCS link using PDMs are covered in the section for installing PDMs (Figures 8-21 and 8-22). Set the PDM switches as follows:

Switch	Setting
9600 BAUD	ON
SYNC	ON
INT	ON
KYBD	ON
AANS	ON
All others	OFF

The baud rate between switches may vary depending on the installation.

The processor interface circuit pack (TN765) provides a single EIA port that allows access to one data link on G1 and G3i switches. The next two figures show direct connections and modem connections, respectively.



* THE MAXIMUM DISTANCE LIMITATION FOR TWO GENERIC 1/3i SINGLE/MULTI-CARRIER CABINETS IS 50 FEET WHEN DIRECTLY CONNECTED WITH 24 AWG WIRE. REDUCING THE MAXIMUM DISTANCE MAY BE NECESSARY IF HIGHER GAUGE WIRE IS USED OR IF THE CAPACITIVE LOAD ON THE LINE IS INCREASED. IN GENERAL, THE GENERIC 1/3i SINGLE/MULTI-CARRIER CABINETS SHOULD BE DIRECTLY CONNECTED BY THE SHORTEST POSSIBLE CABLE.

† THIS CONNECTION IS FOR AC POWERED SINGLE-OR MULTI-CARRIER CABINETS ONLY.

Figure 8-27. Direct Connections for Processor Interface/EIA Ports Between Two G1/G3i Multi-Carrier or Single-Carrier Cabinets

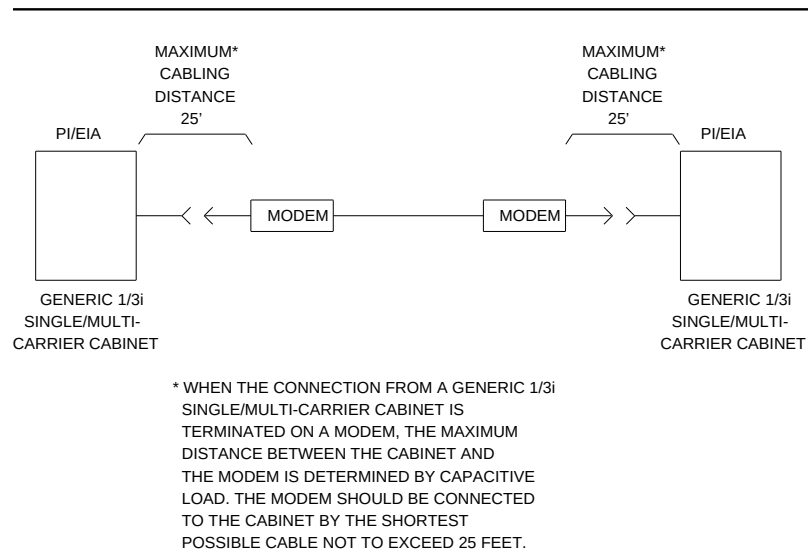
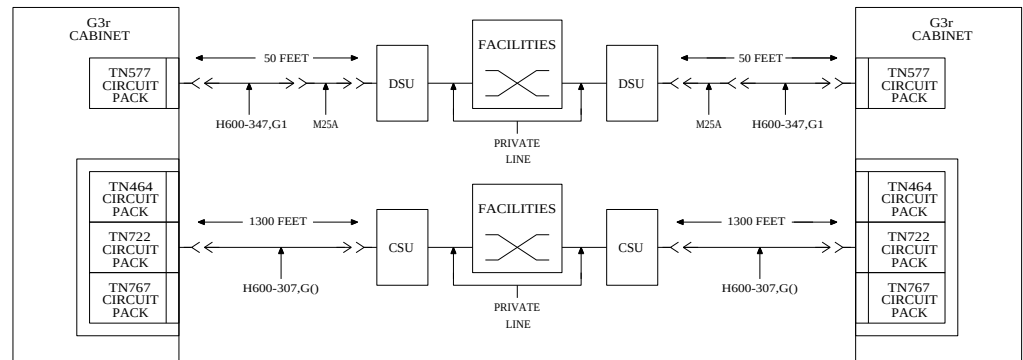


Figure 8-28. Modem Connections for Processor Interface/EIA Ports Between Two G1/G3i Multi-Carrier or Single-Carrier Cabinets

If the DCS link is to be provided by a DS1 tie trunk, refer to “Installing DS1 Tie Trunks” in Chapter 10, Wiring Your Network.

DCS connections to the DEFINITY G3r switch vary depending on the distance between switches and the type of switch being connected. The many ways of completing these connections are illustrated in Figures 8-29 through 8-33.

LONG HAUL X.25 SIGNALING: G3r TO G3r VIA DSU



LONG HAUL X.25 SIGNALING: G3r TO G3r VIA AVD DS1

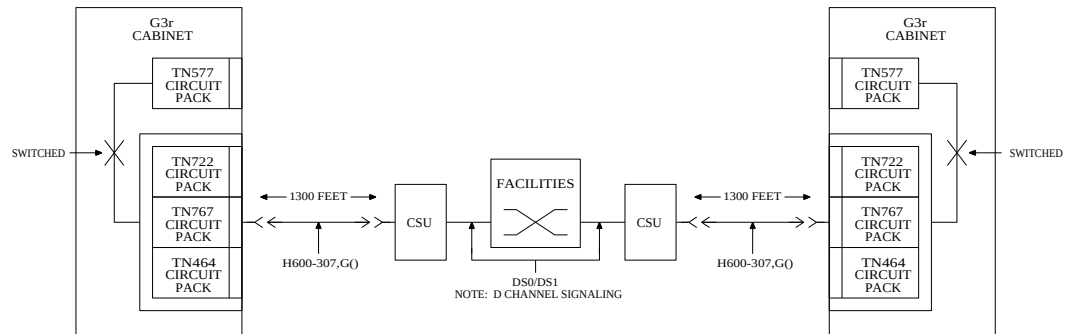


Figure 8-29. Typical DCS Link: G3r to G3r

SHORT HAUL X.25 SIGNALING: G3r TO G3r - DIRECT VIA IDI (ISOLATING DATA INTERFACE)

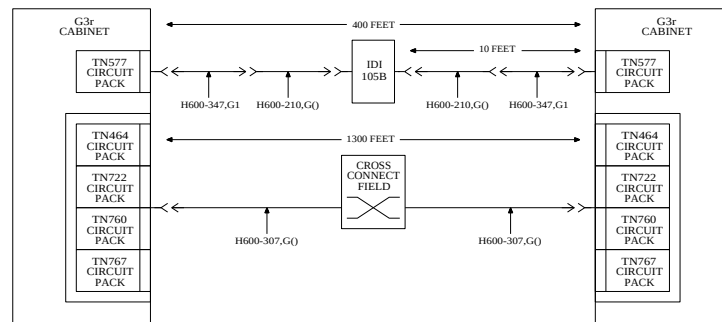
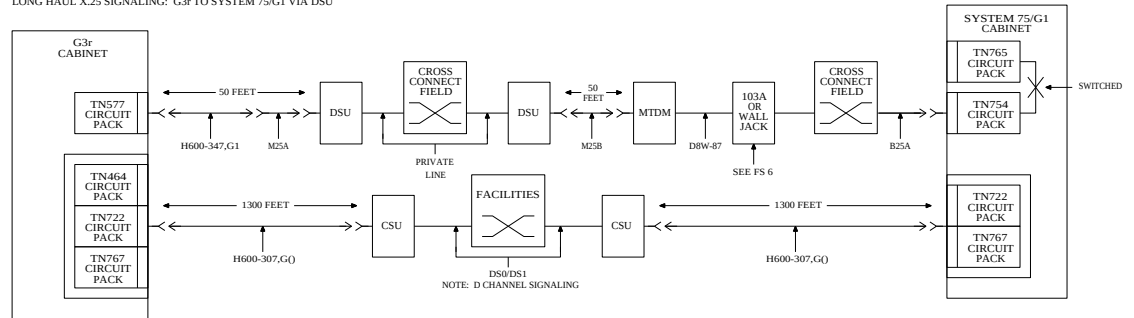


Figure 8-30. Typical DCS Link: G3r to G3r — Direct Using Isolating Data Interface

LONG HAUL X.25 SIGNALING: G3r TO SYSTEM 75/G1 VIA DSU



SHORT HAUL X.25 SIGNALING: G3r TO SYSTEM 75/G1 VIA MPDM

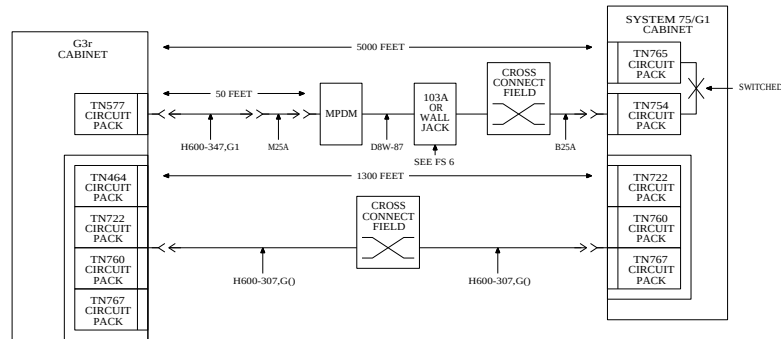
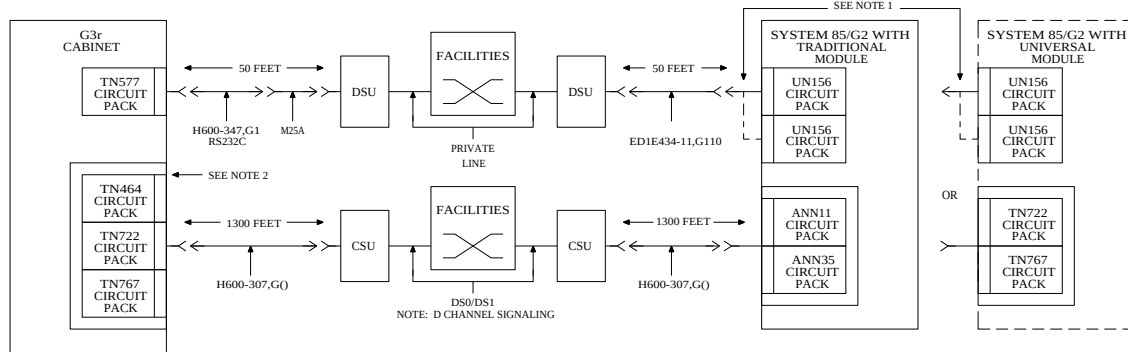
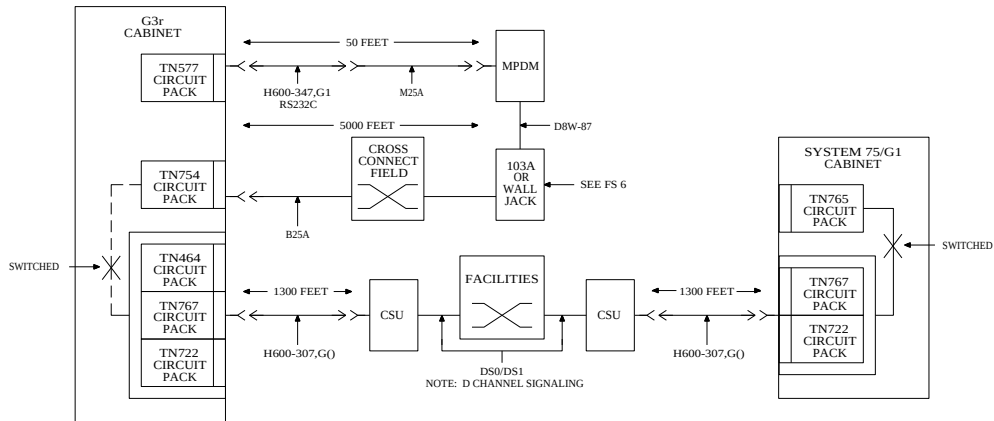


Figure 8-31. Typical DCS Link: G3r to System 75/G1

LONG HAUL X.25 SIGNALING: G3r TO SYSTEM 85/G2 VIA DSU



LONG HAUL X.25 SIGNALING: G3r TO SYSTEM 75/G1 VIA AVD DS1

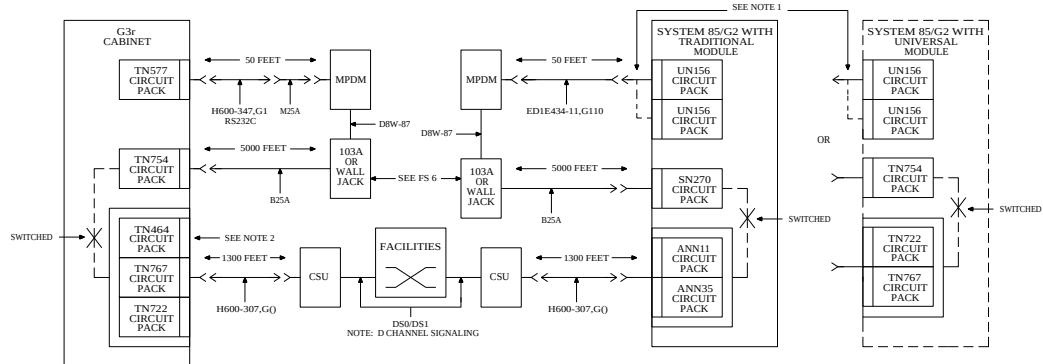


NOTES:

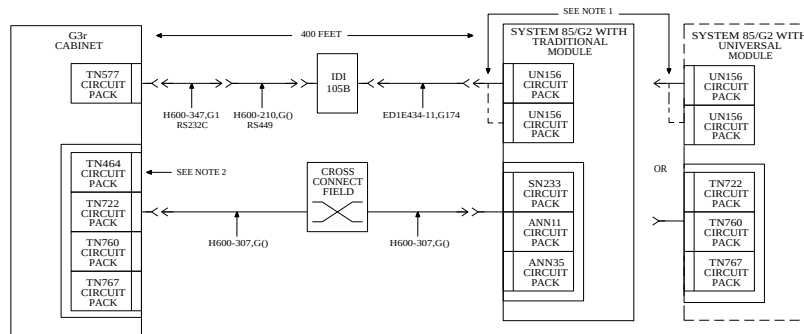
1. WHEN DUPLICATING DCIU'S, CONNECT ED1E434-11, G342 TO BOTH DCIU'S AND ED1E434-11, G110.
2. WHEN USING TN464, USE ANN35 ON G2 TRADITIONAL MODULE SIDE.

Figure 8-32. Typical DCS Link: G3r to System 85/G2 and System 75/G1

LONG HAUL X.25 SIGNALING: G3r TO SYSTEM 85/G2 VIA AVD DS1



SHORT HAUL X.25 SIGNALING: G3r TO SYSTEM 85/G2 - DIRECT VIA IDI (ISOLATING DATA INTERFACE)



NOTES:

1. WHEN DUPLICATING UN156'S, CONNECT ED1E434-11, G342 TO BOTH UN156'S AND ED1E434-11, G174.
2. WHEN USING TN464, USE ANN35 ON G2 TRADITIONAL MODULE SIDE.

Figure 8-33. Typical DCS Link: G3r to System 85/G2

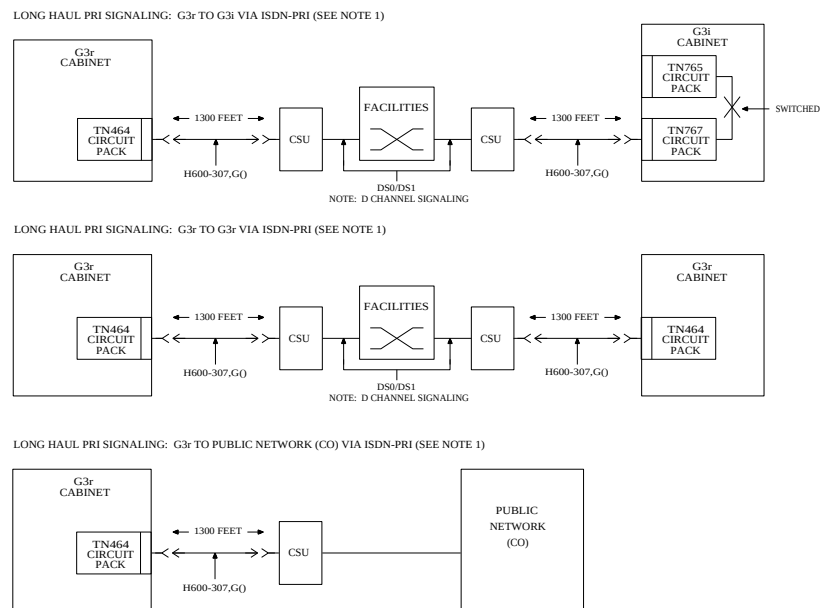


Figure 8-34. PRI Signaling: G3r to Public Network and /G3r/G3i

Installing PMS Interface

Requirements

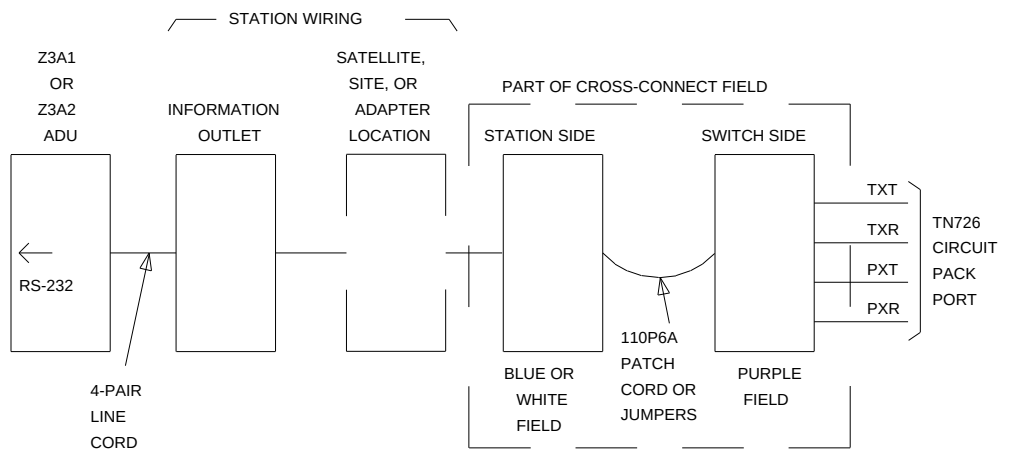
The interface between the switch and the customers PMS can be through PDMs. Such connection between the PMS interface and the switch is covered in the section for installing PDMs (Figures 8-21 and 8-22).

Refer to the appropriate vendor's documentation for connecting the PDM to the PMS. The option switches on the PDM should be set in accordance with the requirements for the customers PMS.

A journal printer can be used with the PMS. The connections for the printer are the same as for the PMS. Refer to the appropriate vendor's documentation for connecting the PDMs to the printer. The option switches on the PDM are to be set according to the requirements for the printer.

The PMS interface and the journal printers can also be installed using Asynchronous Data Unit (ADUs). The connections are the same as for a customer-provided data terminal (Figure 8-35).

Connections to a G3r switch can be switched connections through an ADU, through a modem, or through the 7400A/B or 7500 data modules. Such connections are illustrated in Figures 5-10 and 5-11.



NOTE:

OTHER DATA-LINE CIRCUIT PACKS MAY BE USED IN SOME COUNTRIES

Figure 8-35. Connections to ADU for Data Terminal Equipment

Installing Customer-Provided Terminal Using ADUs

Requirements

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

Asynchronous data terminals, however, can be connected through a Z3A ADU to a TN726B data line circuit pack (Figure 5-11). (Other data-line circuit packs may be required in some countries.) Normally, the ADU is powered from the connected data terminal. The ADU can also be remotely or locally powered using a 2012D transformer equipped with a 248B adapter. ADUs connected to receive-only printers always require external power. The need for external power must be determined experimentally for ADUs connected to other devices. For details on ADU installation, refer to the *Z3A Asynchronous Data Unit User's Manual*, 555-401-701.

Installation

1. Determine ADU port assignment from Data Module Form:

EXAMPLE: Port Number	2	B	02	01
	Cabinet	Carrier	Slot	Circuit

2. Connect the RS-232 plug on the ADU to the data terminal.
3. Connect a 4-pair line cord (modular plug on both ends) from the information outlet to the ADU.
4. Install patch cord/jumper wires at cross-connect field.
5. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
 - *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653

Installing SMDR/CDRU Interface

The interface between the switch and SMDR can be through a PDM, trunk data module (TDM), or 212-type modem. Where the switch is a G3r, the interface to CDRU can be through an ADU, through a modem, or through a 7400A/B or 7500 data module.

For connections between the switch and the PDM or TDM, refer to the section on installing PDMs

The connection between the switch and the 212-type modem is the same as for external ringing (Figure 11-38). When a 212-type modem is used, a TN758 pooled modem circuit pack must be provided. One of the pooled modem's conversion resources is dedicated to the SMDR output device.

Connections between the G3r switch and an ADU or data module are the same as for remote administration devices such as the Generic 3 Management Terminal. These connections are illustrated in Figures 5-10 and 5-11. All such connections require the mode 2 to mode 3 conversion resource shown in these figures.

Administer your connections as described in the appropriate one of the following documents:

- *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
- *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653

A TN726B data line circuit pack may also be used and if it is, PDMs, TDMs, or 212-type modems are not required for the DTE. Connections between the switch and the SMDR output receiving device is the same as a customer-provided data terminal (Figure 8-36).

The SMDR output device can be connected directly to the DCE connector on the rear of the control carrier. This connection is made using a RS-232 cable. A PDM or TDM, modem, or ADU is required (Figures 8-36 through 8-39).

Interface Cabling to SMDR Output Device

Figure 8-36 shows the cabling required to connect the TELESEER⁴ unit, printer, or customer-provided DTE for an ac powered single- or multi-carrier cabinet. The M25B/RS-232 cable connects to the **P1** connector on the TELESEER unit.

All peripherals that are connected to a dc powered switch through the asynchronous EIA RS-232 interface on the PPN A or B carrier or the EPN maintenance circuit pack, require an isolator. The isolator is plugged into the RS-232 interface connector. The cable from the peripheral equipment is then plugged into the opto-isolator. Figure 8-37 shows the connections for a dc powered multi-carrier cabinet.

The apparatus code for the isolator is 116A and the comcode is 106005242.

4. Trademark of AT&T.

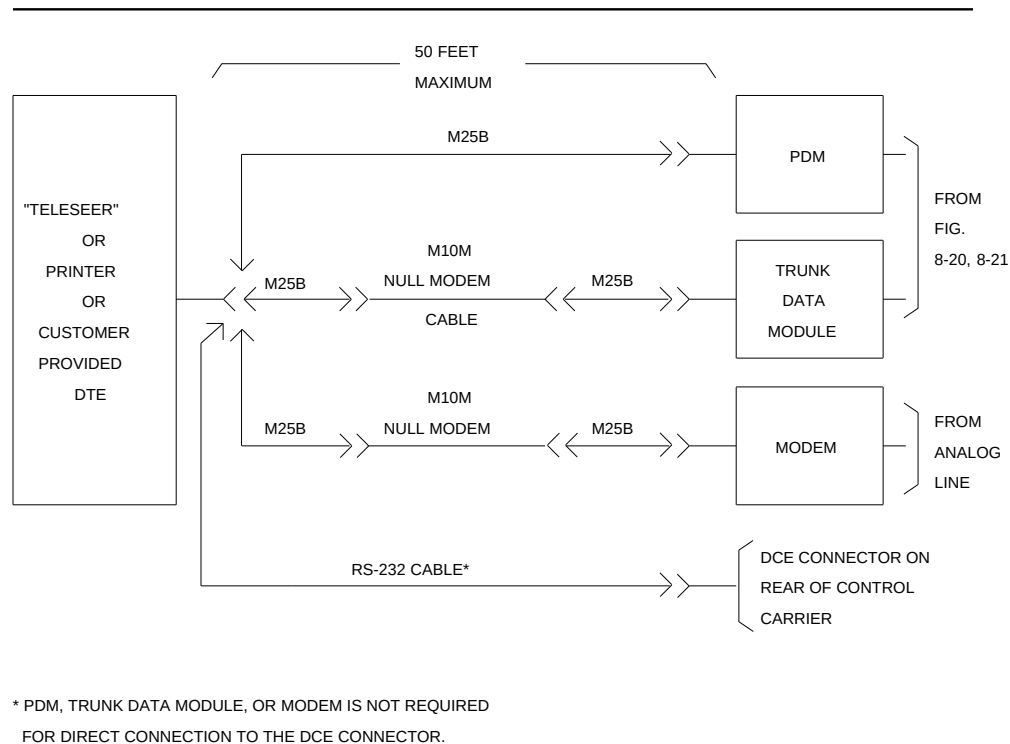
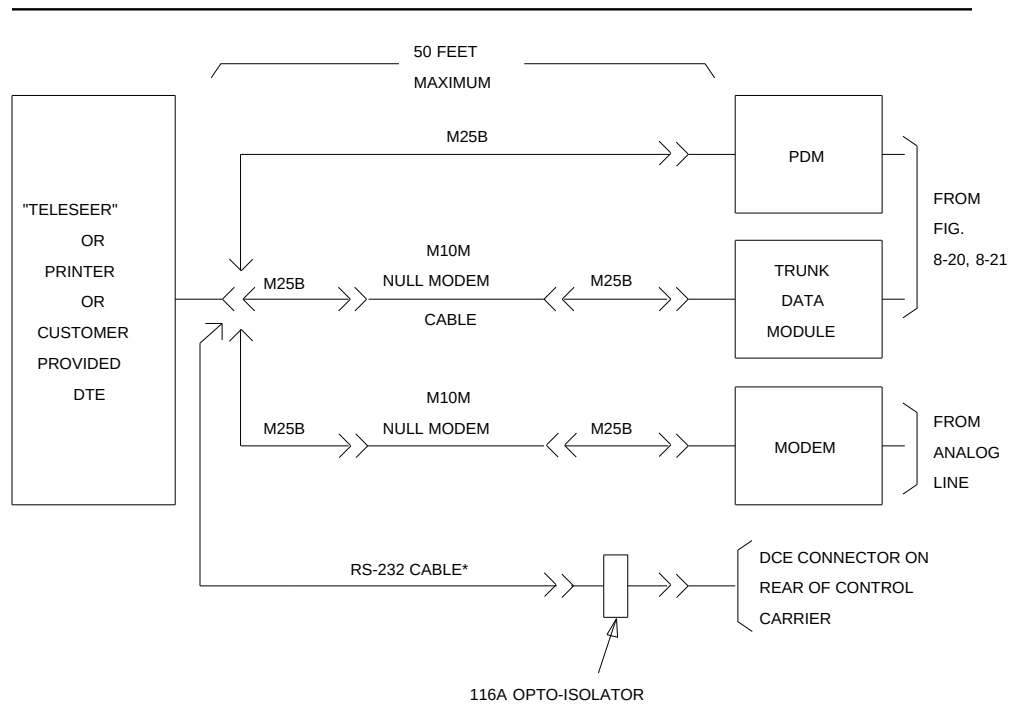


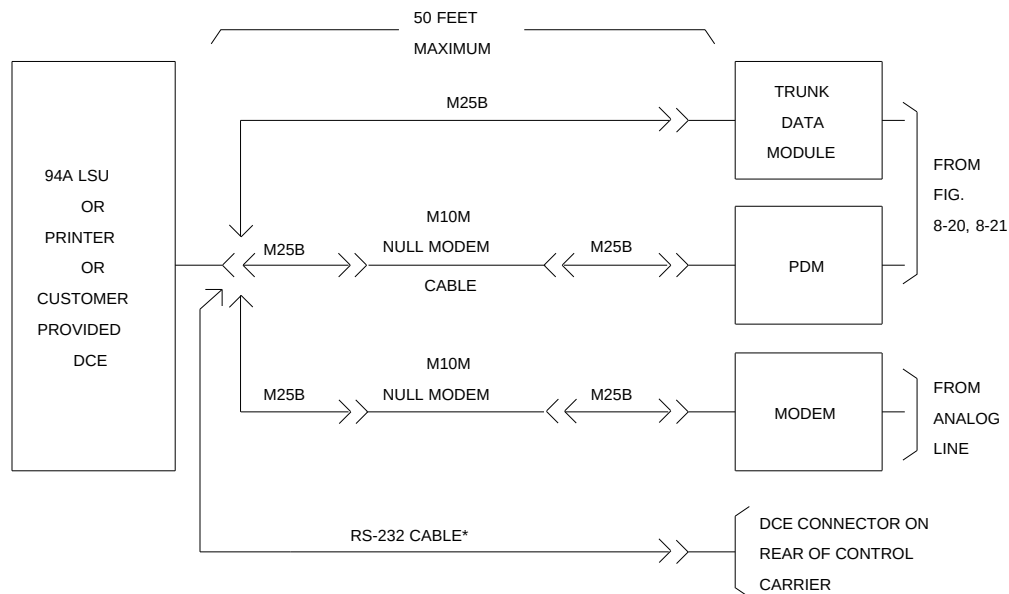
Figure 8-36. SMDR Cabling for Data Terminal Equipment From AC Powered Single- or Multi-Carrier Cabinet



* PDM, TRUNK DATA MODULE, OR MODEM IS NOT REQUIRED FOR DIRECT CONNECTION TO THE DCE CONNECTOR.

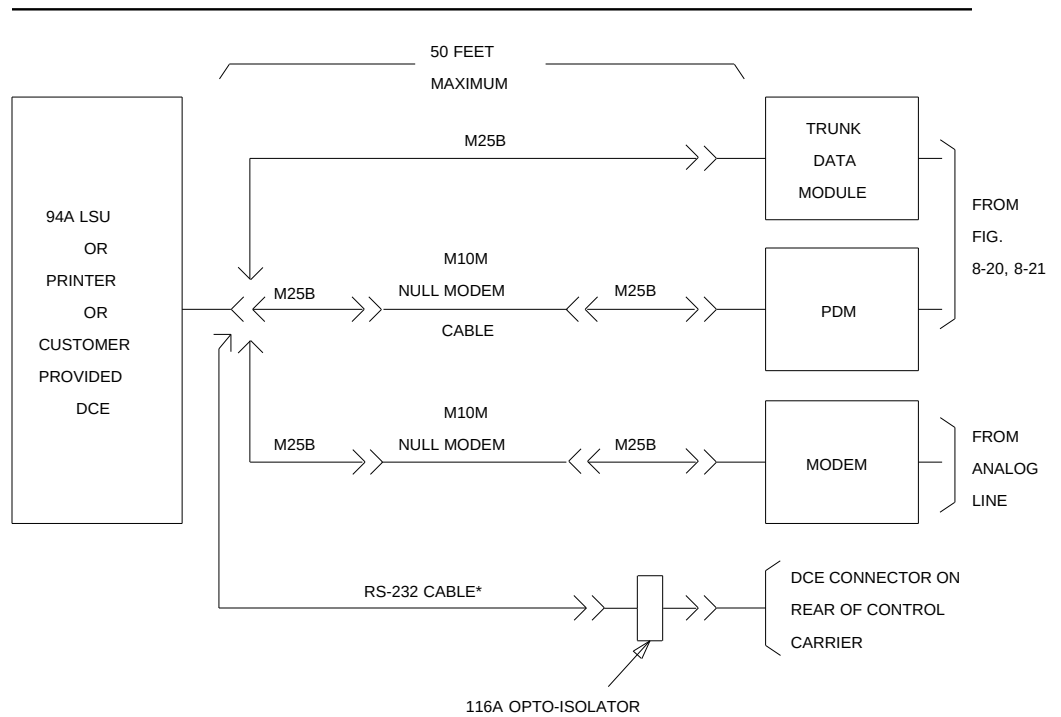
Figure 8-37. SMDR Cabling for Data Terminal Equipment from DC Powered Multi-Carrier Cabinet

Figure 8-38 shows the cabling required to connect the 94A LSU, a printer, or customer-provided data communications equipment (DCE) for an ac powered single- or multi-carrier cabinet. Figure 8-39 shows the connections for a DC powered multi-carrier cabinet. The M25B/RS-232 cable connects to the **C1** connector on the 94A LSU.



* TRUNK DATA MODULE, PDM, OR MODEM IS NOT REQUIRED FOR DIRECT CONNECTION TO THE DCE CONNECTOR.

Figure 8-38. SMDR Cabling for On-Premises Data Communications Equipment from AC Powered Single- or Multi-Carrier Cabinet



* TRUNK DATA MODULE, PDM, OR MODEM IS NOT REQUIRED
FOR DIRECT CONNECTION TO THE DCE CONNECTOR.

Figure 8-39. SMDR Cabling for On-Premises Data Communications Equipment from DC Powered Multi-Carrier Cabinet

Figure 8-40 shows the connections for a remote host connected by a private line.

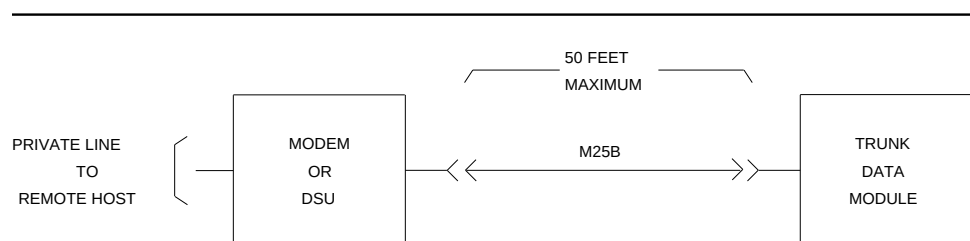


Figure 8-40. SMDR Cabling for a Remote Host

PDM, Trunk Data Module, or 212-Type Modem Switch Settings

PDM or TDM Switch Setting

Set the option switches as follows:

Switch	Setting
SELF TEST	OFF
LOC LOOP/REM LOOP	OFF
1200	ON
AANS (PDM Only)	ON
SIGLS	ON
PRTY	ON
1/0D	ON
All Others	OFF

212-Type Modem Switch Setting

Set the option switches as follows:

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

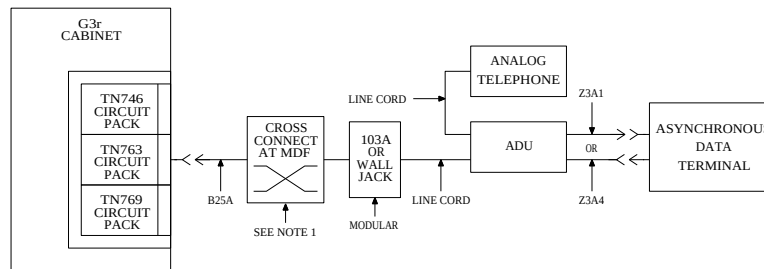
Installing ISN Interface

The ISN interconnects computers and terminals on a customer's premises. When an ISN and a switch are collocated, voice and data can be shared at the same information outlet as shown in Figure 8-41 and in Figure 8-42.

The voice pair that connects to a TN746B analog line circuit pack port occupies the first pair of the information outlet. (Other analog-line circuit packs may be required in some countries.) The ISN data pairs occupy the second and third pairs of the information outlet. The voice and data pairs can be separated. The data pairs either connect to an Asynchronous Interface Module (AIM) located in an ISN concentrator or the ISN packet controller.

The Z3A1 ADU is equipped with two 8-pin modular jacks to terminate the line cords from the information outlet and an analog telephone. Normally, this ADU is powered from the connected data terminal. The ADU can also be remotely or locally powered using a 2012D transformer equipped with a 248B adapter.





NOTES:

1. PAIR 1 (VOICE PAIR) CONNECTS TO THE TN746, TN763, AND TN769.
PAIRS 2 AND 3 (DATA PAIRS) CONNECT TO AN 'AIM' LOCATED IN
AN 'ISN' CONCENTRATOR OR THE 'ISN' PACKET CONTROLLER.
2. OTHER ANALOG-LINE CIRCUIT PACKS MAY BE USED IN SOME COUNTRIES

Figure 8-42. Typical ISN Interface

Installing STARLAN NETWORK Interface

The STARLAN NETWORK interconnects small numbers of personal computers, data terminals, resource units, and printers. When a STARLAN NETWORK and a DEFINITY Communications System are collocated, voice and data can be shared on the same information outlet as shown in the next figure.

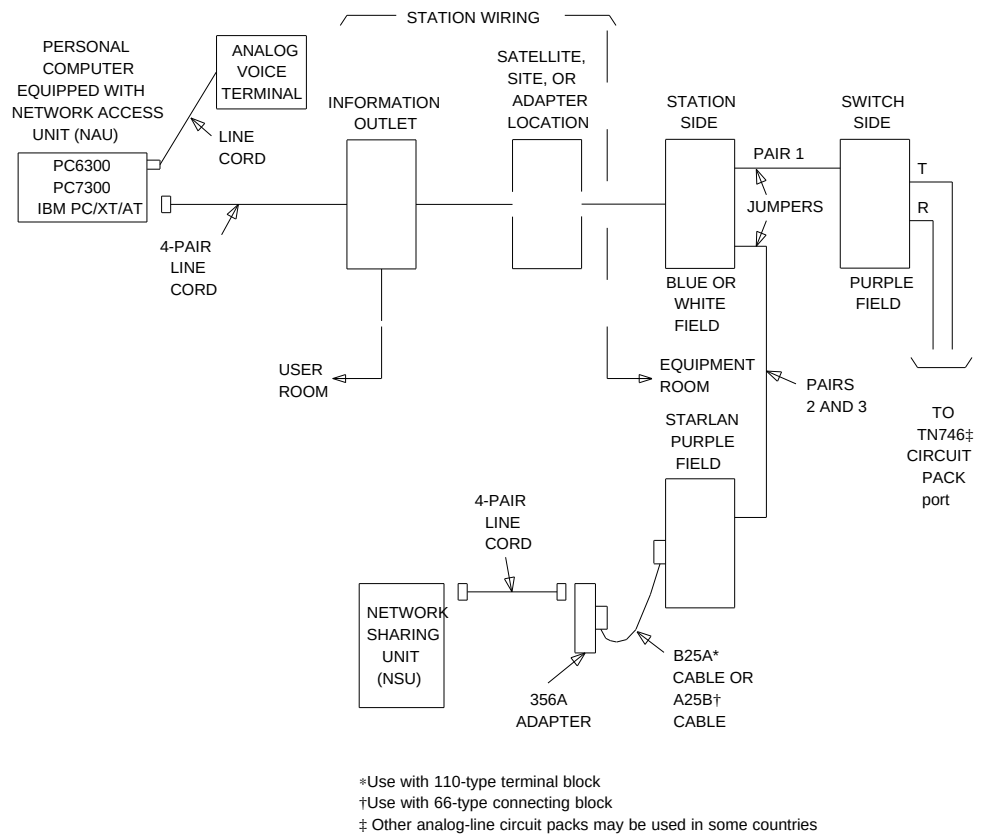


Figure 8-43. System Voice Circuits and STARLAN NETWORK Data Circuits Sharing an Information Outlet

The voice pair that connects to a TN746B analog line circuit pack port occupies the first pair of the information outlet. (Other analog-line circuit packs may be required in some countries.) The STARLAN NETWORK data pairs occupy the second and third pairs of the information outlet. The voice and data pairs must be separated at the blue or white cross-connect field in the equipment room or at the blue cross-connect field in a satellite location.

Installing Premises Lightwave System (PLS) Interface

The PLS is used to connect IBM⁵ 3270 Type A terminals to an IBM 3274 cluster controller. An optical fiber backbone and station cables are used instead of coaxial cables. When a PLS and a G1 switch are collocated, voice and data can be shared on the same information outlet as shown in the next figure.

The voice pair that connects to a TN746B analog line circuit pack port occupies the first pair of the information outlet. (Other analog-line circuit packs may be required in some countries.) The PLS data pairs occupy the second and third pairs of the information outlet. The voice and data pairs must be separated at the blue or white cross-connect field in the equipment room or the blue cross-connect field in a satellite location.

5. Trademark of International Business Machines Corporation.

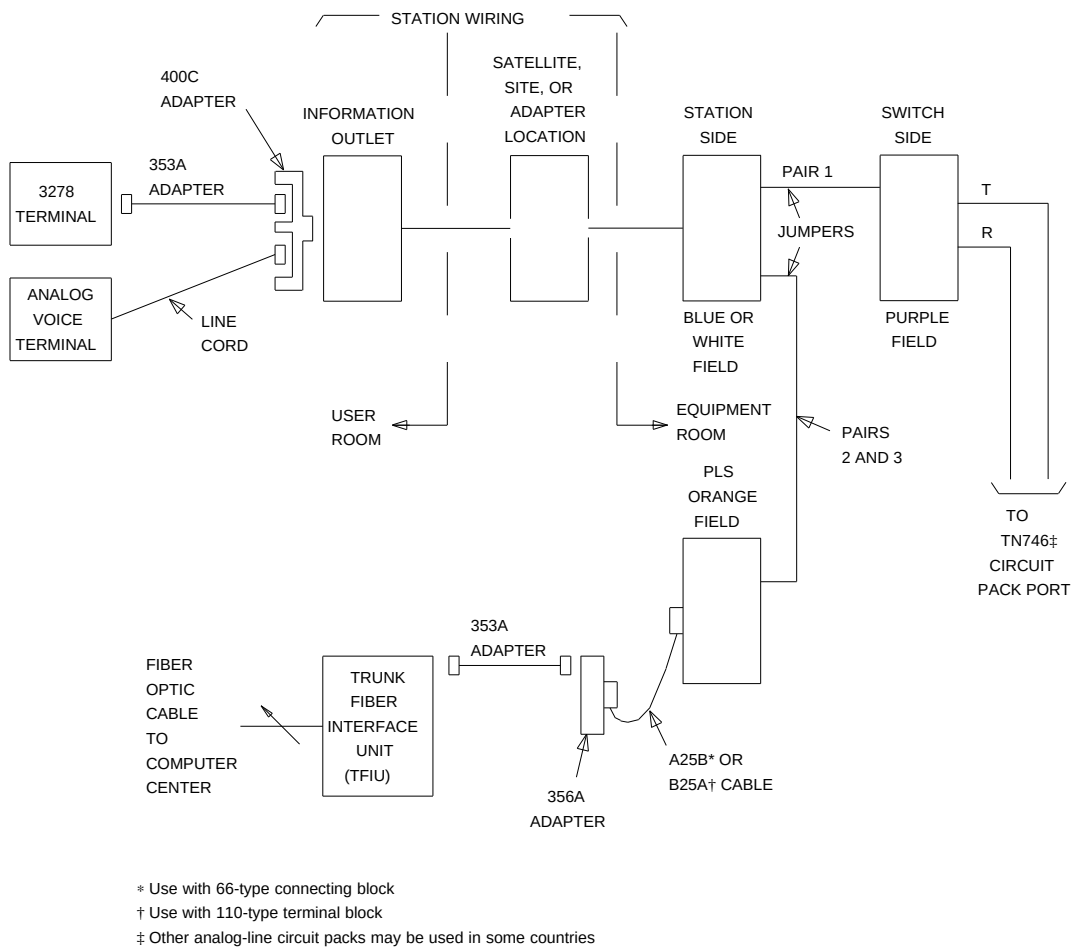


Figure 8-44. System Voice circuits and PLS Data Circuits Sharing an Information Outlet

Installing Stratum 3 External Synchronizing Clock

This document provides the information required to install the Stratum 3 clock in a new system.

Set Clock Options

There are four sets of option switches on the clock. Use the following steps to set them for your installation.

1. Set the options on the Clock Input Board (CI) per Figure 8-45.

CLOCK INPUT BOARD (CI)

SWITCH	FUNCTION	SWITCH POSITION	
		OFF	ON
1	T1 SELECT	ENABLE*	DISABLE
2	CC SELECT	ENABLE	DISABLE*
3	FRAMING SELECT	ESF	D4*
4	BX.25	ENABLE	DISABLE*
*=FACTORY SETTING			

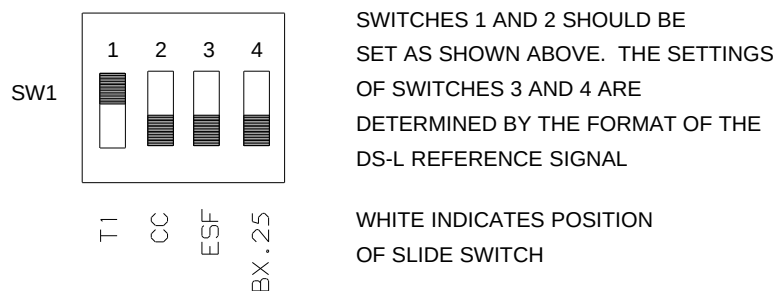


Figure 8-45. CI Option Switch Settings

2. Set the options on the Stratum 3 Clock Board (ST3) per Figure 8-46.

SWITCH		STATUS/RESULT	
1	(Minor alarm control)	OFF	Minor alarm never output
		ON	Minor alarm is output if holdover occurs
2	(Major alarm control)	OFF	Major alarm is output and fail lamp lights if: 5V power is lost 4Khz output is lost
		ON	Major alarm is output and fail lamp lights if: 5V power is lost 4Khz output is lost Holdover occurs

Switch SW1 controls the output of alarm signals from the board. Only switch positions 1 and 2 are used.

Figure 8-46. ST3 Clock Board Option Switch Settings

3. Set the options on the Composite Clock Timing Output Board (TOCA) per Figure 8-47.

Figure 8-48. Stratum 2/Stratum 3 Option Switch Settings

Cabling the Stratum 3 Clock

Figure 8-49 shows the cabling connections that need to be made for the Stratum 3 clock installation procedure. Connections to the Stratum 3 clock are made through the yellow field cross-connect. A custom "Y" cable (H600-274) connects the Channel Service Unit (CSU) to the DS1 circuit pack and taps off the input required by the Stratum 3 clock. A resistor is built into the cable to provide the required isolation between the PBX and the clock. The "Y" cable plugs directly into the CSU, and connects to standard cables for the interface to the PBX and yellow field cross-connect.

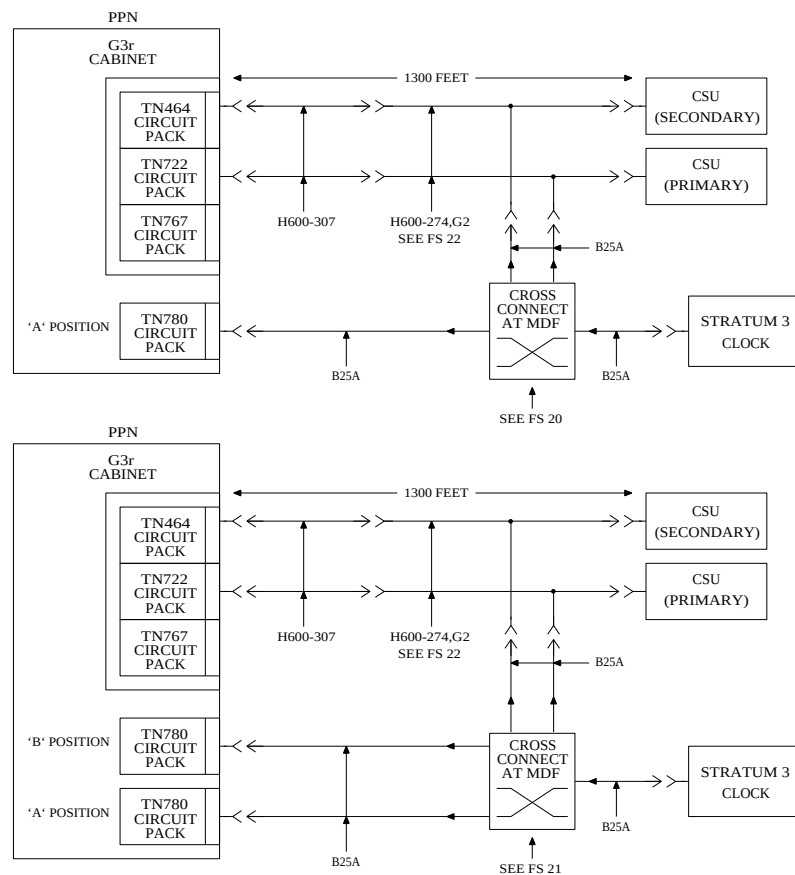


Figure 8-49. Connections for the Stratum 3 External Synchronization Clock

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

Stratum 3 Clock Wiring Installation Procedure

1. Connect the B25A cables from the TN780 connector panel slot on the switch cabinet and the Stratum 3 External Synchronization Clock to the factory connectorized cross-connect module in the yellow field (Figure 8-49).
2. Connect the CSU plug end of the H-600-274 (Y) cable to the primary CSU. Run and connect an H600-307 cable from the DS1 connector panel slot on the switch cabinet to the connector on the "SYSTEM" end of the "Y" cable.
3. Run and connect a B25A cable from the "CLOCK" end of the "Y" cable to the factory connectorized cross-connect module in the yellow field.
4. Repeat steps two and three for the secondary CSU. The maximum allowable cabling distance between the Stratum 3 clock and the CSU is:

CSU	Max. Cabling Distance (feet)
551A	85
551V	85
551V EFS/R	655
EFS T1	655

5. Cross-connect the TN780 and "CLOCK" end connections to the External Synchronization Clock connections on the cross-connect module (Table 8-7 for the Simplex PBX).

Table 8-7. Cross-Connections Block Positions for Simplex PBX

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

6. Cross-connect the TN780 and "CLOCK" end connections to the External Synchronization Clock connections on the cross-connect module (Table 8-8 for the Duplex PBX).
7. Dress the cables down sides of the switch cabinet and run through the cable slack manager, if provided, to take up the excess cable slack.
8. Administer per *DEFINITY Communications System Generic 1 Implementation*, 555-204-654 or *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653.

Table 8-8. Cross-Connections Block Positions for Duplex PBX

From: Stratum 3 Clock			To: Y Cable Clock End (Primary)					
Lead Designation	Lead Color	Connecting Block Terminal	Lead Designation	Lead Color	Connecting Block Terminal			
RREF1	W-BL	1		V-O	43			
TREF1	BL-W	2		O-V	44			
			To: Y Cable Clock End (Secondary)					
RREF2	W-O	3		V-O	43	Lead Designation	Lead Color	Connecting Block Terminal
TREF2	O-W	4		O-V	44			
			To: TN780 Carrier A			To: TN780 Carrier B		
BCLKRTN	R-O	13	ALRM5B	V-G	45	ALRM5B	V-G	45
BCLKLST	O-R	14	ALRM5A	G-V	46	ALRM5A	G-B	46
BPWRRTN	R-BR	17	ALRM4B	BK-BL	21	ALRM4B	BK-BL	21
BPWRLST	BR-R	18	ALRM4A	BL-BK	22	ALRM4A	BL-BK	22
REF2RTN	W-BR	7	ALRM3B	R-BR	17	ALRM3B	R-BR	17
REF2LST	BR-W	8	ALRM3A	BR-R	18	ALRM3A	BR-R	18
SCLKRTN	R-BL	11	ALRM2B	R-BL	11	ALRM2B	R-BL	11
SCLKLST	BL-R	12	ALRM2A	BL-R	12	ALRM2A	BL-R	12
SPWRRTN	R-G	15	ALRM1B	Y-BL	31	ALRM1B	Y-BL	31
SPWRLST	G-R	16	ALRM1A	BL-Y	32	ALRM1A	BL-Y	32
REF1RTN	W-G	5	ALRM0B	W-BR	7	ALRM0B	W-BR	7
REF1LST	G-W	6	ALRM0A	BR-W	8	ALRM0A	BR-W	8
CCA01R	R-S	19	EXTSYN0T	V-BL	41			
CCA01T	S-R	20	EXTSYN0R	BL-V	42			
CCB01R	BK-BL	21	EXTSYN1T	Y-G	35			
CCB01T	BL-BK	22	EXTSYN1R	G-Y	36			
CCA02R	BK-O	23				EXTSYN0T	V-BL	41
CCA02T	O-BK	24				EXTSYN0R	BL-V	42
CCB02R	BK-G	25				EXTSYW1T	Y-G	35
CCB02T	G-BK	26				EXTSYN1R	G-Y	36

⇒ NOTE:

The common cross-connection at the cross-connect field from the TN780 circuit packs in A and B carriers to the Synchronization Clock should be done by bridging the jumper wires.

Installing the Adjunct-Switch Application Interface (ASAI) Link

Requirements

The ASAI is connected to a TN556 BRI circuit pack port.

Refer to the appropriate vendor's documentation for connecting the ASAI to the TN556 circuit pack.

⇒ NOTE:

The ASAI cannot support multi-drop configurations, meaning ASAI requires a dedicated BRI port and can accept only the one ASAI link on that port.

Installing the 808A Emergency Transfer Panel

The 808A Emergency Transfer Panel (ETP) provides emergency trunk bypass or power-fail transfer for up to five incoming Central Office (CO) trunk loops to five selected PBX station sets. When a power failure or other system problem interrupts service, the sets are automatically and directly connected to the CO trunk and are available for emergency use outside the PBX service environment.

During normal switch operation, -48VDC power from the alarm panel keeps the 808A's power failure detection relays open. During a power failure or major system failure the 808A operates as follows:

- Upon failure, the power failure detection relays close which enables the bypass circuits.
- Each bypass circuit directly connects a designated 7102 or 2500-type voice terminal to a central office (CO) trunk. The switch is completely bypassed.
- When a voice terminal connected to the 808A goes off-hook during bypass, circuitry inside the panel places signaling on the CO trunk causing the CO to return dial tone. Each such 808A bypass circuit can be switched to either loop-start or ground-start signaling.

Should power be restored to the relays while a call connected through the 808A is in progress, the 808A maintains the connection until the user goes on-hook. (Unlike the older 609A transfer panel, the 808A panel doesn't require the voice terminal user to operate a signaling key.) Each 808A can handle up to five CO trunks.

(The model 574-5 panel, manufactured by Porta Systems Corporation, supported the power failure transfer feature before the AT&T model 808A became available. Operation for the 574-5 was essentially the same as 808A operation except that the 574-5 immediately dropped all calls in progress when power was restored.)

The 808A unit is shown in the following illustration.

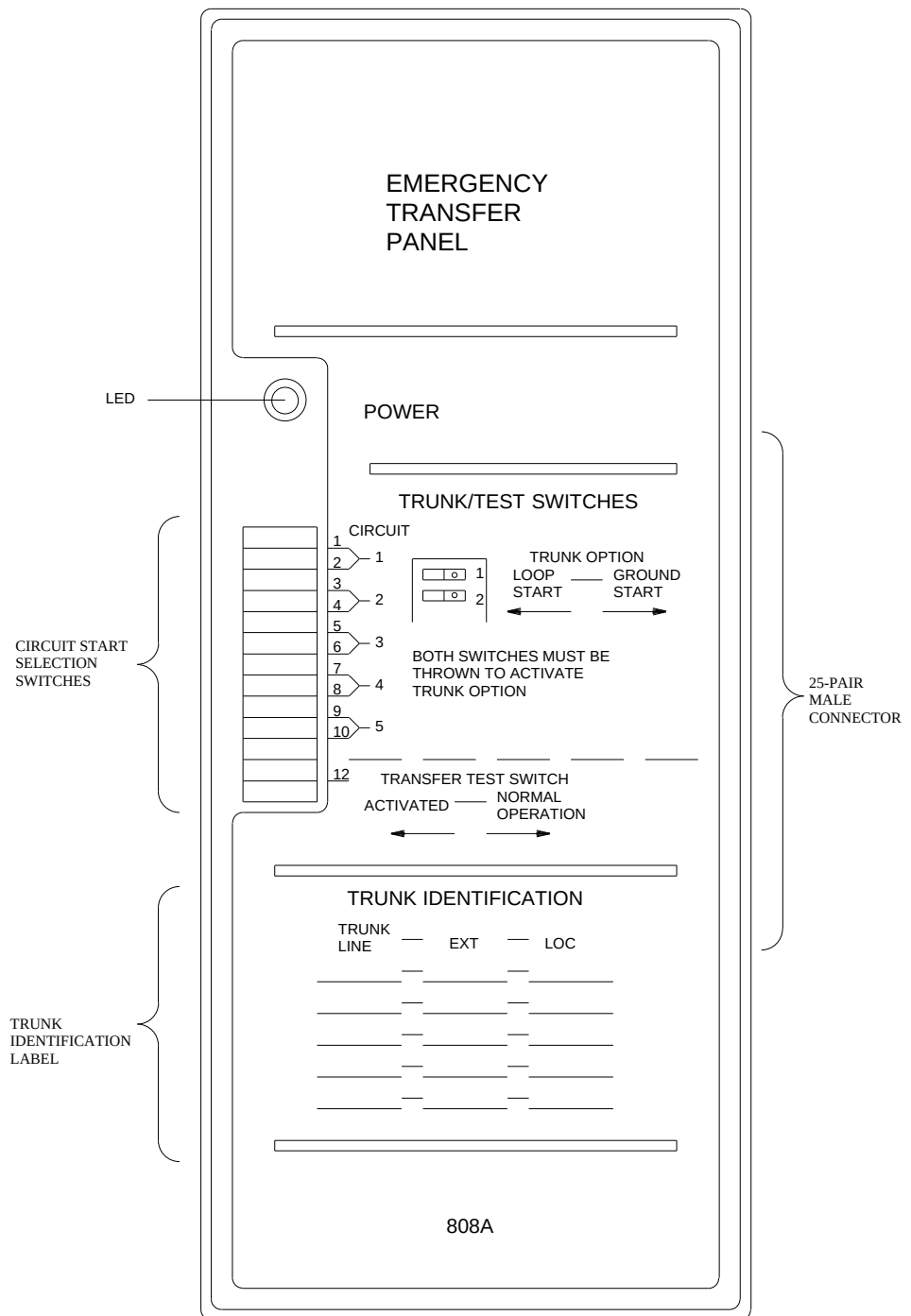


Figure 8-50. 808A Emergency Transfer Panel

The ETP can be installed on any mounting frame in either a vertical or horizontal position. The housing has ears for screw-mounting and cutouts for snap-mounting the unit in an 89-type mounting bracket (see Figure 8-51).

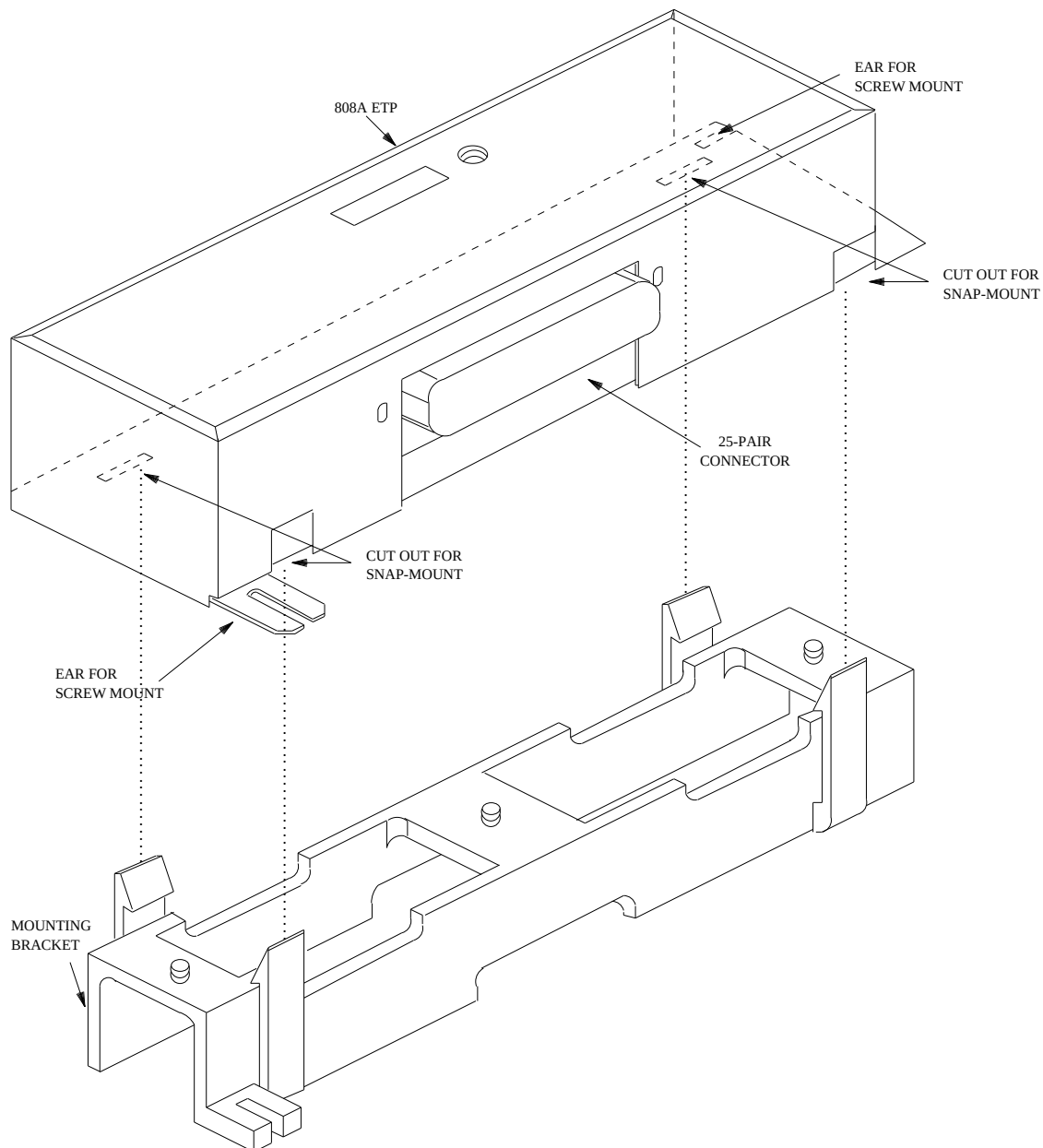


Figure 8-51. 808A EPT Mounting

**NOTE:**

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

To install the unit, follow the steps below:

1. Verify that there is a dial tone at each trunk circuit to which you will connect.
2. Locate the circuit start selection switches (see Figure 8-50). These are the first 10 two-position switches on the left side of the ETP. They are used to set each of the five incoming trunk lines to either loop start or ground start. Two switches are used for each circuit; switches 1 and 2 are used for circuit 1, switches 3 and 4 are used for circuit 2, and so forth (see Table 8-9). For loop start, set the switches to the **left**. For ground start, set the switches to the **right**.

Table 8-9. Trunk/Test Switches

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

3. Connect a 25-pair cable between the male RJ21 25-pair connector on the ETP and the switch. Location of the connector is shown in Figure 8-51. Table 8-10 shows the pin assignments.

Table 8-10. Pin Assignments for 25-Pair Connector

Pin	Color	Designation	Connector/Description
1	BL-W	RTC1	Ring-PBX Trunk Ckt 1
2	O-W	RTK1	Ring-CO Trunk Ckt 1
3	G-W	RLC1	Ring-PBX Line Port 1
4	BR-W	RST1	Ring-Emergency Terminal 1
5	S-W	RTC2	Ring-PBX Trunk Ckt 2
6	BL-R	RTK2	Ring-CO Trunk Ckt 2
7	O-R	RLC2	Ring-PBX Line Port 2
9	G-R	RST2	Ring-Emergency Terminal 2
10	S-R	RTK3	Ring-CO Trunk Ckt 3
11	BL-BK	RLC3	Ring-PBX Line Port 3
12	O-BK	RST3	Ring-Emergency Terminal 3
13	G-BK	RTC4	Ring-PBX Trunk Ckt 4
14	BR-BK	RTK4	Ring-CO Trunk Ckt 4
15	S-BK	RLC4	Ring-PBX Line Port 4
16	BL-Y	RST4	Ring-Emergency Terminal 4
17	O-Y	RTC5	Ring-PBX Trunk Ckt 5
18	G-Y	RTK5	Ring-CO Trunk Ckt 5
19	BR-Y	RLC5	Ring-PBX Line Port 5
20	S-Y	RST5	Ring-Emergency Terminal 5
21	BL-V	NO1	Normally Open 1 Contact
22	O-V	NC1	Normally Closed 1 Contact
23	G-V	NO2	Normally Open 2 Contact
24	BR-V		
25	S-V	-48PX	-48V from Alm Panel

Table 8-10. Pin Assignments for 25-Pair Connector *Continued*

Pin	Color	Designation	Connector/Description
26	W-BL	TTC1	Tip-PBX Trunk Ckt 1
27	W-O	TTK1	Tip-CO Trunk Ckt 1
28	W-G	TLC1	Tip-PBX Line Port 1
29	W-BR	TST1	Tip-Emergency Terminal 1
30	W-S	TTC2	Tip-PBX Trunk Ckt 2
31	R-BL	TTK2	Tip-CO Trunk Ckt 2
32	R-O	TLC2	Tip-PBX Line Port 2
33	R-G	TST2	Tip-Emergency Terminal 2
34	R-BR	TTC3	Tip-PBX Trunk Ckt 3
35	R-S	TTK3	Tip-CO Trunk Ckt 3
36	BK-BL	TLC3	Tip-PBX Line Port 3
37	BK-O	TST3	Tip-Emergency Terminal 3
38	BK-G	TTC4	Tip-PBX Trunk Ckt 4
39	BK-BR	TTK4	Tip-CO Trunk Ckt 4
40	BK-S	TLC4	Tip-PBX Line Port 4
41	Y-BL	TST4	Tip-Emergency Terminal 4
42	Y-O	TTC5	Tip-PBX Trunk Ckt 5
43	Y-G	TTK5	Tip-CO Trunk Ckt 5
44	Y-BR	TLC5	Tip-PBX Line Port 5
45	Y-S	TST5	Tip-Emergency Terminal 5
46	V-BL	COM1	Common 1 Relay Contact
47	V-O	NC2	Normally Closed 2 Contact
48	V-G	COM2	Common 2 Relay Contact
49	V-BR		
50	V-S	GRD	Ground From PBX

4. On the trunk identification label at the bottom of the ETP, record the trunk line, extension, and location for each circuit.
5. To each voice terminal designated as an emergency terminal, attach a label identifying it as such. The labels are provided with the unit.

6. Check the system for normal operation as follows:

- Place the test switch (switch 12) in the NORMAL OPERATION position (see Figure 8-50).
- Ensure that the power supply is providing -48 VDC at a maximum of 80ma.
- Check wiring connections (see Table 8-8).
- Verify power by observing the LED. It should be ON.
- Verify that there is dial tone on all Emergency Transfer sets.

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

7. Check the system for transfer operation as follows:

- Place the test switch (switch 12) in the ACTIVATED position (see Figure 8-50).
- Verify that power is not being supplied to the panel by observing the LED. It should be OFF.
- Verify that there is dial tone on all Emergency Transfer sets.

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

Malicious Call Trace

The malicious call trace voice recorder is directly connected to the tip and ring connections of a TN763 circuit pack. (Other Aux-trunk circuit packs may be required in some countries.) Seizure control to the recorder is handled by a 909A/B Universal Coupler. The coupler is mounted in the auxiliary cabinet, if one is available.

If the 909A/B is not mounted in an auxiliary cabinet, provisions must be made for obtaining the DC power. If the coupler is being used with a Multi-Carrier Cabinet, -48VDC can be obtained from the Auxiliary connector behind the common control carrier. If the adapter is being used with a Single-Carrier Cabinet or in a situation where using the -48VDC from the Multi-Carrier Cabinet isn't feasible, use an MSP-1 or other approved -48V power supply.

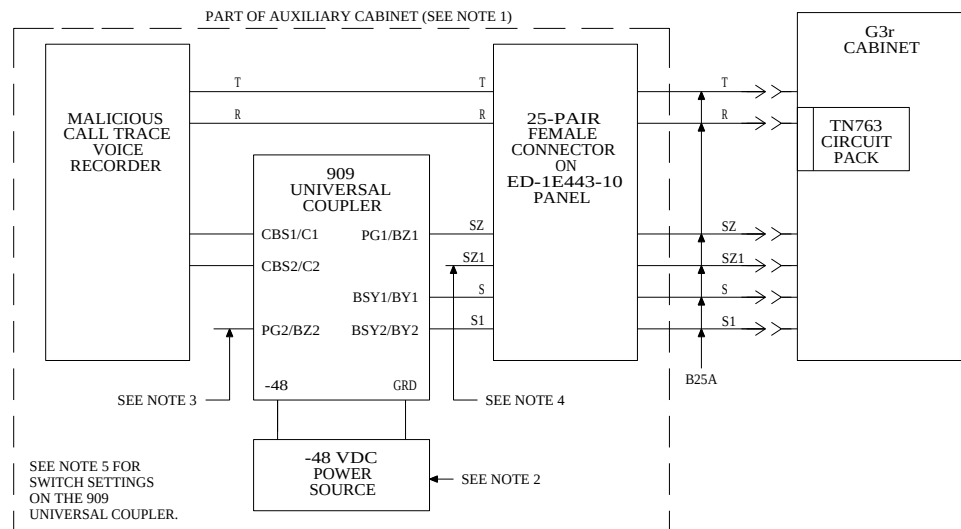
If an auxiliary cabinet is not available, a connectorized wiring block must be locally engineered to replace the auxiliary cabinet ED-1E443-10 intra-connection panel. Four leads (SZ, SZ1, S, and S1) connect the adapter to a TN763 auxiliary trunk circuit pack located in a port carrier. (Other Aux-trunk circuit packs may be required in some countries.)

Figure 8-52 shows the connections for the Malicious Call Trace feature. Install Malicious Call Tracing as follows:

1. Determine the port assignment of the recorder from the Malicious Call Tracing Form:

EXAMPLE: Port Number 2 B 02 01
 Cabinet Carrier Slot Circuit

2. Identify carrier slot and label both ends of an A25D cable.
3. Connect the A25D cable from the assigned port carrier slot to the 25-pair connector on the auxiliary cabinet's ED-1E443-10 intra-connection panel (Figure 8-52).
4. Install the 909A/B Universal Coupler on a vertical surface.
5. Using Tables 8-1, 8-2, and 8-3, and Figure 8-52 as your guide, make connections from the 909A/B Universal Coupler to the 110-type wiring blocks on the ED-1E443-10 intra-connection panel.
6. Wire the tip and ring connections of the voice recorder to the 110-type wiring blocks on the ED-1E443-10 intra-connection panel. (Use table 9-7 as your guide.)
7. On the 909A/B Universal Coupler:
 - Connect an approved -48VDC power source to the **-48** and **GRD** terminals (pins 5 and 2, respectively, of J3).
 - Connect seizure control voltage of from -9 to -60 volts to the PG2/BZ2 connection (pin 2 of J1). Switching voltage to the PG2/BZ2 connection can be from the 909's -48 volt supply.
8. Administer per one of the following:
 - *DEFINITY Communications System Generic 1 Implementation*, 555-204-654
 - *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653



NOTES:

- AUXILIARY CABINET IS OPTIONAL.
- USE -48V AND -48VRET FROM THE CABINET OR WALL FIELD OR A KS-22911L2 OR OTHER APPROVED -48VDC POWER SUPPLY
- CONNECT PG2/BZ2 TO AN AVAILABLE DC POWER SOURCE OF -9.5 TO -60VDC.
- CONNECT SZ1 TO THE GROUND OF THE DC POWER SOURCE USED FOR PG2/BZ2.
- SET S1 TO THE C2 POSITION. SET S2 SWITCH POSITION 6 OPEN. ALL OTHER SWITCHES ARE 'DON'T CARE'.
- OTHER AUX-TRUNK CIRCUIT PACKS MAY BE USED IN SOME COUNTRIES.

Figure 8-52. Malicious Call Trace

Installing Adjuncts to the DEFINITY AUDIX System

This section describes the tasks required to install DEFINITY AUDIX peripherals (such as administration and maintenance terminals).



WARNING:

*To avoid a disk crash, **never** unplug the DEFINITY AUDIX System without first shutting it down. You need to shut down the DEFINITY AUDIX system (and allow the disk to completely spin down) before unplugging the DEFINITY AUDIX assembly. Refer to chapter 1 in DEFINITY AUDIX System Maintenance, 585-300-110, for a description of the shutdown procedure.*



WARNING:

To avoid a disk crash, do not power down or power cycle a switch with a DEFINITY AUDIX System (for example, during switch acceptance tests) unless you have first shutdown the DEFINITY AUDIX system. Refer to chapter 1 in DEFINITY AUDIX System Maintenance, 585-300-110, for a description of the shutdown procedure.

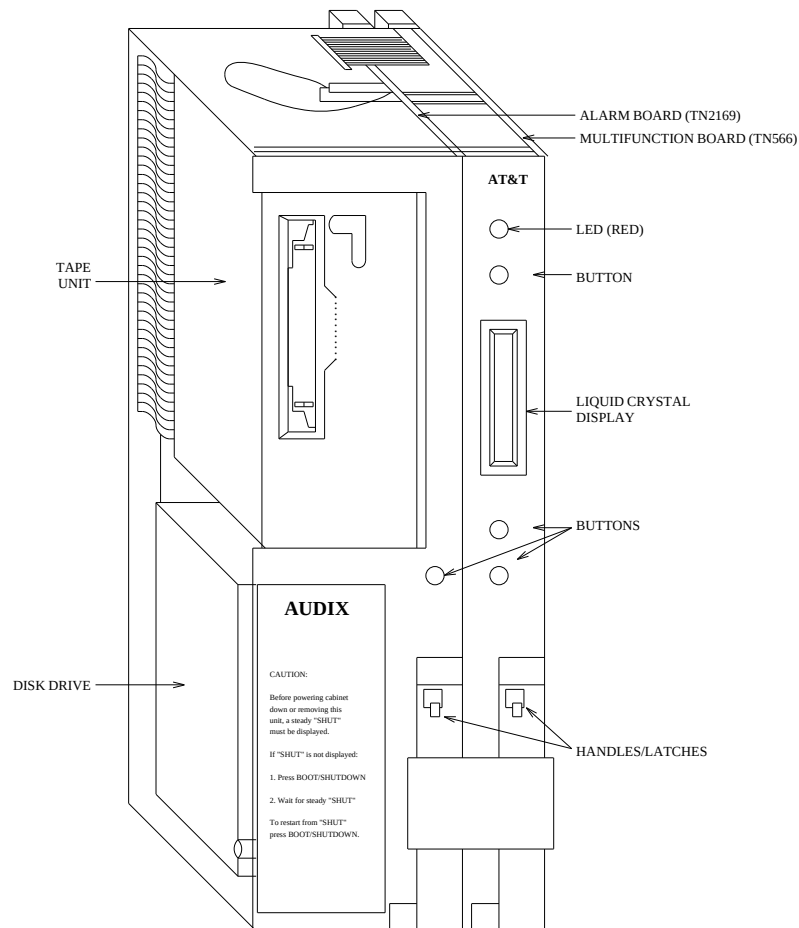


Figure 8-53. The DEFINITY AUDIX Assembly

The DEFINITY AUDIX system may be located in any G1 or G3 switch.

The DEFINITY AUDIX installation procedures are virtually the same for all switch types. Therefore only one set of procedures is provided, with any differences for switch types indicated in the instructions. These installation tasks include:

1. Connecting the alarm origination cable
2. Installing the terminal(s)
3. Installing the optional printer
4. Verifying the hardware installation

Before beginning the tasks, make sure you have the *Installing the Terminal* worksheet. (The Project Manager or Software Specialist should have provided you with this completed worksheet.)



WARNING:

Do not power up the DEFINITY AUDIX assembly unless the DEFINITY AUDIX assembly adaptor Y-cables are connected.

Connecting the Alarm Origination Cable

Refer to Figure 8-54 while performing this task.

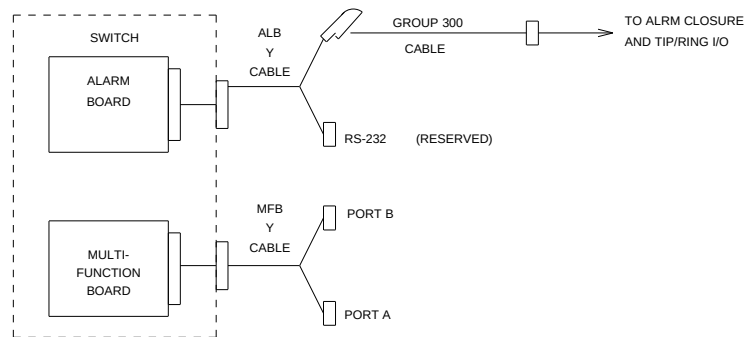


Figure 8-54. Installing the Alarm Origination Cable

1. Connect the DEFINITY AUDIX ALB Y-cable to the cross-connect field.

Attach the male amphenol connector on a Group 300 cable to the female amphenol connector labeled *ALARM* on the ALB Y-cable (the Y-cable that is now connected to the third DEFINITY AUDIX slot). (The other end of the Group 300 cable should be punched down to the cross-connect field.)

**NOTE:**

You will not be connecting the RS-232 connector on the ALB Y-cable. The standard alarm origination circuit uses an on-board DEFINITY AUDIX modem that is internally wired to the amphenol connector on the ALB Y-cable. The RS-232 connector on the Y-cable is reserved.

2. Perform the cross-connects for the alarm origination connection as described on the service order, using the pin-outs listed in Table 8-11.

Table 8-11. Alarm Origination Pinouts

Pin	Definition
26	Tip (white/blue)
1	Ring (blue/white)
44	Minor RTN*
19	Minor
47	Major RTN*
22	Major

* RTN is the return or ground.

3. Continue with the next section, "Installing the Terminal(s)".

Installing the Terminal(s)

You may be installing two terminals, a local maintenance terminal and an administration terminal. The local maintenance terminal is optional, but the administration terminal is required. There is only one way to connect the local maintenance terminal—via a direct cable connection. However, there are four ways to connect the administration terminal.

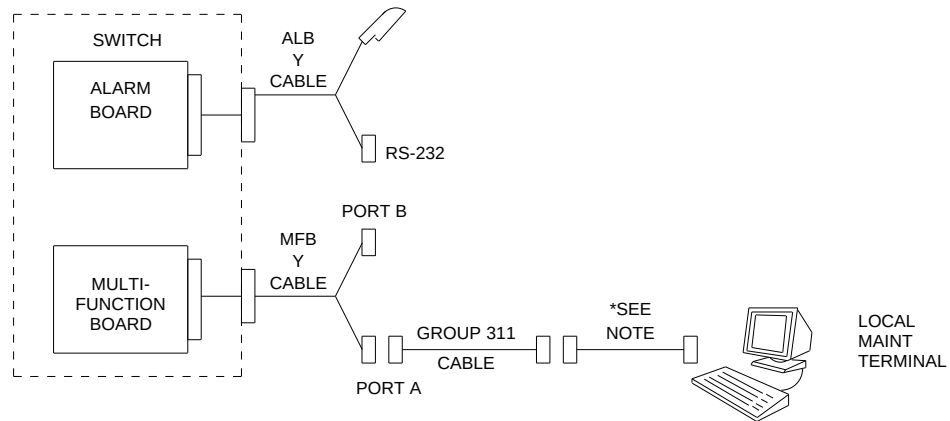
- Via a direct connection
- Via modems
- Via asynchronous data units (ADU)
- Via 7400A data sets

See the *DEFINITY AUDIX System Description*, 585-300-205, for a list of the supported terminals and modems. The connectivity for all supported terminals is similar. Therefore, these subtasks are the same for all supported terminals, with differences identified as required for different terminal types.

If you are connecting a G3-MA (formerly called SAT-PC) as the DEFINITY AUDIX administration terminal, see *DEFINITY Communications System Generic 3 Management Applications Station Provisioning*, 555-229-201 for installation instructions. However, keep in mind that the DEFINITY AUDIX System is data terminal equipment (DTE), the switch is data communications equipment (DCE). Therefore, you may need to install a null modem to complete the DTE/DCE pair in connecting the G3-MA.

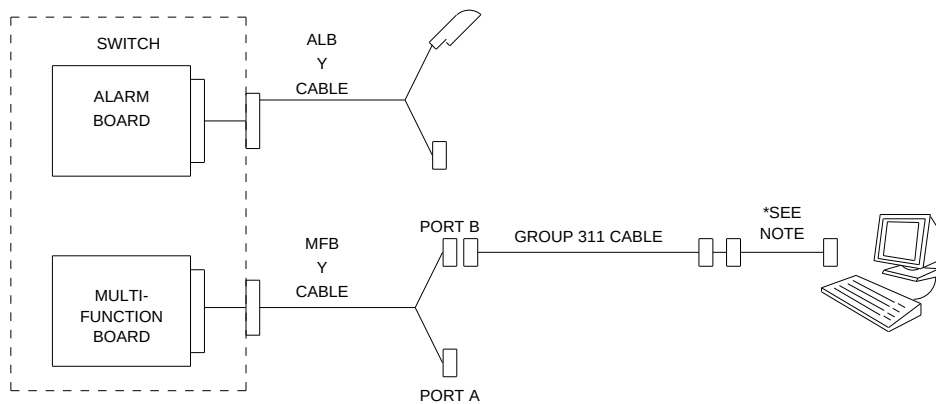
Installing a Directly-Connected Terminal

Refer to the appropriate figures while performing this task. Figure 8-55 shows the connectivity for a local maintenance terminal (LMT). Figure 8-56 shows the connectivity for a local administration terminal (LAT).



*NULL MODEM - NOT REQUIRED WHEN CONNECTING TO 715 BCT DCE PORT.

Figure 8-55. Installing a Local Maintenance Terminal



*NULL MODEM - NOT REQUIRED WHEN CONNECTING TO 715 BCT DCE PORT.

Figure 8-56. Installing a Directly-Connected Local Administration Terminal

1. If you are installing a new terminal, unpack it according to the instructions supplied with the terminal.
2. Place the terminal on a suitable table within 15 feet of the switch cabinet if you have a 20-foot Group 311 cable, or within 45 feet if you have a 50-foot Group 311 cable, and connect the keyboard.
3. Connect a Group 311 cable between the DEFINITY AUDIX MFB and the terminal.
 - a. Attach one end of a Group 311 cable (supplied with the DEFINITY AUDIX PEC) to the RS-232 connector labeled *PORT A* (for the LMT) or *PORT B* (for the LAT) on the MFB Y-cable (the one connected to slot four of the five DEFINITY AUDIX slots).

If you connected an opto-isolator to either the PORT A and/or PORT B connectors on the Y-cable, attach the Group 311 cable to the cable on the opto-isolator.
 - b. For a 715 BCT, attach the other end of the Group 311 cable to the DCE connector on the back of the terminal. Then skip to step 4.

For a 513 or equivalent BCT, attach the other end to the female connector on an H600-258 Group 2 null modem.
 - c. Connect the male connector on the null modem to an RS-232 serial port connector on the back of the terminal.

Testing the Connection

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



NOTE:

When installing a serial printer on all but a 610 or 615 BCT, set the options on the printer as described in the manual supplied with the printer then set the corresponding options on the terminal to match. On the 610/615, set the terminal options first, then set the printer options.

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

If the terminal does not display the login prompt when the DEFINITY AUDIX Sytem is in one of the above states, write down the state displayed on the LCD then see the troubleshooting procedures for terminal connections in *DEFINITY AUDIX System Maintenance*, 585-300-110.

4. Continue with the section named "Installing the Printer".

Installing the Administration Terminal via Modems

To make sure the modems that you are installing are on the list of supported peripherals, refer to the *DEFINITY AUDIX System Description*, 585-300-205.

Refer to Figure 8-57 when performing this task.

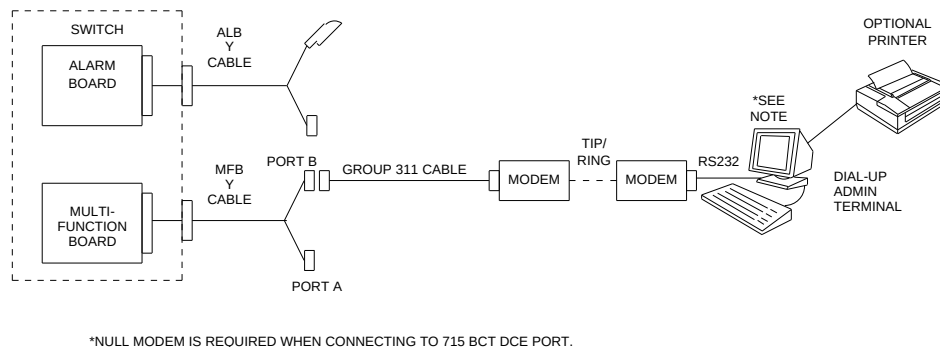


Figure 8-57. Connecting to the Administration Terminal Through Modems

1. In the room where the switch and DEFINITY AUDIX System are located, place one modem between the DEFINITY AUDIX System and a telephone jack, close enough to each that the cables can easily reach. Also make sure the modem is within reach of a power outlet.
2. Connect the modem to the DEFINITY AUDIX MFB.
 - a. Attach one end of one of the Group 311 cables to the RS-232 connector labeled *PORT B* on the MFB Y-cable (the one connected slot four of the five DEFINITY AUDIX slots). Attach the other end to the female 25-pin connector on the modem.
 - b. Attach the connector on one end of a modular cord to the modem, and attach the other connector to a telephone outlet.
 - c. Plug the power cord on the modem into a wall outlet.
 - d. Power on the modem.
 - e. Set the modem options. See *DEFINITY AUDIX Installation*, 585-300-111, for a complete list of option settings for all supported modems.

3. In the administration terminal room, connect a modem to the administration terminal.
 - a. If you are installing a new terminal, unpack it according to the instructions supplied with the terminal.
 - b. Place the terminal on a suitable table and connect the keyboard.
 - c. Attach one end of an RS-232 cable to a serial RS-232 port on the terminal (the DTE port on a 715 BCT), and attach the other end to the modem (if it is not already connected).

⇒ NOTE:

If you connect the modem to the DCE port on a 715 BCT, you must also connect a null modem cable between the modem and the 715 BCT.

- d. Attach the connector on one end of a modular cord to the modem, and attach the other end to a telephone outlet.
- e. Plug the power cord on the modem into a wall outlet.
- f. Plug the power cord on the terminal into a wall outlet.
- g. Power on the terminal and modem.
- h. Set the options on the terminal and modem. See *DEFINITY AUDIX Installation*, 585-300-111, for a complete list of option settings for all supported terminals and modems.

⇒ NOTE:

When installing a serial printer on all but a 610 or 615 BCT, set the options on the printer as described in the manual supplied with the printer then set the corresponding options on the terminal to match. On the 610/615, set the terminal options first, then set the printer options.

- i. At the terminal, enter AT.

If the modem is installed correctly, it responds with OK (written on the terminal screen).

- j. Enter ATDT and the telephone number of the modem connected to the DEFINITY AUDIX *PORT B* port (listed on the *Installing the Terminals* worksheet).

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

If the terminal does not display the login prompt when the DEFINITY AUDIX System is in one of the above states, write down the state displayed on the LCD then see the troubleshooting procedures for terminal connections in *DEFINITY AUDIX System Maintenance*, 585-300-110.

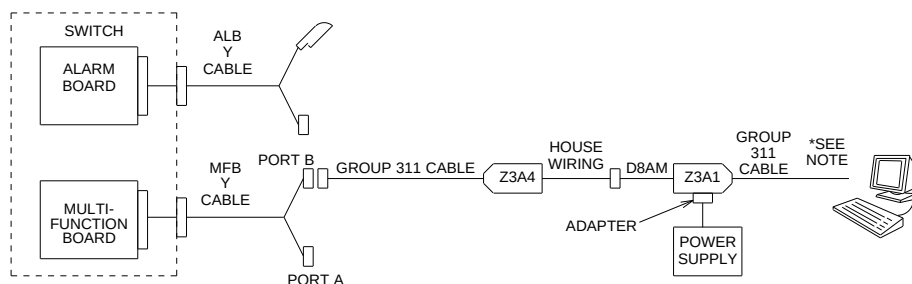
- k. Log in to the DEFINITY AUDIX System as described elsewhere in this book under “Testing the DEFINITY AUDIX System”.

If you can log in successfully, the modem and terminal options are set correctly.

4. If you are to install a printer, go to the procedure given under “Installing the Printer” later in this chapter.

Installing the Administration Terminal via ADUs

Refer to Figure 8-58 when performing this task.



*NULL MODEM IS REQUIRED WHEN CONNECTING TO 715 BCT DCE PORT.

Figure 8-58. Connecting to the Administration Terminal through ADUs

1. Connect the Z3A-4 ADU to the DEFINITY AUDIX MFB.
 - a. In the room where the switch and DEFINITY AUDIX System are located, attach one end of a Group 311 cable to the RS-232 connector labeled *PORT B* on the MFB Y-cable (the one connected to slot four of the five DEFINITY AUDIX slots). Attach the other end to the Z3A-4 (female) ADU.
 - b. Plug the cable from the ADU into a telephone outlet.
2. In the administration terminal room, connect the Z3A-1 ADU to the administration terminal.
 - a. If you are installing a new terminal, unpack it according to the instructions supplied with the terminal.
 - b. Place the administration terminal on a suitable table and connect the keyboard.
 - c. Attach the Z3A-1 ADU (male) to a serial RS-232 port on the terminal (the DTE port on a 715 BCT).

⇒ NOTE:

If you connect the ADU to the DCE port on a 715 BCT, you must also connect a null modem cable between the ADU and the 715 BCT.

- d. Plug one end of the D8AM crossover cord into the connector labeled *Wall Jack* on the ADU, and plug the other end of the D8AM cord into a telephone outlet.
- e. Connect the 2012D ADU Power Supply to the ADU. (The power supply can be connected to either ADU.)
 - a. Attach either the 400B2 or 248B adapter to the ADU.
 - b. Plug the power supply into the adapter.
 - c. Plug the power cord on the power supply into a wall outlet.
- Plug the power cord on the terminal into a wall outlet.
- f. Power on the terminal.
- g. Set the terminal options. See *DEFINITY AUDIX Installation*, 585-300-111, for a complete list of option settings for all supported terminals.

⇒ NOTE:

When installing a serial printer on all but a 610 or 615 BCT, set the options on the printer as described in the manual supplied with the printer then set the corresponding options on the terminal to match. On the 610/615, set the terminal options first, then set the printer options.

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

If the terminal does not display the login prompt when the DEFINITY AUDIX System is in one of the above states, write down the state displayed on the LCD then see the troubleshooting procedures for terminal connections in *DEFINITY AUDIX System Maintenance*, 585-300-110.

3. If you are to install a printer, go to the procedure given under "Installing the Printer" later in this chapter.

Installing the Administration Terminal via 7400 Data Sets

Refer to Figure 8-59 when performing this task.

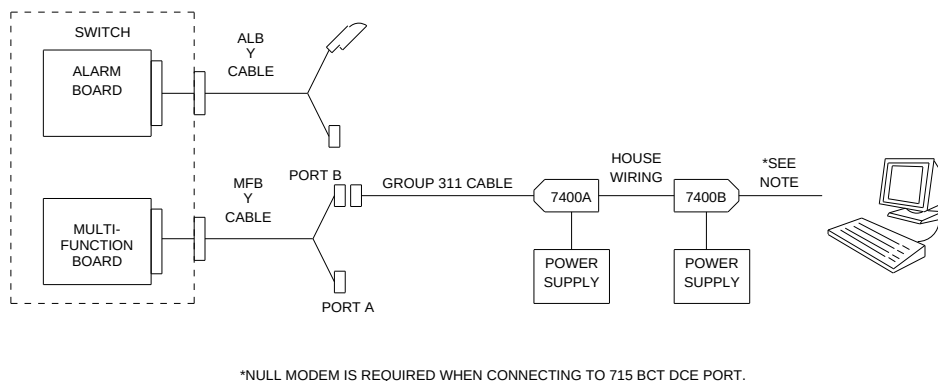


Figure 8-59. Installing the Administration Terminal via 7400 Data Sets

⇒ NOTE:

You may use two 7400A data sets in this configuration. However, because the 7400B data set is easier to set up and use, it is the one described in this procedure on the terminal side. (The DEFINITY AUDIX System side of the configuration requires the 7400A.) If you are using two 7400A data sets, connect the second 7400A the same as the 7400B, but set the options as described under "Using the Front Panel" in *7400A Data Module User's Manual*, 555-020-706.

1. Make sure the EIA connector board (located inside the front panel) is set to DCE (the factory default). If not, unplug the card and turn it around to the DCE setting (see the *7400A Data Module User's Manual*, 555-020-706, for details).
2. Connect the 7400A data set to the DEFINITY AUDIX MFB.
 - a. In the room where the switch and DEFINITY AUDIX System are located, attach one end of a Group 311 cable to the RS-232 connector labeled *PORT B* on the MFB Y-cable (the one connected to slot four of the five DEFINITY AUDIX slots). Attach the other end to a 7400A data set.
 - b. Plug one end of the modular cord (supplied with the data set) into the *LINE* connector on the 7400A data set and plug the other end into a telephone outlet.
 - c. Connect the 4-pin connector on one of the 7400A power supplies to the *POWER* connector on the data set.
 - d. Set the options and interface baud rate on the 7400A data set. Refer to "Using the Front Panel" in the *7400A Data Module User's Manual*, 555-020-706, for details.
3. In the administration terminal room, connect the 7400B data set to the administration terminal.
 - a. If you are installing a new terminal, unpack it according to the instructions supplied with the terminal.
 - b. Place the administration terminal on a suitable table and connect the keyboard.
 - c. Check the dip switches inside the front panel. If you are not connecting a telephone with this data set, set the first dip switch (1) to the ON position (it is shipped in the OFF position, as are all the others). If you are connecting a telephone, leave all dip switches OFF.
 - d. Attach the 7400B data set to a serial RS-232 port on the terminal (the DTE port on a 715 BCT).

⇒ NOTE:

If you connect the data set to the DCE port on a 715 BCT, you must also connect a null modem cable between the data set and the 715 BCT.

- e. Plug one end of a D8W cable into the *LINE* connector on the 7400B data set and connect the other end into a telephone outlet.
- f. Connect the 7400B power supply to the data set.
- g. Plug the power cord on the terminal into a wall outlet.
- h. Power on the terminal.
- i. Set the terminal options. See *DEFINITY AUDIX Installation*, 585-300-111, for a complete list of option settings for all supported terminals.

**NOTE:**

When installing a serial printer on all but a 610 or 615 BCT, set the options on the printer as described in the manual supplied with the printer then set the corresponding options on the terminal to match. On the 610/615, set the terminal options first, then set the printer options.

- j. At the terminal, enter AT

If the 7400B data set is connected correctly, it responds with OK (written on the terminal screen).

- k. Enter ATDT and the phone number of the 7400A data set connected to the DEFINITY AUDIX System (refer to the *Installing Terminals* worksheet for this number).

After a connect interval, if the terminal and 7400 data sets are installed correctly (and the DEFINITY AUDIX System is in either *ADX*, *OAM*, *OS* or *AINIT* state), the screen displays the login prompt.

If the terminal does not display the login prompt when the DEFINITY AUDIX Sytem is in one of the above states, write down the state displayed on the LCD then see the troubleshooting procedures for terminal connections in *DEFINITY AUDIX System Maintenance*, 585-300-110.

- 4. Continue with the next section, "Installing the Printer".

Installing the Printer (Optional)

This task is required only if the customer requested a printer on the DEFINITY AUDIX administration terminal.

This task describes how to install an AT&T 470 or 570 series printer. For other printers follow the instructions supplied with the printer, making sure you set the options required for the DEFINITY AUDIX System as described in this task.

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



NOTE:

If you are connecting a serial printer to the DTE connector on a 715 BCT, you must connect a null modem between the printer and the terminal.

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



NOTE:

When installing a serial printer on all but a 610 or 615 BCT, set the options on the printer as described in the manual supplied with the printer then set the corresponding options on the terminal to match. On the 610/615, set the terminal options, then set the printer options.

4. Test the system as described elsewhere in this book under "Testing the DEFINITY AUDIX System".

Installing Wideband Endpoints

Wideband switching makes it possible for the DEFINITY G3r switch to support high-speed data transfer between endpoints. Wideband endpoints may include (for example) video equipment or bridge/routers for local area networks.

Use the running list that accompanies your system to indicate which cable is to be connected where. The following text and illustrations are just *examples* of how a system should be wired rather than a prescription for all wideband system wiring.

Non-Signaling Configuration

A non-signaling connection from the switch to a wideband endpoint may or may not pass through a channel service unit (CSU). If no CSU is used, the distance between the switch and the endpoint is limited to a few hundred feet. The exact maximum figure depends on the type of cable and type of endpoint.

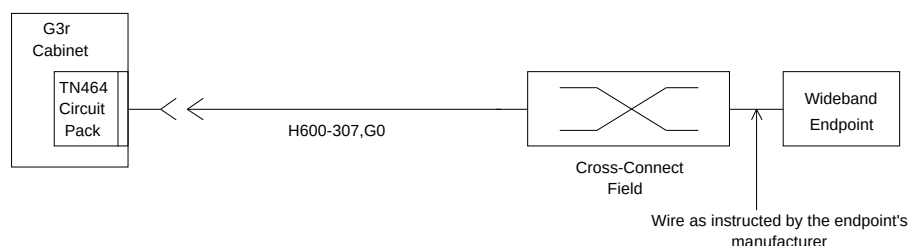


Figure 8-60. Typical Connections for a Non-Signaling Wideband Configuration

if a CSU is used, the distance between the switch and the CSU may be as long as 1300 feet. The maximum distance between the CSU and the wideband endpoint also depends on the characteristics of the cable used and on the specifications of the wideband endpoint.

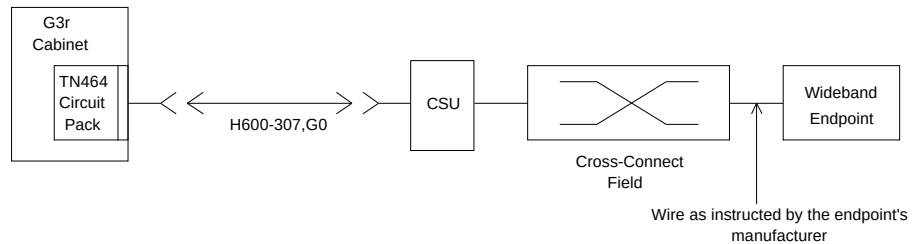


Figure 8-61. Typical Connections for a Non-Signaling Wideband Configuration with CSU

Signaling Configuration

A signaling connection from the switch to a wideband endpoint passes through a bandwidth controller. Details such as the distance between the switch and the bandwidth controller depend on characteristics of the cable used and on the specifications of the controller used.

➤ NOTE:

In both of the *signalling configuration* cases, cross the transmit and receive lines so that a transmit signal from the TN464 is connected to the receive connection on the bandwidth controller and so that a transmit signal from the bandwidth controller is connected to the receive connection on the TN464.

The next illustration shows the configuration where the bandwidth controller is connected directly to the wideband endpoint. The bandwidth controller typically is installed near the wideband endpoint where they are directly connected. The distance between them is usually a matter of a few feet.

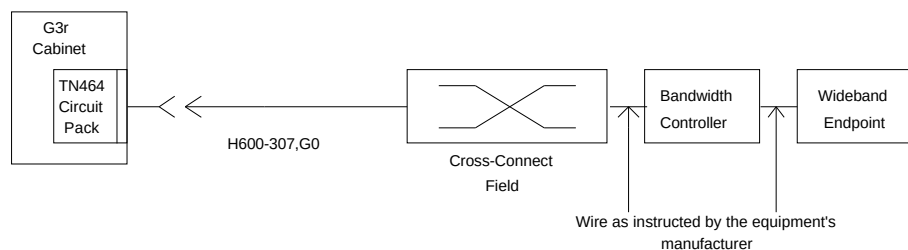


Figure 8-62. Typical Connections for a Signaling Wideband Configuration

The next illustration shows the place that a remote port module fills in a typical installation. In this configuration, there can be considerable distance between the bandwidth controller and the wideband endpoint. As in the other situations mentioned, the maximum distances between elements of the system depend on the quality of the conductors and on the specifications of the wideband equipment.

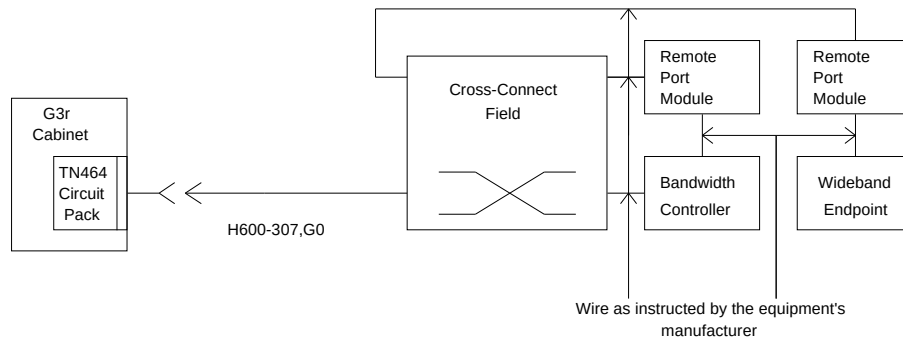


Figure 8-63. Typical Signaling Wideband Configuration with Remote Port Module

Installing the PassageWay Interface

The PassageWay interface device makes it possible to connect a Mu-law digital telephone and a personal computer through a single four-wire-DCP digital port to the switch.

PassageWay provides two standard 8-pin modular jacks, one for connection to the telephone and one for connection to a modular wall jack leading to the switch. Connect the wall jack to the jack marked *Line*. The PassageWay interface uses one Watt at about –48 Volts that you must provide by means of a bulk or individual power supply. Plug the telephone into the jack marked *Phone*. PassageWay also provides a serial I/O connection for a personal computer.

An example is shown in the accompanying illustration of a PC and telephone connected together through a PassageWay interface to a four-wire digital-line circuit pack (in this case a TN754). The telephone shown could be a Callmaster workstation used by call-agents.

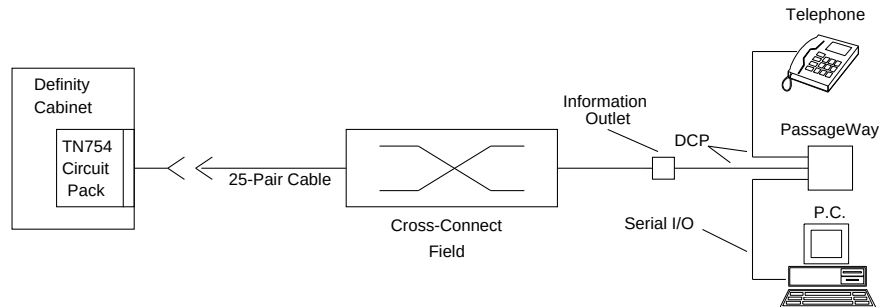


Figure 8-64. Typical Connections to a Switch Through PassageWay

Installing a Two-Wire DCP Endpoint

The tip and ring connections of two-wire DCP endpoints are wired to a TN2181 in a way similar to the way two-wire analog endpoints are wired to a TN746B.



NOTE:

Unlike some analog circuits, you must take care to wire tip to tip and ring to ring between port and endpoint. (Check the pinout drawing of the TN2181 in Appendix F for details.) You must also use twisted-pair wiring that is rated for digital connections.

Installing Two-Wire Voice Terminals

The accompanying illustration depicts a voice terminal wired to a TN2181 circuit pack: a typical two-wire DCP installation. Wire the circuit pack to the distribution field with a 25-pair cable:

- Use a B25A cable to wire to a 66-type connecting block. Use an A25D cable to wire to a 110-type connecting block.
- Jumper across the distribution field in the usual way.
- See Caution. Wire the tip and ring pair to the information outlet in the usual way with the following exception.



CAUTION:

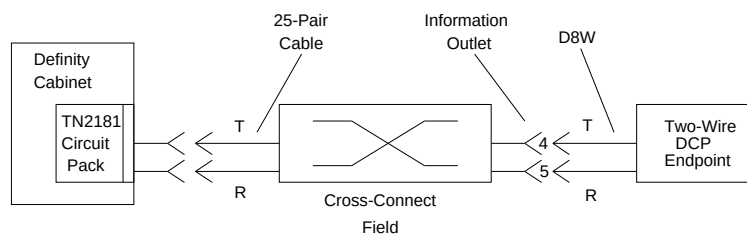
Reverse the usual tip and ring connections when wiring 8400-series, 302B, and 603E terminals to two-wire DCP circuits. The tip connection should appear on pin 4 of the 8-pin modular information outlet.

The ring connection should appear on pin 5 of the 8-pin modular information outlet.

*Except for auxilliary power, if necessary (wired per the following table), these should be the **only** connections to the wall jack. Do **not** bridge or parallel these telephones.*

Table 8-12. DCP Information Outlet Pinout

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



NOTE: 8400-series voice terminals in 2-wire operation must be within 5500 feet of the TN2181 using 22-gauge wire, within 3500 feet using 24-gauge wire, and within 2200 feet using 26-gauge wire.

Figure 8-65. Typical Connections to a Two-Wire DCP Endpoint

Installing Two-Wire Voice and Data Terminals

The following illustration depicts a work station wired to a TN2181 circuit pack by way of Italtel's data adaptor. Wire the circuit pack to the distribution field with a 25-pair cable:

- Use a B25A cable to wire to a 66-type connecting block. Use an A25D cable to wire to a 110-type connecting block.
 - Jumper across the distribution field in the usual way.
 - Wire the tip and ring pair to the information outlet according to local standards.
 - Wire to the data adaptor according to local standards.
 - Wire to the two terminals as instructed in the document accompanying the data adaptor.
-

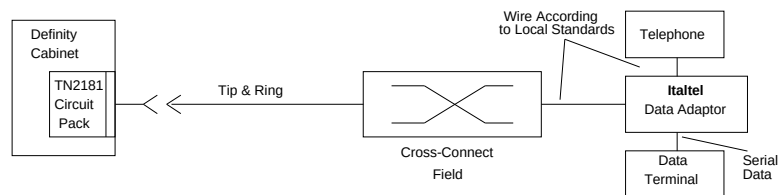


Figure 8-66. Typical Connections to a Two-Wire DCP Workstation

Installing the Callmaster 603 Digital Console

The Callmaster 603A, D and E digital consoles are supported by version 3 of the Definity switches.

Wire a Callmaster 603A/D as you would any 4-wire digital voice terminal. That is, wire it through a modular cable to an information outlet. Wire it from there through the cross-connect field and a 25-pair cable to a 4-wire digital circuit pack (for example, a TN754).

Wire a Callmaster 603E as instructed earlier in this section under “Installing a Two-Wire DCP Endpoint”. Pay special attention to the Note and Caution texts under that heading.

Installing Constellation Terminals

Constellation terminals provide telemarketing features for the user of a DCP telephone. The terminal itself is a Memorex-Telex model 6538 or 6539.

Constellation is connected between the switch and the telephone by way of two standard 8-pin modular jacks. These jacks appear on a plug-in card installed in the base of the terminal. The jack on the Constellation terminal that is connected to the telephone is marked **PHONE**. The jack on the Constellation terminal that is connected to the information outlet is marked **LINE**. Install the terminal as instructed by the Memorex-Telex instructions that accompany the terminal.

The Constellation terminal is supported by a Memorex-Telex model 6544 Cluster Controller. The Cluster Controller downloads a terminal configuration to the Constellation terminal. It also relays call information from the ISDN trunk for use by applications on as many as three host computers. A typical application will send a response to the call information from the computer to the terminal. Install the controller as instructed by the Memorex-Telex instructions that accompany the controller.

An example of the necessary connections is shown in the accompanying illustration of a telephone connected through a Constellation terminal to a four-wire digital-line circuit pack (in this case, a TN754). Shown too are switched connections between the TN754 and a TN464, and wiring from there through the Cluster Controller to a host computer.

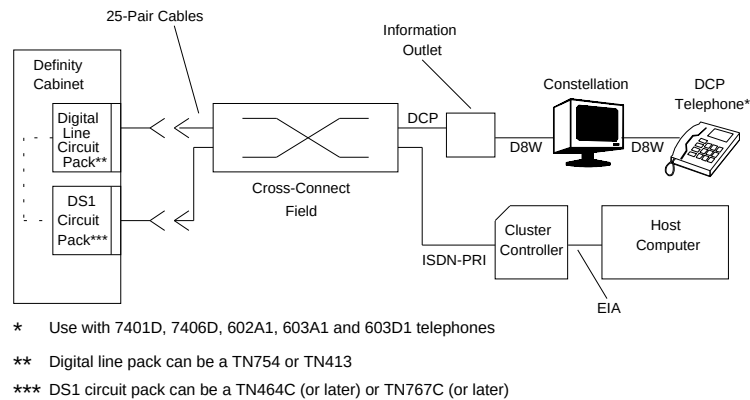


Figure 8-67. Typical Connections to a Switch Through Constellation

Install Integrated CSU Module

These instructions describe procedures for field personnel to install the integrated CSU module on Generic 1 and Generic 3 systems. The integrated CSU is a combination of a 120A CSU module integrated with either a TN464F or TN767E (or later suffixes) DS1 circuit pack.

⇒ NOTE:

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

⇒ NOTE:

Throughout this document, the term integrated CSU module means the combination of a DS1 board and the 120A CSU module.

Installing the 120A CSU Module

Refer to the following figures and tables when installing the 120A CSU module. Installation instructions follow these figures and tables.

Table 8-13. Parts List (Parts Used for G1 and G3)

Part	Notes
120A CSU Module	
Cable H600-383	Shipped loose with CSU. Group 2, 50 ft. cable is the default.
Cord DW8A-DE	Shipped loose with CSU.

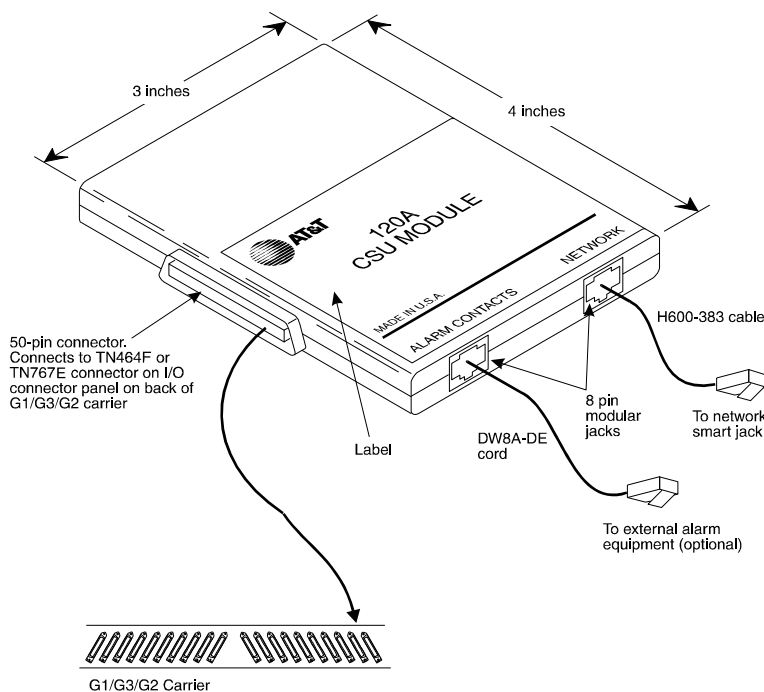


Figure 8-68. 120A CSU Module

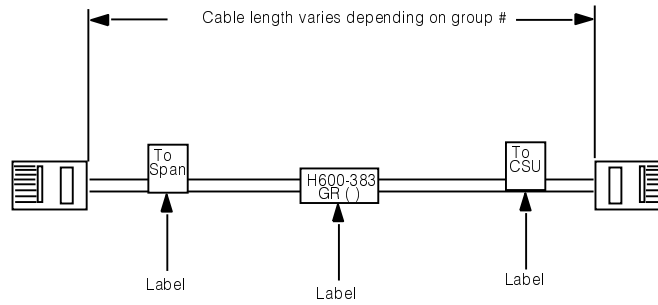


Figure 8-69. H600-383 CSU-to-Network Smart Jack Cable

Table 8-14. H600-383 Connector Pin Assignments

Pin	Color	CSU Desig	Net. Desig	Function
1	BK	Line in 0	R1	RCV
2	Y	Line in 1	T1	
3	Shield			
4	R	Line out 0	R	XMT
5	G	Line out 1	T	
6	Shield			
7				Not Assigned
8				Not Assigned

Table 8-15. H600-383 Cable Lengths by Group Number

Group	Length	Group	Length
1	25 ft.	5	125 ft.
2	50 ft.	6	200 ft.
3	75 ft.	7	400 ft.
4	100 ft.	8	650 ft.

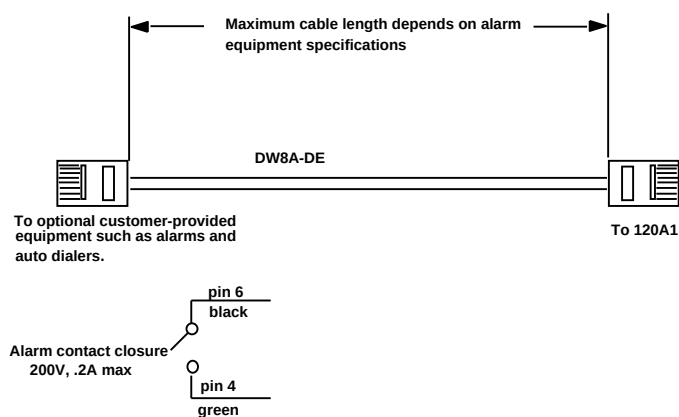


Figure 8-70. Alarm Equipment Cable

Installing the 120A CSU Module



CAUTION:

Before installing the 120A, observe the following cautions:

- *Do not plug the 120A into any circuit pack other than a TN464F or TN767E or later release/vintage. Furthermore, make sure the DS1*

circuit pack is optioned for 24 channel operation (1.544 Mbps). The CSU does not work with the 32 channel interface. This option is set both in administration and by a switch on the circuit pack.

- *Do not touch the connector terminals on the 120A because the 120A can be damaged by static discharge.*
- *Do not touch the external alarm cable when it is connected to the 120A unless you are properly grounded. A solid state relay in the 120A might be damaged by static discharge.*
- *Do not connect the 120A to any interface other than a network smart jack. The 120A, in combination with the systems discussed in this document, does not support this capability.*

Following are the steps you should follow to install the 120A CSU Module:

⇒ NOTE:

If installing more than one ICSU in a G3VS all the DS1 circuit packs should be located either in slots 1 through 4 or in slots 5 through 10 but not in both. This reduces cable congestion on the rear of the switch. Placing DS1 boards in both slot ranges causes CSU modules to be in close proximity on the backplane and requires the CSU module-to-network interface cable to be bent at a sharp angle. This configuration will work but should be avoided.

1. Properly ground yourself.
2. Make sure the slot in which the DS1 circuit pack you are connecting to is empty (the circuit pack is unplugged).
3. Install a 4C retainer in the 50-pin plug associated with the DS1 circuit pack slot.
4. Plug the 120A's 50-pin connector into the 50-pin plug associated with the DS1 circuit pack slot.
5. Secure the 4C retainer around the 120A.
6. Attach the H600-383 cable to the CSU and to the network smart jack. This cable is directional. You can determine the end that connects to the CSU module by doing a continuity test between pins 3 and 6. The end with this continuity is the CSU end. The shield is grounded only at the CSU end. You should use the cable provided. If you use cabling other than that provided with the 120A, observe the following guidelines:

- For best results under normal circumstances, 24 gauge cable providing individually shielded, twisted pairs for transmit and receive signals should be used between the network interface and the CSU. The shields of this cable should be grounded only at the CSU end to avoid ground loops.
 - Cabling between the network interface and CSU can have no bridge taps.
 - If attempting to use standard house riser cable for connections between the network interface and the CSU, a 100-pair separation should be maintained between the receive and transmit twisted pairs.
 - If attempting to use standard house riser cable for connections between the network interface and the CSU, cross connects through type 66 or 110 cross connect blocks must be limited to a maximum of 2.
 - Never use quad cable (untwisted two pair telephone cable) in a DS1 line.
 - Avoid mixing wires of different gauges in a DS1 line.
7. If you are using external alarm equipment, attach a DW8 cable to the CSU and to the external equipment, providing strain relief at each end. The maximum length of this cable depends on the electrical specifications of the alarm equipment.
 8. If you are using a TN464F, make sure the circuit pack is optioned for 24 channel operation. You do this by setting a switch on the board as shown in the following figure:

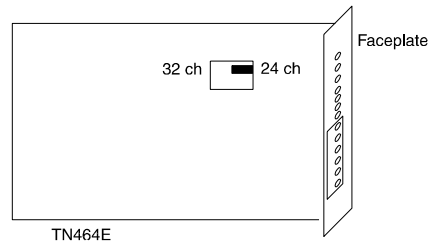


Figure 8-71. Channel Switch on TN464

9. Set the line compensation value for 0-133 feet. This is the distance between the DS1 circuit pack and the CSU module. This is set from the switch administration terminal. In G1 and G3 systems you do this in the DS1 circuit pack form in the field line compensation. In G2 systems, you do this in procedure 260, word 1, field 18. This setting should not be confused with the distance from the CSU module to the smart jack which is automatically compensated for by the CSU module.
10. Using the procedures for your particular switch, insert the DS1 board in the slot



NOTE:

Removing and reinserting the DS1 circuit pack automatically resets the 120A. To completely test the 120A, the DS1 circuit board must be inserted after the 120A is installed. Always reinsert the DS1 board when you want to completely test the 120A.

11. Independent of the host switch, the DS1 circuit pack initializes and tests the CSU module. Initialization and testing is complete when the green LED (2nd from the top) goes off. After initializing and testing the CSU module, the DS1 circuit pack will indicate the status of the circuit pack and CSU module
12. The top (red) led must be off after the test. This indicates a working DS1 circuit pack and CSU module combination.

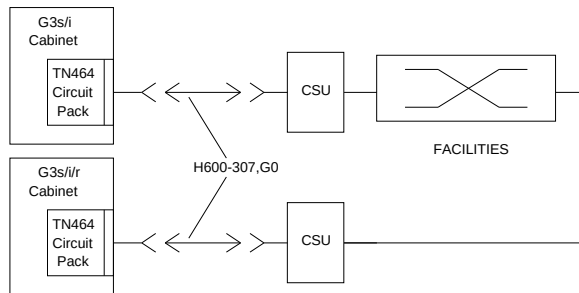
If the circuits do not pass the above test, troubleshoot the integrated CSU as instructed in *Integrated CSU Module Installation and Operation*, 555-230-193.

PRI Over PACCON

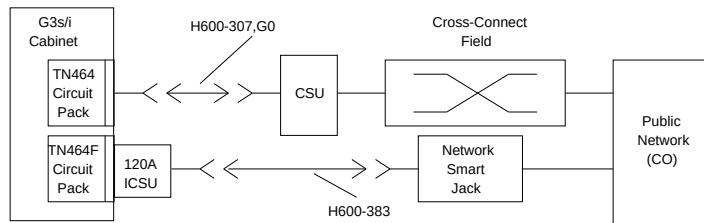
G3V3 introduces PRI over PACCON to the G3s and G3i switches. These switches are no longer limited to Processor Interface (TN765) connections for PRI communications. So, where DS1 communication is required of a G3s/i system, you may be asked to connect directly to a TN464. (A G3s/i switch must include a TN778 packet control (PACCON) circuit pack to manage this kind of connection. A G3i supporting an EPN must also include a TN570 packet expansion interface circuit pack.)

The following illustration shows examples of such connections.

LONG HAUL PRI SIGNALING: G3s/IV3 TO G3s/IV3 or G3r VIA ISDN-PRI



LONG HAUL SIGNALING: G3s/IV3 TO PUBLIC NETWORK (CO) VIA ISDN-PRI



NOTES: G3s/i require a TN778 to work with PRI over PACCON and they also require a TN570 to work with an EPN

To use a 120A CSU module for PRI over PACCON, the DS1 circuit pack must be a TN464F (or later suffix)

Figure 8-72. Typical Connections from DEFINITY G3V3 to Other Systems Using PRI over PACCON

Installing Wireless Telephones

Definity V3 offers native support of the MDW 9000 TransTalk Digital Wireless System.

The base station carrier appears to the Definity switch to be a standard hybrid voice terminal. Wire the base station carrier exactly as you would a conventional hybrid voice terminal. That is, wire each base station through a modular cable to an information outlet. Wire it from there through the cross-connect field and a 25-pair cable to a hybrid circuit pack (for example, a TN762B).

Installing Cordless Telephones

Definity V3 offers native support of the MDC 9000 Digital Cordless Business telephone and the CP9530 Single-Line Analog cordless telephone.

The MDC 9000 Digital Cordless Business Telephone

The MDC 9000 base station appears to the Definity switch to be a standard hybrid voice terminal. Wire the base station exactly as you would a conventional hybrid voice terminal. That is, wire the MDC 9000 base station through the supplied modular cable to an information outlet. Wire it from there through the cross-connect field and a 25-pair cable to a hybrid circuit pack (for example, a TN762B).

The CP9530 Analog Cordless Telephone

The CP9530 base station appears to the Definity switch to be an ordinary analog voice terminal. Wire the base station exactly as you would a conventional analog voice terminal. That is, wire the CP9530 base station through a modular cable to an information outlet. Wire it from there through the cross-connect field and a 25-pair cable to an analog circuit pack.

Connect to the Trunk/Aux and Distribution Fields

9

Hardware Equipment Room Applications

In the equipment room, 66-type or 110-type hardware is used for the cross-connect field, which consists of a trunk/auxiliary field and a distribution field (port, auxiliary, and station).

Trunk/Auxiliary Field

The trunk/auxiliary field contains three distinct cross-connect areas:

- The green field terminates the network interface leads (from the CO) and provides the terminals to cross-connect the CO leads to the purple or yellow fields as required. A single row of the 66-type connecting block/110-type terminal block can terminate twenty-four 1-pair, eight 3-pair, or twelve 2-pair trunks.
- The purple field terminates the trunk circuits from the switch with WP-90929, List 1 or 3 (110-type terminal block) or WP-90929, List 2 or 4 (66-type connecting block) concentrator cables. Also, 25-pair cables can be used to terminate trunk circuits from the switch with each trunk circuit pack connecting to one 25-pair row of the 66-type connecting block/110-type terminal block. Each 66-type connecting block/110-type terminal block row can terminate twenty-four 1-pair, eight 3-pair, or twelve 2-pair trunks.



NOTE:

Both 10- and 15-foot B25A connector cables are shipped with the switch in the required quantities.

- The yellow field provides cross-connection terminals for all miscellaneous leads from the switch, such as alarm monitors, emergency transfer relay power, attendant console power, and Initialization and Administration System (INADS) trunk. This field is also used for emergency transfer wiring, applications processor (AP) alarms, paging equipment, music sources, etc.

Trunk/Auxiliary Field (110-Type Hardware Only)

Figure 9-1 shows two typical 300-pair terminal block configurations of 110-type hardware arranged for use in the trunk/auxiliary field. One 300-pair terminal block will terminate 96 three-pair circuits and two 300-pair terminal blocks will terminate 192 three-pair circuits.

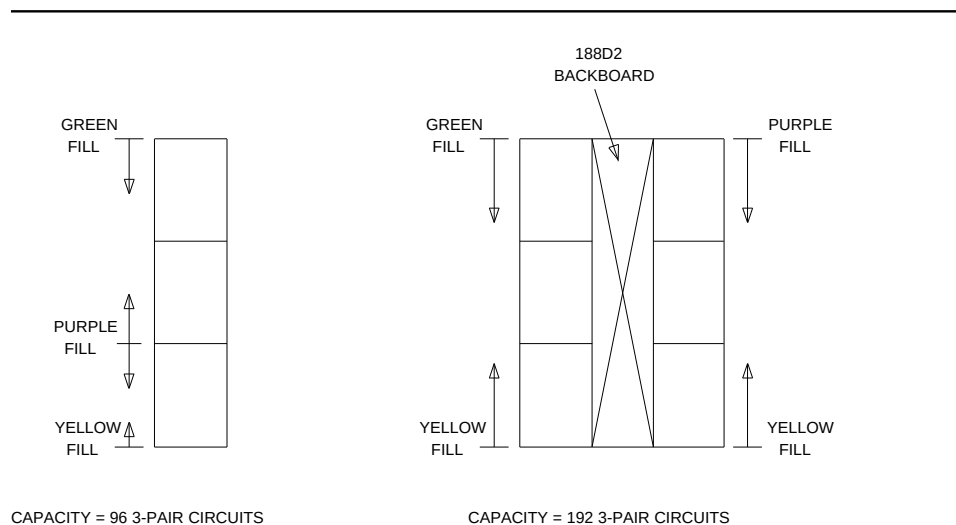


Figure 9-1. 300-Pair Trunk/Auxiliary Field Arrangements

The 110-type terminal blocks that can be used in the trunk/auxiliary field are the:

- 110AC1-300STM/6 which has six stub cables that exit from the top of the terminal block. Each cable stub is 6-feet long and equipped with a 50-pin male connector.
- 110AC1-300STF/6 which has six stub cables that exit from the top of the terminal block. Each cable stub is 6-feet long and equipped with a 50-pin female connector.
- 110PC1-300CT which has six stub cables that exit from the top of the terminal block. Each cable stub is 6-feet long and equipped with a 50-pin female connector.

Figure 9-2 shows two typical 900-pair terminal block configurations of 110-type hardware arranged for use in the trunk/auxiliary field. One 900-pair terminal block will terminate 288 three-pair circuits and two 900-pair terminal blocks will terminate 576 three-pair circuits.

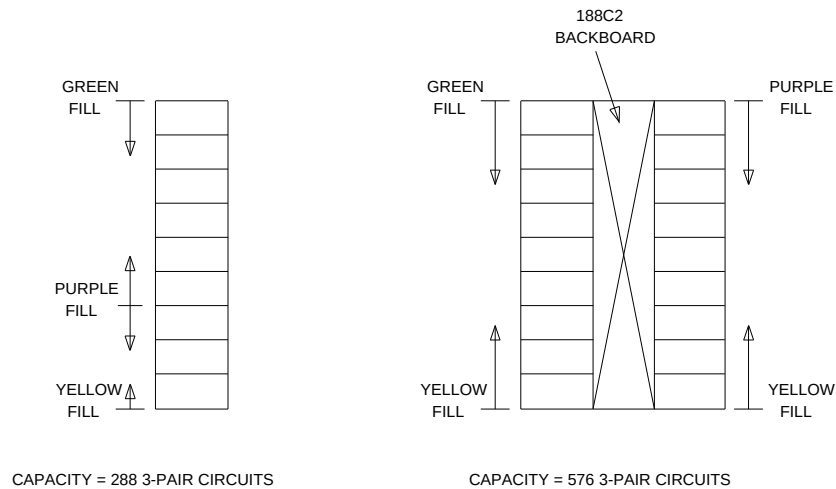


Figure 9-2. 900-Pair Trunk/Auxiliary Field Arrangements

The 900-pair 110P-type terminal block recommended for the trunk/auxiliary field is the:

- 110PC1-900CB which is equipped with 36 female 50-pin connectors. The connectors are mounted at the bottom of the terminal block. This allows for easy cable routing to the floor and/or the cable slack manager as required.
- 110PC1-900CT which is equipped with 36 female 50-pin connectors. The connectors are mounted at the top of the terminal block. This can be used if cable routing from the top is desirable.

Distribution Field

The distribution field contains four distinct cross-connect areas:

- The purple field (port field) terminates 25-pair cables from the switch. Each line circuit pack connects to one 66-type connecting block or to one 25-pair row of the 110-type terminal block. One 25-pair cable is required for each line circuit pack.

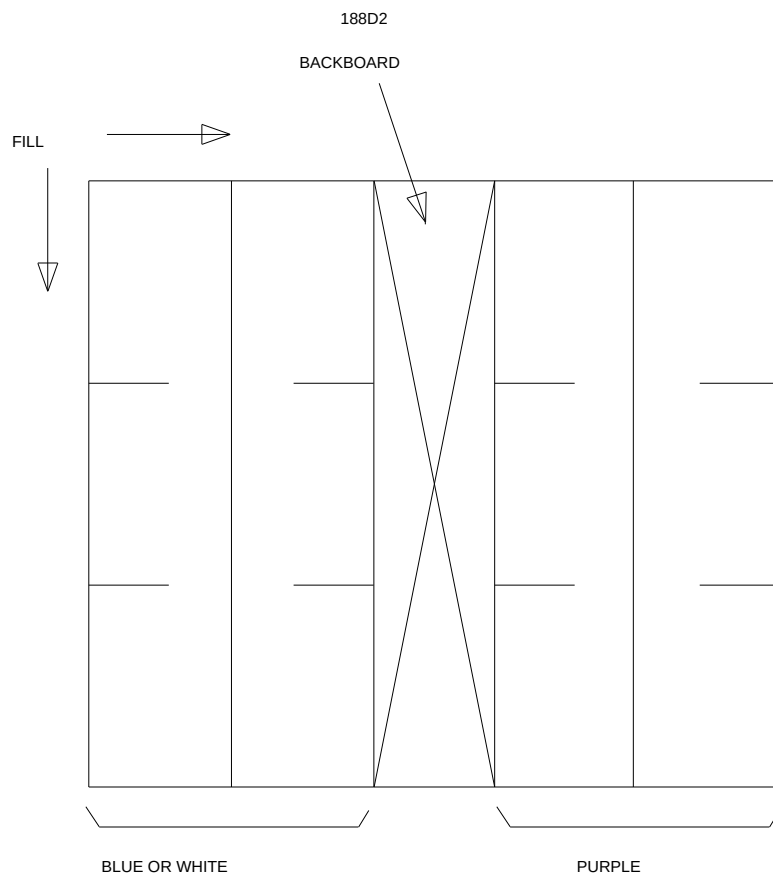
⇒ NOTE:

This is the case except for the 16 port analog circuit pack and the MET circuit pack. The 16-port analog line circuit pack requires an adapter cable to connect from one connector on the switch to two 25-pair connectors on a 66-type connecting block/110-type terminal block. Two MET circuit packs require a concentrator cable to connect from two connectors on the switch to one 25-pair connector on a 66-type connecting block/110-type terminal block.

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

Distribution Field (110-Type Hardware Only)

Figure 9-3 shows a typical 300-pair terminal block configuration of 110-type hardware arranged for use in the distribution field. One 300-pair terminal block will terminate 192 three-pair port circuits (purple field), and either 192 three-pair station circuits (white or blue field) or 144 four-pair station circuits (blue field).



CAPACITY WHITE FIELD = 192 3-PAIR CIRCUITS

CAPACITY BLUE FIELD = 144 4-PAIR CIRCUITS

OR 192 3-PAIR CIRCUITS

CAPACITY PURPLE FIELD = 192 3-PAIR CIRCUITS

Figure 9-3. Distribution Field Arrangement of 110-Type Hardware: Four 300-Pair Terminal Blocks

Figure 9-4 shows a typical 300-pair terminal block configuration of 110-type hardware arranged for use in the distribution field. This configuration will terminate 384 three-pair port circuits (purple field), and either 384 three-pair station circuits (white or blue field) or 288 four-pair station circuits (blue field).

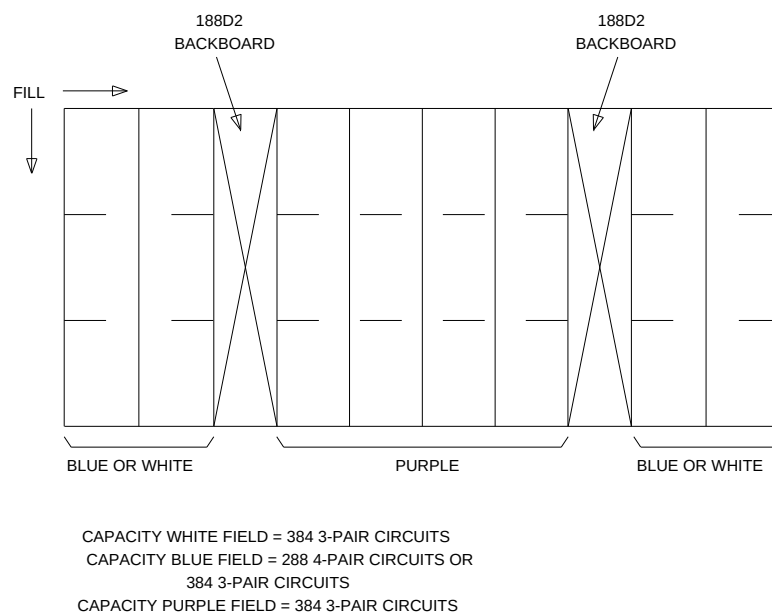
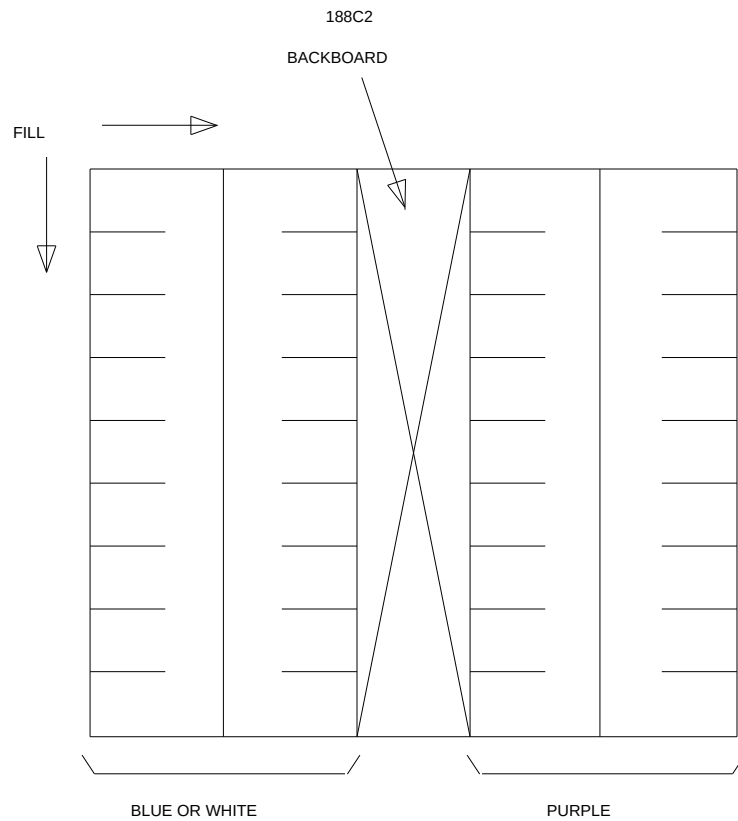


Figure 9-4. Terminal Blocks Distribution Field Arrangement of 110-Type Hardware: Eight 300-Pair Terminal Blocks

Figure 9-5 shows a typical 900-pair terminal block configuration of 110-type hardware arranged for use in the distribution field. This configuration will terminate 576 three-pair port circuits (purple field), and either 576 three-pair station circuits (white or blue field) or 432 four-pair station circuits (blue field).



CAPACITY WHITE FIELD = 576 3-PAIR CIRCUITS

CAPACITY BLUE FIELD = 432 4-PAIR CIRCUITS OR
576 3-PAIR CIRCUITS

CAPACITY PURPLE FIELD = 576 3-PAIR CIRCUITS

Figure 9-5. Distribution Field Arrangement of 110-Type Hardware: Four 900-Pair Terminal Blocks

Figure 9-6 shows a typical 900-pair terminal block configuration of 110-type hardware arranged for use in the distribution field. This configuration will terminate 1152 three-pair port circuits (purple field), and either 1152 three-pair station circuits (white or blue field) or 864 four-pair station circuits (blue field).

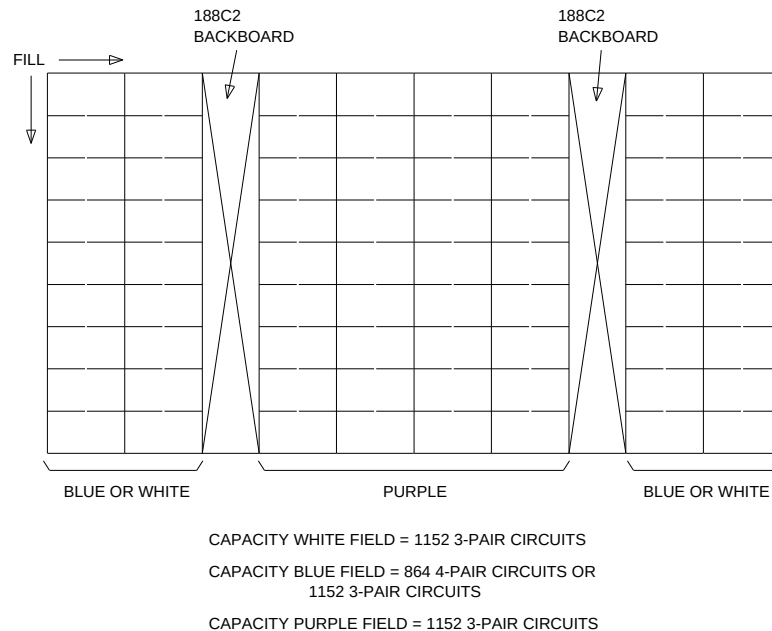


Figure 9-6. Distribution Field Arrangement of 110-Type Hardware: Eight 900-Pair Terminal Blocks

The following 110-type terminal blocks (Table 9-1) can be used in the distribution field.

- a. The 110AC1-300STM/6 is a factory assembled 300-pair terminal block. It is equipped with twelve, 6-foot long, 25-pair cable stubs. Each cable stub exits from the top of the block, and is equipped with a 50-pin male miniature ribbon connector.
- b. The 110AC1-300STF/6 is a factory assembled 300-pair terminal block. It is equipped with twelve, 6-foot long, 25-pair cable stubs. Each cable stub exits from the top of the block, and is equipped with a 50-pin female miniature ribbon connector.
- c. The 110AB1-100FT is a 100-pair terminal block (110AW1-100) for use when the wiring is to be field terminated. It provides termination space for twenty-four 4-pair circuits.
- d. The 110AB1-300FT is a 300-pair terminal block (110AW1-100) for use when the wiring is to be field terminated. It provides termination space for seventy-two 4-pair circuits.
- e. The 110AC1-100FT is a 100-pair terminal block (110AW1-100) for use when the wiring is to be field terminated. It provides termination space for thirty-two 3-pair circuits.
- f. The 110AC1-300FT is a 300-pair terminal block (110AW1-100) for use when the wiring is to be field terminated. It provides termination space for ninety-six 3-pair circuits.

Table 9-1. Distribution Field: 110A-Type Terminal Blocks

3-Pair Port Field (Purple)	4-Pair Station Field (Blue)	3-Pair Station Field (Blue or White)
110AC1-300STM/6	110AB1-100FT	110AC1-100FT
110AC1-300STF/6	110AB1-300FT	110AC1-300FT
		110AC1-300STM/6
		110AC1-300STF/6

The following 300-pair 110-type terminal blocks (Table 9-2) can be used in the distribution field.

- a. The 110PC1-300CT is a factory assembled 300-pair terminal block. It is equipped with twelve female 50-pin miniature ribbon connectors that are mounted at the top of the block. The terminal block provides termination space for ninety-six 3-pair circuits.

- b. The 110PB1-300CT is a factory assembled 300-pair terminal block. It is equipped with twelve female 50-pin miniature ribbon connectors that are mounted at the top of the block. The terminal block provides termination space for seventy-two 4-pair circuits.
- c. The 110PB1-300FT is a 300-pair terminal block (110DW1-100) for use when the wiring is to be field terminated. It provides termination space for seventy-two 4-pair circuits.
- d. The 110PC1-300FT is a 300-pair terminal block (110DW1-100) for use when the wiring is to be field terminated. It provides termination space for ninety-six 3-pair circuits.

Table 9-2. Distribution Field: 300-Pair 110P-Type Terminal Blocks

3-Pair Port Field (Purple)	4-Pair Station Field (Blue)	3-Pair Station Field (Blue or White)
110PC1-300CT	110PB1-300CT	110PC1-300CT
	110PB1-300FT	110PC1-300FT

The following 900-pair 110-type terminal blocks (Table 9-3) can be used in the distribution field.

- a. The 110PC1-900CT is a factory assembled 900-pair terminal block. It is equipped with thirty-six female 50-pin miniature ribbon connectors that are mounted at the top of the block. The terminal block provides termination space for 576 3-pair circuits.
- b. The 110PC1-900CB is a factory assembled 900-pair terminal block. It is equipped with thirty-six female 50-pin miniature ribbon connectors that are mounted at the bottom of the block. The terminal block provides termination space for 576 3-pair circuits.
- c. The 110PB1-900CT is a factory assembled 900-pair terminal block. It is equipped with thirty-six female 50-pin miniature ribbon connectors that are mounted at the top of the block. The terminal block provides termination space for 432 4-pair circuits.
- d. The 110PB1-900CB is a factory assembled 900-pair terminal block. It is equipped with thirty-six female 50-pin miniature ribbon connectors that are mounted at the bottom of the block. The terminal block provides termination space for 432 4-pair circuits.
- e. The 110PB1-900FT is a 900-pair terminal block for use when the wiring is to be field terminated. It provides termination space for 432 4-pair circuits.

- f. The 110PC1-900FT is a 900-pair terminal block for use when the wiring is to be field terminated. It provides termination space for 576 3-pair circuits.

Table 9-3. Distribution Field: 900-Pair 110P-Type Terminal Blocks

3-Pair Port Field (Purple)	4-Pair Station Field (Blue)	3-Pair Station Field (Blue or White)
110PC1-900CB	110PB1-900CB	110PC1-900CB
110PC1-900CT	110PB1-900CT	110PC1-900CT
	110PB1-900FT	110PC1-900FT

Distribution Field (66-Type Hardware)

Figure 9-7 shows a typical cross-connect field using 66-type hardware. It is possible that only a few 66-type connecting blocks will be required in the trunk/auxiliary field for the green and yellow fields. For this reason, if 157B connecting blocks mounted on a purple 183-type or 166-type backboard is used as the trunk/auxiliary field, then some of the extra connecting blocks in the purple field can be used as the green and yellow fields to save ordering extra backboards and connecting blocks. When this is done, the green and yellow fields should be clearly identified to avoid confusion. When white backboards are required for cross-connections with a satellite closet, they must be ordered from an outside vendor. If a blue backboard is used for these cross-connections, then the part of the blue field that is functionally used as the white field, should be clearly identified.

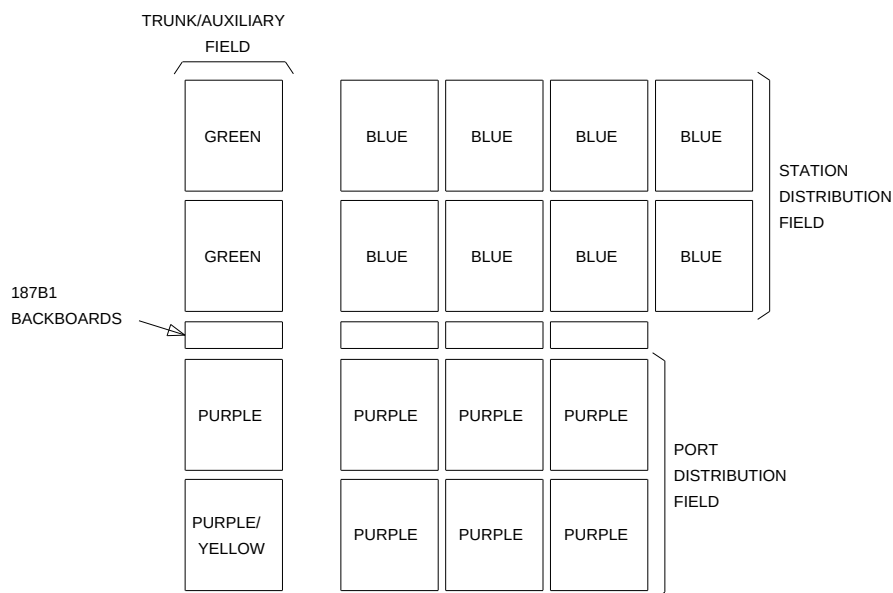


Figure 9-7. Typical Cross-Connect Field Arrangement Using 66-Type Hardware

The 66-type connecting blocks can be mounted directly onto the wall without using colored backboards. If this is the case, all of the cross-connect field functional colors should be identified on the wall.

Cross-Connect Field

Typical Cross-Connect Field Using 110-Type Hardware

The cross-connect field is located directly behind the switch cabinet. Figure 9-8 shows a typical cross-connect field installation using 110A-type terminal blocks. Figure 9-9 shows a typical cross-connect field installation using 300-pair 110P-type terminal blocks, and Figure 9-10 shows a typical cross-connect field using 900-pair 110P-type terminal blocks.

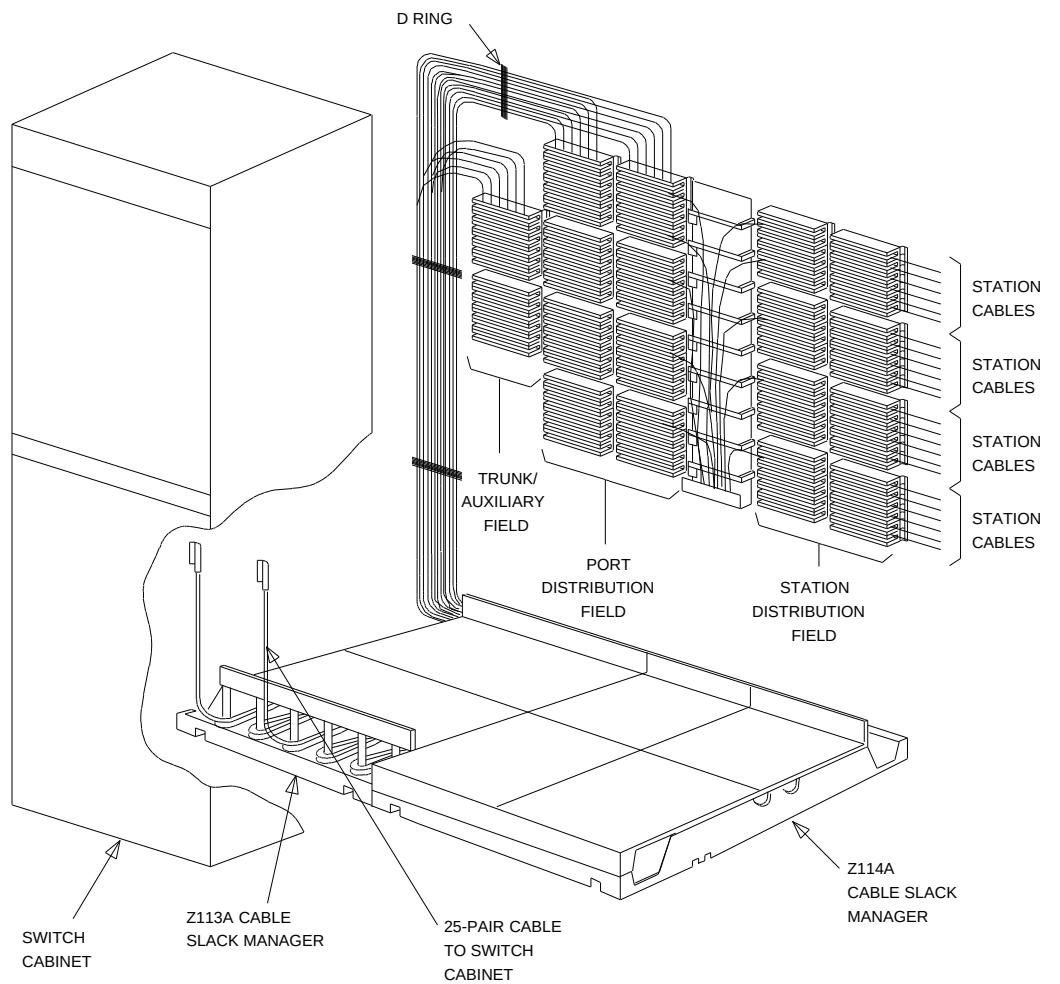


Figure 9-8. Typical Cross-Connect Field Installation: 110A-Type Terminal Blocks (Approximately 576 4-Pair or 768 3-Pair Station Capacity Illustrated)

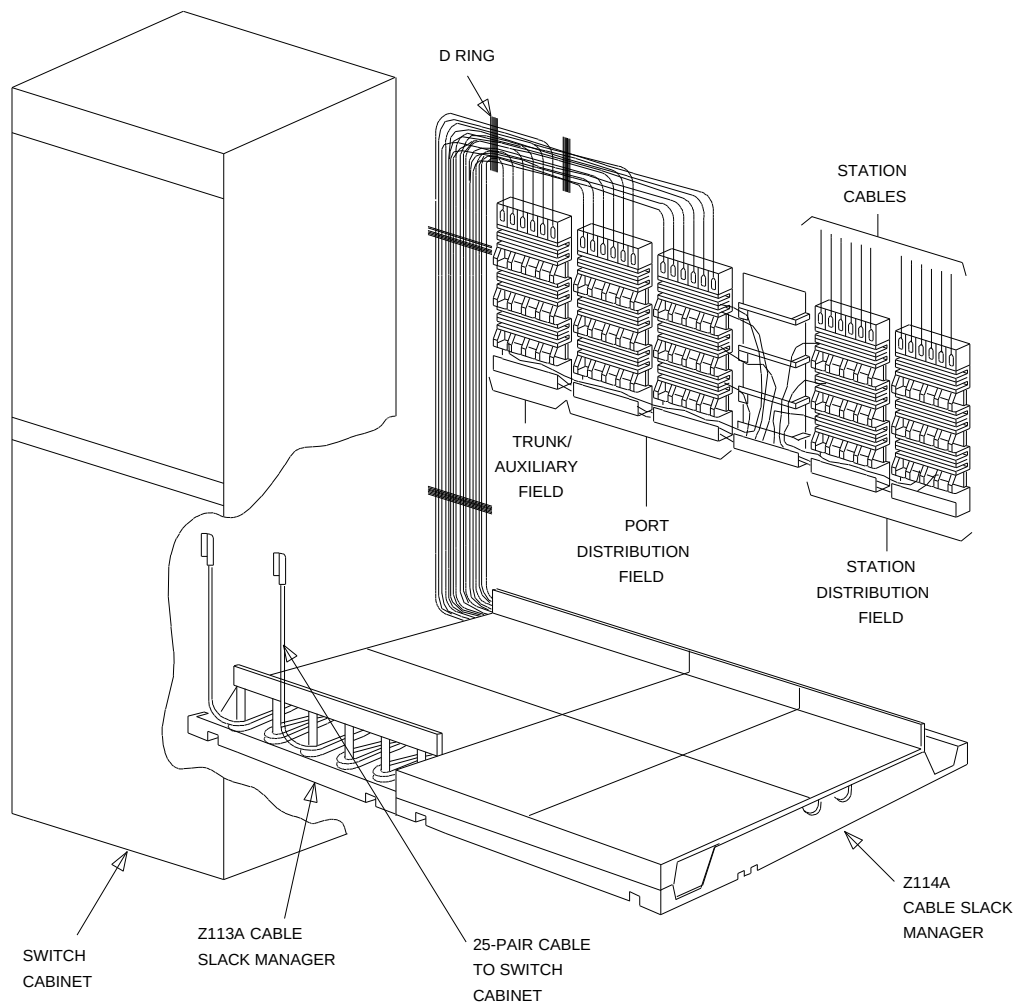


Figure 9-9. Typical Cross-Connect Field Installation: 300-Pair 110P-Type Terminal Blocks (Approximately 288 4-Pair or 384 3-Pair Station Capacity Illustrated)

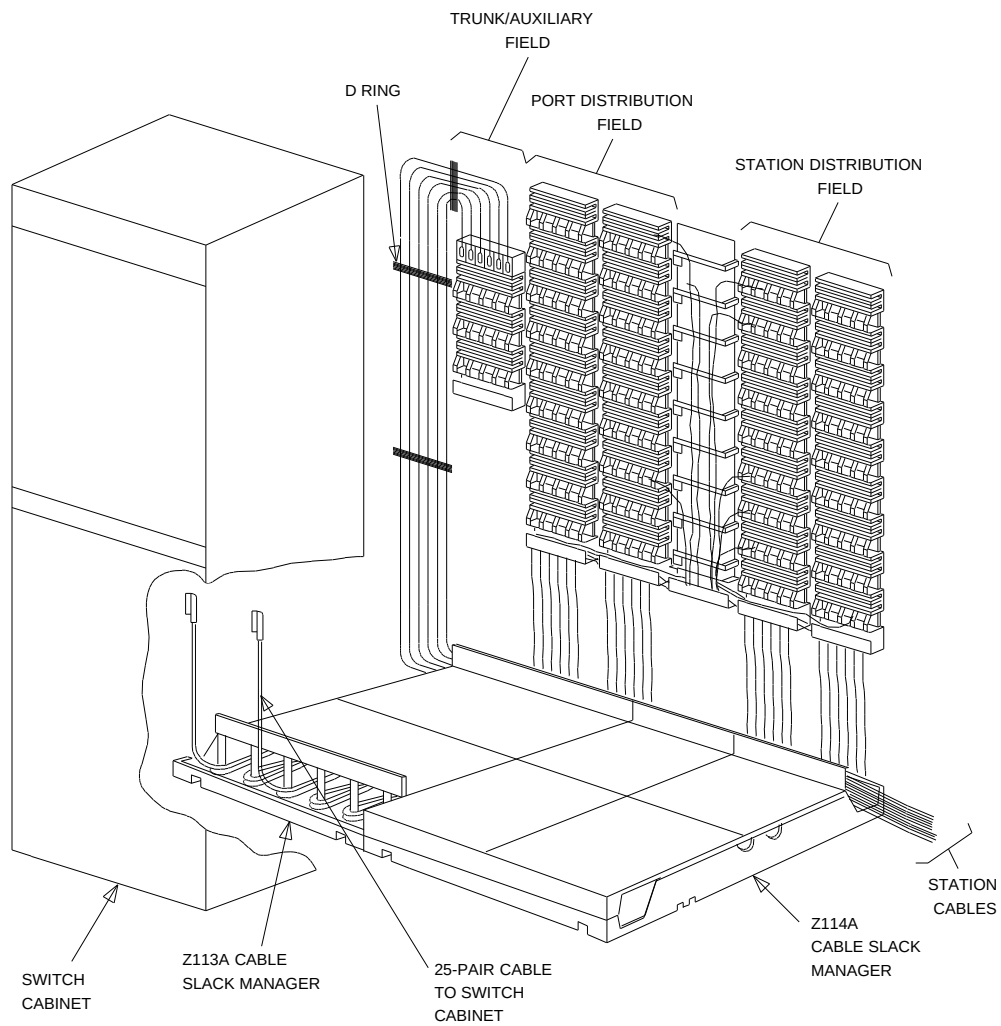


Figure 9-10. Typical Cross-Connect Field Installation: 900-Pair 110P-Type Terminal Blocks (Approximately 432 4-Pair or 576 3-Pair Station Capacity Illustrated)

Typical Cross-Connect Field Using 66-Type Hardware

Figure 9-11 shows a typical cross-connect field installation using 66-type connecting blocks.

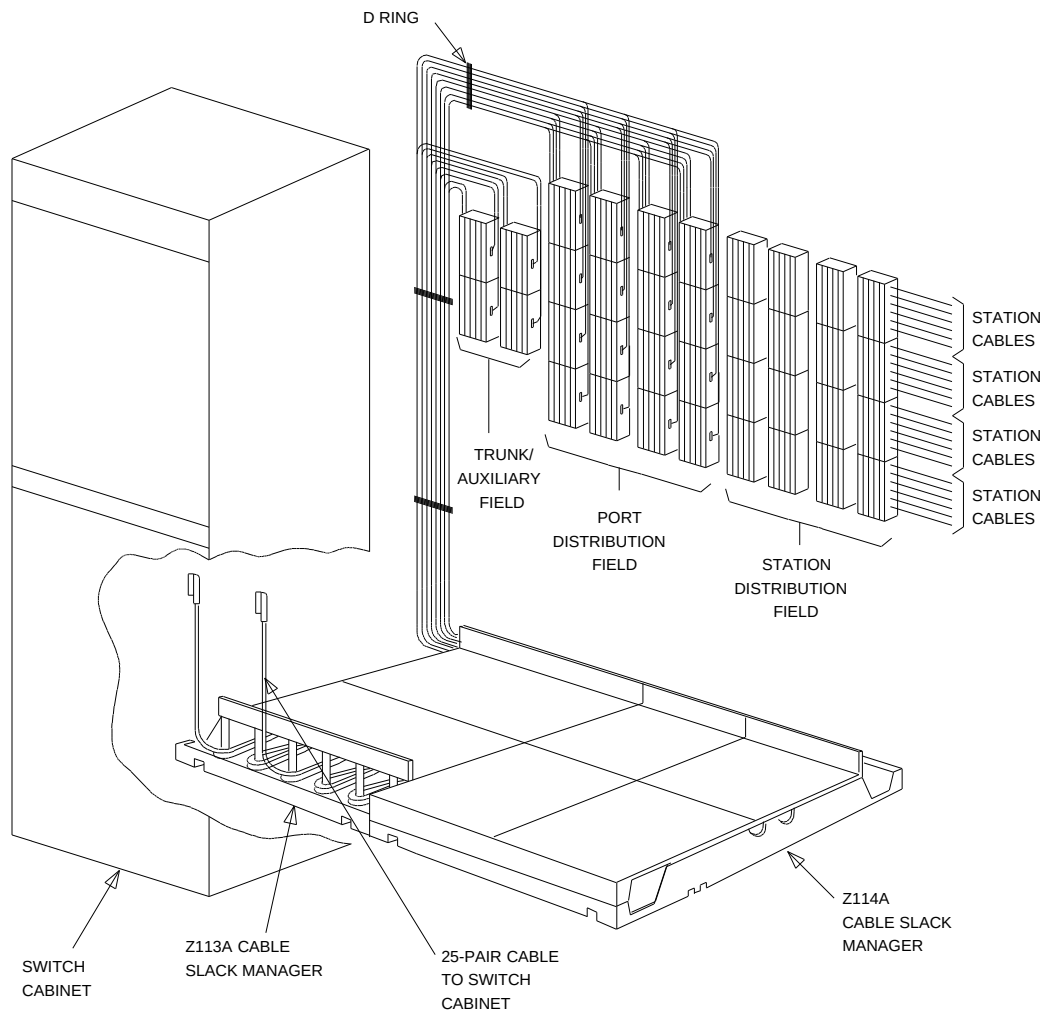


Figure 9-11. Typical Cross-Connect Field Installation Using 66-Type Connecting Blocks

Wall Space Requirements

Approximately 8 inches of horizontal wall space is required for each column of sneak fuse panels. Horizontal wall space must also be provided for emergency transfer units.

Wall Space Requirements for 110-Type Hardware

The trunk/auxiliary field and the distribution field are mounted on the same wall. Each 110P-type terminal block is 8-1/2 inches wide. Vertical patch cord troughs are 5-5/16 inches wide and horizontal patch cord troughs are 23 inches wide.

Each 110A-type terminal block is 10-13/16 inches wide; however, no horizontal patch cord troughs are used and the blocks are shorter than 110P-type terminal blocks. This allows the 110A-type terminal blocks to be stacked. Therefore, the 110A-type hardware requires less space than the 110P-type hardware on a per-station basis.

Wall Space Requirements for 66-Type Hardware

The trunk/auxiliary field and the distribution field are mounted on the same wall.

If the 66-type connecting blocks are being mounted directly on a wall, the space requirements of a 183-type backboard should be used to figure the amount of wall space required for the connecting blocks. This method allows enough space between the connecting blocks for jumper wires and cable connections. The 183A-type backboard mounts four 66-type connecting blocks and is 8-1/2 inches wide and 20 inches tall. The 183B-type backboard mounts eight 66-type connecting blocks, and is 17 inches wide and 20 inches tall.

When multiple mountings are required, each 166-type mounting is 17 inches wide and 20 inches tall, and each 154A-type mounting is 8-1/2 inches wide and 20 inches tall.

The 187B1 backboard, equipped with pegs, is 17 inches wide and 6-1/2 inches tall.

Equipment Requirements

Cable Slack Manager Requirements

A cable slack manager is 32 inches wide. Slack managers are normally used in installations of three cabinets or less. The quantity of cable slack managers required is determined by dividing the total length of the cross-connect field (in inches) by 32. A partial number of .4 or less should be rounded down, and a partial number of .5 or more should be rounded up (for example: 2.4 = 2 cable slack managers and 2.5 = 3 cable slack managers required).

110-Type Hardware and Patch Cord Requirements

Table 9-4 lists the amount of 110-type hardware required to provide 1-, 2-, 3-, or 4-pair distribution for the station wiring. The 110-type terminal blocks are available in various sizes and the number of stations connected to each block depends on the number of pairs that are run per station.

Table 9-4. 110-Type Hardware Requirements

Available Block Pairs	Station Wiring			
	1-Pair Wiring*	2-Pair Wiring*	3-Pair Wiring	4-Pair Wiring
75	75	36	24	18
100	100	48	32	24
300	300	144	96	72
900	900	432	288	216

* 1- and 2-pair wiring is only possible for analog type telephones that are cross-connected with 110A-type hardware.

Table 9-5 shows an algorithm for patch cord requirements based on the line capacity of the switch.

Table 9-5. 110 Patch Cord Requirements

Line Size	Patch Cord Length	Percent of Line Size Required
0-216	2 Feet	10.0%
	3 Feet	16.5%
	4 Feet	29.3%
	5 Feet	26.0%
	6 Feet	18.2%
	7 Feet	0%
	8 Feet	0%
	9 Feet	0%
216-648	2 Feet	5.5%
	3 Feet	15.5%
	4 Feet	29.3%
	5 Feet	27.0%
	6 Feet	15.9%
	7 Feet	6.8%
	8 Feet	0%
	9 Feet	0%
648-800	2 Feet	3.0%
	3 Feet	10.3%
	4 Feet	22.1%
	5 Feet	25.7%
	6 Feet	22.5%
	7 Feet	8.5%
	8 Feet	5.7%
	9 Feet	2.2%

66-Type Hardware Requirements

Table 9-6 lists the amount of 66-type hardware required to provide 1-, 2-, 3-, or 4-pair distribution for station wiring. Each 66-type connecting block can terminate 25-pairs. The quantity of blocks required per switch depends on the number of pairs required per station.

Table 9-6. 66-Type Hardware Requirements

66M150 Blocks Required	Station Range			
	1-Pair Wiring*	2-Pair Wiring*	3-Pair Wiring	4-Pair Wiring
1	1-24	1-12	1-8	1-6
2	25-48	13-24	9-16	7-12
3	59-72	25-36	17-24	13-18
4	73-96	37-48	25-32	19-24
5	97-120	49-60	33-40	25-30
6	121-144	61-72	41-48	31-36
7	145-168	73-84	48-56	37-42
8	169-192	85-96	57-64	43-48
9	193-216	97-108	65-72	49-54
10	217-240	109-120	73-80	55-60
11	241-264	121-132	81-88	61-66
12	265-288	133-144	89-96	67-72
13	289-312	145-156	97-104	73-78
14	313-336	157-168	105-112	79-84
15	337-360	169-180	113-120	85-90
16	361-384	181-192	121-128	91-96
17	385-408	193-204	129-136	97-102
18	409-432	205-216	137-144	103-108
19	433-456	217-228	145-152	109-114
20	457-480	229-240	153-160	115-120

* 1- and 2-pair wiring is used only for analog type sets.

Equipment Room Hardware and Cabling Installation

Hardware Installation

The procedures, provided in this guide, for installing hardware are written so that one system technician can do the installation. Procedures are provided for installing the following:

- Cross-connect field
- Cable slack managers
- Labels for cross-connect field
- Sneak fuse panels

Installing the Cross-Connect Field

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

Wall Mounting 110A-Type Terminal Blocks

The 110A-type hardware can be stacked in almost any arrangement at any height or location on the wall. One arrangement is shown in Figure 9-11. The distance between the mounting screw holes on the terminal blocks is 10-13/16 inches. If a vertical patch cord trough is to be used, the distance between the mounting screw holes is 5-5/16 inches.

Wall Mounting 110P-Type Terminal Blocks

The first terminal block of the trunk/auxiliary field is aligned with the left side of the switch cabinet (Figures 9-10 or 9-11). This arrangement allows for growth on the right side of the cross-connect field.

To install the cross-connect field, proceed as follows:

1. If 300-pair terminal blocks are to be installed, draw a level horizontal line on the wall 47-1/2 inches above the floor (Figure 9-12). If 900-pair terminal blocks are to be mounted, draw a level horizontal line on the wall 23 inches above the floor (Figure 9-13).

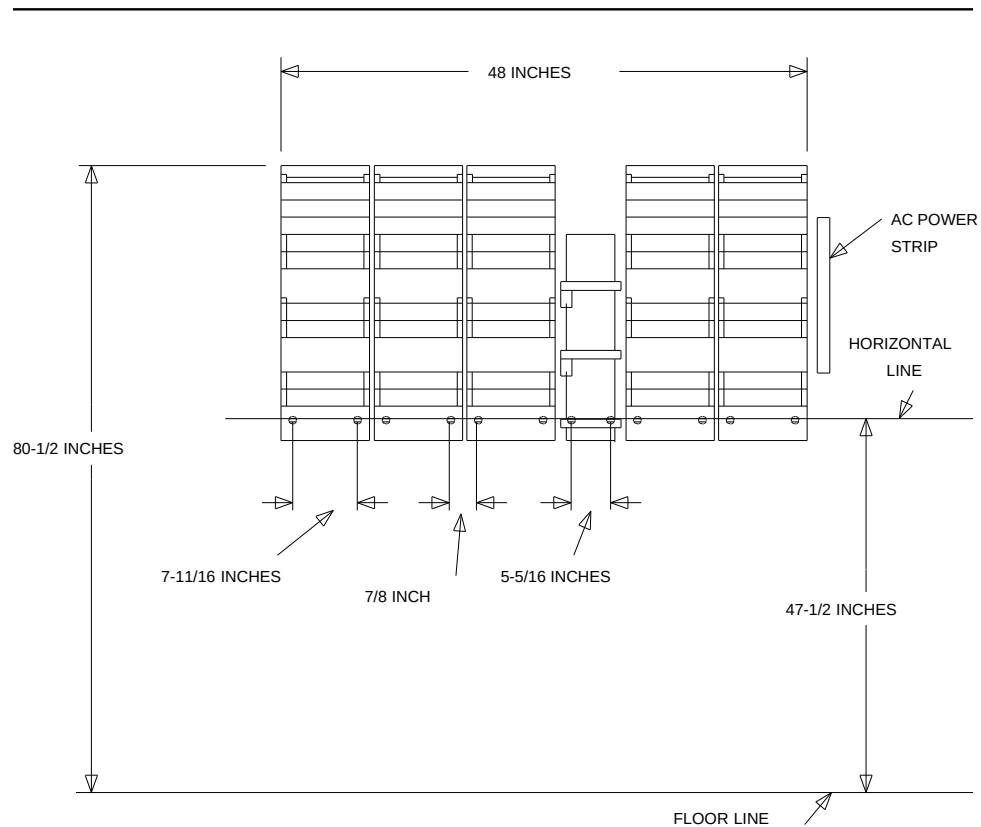


Figure 9-12. Mounting 300-Pair 110P-Type Terminal Blocks (Approximately 288 4-Pair or 384 3-Pair Station Capacity Illustrated)

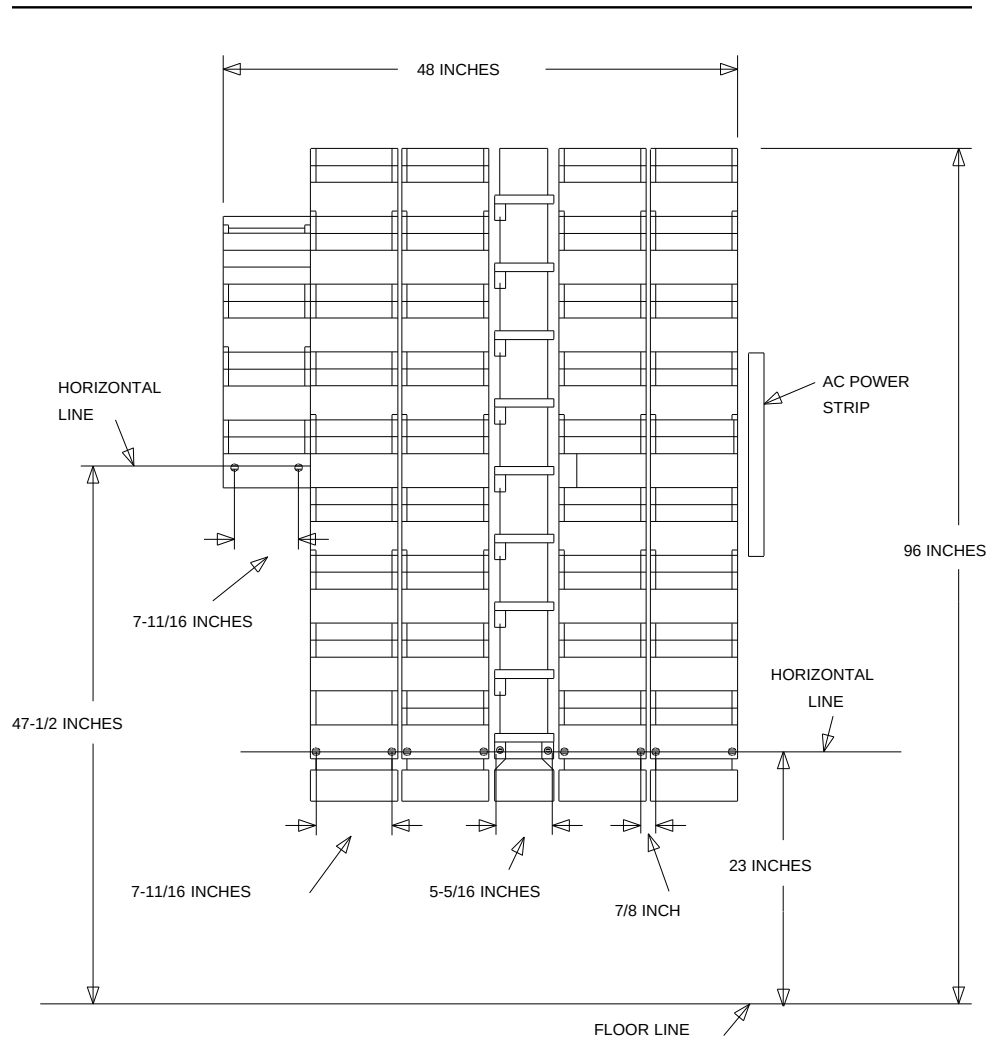


Figure 9-13. Mounting 900-Pair 110P-Type Terminal Blocks (Approximately 432 4-Pair or 576 3-Pair Station Capacity Illustrated)

2. To mount the first trunk/auxiliary field terminal block, partially install two 3/4-inch No. 12 wood screws, 7-11/16 inches apart on the left side of the horizontal line on the wall
3. Slide the bottom terminal block feet onto the mounting screws and mark the upper mounting screw locations.
4. Remove the terminal block and partially install the upper mounting screws.
5. Place the terminal block on the mounting screws and tighten the screws.
6. If a vertical patch cord trough is to be installed, partially install the first screw for the patch cord trough, on the line, 7/8 inch to the right of the previous screw. Partially install the second mounting screw 5-5/16 inches to the right of the screw just installed. Repeat Steps 3, 4, and 5.
7. If another trunk/auxiliary field terminal block is to be installed, partially install the first screw for the terminal block, on the line, 7/8 inch to the right of the previous screw. Partially install the second mounting screw 7-11/16 inches to the right of the screw just installed. Repeat Steps 3, 4, and 5.
8. If a horizontal patch cord trough is to be installed, install it, on the line, between the trunk/auxiliary field and the distribution field.
9. To install the first distribution field terminal block, partially install two 3/4-inch, No. 12 wood screws, 7-11/16 inches apart on the line, to the right of the vertical patch cord trough. Repeat Steps 3, 4, and 5.
10. If another distribution field terminal block is to be installed, partially install the first screw for the terminal block, on the line, 7/8 inch to the right of the previous screw. Partially install the second mounting screw 7-11/16 inches to right of the screw just installed. Repeat Steps 3, 4, and 5.
11. If a vertical patch cord trough is to be installed in the distribution field, go to Step 6.
12. Repeat Steps 10 and 11 until all the terminal blocks and vertical patch cord troughs in the distribution field have been installed.

Frame Mounting 110P-Type Terminal Blocks

The 900-pair 110P-type terminal blocks and the associated patch cord troughs can also be mounted on a free-standing, floor-mounted 1110A2 apparatus mounting frame (Figure 9-14). Each 1110A2 apparatus mounting frame provides the space to mount five terminal blocks/patch cord troughs on each side of the frame. A cable support structure, apparatus mounting 1110C1, mounts directly on top of the 1110A2 apparatus mounting frame and provides support for all cables routed to and from the frame.

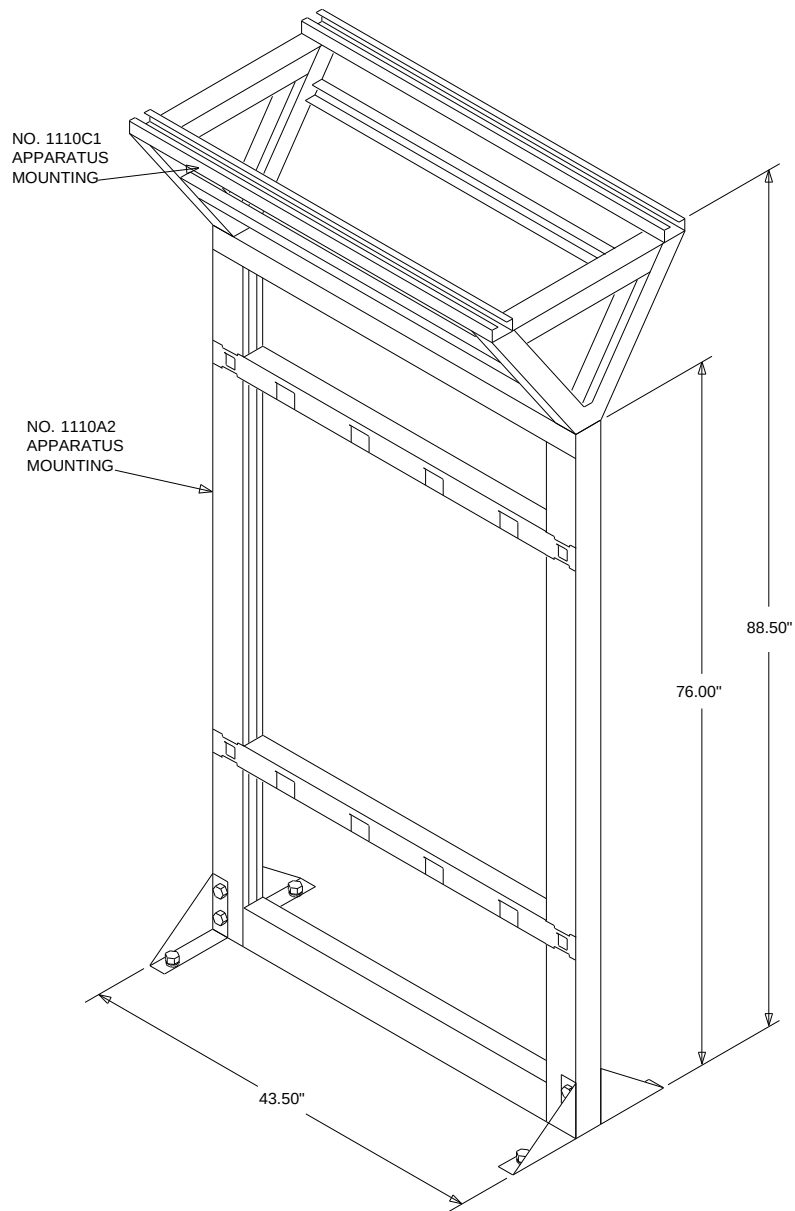


Figure 9-14. 1110A2 and 1110C1 Apparatus Mountings

Apparatus Mounting Frame Ordering Information		
Code Number	Description	Comcode
1110A2	Apparatus Mounting Frame	104032495
1110C1	Cable Support Assembly	104175120
1110A1	End Dress Panel	104176268
2110A1	Top Dress Panel	104176276
2110B1	Bottom Dress Panel	104176284

Wall Mounting 66-Type Connecting Blocks

The first column of 66-type connecting blocks should be aligned with the left side of the switch cabinet (Figure 9-7). This arrangement allows for orderly growth toward the right side of the cross-connect field.

The connectorized 66-type connecting blocks are factory wired for cable routing from the top so that the cable connector will align with the connector on the connecting block. If cable routing from the bottom is desired, then the connector on the connecting block must be removed and rotated 180 degrees. Then, the connector must be relocated in the previously unoccupied hole because the connecting block leads are not long enough to reach the hole where the connector was previously mounted. The VELCRO¹ cable retainer must also be relocated.

To install the cross-connect field, proceed as follows:

1. Draw a level horizontal line on the wall 12 inches above the floor (Figure 9-15).

1. Registered trademark of VELCRO U.S.A. Inc..

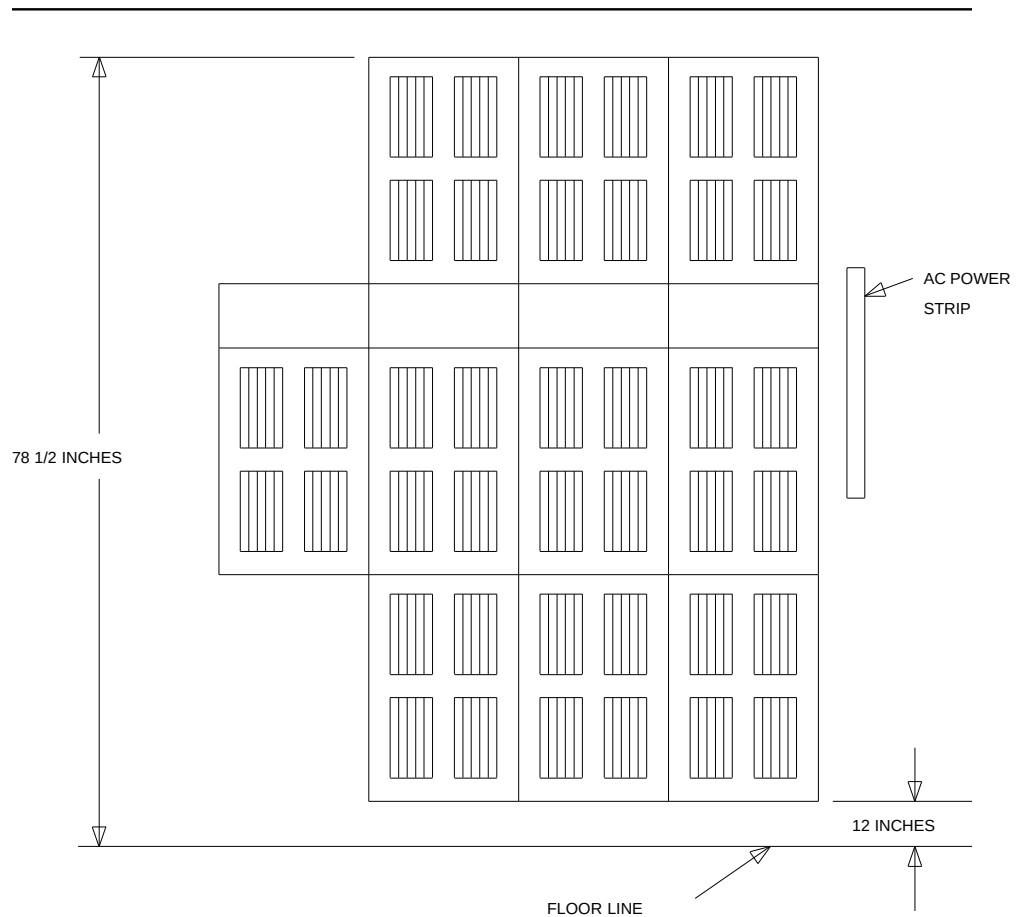


Figure 9-15. Cross-Connect Field Installation, 66-Type Connecting Blocks

2. Place bottom of the first backboard/connecting block on the line and align it vertically with the left side of the switch cabinet. Mark the mounting holes.
3. Remove the backboard/connecting block and drill holes in the wall for 3/4-inch No. 12 wood screws.
4. Move the backboard/connecting block into place and fasten it to the wall with 3/4-inch No. 12 wood screws.
5. The next backboard/connecting block can be mounted to the right or above the one just installed, depending on space requirements. Repeat Steps 2, 3 and 4 until each backboard or connecting block has been installed.



NOTE:

The 66-type connecting blocks should not be installed more than 78-1/2 inches above the floor.

Installing Cable Slack Managers

To install the cable slack managers (Figure 9-11), proceed as follows:

1. Place the Z113A cable slack manager against the wall under the cross-connect field (Figure 9-11), 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 previously installed 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) are provided in a cable slack manager base in the event earthquake mounting is required. 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 must be obtained locally.

Labeling the Cross-Connect Field

Labeling 110-Type Terminal Blocks

Figure 9-16 shows the graphic symbols used (instead of words) on labels for the switch, cross-connections, information outlets, and cables for the system. The labels are color-coded to identify system wiring as follows:

- Green — Leads to CO
- Purple — Leads to switch ports
- Yellow — Leads to auxiliary equipment and miscellaneous switch leads
- Blue — Leads to information outlets
- White — Leads from the cross-connect field to the satellite locations (3-pair)

		Designations
	Cabinet	1, 2, 3 . . . n
	Carrier	A, B, C, D, E
	Slot	1, 2, 3 . . . 20
	Information Outlet	1, 2, 3 . . . 560
	Site/Satellite Closet	A, B, C, D, E, F
	Tie Circuit	1, 2, 3 . . . n
	Floor	Write Floor or Building Identification on Label as Required for Easy Identification.
	Building	

Figure 9-16. System Label Graphic Symbols and Designation Nomenclature

Each 110-type label is used to identify 2 rows on the 110-type terminal block. The upper half of the label identifies the row above it and the lower half of the label identifies the row below it. The labels are inserted into the clear plastic designation strips (Figure 9-17) that are furnished with the 110-type terminal blocks. After the label has been inserted into the designation strip, the designation strip is snapped into place between the 110-type terminal block rows. Label code number 220A (comcode 103970000) contains all of the 110-type labels.

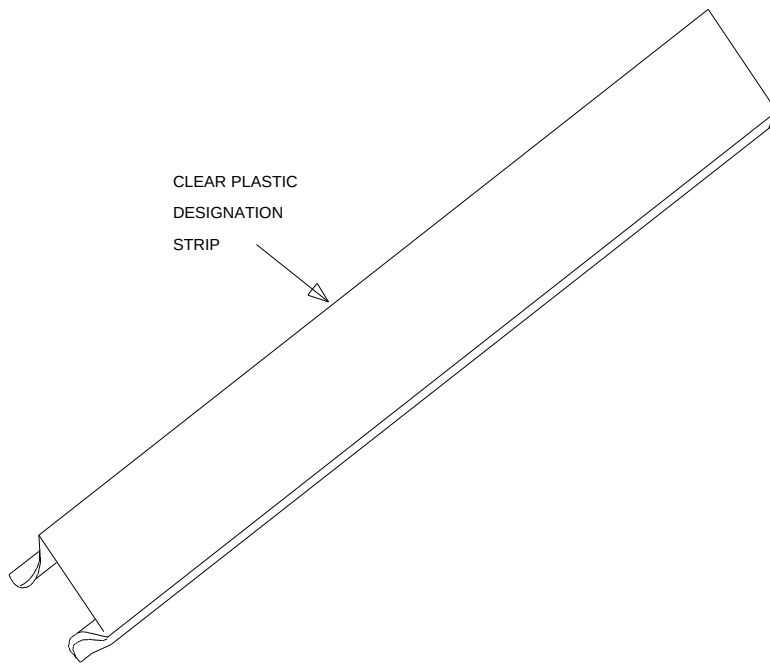


Figure 9-17. Clear Plastic Designation Strip

CO Trunk Labels (Green)

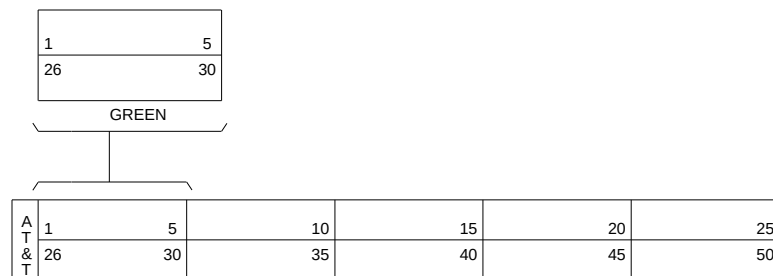
The labels shown in Figure 9-18 identify the network interface leads for trunk circuits. On the top label, cable pairs are numbered consecutively from 1 to 300 (in groups of five). The bottom label is blank and must be filled in manually as required.

LN=1 LNS=1

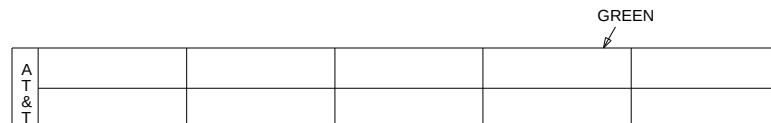
Label Code 221A — Green Labels (Comcode 103970018)

Label code number 221A contains the following CO trunk labels:

- (6) green trunk labels (Figure 9-18). The labels are numbered from 1 to 300. Each label identifies 50 trunk pairs.
- (4) unnumbered green labels (Figure 9-18). Each label identifies 50 trunk pairs.



- **USAGE:**
IDENTIFIES NETWORK INTERFACE TRUNK PAIRS.
- **CODE NO:**
221A



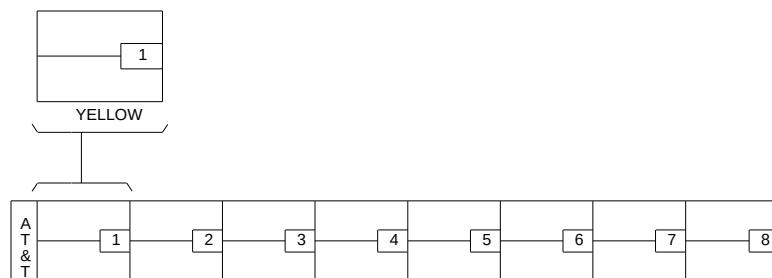
- **USAGE:**
CUSTOMER IDENTIFICATION OF NETWORK
INTERFACE TRUNK PAIRS.
- **CODE NO:**
221A

Figure 9-18. CO Trunk Labels for 110-Type Terminal Blocks

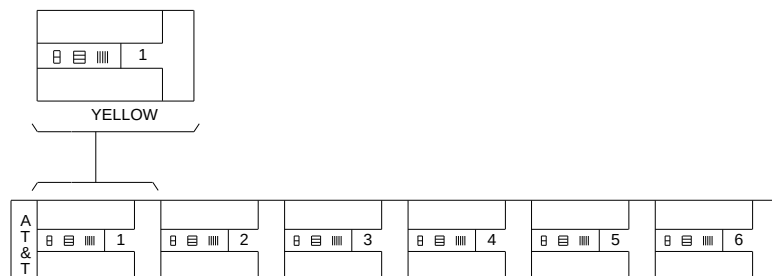
Auxiliary Labels (Yellow)

AUXILIARY PORT AND CIRCUIT LABELS

The labels shown in Figure 9-19 identify auxiliary port and circuit appearances at the cross-connect field. The labels must be filled in manually. (AP port identification does not apply to G3.)



- **USAGE:**
IDENTIFIES 3-PAIR AUXILIARY
CIRCUITS 1 THROUGH 8
- **CODE NO:**
222A

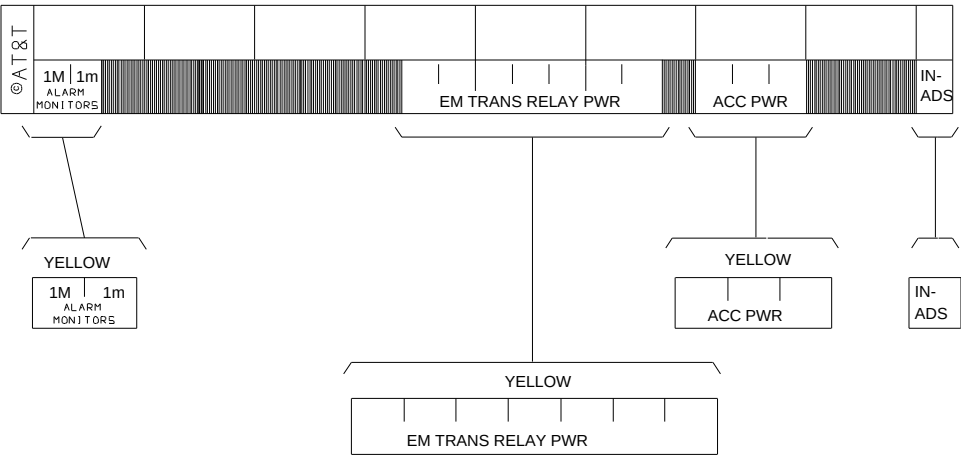


- **USAGE:**
IDENTIFIES SSI PORTS 1 THROUGH 6
FROM AN AP.
- **CODE NO:**
222A

Figure 9-19. Auxiliary Port and Circuit Appearance Labels for 110-Type Terminal Blocks

AUXILIARY CIRCUIT AND CONTROL CARRIER OUTPUTS (AUXILIARY) LABELS

The labels shown in Figures 9-20 and 9-21 identify auxiliary circuit appearances and the control carrier **AUXILIARY** connector outputs for multi-carrier and single-carrier cabinets, respectively. The top half of the labels identify auxiliary circuit appearances and must be filled in manually. The bottom half of the labels identify the control carrier **AUXILIARY** connector outputs.



- USAGE:
IDENTIFIES CONTROL CARRIER OUTPUTS (AUXILIARY) AND
AUXILIARY CIRCUITS
- CODE NO:
222A

Figure 9-20. Auxiliary Circuit and Control Carrier Outputs (AUXILIARY) Labels for 110-Type Terminal Blocks: G1 Multi-Carrier Cabinet

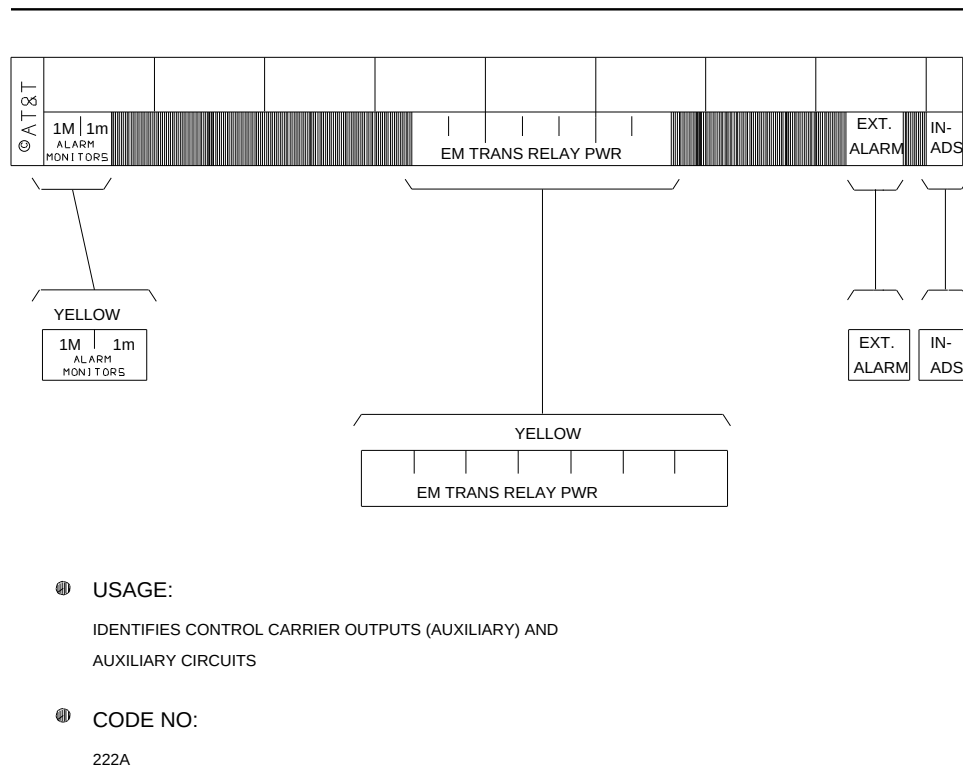
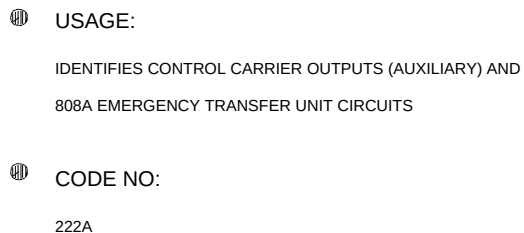
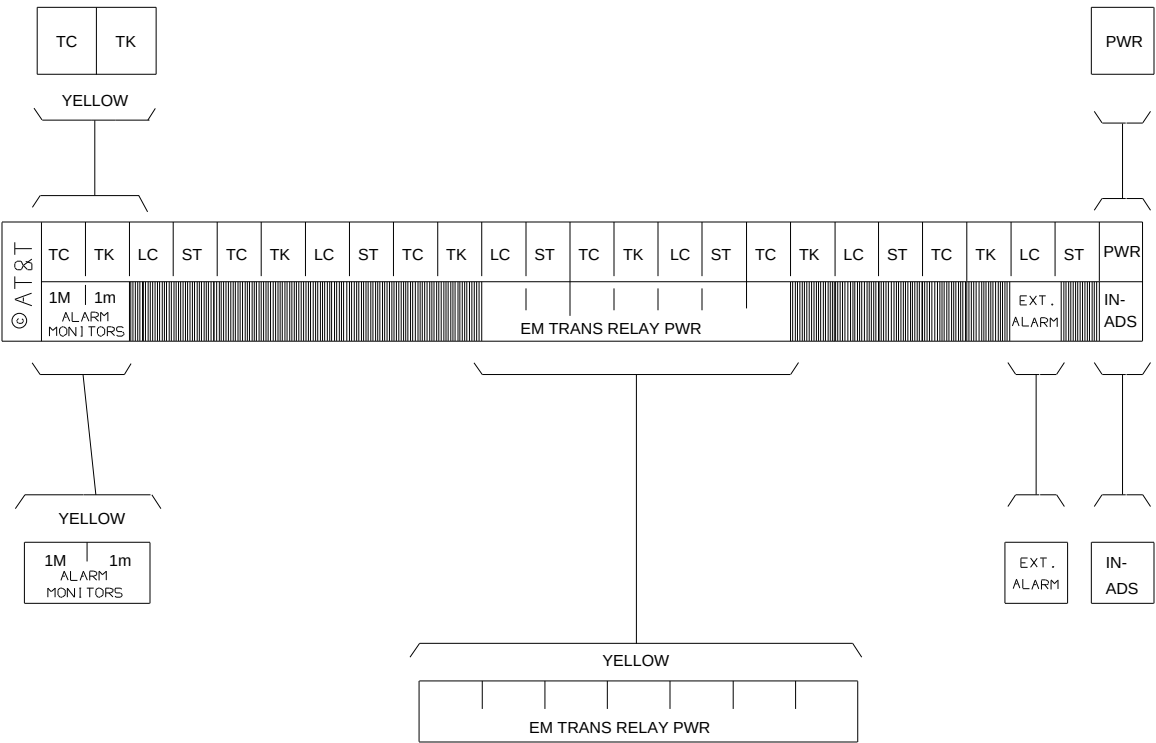


**Figure 9-21. Auxiliary Circuit and Control Carrier Outputs (AUXILIARY)
Labels for 110-Type Terminal Blocks: G1 Single-Carrier Cabinet**

*808A EMERGENCY TRANSFER UNIT AND CONTROL CARRIER OUTPUTS
(AUXILIARY) LABELS*

The labels shown in Figures 9-22 and 9-23 identify the leads and connection point for -48VDC power to the 808A emergency transfer unit and the control carrier **AUXILIARY** connector outputs for multi-carrier and single-carrier cabinets, respectively. The top half of the labels identify the 808A emergency transfer unit and the bottom half of the labels identify the control carrier **AUXILIARY** connector outputs. The control carrier **AUXILIARY** connector outputs are the same as described for the auxiliary circuit and control carrier outputs labels.



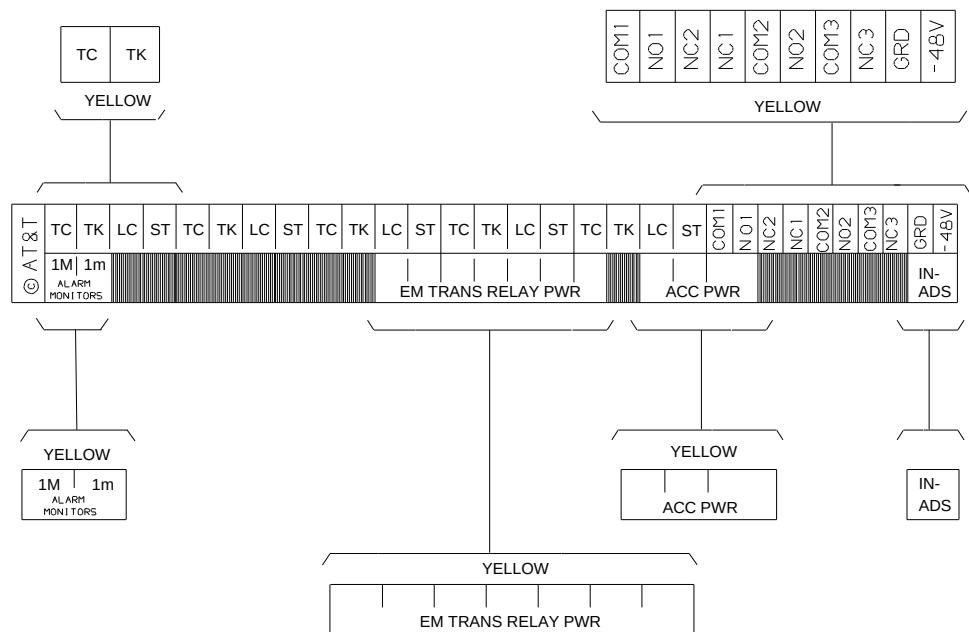


- ④ USAGE:
- IDENTIFIES CONTROL CARRIER OUTPUTS (AUXILIARY) AND
808A EMERGENCY TRANSFER UNIT CIRCUITS
- ④ CODE NO:
- 222A

Figure 9-23. Emergency Transfer and Control Carrier Outputs (AUXILIARY) Label for 110-Type Terminal Blocks: Single-Carrier Cabinet

574-5 POWER TRANSFER UNIT AND CONTROL CARRIER OUTPUTS (AUXILIARY) LABELS

The labels shown in Figures 9-24 and 9-25 identify the leads to the 574-5 power transfer unit and the control carrier **AUXILIARY** connector outputs for multi-carrier and single-carrier cabinets, respectively. The top half of the labels identify the 574-5 power transfer unit and the bottom half of the labels identify the control carrier **AUXILIARY** connector outputs. The control carrier **AUXILIARY** connector outputs are the same as described for the auxiliary circuit and control carrier outputs labels.



④ USAGE:
IDENTIFIES CONTROL CARRIER OUTPUTS (AUXILIARY)
AND 574-5 EMERGENCY TRANSFER UNIT CIRCUITS

④ CODE NO:
222A

Figure 9-24. Power Transfer Unit and Control Carrier Outputs (AUXILIARY) Labels for 110-Type Terminal Block: G1 Multi-Carrier Cabinet

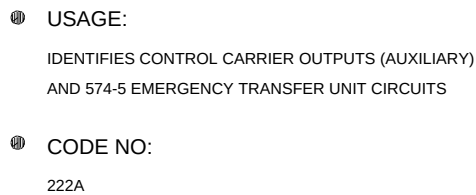


Figure 9-25. 574-5 Power Transfer Unit and Control Carrier Outputs (AUXILIARY) Labels for 110-Type Terminal Block: G1 Single-Carrier Cabinet

808A EMERGENCY TRANSFER UNIT LABELS

The label shown in Figure 9-26 identifies the emergency transfer leads and the -48VDC power connection for the 808A emergency transfer unit.

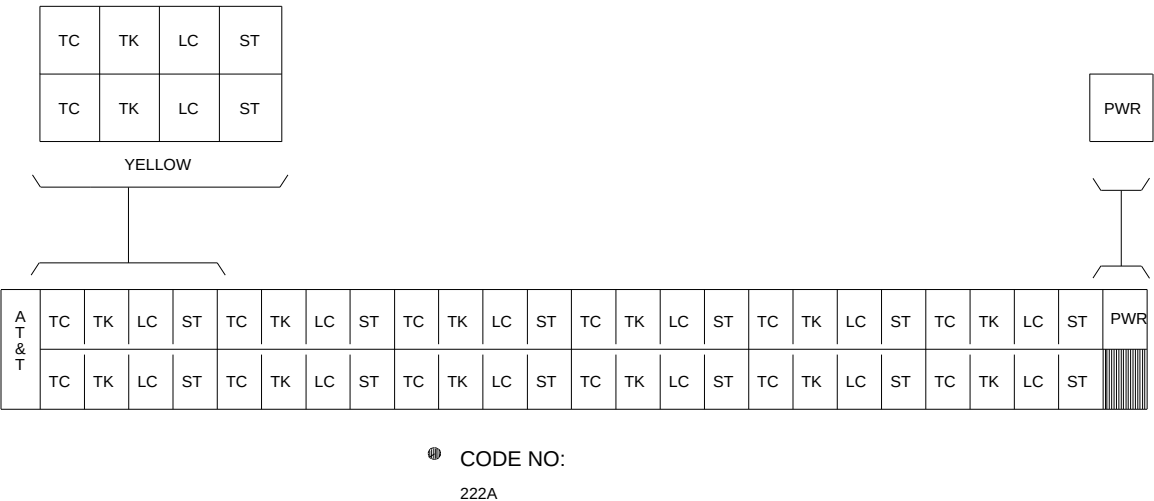


Figure 9-26. 808A Emergency Transfer Unit Label

574-5 POWER TRANSFER UNIT LABEL

Both sections of the label shown in Figure 9-27 identify leads to the 574-5 power transfer unit.

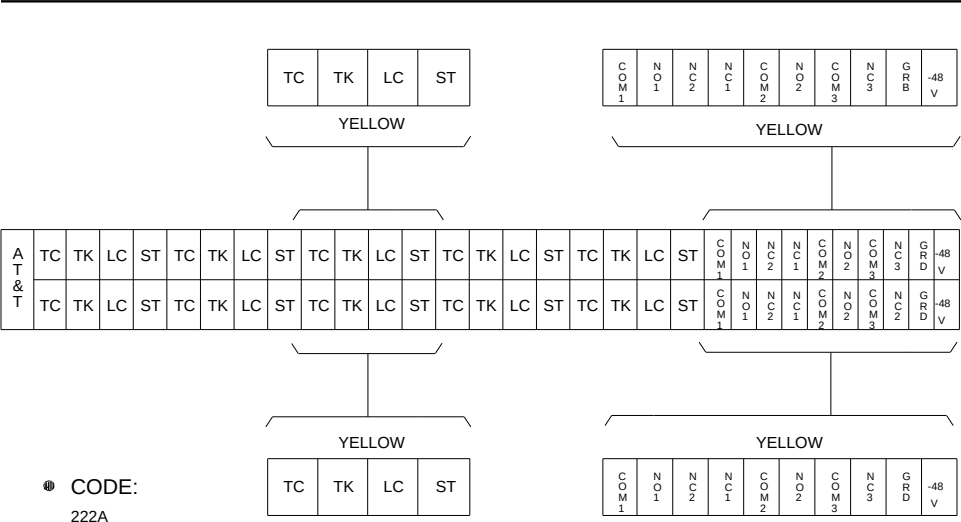


Figure 9-27. 574-5 Power Transfer Unit Label

BLANK AUXILIARY LABEL

The blank label shown in Figure 9-28 identifies auxiliary equipment and must be filled in manually.

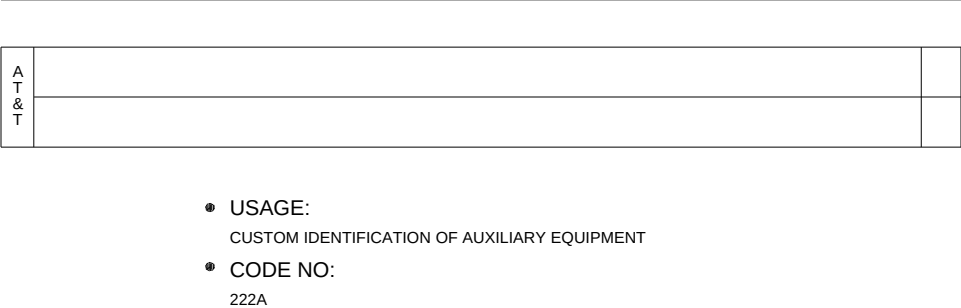


Figure 9-28. Blank Auxiliary Labels

LN=1 LNS=1

Label Code 222A — Yellow Labels (Comcode 103970026)

Label code 222A contains the following labels:

- (4) AP SSI port labels (Figure 9-18)
- (4) 3-pair Auxiliary circuit labels (Figure 9-18)
- (2) Unnumbered auxiliary circuit and control carrier **AUXILIARY** connector labels (Figures 9-20 or 9-21)
- (2) 808A Emergency transfer unit and control carrier **AUXILIARY** connector labels (Figures 9-22 or 9-23)
- (2) 574-5 Power transfer unit and control carrier **AUXILIARY** connector labels (Figures 9-24 or 9-25)
- (2) 808A Emergency transfer unit labels (Figure 9-26)
- (2) 574-5 Power transfer unit labels (Figure 9-27)
- (6) Blank labels (Figure 9-28)

Station Labels (White and Blue)

3-PAIR WHITE STATION LABELS

The white labels shown in Figure 9-29 identify 3-pair station appearances at the cross-connect field that connect to a satellite location. The top labels are grouped and numbered in sequence, **A 1** to **A 160** through **F 1** to **F 160** to correspond to the satellite locations. The bottom labels must be filled in manually. These labels are installed starting with the first terminal block in the white field.

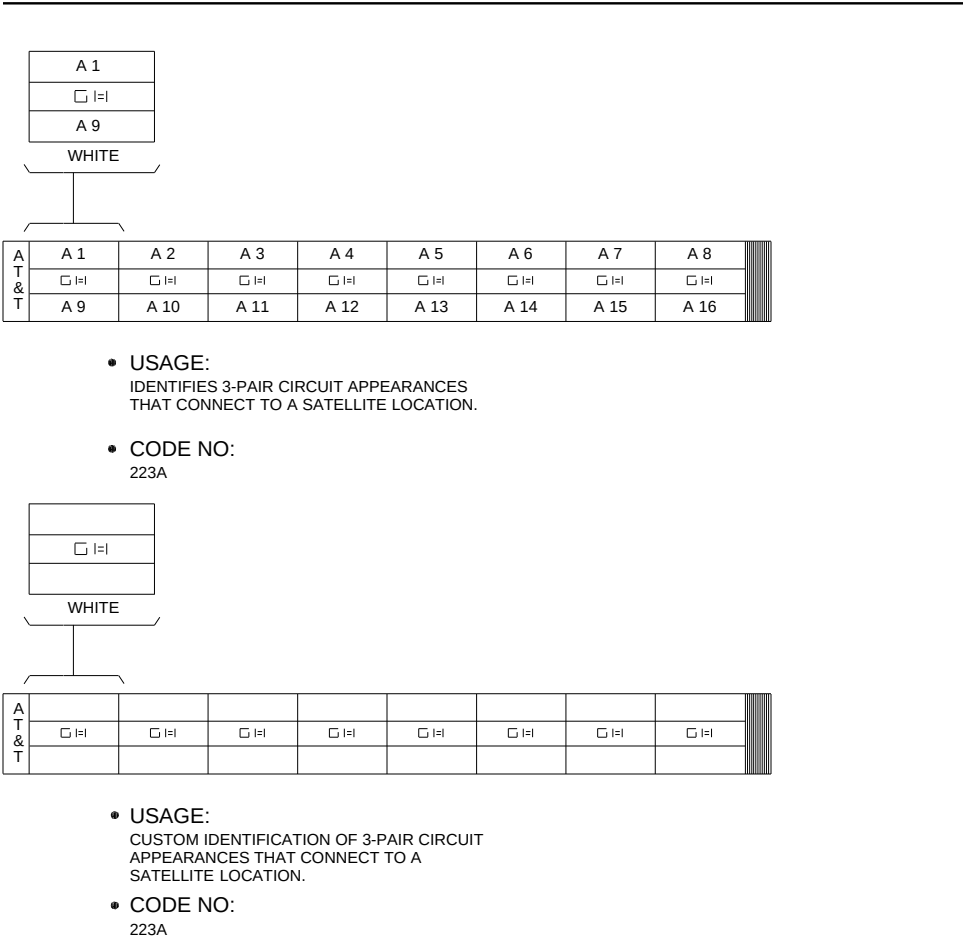


Figure 9-29. 3-Pair White Station Wiring (Equipment Room) Labels

LN=1 LNS=1

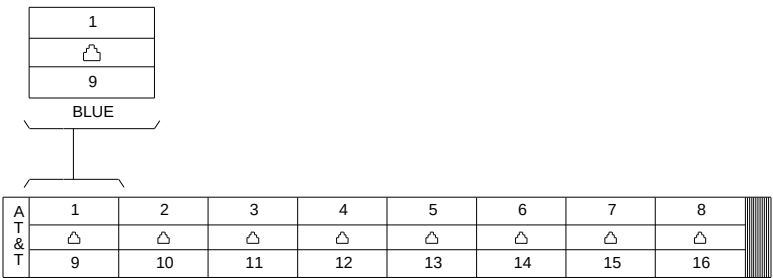
Label Code 223A — White Labels (Comcode 103970034)

Label code 223A contains the following labels:

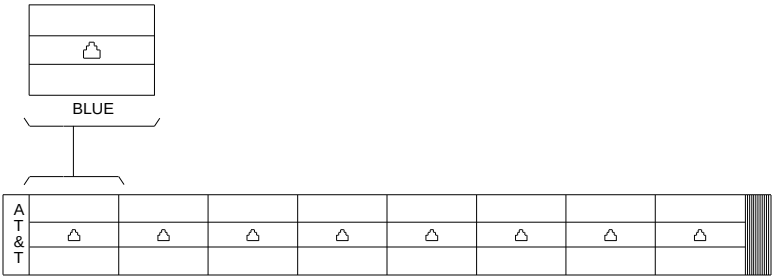
- (60) White labels that identify 3-pair circuits from the equipment room to the satellite closet (Figure 9-29). Each label identifies 16 three-pair station circuits. There are labels for satellite closets numbered A through F, and each satellite closet has station circuits numbered 1 through 160.
- (20) Unnumbered white labels (Figure 9-29) that identify 3-pair station circuits from the satellite closet. Each label identifies twelve 3-pair station circuits.

3-PAIR BLUE STATION LABELS

The labels shown in Figure 9-30 identify 3-pair blue station appearances at the cross-connect field. The top labels are numbered and should be installed in sequence (1 to 560) starting with the first terminal block in the blue field. The bottom label must be filled in manually.



- **USAGE:**
IDENTIFIES 3-PAIR STATION APPEARANCES THAT CONNECT TO A 356A ADAPTER. LABELS ARE NUMBERED IN SEQUENCE FROM 1 TO 560.
- **CODE NO:**
224A



- **USAGE:**
CUSTOMER IDENTIFICATION OF 3-PAIR STATION APPEARANCES THAT CONNECT TO A 356A ADAPTER.
- **CODE NO:**
224A

Figure 9-30. 3-Pair Blue Station Wiring (Equipment Room) Labels

LN=1 LNS=1

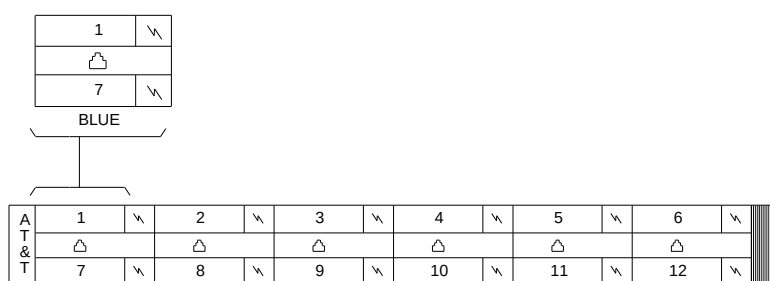
Label Code 224A — Blue Labels (Comcode 103970042)

Label code 224A contains the following labels:

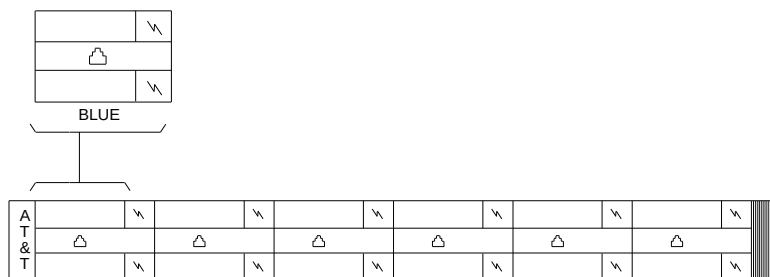
- (35) Blue labels (Figure 9-30) that identify 3-pair station circuits from the equipment room. Each label identifies sixteen 3-pair station circuits. The labels are numbered sequentially from 1 to 560.
- (40) Blue labels (Figure 9-31) that identify 4-pair station circuits from the equipment room. Each label identifies twelve 4-pair station circuits. The labels are numbered sequentially from 1 to 480.
- (102) Blue labels (Figure 9-31) that identify 4-pair station circuits from the satellite closet. Each label identifies twelve 4-pair station circuits. There are labels for satellite closets numbered A through F, and each satellite closet has station circuits numbered 1 through 204.
- Unnumbered blue labels (Figure 9-30) that identify 3-Pair station circuits from the equipment room. Each label identifies sixteen 3-pair station circuits.
- Unnumbered blue labels (Figure 9-31) that identify 4-pair station circuits from the equipment room. Each label identifies twelve 4-pair station circuits.
- (28) Unnumbered blue labels (Figure 9-32) that identify 4-pair station circuits from the satellite closet. Each label identifies twelve 4-pair station circuits.

4-PAIR BLUE STATION LABELS

The labels shown in Figure 9-31 identify 4-pair station appearances at the cross-connect field. The top labels are numbered and installed in sequence (1 to 480) starting with the first terminal block in the blue field. The bottom label must be filled in manually. The labels shown in Figure 9-32 identify 4-pair station circuits from the satellite closet. The top labels are grouped and numbered in sequence **A 1** to **A 204** through **F 1** to **F 204** to correspond to the satellite locations and information outlets.

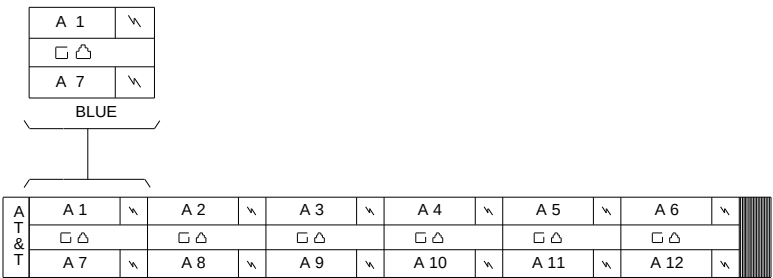


- **USAGE:**
IDENTIFIES 4-PAIR STATION APPEARANCES.
LABELS ARE NUMBERED IN SEQUENCE FROM 1 TO 480.
- **CODE NO:**
224A

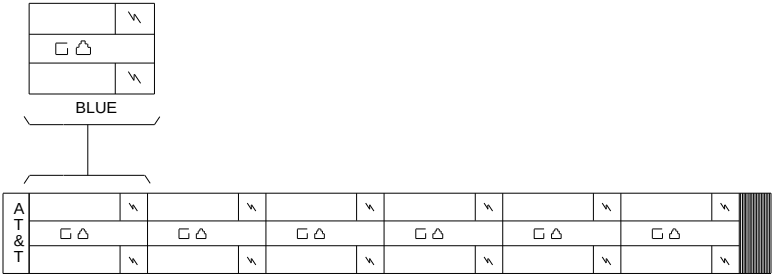


- **USAGE:**
CUSTOMER IDENTIFICATION OF 4-PAIR STATION APPEARANCES.
- **CODE NO:**
224A

Figure 9-31. 4-Pair Blue Station Wiring (Equipment Room) Labels



- **USAGE:**
IDENTIFIES 4-PAIR STATION APPEARANCES
AT THE SATELLITE LOCATION.
- **CODE NO:**
224A



- **USAGE:**
CUSTOMER IDENTIFICATION OF 4-PAIR STATION
APPEARANCES AT THE SATELLITE LOCATION.
- **CODE NO:**
224A

Figure 9-32. 4-Pair Blue Station Wiring (Satellite Closet) Labels

Port Labels (Purple)

PORT LABELS

The labels shown in Figure 9-33 identify the equipped carrier slots (see Note) in the switch cabinet. These labels are grouped together (by carriers) starting with Carrier A. These labels are used for the trunk/auxiliary field, and the distribution field. They are installed starting with the first terminal block in either field. The top label is grouped and numbered in sequence **1A1** to **1A10** and **1B1** to **1B20** through **1E1** to **1E20** to correspond to the cabinet, carrier, and slot of the port circuit pack. The bottom label must be filled in manually. It is used to label the MET circuit pack and the 16-port analog line circuit pack. An example of how to fill out the label for the MET circuit pack is shown in Figure 9-34. An example of how to fill out the label for the 16-port analog circuit pack is shown in Figure 9-35. If WP-90929, List 1 or 3 concentrator cables are used to connect trunk or tie trunk circuits to the switch, then use the labels shown in Figure 9-36 and 9-37 for these circuits. Figure 9-36 shows an example of how to fill out a dual-purpose emergency transfer station label.



NOTE:

Equipped carrier slots are identified on the Customer Service Order (CSO).

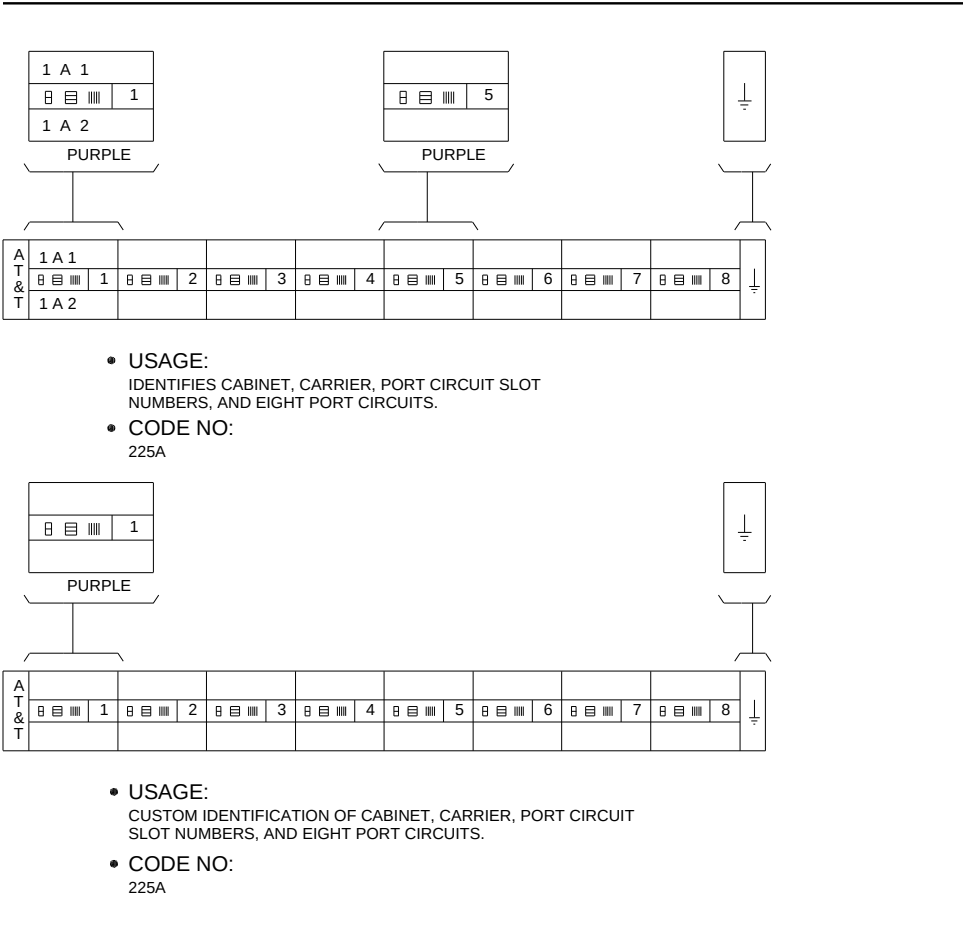


Figure 9-33. Port Labels

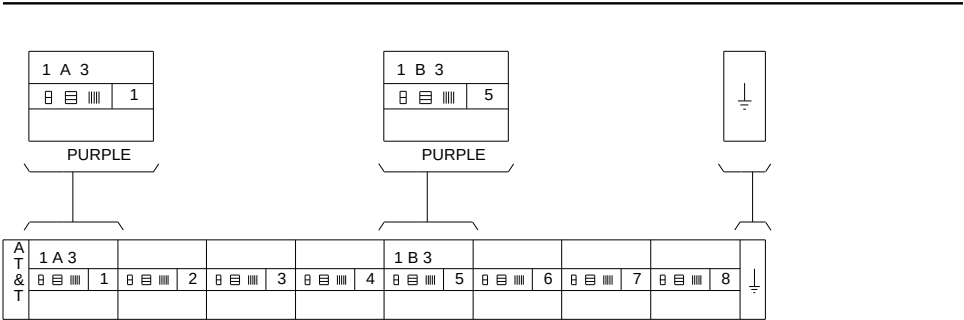


Figure 9-34. Example of Port Label for MET Line Circuit Pack

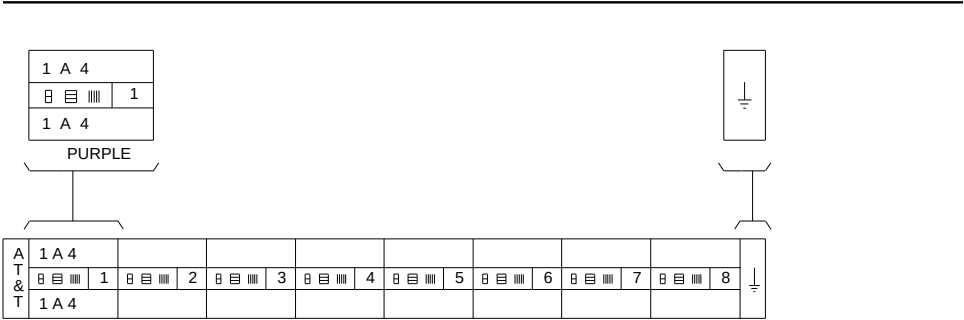


Figure 9-35. Example of Port Label for 16-Port Analog Line Circuit Pack

WP-90929, List 1 or 3 concentrator cables can be used between the switch cabinet and the 110-type terminal blocks. The label shown in Figure 9-36 identifies 3-pair trunk circuits from the switch cabinet. The label shown in Figure 9-37 identifies 3-pair tie trunk circuits from the switch cabinet.

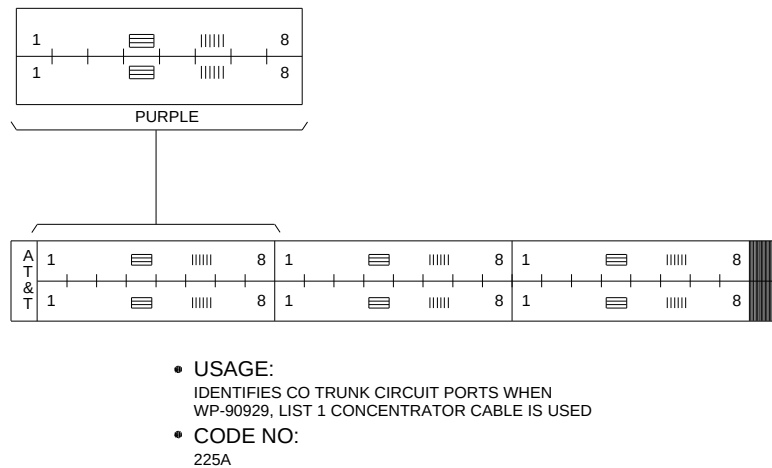


Figure 9-36. Switch Trunk Port Circuit Labels

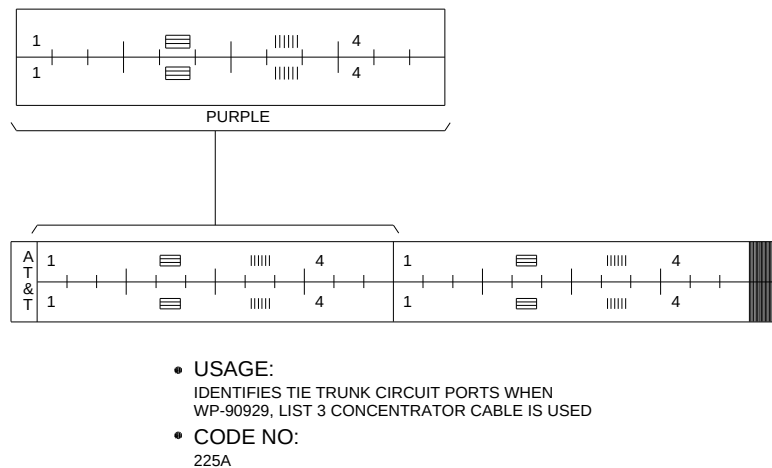
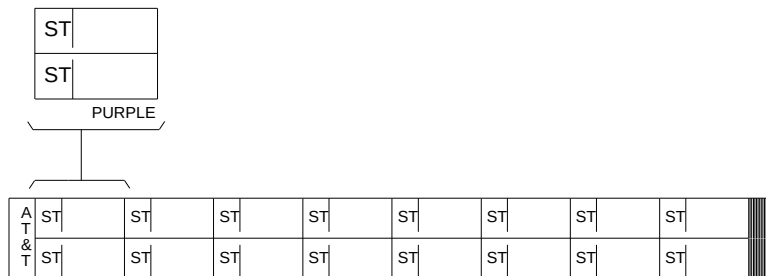


Figure 9-37. Switch Tie Trunk Port Circuit Labels

DUAL-PURPOSE EMERGENCY TRANSFER STATIONS LABELS

The label shown in Figure 9-38 identifies the telephone connections at the cross-connect field for both normal use and emergency transfer stations.



- CODE NO:
225A

Figure 9-38. Dual-Purpose Emergency Transfer Station Labels

LN=1 LNS=1
Label Code 225A — Purple Labels (Comcode 103970059)

Label code number 225A contains the following port labels:

- (45) Purple labels (Figure 9-33) that identify 3-pair port circuits from the switch. The labels are numbered for the carriers at the switch, A through E, and each carrier has slots numbered 1 to 20, except carrier A which is only 1 to 10. Each label identifies 16 3-pair circuits.
- (10) Unnumbered purple labels (Figure 9-34) that identify 3-pair port circuits from the switch. Each label identifies 16 3-pair circuits.
- (3) Purple labels that identify 3-pair system trunk port circuits from the switch when WP-90929, List 1 (Figure 9-38) concentrator cables are used.
- (3) Purple labels that identify 3-pair system tie trunk port circuits from the switch when WP-90929, List 3 (Figure 9-37) concentrator cables are used.
- (5) Purple labels to identify connections to dual-purpose emergency transfer stations (Figure 9-38).

Labeling 66-Type Connecting Blocks

The cross-connect field is color-coded to identify system wiring as follows:

- Green — Leads to CO
- Purple — Leads to switch ports
- Yellow — Leads to auxiliary equipment and miscellaneous switch leads
- Blue — Leads to information outlets
- White — Leads from the cross-connect field to the satellite locations (3-pair)

A permanent felt-tipped pen can be used to write the lead designations on the 66-type connecting blocks (Figure 9-39). Table 9-7 shows the lead designations for the switch port appearances at the cross-connect field, and Table 9-8 shows the lead designations for the auxiliary circuits. Any time these leads are cross-connected to another connecting block they should also be labeled at that block.

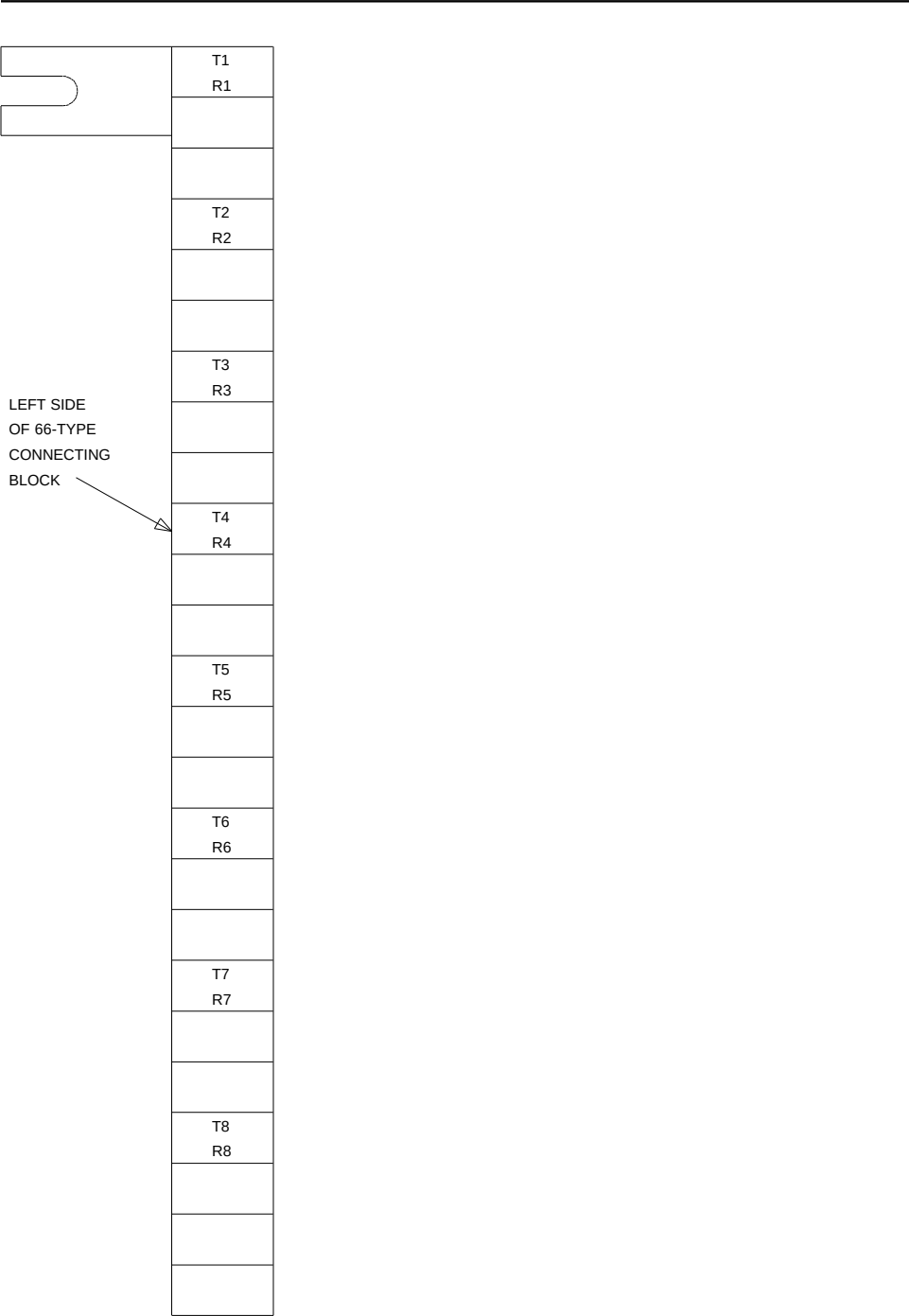


Figure 9-39. Labeling 66-Type Connecting Blocks

Table 9-7. Lead Designations at Cross-Connect Field

Color	Conn. Pin Numbers	Anal. Line (8)	Anal. Line (16)	Data Line	Dig. Line	Hyb. Line	MET Line	AUX. Trk.	CO Trk. TN429 TN493 TN422 TN421 TN438 TN447 TN465 TN747B TN2138 TN2147 TN2148	DID/ DIOD Trk. TN429 TN2139 TN459 TN436 TN414 TN2146 TN753	Tie Trk. TN478 TN458 TN449 TN434 TN415 TN760 TN760D	DS1 Tie Trk. TN483 TN722 TN767B TN722B TN464D	ISDN BRI Line TN556
W-BL	26	T1	T1			V1T1	T1	T1	T1	T1	T1		PXR1
BL-W	01	R1	R1			V1R1	R1	R1	R1	R1	R1		PXT1
W-O	27		T2	TXT1	TXT1	CT1	TXT1	SZ1			T11		TXT1
O-W	02		R2	TXR1	TXR1	CR1	TXR1	SZ11			R11		TXR1
W-G	28		T3	PXT1	PXT1	P-1	PXT1	S1			E1		PXR2
G-W	03		R3	PXR1	PXR1	P+1	PXR1	S11			M1		PXT2
W-BR	29	T2	T4			V1T2	T2	T2	T2	T2	T2		TXT2
BR-W	04	R2	R4			V1R2	R2	R2	R2	R2	R2		TXR2
W-S	30			TXT2	TXT2	CT2	TXT2	SZ2			T12		PXR3
S-W	05			TXR2	TXR2	CR2	TXR2	SZ12			R12		PXT3
R-BL	31			PXT2	PXT2	P-2	PXT2	S2			E2		TXT3
BL-R	06			PXR2	PXR2	P+2	PXR2	S12			M2		TXR3
R-O	32	T3				V1T3	T3	T3	T3	T3	T3		PXR4
O-R	07	R3				V1R3	R3	R3	R3	R3	R3		PXT4
R-G	33			TXT3	TXT3	CT3	TXT3	SZ3			T13		TXT4
G-R	08			TXR3	TXR3	CR3	TXR3	SZ13			R13		TXR4
R-BR	34		T5	PXT3	PXT3	P-3	PXT3	S3			E3		PXR5
BR-R	09		R5	PXR3	PXR3	P+3	PXR3	S13			M3		PXT5
R-S	35	T4	T6			V1T4	T4	T4	T4	T4	T4		TXT5
S-R	10	R4	R6			V1R4	R4	R4	R4	R4	R4		TXR5
BK-BL	36		T7	TXT4	TXT4	CT4	TXT4	SZ4			T14		PXR6
BL-BK	11		R7	TXR4	TXR4	CR4	TXR4	SZ14			R14		PXT6
BK-O	37		T8	PXT4	PXT4	P-4	PXT4	S4			E4		TXT6
O-BK	12		R8	PXR4	PXR4	P+4	PXR4	S14			M4		TXR6
BK-G	38	T5	T9			V1T5			T5	T5			PXR7
G-BK	13	R5	R9			V1R5			R5	R5			PXT7
BK-BR	39		T10	TXT5	TXT5	CT4							TXT7
BR-BK	14		R10	TXR5	TXR5	CR4							TXR7

Continued next page

Table 9-7. Lead Designations at Cross-Connect Field *Continued*

Color	Conn. Pin Numbers	Anal. Line (8)	Anal. Line (16)	Data Line	Dig. Line	Hyb. Line	MET Line	AUX. Trk.	CO Trk. TN429 TN493 TN422 TN421 TN438 TN447 TN465 TN747B TN2138 TN2147 TN2148	DID/ DIOD Trk. TN429 TN2139 TN459 TN436 TN414 TN2146 TN753	Tie Trk. TN478 TN458 TN449 TN434 TN415 TN760 TN760D	DS1 Tie Trk.† TN483 TN722 TN767B TN722B TN464D	ISDN BRI Line TN556
BK-S	40		T11	PXT5	PXT5	P-5							PXR8
S-BK	15		R11	PXR5	PXR5	P+5							PXT8
Y-BL	41	T6	T12			V1T6			T6	T6			TXT8
BL-Y	16	R6	R12			V1R6			R6	R6			TXR8
Y-O	42			TXT6	TXT6	CT6							PXR9
O-Y	17			TXR6	TXR6	CR6							PXT9
Y-G	43			PXT6	PXT6	P-6							TXT9
G-Y	18			PXR6	PXR6	P+6							TXR9
Y-BR	44	T7				V1T7			T7	T7			PXR10
BR-Y	19	R7				V1R7			R7	R7			PXT10
Y-S	45			TXT7	TXT7	CT7							TXT10
S-Y	20			TXR7	TXR7	CR7							TXR10
V-BL	46		T13	PXT7	PXT7	P-7							PXR11
BL-V	21		R13	PXR7	PXR7	P+7							PXT11
V-O	47	T8	T14			V1T8			T8	T8		L1*	TXT11
O-V	22	R8	R14			V1R8			R8	R8		L1	TXR11
V-G	48		T15	TXT8	TXT8	CT8						L0	PXR12
G-V	23		R15	TXR8	TXR8	CR8						L0*	PXT12
V-BR	49		T16	PXT8	PXT8	P-8						LBACK2	TXT12
BR-V	24		R16	PXR8	PXR8	P+8						LBACK1	TXR12
V-S	50												
S-V	25												

* Denotes ring side or high side of a pair.

† The wire colors may not apply to DS1 cables. See Appendix F.



NOTE:

See Table A-1 for a cross-reference to 110-type wiring block or 66-type connecting block pin designations.

See Table 5-5 for more lead designations.

See Appendix F for more lead designations.

Table 9-8. Auxiliary Lead Appearances at 66-Type Cross-Connect Field

Color	66-Type Conn Block Term	Multi-Carrier Aux Conn Outputs	Single-Carrier Aux Conn Outputs	808A Emerg Xfr Unit Outputs	574-5 Power Xfr Unit Outputs
W-BL	01	1M	1M	TC	TC
BL-W	02				
W-O	03	1m	1m	TK	TK
O-W	04				
W-G	05	2M(Note1)	2M(Note 1)	LC	LC
G-W	06				
W-BR	07	2m(Note1)	2m(Note 1)	ST	ST
BR-W	08				
W-S	09	3M(Note 1)	3M(Note 1)	TC	TC
S-W	10				
R-BL	11	3m(Note 1)	3m(Note 1)	TK	TK
BL-R	12				
R-O	13	3W(Note 1)	3W(Note 1)	LC	LC
O-R	14				
R-G	15	Not Connected		ST	ST
G-R	16				
R-BR	17		Not Connected	TC	TC
BR-R	18				
R-S	19			TK	TK
S-R	20				
BK-BL	21	GND	GND	LC	LC
BL-BK	22	-48	-48		
BK-O	23	GND	GND	ST	ST
O-BK	24	-48	-48		
BK-G	25	GND	GND	TC	TC
G-BK	26	-48	-48		

- 1 These leads are not available on DEFINITY G1 or G3. If your system is being upgraded from System 75 to DEFINITY G1 or G3 and these leads were previously used, these alarm connections will have to be dropped.

Table 9-8. Auxiliary Lead Appearances at 66-Type Cross-Connect Field *Continued*

Color	66-Type Conn Block Term	Multi-Carrier Aux Conn Outputs		Single-Carrier Aux Conn Outputs	808A Emerg Xfr Unit Outputs	574-5 Power Xfr Unit Outputs
BK-BR	27	GND	Emerg Xfr Relay Power	GND	TK	TK
BR-BK	28	-48		-48		
BK-S	29	GND		GND	LC	LC
S-BK	30	-48		-48		
Y-BL	31	GND		GND	ST	ST
BL-Y	32	-48		-48		
Y-O	33	GND		GND	TC	TC
O-Y	34	-48		-48		
Y-G	35	Not Connected	ACC Power	Not Connected	TK	TK
G-Y	36					
Y-BR	37	GND			LC	LC
BR-Y	38	-48				
Y-S	39	GND			ST	ST
S-Y	40	-48				
V-BL	41	GND			COM1	C0M1
BL-V	42	-48			N01	N01
V-O	43	Not Connected			NC2	NC2
O-V	44				NC1	NC1
V-G	45	Ext Alarm A		Ext Alarm A	COM2	C0M2
G-V	46	Ext Alarm B		Ext Alarm B	N02	N02
V-BR	47	Not Connected				
BR-V	48					
V-S	49	INADS		INADS	GRD	GRD
S-V	50				-48V	-48V

Connect External Alarms

The AUX connector on the back of each control carrier and expansion control carrier is routinely connected to a wiring block at the AUX/TRUNK field. Connected in that way, Definity G1 and G3 products route one major alarm pair and one minor alarm pair for each port cabinet to the AUX/TRUNK field. These are designated *1M* and *1m* on Table 9-8, which shows wiring block connections from the AUX connector. (The alarm connections from that table are reproduced below, and Table A-1 is a cross-index of connector pin numbers to wiring block terminals.)

Table 9-9. External Alarm Leads at 66-Type Cross-Connect Field

Color	66-Type Conn Block Term	Multi-Carrier Aux Conn Outputs	Single-Carrier Aux Conn Outputs	808A Emerg Xfr Unit Outputs	574-5 Power Xfr Unit Outputs
W-BL	01	1M	1M	TC	TC
BL-W	02				
W-O	03	1m	1m	TK	TK
O-W	04				

As you wired the AUX/TRUNK field, you may have already connected alarm contacts to the input terminals. A typical major alarm installation would be from pins 14 and 15 of J2 on an uninterruptable power supply through terminals 1 and 2 of the wiring block associated with the AUX connector of a control carrier (terminals labeled *1M* as shown on figure 9-20 and several subsequent illustrations). From there, the connection is completed through the usual white and blue wire pair to pins 1 and 26 of the auxiliary connector on the control carrier.

Minor alarms are wired in a similar way. They are wired, however, through the second pair of the aux cable (the white and orange pair).

Having wired the external alarms to the control carriers as instructed by the system designers, note which device is connected to which alarm. After the system is installed, be sure to contact the TSC to give them this information for troubleshooting purposes.

⇒ NOTE:

If you have received no instructions to wire the external alarms, report the situation to the customer contact person for the site at which you are working.

Installing Sneak Fuse Panels

The sneak fuse panel (see Figure A-17) must be installed as near as possible to the network interface. To install the sneak fuse panel, proceed as follows:

1. Hold the panel against the mounting surface and mark the upper right and lower left mounting screw locations.
2. Drill pilot holes at the marked locations, and partially install the 3/4 inch No. 12 screws.
3. Slide the sneak fuse panel onto the mounting screws and tighten the screws.
4. Repeat the procedure for each sneak fuse panel.

Cable Installation

Labels

The purple port label shown in the next figure is installed on both ends of the 25-pair cables that connect to the trunk/auxiliary field and/or the distribution field. The blue/yellow building and floor labels are for cables that connect from the equipment room to a site/satellite location on another floor or in another building. The yellow label is for auxiliary circuits that connect to the trunk/auxiliary field or for SSI circuits that connect to an AP.

The blue/yellow label is for 25-pair cables that connect to site/satellite closets.

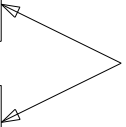
LABEL NAME	RANGE	SAMPLE LABEL
PORT CABLE	1A1-1A10, 1B1-1B20, 1C1-1C20, 1D1-1D20, 1E1-1E20	  PURPLE
BUILDING	FIELD IDENTIFIED	   BLUE/YELLOW
FLOOR	FIELD IDENTIFIED	
AUXILIARY CABLE	FIELD IDENTIFIED	  YELLOW
SITE OR SATELLITE	A-F AND/OR FIELD IDENTIFIED	  BLUE/YELLOW

Figure 9-40. Equipment Room Cabling Labels

Cable/Connector/Building Label Ordering Information

Description	Qty. Per. Code	Comcode
201A Labels	34 Sheets	103969994

Figure 9-41 shows the proper way to install a label on a 25-pair cable connector (see the note).



NOTE:

The label should be installed near the rear of the connector as shown in Figure 9-41 so it will not be obscured by the switch cabinet connector retainers. Also, it can be installed on the skin of the cable near the connector.

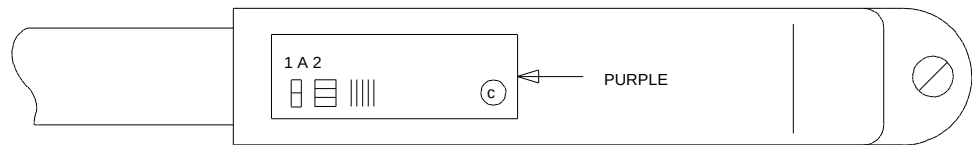


Figure 9-41. Installing Self-Stick Label on 25-Pair Cable Connector

Routing Cable Guidelines

General

The following guidelines should be followed when installing the equipment room cabling. Following these guidelines will maximize use of the cable slack managers and make future cabling additions and changes easier.

Figures 9-42 and 9-43 show typical cable routing from the switch cabinet to the top and bottom of the cross-connect field, respectively.

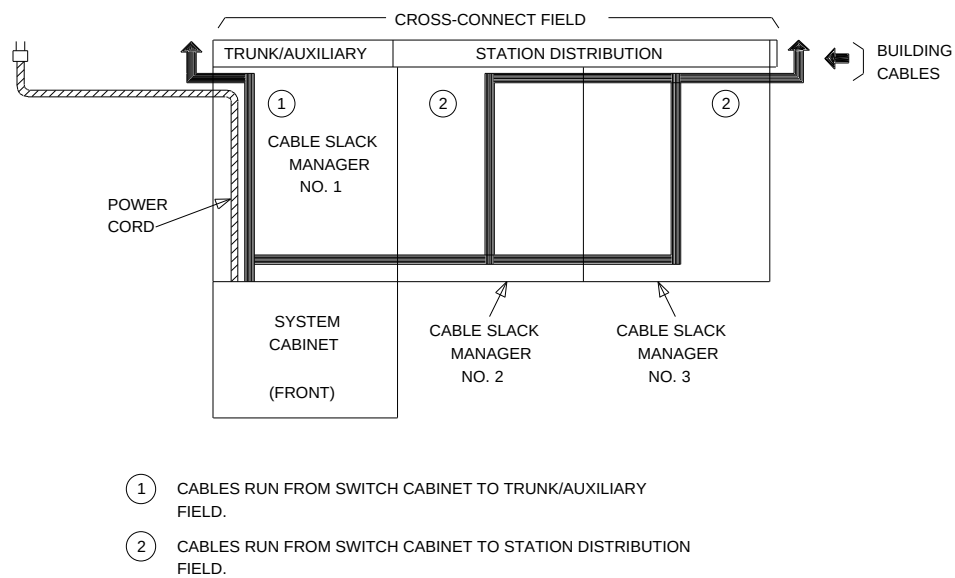


Figure 9-42. Cable Routing from Switch Cabinet to Cross-Connect Field (Using Top Terminal Blocks)

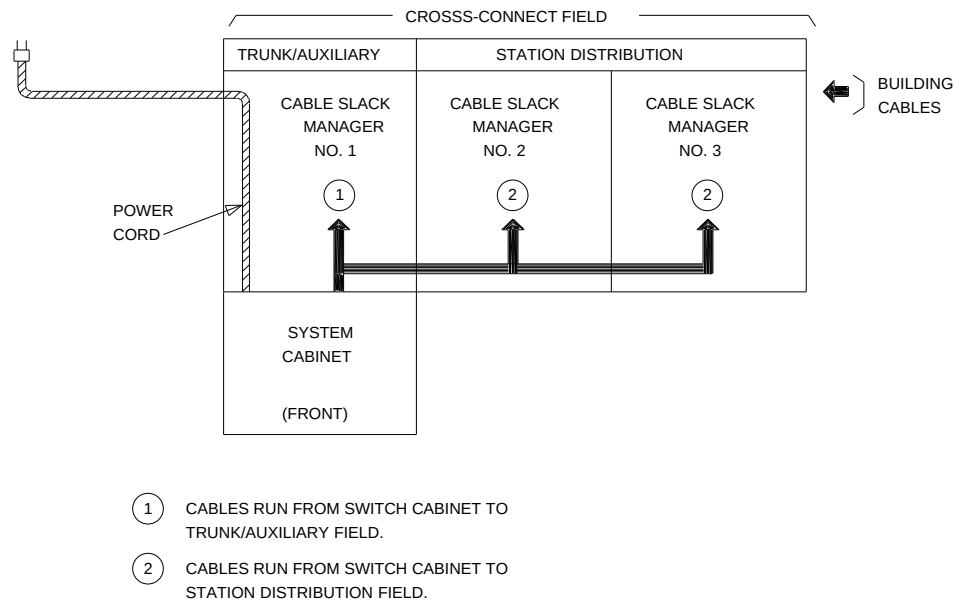


Figure 9-43. Cable Routing from Switch Cabinet to Cross-Connect Field (Using Bottom Terminal Blocks)

Routing Cables Using 110-Type Terminal Blocks

Figures 9-44 and 9-45 show the cable routing pattern through the cable slack manager for a single cabinet installation using 110-type terminal blocks with the connectors located at the top and bottom of the terminal blocks, respectively. Cables are routed through the cable slack manager in either the cabinet or wall troughs. When needed, the two troughs can be used.

Port cables are routed through the cabinet trough for parallel runs. Station cables should use the wall trough. After the cabinet and wall troughs are filled, use the trough.

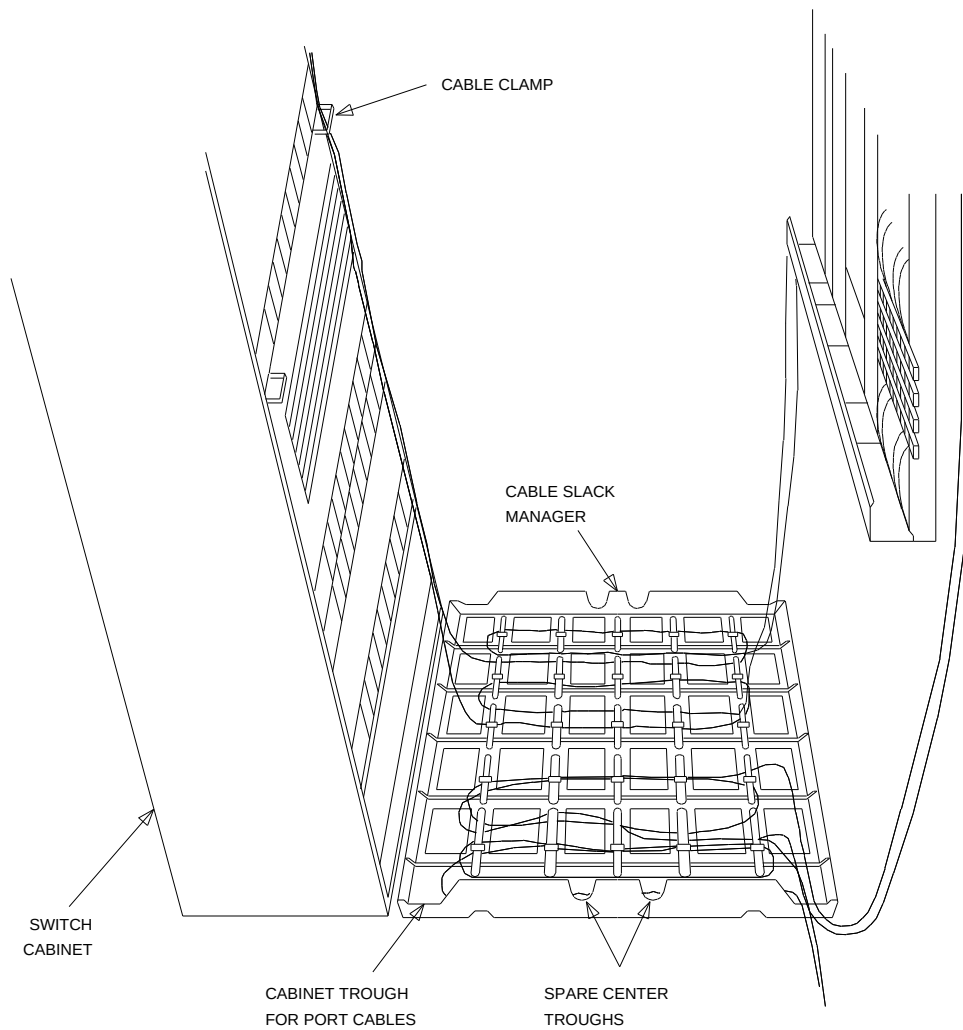


Figure 9-44. Cable Routing Through Cable Slack Manager: Single Cabinet Installation (Using Connectorized Top Terminal Blocks)

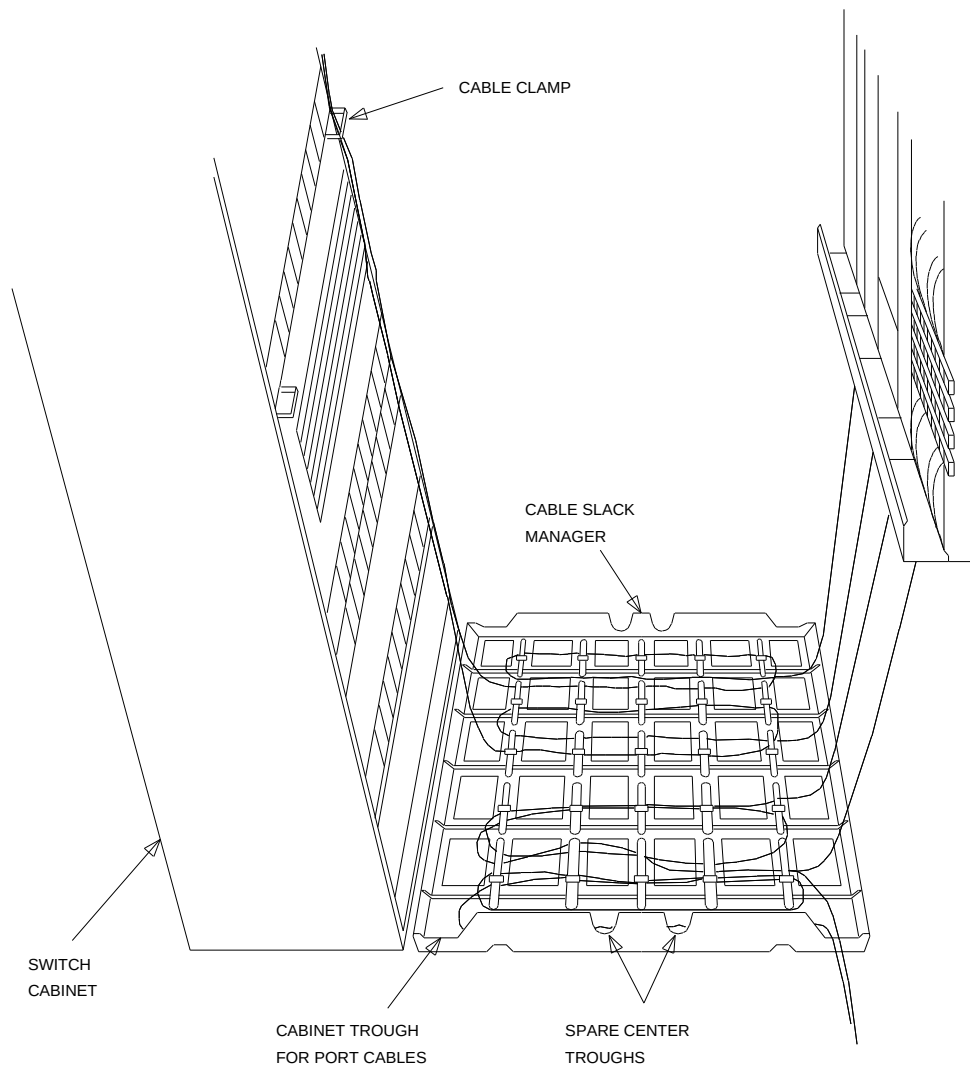


Figure 9-45. Cable Routing Through Cable Slack Manager: Single Cabinet Installation (Using Connectorized Bottom Terminal Blocks)

Routing Cables Using 66-Type Connecting Blocks

Figures 9-46 and 9-47 show the cable routing pattern through the cable slack manager for a single cabinet installation with the cables routed from the top and bottom of the 66-type connecting blocks, respectively. Cables are routed through the cable slack manager in either the cabinet or wall troughs. When needed, the two troughs can be used.

Port cables are routed through the cabinet trough for parallel runs. Station cables should use the wall trough. After the cabinet and wall troughs are filled, use the trough.

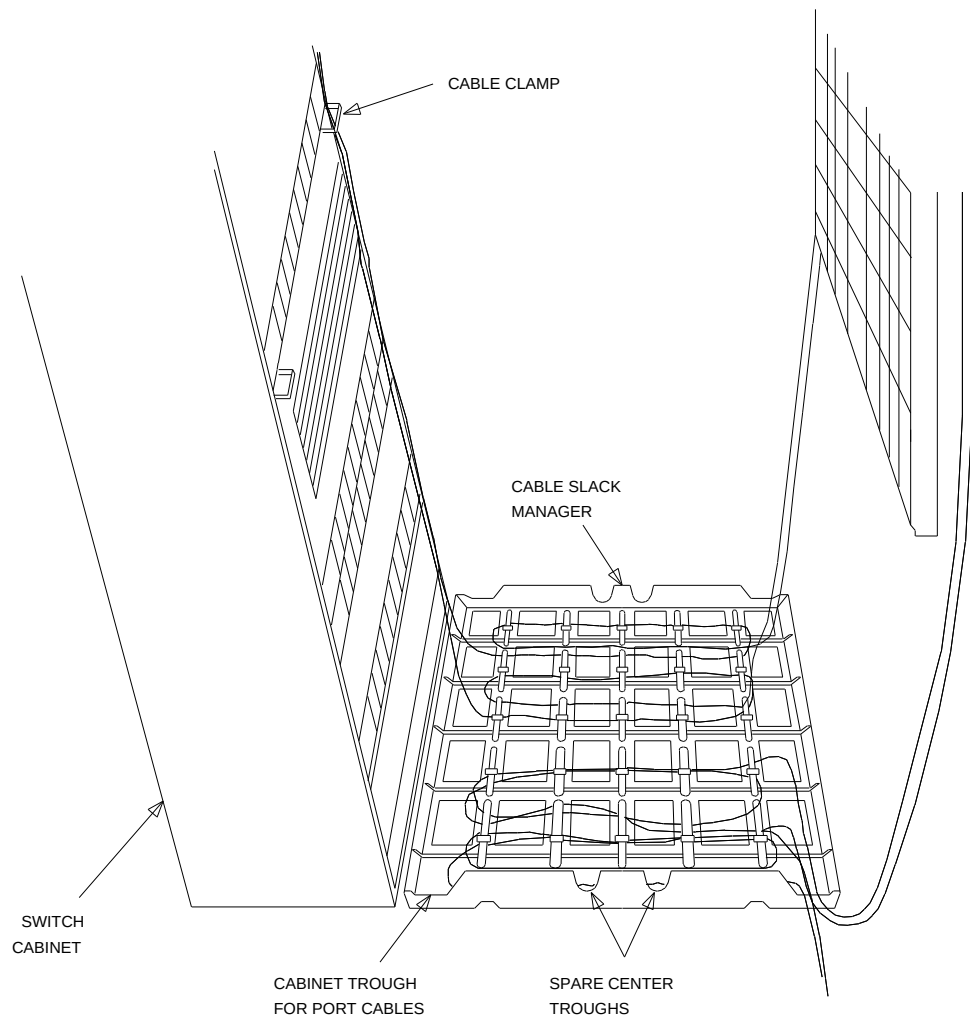


Figure 9-46. Cable Routing Through Cable Slack Manager: Single Cabinet Installation (Using 66-Type Connecting Blocks with Cables Routed from Top of Cross-Connect Field)

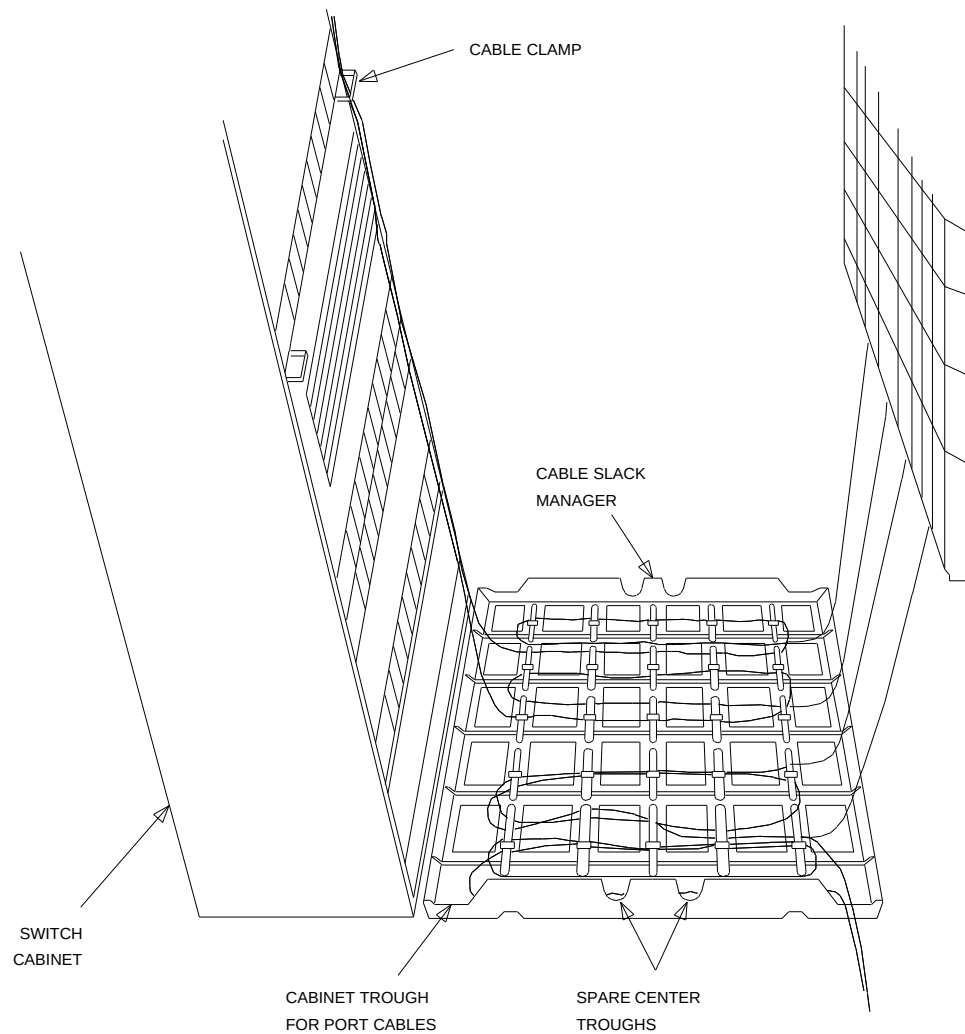


Figure 9-47. Cable Routing Through Cable Slack Manager: Single Cabinet Installation (Using 66-Type Connecting Blocks with Cables Routed from Bottom of Cross-Connect Field)

Cable Routing from a Wall-Mounted Cabinet

A wall-mounted system such as the G3vs is designed to be mounted on the same wall as the cross-connect field. If the cross-connect field has provisions for slack management, use these provisions. Otherwise, loop the cables between the system and the cross-connect field and support them with D-rings secured to the wall.

Dress the cables to feed through one of the holes formed at the junction of the switch and its rear cover next to the hinge on the mounting plate. Dress through the top or bottom hole or both, as seems appropriate for this installation. Tie the cables to the cable-tie mounts provided on the rear panel of the system. (The cable-tie mounts relieve pressure on the rear cover which is ornamental and is not capable of retaining a bundle of cables.)

Use of the top hole is shown in the following illustration. (The bottom hole is used in a similar way.)

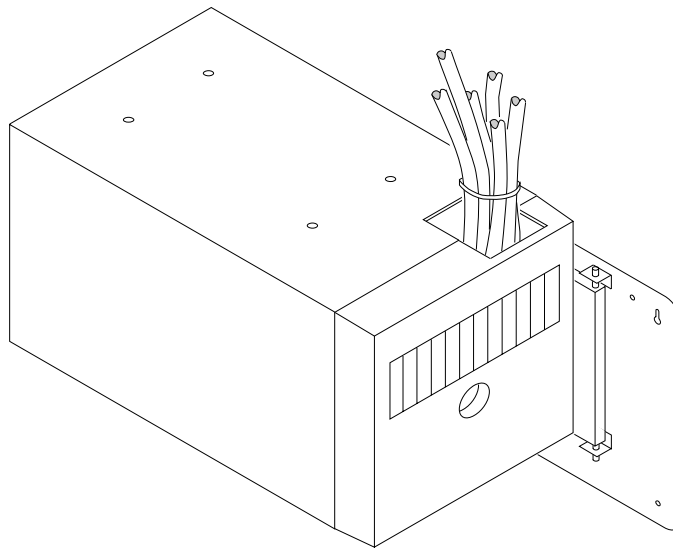


Figure 9-48. Cable Dress from a Wall-Mounted Cabinet



NOTE:

As you dress the cables, open and close the hinge on which the system is mounted. In this way, the cables will not be tied so tightly to the wall that changing the system's position will put stress on the cables.

Routing Cables from Cabinet to Cross-Connect Field

The following guidelines should be followed when routing cables from the cabinet to the cross-connect field.

- When cable routing is to the top/bottom of the cross-connect field, each port cable is connected at the cabinet and then routed along the front trough of the cable slack manager to the connecting/terminal block where the cable is to be terminated.
- Enough slack must be left at the cabinet end of the cable to allow for proper dressing of the cables (Figure 9-49).
- 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 the 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 using D rings.
- 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.

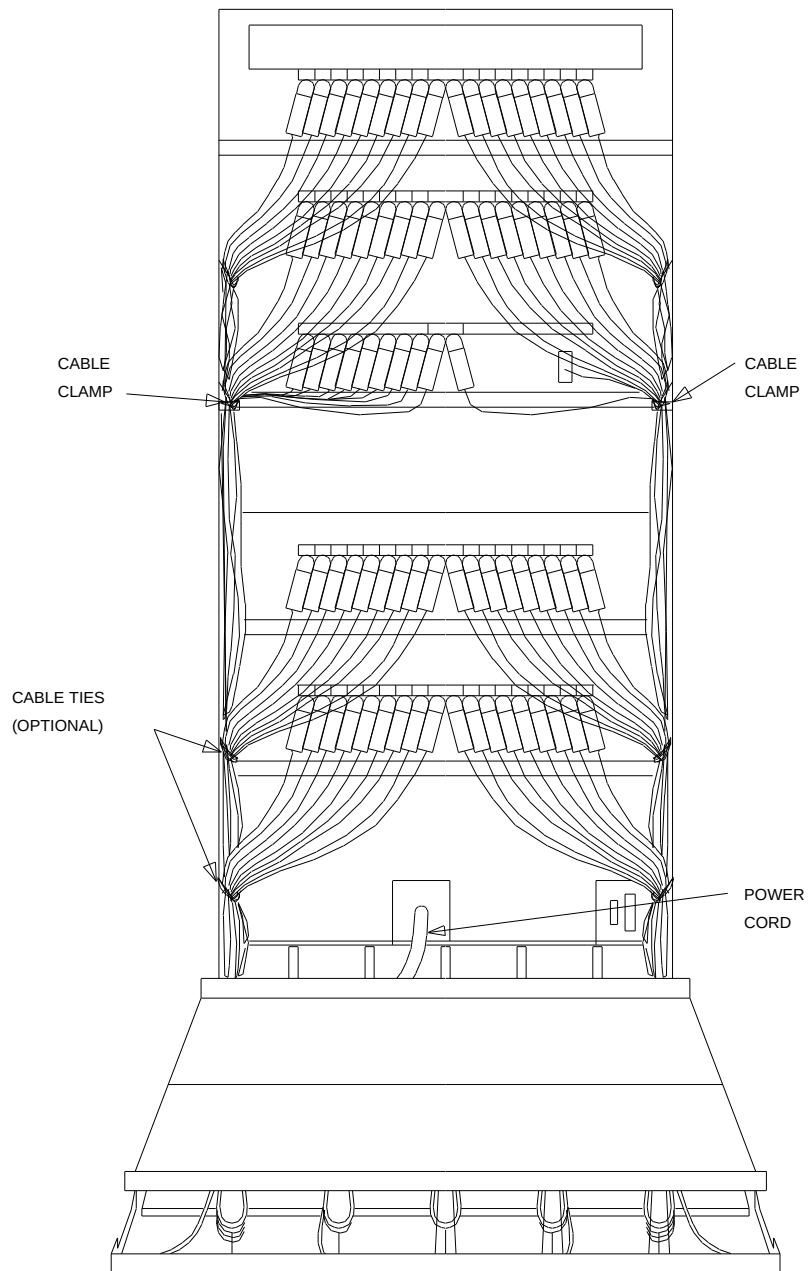


Figure 9-49. Typical Port Cable Installation at Switch Cabinet

Installing Control Carrier Outputs Cable

The control carrier **AUXILIARY** connector outputs include the following:

- Alarm monitoring for the AP and auxiliary cabinet
- (7) DC power (-48V) sources for emergency transfer units
- (3) DC power (-48V) sources for remotely powering two attendant consoles and one executive voice terminal adjunct.
- The INADS 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 more than 100 volts at ¾ amps.

There is one connector on the back of the control carrier that is labeled *AUX*. A 25-pair cable connects this control carrier **AUXILIARY** connector to a 66-type connecting block/110-type terminal block in the yellow field of the trunk/auxiliary field.

Labeling Control Carrier Cable (Used with 110-Type Hardware)

Place the appropriate **AUXILIARY** connector label (Figure 9-28) on the assigned 110-type terminal block row. On the control carrier cable, place a yellow auxiliary label (Figures 9-40 and 9-41) on the connectors at each end of the cable. Write the letters **AUX** on each label.

Labeling Control Carrier Cable (Used with 66-Type Hardware)

Write the lead designations for the **AUXILIARY** connector (Table 9-8) on the 66-type connecting block. If cable labels are to be used, place a yellow auxiliary label (Figures 9-40 and 9-41) on the connectors at each end of the cable. Write the **AUX** on each label. If cable labels are not available, use a magic marker to write **AUX** on the connectors at each end of the cable.

Connecting Control Carrier Outputs Cable

Plug the connector cable in the **AUXILIARY** connector on the rear of the control carrier. Route the connector cable through the cable slack manager to the assigned 66-type connecting block/110-type terminal block in the yellow field of the trunk/auxiliary field.

The output wiring connections for alarm monitoring, emergency power failure, accessory power, and the INADS trunk interface is contained in Chapter 10 of this guide under the heading "Miscellaneous Wiring Installation".

Installing Trunk Cables Among Network Interface, Sneak Fuse Panel, and Switch Cabinet

The 1-pair CO trunks are installed by the local telephone company in the green field. Up to 24 pairs may be terminated on each 66-type connecting block or on each row of the 110-type terminal block. Tie trunks also appear in the green field with up to eight 3-pair trunks terminated on each 66-type connecting block or on each row of the 110-type terminal block.

Selecting Concentrator Cables For Use with 110-Type Hardware

WP-90929, List 1 and 3 concentrator cables can be used to connect the switch cabinet to the 110-type terminal blocks in the purple field. The 1-pair patch cords/jumper wires are then run from the purple terminal block rows to the green terminal block rows in order to establish the correct 3-pair modularity. Tables 9-7 and A-1 show switch port appearances at the cross-connect field. Illustrations throughout Chapter 6, "Interconnect Switch Elements", show the carrier connectors on the rear of the switch that connect to the purple field.

Selecting Concentrator Cables For Use with 66-Type Hardware

WP-90929, List 2 and 4 concentrator cables can be used to connect the switch cabinet to the 66-type connecting blocks in the purple field. Jumper wires are then run from the connecting blocks in the purple field to the connecting blocks in the green field to establish the correct 3-pair modularity for the 1- and 3-pair trunks. Tables 9-7 and A-1 show switch port appearances at the cross-connect field. Illustrations throughout Chapter 6, "Interconnect Switch Elements", show carrier connectors on the rear of the switch that connect to the purple field.

Connecting Trunk Pairs to the Switch Cabinet Using Concentrator Cables

Figure 9-50 shows trunk pairs connected to the switch cabinet with concentrator cables. To install the cables, proceed as follows:

1. Connect B25A connector cables between the network interface and sneak fuse panels.
2. Connect A25D connector cables from the sneak fuse panels to the 110-type terminal block/157B connecting block connectors in the green field.
3. ***For 110-type hardware only***, connect patch cords/jumper wires from the terminal block in the green field to the associated terminal block in the purple field.

4. ***For 66-type hardware only***, install bridging clips on the 66-type connecting blocks, as required.



NOTE:

The left half of the 66-type connecting block is designated as part of the green field and the right half is designated as part of the purple field.

5. Connect the single-fingered end of the concentrator cables to the 110-type terminal block/157B connecting block connectors associated with the purple row in Step 3/4.
6. At the rear of the switch cabinet, connect the other end (2/3-fingered end) of the concentrator cables to the appropriate carrier slots. Equipped carrier slots are identified on the CSO. Mark the nomenclature strips above the carriers to identify the equipped slots.
7. Label connectors on each end of the cables that connect to the switch cabinet.
8. Dress cables down the sides of the switch cabinet and store the excess cable slack in the cable slack manager as described previously.

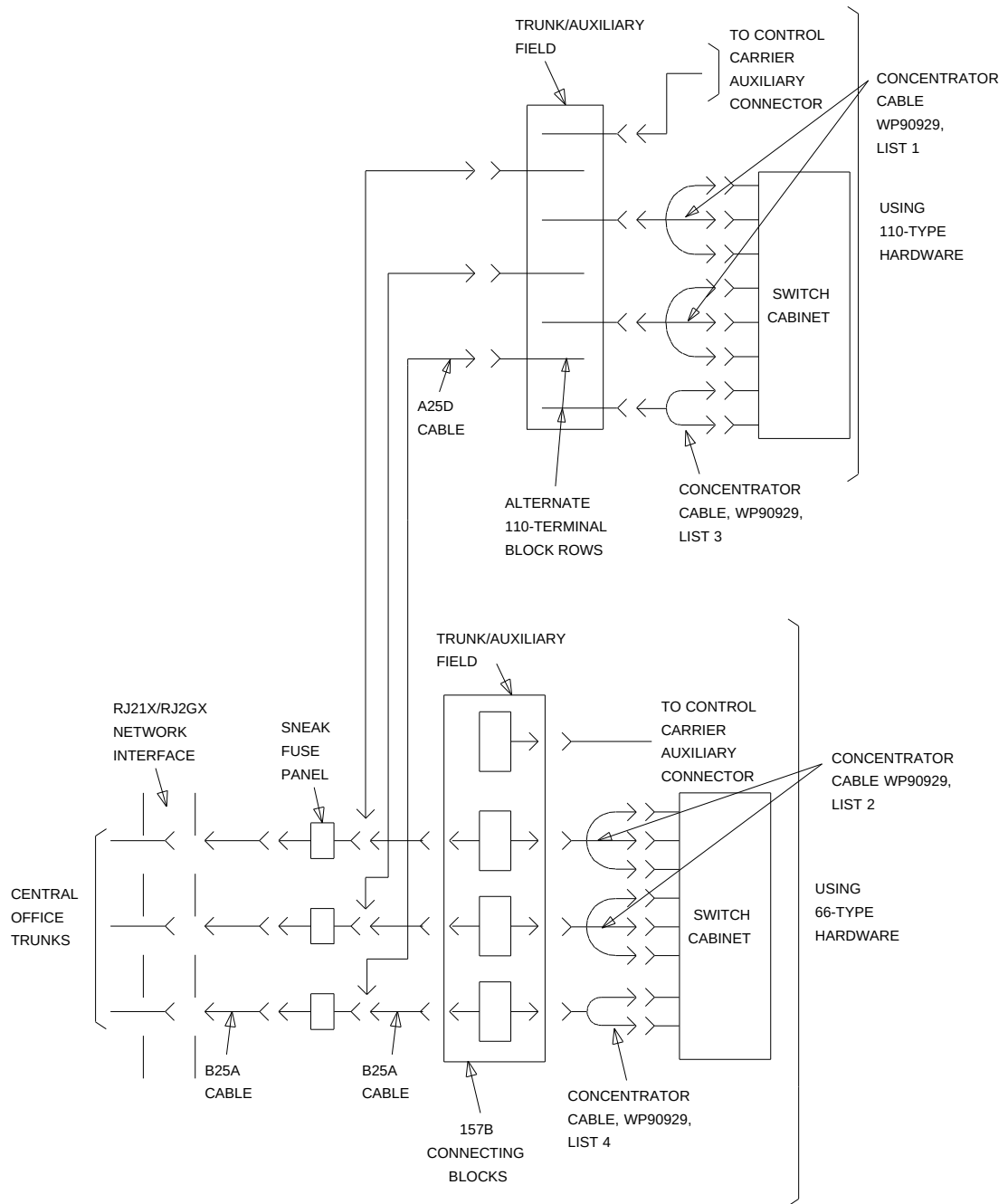


Figure 9-50. Connecting Trunk Pairs Used for 1-Pair Trunk Circuits; DID, Loop Start, Ground Start Using Concentrator Cables

Connecting Trunk Pairs to the Switch Cabinet Using Jumper Wires To Establish 3-Pair Modularity

Figures 9-51 and 9-52 show trunk pairs connected to the switch cabinet with jumper wires to establish 3-pair modularity. To connect the trunk pairs to the purple field, proceed as follows:

1. Connect B25A connector cables between the network interface and the sneak fuse panels (Figure 9-50).
2. Connect A25D/B25A connector cables from the sneak fuse panels to the 110-type terminal block/66-type connecting block connectors in the green field (Figure 9-50).
3. Connect 1-pair patch cords/jumper wires from each 110-type terminal block row/66-type connecting block in the green field to the 110-type terminal block rows/66-type connecting blocks in the purple field as shown in Figure 9-51 for 1-pair CO trunks or in Figure 9-52 for 3-pair tie trunks.

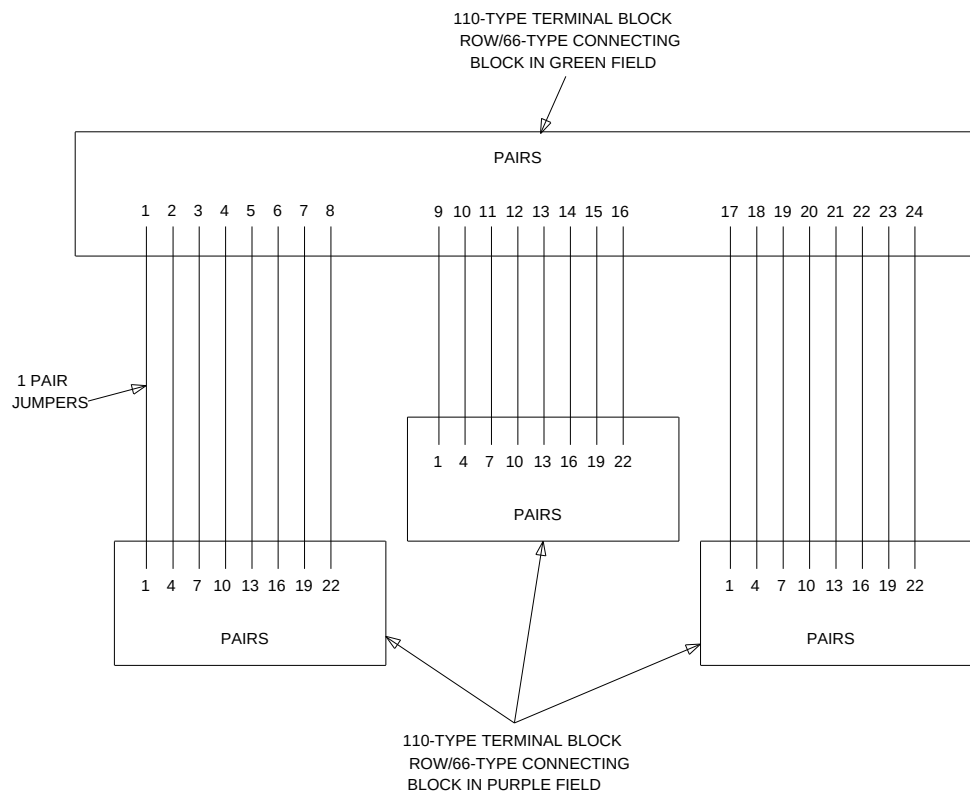


Figure 9-51. Example of Establishing 3-Pair Modularity for Trunk Pairs Used for 1-Pair Trunk Circuits; DID, Loop Start, Ground Start

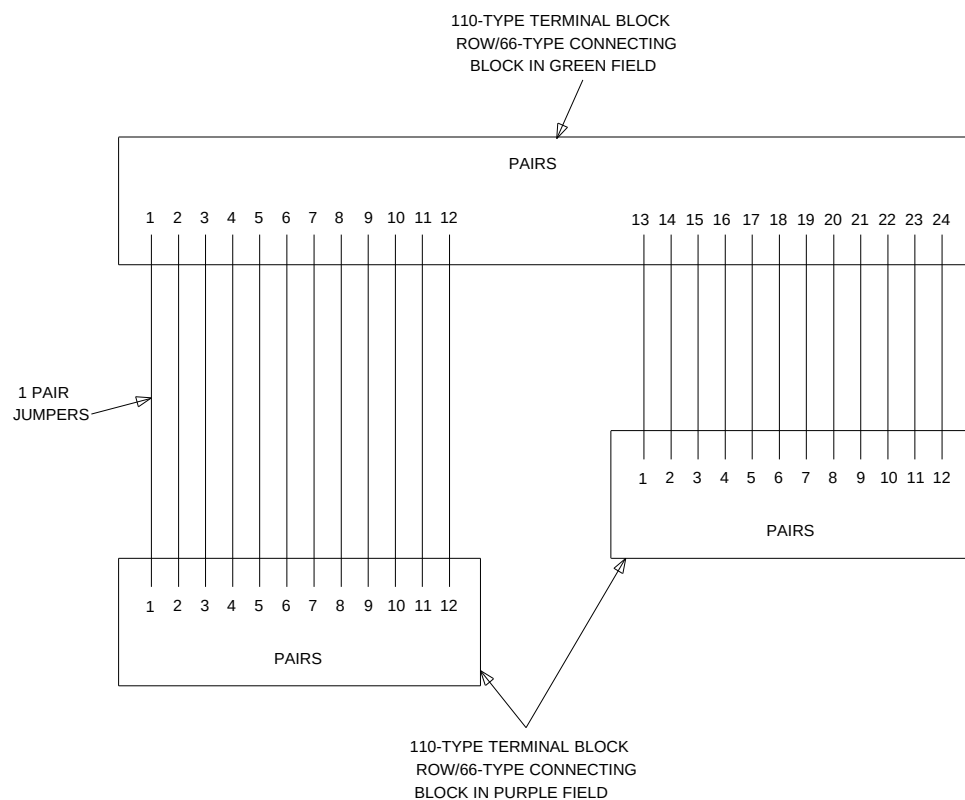


Figure 9-52. Example of Establishing 3-Pair Modularity for Trunk Pairs Used for 3-Pair Tie Trunks

Installing Coupled Bonding Conductor Grounding

A coupled bonding conductor (CBC) must be tie-wrapped to all trunk cables. The CBC connects the cabinet single-point ground block to the approved ground located nearest the telephone company owned protector block at the building entrance facility (Figure 9-53).

➤ NOTE:

The CBC is a conductor that is connected to ground and run adjacent to the pairs in an inside wiring cable. The mutual coupling between the bonding conductor and the cable pairs reduces potential differences in terminating equipment. The conductor consists of a 10-AWG wire that is tie-wrapped to the inside wiring cable.



Grounding of the system shall comply with the general rules for grounding contained in Article 250 of the National Electrical Code, NFPA 70. See Appendix G for a description of “approved ground.”

1. Install “D” rings on the wall between the cable slack manager and the terminal/connecting blocks mounted on the cross-connect field.
2. Install a self-sticking port label on the back of each connector on the connector cable (Figure 9-41).

Labels should be positioned so they will not be obscured by the cabinet connector retainers.

3. At the rear of the cabinet, connect one end of the connector cable to the assigned connector.
4. Dress the cable down the back of the cabinet, and through the cable slack manager to the cross-connect field.
5. At the cross-connect field, connect the other end of the cable to the assigned terminal/connecting block connector.
6. Store the cable slack in the cable slack manager.
7. Repeat previous Steps 2 through 6 until all cables are installed.

Installing Connector Cables Between Auxiliary Cabinet and Cross-Connect Field

Auxiliary equipment that connects to the cross-connect field can be mounted inside the auxiliary cabinet. The equipment connects to an ED-1E1443-10 (Group 1) intraconnection panel mounted in the auxiliary cabinet. This intraconnection panel consists of a 110-type 100-pair wiring block mounted inside the cabinet. Auxiliary equipment is connected to the 110-type wiring block. The wiring block is prewired to four 25-pair female connectors mounted on the outside rear skin of the cabinet.

Install connector cables between the auxiliary cabinet and cross-connect field as follows:

1. Install "D" rings on the wall between the cable slack manager and the terminal/connecting blocks mounted on the cross-connect field.
2. Install a self-sticking port label on the back of each connector on the B25A connector cable (Figure 9-41).



NOTE:

Labels should be positioned so they will not be obscured by the cabinet connector retainers.

3. At the rear of the auxiliary cabinet, connect one end of the connector cable to the assigned connector.
4. Dress the cable down the back of the cabinet, and through the cable slack manager to the cross-connect field.
5. At the cross-connect field, connect the other end of the cable to the assigned terminal/connecting block connector.
6. Store the cable slack in the cable slack manager.
7. Repeat previous Steps 2 through 6 until all cables are installed.

Details for installing the equipment and making the connections to the cross-connect field are included in Chapter 5.

Station Wiring Design

The following hardware and cabling is used in the station wiring design:

- Information outlets
- Station Cables
- Closets
 - Site locations
 - Satellite locations
- Adapters
- Labels

A brief description of each of the above listed items follows. The station wiring labels and their use are described in Chapter 5. Ordering information is not provided for station cables and information outlets. The ordering information for this equipment is available in the *Premises Distribution System Equipment and Supplies Catalog*.

Information Outlets

Information Outlets are 8-pin modular wall jacks. Most of the outlets are wired with push-on connections. Information outlets are also available that connect to a double modular plug-ended 4-pair station cable run from the cross-connect field, a site/satellite location, or an adapter.

Station Cables

For clarity in describing the wiring in this guide, station cable is either 25-pair cable, multiple 25-pair cable, or 4-pair D-inside wire (DIW) run from the equipment room, a site/satellite location, or an adapter to the information outlets. The following types of station cable are available.

- Connectorized 25-pair station cable—This cable is used between the equipment room and the site/satellite locations or adapters. **For 110-type hardware**, use an A25D cable (male to male) between the equipment room and a satellite closet, and use a B25A cable (male to female) between the equipment room and a site closet or adapter. **For 66-type hardware**, use an A25B cable (female to female) between the equipment room and a satellite/site closet or adapter. The A25B cable is available with connectors on each end (double-ended), and also with a connector on only one end (single-ended). Use the single-ended cable when the leads are punched down on the connecting blocks.
- Connectorized multiple 25-pair station cable—This cable can be used between the equipment room and the site/satellite locations or adapters. This cable consists of individually sheathed 25-pair cables with a factory-installed 25-pair connector on each end. **For 110-type hardware**, use a

male to female cable to connect between the equipment room and a site location or adapter, and use a male to male cable to connect between the equipment room and a satellite location. **For 66-type hardware**, use a female to female cable to connect between the equipment room and a site/satellite location or adapter. Staggered-finger cables are recommended for all multiple 25-pair station cables. Staggered-finger cables are available in both double-ended and single-ended types.

- Bulk Cable—This cable is the same as the connectorized 25-pair cable or multiple 25-pair cable; however, the bulk cable is not equipped with connectors. Use this cable between the equipment room and satellite closets when both are equipped with punch-down type terminal/connecting blocks.
- Nonconnectorized 4-pair station cable—Use this cable when 4-pair station cables are to be field-terminated on the 110-type terminal blocks/66-type connecting blocks in the equipment room or satellite closet and the information outlets require push-on connections.
- Single modular plug-ended 4-pair station cable(Figure 9-54)—Use this cable between adapters and information outlets that require push-on connections. It can also be used when 4-pair station cables are field-terminated on the 110-type terminal blocks/66-type connecting blocks in the equipment room or satellite closet and modularly connected to information outlets. The station cables are available in the following lengths:
 - 10 feet
 - 25 feet
 - 50 feet
 - 75 feet
 - 100 feet
 - 150 feet
 - 200 feet

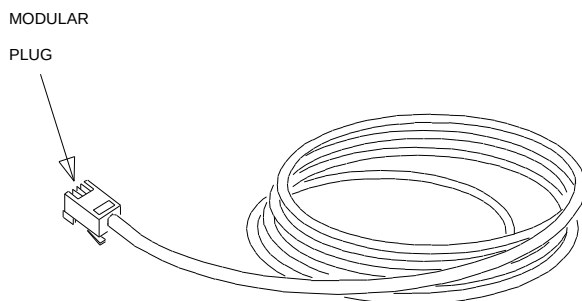


Figure 9-54. 4-Pair Single Modular Plug-Ended Station Cable

- Double modular plug-ended 4-pair station cable—Use this cable to provide nonstandard length runs between adapters and information outlets with push-on connections. It can also be used between adapters and modularly connected information outlets. It is available in the same lengths as the single modular plug-ended cable.



NOTE:

If more than 200 feet of 4-pair station cable is required, a 451A in-line adapter (double-ended modular female connector) is attached to the cable and a second 4-pair cable of the required length is plugged into the adapter (Figure 9-55).

451A Adapter Ordering Information

Color	Comcode
Gray	103942272
Ivory	103786240

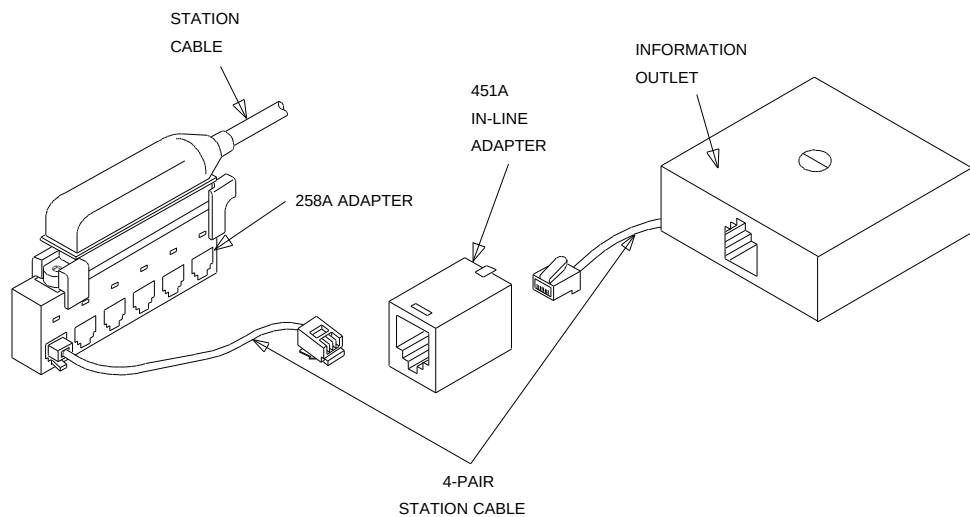


Figure 9-55. Example of Extending 4-Pair Station Cables

Closets

Site Locations

Site locations are closets that provide a point in the station wiring for the administration of remote powering. Adapters are used at site locations to terminate the 25-pair station cables and provide connection points (modular jacks) for power adapters and 4-pair station cables.

258A AND BR2580A Adapters

The 258A and BR2580A adapters (Figure 9-56) plug into a 25-pair female cable connector. These adapters divide the 25-pair cable into six 4-pair (modular jack) circuits. See “Adjunct Powering” in Chapter 5 for details.)

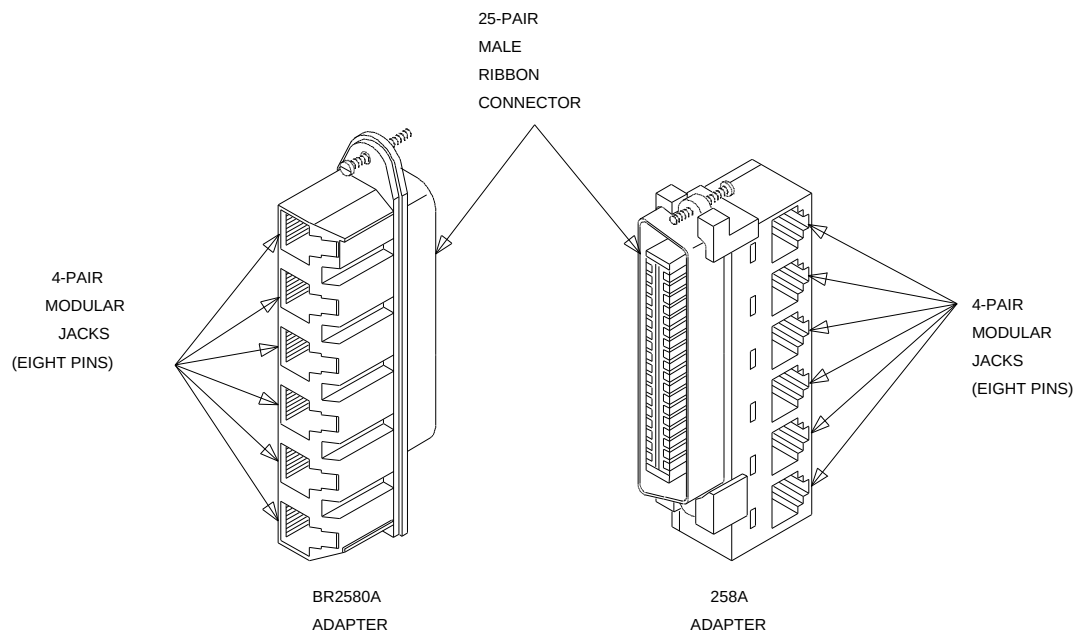


Figure 9-56. 258A and BR2580A Adapters

356A ADAPTER

The 356A adapter (Figure 9-57) plugs into a 25-pair female cable connector. The 356A adapter divides the 25-pair cable into eight 3-pair circuits. Although the circuits are 3-pair, the adapters modular jacks will accept the 8-pin modular plug used on the 4-pair station cable. See “Adjunct Powering” in Chapter 5 for details.)



CAUTION:

Adapters wired similarly to the 356A should not be used. Their jacks will not accept 4-pair plugs.

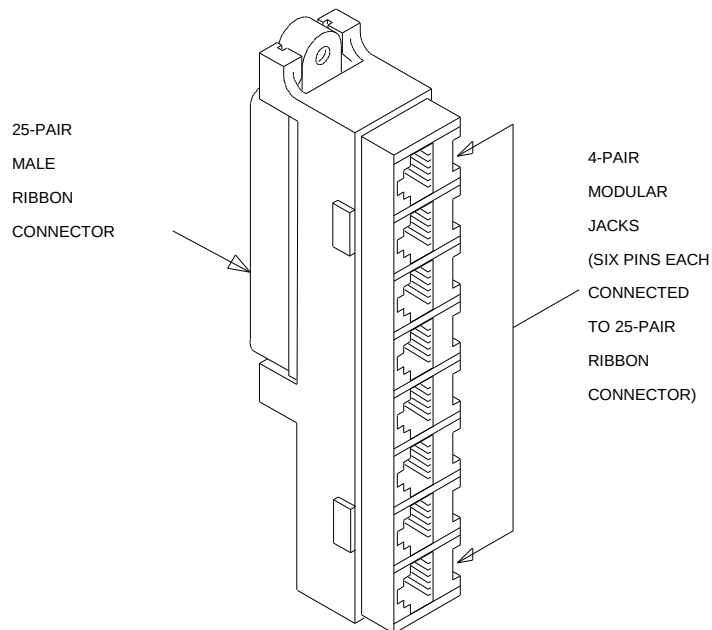


Figure 9-57. 356A Adapter

ZD8AJ ADAPTER

Use the ZD8AJ adapter to connect a MET line cord to an information outlet. The adapter interchanges pairs 3 and 4 to correspond with the pair assignments for the MET. The MET line cord plugs into the adapter, and then the adapter is plugged into an information outlet.

Adapter Ordering Information

Description	Comcode
258A Adapter	102605136
BR2580A Adapter	403384720
356A Adapter	104158829
400B Adapter	103848859
400B2 Adapter	104152558
ZD8AJ Adapter	103881421

Satellite Locations

Satellite locations are closets that provide an administration point (using cross-connect equipment) for station cables and where adjunct power may be applied. The station cable circuits from the equipment room cross-connect field are 3-pair. The hardware at the equipment room has been described previously. At the satellite location, 4-pair circuits run to the information outlets. The hardware used at the satellite location is 110-type terminal blocks/66-type connecting blocks.

Satellite Locations Using 110-Type Hardware

Each terminal block has a 3-pair (white field) and a 4-pair (blue field) located on the same terminal block.

The 110A-type terminal block that can be used in the satellite closet is the 110AE1-75FT. It must be field-terminated to both the white and blue fields.

The 300-pair 110P-type terminal blocks that can be used in the satellite closet are the:

LI 110PE1-300CT — Connectorized on both the white and blue fields

- 110PE1-300CT/FT — Connectorized on the white field and field-terminated on the blue field
- 110PE1-300FT — Field-terminated on both the white and blue fields.

The 900-pair 110P-type terminal blocks that can be used in the satellite closet are the:

- 110PE1-900CT/FT — Connectorized on the white field and field-terminated on the blue field
- 110PE1-900FT — Field-terminated on both the white and blue fields.

Satellite Locations Using 66-Type Hardware

The 3-pair station circuits from the equipment room are terminated on a 66-type connecting block in the satellite closet white field, and then cross-connected to a 66-type connecting block in the blue field. The 4-pair station circuits from the information outlets are terminated on the satellite closet blue field. The following 66-type connecting blocks can be used in a satellite closet:

- 66M1-50 connecting block
- 157B connecting block
- 154A-type backboard
- 166A-type backboard

Station Circuit Distribution from Equipment Room

The following information explains the station circuit distribution from the equipment room to the information outlets for new wiring installations. Connection diagrams are provided to show the options for running and connecting the station cables.

If most of the telephones/voice terminals that require remote powering are within 250 feet of the equipment room, 4-pair station circuits are run from the equipment room to the information outlets. If this is not the case, or if the customer requires 2-point administration, 3-pair station circuits are run from the equipment room to satellite locations. Then, the 4-pair station circuits are run from the satellite locations to the information outlets.

4-Pair Station Circuits

Four-pair circuits can be run directly from an equipment room cross-connect field to a 258A or BR2580A adapter as shown in Figure 9-58. The 4-pair station cables connect the adapter to the information outlets.

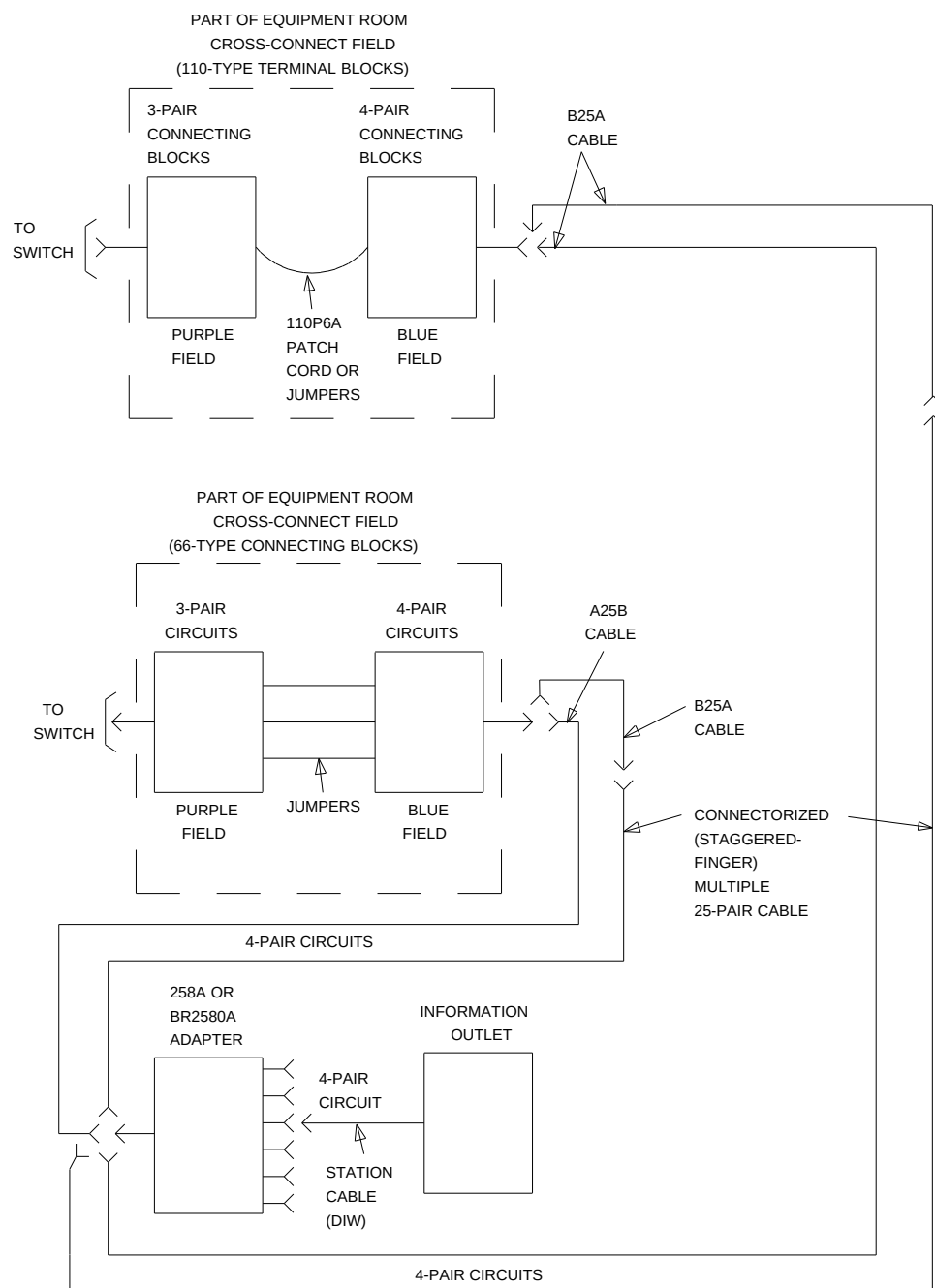


Figure 9-58. 4-Pair Circuit Distribution and Connectivity from Equipment Room Cross-Connect Field

The 4-pair station cables can be run directly from the equipment room to the information outlets if 4-pair terminal blocks are used in the distribution field (Figure 9-59). The station cables must be field-terminated on the 110-type terminal blocks/66-type connecting blocks. If **110-type terminal blocks** are used with a modular plug-ended station cable, an adapter can be connected directly to the 110-type terminal block connectors (Figure 9-60).

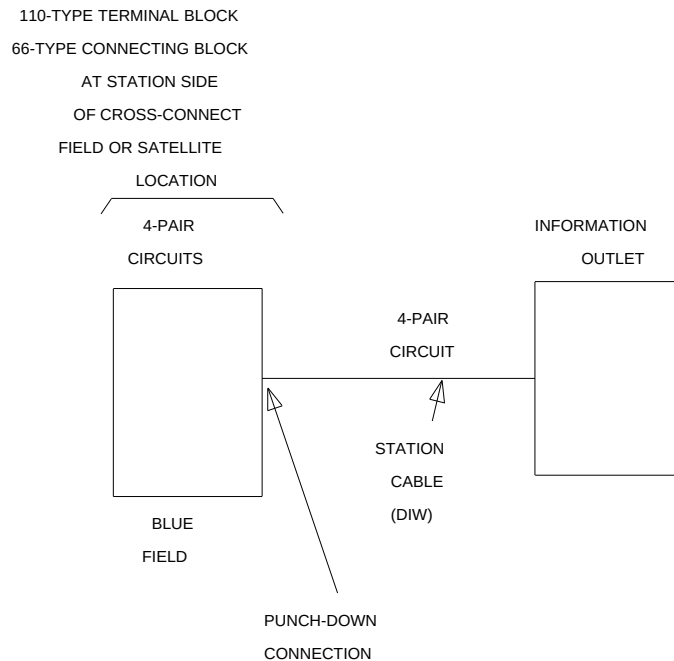


Figure 9-59. 4-Pair Home Run to Equipment Room or Satellite Location

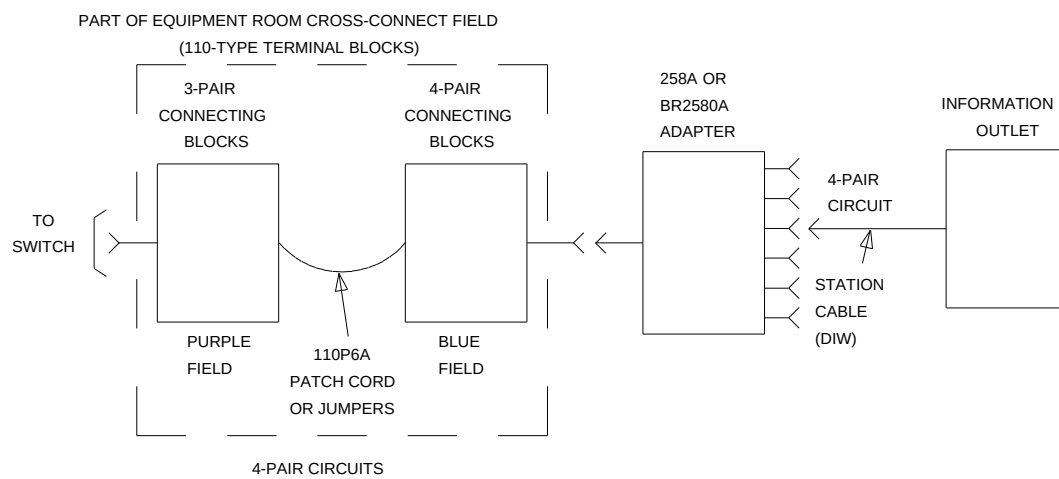


Figure 9-60. Example of 4-Pair Home Run to Equipment Room or Satellite Location Using Modular Plug-Ended Station Cable

3-Pair to 4-Pair Station Circuit Distribution

Figures 9-61 and 9-62 show the 3-pair circuit distribution from an equipment room cross-connect field to a satellite location using 110- and 66-type hardware, respectively. Four-pair circuits are distributed from the satellite location to the information outlets.

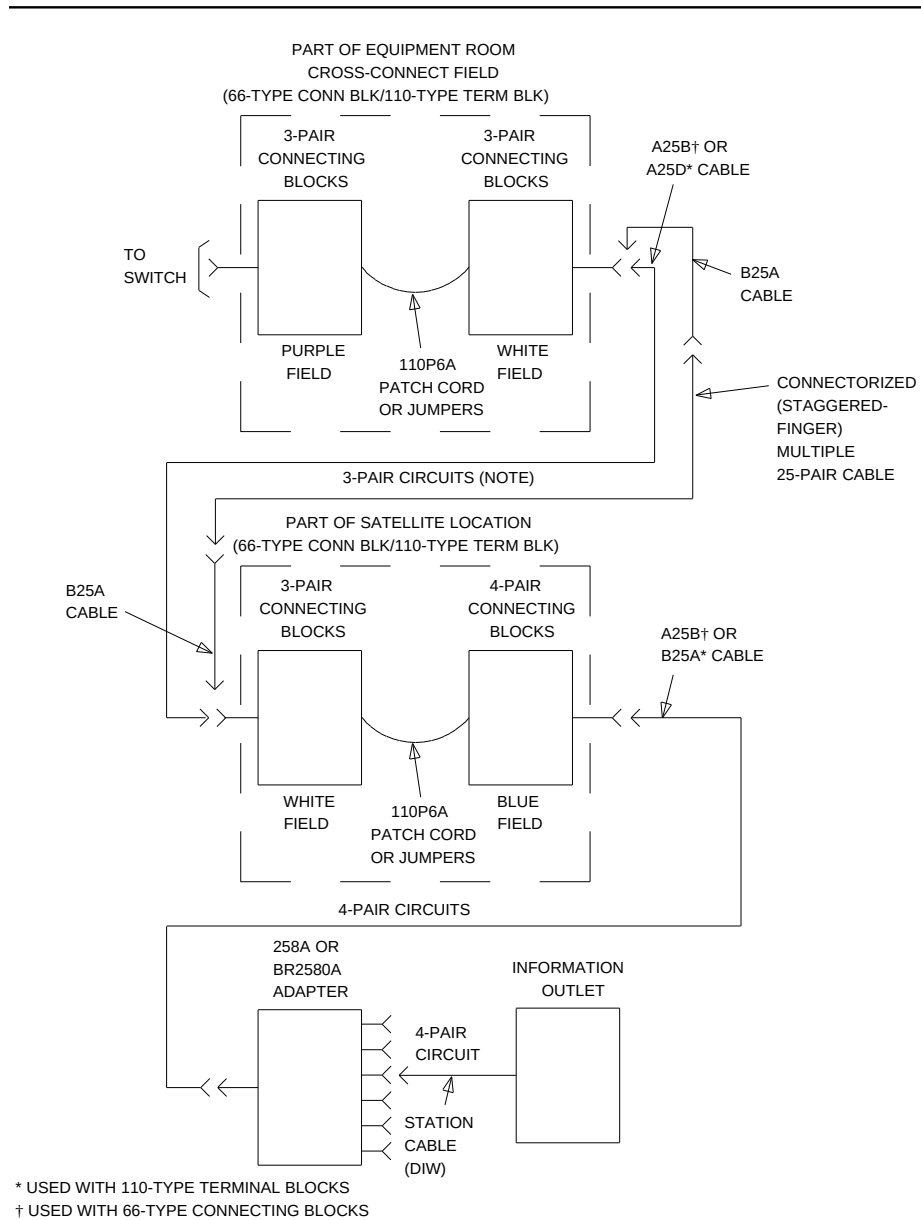


Figure 9-61. 3-Pair to 4-Pair Circuit Distribution and Connectivity from Equipment Room Using 110-Type Hardware

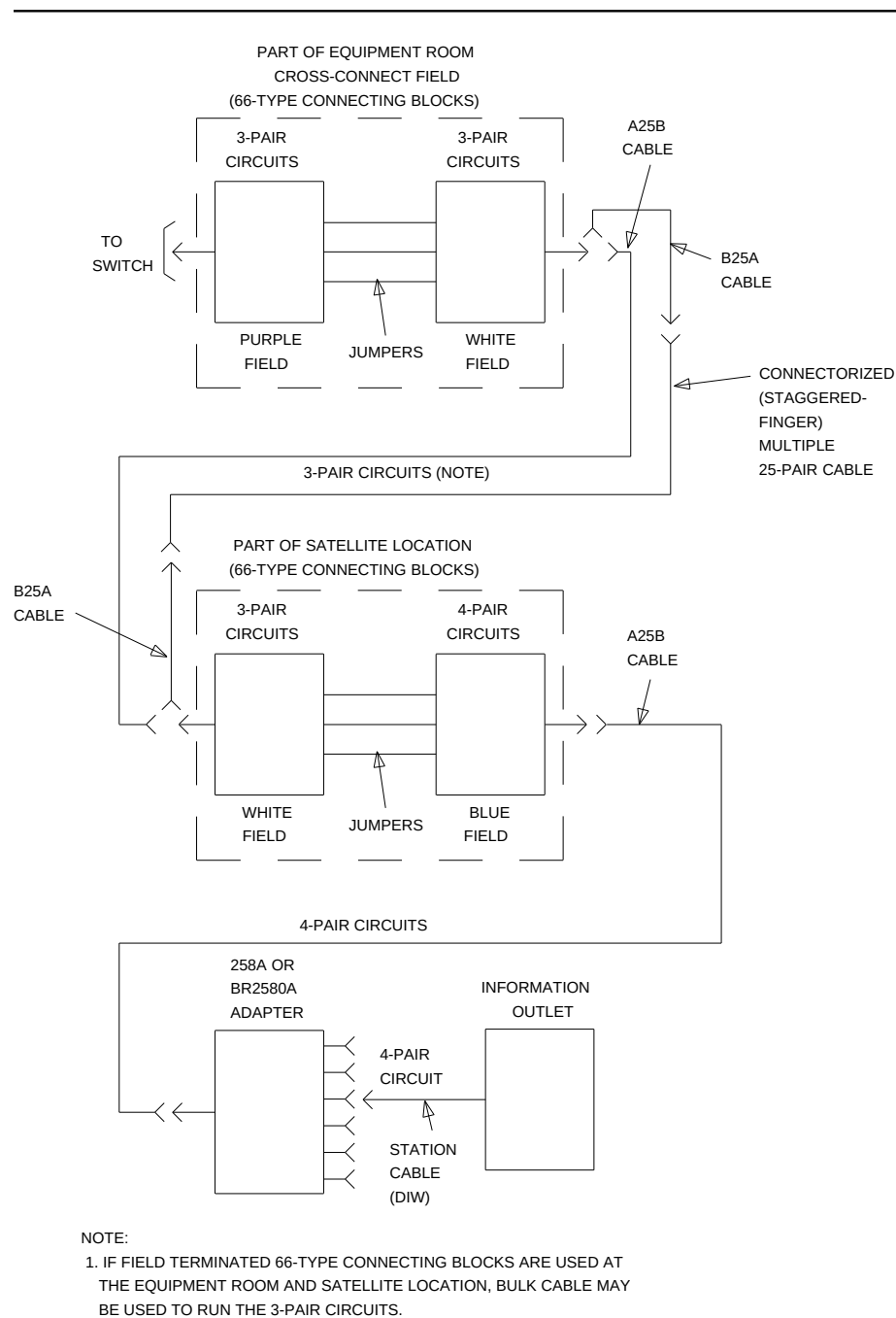


Figure 9-62. 3-Pair to 4-Pair Circuit Distribution and Connectivity from Equipment Room Using 66-Type Hardware

Three-pair circuits can also be run directly from the equipment room cross-connect field to a 356A adapter as shown in Figure 9-63. Four-pair station cables connect the adapter to the information outlets. Four-pair station cables can be run directly from a satellite location to the information outlets as previously described (Figure 9-59 and 9-60).

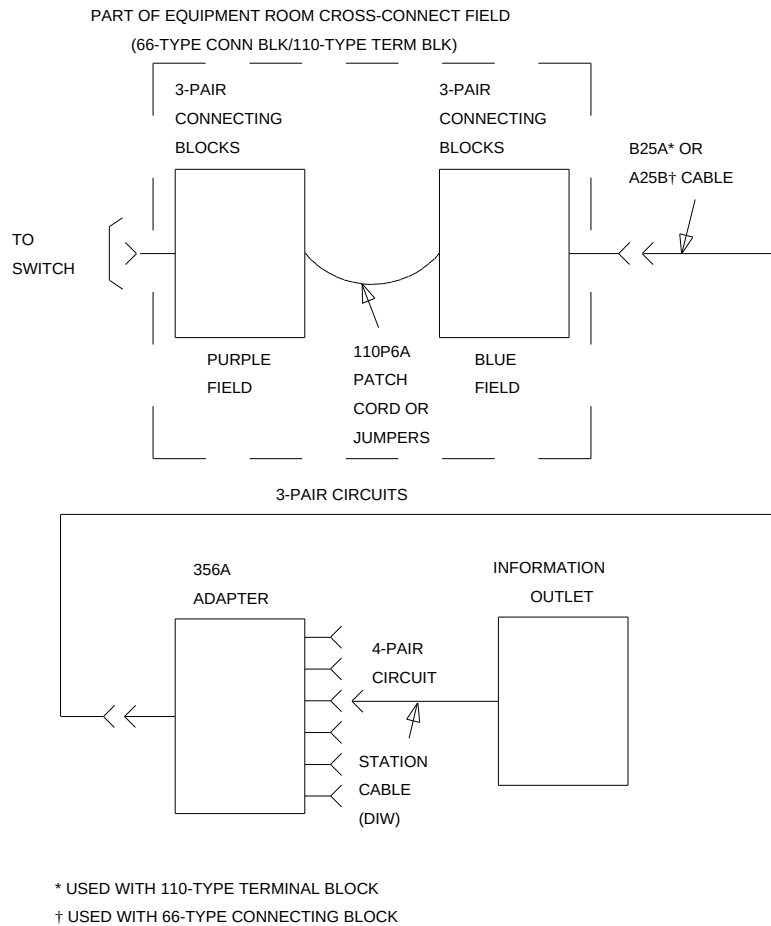


Figure 9-63. 3-Pair to 4-Pair Circuit Distribution and Connectivity from Equipment Room Using a 356A adapter



NOTE:

Bridged taps must not be allowed on any part of the station wiring.

Layout

Locating Information Outlets

The customer or marketing representative must provide floor plans showing the information outlet locations and types (flush- or surface-mounted) required. The floor plans must also show a complete overview of all conduit and cabling facilities in the building.

Locating Satellites and Sites

Use the following information when determining site, satellite, or adapter locations.

- a. Keep the number of locations to a minimum.
- b. To minimize the station wiring distances, centrally locate the sites/satellites, or adapters among the information outlets.
- c. Site/satellite locations must be easily accessible and contain ac power receptacles.

Adapter Requirements

One 258A/BR2580A adapter is required for each 25-pair station cable containing 4-pair station circuits. One 356A adapter is required for each 25-pair station cable containing 3-pair station circuits.

Hardware Requirements

Hardware requirements are the same as for the equipment room.

Sizing 4-Pair Station Cables

Use the scale of the floor plan to determine the approximate length of the station cables required per the standard SYSTIMAX™ wiring concepts.

Sizing 25-Pair and Multiple 25-Pair Station Cables

Use the scale of the floor plan to determine the approximate length of each 25-pair station cable. The 25-pair station cables must be selected and properly sized to make maximum use of the hardware at the equipment room or satellite location.

When using 110-type hardware, use 25-pair B25A cables to connect adapters directly to the equipment room cross-connect field or satellite location. Staggered-finger cables, equipped with factory-installed 25-pair connectors at both ends (male to female), are recommended for use when multiple 25-pair

cables are to be used between the equipment room or satellite location and the adapters. B25A cables are required at the equipment room or satellite location to connect the staggered-finger cables to the 110-type terminal blocks.

When using 66-type hardware, use 25-pair A25B cables to connect adapters directly to the equipment room cross-connect field or satellite location. Staggered-finger 25-pair cables (double- or single-ended), are recommended for use when multiple 25-pair cables are to be used between the equipment room or satellite location and the adapters. B25A cables are required at the equipment room or satellite location to connect the double-ended (female to female) staggered-finger cables to the 66-type connecting blocks.

Use the following information to determine the cable size (cable pairs) required for either 3-pair or 4-pair circuits. Note the length and size on the floor plan to aid in the ordering and installation of the station cables.

3-Pair Station Cable Circuits

To determine the size of station cables containing 3-pair circuits, multiply the number of 3-pair circuits required at the satellite location by 3.5. Then, using the minimum size cable requirement, round up the cable size requirement to the next highest available cable bundle size. This will provide additional pairs for growth and compensate for the fact that every twenty-fifth pair in a cable is not used.

4-Pair Station Cable Circuits

To determine the size of station cables containing 4-pair circuits, find out how many information outlets are served by the equipment room cross-connect field or satellite location cross-connect field. Multiply the number of information outlets by 4 (see the following note). Then, using the minimum size cable requirement, round up the cable size requirement to the next highest available cable bundle size.

⇒ NOTE:

This formula may not compensate for the unused twenty-fifth pair in all cases. If not, you must allow for it.

Installation of Station Wiring and Associated Hardware

Installing Station Cables

The station labels shown in Figure 10-1 must be installed on each end of a 25-pair station cable. The labels are provided with the 201A cable/jack station labels (Figure 9-40). The labels must match the labels that were previously installed at the cross-connect field. For example, if the cable plugs into a 110-type terminal block or 66-type connecting block connector with jacks labeled 1 through 6, the cable label must be numbered 1 through 6 (see the following note).

⇒ NOTE:

If cable/jack station labels are not available, the information can be written on the cable connector with a felt-tipped pen.

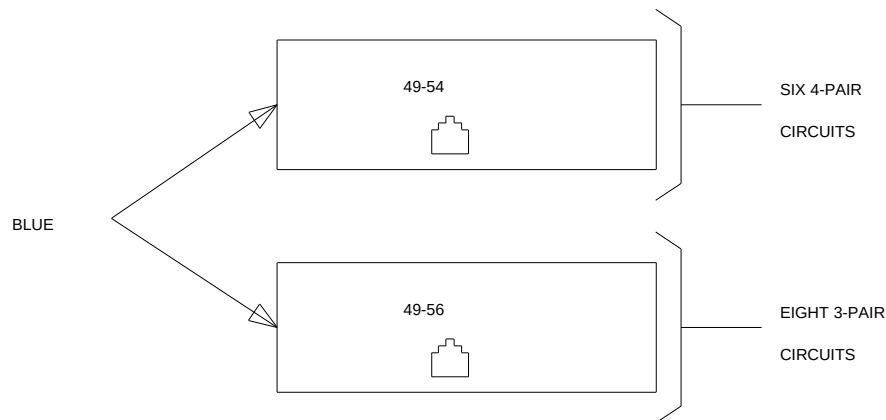


Figure 10-1. 25-Pair Station Cable Labels

Install the station cables between the equipment room cross-connect field and the site, satellite, or adapter locations. If 25-pair cables are run from the equipment room to the satellite location, A25B (**for 66-type connecting blocks**) or A25D (**for 110-type terminal blocks**) cables are used. If multiple 25-pair staggered finger station cables (male to male) are to be run from the equipment room to the satellite location, B25A cables must be used to connect the multiple 25-pair cables to the 110-type terminal block/66-type connecting block connectors. Bulk cables can also be used to run from the equipment room to the satellite locations if field-terminated 110-type terminal blocks/66-type connecting blocks are used.

If cables are to be connected to site locations or adapters, A25B (**for 66-type connecting blocks**) or B25A (**for 110-type terminal blocks**) cables connect to the terminal blocks at the equipment room. The B25A/A25B cables are run to the site locations or adapters or connect to the multiple staggered-finger station cables (Figure 10-2). The staggered-finger station cables are run to the site locations or adapters.

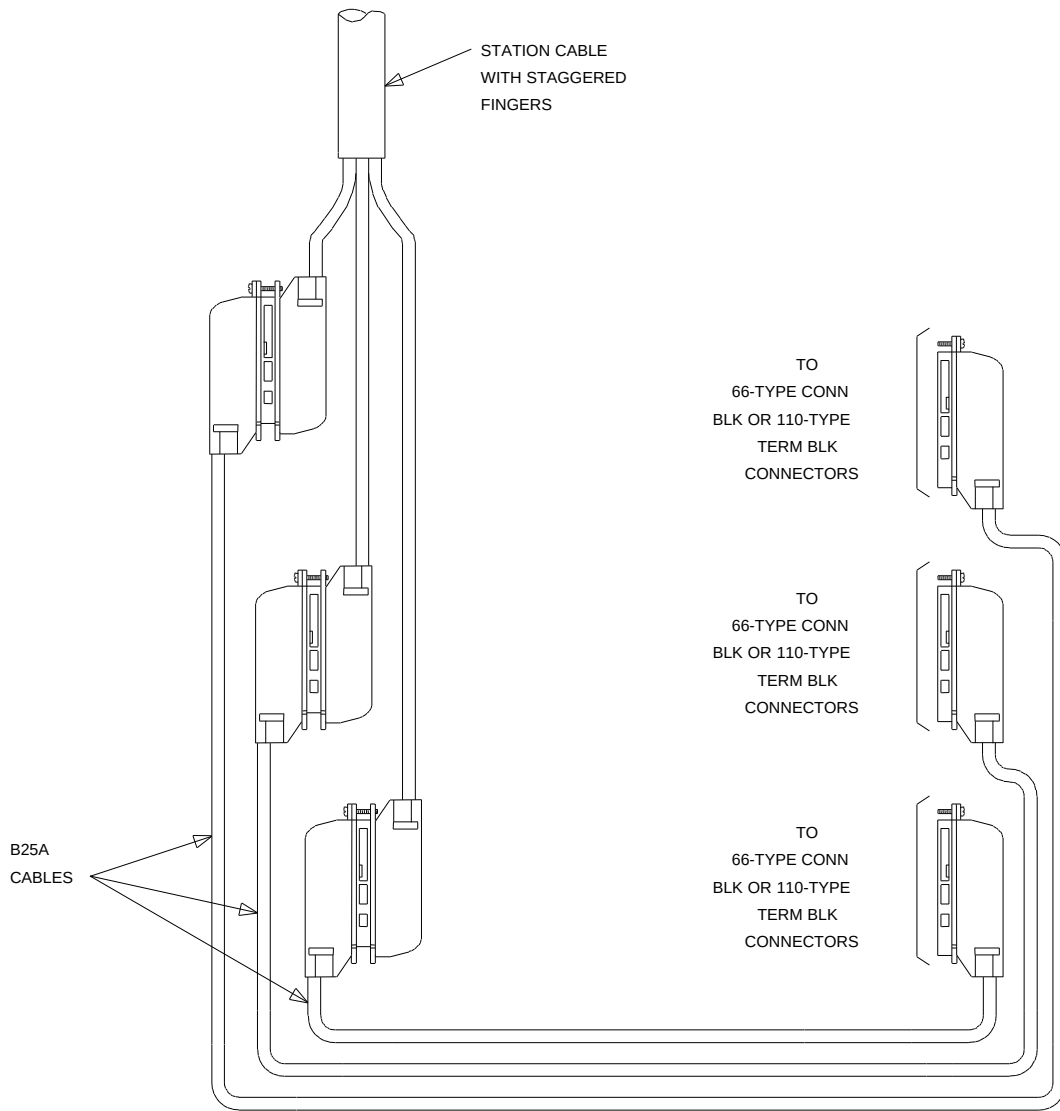


Figure 10-2. Multiple 25-Pair Station Cable with Factory-Installed Staggered Fingers Connected to a 110-Type Terminal Block/66-Type Connecting Block

Installing 110-Type Hardware at Satellite Locations

To install 110-type terminal blocks at a satellite location, use the same installation procedure described in Appendix A in the section "Installing the Cross-Connect Field". Figure 10-3 shows typical satellite location layouts.

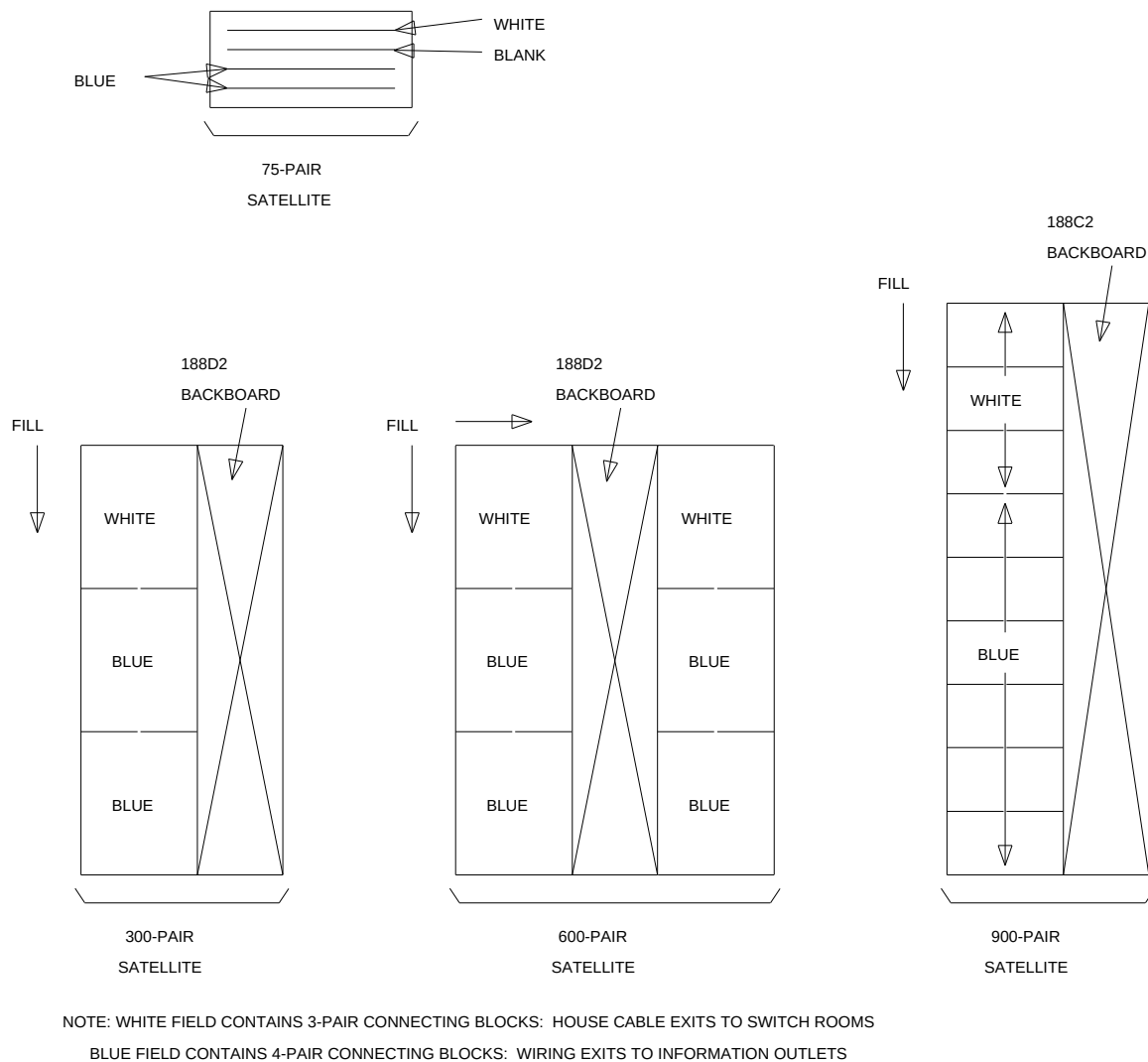


Figure 10-3. Typical Satellite Location Layouts

The 3-pair station circuits from the equipment room connect to the 3-pair terminal block rows (white field). The 4-pair station circuits to the information outlets connect to the 4-pair terminal blocks (blue field). Connections to both the 3- and 4-pair sections of the terminal blocks can be made with connectorized or field-terminated cables depending on the type of terminal blocks used.

Labeling

Figure 10-3 shows the fill directions for the blue and white fields at a satellite location. Use the labels described in Appendix A in the section “Labeling the Cross-Connect Field” (with the satellite symbols) at a satellite location.

Figure 10-4 shows the labeling scheme from the white field at the equipment room to the information outlet. In the example shown, the white label identifying the terminal block row associated with circuits 17 to 24 is connected to an identically labeled terminal block row at the satellite closet. This is always the case for either 1-point or 2-point administration. See “Patch Cord Installation and Administration” section in this chapter for details.

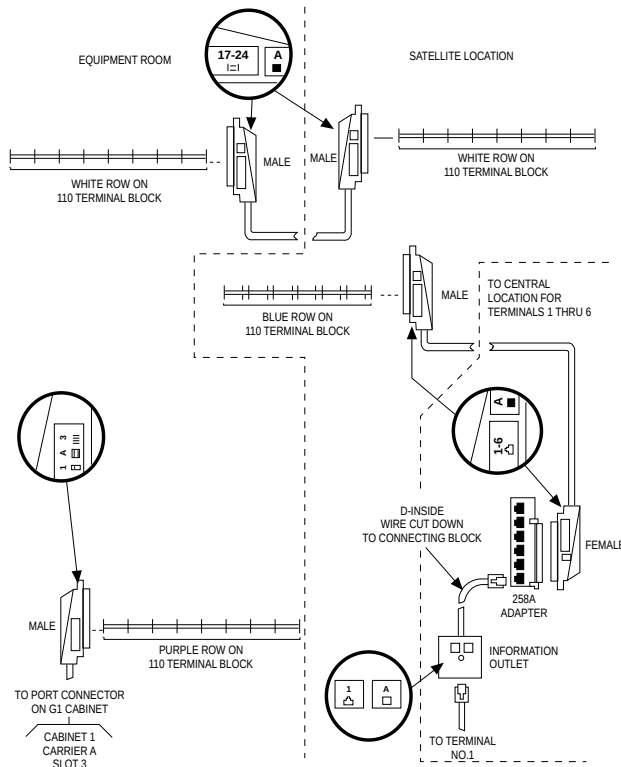


Figure 10-4. 3-Pair to 4-Pair Wiring Labeling from Equipment Room to Information Outlet

The satellite symbol must be installed at all connection points between the blue field and the information outlet. It must also be installed at the information outlet itself. Figure 10-5 shows the labeling scheme for 4-pair circuits from the equipment room to the information outlets. The labeling scheme for 3-pair circuits from the cross-connect field to a satellite location is discussed in “Installing 110-Type Hardware at Satellite Locations” section in this chapter.

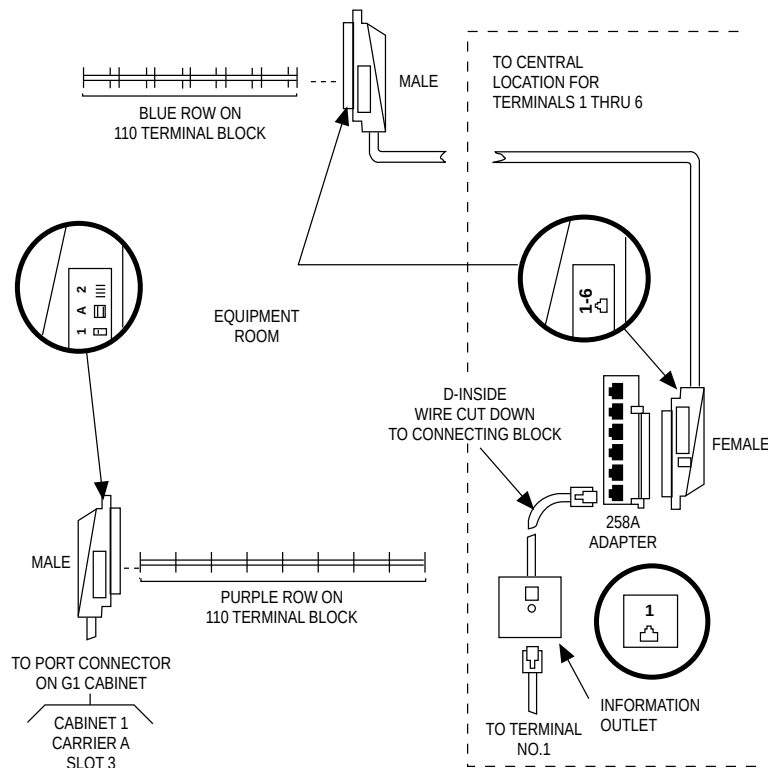


Figure 10-5. 4-Pair Station Wiring Labeling from Equipment Room to Information Outlet

Installing 66-Type Hardware at Satellite Locations

To install 66-type connecting blocks at a satellite location, use the installation procedure described in Appendix A in the section “Installing the Cross-Connect Field”. Figure 10-6 shows a typical satellite location layout.

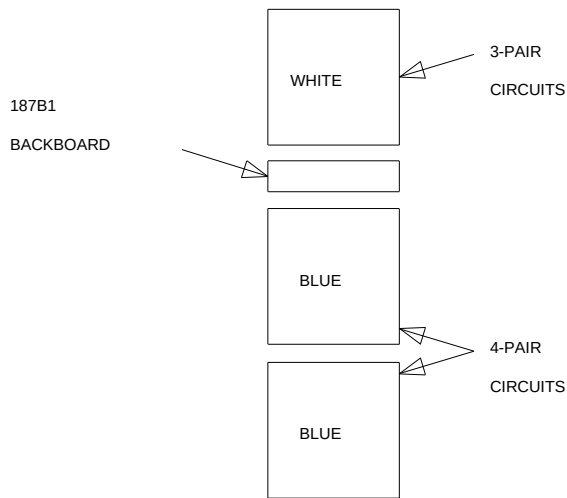


Figure 10-6. Typical Satellite Location Layout Equipped with 66-Type Connecting Blocks

Three-pair station circuits are run from the equipment room to the satellite closet white field and four-pair station circuits are run from the satellite closet blue field to the information outlets. Connections to both the three- and four-pair circuits can be made with connectorized or field-terminated cables depending on the type of connecting blocks used.

Labeling

Figure 10-6 shows the fill direction for the blue and white fields at a satellite location. Lead designations are written on the connecting blocks using a permanent felt-tipped pen as described in Appendix A in the section “Labeling the Cross-Connect Field”.

Installing 4-Pair Station Cables

The 4-pair station cables can either be plugged into adapters or field-terminated at the cross-connect field and then run to the information outlets.

Installing Information Outlets

Install the information outlets (Figure 10-7) at the designated telephone/voice terminal locations. See Table 9-9 for connection information.

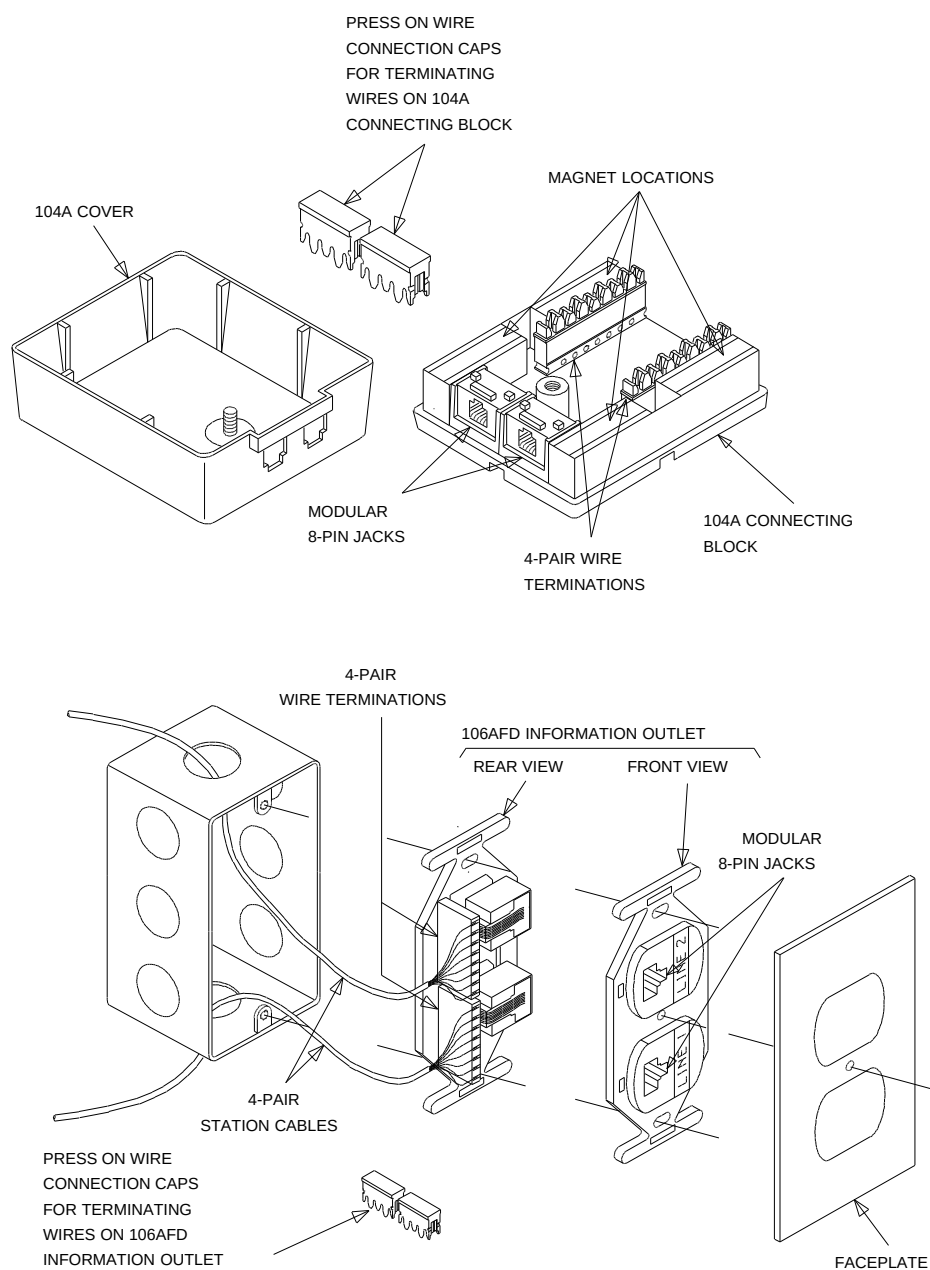


Figure 10-7. Typical 8-Pin Modular Information Outlets

Adjunct Powering

Adjunct Powering from the Equipment Room and Satellite Locations

Adjunct power is provided at cross-connect fields or satellite locations when 4-pair circuits are required for station wiring. Figure 10-8 shows the connection arrangement at the cross-connect field. The power adapter cord is routed from the connecting block the power supply.

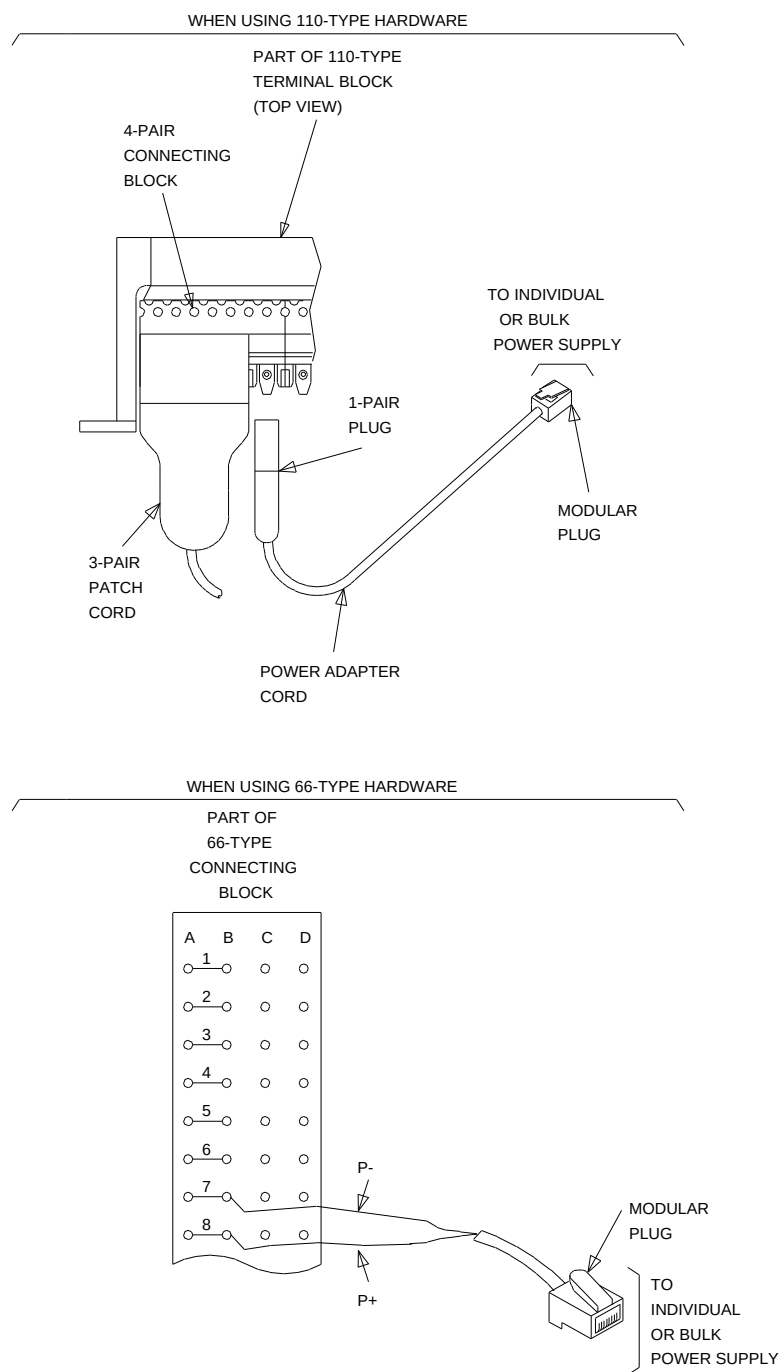


Figure 10-8. Remote Powering from the Equipment Room or Satellite Location

Adjunct Powering from Site Locations

Adjunct power can be provided through an adapter located in a site closet. Adjunct power is required when the length of the 4-pair station wiring from the equipment room or satellite location is more than 250 feet or when the 3-pair station wiring is run from the cross-connect field to a 356A adapter.

Figure 10-9 shows connections for the 258A and 356A adapters. The 400B2 adapter and D6AP power cord provide power on the fourth pair of the 4-pair station cable. The D6AP power cord connects to an individual or a bulk power supply. The D6AP power cord is available in 7-, 14-, and 25-foot lengths.

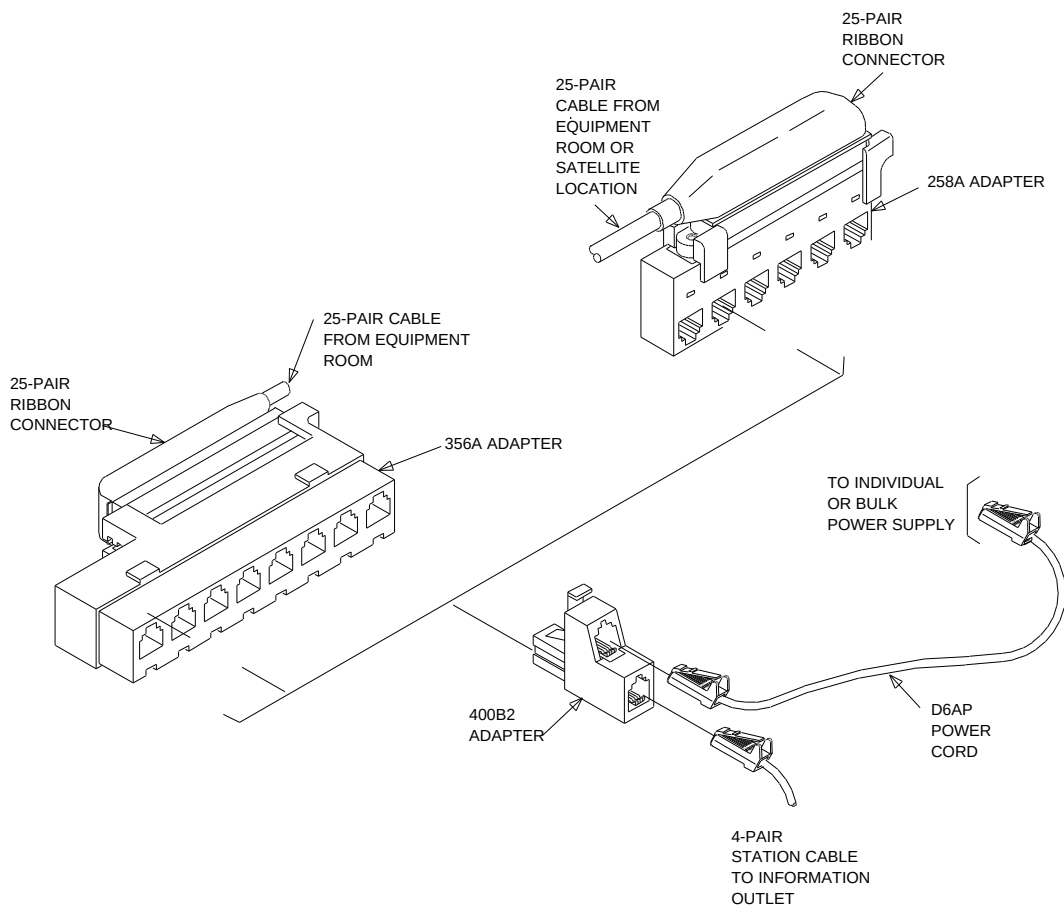


Figure 10-9. Remote Powering from a 258A/356A Adapter in a Site Closet

Adjunct Powering from Information Outlets

An individual power supply is the only source of local power at an information outlet. Figure 10-10 shows typical connections at an information outlet using the 400B2 adapter and a D6AP power cord.

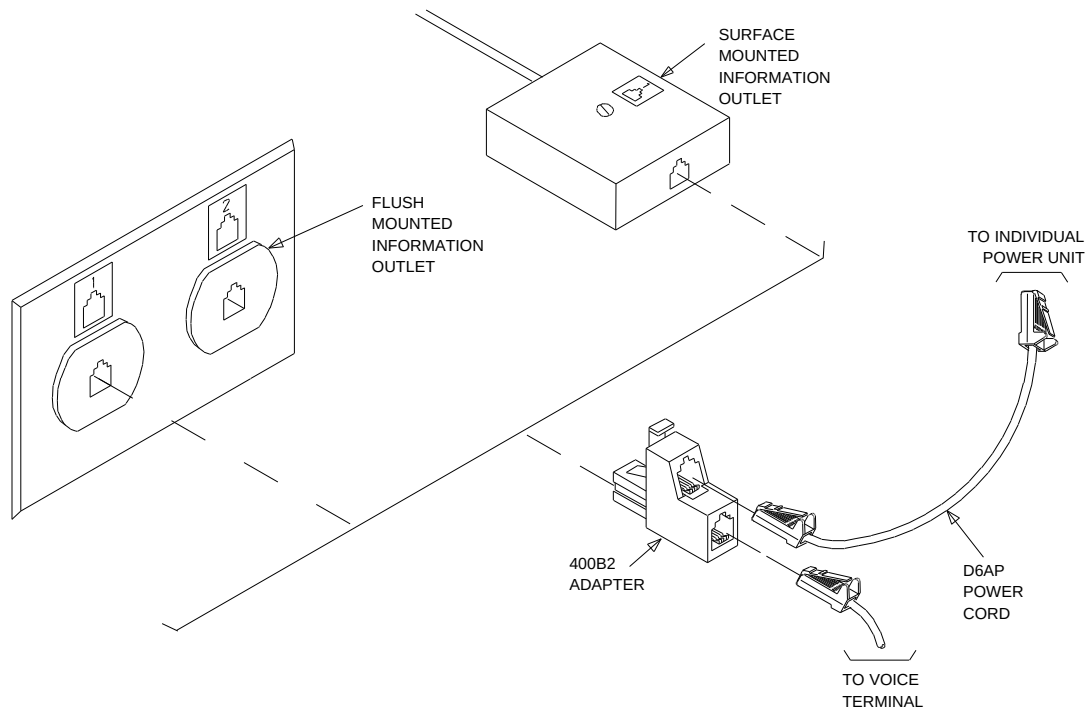


Figure 10-10. Typical Local Powering from a 400B2 Adapter: Flush/Surface-Mounted Information Outlet

Patch Cord/Jumper Installation And Administration

Before starting the patch cord installation, obtain a copy of the Port Assignment Record forms (Figure 10-11) from the customer or marketing representative. These forms contain the port assignments and identify the extension numbers (**Terminal No.**) of the telephones/voice terminals. Enter the jack assignments at the equipment room and indicate if adjunct power is required and where it is provided (cross-connect field, site/satellite closet, or information outlet).

When satellite locations are provided, enter the satellite letter designation (A through F) and the jack appearance in the equipment room on the form. Also, enter the floor designation and/or building designation if appropriate. For 1-point administration (Figure 10-12), this entry is all that is required. The white field number always corresponds to the station jack number at the satellite location blue field.

For 2-point administration (Figure 10-13), the station jack numbers (blue field) at the satellite locations must also be entered on the form. For example, the entry **A1-10** indicates satellite location A, white field position 1 at the equipment room and the satellite location, and station jack number 10 at the satellite location.

CARRIER _____			PORT ASSIGNMENT RECORD										Page _____	
Slot	Port	Jack*	Extension Number		Bldg Flr Rm	Voice Terminal		Voice Terminal Adjunct	Module	Power*		User Name/Use		
			Old	New		Type	Color							
Slot	01													
	02													
	03													
	04													
	05													
	06													
	07													
	08													
	09													
	10													
	11													
CKT PK Type	12													
	13													
	14													
	15													
	16													
	17													
	18													
	19													
	20													
	21													
	22													
	23													
	24													

* To be completed by installation technician

Figure 10-11. Port Assignment Record Form

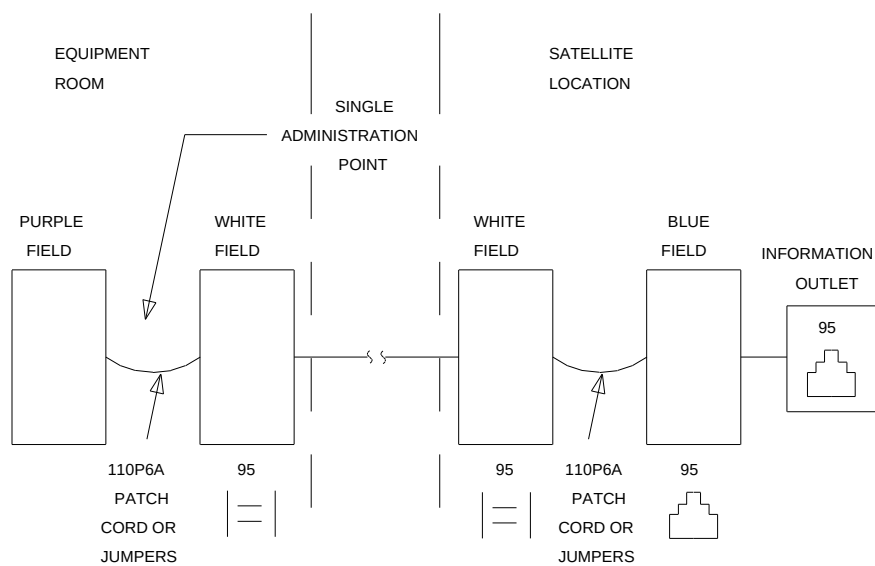


Figure 10-12. 1-Point Administration

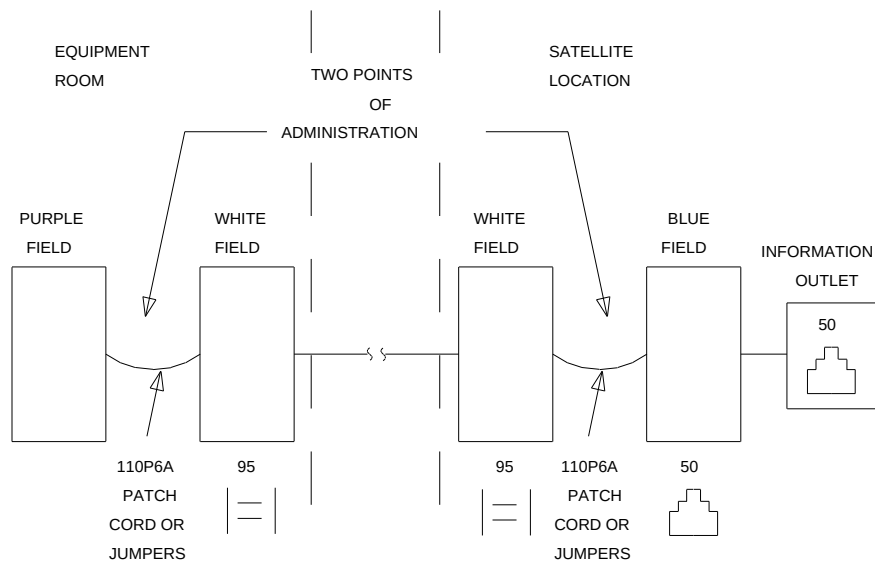


Figure 10-13. 2-Point Administration

Equipment Room Cross-Connect Field

The following guidelines and procedures are provided for installing and removing patch cords/jumper wires, and power adapter cords. Administration details for changing system translations using the DEFINITY G3 Management Terminal are included in the *DEFINITY Communications System Generic 1 and System 75 Administration and Measurements*, 555-200-500.

Installing Patch Cords/Jumper Wires

The *DEFINITY Communications System and System 75, System 75 XE and System 85, Terminals and Adjuncts, Installation and Tests*, 555-015-104, contains installation procedures for telephones/voice terminals and adjuncts. The telephones/voice terminals and adjuncts are installed before the patch cords/jumper wires, and power adapter cords are connected.

The shortest patch cord/jumper wire should always be used to make a cross-connection.

To install a patch cord/jumper wire, proceed as follows:

1. At the blue or white field, locate the jack number associated with the voice terminal location.
2. Connect one end of the patch cord/jumper wire to the terminal/connecting block associated with this jack (see the following note).



NOTE:

An impact tool or 714B tool (**for 66-type hardware only**) is required when installing jumper wires.

3. At the purple field, locate the port jack number identified on the Port Assignment Record.
4. Route the previously connected patch cord/jumper wire to the terminal/connecting block associated with the port jack.
5. Connect patch cord/jumper wire to the appropriate terminal on the terminal/connecting block.
6. Update the Port Assignment Record (Figure 10-11).
7. Repeat the procedure until all patch cords/jumper wires are installed.
8. Update system translations.

Removing Patch Cords/Jumper Wires

When it is necessary to remove a patch cord/jumper wire because a telephone/voice terminal is being removed, disconnect the telephone/voice terminal at the information outlet. Then, remove the patch cord/jumper wire from the cross-connect field. This gives a visual indication of the available terminal/connecting block terminals associated with port and station jacks. Do not leave a partially or totally disconnected patch cord/jumper wire intermingled with the remaining patch cords/jumper wires.

When it is necessary to rearrange patch cords/jumper wires because of telephone/voice terminal moves, remove the patch cord/jumper wire and reinstall it even if only one end of the cross-connection is affected. This reduces entanglement and helps to assure a neat appearance.

To remove a patch cord/jumper wire, proceed as follows:

1. On the Port Assignment Record (Figure 10-11), locate the terminal/connecting block associated with the jack assignments at the purple and white or blue fields.
2. At the purple field, disconnect the patch cord/jumper wire (see the following note).



NOTE:

An impact tool or 724A tool (**for 66-type hardware only**) is required when removing jumper wires.

3. Lift the patch cord/jumper wire upward, taking up slack, until the patch cord/jumper wire can be located by its movement in the patch cord trough/187B1 backboard.
4. Trace the other end to its connection point at the blue or white field and disconnect the patch cord/jumper wire.
5. Remove the patch cord/jumper wire from the patch cord trough/187B1 backboard.
6. Update the Port Assignment Record (Figure 10-11).
7. Update system translations.

Installing and Removing Power Adapter Cords

The power adapter cords are installed as described previously in the “Adjunct Powering” section of this chapter (Figure 10-8). The power adapter cords can be used only with the 4-pair station circuit terminal/connecting blocks. The telephone/voice terminal and adjunct must be installed before installing the power adapter cord and patch cord/jumper wire.

To remove a power adapter cord, proceed as follows:

1. On the Port Assignment Record (Figure 10-11), locate the station jack number for the telephone/voice terminal receiving remote power.
2. Unplug the power adapter cord at the power supply.
3. Locate the power adapter cord plug/leads on the 110-type terminal block/66-type connecting block (blue field).
4. Disconnect the power adapter cord/leads from the terminal/connecting block.
5. Remove the power adapter cord from the patch cord troughs/187B1 backboards.
6. Update the Port Assignment Record.

Satellite Locations

The guidelines for installing and removing patch cords, jumper wires, and power adapter cords at the equipment room cross-connect field should be followed at a satellite location cross-connect field. The cross-connects should be made between the white field (equipment room side) and the blue field (station side).

1-Point Administration

For 1-point administration (Figure 10-12), the patch cords/jumper wires are connected between purple field terminal/connecting blocks and white field terminal/connecting blocks at the equipment room. The patch cords/jumper wires are connected between identically numbered white field terminal/connecting blocks (equipment room side) and blue field terminal/connecting blocks (station side).

2-Point Administration

For 2-point administration (Figure 10-13), the patch cords/jumper wires are connected between purple field terminal/connecting blocks and white field terminal/connecting blocks at the equipment room. At the satellite location, patch cords/jumper wires are connected between the white field terminal/connecting blocks (equipment room side) and blue field terminal/connecting blocks (station side) as specified on the Port Assignment Record. Update the Port Assignment Record for all administrative changes at a satellite location.

Installing System Management Tool

See the instructions given in chapter 5 for G3 Management Terminal installation.

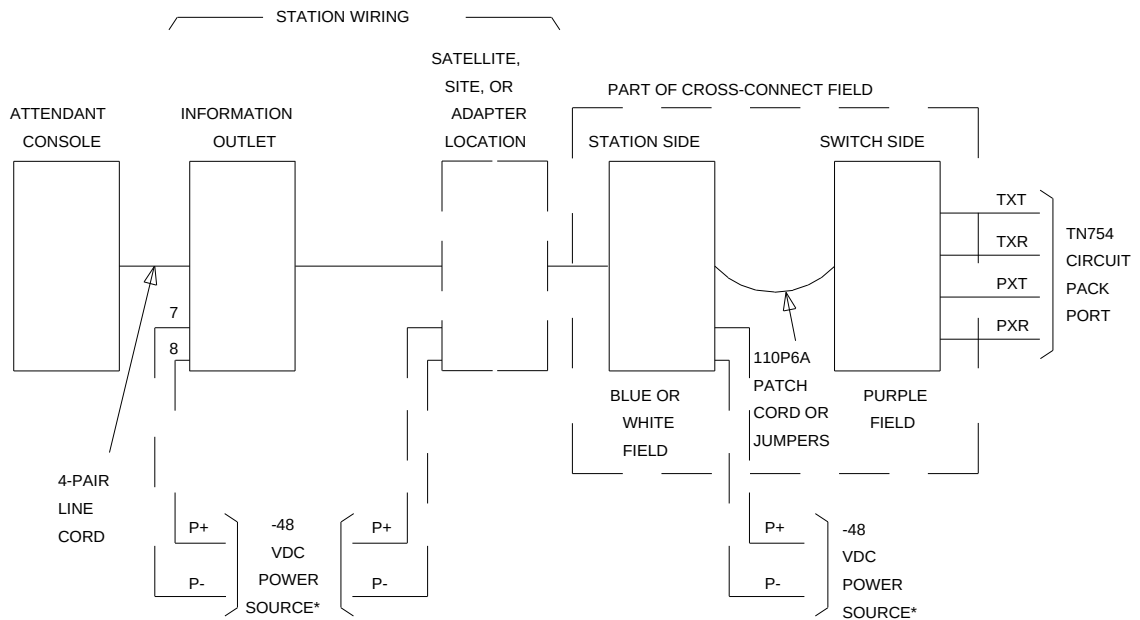
Installing the G3 Management Applications

The PC-based DEFINITY Communications System Generic 3 Management Applications (Formerly sometimes known as PC-SAT) are installed according to the complete installation instructions given in the *DEFINITY Communications System G3-MA Operation and Installation* document.

Installing Attendant Console

Requirements

The attendant console is connected to an information outlet the same as any telephone/voice terminal. Figure 10-14 shows the connections for the attendant console.



* ACC PWR LEADS AT YELLOW FIELD, 346 BULK POWER SUPPLY, OR 329A POWER SUPPLY.
KS-22911, L1 POWER SUPPLY CAN BE USED IF ATTENDANT CONSOLE IS NOT EQUIPPED WITH OPTIONAL SELECTOR CONSOLE.

Figure 10-14. Connections for Attendant Console

Power for three consoles can be provided by the switch cabinet through an auxiliary cable connected to the trunk/auxiliary field. Whenever possible, power for the primary attendant console should be provided by the switch cabinet. This makes the primary console fully operational during short (less than 10 seconds) power outages.

Additional attendant consoles can be remotely powered by the 346 bulk power supply or individual power units. Refer to "Adjunct Powering" section in this chapter for details on remote powering from adjunct power units located at satellite locations, site locations, or information outlets.

➡ NOTE:

The 329A power unit should not be used as a source of remote power for the attendant console. An MSP-1 or 1145A1 power unit should be used.

The maximum cabling distance for an attendant console powered from the switch cabinet is 350 feet when using 24-gauge wire.

Installation

Install attendant console as follows:

1. Unpack console and inspect for damage.
2. Determine port assignment of console from Attendant Console Form (see the following note).

EXAMPLE: Port Number A 02 01
 Carrier Slot Circuit

⇒ NOTE:

It is recommended that the primary attendant console be connected to the control carrier. This allows for battery holdover on the G1 multi-carrier cabinet and a better chance of uninterrupted service on the G1 single-carrier cabinet if a port carrier fails.

3. If power is to be supplied from the switch cabinet do the next step, otherwise go to step 5.
4. Connect jumpers (-48V and GND) from terminal/connecting block in yellow trunk/auxiliary Field to attendant console appearance on the station side of the distribution field (Figure 10-15).

Go to step 6.

5. If power is to be supplied at cross-connect field, connect power adapter cord to attendant console appearance on the station side and a power unit located above the cross-connect field. If power is not supplied at cross-connect field, provide power as described in “Adjunct Powering” section in this chapter.
6. Install patch cord/jumper wires at cross-connect field.
7. Connect console line jack on bottom of console to information outlet (Figure 10-14).
8. Install labels per Attendant Console Form and Display Module Form Assignments.
9. Install handset bracket on left or right side of console, as desired.
10. Insert handset adapter on same side of handset bracket.

⇒ NOTE:

The handset adapter is available in two models: 854A-03 (black) or 854A-143 (burgundy). A bracket is not required for a headset.

11. Connect handset cord to jack on same side of console as handset bracket.
12. Administer the console as instructed in *DEFINITY Communications System Generic 1 Implementation*, 555-204-654, or *DEFINITY*

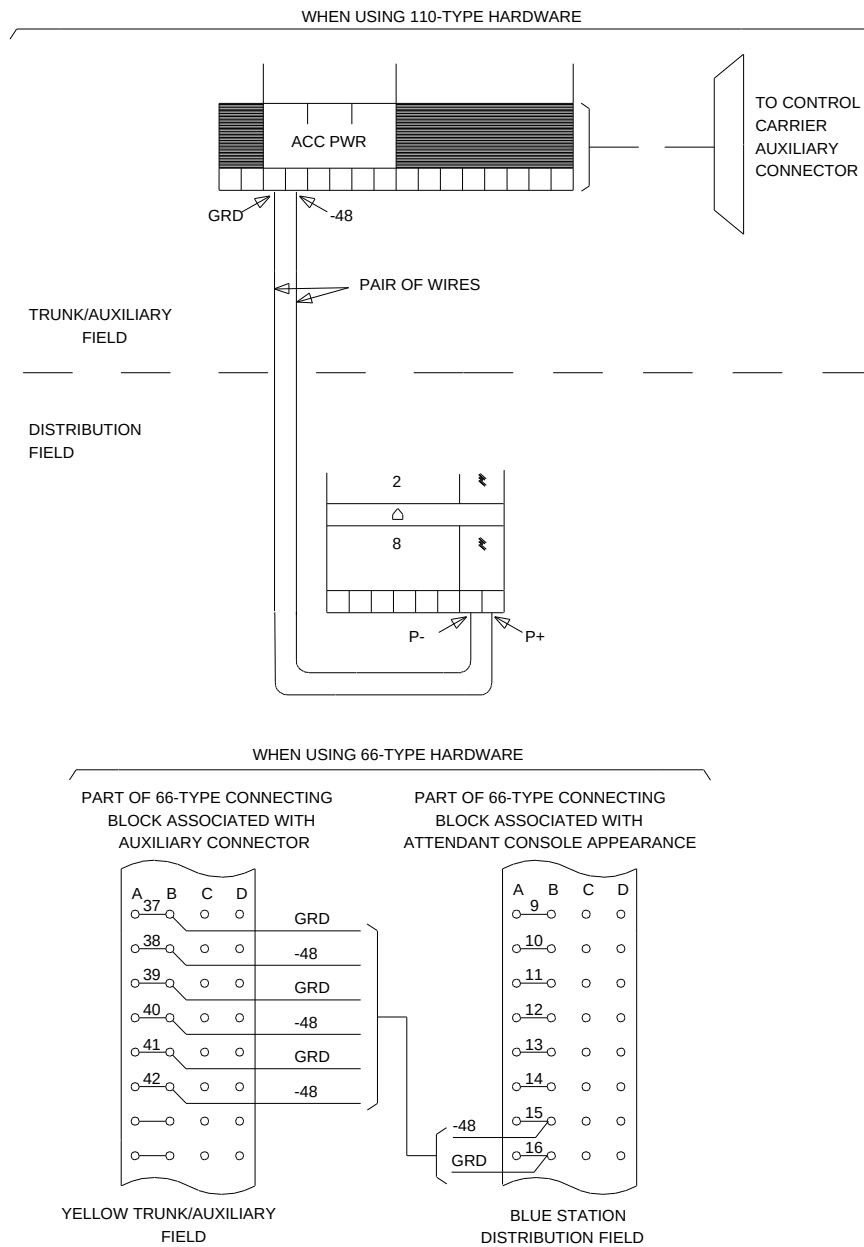


Figure 10-15. Wiring Required at Cross-Connect Field for Attendant Console Remotely Powered from Switch Cabinet: G1 Multi-Carrier Cabinet Only

Installing Selector Console

Requirements

The selector console is connected to the attendant console by a 3-foot D8AC cord that is furnished with the selector console (Figure 10-16).

Installation

1. Connect the D8AC cord between DXS/BLF jack on bottom of attendant console and modular jack on bottom of selector console.
2. Install labels per Attendant Console Form.
3. Administer as instructed in *DEFINITY Communications System Generic 1 Implementation*, 555-204-654, or *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653.

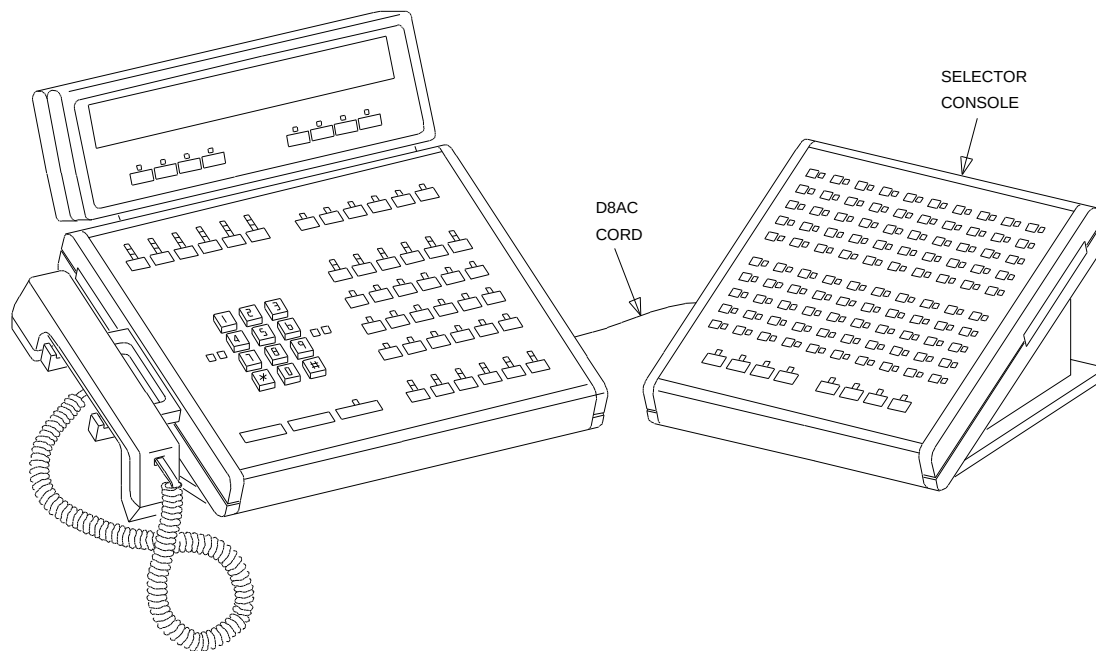


Figure 10-16. Selector Console Installation

Installing INADS Interface

Requirements

The INADS trunk should appear on the twenty-fifth pair of a RJ21X network interface jack. The INADS trunk is a two-way, rotary dial, loop start trunk that connects to one of the TN731 maintenance circuit pack, the TN773 processor pack, or the TN1648 Sysam pack through the INADS terminals at the trunk/auxiliary cross-connect field. Figure 10-17 shows a typical INADS trunk installation.

INADS Interface Installation

Install the INADS interface as follows:

1. Determine INADS trunk appearance at the green trunk/auxiliary cross-connect field.
2. Label terminals for INADS trunk appearance (IN).
3. Install jumpers between INADS trunk appearance (IN) and INADS terminals.

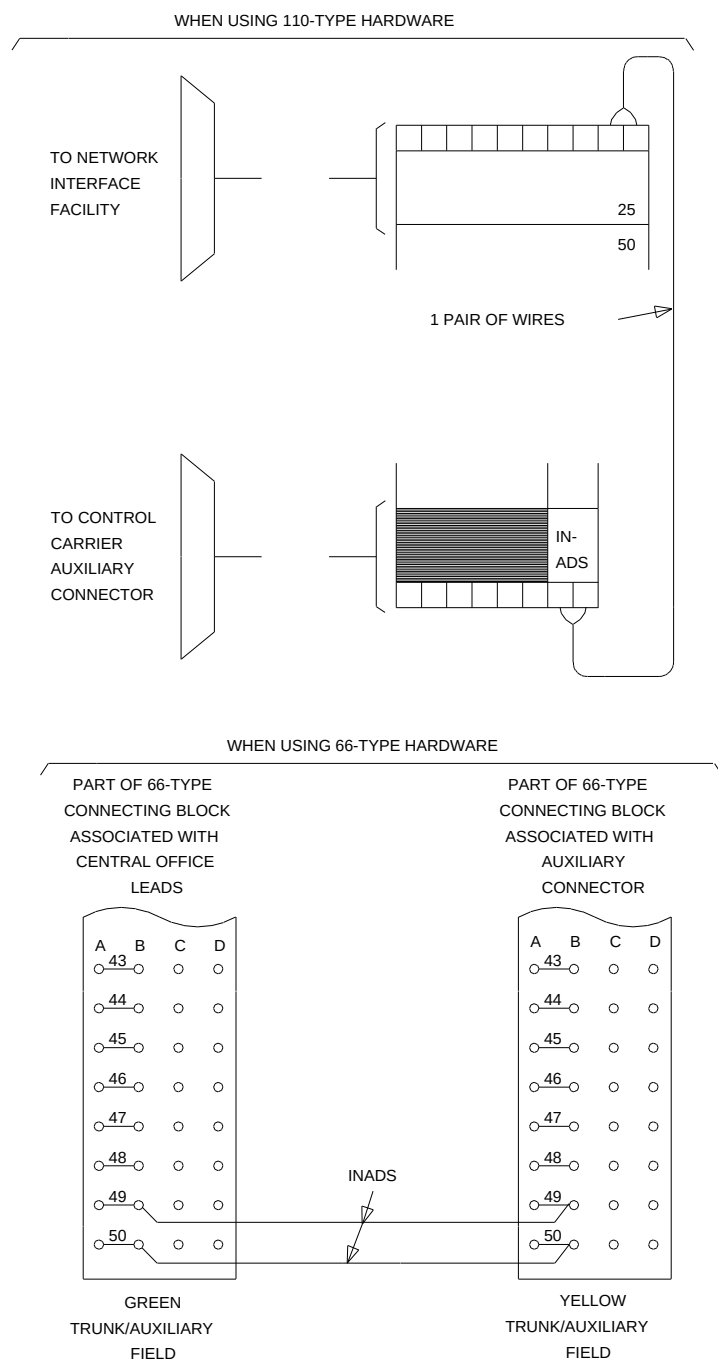


Figure 10-17. Connections at Trunk/Auxiliary Field for INADS Trunk

Installing DS1 Tie Trunks

DS1 tie trunks provide a 1.544 Mbps digital data service between two collocated G1 multi-carrier or single-carrier cabinets or between the system and a data network using T1 carrier facilities. DS1 tie trunk circuit packs provide connection capability to the DS1 facility. Lead designations, pin numbers, and wire colors are shown for various DS1 interface cables in Appendix F, “Connector and Cable Diagrams”.

The following connector cables are also used to connect DS1 tie trunk circuit packs to DS1 digital facilities:

- C6C connector cable (comcode 104307327)—50-Foot long shielded cable equipped with a 50-pin male connector on one end and a 15-pin male connector on the other end. Use this cable to connect a DS1 tie trunk circuit pack to a 551-type Channel Service Unit (CSU).
- C6D connector cable (comcode 104307376)—50-Foot long shielded cable equipped with 50-pin male connectors on each end. Use this cable to connect DS1 tie trunks in collocated G1 multi-carrier or single-carrier cabinets.
- C6E connector cable (comcode 104307434)—100-Foot long shielded cable equipped with a 50-pin male connector on one end and a 50-pin female connector on the other end. Use this cable as an “extension” cable between the DS1 tie trunk circuit pack and the other connector cables.
- C6F connector cable (comcode 104307475)—50-Foot long shielded cable equipped with a 50-pin male connector on one end and a three inch stub on the other end. This cable is used to connect the DS1 tie trunk circuit pack to channel multiplexers requiring hardwired connections.

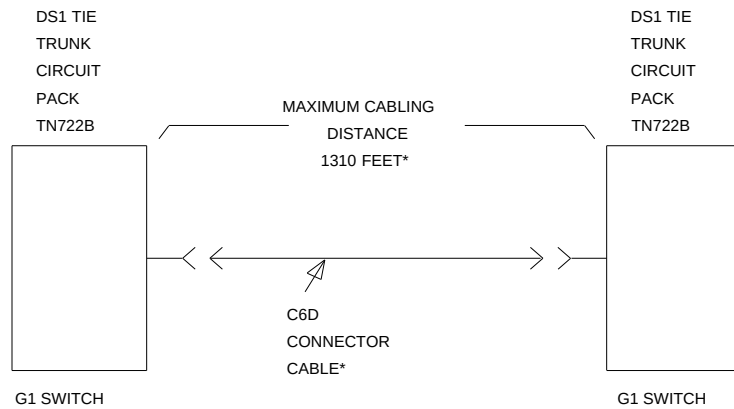
C6F Connector Cable Lead Identification

Wire Color	Lead Designation	Connector Pin Number
W-G	LI*	47
G	LI	22
W-BR	LO	48
BR	LO*	23
W-S	LBACK2	49
S	LBACK1	24

* Denotes ring or high side of pair.

Collocated DS1 Tie Trunks

Figure 10-18 shows an example of the connections for two DS1 tie trunk circuit packs in collocated G1 multi-carrier or single-carrier cabinets. See Chapter 8 “Install Auxiliary Equipment” for several more examples of DS1 connections.



* FOR DISTANCES OVER 50 FEET USE
C6E CONNECTOR CABLE(S) BETWEEN
C6D CONNECTOR CABLE AND DS1 TIE
TRUNK CIRCUIT PACK.

Figure 10-18. Typical Connections for DS1 Tie Trunks (Between G1 Cabinets)

DS1 Tie Trunks Using 551-Type CSU

Figure 10-19 shows the connections required to connect a DS1 tie trunk to a T1 CSU. The CSU is required to interface the DS1 tie trunks with the 1.544 Mbps digital facility. For information on installing the CSU, refer to the information provided with the unit. The most frequently used CSUs are the 551A, 551V, 551V EFS/R, and ESF T1. The 551V EFS/R (R means retrofit) can be used to upgrade the 551V to the new Extended Superframe (ESF) status.

The maximum allowable cabling distance between the DS1 tie trunk and the CSU is:

CSU	Max. Cabling Distance (feet)
551A	85
551V	85
551V EFS/R	655
EFS T1	655

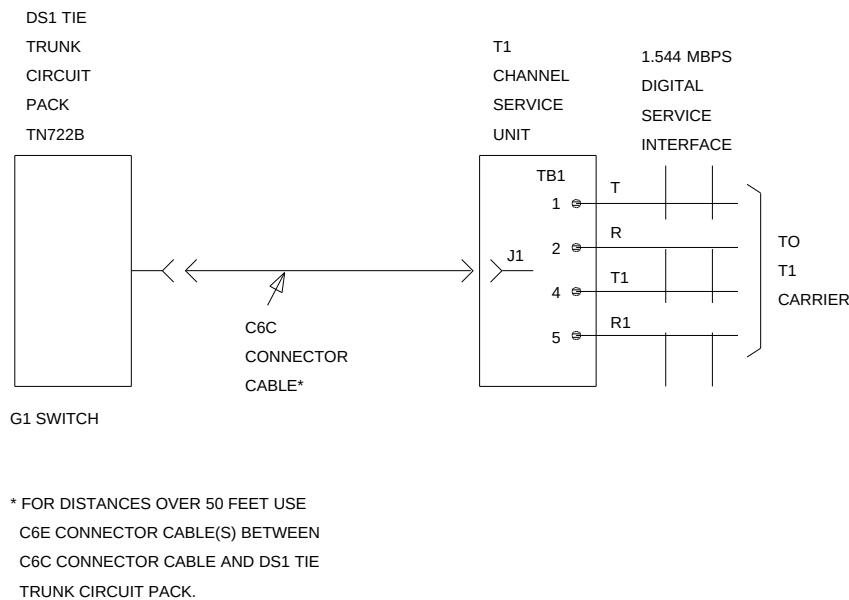


Figure 10-19. Connections Between DS1 Tie Trunk and T1 CSU

Installing Customer-Provided Alarm

Requirements

The switch provides access to a relay contact that can be used to operate a customer-provided alarm, such as a light, bell, or similar type device. The relay contact can be administered so that it makes contact when a major, minor, or warning alarm condition exists 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 more than 100 volts at 3/4 amp. The contact leads appear at the cross-connect field on the AUXILIARY connector. Refer to Table 9-8 for the AUXILIARY connector lead assignments.

Installing Off-Premises Station Wiring

Requirements

The cabling outside the building for off-premises stations is provided by the local telephone company. The off-premises stations can appear on any of the RJ21X network interfaces provided for CO trunks. Only a FCC approved analog type telephone, for example, a 2500-type, can be used as an off-premises station. Figure 10-20 shows the connections for off-premises stations. The TN746 analog line circuit pack cannot be used for off-premises stations.

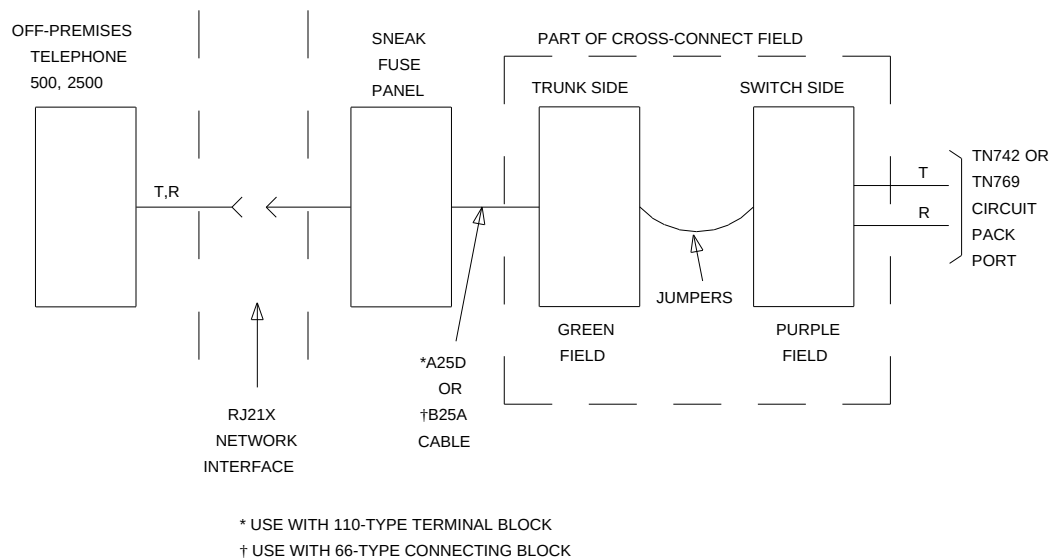


Figure 10-20. Connections for Off-Premises Stations

Installation

To install an off-premises station:

1. Install a B25A cable between the RJ21X network interface and a sneak fuse panel. See "Installing Sneak Fuse Panel" in Chapter 9.
2. At the cross-connect field, connect jumper wires between one row/connecting block in the green field and up to three rows/connecting blocks in the purple field to concentrate the analog line pairs as shown in Figure 9-50.
3. **When 110-type hardware is used**, connect an A25D cable between the sneak fuse panel and the 110 terminal block connector associated with the green row in step 3.

4. **For 110-type hardware**, install a green label on the 110-type terminal block to identify the remote location. **For 66-type hardware**, write the remote location lead designations on the connecting block with a permanent felt-tipped pen.
5. Administer as instructed in *DEFINITY Communications System Generic 1 Implementation*, 555-204-654, or *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653.

Installing Out-of-Building Campus Stations

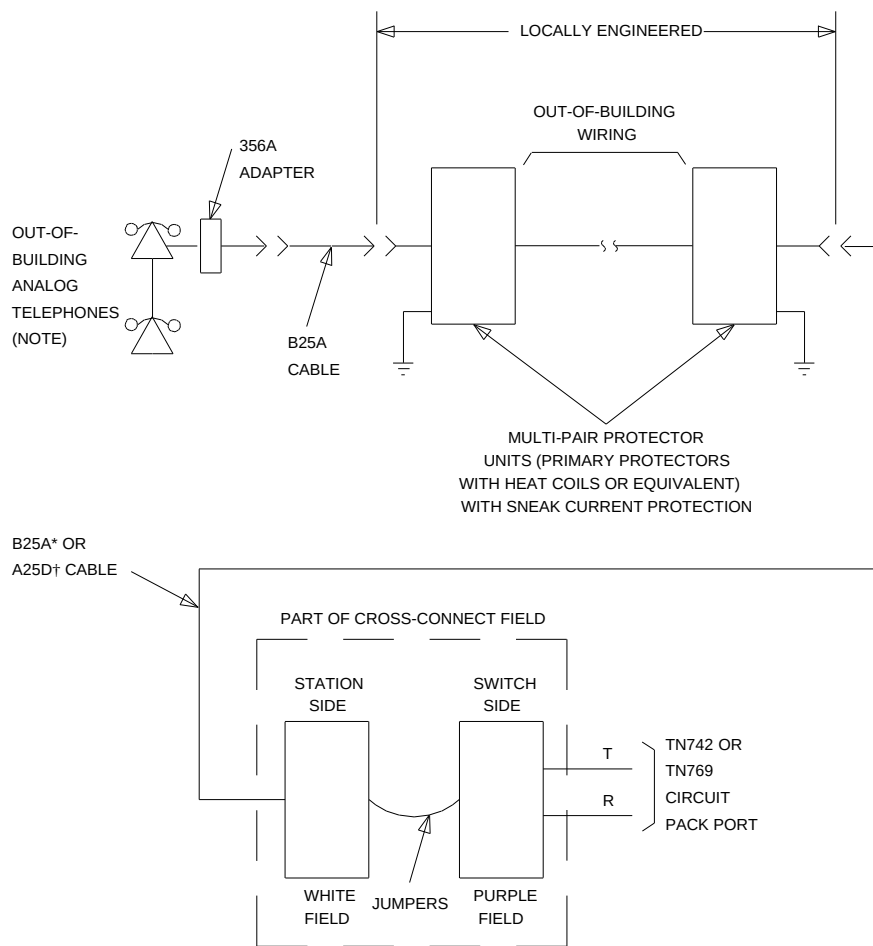
Out-of-building campus stations are those telephones/voice terminals that are not physically located in the same building as the PBX equipment room but are located on the same property.

Both analog telephones and digital voice terminals can be used as out-of-building stations.

Analog Out-of-Building Stations

Figure 10-21 shows the connections for one to eight off-premises analog telephones. The TN746 analog line circuit pack cannot be used with off-premise or out-of-building stations. Only analog telephones connected to TN742, TN746B, or TN769 analog line circuit packs can be installed out-of-building.

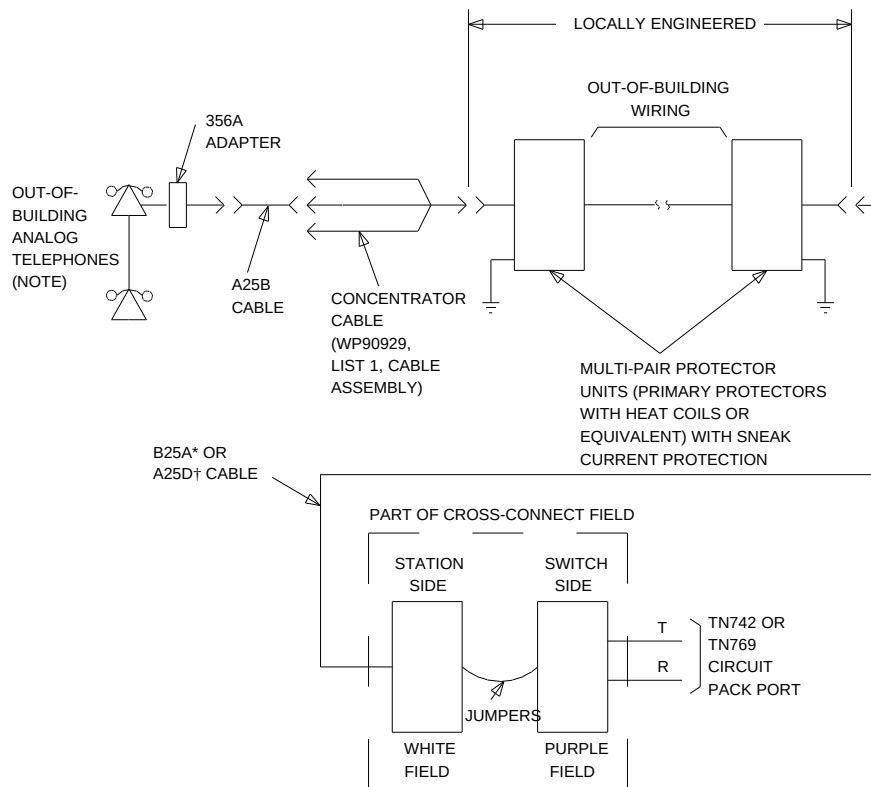
Figure 10-22 shows the connections for up to 24 off-premises analog telephones. Concentration of analog line pairs is used at both buildings to minimize the off-premises wiring required. At the cross-connect field, jumpers must be connected between one row/connecting block in the white field and up to three rows/connecting blocks in the purple field as shown in Figure 9-50. At the station location, a WP-90929, List 1 concentrator cable is used. There are eight station appearances on each of the three fingers of the concentrator cable.



NOTE:
THE MAXIMUM CABLING DISTANCE FROM THE SWITCH CABINET
TO OUT-OF-BUILDING VOICE TERMINALS IS 6000 FEET OF 24 AWG WIRE.

* USED WITH 66-TYPE CONNECTING BLOCK
† USED WITH 110-TYPE TERMINAL BLOCK

Figure 10-21. Connections for One to Eight Out-of-Building Analog Telephones



NOTE:
THE MAXIMUM CABLING DISTANCE FROM THE SWITCH CABINET
TO OUT-OF-BUILDING VOICE TERMINALS IS 6000 FEET OF 24 AWG WIRE.

* USED WITH 66-TYPE-CONNECTING BLOCK

† USED WITH 110-TYPE TERMINAL BLOCK

Figure 10-22. Connections for Each Group of Eight Out-of-Building Analog Telephones

Carbon block, or equivalent protection is required at both building entrances. Also sneak current protection is required. Protection can be provided by a 4-type protector or a 3-type protector plus a separate sneak current protector. The 4-type protector is equipped with a heat coil for sneak current protection. The 4-type protector is the preferred device. For installations not making use of existing primary protection, 4-type protectors should always be used. When the 3-type protector is already installed, a separate sneak current protector is required. The multi-pair protector units and the off-premises cabling must be locally engineered. Connectorized multi-pair protector units (female 25-pair connector out) are recommended. The protector units can be ordered from the *Premises Distribution Systems Equipment and Supplies Catalog*.

Table 10-1 shows the recommended protectors.

Table 10-1. Analog Line Circuit Protectors

Protectors		
Primary *	Primary (w/heat coil)	Sneak Current Protectors *
3B1A (carbon)	4B1C (carbon)	79A Fuse
3B1E-W (wide gap gas tube)	4B1E-W (wide gap gas tube)	SCP-1
3C1S (solid state)	4C1S (solid state)	

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

The maximum range of out-of-building analog telephones (500-, 2500-, or 7100-types) connected to a TN742, TN746B, or TN769 analog line circuit pack should be such that the maximum loop resistance does not exceed 1300 ohms.

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

- 7300-type voice terminals connected to TN762 hybrid line circuit packs
- MET sets connected to TN735 MET line circuit packs
- Analog telephones connected TN746 analog line circuit packs

Protector Ordering Information

Description	Comcode
3B1A (Carbon Block)	102381779
3B1E-W (Wide Gap Gas Tube)	104410147
3C1S (Solid State)	105514756
4B1C (Carbon Block with Heat Coil)	102904893
4B1E-W (Wide Gap Gas Tube w/Heat Coil)	104401856
4C1S (Solid State with Heat Coil)	104386545
SCP-1 Sneak Current Protector	403617632
79A Fuse (sneak current protector)	103351610

Digital Out-of-Building Voice Terminals

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

It is very important to note that the 4C3S-75 may only be used with Vintage 14 or newer TN754 circuit packs. The 4C3S-75 can be used on all vintages of the TN754B circuit packs. The ITW Linx Enhanced Protector may be used on all vintages of the TN754 and TN754B circuit packs. Table 10-2 list the approved digital voice circuit protectors.

Table 10-2. Digital Voice Circuit Protectors

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

Whenever possible, all new wiring installations should use blocks that accept the standard 5-pin plug-in 4C3S-75 protector. All reuse wiring installations should, whenever possible, encourage the use of 5-pin plug protectors. However, there are reuse wiring installations where this may not be cost effective. For these installations, the ITW Linx protector may be installed. An example of this is an installation where screw type carbon block protectors (or other non plug-compatible types) are in place and it is found to be too costly to reterminate the outside plant cable on a 5-pin mounting block for the few out-of-building terminals being installed. The ITW Linx Enhanced Protector may be installed in series with existing primary protection. Note that the 4C3S-75 protector cannot be installed in series with other types of primary protection. It must be installed as the only protection on the line entering the building.

For the 4C3S-75 protector there are a variety of 25-, 50-, and 100-pair protector panels that are equipped with 66- or 110-type connecting blocks and/or RJ21X connectors. The ITW Linx Enhanced Protector mounts directly on 66-type connecting blocks and requires a separate ground bar.

The maximum range for out-of-building digital voice terminals is 3400 feet when using 24 AWG wire and 2200 feet when using 26 AWG wire. The range can be extended to 5000 feet (24 AWG wire) or 4000 feet (26 AWG wire) with the use of a Data Link Protector (DLP). The DLP is an isolating transformer used to remove phantom power on the switch side and reintroduce it on the terminal side. When a DLP is used, the voice terminal must be locally powered by an external power supply or through the ac power cord provided with some of the 7400-type voice terminals. The DLP is installed on the equipment side of the protection in both buildings.

Protector and DLP Ordering Information

Description	Comcode
4C3S-75 (Solid State w/Heat Coil)	105581086
ITW LINX (Gas Tube, Avalanche Supress)	406144907
ITW Linx Ground Bar (used with above)	901007120
ITW Linx Replacement Fuse	406304816
Data Link Protector (one ckt)	103972758
Data Link Protector (8 ckts)	103972733

Figure 10-23 shows the connections for digital out-of-building voice terminals.

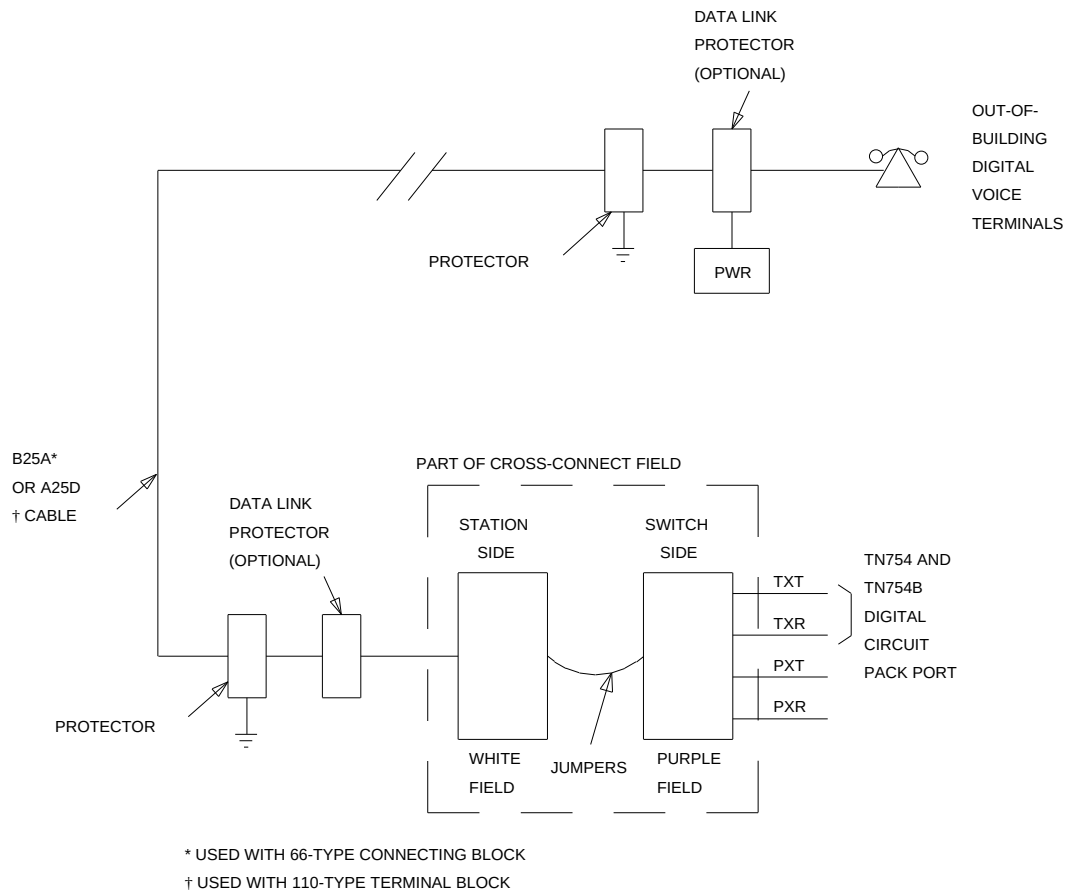


Figure 10-23. Connections for Digital Out-of-Building Voice Terminals

Installing 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 CO and Wide Area Telecommunications Service (WATS) 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 Central Office (CO) trunk loops to five selected PBX station sets. When a power failure or other system problem interrupts service, the sets are automatically and directly connected to the CO trunk and are available for emergency use outside the PBX service environment.

When a voice terminal connected to the 808A goes off-hook during bypass, circuitry inside the panel places signaling on the CO trunk causing the CO to return dial tone. Each such 808A bypass circuit can be switched to either loop-start or ground-start signaling.

- 574-5 power transfer unit—Each 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. There are seven EM TRANS RELAY PWR terminal pairs which allows powering of up to seven transfer units.

Installing the 808A Emergency Transfer Panel

Installation of the 808A Emergency Transfer Panel is covered at length in chapter 8 “Install Auxiliary Equipment”. The 808A is connected to your 110-type or 66-type hardware by means of a B25A or A25B cable. Wiring across your 110-type or 66-type hardware is the same as the wiring set out below for the 574-5 power transfer unit.

Installing the 574-5 Power Transfer Unit

The 574-5 power transfer unit has connection for five emergency transfer telephones and is compatible with both loop start and ground start trunks. Ten slide switches in the center of the unit (Figure 10-24) are set for the trunk type (two per trunk). The switches are set at the factory for ground start trunks.

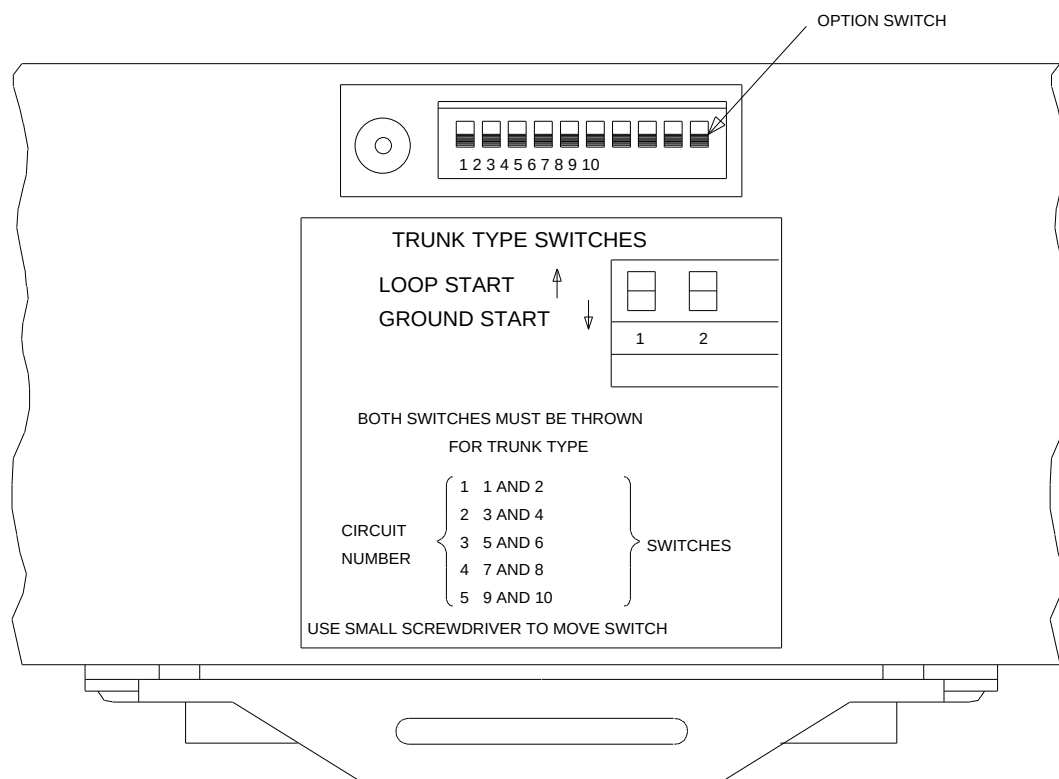


Figure 10-24. 574-5 Power Transfer Unit Option Switches

When ground start trunks are used, the transfer unit automatically provides ground start for each trunk without requiring any special wiring at the telephone used for emergency transfer service.

Figures 10-25 and 10-26 shows the connections on 110-type terminal blocks and 66-type connecting blocks, respectively, at the trunk/auxiliary cross-connect field for a telephone used only for emergency transfer. Figures 10-27 and 10-28 show the connections on 110-type terminal blocks and 66-type connecting blocks, respectively, at the trunk/auxiliary cross-connect field for a telephone used for emergency transfer as well as a normal extension.

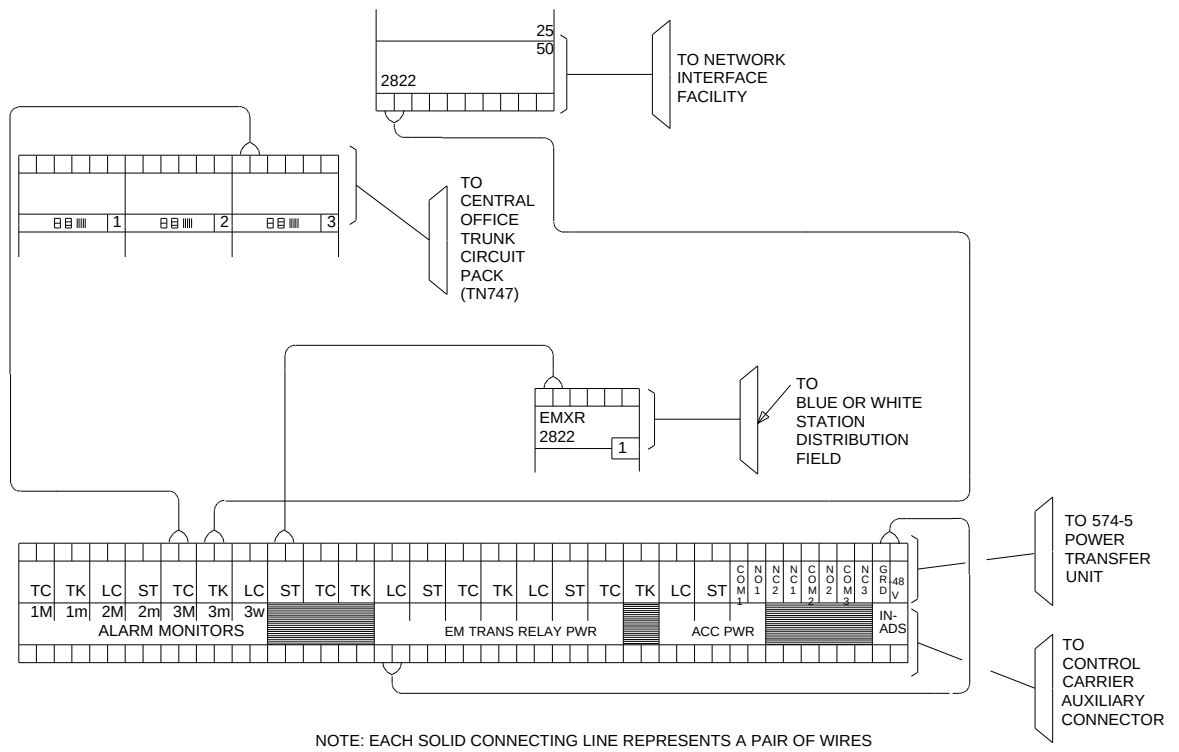


Figure 10-25. Connections at Trunk/Auxillary Field Equipped with 110-Type Hardware for Telephone Used Only for Emergency Transfer

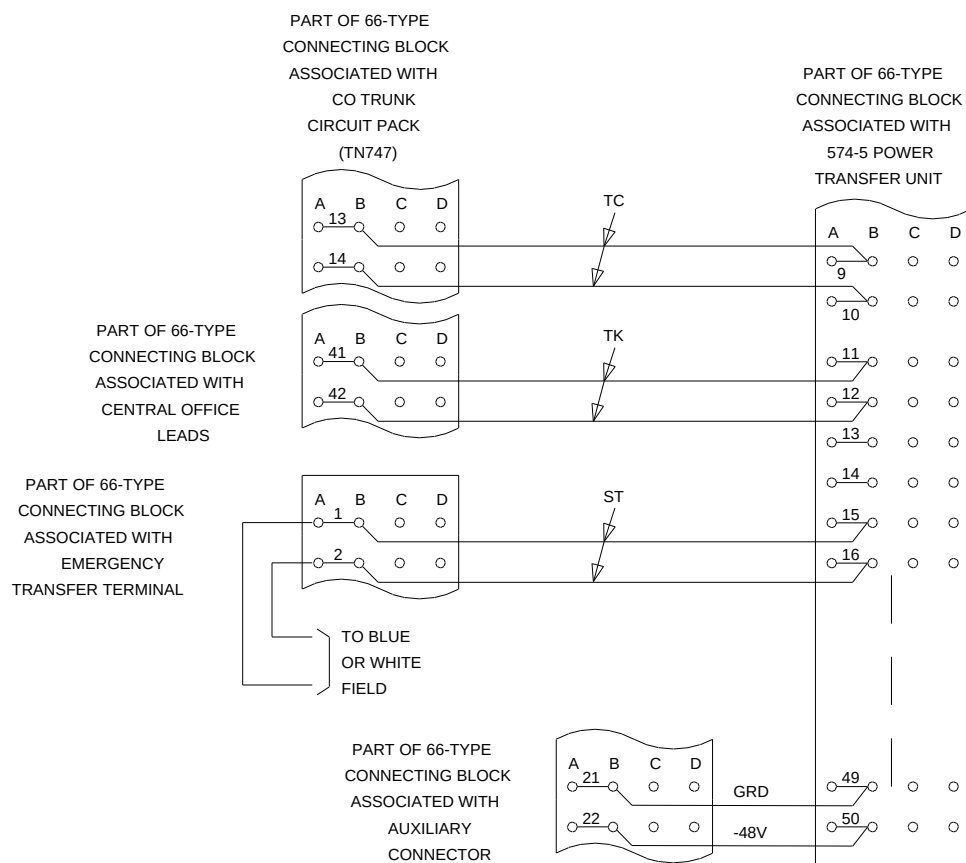


Figure 10-26. Connections at Trunk/Auxillary Field Equipped with 66-Type Hardware for Telephone Used Only for Emergency Transfer

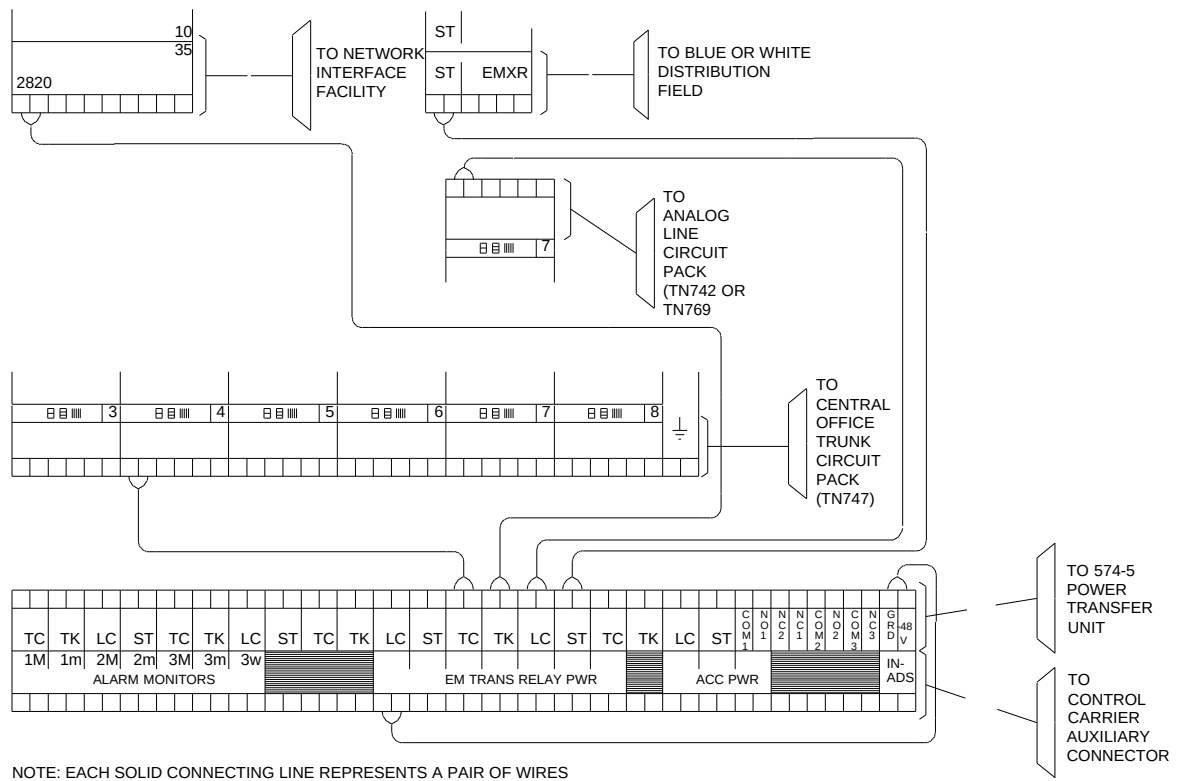


Figure 10-27. Connections at Trunk/Auxilliary Field Equipped with 110-Type Hardware for Telephone Used for Emergency Transfer and as Normal Extension

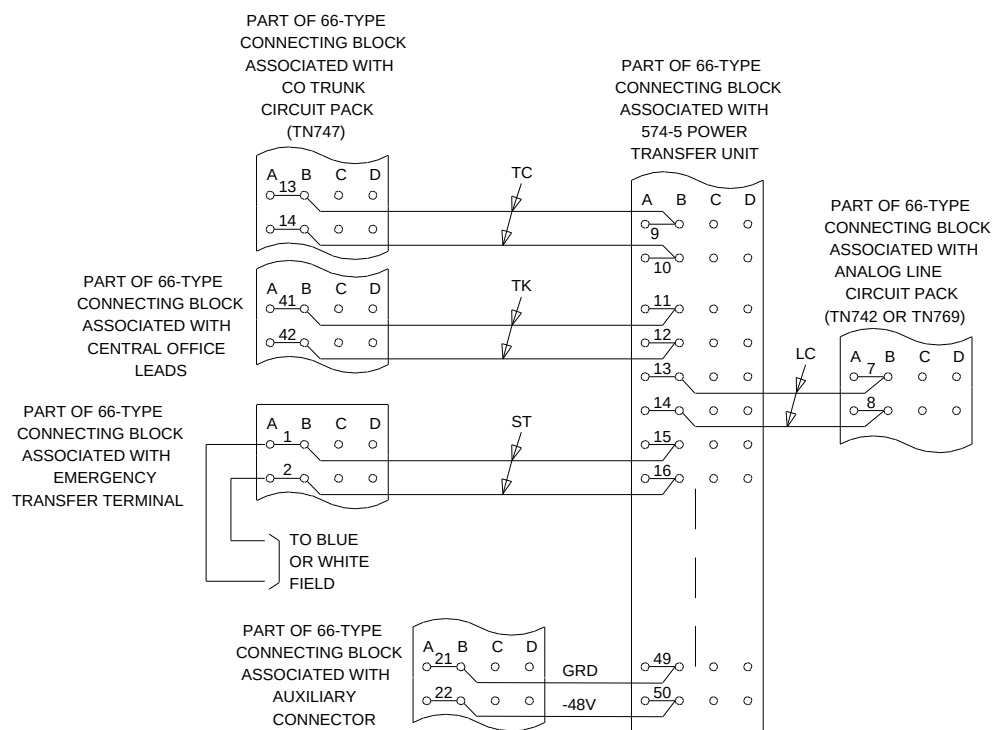


Figure 10-28. Connections at Trunk/Auxiliary Field Equipped with 66-Type Hardware for Telephone Used for Emergency Transfer and as Normal Extension

Installing Optional DID Make-Busy Trunk for Use with 574-5 Power Transfer Unit

Requirements

Figure 10-29 shows the connections at the trunk/auxiliary cross-connect field for a direct inward dialing (DID) make-busy trunk. This option prevents DID trunks from being taken out of service by the serving CO during emergency transfer. This trunk is used for this function only and should be assigned to the twenty-fifth pair of a network interface jack.

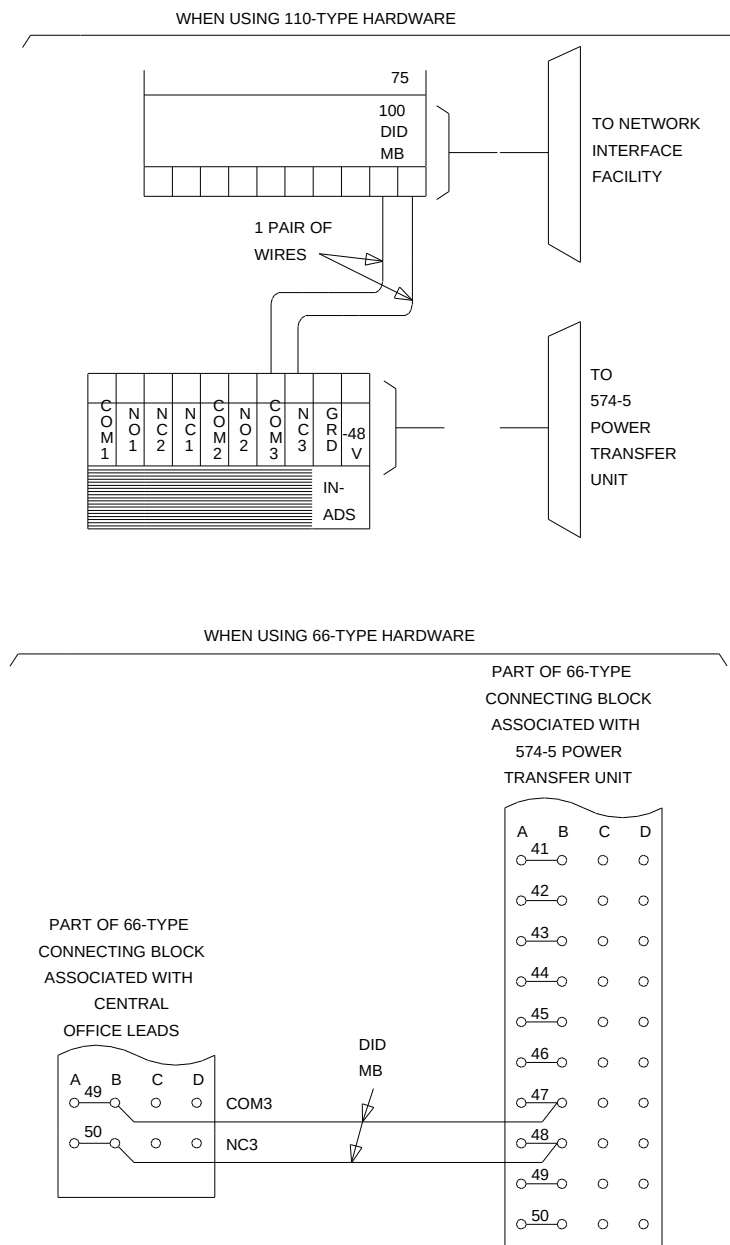


Figure 10-29. Connections at Trunk/Auxillary Field for DID Make-Busy Trunk: 574-5 Power Transfer Unit

Installation

Connect the DID make-busy trunk as follows:

1. At the trunk/auxiliary cross-connect field, connect a jumper from one DID make-busy lead to terminal **COM3** on the yellow emergency transfer row/connecting block (Figure 10-29).
2. Connect a jumper from the other DID make-busy lead to terminal **NC3** on the yellow emergency transfer row/connecting block.

Installing the Power Transfer Unit

Install the 574-5 power transfer unit as follows:

1. Mount the power transfer unit on the wall to the left of the trunk/auxiliary cross-connect field. Mount additional units on the wall below the first one in a vertical column.
2. Connect a B25A (**for 110-type hardware**) or A25B (**for 66-type hardware**) cable from the power transfer unit to the connector associated with the yellow emergency transfer row/connecting block in the trunk/auxiliary cross-connect field.

Installing Telephone Associated with 574-5 Power Transfer Unit

Trunk/Auxiliary Field Connections: Telephone Used Only for Emergency Transfer

Install telephone as follows:

1. At trunk/auxiliary cross-connect field, connect a pair of wires between the **-48V** and **GRD** terminals on the yellow emergency transfer row/connecting block and the **EM TRANS RELAY PWR** terminal (Figures 10-25 and 10-26, respectively for 110-type and 66-type hardware).
2. Connect CO trunk leads from the purple field to **TC** terminals on the yellow emergency transfer row/connecting block for each trunk.
3. Connect CO trunk leads from the green field to **TK** terminals on the yellow emergency transfer row/connecting block for each trunk.
4. Connect **ST** leads on the yellow emergency transfer row/connecting block for each emergency transfer telephone to the **ST** terminal appearance in the yellow trunk/auxiliary field (see the following note).



NOTE:

The **ST** terminal leads should be terminated on the following pairs: 1, 4, 7, 10, 13, 16, 19, or 22 (the first pair of any 3-pair group).

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

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

Connect telephone as follows:

1. At trunk/auxiliary field, connect a pair of wires between the **-48V** and **GRD** terminals on the yellow emergency transfer row/connecting block to the **EM TRANS RELAY PWR** terminal (Figures 10-27 and 10-28, respectively for 110-type and 66-type hardware).
2. Connect CO trunk leads from the purple field to **TC** terminals on the yellow emergency transfer row/connecting block for each trunk.
3. Connect CO trunk leads from the green field to **TK** terminals on the yellow emergency transfer row/connecting block for each trunk.
4. Connect telephone leads from the purple analog line board row/connecting block to the **LC** terminals on the yellow emergency transfer row/connecting block for each telephone.
5. Connect **ST** leads on the yellow emergency transfer row/connecting block for each emergency transfer telephone to the **ST** terminal appearance in the purple trunk/auxiliary field.
6. Connect the **ST** leads from the terminal selected in Step 4 to the assigned terminal in the blue or white station distribution field.

Telephone Installation

Install telephone assigned to emergency transfer as follows:

1. Connect telephone to the information outlet.
2. Install patch cords/jumper wires between the switch side and the station side of the station distribution cross-connect field.

Installing External Ringing

Requirements

Figure 10-30 shows the connections for external ringing, which is 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 a TN742 or TN769 analog line circuit pack located in a port carrier. The TN742 or TN769 circuit pack contains eight ports.

A maximum of 3 devices can be connected to one TN742 or TN769 circuit pack port.

Installation

Install ringing device as follows:

1. Determine port assignment of Call Answer from Any Voice Terminal (CAAVT) feature from Console Parameters Form:

EXAMPLE: Port Number B 02 01
 Carrier Slot Circuit

2. Install patch cord/jumper wires at cross-connect field.
3. Mount the ringing device at location specified on the External Ringing Device Worksheet.
4. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the ringing device (Figure 10-30).
5. Connect red (R) and green (T) leads to the ringing device.
6. Administer per *DEFINITY Communications System Generic 1 Implementation*, 555-204-654, and *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653.

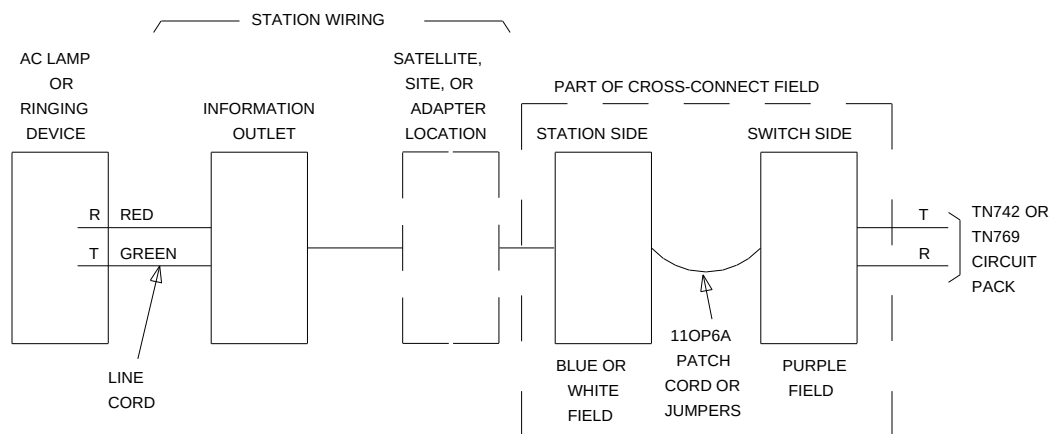


Figure 10-30. Connections for External Ringing or Queue Warning Indicator

Installing Queue Warning Indicator

Requirements

Figure 10-30 shows the connections for the queue warning indicator. An ac indicator (lamp) such as a 21C49 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 a TN742 or TN769 analog line circuit pack located in a port carrier. The TN742 or TN769 circuit packs each contain eight ports.

Installation

Install queue warning indicator as follows:

1. Determine port assignment for queue warning indicator from Hunt Group Form:

EXAMPLE:	Port Number	B	02	01
		Carrier	Slot	Circuit

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 (Figure 10-30).
5. Connect red (R) and green (T) leads to the indicator.
6. Administer per *DEFINITY Communications System Generic 1 Implementation*, 555-204-654, and *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653.

Installing the 1145A1 Power Supply

The 1145A1 closet power arrangement provides an uninterruptible -48VDC power source with battery and 1146A1 distribution unit for ISDN/DCP terminal equipment, terminal adjuncts, and other customer premises equipment. During AC power interruptions, batteries are automatically switched on to 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 outputs 1-8 or 1-32. *With the switch set to the 1 through 32 setting, all outputs will be provided battery reserve power.*

The 1145A1 is a -48V power supply, with 200 watt total output. The 1146A1 is a 110-type distribution unit with 32 output circuits. Each output is current limited by a positive temperature coefficient thermistor (PTC). The PTC limits the maximum output to 12 watts. The PTC prevents excessive current from causing potential hazards. If the PTC is current limiting, there is a short across the power pair. Each 1146A1 output has an individual LED to indicate the status of the PTC. If the LED is lighted, then the PTC has experienced a short on that power pair.

Although the maximum power per output is 12 watts, not all outputs can simultaneously provide 12 watts. The average power per output cannot exceed $6\frac{1}{4}$ watts ($200/32 = 6.25$). *The 1145A1/1146A1 is designed to power one ISDN terminal or DCP adjunct per output. The maximum number of terminals or adjuncts is 32.*

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

- Any 8520 terminal.
- Any 7500-series or 8500-series terminal with an ADM.
- Any 7500-series terminal (whether in passive bus, or point to point, that is, one per BRI port).
- Any 8510 terminal in passive bus or with an ADM.

(Provide auxiliary power to an 8510 unless you are certain that it will never be used to support such applications as data or video.)

This section tells how to install the 1145A1 Power Supply, 1146A1 Power Distribution Unit, and 2.5 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.)

Wall-Mounting Plates

Two wall-mounting plates are provided for easy assembly and to provide correct spacing between units for cooling. One plate (top one) is required for mounting the back-up battery. The second plate (bottom one), 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 (of about 6½ feet) will reach the desired electrical outlet from a power supply mounted on the bottom plate. Both plates should be located so that the raised letters are right side up.



NOTE:

A maximum of four Power Supplies can be powered from one dedicated 110VAC, 20A feeder. Use only unswitched receptacles.

2. Secure the wall-mounting plates to a standard 3/4 inch thick plywood mounting board. Each wall-mounting plate comes with four #10x1¼ inch wood screws for the purpose.

WALL MUST BE 3/4" PLYWOOD

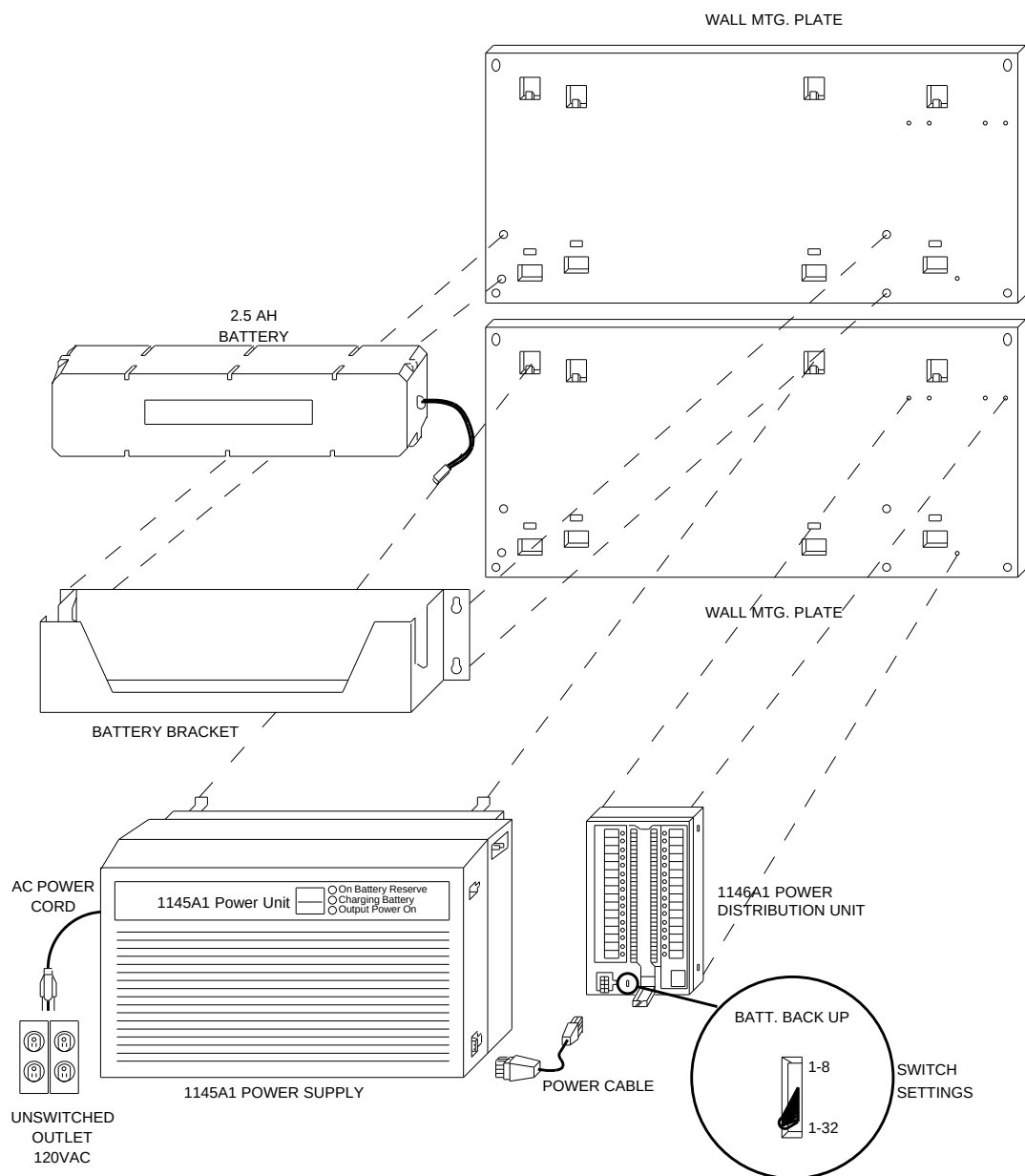


Figure 10-31. 1145A1/1146A1 Mounting Arrangement

Mounting the 1145A1 Power Supply

The 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 1145A1 Power Supply mounting are indicated on the wall-mounting plate. The preceding illustration shows a side view of the mounting arrangement. To dismount the unit, push the bottom of the power unit towards the mounting plate while pressing the two snaps on the bottom, then rotate upwards and lower the unit.

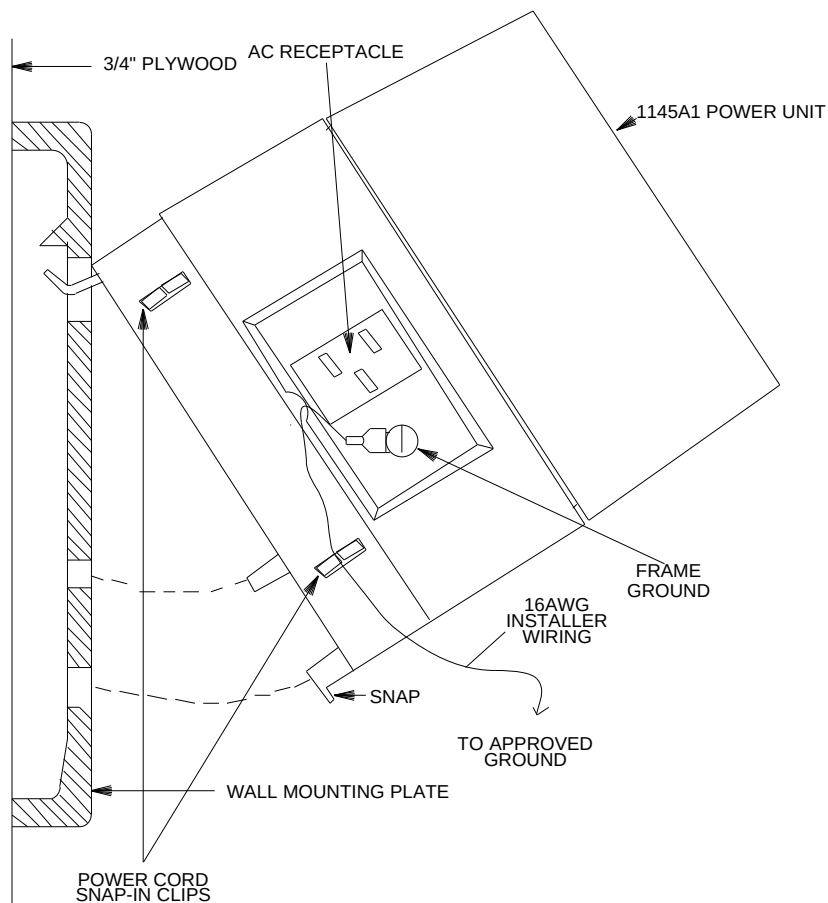


Figure 10-32. Side View of 1145A1 Power Supply Mounting

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 AC 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 LEDs.

Mounting the 1146A1 Power Distribution Unit

The Power Distribution Unit is mounted onto the bottom wall-mounting plate with three screws.

1. Place and tighten (all the way), the two #8-32x0.5" shoulder screws (they have an unthreaded section at the top) into the top holes designated for 1146A1 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. To secure the unit, insert the #8-32x1" screw through the unit at the bottom (just above the wire clips) and into the wall-mounting plate. Then 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 other position (up) will provide 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 as shown in the exploded drawing. Refer to the Power Supply's right label to locate the output power connection.

Battery Mounting/Wiring

The back-up battery is placed in the battery bracket which is mounted onto the top wall-mounting plate using the four #10-32x0.5" screws.

1. Insert (do not tighten) two #10-32x0.5" 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 #10-32x0.5" 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.)

Power Up and Test

Powering up and testing should be performed only after all the hardware is properly mounted as described in the previous sections. The following table describes the meaning of the Power Supply LEDs when lit.

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

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

**NOTE:**

A maximum of four Power Supplies can be powered from one dedicated 110VAC, 20A feeder. Use only unswitched receptacles.

2. Plug the cord into the outlet. This will power up the Power Supply (there is no ON/OFF switch).
3. Check AC operation of the 1145A1 Power Supply by monitoring the LEDs:

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

FAIL: If either green or yellow LED is not lit after powering up, check the connections. Test the AC outlet. If power is available 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 (disconnecting AC plug activates DC supply).
5. Check DC (battery back-up) operation of the 1145A1 Power Supply by monitoring the LEDs:

PASS: The red and green LEDs should be lit together. The red LED means that the Power Supply is on battery back-up.

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

6. Reconnect AC power to the Power Supply. Green and yellow LEDs should lit as described before.

Wiring the 1146A1 Power Distribution Unit

It may be to your advantage to wire destinations to the 1146A1 while power from the 1145A1 is turned on. This way, a red LED on the distribution unit will light if you connect its associated circuit to shorted building wiring or to a shorted terminal.

1. Punch down (using a D Impact Tool) auxiliary power leads (or connect patch cords) to 110-type connectors on the Distribution Unit (the label shows polarity). Route the wires through the clip provided on the unit. If a red LED is lit, see the next section "Reset LEDs on Power Distribution Unit". The following illustration shows a typical connection.
2. Mark lead destination on the label write-on area next to each connector on the Distribution Unit. Also mark the Unit Number and Connectivity information on the label.

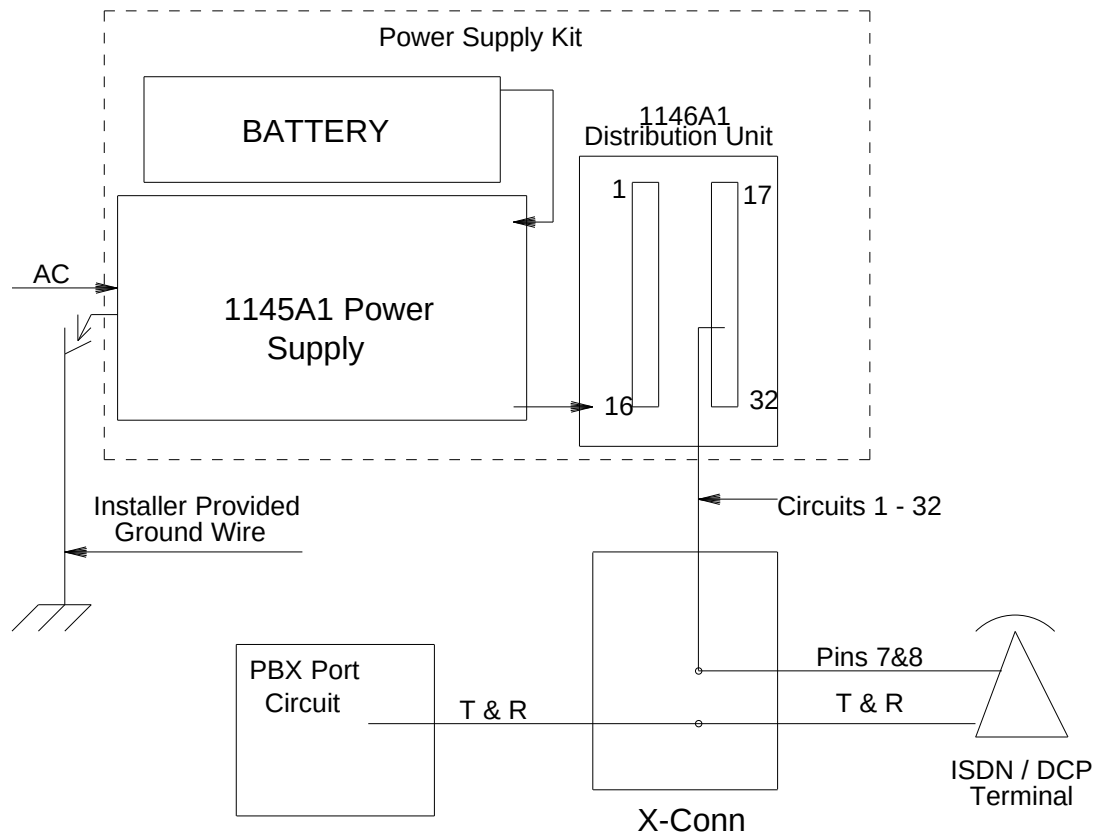


Figure 10-33. Typical Wiring to a Terminal

Reset LEDs on Power Distribution Unit

A lit red 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. If you need to reset the LED, perform the following procedure:

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



WARNING:

Important Safety Instructions follow.

When operating this equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, 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. To protect it from overheating, these openings must not be blocked or covered. 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 obsolete 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 but 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 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 has 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 1145A1 power unit will recharge 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 "dead" batteries as soon as possible since "dead" 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.

Installing the MSP-1 Power Supply

UL Information

The MSP-1 Power Supply has been tested and found to comply with the Underwriters Laboratories (UL) Standard UL 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.

Complies	UL 1459
Certified	CSA 22.2
Approved	IEC 950

Important Safety Instructions

Only 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.

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

- Read and understand all instructions.
- Follow all warnings and instructions marked on this power supply.
- This product can be hazardous if immersed in water. To avoid the possibility of electrical shock, do not use it near water.
- To reduce the risk of electric shock, do not disassemble this product. 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 ac power being provided, contact a qualified service person.
- Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
- Do not overload wall outlets and extension cords as this can result in the risk of line or electric shock.

- Disconnect the cords on this product and refer servicing to qualified service personnel under the following conditions:
 - When the power supply cord or plug is damaged or frayed.
 - If liquid has been spilled into the product.
 - If the product has been exposed to rain or water.
 - If the product 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.

Description of the MSP-1 Power Supply

The MSP-1 (WP92464L1) Power Supply can be used to supply local power to ISDN-T 65xx, 75xx, and 85xx series voice terminals connected to an AT&T DEFINITY communications system and to the DCP 7444 voice terminal which needs auxiliary power for its vacuum fluorescent display. The MSP-1 can also supply auxiliary power to adjunct equipment such as the S201A and CS201A speakerphones or a 500A Headset Adapter attached to any currently manufactured analog, DCP, or ISDN-T voice terminal equipped with an Adjunct jack.



CAUTION:

*The 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 220/230/240 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.

Locating 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.



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.

Mounting 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 you want to mount the power supply.
2. Take one of the double-sided adhesive strips and peel off the paper backing.
3. Place the sticky side on the flat surface, and press the strip to the surface so it adheres to the surface. The fastener side of the strip should be directed outward.
4. Take the other double-sided adhesive strip and peel off the paper backing.
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 line up 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.

Connecting 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.

This power supply replaces the KS-22911-L1/2, 329A, and 353A DC Power Supplies and the 2012D AC Transformer.

The power output is provided through 3 modular jacks on the power supply. These jacks are labeled as shown:

PHONE	OTHER	LINE
-7 +8	-2 +5	

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.

- The first illustration that follows shows the local powering arrangement for: ISDN voice terminals, the DCP 7444 voice terminal VF display, and adjuncts connected to all telephones except the 8102.
- The second illustration that follows 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 drawing.

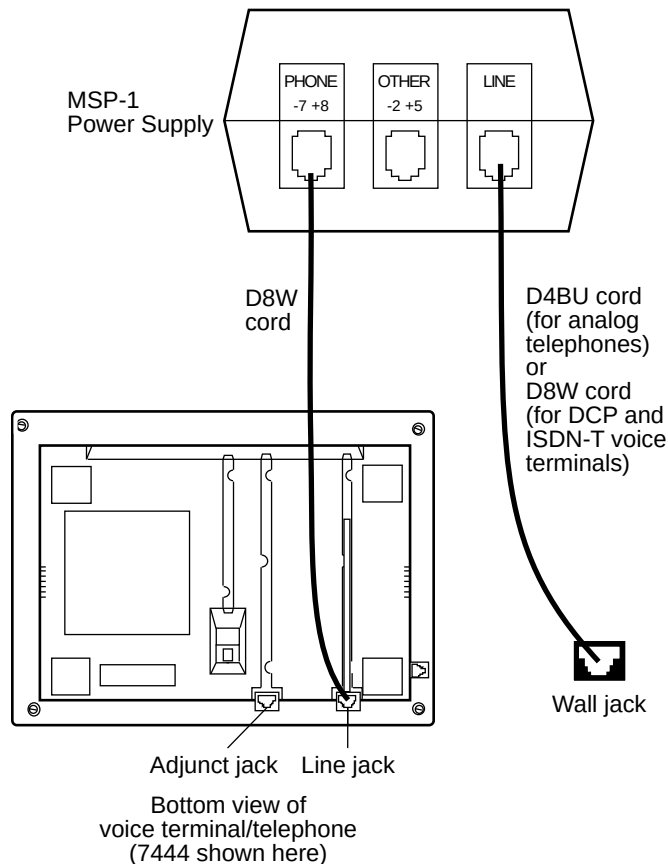


Figure 10-34. MSP-1 Connections for -48V Powered Telephones and Their Adjuncts (Except the 8102)

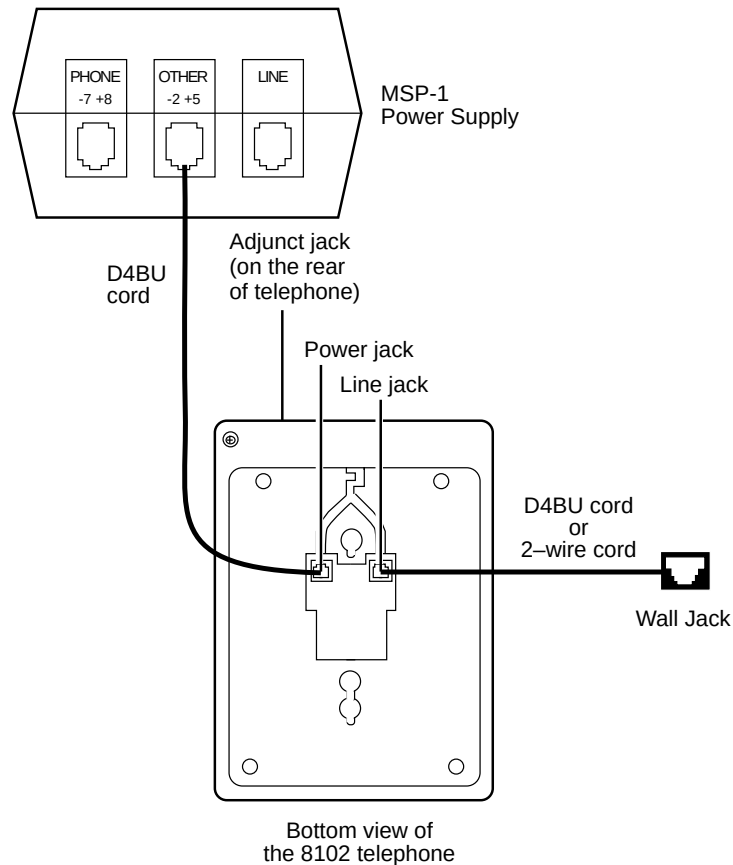


Figure 10-35. MSP-1 Connections for Adjuncts Connected to the 8102 Analog Telephone

Installing the BRI Terminating Resistor

A terminating resistor is always required when the T-card is used. Terminating resistors are used to balance the cable plant between the receiver and the transmitter on the T-interface. The terminating resistor is built into the NT1 and can take one of three values. The value depends on the configuration and the distance from the NT1 to the ISDN terminal. The terminating resistor value is controlled from the NT1. In some configurations, an ISDN terminating resistor adapter (TR) is needed. The TR can be placed in the satellite closet or the work location.



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 from UL should be observed and heeded when installing a terminating resistor 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.

Terminating Resistor Adapter

Figure 10-36 depicts an 8-pin 440A4 TR. The TR is 3 inches long with plugs at both ends and comes with a short cord to connect the 8-conductor jack. When the TR is connected, a tool such as a small screwdriver is needed for removal.

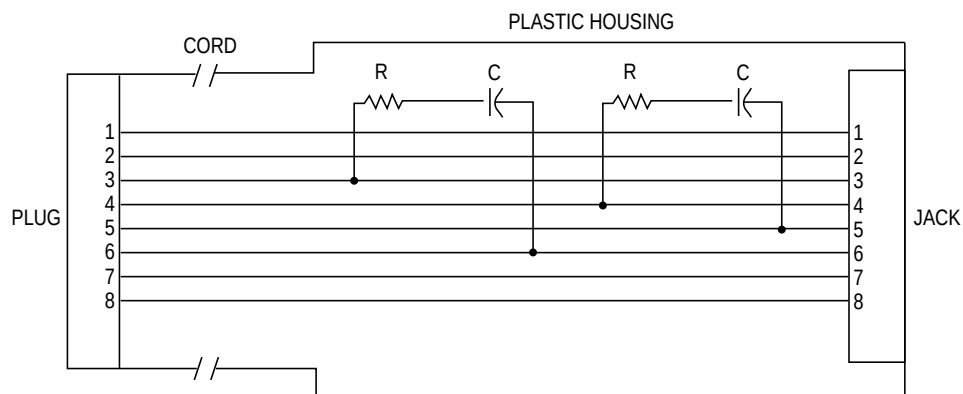


Figure 10-36. 8-Pin Terminating Resistor Adapter (440A4)

Closet Mounted (110RA1-12)

The 110RA1-12 terminating resistor block is designed to mount in the telecommunications wire closet. It consists of 12 (2-pair) circuits and provides the 100-ohm termination used for ISDN-BRI circuits. Figure 10-37 depicts the circuit 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 (already assembled) with preprinted designation strips to simplify circuit identification and installation.

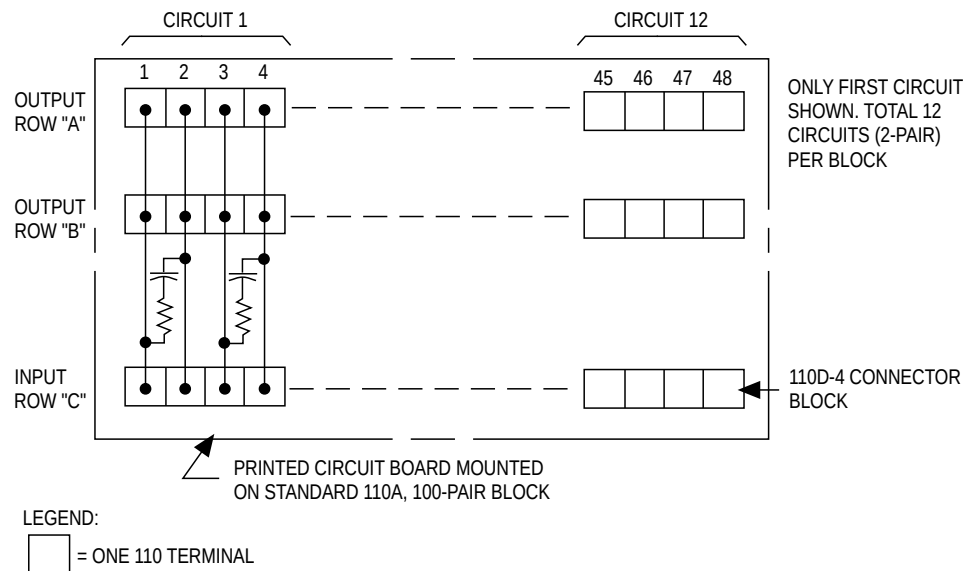


Figure 10-37. Terminating Resistor Block (110RA1-12)

Figure 10-38 shows the wiring connections for the 110RA1-12 terminal block. The TN556 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. Observe that 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.

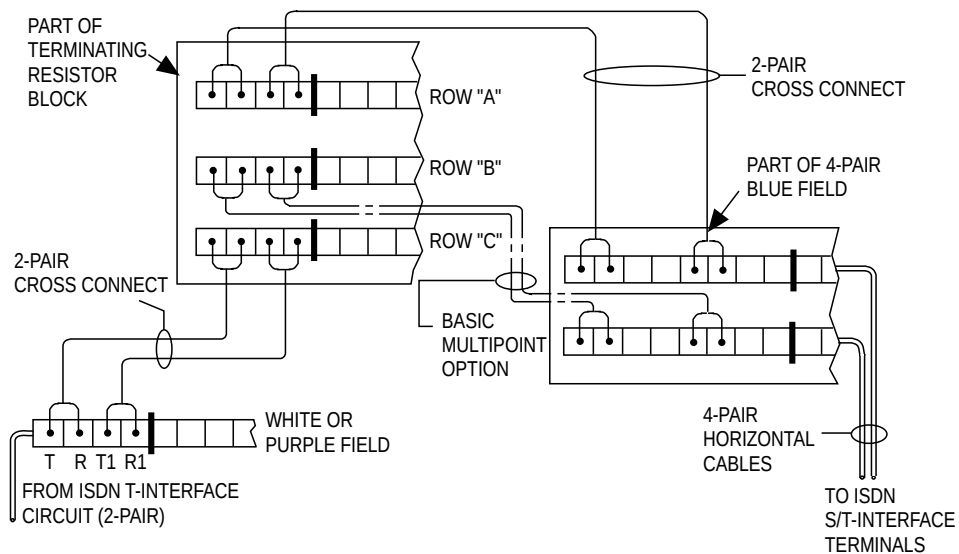


Figure 10-38. Typical Installation of Terminating Resistor Block (110RA1-12)

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

Installing Multipoint Adapters

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

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

BR851-B Adapter (T-Adapter)

The BR851-B supports two terminals on one Multipoint BRI at the work station. It is a T-shaped device that is used to fanout transmission and power. The BR851-B is an 8-position device with a single plug and two jacks. Figure 10-40 depicts the wiring diagram of the BR851-B.

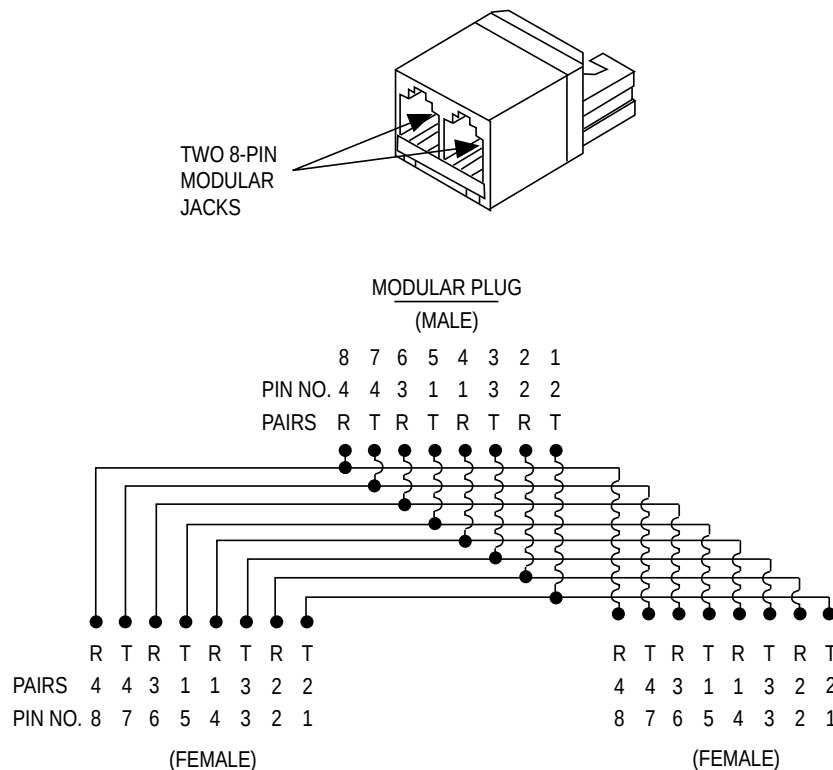


Figure 10-39.

Diagram of BR851-B

367A Adapter

The 367A Adapter (Figure 10-41) provides fanout. It can provide input to seven terminals. The 367A is an 8-conductor adapter. This adapter 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.

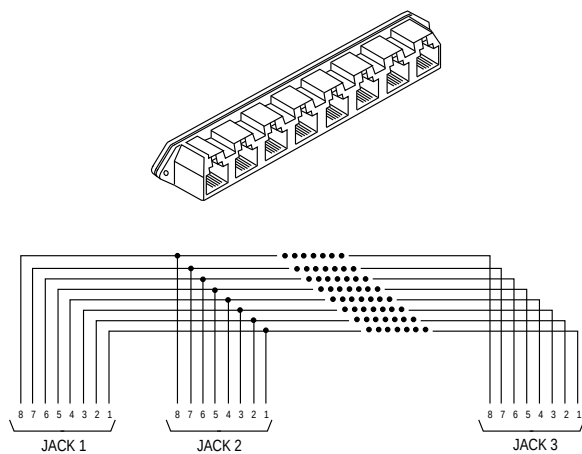


Figure 10-40. Diagram of 367A

Installing 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 10-42 shows the side-by-side adapters.

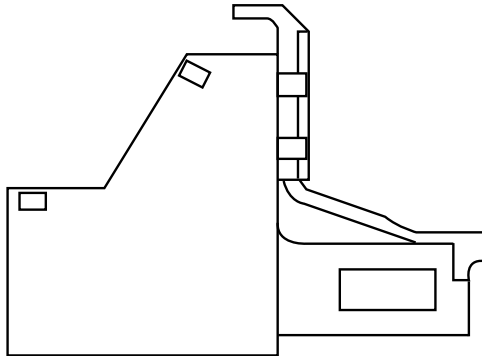


Figure 10-41. Side View of Adapter

400B2

This piggyback adapter (Figure 10-43) provides power from the KS-22911 to PR4 of the T-interface or 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

400F2

This piggyback adapter (Figure 10-44) provides auxiliary power from the KS-22911 to PR3 of the 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

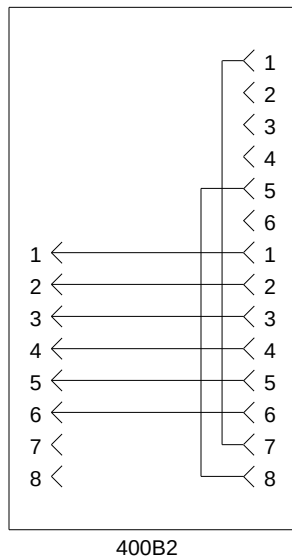


Figure 10-42. Diagram of 400B2 Adapter

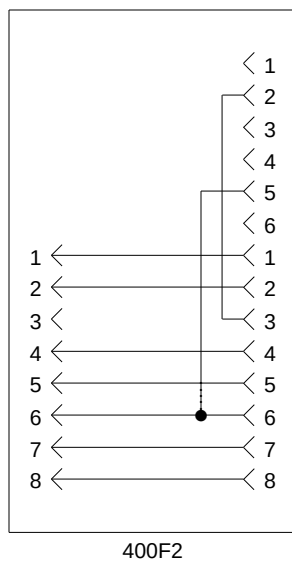


Figure 10-43. Diagram of 400F2 Adapter

Basic Multipoint Installation Distances

The combination of Figure 10-45 and Tables 10-6 and 10-7 provides cabling distances for fanout of Basic Multipoint installations of ISDN. "A" is the distance from the T-interface source to the work location. "B" is the distance from the closet to the work location. "C" is less than 33 feet of mounting cord. In Table 10-7, the terminating resistor is in the closet. All distances assume 24-gauge DIW.

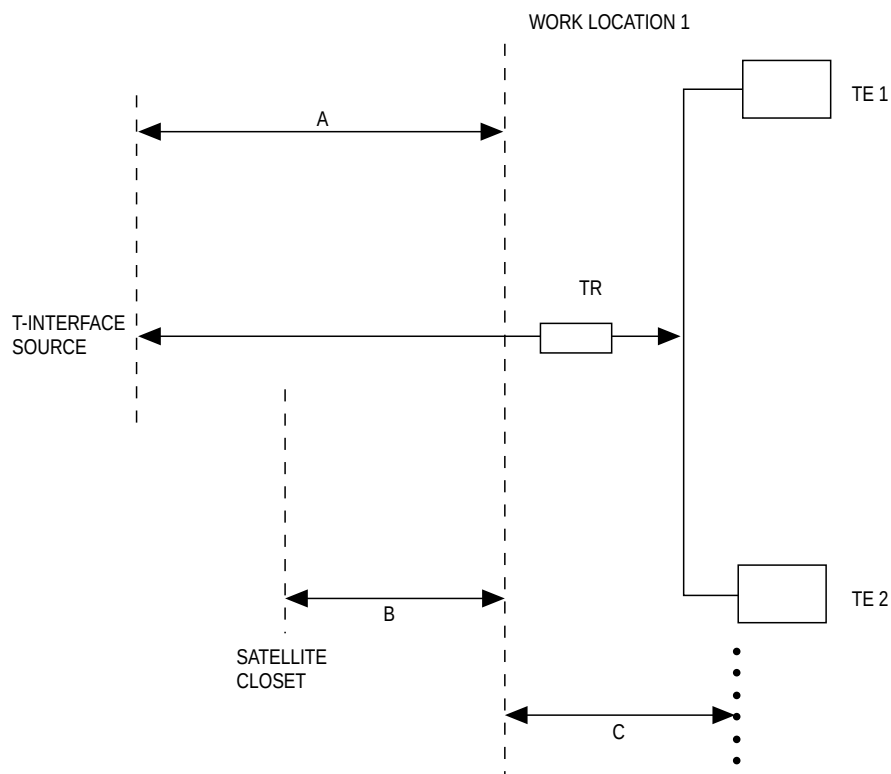


Figure 10-44. Basic Multipoint with One Work Location

Table 10-3. Basic Multipoint Cabling Distances

NO. OF TERMINALS	A	C
2	1900 ft	33 ft

Table 10-4. Basic Multipoint Cabling Distances (Where Resistor Is in Closet)

NO. OF TERMINALS	A	B	C
2	1600 ft	250 ft	33 ft

Test the System

11

The tests in this manual are performed after customer's translations have been entered and all wiring and connections have been made.

The following tests are in the nature of acceptance tests or sanity tests and the assumption is that the system will perform properly after installation and administration. If problems occur or more extensive or specific tests are required, refer to *DEFINITY Communications System Generic 1 and Generic 3i/s/vs Maintenance*, 555-204-105, or *DEFINITY Communications System Generic 3r Maintenance*, 555-230-105.

Make Test Call (Single-Cabinet Switch)

Description

Make two calls from one telephone/voice terminal to another telephone/voice terminal. Make the first call by dialing an extension number, and make the second call by dialing a trunk access code and a listed directory number (LDN).

Procedure

1. Select a working telephone/voice terminal for the test terminal, and go off-hook.



NOTE:

Requirement: Dial tone is heard.

2. Dial extension number of a working telephone/voice terminal.



NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

3. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
4. At test terminal, go off-hook.



NOTE:

Requirement: Dial tone is heard.

5. Dial trunk access code.



NOTE:

Requirement: Dial tone is heard.

6. Dial LDN for a working telephone/voice terminal.



NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

7. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.

Make Test Call (Two-Cabinet Switch)

Description

To test a two-cabinet switch, make the following calls:

- Make a call from a telephone/voice terminal associated with a line port in the PPN to an extension number associated with a line port in the PPN.
- Make a call from a telephone/voice terminal associated with a line port in the PPN to an extension number associated with a line port in the EPN.

- Make a call from a telephone/voice terminal associated with a line port in the PPN to a LDN.
- Make a call from a telephone/voice terminal associated with a line port in the EPN to an extension number associated with a line port in the EPN.
- Make a call from a telephone/voice terminal associated with a line port in the EPN to an extension number associated with a line port in the PPN.
- Make a call from a telephone/voice terminal associated with a line port in the EPN to a LDN.

Procedure

1. Select a working telephone/voice terminal (associated with a line port in the PPN) for the test terminal, and go off-hook.



NOTE:

Requirement: Dial tone is heard.

2. Dial extension number of a working telephone/voice terminal associated with a line port in the PPN.



NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

3. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
4. At test terminal, go off-hook.
5. Dial extension number of a working telephone/voice terminal associated with a line port in the EPN.



NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

6. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
7. At test terminal, go off-hook.



NOTE:

Requirement: Dial tone is heard.

8. Dial trunk access code.



NOTE:

Requirement: Dial tone is heard.

9. Dial LDN for a working telephone/voice terminal.

⇒ NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

10. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
11. Select a working telephone/voice terminal (associated with a line port in the EPN) for the test terminal, and go off-hook.

⇒ NOTE:

Requirement: Dial tone is heard.

12. Dial extension number of a working telephone/voice terminal associated with a line port in the EPN cabinet.

⇒ NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

13. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
14. At test terminal, go off-hook.
15. Dial extension number of a working telephone/voice terminal associated with a line port in the PPN.

⇒ NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

16. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
17. At test terminal, go off-hook.

⇒ NOTE:

Requirement: Dial tone is heard.

18. Dial trunk access code.

⇒ NOTE:

Requirement: Dial tone is heard.

19. Dial LDN for a working telephone/voice terminal.

⇒ NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

20. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.

Make Test Call (Three-Cabinet Switch)

Description

To test a three-cabinet switch, make the following calls:

- Make a call from a telephone/voice terminal associated with a line port in the PPN to an extension number associated with a line port in the PPN.
- Make a call from a telephone/voice terminal associated with a line port in the PPN to an extension number associated with a line port in the EPN1.
- Make a call from a telephone/voice terminal associated with a line port in the PPN to an extension number associated with a line port in the EPN2.
- Make a call from a telephone/voice terminal associated with a line port in the PPN to a LDN.
- Make a call from a telephone/voice terminal associated with a line port in the EPN1 to an extension number associated with a line port in the EPN1.
- Make a call from a telephone/voice terminal associated with a line port in the EPN1 to an extension number associated with a line port in the EPN2.
- Make a call from a telephone/voice terminal associated with a line port in the EPN1 to an extension number associated with a line port in the PPN.
- Make a call from a telephone/voice terminal associated with a line port in the EPN1 to a LDN.
- Make a call from a telephone/voice terminal associated with a line port in the EPN2 to an extension number associated with a line port in the EPN2.
- Make a call from a telephone/voice terminal associated with a line port in the EPN2 to an extension number associated with a line port in the EPN1.
- Make a call from a telephone/voice terminal associated with a line port in the EPN2 to an extension number associated with a line port in the PPN.
- Make a call from a telephone/voice terminal associated with a line port in the EPN2 to a LDN.

Procedure

1. Select a working telephone/voice terminal (associated with a line port in the PPN) for the test terminal, and go off-hook.



NOTE:

Requirement: Dial tone is heard.

2. Dial extension number of a working telephone/voice terminal associated with a line port in the PPN.

⇒ NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

3. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
4. At test terminal, go off-hook.
5. Dial extension number of a working telephone/voice terminal associated with a line port in EPN1.

⇒ NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

6. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
7. At test terminal, go off-hook.
8. Dial extension number of a working telephone/voice terminal associated with a line port in EPN2.

⇒ NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

9. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
10. At test terminal, go off-hook.

⇒ NOTE:

Requirement: Dial tone is heard.

11. Dial trunk access code.

⇒ NOTE:

Requirement: Dial tone is heard.

12. Dial LDN for a working telephone/voice terminal.

⇒ NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

13. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.

14. Select a working telephone/voice terminal (associated with a line port in EPN1) for the test terminal, and go off-hook.



NOTE:

Requirement: Dial tone is heard.

15. Dial extension number of a working telephone/voice terminal associated with a line port in EPN1 cabinet.



NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

16. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
17. At test terminal, go off-hook.
18. Dial extension number of a working telephone/voice terminal associated with a line port in the EPN2.



NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

19. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
20. At test terminal, go off-hook.

21. Dial extension number of a working telephone/voice terminal associated with a line port in the PPN.



NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

22. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
23. At test terminal, go off-hook.



NOTE:

Requirement: Dial tone is heard.

24. Dial trunk access code.



NOTE:

Requirement: Dial tone is heard.

25. Dial LDN for a working telephone/voice terminal.



NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

26. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
27. Select a working telephone/voice terminal (associated with a line port in EPN2) for the test terminal, and go off-hook.



NOTE:

Requirement: Dial tone is heard.

28. Dial extension number of a working telephone/voice terminal associated with a line port in EPN2 cabinet.



NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

29. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
30. At test terminal, go off-hook.

31. Dial extension number of a working telephone/voice terminal associated with a line port in the EPN1.



NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

32. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
33. At test terminal, go off-hook.
34. Dial extension number of a working telephone/voice terminal associated with a line port in the PPN.



NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

35. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.
36. At test terminal, go off-hook.



NOTE:

Requirement: Dial tone is heard.

37. Dial trunk access code.



NOTE:

Requirement: Dial tone is heard.

38. Dial LDN for a working telephone/voice terminal.



NOTE:

Requirement: Ringback is heard through earpiece of test terminal.

39. At called telephone/voice terminal, go off-hook. Conversation is satisfactory; go on-hook at both telephones/voice terminals.

Test the DEFINITY AUDIX System

These tests are required for all installations that include a DEFINITY AUDIX system.

1. Verify that the DEFINITY AUDIX System is in *ADX* state.

Standing to the right of the DEFINITY AUDIX assembly, reading from bottom to top, the LCD should display ADX. (For the DEFINITY AUDIX System to come up to DEFINITY AUDIX state, the system had to pass a set of onboard diagnostics; therefore, this is the first test.)

2. Login to the maintenance (if installed) and administration terminals to verify that the terminals and modems (if applicable) are connected and set up correctly.

- a. At the login prompt, enter `system technician`.

The system responds with the Password prompt.

- b. Enter `crftpw`.

The system responds with the System Password prompt.

- c. Press `(Enter)` (there is no system password at this time).

The system responds with the `Enter terminal type` prompt.

- d. Enter one of the following:

- 513 for a 513 BCT or 715 BCT (also for a 610/615 BCT, a G3-MA, or other PC with a 513 emulation package)
- 4410 for a 4410 or 5410 terminal (also for a 610/615 BCT or a PC with a 4410 emulation package)
- 4425 for a 4425 or 5425 terminal
- 5420 for a 5420 or 4415 terminal

If the terminals and modems (if applicable) are connected properly and the options are set correctly, the system responds with the DEFINITY AUDIX command line.

3. Verify that the DEFINITY AUDIX System hardware and software components are installed properly.

- a. At the DEFINITY AUDIX command line, enter `list configuration`.
The system responds with the LIST CONFIGURATION form.
 - b. Verify that the form displays the following components.
 - ALARM_BD
 - ABP_FW
 - MFB_BD
 - FAC_FC
 - 386_FW
 - DISK
 - TAPE
4. Check the alarm status.
 - a. With the cursor on the DEFINITY AUDIX command line, enter `display alarms`.
The system displays the ALARM REPORT form.
 - b. Check the ALARM TYPES fields for any active alarms (indicated by a y next to the alarm type).
You should see a voice ports major alarm and possibly port warnings because the ports are not administered yet. These are the only alarms that you should expect.
 - c. Ignore the voice port alarms; however, resolve all other active alarms. See *DEFINITY AUDIX System Maintenance*, 585-300-110, for the procedures for identifying and resolving the alarms.
 - d. Press the (F1) function key to exit the form.
5. Place the labels supplied with the DEFINITY AUDIX System hardware as follows:
 - Place the label containing the DEFINITY AUDIX shutdown warning next to the cabinet Power switch.
 - Place the label with fan/filter cleaning information on the inside of the switch cabinet door.
6. Give the program tape and one of the blank cartridge tapes to the DEFINITY AUDIX administrator, or put them in a safe place (away from electromagnetic parts). Keep the other blank tape, you will install it in the drive later.
7. With the cursor on the command line, enter `logoff` to log off of the local maintenance terminal (LMT).
8. Administer the DEFINITY AUDIX system as described in *DEFINITY AUDIX Installation*, 585-300-111.

Test Attendant Console

Description

Check that all lamps are operational and call another voice terminal in the system.

Procedure

1. Open front panel of console, press and hold **Test** or **Self-Test** switch.
2. Verify that 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 voice terminal.
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.

Test Selector Console

Description

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

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 voice terminal light.
4. Press Direct Extension Selection (DXS) button for the desired extension.
Audible ringing tone is heard in ear piece on attendant console.
5. On attendant console, press **Release**.
Audible ringing tone is silenced.

Test External Ringing

Description

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

Procedure—Ringing Device Installed

1. On attendant console, press **Night** key.
2. Verify that **Night** lamp lights.
3. Select working voice terminal as test terminal.
4. At test terminal, go off-hook, dial trunk access code and listed directory number for attendant console.
5. Verify that ringing device sounds.
6. At test terminal, go on-hook.
7. On attendant console, press **Night** key.
8. Verify that Night lamp goes dark.

Procedure—Ringing Device Not Installed

1. Connect spare 2500-type voice terminal to information outlet.
2. On attendant console, press **Night** key.
3. Verify that **Night** lamp lights.
4. Select working voice terminal as test terminal.
5. At test terminal, go off-hook, dial trunk access code and listed directory number for attendant console.
6. Verify that ringing is heard on spare voice terminal.
7. At test terminal, go on-hook.
8. Disconnect spare voice terminal from information outlet.
9. Press **Night** key on attendant console.
10. Verify that **Night** lamp goes off.
11. Notify customer that installation is complete and that external ringing device can be installed.

Test Queue Warning Indicator

Description

Make test call to an extension associated with a Uniform Call Distribution (UCD) or Direct Department Calling (DDC) group, and verify that queue warning indicator lamp lights. If queue warning indicator has not yet been installed by customer, connect spare voice terminal to information outlet reserved for queue warning indicator and make test call.

Procedure—Queue Warning Indicator Installed

1. Administer Queue Warning Indicator number to 0 on Hunt Group Form. Record old number.
2. Make sure all terminals in the group are disconnected or are “busy.”
3. Select working voice terminal as test terminal.
4. At test terminal, go off-hook and dial number associated with UCD or DDC group.

5. Verify that lamp lights (see the following note).



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 test terminal, go on-hook.
7. Administer queue warning threshold number to number changed in Step 1.
8. Restore service to all terminals made busy or disconnected in Step 2.

Procedure—Queue Warning Indicator Not Installed

1. Administer Queue Warning Indicator number to 0 on Hunt Group Form. Record old number.
2. Make sure all terminals in the group are disconnected or are “busy.”
3. Connect spare 2500-type voice terminal to information outlet.
4. Select working voice terminal as test terminal.
5. At test terminal, go off-hook and dial number associated with UCD or DDC group.
6. Verify that ringing is heard on spare voice terminal (see the following note).



NOTE:

Delay Recorded Announcement is heard at test terminal if it is administered for this group. The delay announcement is followed by music if Music-on-Hold is administered.

7. At test terminal, go on-hook.
8. Disconnect spare voice terminal from information outlet.
9. Administer queue warning threshold number to number changed in Step 1.
10. Restore service to all terminals made busy or disconnected in Step 2. Notify customer that installation is complete and that queue warning indicator lamp can be installed.

Test Recorded Intercept Announcement

Description

Make call using a trunk access code and an invalid extension number to verify that recorded announcement is heard. If recorded announcement equipment has not been installed by customer, this feature cannot be tested.

Procedure—Recorded Announcement Equipment Installed

1. Select working voice terminal as test terminal.
2. At test terminal, go off-hook and dial trunk access code and invalid extension number. The first number of the extension number must agree with the first digit in the system dial plan.



NOTE:

Requirement: Recorded statement is heard.

Test Integrated Announcement

Description

The TN750 Announcement circuit pack provides the ability to store messages. The messages can be recorded from voice terminals, on- or off-premises, and have flexible message lengths.

Record Announcement

1. Dial access code followed by the integrated announcement extension number.



NOTE:

Requirement: Dial Tone is heard.

2. Dial "1."



NOTE:

Requirement: Short burst of tone heard and recording begins.

3. When recording is complete, dial "#" if using hybrid voice terminal or hang up if using analog or digital voice terminal.



NOTE:

Requirement: Recording stops and dial tone is heard.

Playback Announcement

1. Dial access code followed by the integrated announcement extension number.



NOTE:

Requirement: Dial Tone is heard.

2. Dial "2."



NOTE:

Requirement: Announcement is heard and dial tone is heard at completion of announcement.

Delete Announcement

1. Dial access code followed by the integrated announcement extension number.



NOTE:

Requirement: Dial Tone is heard.

2. Dial "3."



NOTE:

Requirement: Confirmation tone is heard and announcement is deleted.

Test Recorded Telephone Dictation Access

Description

Make call to verify that dial dictation equipment can be accessed. If the dial dictation equipment has not been installed by customer, this feature cannot be tested.

Procedure—Dial Dictation Equipment Installed

1. Select working voice terminal as test terminal and go off-hook.
2. Dial access code and number associated with dial dictation trunk.



NOTE:

Requirement: Ready or talk-down tone is heard.

Test Loudspeaker Paging

Description

Make a call to each paging zone to verify that loudspeaker paging equipment can be accessed.

Procedure

1. Select a working telephone/voice terminal, and go off-hook.
2. Go off-hook, and dial trunk access code for a particular paging zone.



NOTE:

Requirement: Confirmation tone is heard.

3. Speak into transmitter.



NOTE:

Requirement: At loudspeaker(s), announcement is heard.

4. At telephone/voice terminal, go on-hook.
5. Repeat Steps 1 through 4 for each paging zone.

Test Loudspeaker Paging—Deluxe

Description

Establish a call between two test stations, park the call, make a test call to each paging zone to verify that loudspeaker equipment can be accessed. Respond to the page and verify the parked call can be accessed.

Procedure

1. Select working voice terminal as test terminal A.
2. Select working voice terminal as test terminal B.
3. Establish a call between terminal A and terminal B.
4. At terminal A, press the **Recall** button or flash the switchhook.



NOTE:

Requirement: Terminal B is placed on hold and recall dial tone is heard.

5. At test terminal A, dial trunk access code for a particular zone.



NOTE:

Requirement: Dial tone is heard.

6. Press # to park the call on test terminal A or park the call at any working extension by dialing that extension number.



NOTE:

Requirement: Confirmation tone is heard and the call is temporarily parked.

7. Make the announcement.



NOTE:

Requirement: At loudspeaker(s), announcement is heard.

8. Press the **Recall** button before the administered loudspeaker paging timeout interval expires and go on hook.

9. At test terminal A, go off-hook.



NOTE:

Requirement: Dial tone heard.

10. Dial the answer-back feature access code.



NOTE:

Requirement: Dial tone heard.

11. Press # if you are at the extension that is parked, or dial the extension number of the terminal where the call is parked if at another terminal.



NOTE:

Requirement: All parties associated with the parked call receive confirmation tone and the answer-back and parked parties are connected.

12. Repeat the procedure for all loudspeaker zones.

Test Code Calling

Description

Make test call using trunk access codes to verify that loudspeaker equipment in each zone can be accessed.

Procedure

1. Select working voice terminal as test terminal.
2. At test terminal, go off-hook and dial trunk access code for a particular zone.



NOTE:

Requirement: Dial tone is heard.

3. Dial extension number for a working voice terminal that is listed on Code Calling IDs Form.



NOTE:

Requirement: At loudspeaker(s), chimes are heard.

4. At test terminal, go on-hook.
5. Repeat Steps 1 through 4 for all zones provided.

Test Music-on-Hold

Description

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

Procedure

1. Select working voice terminal as test terminal.
2. At test terminal, go off-hook and dial 0 for the attendant console.
3. At attendant console, answer call by pressing call appearance button (a through f) associated with flashing **Atnd** lamp.



NOTE:

Requirement: Audible alert stops. **Atnd** lamp lights steadily.

4. Press **Hold** at attendant console.



NOTE:

Requirement: **Hold** lamp associated with the call appearance button lights.

5. Verify that music is heard at test terminal.
6. At test terminal, go on-hook.

Test Emergency Transfer

Description

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

There may be one, two, or three Emergency Transfer switches, depending on the system configuration. The switch is located on the Processor circuit pack in the PPN control carrier or cabinet (XE) and the switch is located on the Maintenance circuit pack in the EPN control carrier or cabinet (XE). A standard-reliability system without EPN has one switch. A high or critical-reliability system without EPN has two switches. A high or critical-reliability system with EPN has three switches.

The EPN cabinets may be tested separately from the PPN cabinets in any system, but the PPN cabinets in a high or critical-reliability system must have both switches set to the ON position to invoke Emergency Transfer.

Procedure

1. At control carrier or cabinet (XE), set **Emergency Transfer** switch(es) to ON position. See Note.



NOTE:

Pull out on Switches to overcome detents.

2. At emergency transfer voice terminal, go off-hook and press **Ground Start** key, if so equipped.



NOTE:

Requirement: Dial tone is heard.

3. Dial number associated with an outside number.



NOTE:

Requirement: Audible ringing or busy tone is heard.

4. Go on-hook.
5. At control carrier or cabinet(XE), set **Emergency Transfer** switch(es) to AUTO () position.

Test INADS Interface

Description

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

Procedure—Remote Test

1. Call INADS.
2. Request INADS personnel to call system and login and display System Parameters Maintenance form.



NOTE:

Requirement: Login is successful.



NOTE:

Requirement: Product Identification on the System Parameters form must match the Product Identification administered by the local technician.

3. INADS personnel enters **test inads-link** command, terminates login, and hangs up.
4. INADS personnel then checks the appropriate trouble ticket. The trouble ticket should show “INADS,n,MINOR” in the description field to indicate that a minor off-board alarm was reported to INADS. There may be additional text in the description field if other resolved alarms were reported.
5. INADS personnel makes 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. INADS personnel terminates login and hangs up.

Procedure—Local Test

1. Login and enter **test inads-link** command.
2. Request INADS personnel to verify that a trouble ticket was created.
3. Check error log to verify no problems.
4. Terminate login.

Test Basic Rate Interface (BRI)

Description

Check for normal voice terminal function (dial tone, ability to make and receive calls). Check for the correct Service Profile Identifier (SPID) on a display terminal and the G3 Management Terminal.

Procedure—Dial Tone

1. Lift handset of voice terminal and listen for dial tone.



NOTE:

Requirement: Dial tone is heard.

Procedure—Make and Receive Calls

1. Select a working voice terminal with display and dial that terminal from the test terminal.



NOTE:

Requirement: Working voice terminal rings.

2. Answer the call on the working voice terminal and verify a good connection.
3. Verify the extension of the test terminal on the display of the working voice terminal.



NOTE:

Requirement: Extension is correct.

4. Call the test terminal from the working voice terminal and verify that the test terminal rings.



NOTE:

Requirement: Test terminal rings.

5. Verify that the name and extension of the test terminal is correct as displayed on the working terminal.



NOTE:

Requirement: Name and extension are correct.

Procedure—Checking the SPID

This test requires a display terminal at the test terminal station.

1. Procedures differ depending on the model of terminal being used. Use appropriate procedures to display the SPID on the test terminal.
2. Verify that the SPID is correct.



NOTE:

Requirement: SPID is correct.

Test ASAI Link to Host

Description

From the G3 Management Terminal, use the Status Station, Status Bri-Port, Test Port, Display Alarms, and Display Errors commands to verify a healthy ASAI link.



NOTE:

The test for the ASAI link is also the test for the Conversant link to the host.

Procedure—Status Station Command

1. At the G3 Management Terminal, enter the **status station** command.



NOTE:

Requirement: The Service State field says "in-service/idle."

2. Enter the **status bri-port** command.



NOTE:

Requirement: The Layer 1 State field says "activated."



NOTE:

Requirement: The Layer2 State column says "l3-established" in the Link1 row.

3. Enter the **test port** command.



NOTE:

Requirement: All tests say "PASS."

4. Enter the **display alarms** command.
5. Tab to the Port field and enter the port number, then press *ENTER*.



NOTE:

Requirement: No alarms against the port.

6. Enter the **display errors** command.
7. Tab to the Port field and enter the port number, then press *ENTER*.



NOTE:

Requirement: No errors listed for the port.

Test Tie Trunks

Description

The four basic tie trunk modes of operation are the following:

- Automatic Outgoing
- Dial Repeating Outgoing
- Automatic Incoming
- Dial Repeating Incoming

These modes can be mixed for the two directions of a 2-way trunk. The following four procedures test access for each of the four modes. Test each trunk in the outgoing mode before testing in the incoming mode. A Facilities Access Test is available to access specific trunks. 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.

Procedure—Automatic Outgoing Tie Trunk

1. Select working voice terminal as test terminal.
2. At test terminal, go off-hook and dial trunk access code for tie trunk.



NOTE:

Audible ringing tone may or may not be heard from terminating equipment.

3. At distant called terminal, go off-hook.
4. Verify that ringing tone is silenced at distant end and conversation is good.
5. At test terminal, go on-hook.
6. At distant terminal, go on-hook.



NOTE:

Requirement: Circuit is released.

Procedure—Dial Repeating Outgoing Tie Trunk

1. Select working voice terminal as test terminal.
2. At test terminal, go off-hook and dial trunk access code for tie trunk.



NOTE:

Requirement: Dial tone is heard. This dial tone is provided by the system and is not from the distant end.

3. Dial distant terminal number over tie trunk.



NOTE:

Requirement: Ringing tone is heard at distant terminal.

4. At distant called terminal, go off-hook.
5. Verify that ringing tone is silenced at distant end and conversation is good.
6. At test terminal, go on-hook.
7. At distant terminal, go on-hook.



NOTE:

Requirement: Circuit is released.

Procedure—Automatic Incoming Tie Trunk

1. At distant terminal, go off-hook and access tie trunk.



NOTE:

Requirement: Audible ringing tone is heard at distant terminal.
Ringing is heard at test terminal.

2. At test terminal, go off-hook.



NOTE:

Requirement: Tones are silenced and conversation is good.

3. At test terminal, go on-hook.
4. At distant terminal, go on-hook.



NOTE:

Requirement: Circuit is released.

Procedure—Dial Repeating Incoming Tie Trunk

1. At distant terminal, go off-hook and access tie trunk.



NOTE:

Requirement: Dial tone is heard.

2. Dial test terminal number over tie trunk.



NOTE:

Requirement: Audible ringing tone is heard at distant terminal.
Ringing is heard at test terminal.

3. At test terminal, go off-hook.



NOTE:

Requirement: Tones are silenced and conversation is good.

4. At test terminal, go on-hook.
5. At distant terminal, go on-hook.



NOTE:

Requirement: Circuit is released.

Test Direct Inward Dialing (DID) Trunks

Description

Verify that an incoming call can be completed over a DID trunk to a test terminal.

Procedure

1. Select a working voice terminal as a test terminal.
2. Arrange an incoming call to the test terminal on the DID trunk to be tested.



NOTE:

Requirement: Ringing is heard at test terminal.

3. At the test terminal, go off-hook.



NOTE:

Requirement: Ringing is silenced and conversation is good.

4. Instruct the distant party to go on-hook.
5. At test terminal, go on-hook.



NOTE:

Requirement: Circuit is released.

Test Central Office (CO) Trunk

Description

Verify that an outgoing and an incoming call can be completed over a CO trunk to a test terminal. Test a trunk in the outgoing mode before testing trunk in the incoming mode. A Facilities Access Test is available to access specific trunks. 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.

Procedure—Outgoing CO Trunk

1. Select a working voice terminal as a test terminal.
2. At test terminal, go off-hook and dial trunk access code for CO trunk.



NOTE:

Requirement: Dial tone is heard. This dial tone is provided by the system and not from the CO.

3. Dial number of desired trunk party.



NOTE:

Requirement: Dial tone silenced.

4. At distant party, go off-hook.
5. Verify that ringing tone is silenced at distant end and conversation is good.
6. At distant end, go on-hook.
7. At test terminal, go on-hook.



NOTE:

Requirement: Circuit is released.

Procedure—Incoming CO Trunk

1. Select a working voice terminal as a test terminal.
2. Arrange an incoming call to the test terminal over a CO trunk.



NOTE:

Requirement: Ringing is heard at test terminal.

3. At the test terminal, go off-hook.



NOTE:

Requirement: Ringing is silenced and conversation is good.

4. Instruct the distant party to go on-hook.
5. At test terminal, go on-hook.



NOTE:

Requirement: Circuit is released.

Test Duplication Option Processing Element (PE) Interchange

Description

The process of the standby PE taking over for the active PE is referred to as a PE Interchange. This interchange should not be performed immediately after powering up the system. Wait a few minutes to allow the system to complete its internal tests. The system default is **PE_B** after powering up the system, so the active PE should be the B processor for this test, and the interchange should make **PE_A** the active PE. Verify that the system can successfully perform a PE interchange.

Procedure

1. At the G3 Management Terminal, verify that the screen displays **PE_B** in the upper right corner.
2. Enter **check status** command. Verify **PE_B** is in the standby mode. If it is, proceed to Step 4. If it isn't, proceed to Step 3.
3. Enter **refresh-spr-standby** command.
4. Enter **reset system interchange** command. The G3 Management Terminal will be logged off and a beep will be heard.
5. Login and verify that the screen displays **PE_A** in the upper right corner.



NOTE:

Requirement: Processor A's amber light is on and its green light is off.

Processor B's amber and green lights are off.

The system is alarm free.

6. Make system test call (see Make System Test Call procedure).



NOTE:

Requirement: Call completes and conversation is good.

Terminating Trunk Transmission Test

The Terminating Trunk Transmission Test provides for extension number access to three tone sequences that can be used for trunk transmission testing from the distant end of the trunks.

The three test types must have extension numbers assigned on the —**system-parameters maintenance** form:

Test Type 100: _____ Test Type 102: _____ Test Type 105: _____

Test type 100 provides:

- 5.5 Seconds of 1004 Hz tone at 0dB
- Quiet until disconnect; disconnect is forced after one minute

Test Type 102 provides:

- 9 Seconds of 1004 Hz tone at 0dB
- 1 Second of silence
- Cycle is repeated until disconnect, which is forced after 24 hours

Test Type 105 provides:

- 9 Seconds of 1004 Hz tone at -16dB
- 1 Second of silence
- 9 Seconds of 404 Hz tone at -16dB
- 1 Second of silence
- 9 Seconds of 2804 Hz tone at -16dB
- 30 Seconds of silence
- 0.5 Seconds of test progress tone (2225 Hz)
- Approximately 5 seconds of silence
- Forced disconnect

Test Stratum 3 Clock

Description

To test the ability of the Stratum 3 clock to correctly provide timing and alarms to the PBX, perform the following verification tests:

- Check for red LEDs
- Verify timing to the PBX
- Verify loss of power supply alarms to the PBX
- Verify loss of DS1 reference alarms to the PBX



NOTE:

This procedure is destructive to DS1 data and should not be attempted while there are DS1 facilities in active use.

Procedure—Check for red LEDs

1. Turn on the Stratum 3 clock and wait 40-50 seconds to allow the system to complete the on-board diagnostics before looking at the LEDs.
2. If there are any red LEDs, follow the procedures in Table 11-1:

Table 11-1. Synchronization Clock Card LED Indicators

Card	LED Label	Procedure
PAI	REF A	Check that the CI card on the left is inserted properly. Check wiring for DS1 in carrier A which connects the Switch cabinet to the CSU and the External Synchronization Clock at the cross-connect field through a Y-cable assembly. If all else fails to clear the LED then replace the card.
PAI	REF B	Check that the CI card on the right is inserted properly. Check wiring for DS1 in carrier B which connects the Switch cabinet to the CSU and the External Synchronization Clock at the cross-connect field through a Y-cable assembly. If all else fails to clear the LED then replace the card.
PAI	ST A	Replace the ST3 card.
PAI	ST B	Replace the ST3 card.
CI	FAIL	Check wiring for its associated DS1 reference and replace the card if necessary.
ST3	FAIL	Replace the card.
ST3	LOCK	Ignore this LED.
ST3	HOLDOVER	Ignore this LED.
ST3	FREE RUN	Ignore this LED.
TOCA	FAIL	Replace the card.
TOCA	PORT ALM	Replace the card if necessary.

Procedure—Verify Timing to the PBX

1. Administer the Stratum 3 clock by issuing the **change synchronization** command at the G3 Management Terminal.
2. Type a "3" in the **stratum** field.
3. Type the port network number where the TN780(s) reside in the **port network** field.

**NOTE:**

Wait one minute for the software to reconfigure the system synchronization.

4. Verify results of test 649. If test 649 fails with a code of 2101, then check the wiring for **EXTSYN0** and **EXTSYN1** (Tables 11-2, 11-3 and 11-4).
5. If test 649 is successful, then the system is getting correct timing from the

Stratum 3 clock. Proceed to the next verification.

Table 11-2. Signal Name Definitions

External Synchronization Clock Signals				
Name	Terminal	Name	Terminal	Comment
TREF1	02	RREF1	01	Incoming DS1 reference signal "1"
TREF2	04	RREF2	03	Incoming DS1 reference signal "2"
BCLKRTN	13	BCLKLST	14	"Both S3 clock fail" alarm leads
BPWRRTN	17	BPWRLST	18	"Both power fail" alarm leads
REF2RTN	07	REF2LST	08	"Reference 2 fail" alarm leads
SCLKRTN	11	SCLKLST	12	"Single S3 clock fail" alarm leads
SPWRRTN	15	SPWRLST	16	"Single power fail" alarm leads
REF1RTN	05	REF1LST	06	"Reference 1 fail" alarm leads
CCA01T	20	CCA01R	19	Composite clock timing output
CCB01T	22	CCB01R	21	Composite clock timing output
CCA02T	24	CCA02R	23	Composite clock timing output
CCB02T	26	CCB02R	25	Composite clock timing output
CCA03T	28	CCA03R	27	Composite clock timing output
CCB03T	30	CCB03R	29	Composite clock timing output
CCA04T	32	CCA04R	31	Composite clock timing output
CCB04T	34	CCB04R	33	Composite clock timing output
BREFRTN	09	BREFLST	10	"Both reference fail" alarm leads

TN780 Tone/Clock Signals				
NAME	TERMINAL	NAME	TERMINAL	COMMENT
ALRM5B	45	ALRM5A	46	"Both S3 clock fail" alarm leads
ALRM4B	21	ALRM4A	22	"Both power fail" alarm leads
ALRM3B	17	ALRM3A	18	"Reference 2 fail" alarm leads
ALRM2B	11	ALRM2A	12	"Single S3 clock fail" alarm leads
ALRM1B	31	ALRM1A	32	"Single power fail" alarm leads
ALRM0B	07	ALRM0A	08	"Reference 1 fail" alarm leads
EXTSYN0T	41	EXTSYN0R	42	Composite clock timing input
EXTSYN1T	35	EXTSYN1R	36	Composite clock timing input

Table 11-3. Cross-Connections Block Positions for Simplex PBX

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

Table 11-4. Cross-Connections Block Positions for Duplex PBX

From: Stratum 3 Clock			To: Y Cable Clock End (Primary)					
Lead Designation	Lead Color	Connecting Block Terminal	Lead Designation	Lead Color	Connecting Block Terminal			
RREF1	W-BL	1		V-O	43			
TREF1	BL-W	2		O-V	44			
			To: Y Cable Clock End (Secondary)					
RREF2	W-O	3		V-O	43	Lead Designation	Lead Color	Connecting Block Terminal
TREF2	O-W	4		O-V	44			
			To: TN780 Carrier A			To: TN780 Carrier B		
BCLKRTN	R-O	13	ALRM5B	V-G	45	ALRM5B	V-G	45
BCLKLST	O-R	14	ALRM5A	G-V	46	ALRM5A	G-B	46
BPWRRTN	R-BR	17	ALRM4B	BK-BL	21	ALRM4B	BK-BL	21
BPWRLST	BR-R	18	ALRM4A	BL-BK	22	ALRM4A	BL-BK	22
REF2RTN	W-BR	7	ALRM3B	R-BR	17	ALRM3B	R-BR	17
REF2LST	BR-W	8	ALRM3A	BR-R	18	ALRM3A	BR-R	18
SCLKRTN	R-BL	11	ALRM2B	R-BL	11	ALRM2B	R-BL	11
SCLKLST	BL-R	12	ALRM2A	BL-R	12	ALRM2A	BL-R	12
SPWRRTN	R-G	15	ALRM1B	Y-BL	31	ALRM1B	Y-BL	31
SPWRLST	G-R	16	ALRM1A	BL-Y	32	ALRM1A	BL-Y	32
REF1RTN	W-G	5	ALRM0B	W-BR	7	ALRM0B	W-BR	7
REF1LST	G-W	6	ALRM0A	BR-W	8	ALRM0A	BR-W	8
CCA01R	R-S	19	EXTSYN0T	V-BL	41			
CCA01T	S-R	20	EXTSYN0R	BL-V	42			
CCB01R	BK-BL	21	EXTSYN1T	Y-G	35			
CCB01T	BL-BK	22	EXTSYN1R	G-Y	36			
CCA02R	BK-O	23				EXTSYN0T	V-BL	41
CCA02T	O-BK	24				EXTSYN0R	BL-V	42
CCB02R	BK-G	25				EXTSYW1T	Y-G	35
CCB02T	G-BK	26				EXTSYN1R	G-Y	36

Procedure—Verify Loss of Power Supply Alarms to the PBX

1. Remove the **-48V A** fuse.
2. Enter **test synchronization** at the G3 Management Terminal.

3. If test 649 fails with a code of 2 then the system is successfully receiving this alarm from the Stratum 3 clock. Proceed to the next verification.
4. Remove the **-48V B** fuse.
5. Enter **test synchronization** at the G3 Management Terminal.
6. If test 649 fails with a code of 16 then the system is successfully receiving this alarm from the Stratum 3 clock. Proceed to Step 8.
7. If test 649 does not fail with a code of 16, check the wiring for **ALARM4** (Tables 11-2, 11-3, and 11-4) after restoring the **-48V B** and **-48V A** fuses.
8. Restore the fuse and run **test synchronization clear** to clear the alarm. Proceed to the next verification.

Procedure—Verify Loss of DS1 Reference Alarms to the PBX

1. Disconnect incoming DS1 reference signal "1" at the cross-connect field and enter **test synchronization** at the G3 Management Terminal.
2. If test 649 fails with a code of 1 then the system is successfully receiving this alarm from the Stratum 3 clock. Proceed to the next verification.
3. Check the wiring for **ALRM0** (Table 11-2, 11-3, and 11-4) after reconnecting incoming DS1 reference signal "1" at the cross-connect field and running **test synchronization clear** to clear the alarm.
4. Disconnect incoming DS1 reference signal "2" at the cross-connect field and enter **test synchronization** at the G3 Management Terminal.
5. If test 649 fails with a code of 8 then the system is successfully receiving this alarm from the Stratum 3 clock. Proceed to the next verification.
6. Check the wiring for **ALRM3** (Tables 11-2, 11-3, and 11-4) after reconnecting incoming DS1 reference signal "2" at the cross-connect field and running **test synchronization clear** to clear the alarm.

After following these verification steps, check that the Stratum 3 clock has been restored by running **test synchronization** and ensuring that test 649 passes. If test 649 doesn't pass use the following table (Table 11-5) to troubleshoot:

Table 11-5. Troubleshooting for Test 649

Test 649 Result	Troubleshooting Procedure
1	Check wiring for ALRM0 as shown in Tables 11-2, 11-3, and 11-4.
2	Check wiring for ALRM1 as shown in Tables 11-2, 11-3, and 11-4.
4	Check wiring for ALRM2 as shown in Tables 11-2, 11-3, and 11-4.
8	Check wiring for ALRM3 as shown in Tables 11-2, 11-3, and 11-4.
16	Check wiring for ALRM4 as shown in Tables 11-2, 11-3, and 11-4.
32	Check wiring for ALRM5 as shown in Tables 11-2, 11-3, and 11-4.
2101	Check wiring for EXTSYN0 and EXTSYN1 as shown in Tables 11-2, 11-3, and 11-4.

Test Center-Stage Switching

Description

The yellow LEDs on the three types of boards, SNI (TN573), EI (TN570), and DS1 Converter (TN574), that may be a part of the fiber link can help in diagnosing problems with the fiber link. The yellow LED states are as follows. The flashing LED patterns take precedence over the active or standby LED patterns.

Procedure—Check Yellow LEDs

1. Switch power to the switch and wait for the LEDs on the carriers to stabilize.
2. Observe the yellow LEDs on the switch node interface (SNI) boards. The SNI yellow LED states are given in table 11-6.
3. If the LEDs do not indicate one of “active” or “standby,” troubleshoot the board in question or call a maintenance technician to do so.

Table 11-6. Switch Node Interface Circuit Pack Yellow LED Flashing States

SNI Yellow LED Flashing Codes		
condition	LED on	LED off
Fiber out of Frame	0.1 sec	0.1 sec
* In frame, No Neighbor	0.5 sec	0.5 sec
SNI active	solid on	never off
SNI standby	never on	solid off

* The fiber is in frame but no communication exists to the neighbor.

1. Observe the yellow LEDs on the expansion interface (EI) boards. The EI yellow LED states are given in table 11-7.
2. If the LEDs do not indicate one of “active” or “standby,” troubleshoot the board in question or call a maintenance technician to do so.

Table 11-7. Expansion Interface Circuit Pack Yellow LED Flashing States

Condition	LED on	LED off
Fiber Out-of-Frame	0.1 sec	0.1 sec
In frame-No Neighbor*	0.5 sec	0.5 sec
Expansion Interface Active**	2 sec	0.2 sec
Expansion Interface Active‡	solid on	never off
Expansion Interface Standby§	never on	solid off

* The fiber is in frame but no communication exists to the neighbor.

** This is the normal state for an Active EPN Expansion Interface circuit pack that is also the bus master (Expansion Archangel) in the EPN.

‡ This is the normal state for an Active Expansion Interface circuit pack that is not the bus master (Expansion Archangel) for an EPN. This applies only in the Direct Connect Configuration where the Expansion Interface circuit pack in an EPN is connected via a fiber link to an Expansion Interface circuit pack in the other EPN.
This state also applies for an active Expansion Interface circuit pack located in the PPN.

§ This is the normal state for a Standby Expansion Interface circuit pack in both the PPN and EPN's.

1. Observe the yellow LEDs on the DS1 converter (DS1C) boards. The DS1C yellow LED states are given in table 11-8.
2. If the LEDs do not indicate one of “active” or “standby,” troubleshoot the board in question or call a maintenance technician to do so.

Table 11-8. DS1 Converter Circuit Pack Yellow LED Flashing States

DS1C Yellow LED Flashing Codes		
Condition	LED on	LED off
* Fiber out of Frame	0.1 sec	0.1 sec
** In frame, fiber channel is down	0.5 sec	0.5 sec
‡ In frame, DS1 channel down	1 sec	1 sec
§ DS1C no response from SPE	2 sec	0.2 sec
DS1C active	solid on	never off
DS1C standby	never on	solid off

* A Fiber is Out Of Frame or a Fiber Loss of Signal condition exists.

** DS1C/Fiber Endpoint communication is down.

‡ The DS1 Channel is down between the two DS1Cs in the DS1 Converter complex.

§ The SPE is not acknowledging messages from the DS1C circuit pack or the DS1C circuit pack does not have a processor route. This pattern indicates a probable software problem.

**WARNING:**

To avoid a disk crash, do not power down or power cycle a switch with a DEFINITY AUDIX System (for example, during switch acceptance tests) unless you have first shutdown the DEFINITY AUDIX system. Refer to chapter 1 in DEFINITY AUDIX System Maintenance, 585-300-110, for a description of the shutdown procedure.

Compare Administration and Wiring

Description

Configuration audit test number 759 is non-destructive.

This test queries the SNI for SNCs in the same switch node carrier, SNI peers, DS1Cs, and EI or SNI neighbors that the SNI can communicate with and compares this data to the administered data.

Failures of this test cause entries in the error and alarm logs against Switch Node Configuration (SN-CONF) with the board location of the SNI.

This test is unable to detect the case where an SNI is connected to the same type of board (EI or SNI) as administered but located in a different cabinet but the same carrier and same slot as the administered fiber endpoint. The administered fiber endpoint can be viewed with the **list fiber-link** command. This test can only detect if the fiber endpoint connected to the SNI is in a different carrier, slot location than the administered fiber endpoint.

If the SNI is connected to the same type of fiber endpoint as the administered fiber endpoint, but the location is the same as administered except for the cabinet, all phone calls will not work correctly; some phone calls will not go through and some phone calls will ring the wrong phone.

The **test led** command can be used in this case to check connectivity.

Procedure—Perform Configuration Audit

1. First, run the **test led port-network** command once for each administered port network. Verify that the LEDs on the correct port network are lit.

If the LEDs light on the wrong port carrier light, make sure that the fiber connections to the port network are consistent with the administered fibers (use the **list fiber-link** command to display the administered fibers).

2. Then run the **test led switch-node** command on each administered switch node carrier. Verify that the LEDs on the correct switch node carrier are lit.

If the LEDs light on the wrong switch node carrier light, check the connections to the switch node carrier that does not light the LEDs as expected.

3. Run the **test board** command on each administered switch node interface (SNI) board.

All SNI boards should pass the test. Troubleshoot each board that does not pass or have a maintenance technician do so.

Error codes, test results and interpretations thereof are given in table 11-9.

Table 11-9. TEST #759 Configuration Audit

Error Code	Test Result	Description / Recommendation
1115	ABORT	Could not allocate the necessary system resources to run this test. 1) Retry the command at 1 minute intervals a maximum of 3 times. 2) If the test continues to abort, follow normal escalation procedures.
2300	ABORT	The downlink message necessary to run this test could not be sent. 1) Retry the command at 1 minute intervals a maximum of 3 times. 2) If the test continues to abort, follow normal escalation procedures.
2301	ABORT	The software timer could not be set before sending the downlink message necessary to run this test. 1) Retry the command at 1 minute intervals a maximum of 3 times. 2) If the test continues to abort, follow normal escalation procedures.
2306	ABORT	The SNI circuit pack is not responding to test requests sent by software. 1) Run the test led switch-node for the switch node that this board resides in to verify whether the LEDs on the board light. 2) If the LEDs on the other boards in the carrier light, but the LEDs on this board do not light, run test 760 via test board UUCSS for the active SNC in this carrier. Wait 5 minutes and then try step 1 one more time. If the LEDs on this board still do not light, replace this board. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. 3) If none of the LEDs light for the boards in the same carrier as this board, fix any problems associated with the connectivity of this carrier to the SPE. Check list fibers to determine the fiber connections to this carrier. Check the LEDs on all SNIs and EIs and fix any fiber problems. Fix any EXP-INTF errors associated with the PPN. Fix any SYNC, SNI-BD, SNC-BD, FIBER-LK, or SNI-PEER errors. 4) If the test continues to abort, follow normal escalation procedures.
2500	ABORT	There is an internal system error. 1) Retry the command at 1 minute intervals a maximum of 3 times. 2) If the test continues to abort, follow normal escalation procedures.

Table 11-9. TEST #759 Configuration Audit Continued

Error Code	Test Result	Description / Recommendation
102	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 2. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 1 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 2. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 1, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 1, replace the SNI in slot 2. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.
103	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 3. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 257 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 3. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 257, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 257, replace the SNI in slot 3. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.

Table 11-9. TEST #759 Configuration Audit Continued

Error Code	Test Result	Description / Recommendation
104	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 4. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 513 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 4. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 513, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 513, replace the SNI in slot 4. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.
105	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 5. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 769 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 5. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 769, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 769, replace the SNI in slot 5. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.

Table 11-9. TEST #759 Configuration Audit Continued

Error Code	Test Result	Description / Recommendation
106	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 6. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 1025 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 6. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 1025, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 1025, replace the SNI in slot 6. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.
107	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 7. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 1281 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 7. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 1281, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 1281, replace the SNI in slot 7. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.

Table 11-9. TEST #759 Configuration Audit Continued

Error Code	Test Result	Description / Recommendation
108	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 8. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 1537 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 8. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 1537, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 1537, replace the SNI in slot 8. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.
109	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 9. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 1793 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 9. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 1793, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 1793, replace the SNI in slot 9. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.

Table 11-9. TEST #759 Configuration Audit Continued

Error Code	Test Result	Description / Recommendation
112	FAIL	If the board tested was an SNI, the SNI circuit pack cannot communicate with the active SNC. If the board tested was an SNC, the SNC circuit pack cannot communicate with the other SNC. 1) Check the error log for other SNI circuit packs in the same carrier with a 257 SNI-BD error. Use display errors with category PNC to view SNI-BD errors. If other SNI circuit packs in the same switch node carrier have error 257, then replace the active SNC in this switch node carrier. Replacing an SNC may be service interrupting. Refer to the SNC-BD section for the procedure for replacing an SNC. 2) Replace this SNI. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. 3) Replace the active SNC in the same switch node carrier. Replacing an SNC may be service interrupting. Refer to the SNC-BD section for the procedure for replacing an SNC. 4) If this test still fails, follow normal escalation procedures.
113	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 13. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 2049 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 13. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 2049, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 2049, replace the SNI in slot 13. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.

Table 11-9. TEST #759 Configuration Audit Continued

Error Code	Test Result	Description / Recommendation
114	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 14. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 2305 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 14. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 2305, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 2305, replace the SNI in slot 14. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.
115	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 15. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 2561 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 15. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 2561, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 2561, replace the SNI in slot 15. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.

Table 11-9. TEST #759 Configuration Audit Continued

Error Code	Test Result	Description / Recommendation
116	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 16. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 2817 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 16. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 2817, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 2817, replace the SNI in slot 16. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.
117	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 17. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 3073 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 17. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 3073, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 3073, replace the SNI in slot 17. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.

Table 11-9. TEST #759 Configuration Audit Continued

Error Code	Test Result	Description / Recommendation
118	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 18. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 3329 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 18. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 3329, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 3329, replace the SNI in slot 18. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.
119	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 19. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 3585 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 19. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 3585, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 3585, replace the SNI in slot 19. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.

Table 11-9. TEST #759 Configuration Audit Continued

Error Code	Test Result	Description / Recommendation
120	FAIL	The SNI circuit pack cannot communicate with the equipped SNI in slot 20. 1) Check the error log for SNI failures via display errors with category PNC-PEER. If error 3841 occurs for SNI-PEER for most SNIs in the same switch node carrier as the SNI being tested, replace the SNI in slot 20. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 2) If the SNI being tested has SNI-PEER error type 3841, replace the SNI being tested. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. To view SNI-PEER errors, use the display errors command with category PNC-PEER. Retry the command. 3) If the SNI being tested has SNI-PEER error type 3841, replace the SNI in slot 20. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. Retry the command. 4) If the test continues to fail, follow normal escalation procedures.
133	FAIL	No neighbor link is administered, but the SNI has an EI neighbor. 1) Administer the SNI on a fiber link to the EI neighbor to which it is connected via the add fiber-link next command or disconnect the fiber link. 2) If the test continues to fail, follow normal escalation procedures.

Table 11-9. TEST #759 Configuration Audit Continued

Error Code	Test Result	Description / Recommendation
134	FAIL	No neighbor link is administered, but the SNI has an SNI neighbor. 1) Administer the SNI on a fiber link to the SNI neighbor it is connected to via the add fiber-link next command or disconnect the fiber link. 2) If the test continues to fail, follow normal escalation procedures.
135	FAIL	The SNI circuit pack cannot communicate with its neighbor. The SNI has an administered neighbor, but cannot communicate with its neighbor. 1) Check if the administered neighbor is inserted. If not, insert the neighbor circuit pack. 2) Fix any FIBER-LK errors for the fiber this SNI is administered on. Use display errors with category PNC to view FIBER-LK errors. Check list fiber-link to determine the administered fiber. 3) Fix any on-board errors (either SNI-BD or EXP-INTF, depending on the type of neighbor) against the neighbor board. Use display errors with category PNC to view SNI-BD and EXP-INTF errors. (Use the list fiber command to find the fiber link associated with this SNI and the other end-point of the fiber is the SNI's neighbor.) 4) If this fiber link has a DS1 converter complex administered, fix any DS1C-BD or DS1-FAC errors for either of the DS1C boards administered or for the DS1 facilities associated with either of the DS1C boards administered. Use display errors with category PNC to view DS1C-BD and DS1-FAC errors. 5) Replace this SNI. Replacing an SNI may be service interrupting. Refer to the SNI-BD section for the procedure for replacing an SNI. 6) If this test still fails, follow normal escalation procedures.
136	FAIL	The SNI's administered neighbor does not match the physical neighbor connected. The type of neighbor administered is an SNI and the type of neighbor physically connected is an EI. Check the physical neighbor connected to the SNI. Either change administration or change the physical connection so that the administered neighbor location matches the physical neighbor location.

Table 11-9. TEST #759 Configuration Audit Continued

Error Code	Test Result	Description / Recommendation
137	FAIL	The SNI's administered neighbor does not match the physical neighbor connected. The type of neighbor administered is an EI and the type of neighbor physically connected is an SNI. Check the physical neighbor connected to the SNI. Either change administration or change the physical connection so that the administered neighbor location matches the physical neighbor location.
138	FAIL	The physical neighbor location does not match administered neighbor location. The carrier and slot of the administered neighbor do not match the carrier and slot of the physical neighbor. Check the physical neighbor connected to the SNI. Either change administration or change the physical connection so that the administered neighbor location matches the physical neighbor location.
139	FAIL	The SNI is administered to be connected to a DS1C but is not physically connected to a DS1C. If a DS1C is not supposed to be connected to this SNI, change administration to remove the DS1 converter complex from the fiber link associated with this SNI by: 1) Check for the fiber that this SNI is an endpoint of by checking list fiber-link. 2) Remove fiber-link for the fiber of which this SNI is an endpoint. Refer to the PNC section for the procedure for removing a fiber-link. 3) Add the fiber back via add fiber-link and this time do not administer the DS1 converter complex. If a DS1C should be connected to this SNI, check the physical connection between the DS1C and this SNI.

Table 11-9. TEST #759 Configuration Audit Continued

Error Code	Test Result	Description / Recommendation
140	FAIL	The SNI is physically connected to a DS1C but is not administered to be connected to a DS1C. Either add the DS1 converter complex to the fiber that this SNI is associated with by: 1) Check for the fiber that this SNI is an endpoint of by checking list fiber-link. 2) Remove fiber-link for the fiber of which this SNI is an endpoint. Refer to the PNC section for the procedure for removing a fiber-link. 3) Add the fiber back via add fiber-link and this time administer the DS1 converter complex also. Or, remove the DS1C connection and connect the SNI directly to its administered fiber endpoint.
	PASS	The administered data match the circuit packs with which the SNI or SNC can communicate.

Perform Final Test

Run the following "Hardware Group Test."

Run the complete "System" test with the "Allports" option in the "SPE Interchange" and "Long Test" modes. The hardware group tests are described in Appendix C, "The Hardware Group Tests".

⇒ NOTE:

This test will take several hours. It may be best to run the test in the background, or at night, or both.

Having run the test, inspect the alarms log. Type **display alarms** and, where you see alarms, resolve them in the usual way.

Check the error log for evidence of failure. The only failure results logged should be the outcome of tests that require a connected station, where a station is not connected to the port under test. Repair all other failures or refer them to a maintenance technician for repair.

66-Type and 110-Type Hardware Description

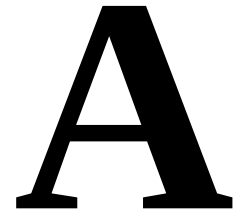


Figure A-1 shows the equipment required to install a G1 switch. This chapter describes the hardware (66-type and 110-type) used in the installation process. Ordering information is provided for the required hardware.

The sites shown in Figure A-1 are physical locations (closets) for pass-through connections where adjunct power can be applied. The satellite location is a place (closet) where cross-connect administration can be carried out, and adjunct power can be applied.

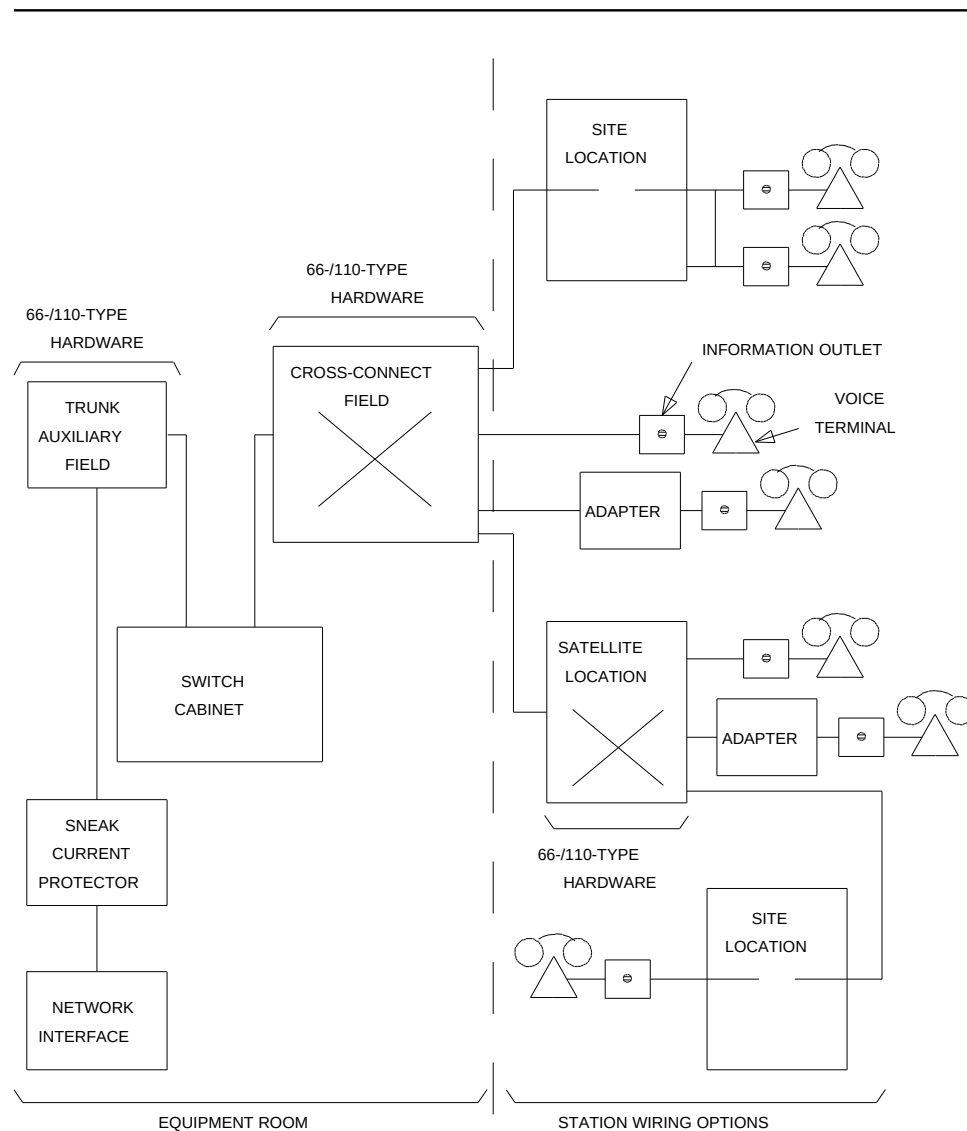


Figure A-1. Block Diagram of Multi-Carrier or Single-Carrier Cabinet Installation

110-Type Hardware Description

The 110-type hardware consists of connectorized or field-terminated terminal blocks in 100-, 300-, and 900-pair sizes. The 110-type terminal blocks consist of the following parts:

- 110-type wiring blocks
- Index strips
- 3-, 4-, and 5-pair connecting blocks

110-Type Wiring Blocks

The 110-type wiring block (Figure A-2) is a plastic wiring block equipped with permanently attached index strips.

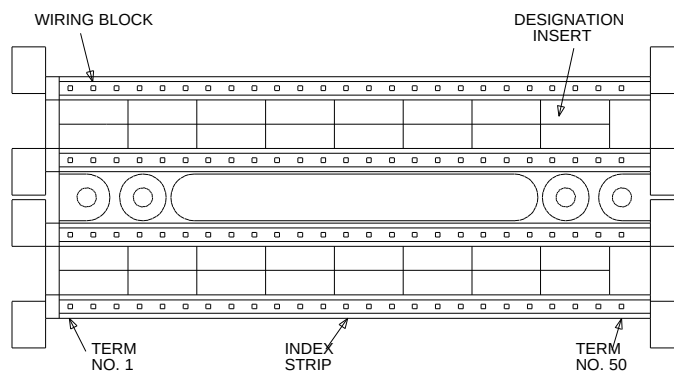


Figure A-2. 110-Type Wiring Block

Index Strips and Connecting Blocks

The index strips (Figure A-3) are slotted rows that provide space to terminate 25-pair cables. The wires are placed in the slots in the index strip. The standard termination for a 25-pair cable is shown in Table A-1.

**NOTE:**

Both 10- and 15-foot B25A connector cables are shipped with the switch in the required quantities.

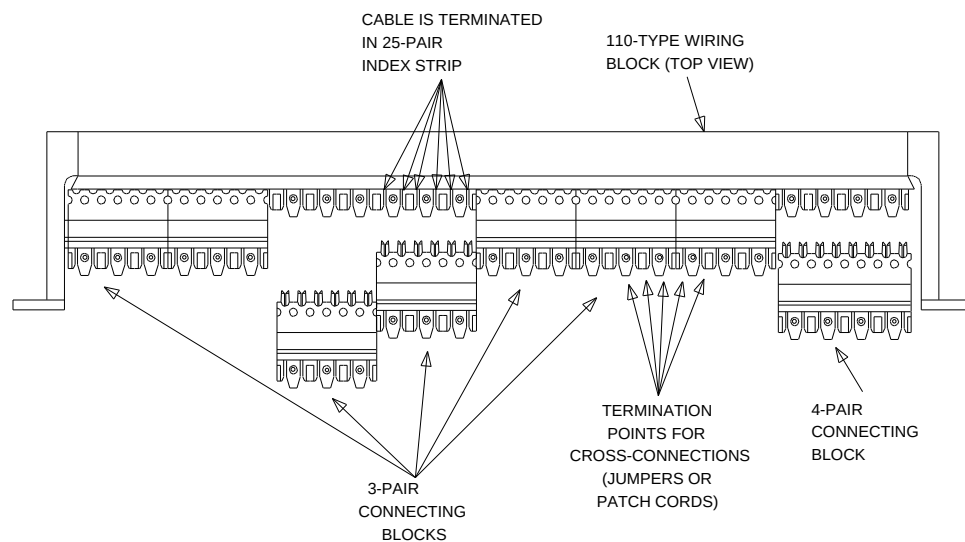


Figure A-3. 110-Type Index Strip With Connecting Blocks

Table A-1. 25-Pair Cable Termination on a 110-Type Wiring Block/66-Type Connecting Block

25-Pair Cable			66-Type Wiring/Conn Block Terminals
Connector Pin Numbers	Pair	Color	
26	1	W-BL	1
1		BL-W	2
27	2	W-O	3
2		O-W	4
28	3	W-G	5
3		G-W	6
29	4	W-BR	7
4		BR-W	8
30	5	W-S	9
5		S-W	10
31	6	R-BL	11
6		BL-R	12
32	7	R-O	13
7		O-R	14
33	8	R-G	15
8		G-R	16
34	9	R-BR	17
9		BR-R	18

Continued next page

Table A-1. 25-Pair Cable Termination on a 110-Type Wiring Block/66-Type Connecting Block *Continued*

25-Pair Cable			66-Type Wiring/Conn Block Terminals
Connector Pin Numbers	Pair	Color	
35	10	R-S	19
10		S-R	20
36	11	BK-BL	21
11		BL-BK	22
37	12	BK-O	23
12		O-BK	24
38	13	BK-G	25
13		G-BK	26
39	14	BK-BR	27
14		BR-BK	28
40	15	BK-S	29
15		S-BK	30
41	16	Y-BL	31
16		BL-Y	32
42	17	Y-O	33
17		O-Y	34
43	18	Y-G	35
18		G-Y	36

Continued next page

Table A-1. 25-Pair Cable Termination on a 110-Type Wiring Block/66-Type Connecting Block *Continued*

25-Pair Cable			66-Type Wiring/Conn Block Terminals
Connector Pin Numbers	Pair	Color	
44	19	Y-BR	37
19		BR-Y	38
45	20	Y-S	39
20		S-Y	40
46	21	V-BL	41
21		BL-V	42
47	22	V-O	43
22		O-V	44
48	23	V-G	45
23		G-V	46
49	24	V-BR	47
24		BR-V	48
50	25	V-S	49
25		S-V	50

The connecting blocks (Figure A-3) are equipped with clips that slice the insulation of the wires when the connecting block is pushed onto the index strip. The top of the connecting blocks are used for cross-connections. When a wire is punched onto the top of the connecting block, it makes a connection, through the connecting block, to the wire in the index strip.

The connecting blocks come in 3-, 4-, and 5-pair blocks. When 3- or 4-pair connecting blocks are used, the last connecting block on each index strip must be one pair larger to complete the 25-pairs. The ordering codes determine the type of connecting blocks received with a terminal block. The 110-type wiring blocks allow for individual 3- and 4-pair connecting blocks to be disconnected for testing without disturbing adjacent circuits.

The 110-type hardware consists of 110A- and 110P-type hardware. The 110P-type hardware uses patch cords to make cross-connections. This allows the customer to make cross-connections. The 110A-type hardware uses individual jumper wires for cross-connections. For this reason, the 110A-type hardware is not intended for customer usage because it requires technically skilled personnel to make cross-connections. The 110A- and 110P-type hardware should not be mixed together in the same room.

110A-Type Hardware

The 110A-type hardware consists of a 100- or 300-pair wiring block and the associated connecting blocks. The 100-pair wiring blocks (Figure A-4) are arranged for field termination. The 300-pair wiring blocks (Figure A-5) come in both field-terminated and connectorized (with 6-foot cable stubs) types.

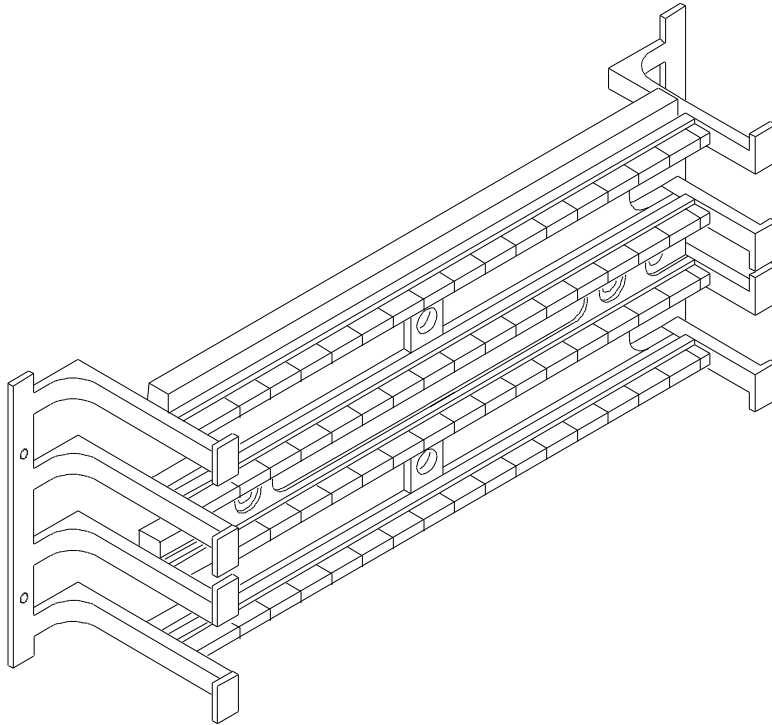


Figure A-4. 110A-Type 100-Pair Terminal Block

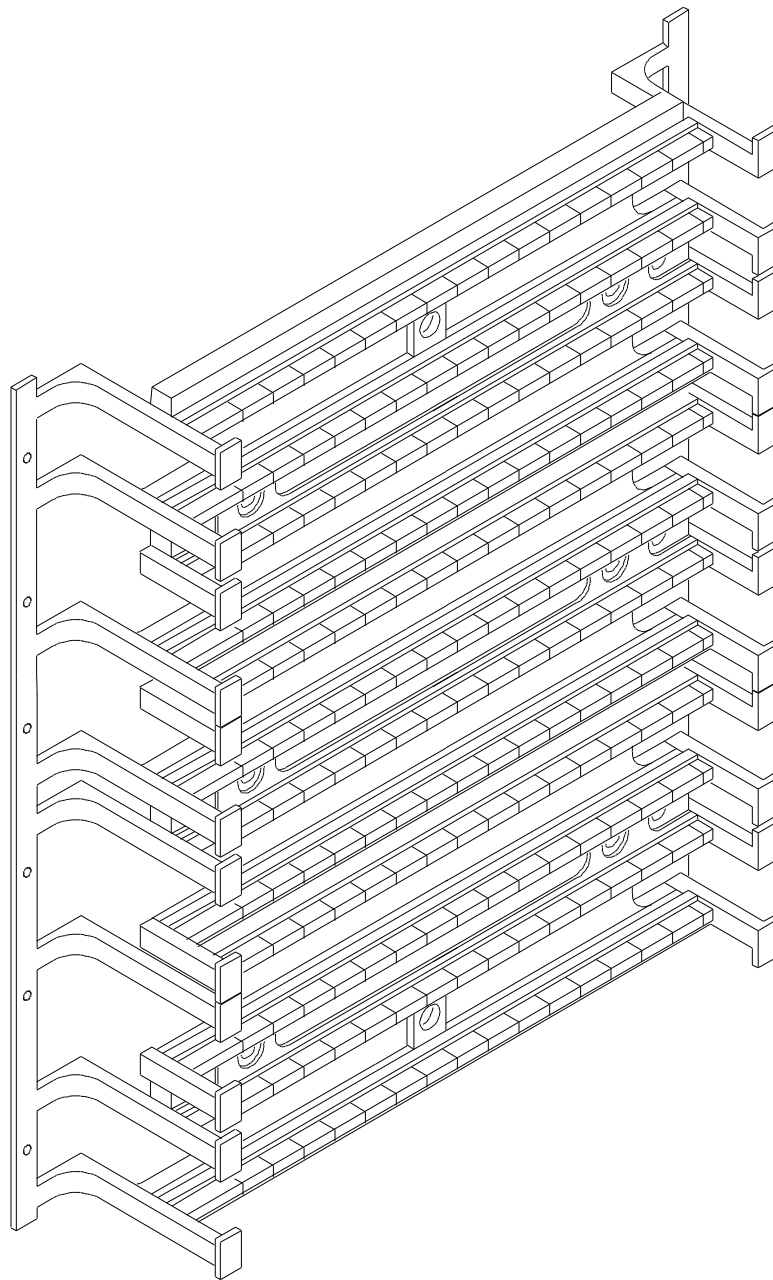


Figure A-5. 110A-Type 300-Pair Terminal Block

The 110A-type hardware can be used for the trunk/auxiliary field and all distribution fields (port, auxiliary, and station). The following 110A-type hardware is available.

- 110AE1-75FT terminal block—A kit of parts for field termination of cables on a 100-pair wiring block (110AW1-100). It provides space to terminate 8 three-pair and 12 four-pair circuits.
- 110AB1-100FT terminal block—A kit of parts for field termination of cables on a 100-pair wiring block (110AW1-100). It provides space to terminate 24 four-pair circuits.
- 110AC1-100FT terminal block—A kit of parts for field termination of cables on a 100-pair wiring block (110AW1-100). It provides space to terminate 32 three-pair circuits.
- 110AB1-300FT terminal block—A kit of parts for field termination of cables on a 300-pair wiring block (110AW1-300). It provides space to terminate 72 four-pair circuits.
- 110AC1-300FT terminal block—A kit of parts for field termination of cables on a 300-pair wiring block (110AW1-300). It provides space to terminate 96 three-pair circuits.
- 110AC1-300STF/6 terminal block—A factory-assembled 300-pair connectorized terminal block that provides space to terminate 96 three-pair circuits. Twelve, 25-pair (6-foot long), cables equipped with female connectors exit from the top of the block. The 25-pair cables are factory-terminated on the wiring block in continuous numerical order.
- 110AC1-300STM/6 terminal block—A factory-assembled 300-pair connectorized terminal block that provides space to terminate 96 three-pair circuits. Twelve, 25-pair (6-foot long), cables equipped with male connectors exit from the top of the block. The 25-pair cables are factory-terminated on the wiring block in continuous numerical order.

The 110AW1-100 or 110AW1-300 wiring blocks can be ordered separately. Also, the 3- or 4-pair connecting blocks (110C-3 or 110C-4, respectively) must be ordered separately.

110A-Type Hardware Ordering Information

Description	Comcode
110AE1-75FT Terminal Block	104049093
110AB1-100FT Terminal Block	103823845
110AC1-100FT Terminal Block	103826780
110AB1-300FT Terminal Block	104049051
110AC1-300FT Terminal Block	104049069
110AC1-300STF/6 Terminal Block	104049077
110AC1-300STM/6 Terminal Block	104049085
110AW1-100 Wiring Block	103804894
110AW1-300 Wiring Block	103804902
110C-3 3-Pair Connecting Block	103801239
110C-4 4-Pair Connecting Block	103801247

110P-Type Hardware

The 110P-type hardware consists of 100-pair wiring blocks, separated by horizontal patch cord troughs, mounted on a panel. It comes in both 300- and 900-pair configurations which can either be connectorized or field terminated. The 110P-type terminal blocks are made up of alternate rows of 110-type wiring blocks and horizontal jumper troughs arranged in a vertical column with the troughs located above the wiring blocks. At the bottom of the terminal block is a partially closed duct. The field-terminated hardware must be assembled (troughs and wiring blocks must be fastened to the back panel); the connectorized terminals come fully assembled and ready for mounting. A 300-pair connectorized terminal block is shown in Figure A-6.

There are two types of 900-pair connectorized terminal blocks: one has a connector field at the top; the other is connectorized with a 40-inch length of cable terminated with a female 25-pair cable at the bottom (Figures A-7 and A-8).

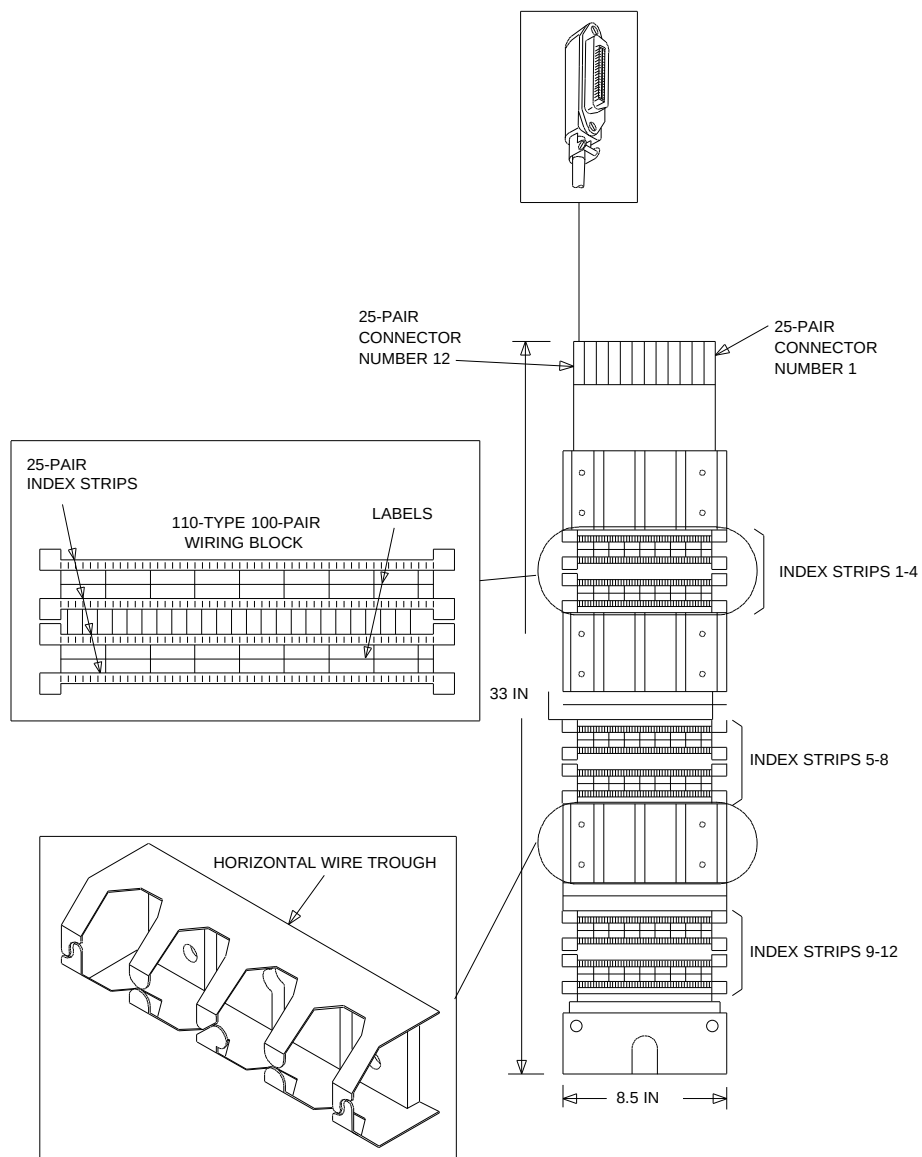


Figure A-6. 110P-Type Terminal Block: 300-Pair Connectorized

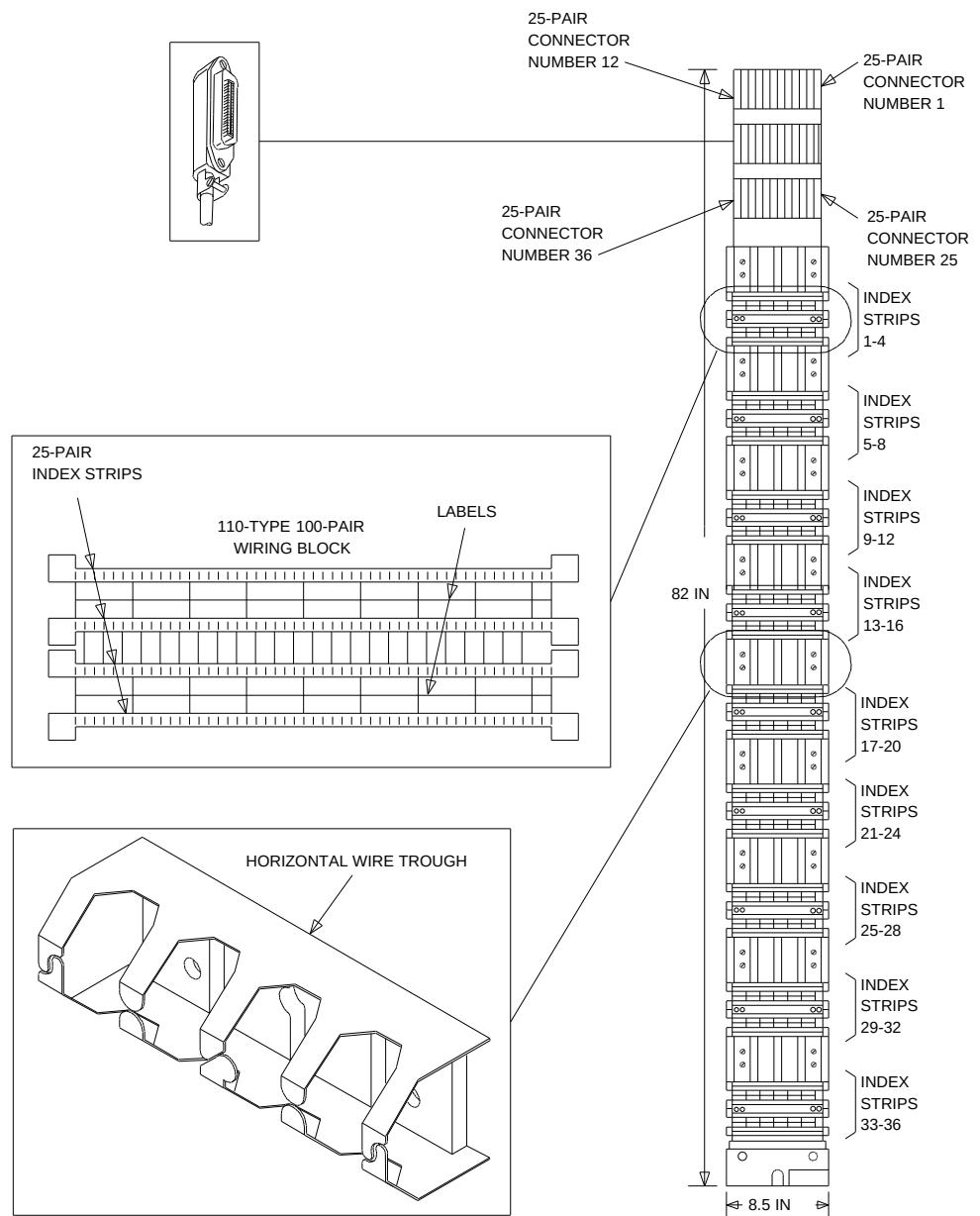


Figure A-7. 110P-Type Terminal Block: 900-Pair Connectorized (Top)

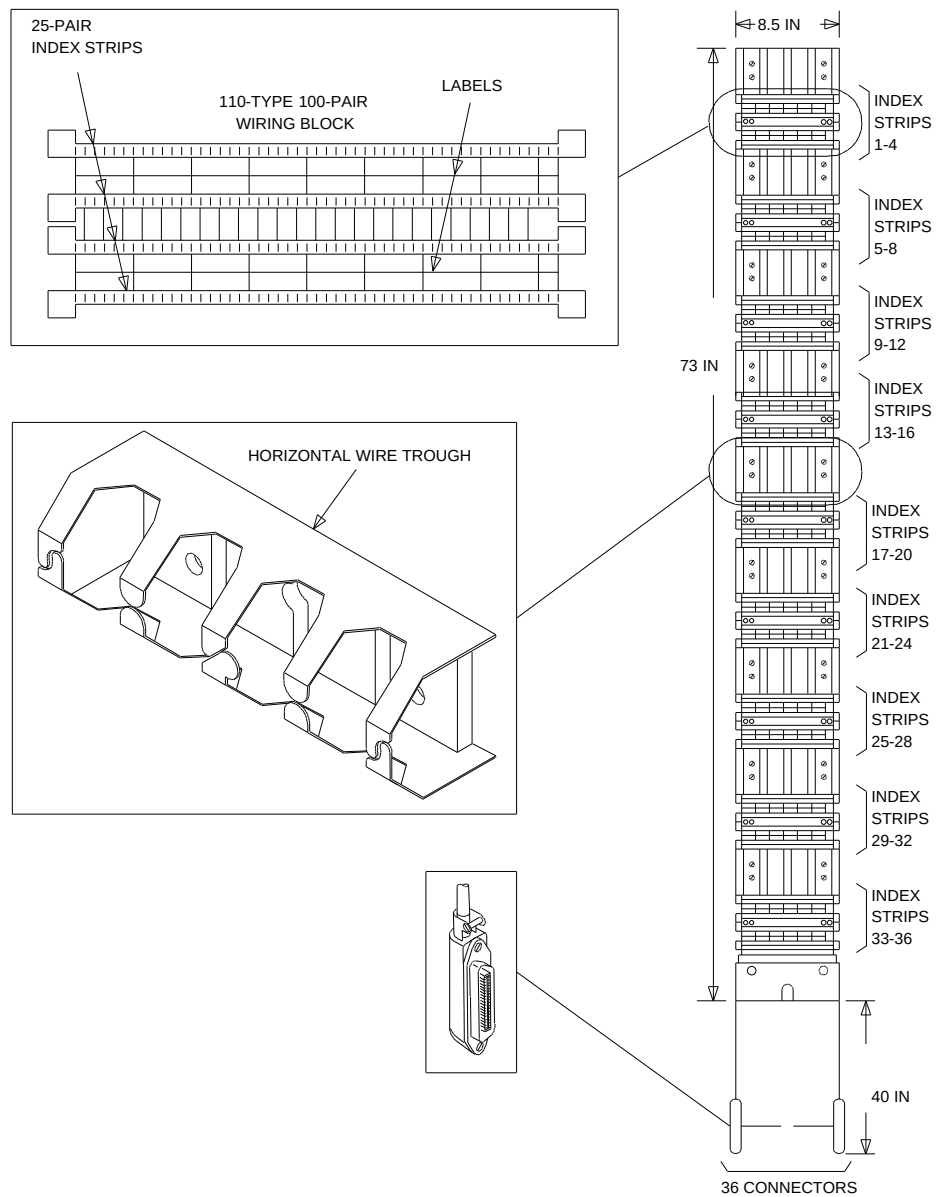


Figure A-8. 110P-Type Terminal Block: 900-Pair Connectorized (Bottom)

The 110P-type hardware can be used for the trunk/auxiliary field and all distribution fields (port, auxiliary, and station). The following 110P-type hardware is available.

- 110PB1-300CT terminal block—A factory-assembled 300-pair connectorized terminal block that provides space to terminate 72 four-pair circuits. Twelve, 25-pair, female, miniature ribbon connectors are mounted at the top of the terminal block. The connectors are factory-terminated on the wiring block in continuous numerical order.
- 110PC1-300CT terminal block—A factory-assembled 300-pair connectorized terminal block that provides space to terminate 96 three-pair circuits. Twelve, 25-pair, female, miniature ribbon connectors are mounted at the top of the terminal block. The connectors are factory-terminated on the wiring block in continuous numerical order.
- 110PB1-300FT terminal block—A kit of parts for field termination of cables on a 300-pair wiring block. It provides space to terminate 72 four-pair circuits.
- 110PC1-300FT terminal block—A kit of parts for field termination of cables on a 300-pair wiring block. It provides space to terminate 96 three-pair circuits.
- 110PE1-300CT terminal block—A factory-assembled, 300-pair, connectorized, terminal block that provides space to terminate 32 three-pair and 48 four-pair circuits. Twelve, 25-pair, female, miniature ribbon connectors are mounted at the top of the terminal block. The connectors are terminated on the wiring blocks in continuous numerical order.
- 110PE1-300CT/FT terminal block—A partially factory-assembled 300-pair terminal block that provides space to terminate 32 three-pair and 48 four-pair circuits. Four, 25-pair, female, miniature, ribbon connectors are mounted at the top of the terminal block. The connectors are terminated on the 3-pair wiring block in continuous numerical order. The 4-pair wiring blocks are available as a kit of parts to allow field termination of the 4-pair circuits.
- 110PE1-300FT terminal block—A kit of parts for field termination of cables on a 300-pair terminal block. It provides space to terminate 32 three-pair and 48 four-pair circuits.
- 110PB1-900CB terminal block—A factory-assembled, 900-pair, connectorized, terminal block that provides space to terminate 216 4-pair circuits. Thirty-six, 25-pair cables (40-inches long), equipped with female miniature ribbon connectors, are mounted at the bottom of the terminal block. The cables are factory-terminated on the wiring blocks in continuous numerical order.

- 110PC1-900CB terminal block—A factory-assembled 900-pair connectorized terminal block that provides space to terminate 288 three-pair circuits. Thirty-six, 25-pair cables (40-inches long), equipped with female miniature ribbon connectors, are mounted at the bottom of the terminal block. The cables are factory-terminated on the wiring blocks in continuous numerical order.
- 110PB1-900CT terminal block—A factory-assembled 900-pair connectorized terminal block that provides space to terminate 216 four-pair circuits. Thirty-six, 25-pair, female, miniature ribbon connectors are mounted at the top of the terminal block. The connectors are factory-terminated on the wiring blocks in continuous numerical order.
- The 110PC1-900CT terminal block—A factory-assembled 900-pair connectorized terminal block that provides space to terminate 288 three-pair circuits. Thirty-six, 25-pair, female, miniature ribbon connectors are mounted at the top of the terminal block. The connectors are factory-terminated on the wiring blocks in continuous numerical order.
- 110PB1-900FT terminal block—A kit of parts for field termination of cables on a 900-pair terminal block. It provides space to terminate 216 four-pair circuits.
- 110PC1-900FT terminal block—A kit of parts for field termination of cables on a 900-pair terminal block. It provides space to terminate 288 three-pair circuits.
- 110PE1-900CT/FT terminal block—A partially factory-assembled 900-pair terminal block that provides termination space for 96 three-pair and 144 four-pair circuits. Twelve, 25-pair, female, miniature, ribbon connectors are mounted at the top of the terminal block. The connectors are terminated on the 3-pair wiring blocks in a continuous numerical order. The 4-pair wiring blocks are available as a kit of parts to allow field termination of the 4-pair circuits.
- 110PE1-900FT terminal block—A kit of parts for field termination of cables on a 900-pair terminal block. It provides space to terminate 96 three-pair and 144 four-pair circuits.

110P-Type Hardware Ordering Information

Description	Comcode
110PB1-300CT Terminal Block	103823886
110PC1-300CT Terminal Block	103804852
110PB1-300FT Terminal Block	103804829
110PC1-300FT Terminal Block	103804860
110PE1-300CT Terminal Block	104017066
110PE1-300CT/FT Terminal Block	104173166
110PE1-300FT Terminal Block	103823902
110PB1-900CB Terminal Block	104173158
110PC1-900CB Terminal Block	104166590
110PB1-900CT Terminal Block	103804837
110PC1-900CT Terminal Block	103048878
110PB1-900FT Terminal Block	103804845
110PC1-900FT Terminal Block	103804886
110PE1-900CT/FT Terminal Block	104173174
110PE1-900FT Terminal Block	103823910

188-Type Backboards

The 188-type backboards are wire troughs that channel the patch cords or cross-connecting wire between the wiring blocks. The backboards consist of a metal frame equipped with retaining rings. They are available in four types:

- The 188B1 backboard is a horizontal wire trough that is used with 110A-type terminal blocks.
- The 188C2 backboard is a vertical wire trough that is used with 900-pair 110P-type terminal blocks.
- The 188D2 backboard is a vertical wire trough that is used with 300-pair 110P-type terminal blocks.
- The 188E2 backboard is a horizontal wire trough that is used between the trunk/auxiliary field and the distribution field for either 300- or 900-pair 110P-type terminal blocks.

188-TYPE Backboard Ordering Information

Description	Comcode
188B1 Backboard	102689569
188C2 Backboard	104031794
188D2 Backboard	104032404
188E2 Backboard	104031802

Cords

110-Type Patch Cords

The 1-pair and 3-pair patch cords (Figure A-9) are used to cross-connect terminals to switch ports at the cross-connect field. The patch cords are available in several lengths. The patch cords are equipped with a plastic plug on each end. The plastic plugs are compatible with the 110-type connecting blocks used on the wiring blocks. The patch cords are keyed so that they cannot be inserted upside down or on a split pair.

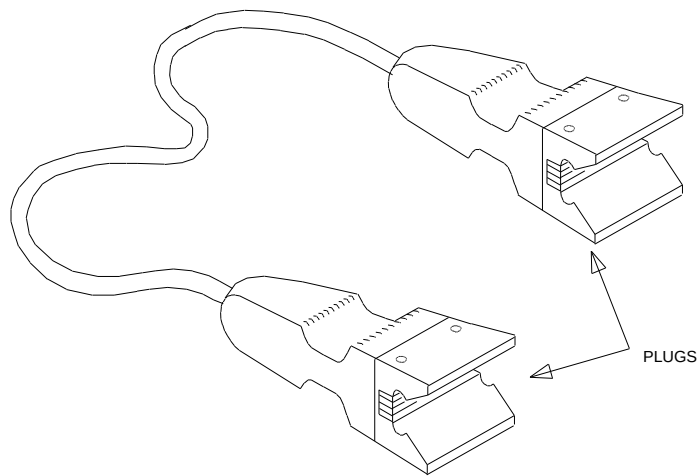


Figure A-9. 3-Pair Patch Cord Used With 110-Type Hardware

110-Type Patch Cord Ordering Information				
Cord	Description	Length	Comcode (1 per package)	Comcode (10 per package)
F-61679-2	1-Pair	2 ft	103991873	Not Available
F-61679-3	1-Pair	3 ft	103991881	Not Available
F-61679-4	1-Pair	4 ft	103991899	Not Available
F-61679-5	1-Pair	5 ft	103991907	104 073 606
F-61679-6	1-Pair	6 ft	103991915	Not Available
F-61679-7	1-Pair	7 ft	103991923	Not Available
F-61679-8	1-Pair	8 ft	103991931	Not Available
F-61679-9	1-Pair	9 ft	103991949	104073 614
F-61679-19	1-Pair	19 ft	103991956	104073622
110P6A2B	3-Pair	2 ft	Not Available	103882965
110P6A3B	3-Pair	3 ft	Not Available	103882957
110P6A4B	3-Pair	4 ft	Not Available	103882940
110P6A5B	3-Pair	5 ft	Not Available	103882973
110P6A6B	3-Pair	6 ft	Not Available	103882932
110P6A7B	3-Pair	7 ft	Not Available	103882924
110P6A8B	3-Pair	8 ft	Not Available	103882916
110P6A9B	3-Pair	9 ft	Not Available	103882908
110P6A19B	3-Pair	19 ft	Not Available	103882890

F-61789 Power Adapter Cords

The F-61789 power adapter cord (Figure A-10) is used at the equipment room or satellite closet cross-connect field to connect an adjunct power supply to a 4-pair connecting block that is mounted on a 110-type wiring block. The power adapter cord is a 1-pair cable equipped with a 6-conductor modular plug on one end, and a 1-pair, 110-type patch cord plug on the other end. The modular plug connects to an adjunct power supply, and the patch cord plug connects to a connecting block mounted on a 110-type wiring block.

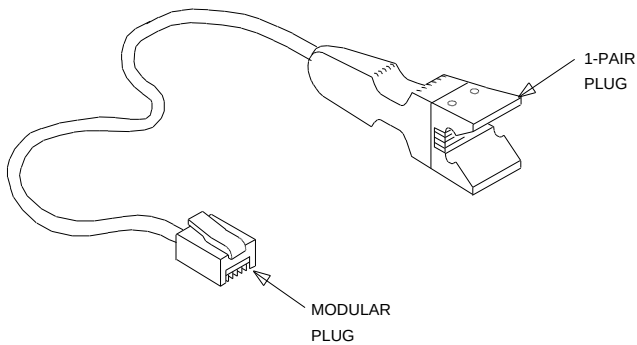


Figure A-10. F-61789 Power Adapter Cord

Power Adapter Cord Ordering Information			
Cord	Length	Comcode (1 per package)	Comcode (10 per package)
F-61789-5	5 ft	103907184	103891800
F-61789-9	9 ft	103907192	103891792
F-61789-19	19 ft	103907200	103891784

Test Cords

The D test cord provides test access to one pair of wires without removing any jumpers.

D Test Cord Ordering Information		
Cord	Length	Comcode
D Test Cord	4 ft	402023949
D Test Cord	8 ft	402023956

Jumpers

Solid wire jumpers can be used to make cross-connections instead of the 1- and 3-pair patch cords. The jumpers are terminated on the connecting blocks with an impact tool.

Jumper Wire Ordering Information

Jumper Wire	Description	Comcode (Order by Footage)
DT 24M-Y/BL/R/G	2-Pair	103252557
DT 24P-W/BRN	1-Pair	102484045
DT 24P-Y/BL	1-Pair	102379195
DT 24P-Y/G	1-Pair	103252565
DT 24P-Y/O	1-Pair	103252573
DT 24P-Y/R	1-Pair	103252581

Tools

The following tools are required to terminate the wires/jumpers on field-terminated wiring blocks:

- The D impact tool (AT-8762) is a single-wire termination tool
- The 788J1 impact tool will terminate five pairs of wire at a time
- The 788K1 conductor retention tool is used to secure cable pairs in the wiring blocks when connecting blocks are being removed from the wiring blocks.

110-Type Tools Ordering Information

Description	Comcode
D Impact Tool	402024723
788J1 Impact Tool	102648839
788K1 Conductor Retention Tool	102655495

F Clip Terminal Insulator

The F clip terminal insulator (AT-8660F) is used to identify special circuits. Each insulator identifies one pair and may be located in adjacent pair positions without interference.

F Clip Terminal Insulator Ordering Information

Description	Comcode
F Clip Terminal Insulator	401149802

Designation Strips

Designation strips (Figure A-11) are made of clear plastic and snap into alternate rows of the 110-type wiring block. Each designation strip can identify 50-pairs of wire. The designation strips accept the standard 110-labels that are ordered separately. The designation strips are furnished with the 110-type terminal blocks.

Designation Strip Ordering Information

Description	Qty. per Code	Comcode
Designation Strip	6	103895504

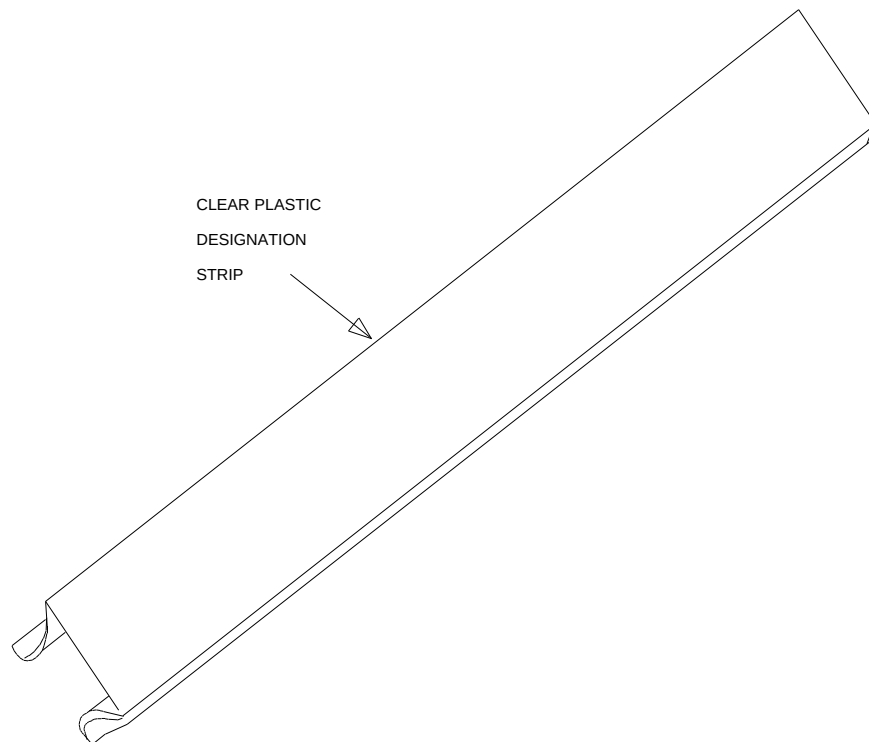


Figure A-11. Designation Strip

66-Type Hardware Description

The 66-type hardware consists of non-connectorized or connectorized connecting blocks. The connecting blocks can be mounted individually or in multiple arrangements. All 66-type hardware uses the same basic connecting block, a 66M1-50.

66M1-50 Connecting Block

The 66M1-50 connecting block is a plastic connecting block containing quick connect terminals sized to terminate 20 to 24 gauge wire. It has 50 rows of terminals with four terminals in each row. The first two and last two terminals of each row are connected together and each row is split between the second and third terminals. These terminals provide space to terminate one 25-pair cable and the associated jumpers. The terminals slice the insulation of the wires when the wires are punched onto the terminals. The standard termination for a 25-pair cable on a 66M1-50 connecting block is shown in Table A-1. The 66M1-50 connecting block can be mounted directly on the wall or on a backboard. These connecting blocks are used in the equipment room for the distribution field.

Connectorized 66-Type Connecting Blocks

The connectorized version of the 66-type connecting block is the 157B (Figure A-12) connecting block. It consists of a 66M1-50 connecting block prewired to a 50-pin connector mounted on each side of the connecting block. Each 157B connecting block can terminate two 25-pair cables. It can be mounted directly on the wall or on a backboard. These connecting blocks are used in the equipment room for the trunk/auxiliary and distribution fields.



NOTE:

Both 10- and 15-foot B25A connector cables are shipped with the switch in the required quantities.

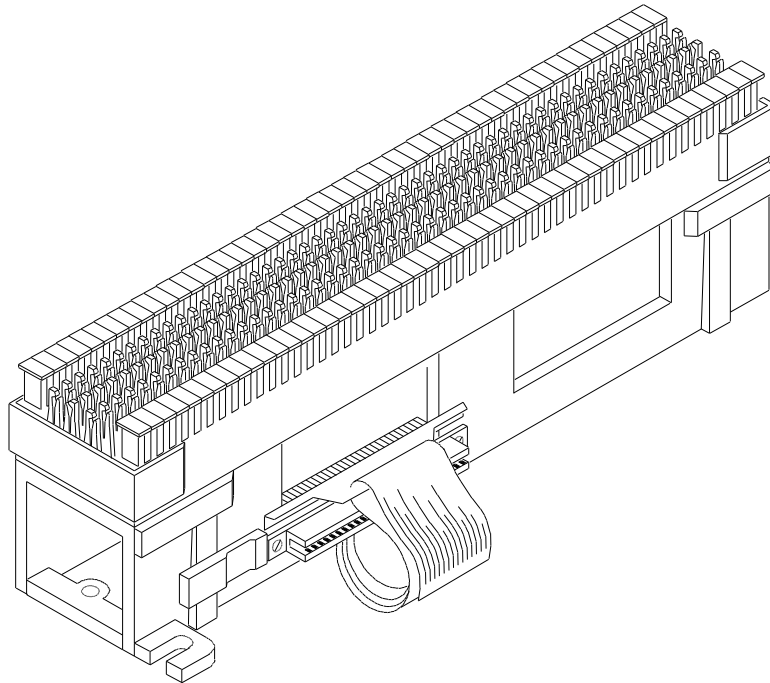


Figure A-12. 157B Connecting Block

Multiple-Mounted 66-Type Connecting Blocks

Connectorized 66-type connecting blocks are available in two multiple mounting arrangements. The 166-type backboard consists of eight 157B connecting blocks factory-mounted on a purple backboard. This multiple arrangement provides space to terminate sixteen 25-pair cables. The 166-type backboard is used in the equipment room for the trunk/auxiliary field and distribution field.

The 154A-type backboard consists of four 157B connecting blocks factory-mounted on a blue backboard. This multiple arrangement provides space to terminate eight 25-pair cables. The 154A-type mounting is used in the equipment room in the distribution field.

66-Type Connecting Blocks Ordering Information

Description	Comcode
66M1-50 Connecting Block	101238178
157B Connecting Block	403613003
166-Type Backboard	403612922
154A-Type Backboard	403612997

183-Type Backboards

The 183-type backboard (Figure A-13) provides mounting space for 66M1-50 connecting blocks. It is available in the four colors (blue, green, purple, and yellow) that are used to identify the functional areas in the cross-connect field. The 183A-type backboard mounts four 66M1-50 connecting blocks. The 183B-type backboard mounts eight 66M1-50 connecting blocks. The 183C-type backboard mounts two 66M1-50 connecting blocks. White backboards that are used for connections between the main distribution field and satellite closets can be obtained from outside vendors.

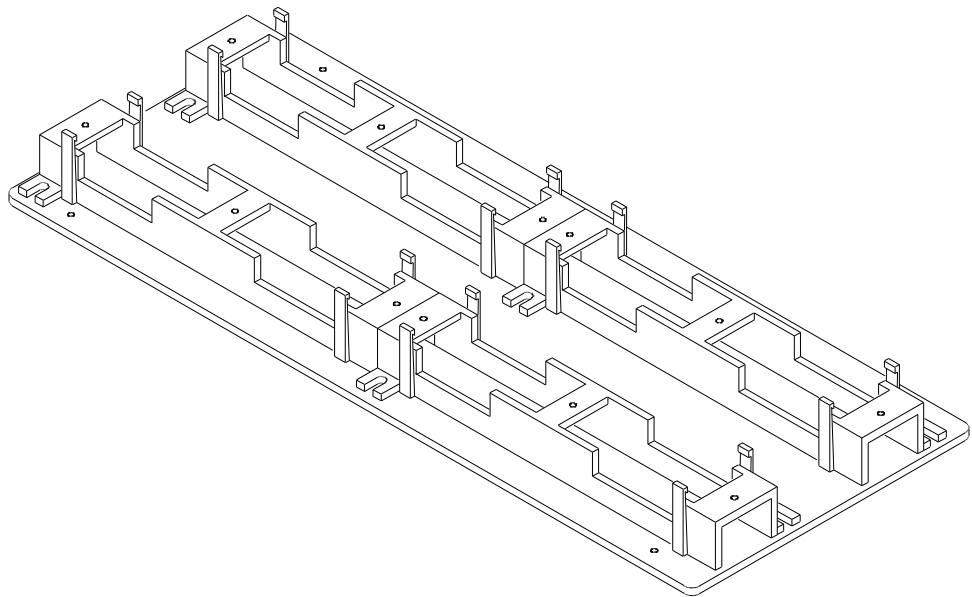


Figure A-13. 183A-Type Backboard

183-Type Backboard Ordering Information			
Code	Color	Mounts	Comcode
183A1	Blue	(4) 66M1-50 Conn Blocks	101412963
183A2	Green	(4) 66M1-50 Conn Blocks	101412971
183A4	Purple	(4) 66M1-50 Conn Blocks	101937902
183A5	Yellow	(4) 66M1-50 Conn Blocks	101986446
183B1	Blue	(8) 66M1-50 Conn Blocks	101412989
183B2	Green	(8) 66M1-50 Conn Blocks	101564631
183B4	Purple	(8) 66M1-50 Conn Blocks	101937928
183B5	Yellow	(8) 66M1-50 Conn Blocks	101986453
183C1	Blue	(2) 66M1-50 Conn Blocks	103222790

187B1 Backboard

The 187B1 backboard (Figure A-14) provides 16 pegs that are used to dress the cross-connecting wire between connecting blocks. The 187B1 backboards can be used with any arrangement of 66-type connecting blocks.

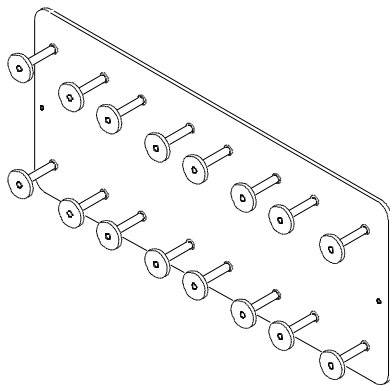


Figure A-14. 187B1 Backboard

187B1 Backboard Ordering Information

Description	Comcode
187B1 Backboard	101937944

Power Adapter Cords

The power adapter cord (Figure A-15) connects an adjunct power supply to a 4-pair station circuit terminated on a 66-type connecting block. The cord consists of a 2-pair cable equipped with a 6-conductor modular plug. The plug end connects to the power supply and the other end terminates on the 66-type connecting block.

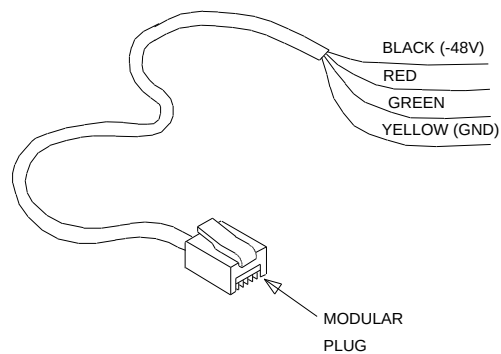


Figure A-15. Power Adapter Cord

Power Adapter Cord Ordering Information

Length	Comcode
10 ft	103935623
25 ft	103895660

Jumpers

Solid wire jumpers are used for cross-connections between terminals on the connecting blocks. The jumpers are punched down on the connecting blocks with a termination tool.

Jumper Wire Ordering Information		
Jumper Wire	Description	Comcode (Order by Footage)
DT 24M-Y/BL/R/G	2-Pair	103252557
DT 24P-W/BRN	1-Pair	102484045
DT 24P-Y/BL	1-Pair	102379195
DT 24P-Y/G	1-Pair	103252565
DT 24P-Y/O	1-Pair	103252573
DT 24P-Y/R	1-Pair	103252581

Tools

The following tools are used to terminate or remove the wire on the connecting blocks:

- The 714B tool is a nonimpact single-wire termination tool
- The D impact tool is a single-wire impact termination tool
- The 724A tool is used to remove wires from the connecting blocks

66-Type Tools Ordering Information

Description	Comcode
714B Tool	100755511
Blade AT-8762	402024681
D Impact Tool	402024723
724A Tool	100755636

Bridging Clips

Bridging clips are spring clips that connect two adjacent terminals in the same terminal row on a connecting block. Bridging clips provide the fastest, most reliable way to make cross-connections. No special tools are required to install or remove the clips.

Bridging Clips Ordering Information

Description	Comcode
BCSS-2 Bridging Clip	403596035

Cable Slack Managers

The cable slack managers (Figure A-16) are raised floor units that are used for cable distribution and cable slack storage between the switch cabinets and the cross-connect field. They can also accommodate a limited amount of slack in station cables. Power cables from the switch cabinets are also run through/from the cable slack managers.

⇒ NOTE:

Cable slack managers are not required when the switch cabinet is installed on a raised computer floor. The station cables and the cables from the switch cabinets are routed under the computer flooring to the cross-connect field.

The cable slack managers have tabs and interlocks that allow adjacent cable slack managers to interlock together. Retainers mounted on columns inside the cable slack managers keep the cables from protruding above the top of the base. The cable slack managers are coded as housings and two types are available.

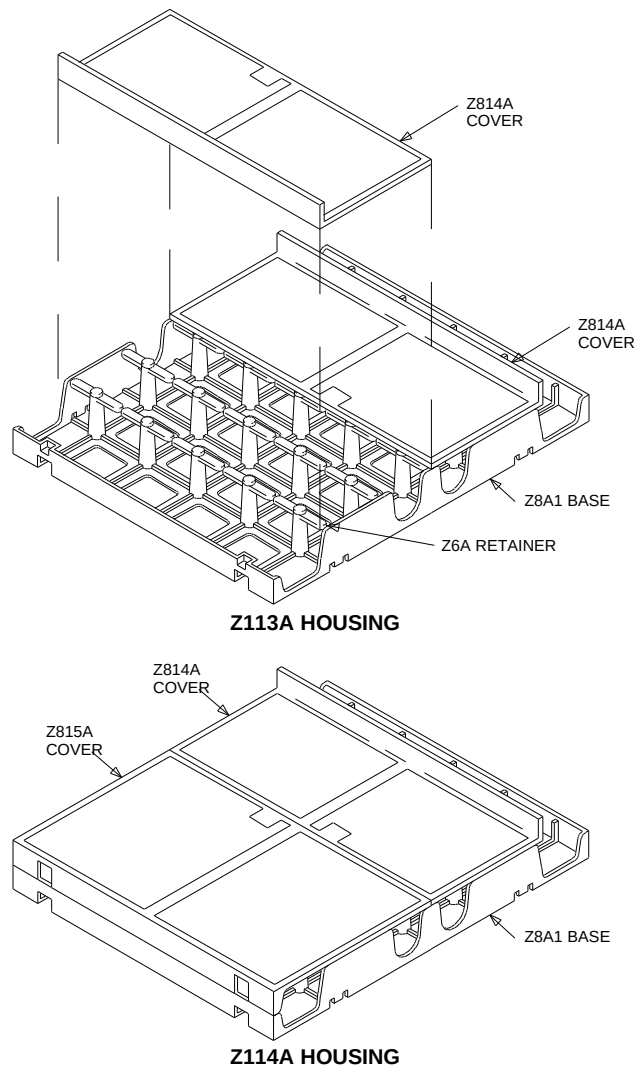


Figure A-16. Cable Slack Managers

Z113A Housing

The Z113A housing is used between the wall and equipment cabinets (switch, AP, auxiliary, etc.). It consists of:

- (1) Z8A1 base
- (2) Z814A covers
- (25) Z6A retainers

Z114A Housing

The Z114A housing is designed to be used adjacent to the Z113A housing if no equipment cabinet exists at the position or if the cabinet(s) is positioned against the wall with the cross-connect field beside the cabinet(s). It consists of:

- (1) Z8A1 base
- (1) Z814A cover
- (1) Z815A cover
- (25) Z6A retainers

Cable Slack Manager Ordering Information

Description	Comcode
Z113A Housing	103961322
Z114A Housing	103961330
Z8A1 Base	103965133
Z814A Cover	103965141
Z815A Cover	103965158
Z6A Retainer	103965166

Network Interfaces

RJ21X Network Interface

The RJ21X network interface is the connection point between the local telephone company lines (1-pair trunks) and the switch. The interface is supplied and installed by the local telephone company. See Table 9-1 for network interface pin assignments on CO and DID trunk circuit packs.

RJ2GX Network Interface

The RJ2GX network interface is the connection point between the local telephone company tie-trunks and the switch three-pair tie-trunks. The interface is supplied and installed by the local telephone company. See Table 9-1 for network interface pin assignments on tie trunk circuit packs.

1.544 Mbps Digital Service Interface

The 1.544 Mbps (megabits per second) digital service interface is the connection point between the local telephone company T1 carrier lines and the switch DS1 trunks. The interface is supplied and installed by the local telephone company.

Sneak Fuse Panels

575-4 Sneak Current Fuse Panel

Sneak current protection is required between the RJ21X or RJ2GX network interface and the switch for both trunk and off-premise circuit packs (see “Installing Off-Premises Station Wiring” in Chapter 10). The Model 575-4 sneak current fuse panel (Figure A-17), or equivalent, is recommended for sneak current protection. The panel is connectorized with incoming and outgoing connectors and equipped with 25 two-pair 79A fuse modules. Connector cables (B25A) connect the network interface to the sneak fuse panel. Also, 157B connecting blocks equipped with SCP-1 protectors can be used for sneak current protection.

Sneak Fuse Panel Ordering Information

Description	Comcode
157B Connecting Block	403613003
SCP-1 Protector	403617632
575-4 Sneak Current Fuse Panel	402989016
79A Two Pair Fuse	103351610



NOTE:

Sneak current protectors with a rating of 350ma at 600 volts must be UL listed for domestic installation and CSA certified for Canadian installation.



NOTE:

The SCP-1 protectors must be ordered separately and installed on the 157B connecting block. Twenty-four protectors are required per block.

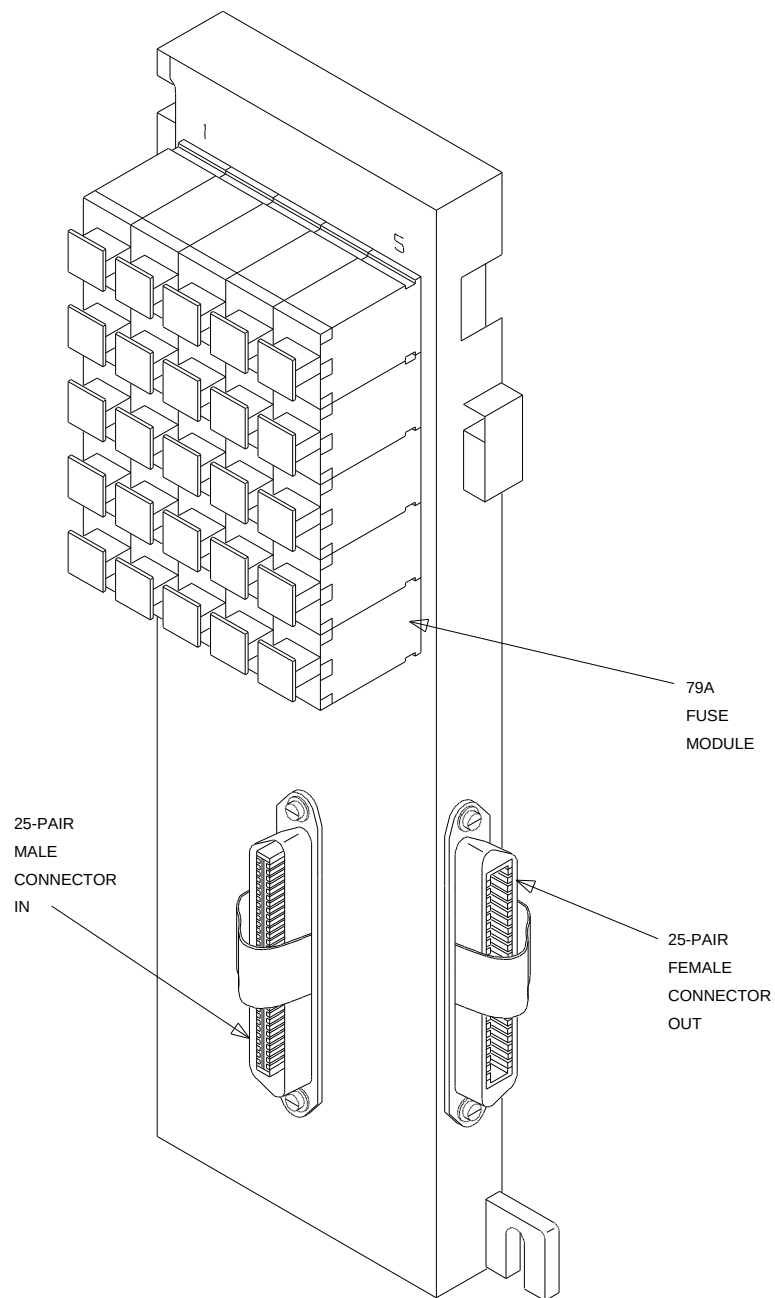


Figure A-17. Model 575-4 Sneak Fuse Panel

Emergency Transfer Units

The emergency transfer unit used with the 66-type/110-type hardware is the 808A emergency transfer unit.

The 808A Emergency Transfer Panel (ETP) provides emergency trunk bypass or power-fail transfer for up to five incoming Central Office (CO) trunk loops to five selected PBX station sets. When a power failure or other system problem interrupts service, the sets are automatically and directly connected to the CO trunk and are available for emergency use outside the PBX service environment.

Details of installation are given in Chapter 8, "Install Auxiliary Equipment".

Trunk Concentrator Cables

Trunk concentrator cables are used for the following purposes:

- To match 1-pair local telephone company trunks to 3-pair switch circuits at the cross-connect field.
- To match 1-pair local telephone company trunks provided for off-premises lines to 3-pair switch circuits at the cross-connect field.
- To split eight 3-pair analog tie trunks into two groups of four 3-pair tie trunks.

The trunk concentrator cables are 25 feet long. They are coded as cable assemblies and described in the following sections.

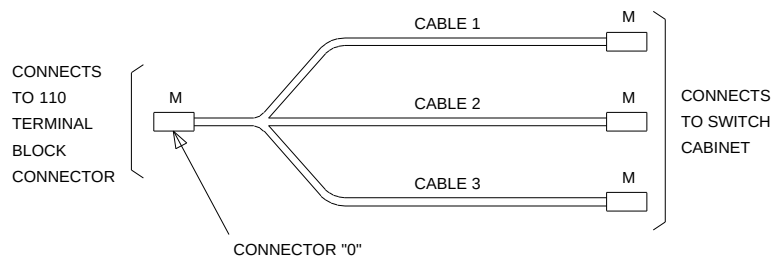


NOTE:

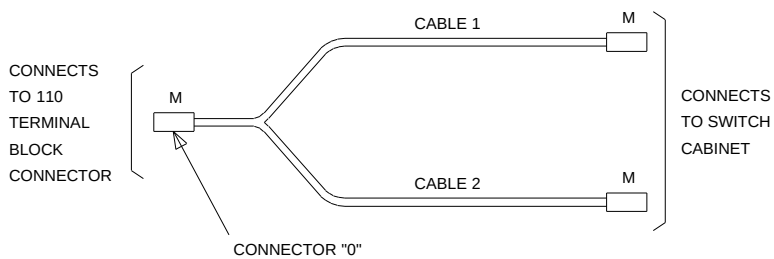
The WP-90929, List 1 and List 3 cable assemblies are used with 110-type hardware, while List 2 and 4 cable assemblies are used with 66-type hardware.

WP-90929, List 1, Cable Assembly (for 110-type Hardware Only)

The WP-90929, List 1, cable assembly (Figure A-18 and Table A-2) provides a way to connect local telephone company trunks to the switch. It can also be used to connect off-premises analog trunks between the port field and trunk field at the equipment room cross-connect field. All the ribbon connectors on the cable assembly are male-type connectors. Each cable assembly can match twenty-four 1-pair trunk circuits with twenty-four 3-pair trunk circuits.



LIST 1 CABLE



LIST 3 CABLE

LEGEND:

M = 25-PAIR MALE CONNECTOR
F = 25-PAIR FEMALE CONNECTOR

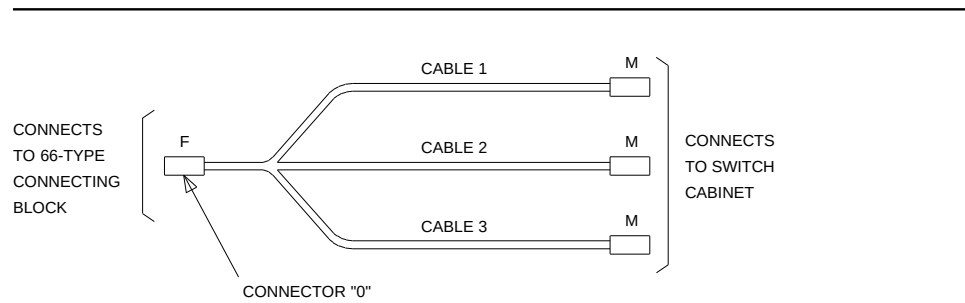
Figure A-18. Trunk Concentrator Cables (WP-90929, L1 & L3) (for 110-type Hardware Only)

Table A-2. WP-90929, List 1 and List 2, Cable Assembly Wiring

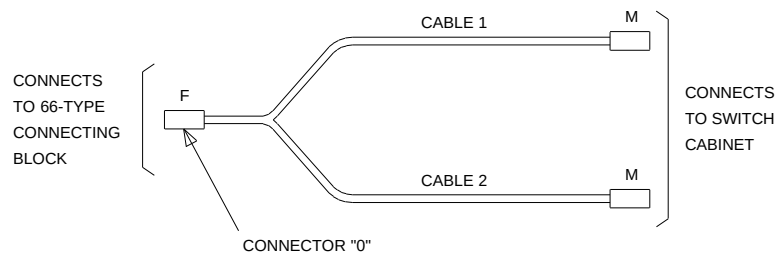
Conn. 0 Pin No.	Cable No. 1	Cable No. 2	Cable No. 3	Conn. 0 Pin Numbers	Cable No. 1	Cable No. 2	Cable No. 3
26	W-BL	-	-	1	BL-W	-	-
27	W-BR	-	-	2	BR-W	-	-
28	R-O	-	-	3	O-R	-	-
29	R-S	-	-	4	S-R	-	-
30	BK-G	-	-	5	G-BK	-	-
31	Y-BL	-	-	6	BL-Y	-	-
32	Y-BR	-	-	7	BR-Y	-	-
33	V-O	-	-	8	O-V	-	-
34	-	W-BL	-	9	-	BL-W	-
35	-	W-BR	-	10	-	BR-W	-
36	-	R-O	-	11	-	O-R	-
37	-	R-S	-	12	-	S-R	-
38	-	BK-G	-	13	-	G-BK	-
39	-	Y-BL	-	14	-	BL-Y	-
40	-	Y-BR	-	15	-	BR-Y	-
41	-	V-O	-	16	-	O-V	-
42	-	-	W-BL	17	-	-	BL-W
43	-	-	W-BR	18	-	-	BR-W
44	-	-	R-O	19	-	-	O-R
45	-	-	R-S	20	-	-	S-R
46	-	-	BK-G	21	-	-	G-BK
47	-	-	Y-BL	22	-	-	BL-Y
48	-	-	Y-BR	23	-	-	BR-Y
49	-	-	V-O	24	-	-	O-V
50	V-S	-	-	25	S-V	-	-

WP-90929, List 2, Cable Assembly (for 66-type Hardware Only)

The WP-90929, List 2, cable assembly (Figure A-19 and Table A-2) provides a way to connect local telephone company trunks to the switch. It can also be used to connect off-premises analog trunks between the port field and trunk field at the equipment room cross-connect field. The 3-fingered end of the cable assembly is equipped with male-type ribbon connectors. The other end of the cable assembly is equipped with a female-type ribbon connector. Each cable assembly can match twenty-four 1-pair trunk circuits with twenty-four 3-pair trunk circuits.



LIST 2 CABLE



LIST 4 CABLE

LEGEND:

M = 25-PAIR MALE CONNECTOR
F = 25-PAIR FEMALE CONNECTOR

Figure A-19. Trunk Concentrator Cables (WP-90929, L2 & L4) (for 66-type Hardware Only)

WP-90929, List 3, Cable Assembly (for 110-type Hardware Only)

The WP-90929, List 3, cable assembly (Figure A-18 and Table A-3) provides a way to connect tie-trunk circuits to the switch. All ribbon connectors on the cable assembly are male-type connectors. Each cable assembly can match eight 3-pair tie-trunk circuits with two groups of four 3-pair tie-trunk circuits.

Table A-3. WP-90929, List 3 and List 4, Cable Assembly Wiring

Conn. 0 Pin No.	Cable No. 1	Cable No. 2	Conn. 0 Pin No.	Cable No. 1	Cable No. 2
26	W-BL	-	1	BL-W	-
27	W-O	-	2	O-W	-
28	W-G	-	3	G-W	-
29	W-BR	-	4	BR-W	-
30	W-S	-	5	S-W	-
31	R-BL	-	6	BL-R	-
32	R-O	-	7	O-R	-
33	R-G	-	8	G-R	-
34	R-BR	-	9	BR-R	-
35	R-S	-	10	S-R	-
36	BK-BL	-	11	BL-BK	-
37	BK-O	-	12	O-BK	-
38	-	W-BL	13	-	BL-W
39	-	W-O	14	-	O-W
40	-	W-G	15	-	G-W
41	-	W-BR	16	-	BR-W
42	-	W-S	17	-	S-W
43	-	R-BL	18	-	BL-R
44	-	R-O	19	-	O-R
45	-	R-G	20	-	G-R
46	-	R-BR	21	-	BR-R
47	-	R-S	22	-	S-R
48	-	BK-BL	23	-	BL-BK
49	-	BK-O	24	-	O-BK
50	V-S	-	25	S-V	-

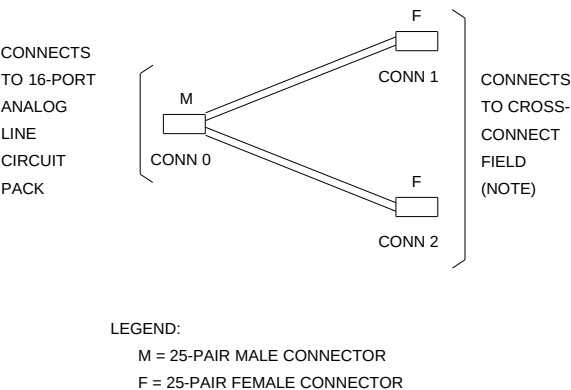
WP-90929, List 4, Cable Assembly (For 66-type Hardware Only)

The WP-90929, List 4, cable assembly (Figure A-19 and Table A-3) provides a way to connect tie-trunk circuits to the switch. The 2-fingered end of the cable assembly is equipped with male-type ribbon connectors. The other end of the cable assembly is equipped with a female-type ribbon connector. Each cable assembly can match eight 3-pair tie-trunk circuits with two groups of four 3-pair tie-trunk circuits.

Trunk Concentrator Cable Ordering Information	
Description	Comcode
WP-90929, List 1, Cable Assembly	405064999
WP-90929, List 2, Cable Assembly	405065012
WP-90929, List 3, Cable Assembly	405075482
WP-90929, List 4, Cable Assembly	405075540

16-Port Analog Line Circuit Pack
Adapter Cable (For 110-Type
Hardware Only)

The 16-port analog line circuit pack (TN746) contains sixteen 1-pair circuits that appear on a 25-pair connector at the switch. The 16-port analog line adapter cable (Figure A-20) separates the 1-pair circuits (from the switch) into 3-pair circuits that appear on two 25-pair connectors at the other end of the cable.



NOTE: AN A25D CABLE MUST BE USED BETWEEN THE ADAPTER CABLE AND THE 110-TYPE TERMINAL BLOCK.

Figure A-20. 16-Port Analog Line Circuit Pack Adapter Cable (853B Adapter)

The adapter cable is 8 feet long and can be ordered with the TN746 circuit pack. The adapter cable is coded as a 853B adapter and can be ordered as follows.

16-Port Analog Line Adapter Cable Ordering Information	
Description	Comcode
853B Adapter	104305834

4-Port MET Line Circuit Pack Concentrator Cable

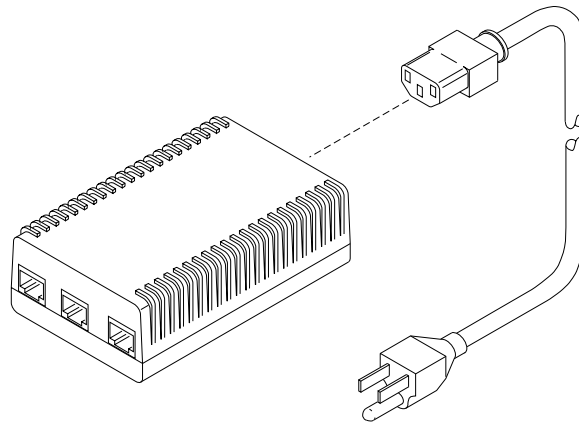
The MET line circuit pack (TN735) contains four 3-pair circuits that appear on a 25-pair connector at the switch. The WP-90929, List 3 and List 4 cable assemblies shown in Figures A-18 and A-19, respectively combine the MET line circuits appearing on two 25-pair connectors (at the switch) into one 25-pair connector at the opposite end of the cable.

Adjunct Power Units

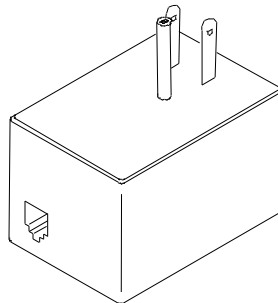
There are two types of power supplies used for adjunct powering, individual and bulk. The power supplies are specified by the Field Services Organization (FSO) for firm quote price lists. For all other quotes, the power supplies are specified by SYSTIMAX.

Individual Power Supplies

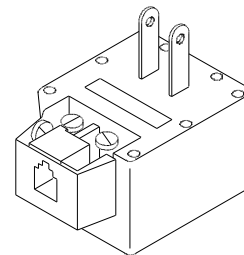
Individual power supplies (Figure A-21) can be used for powering from the equipment room, site or satellite locations, or information outlets. An individual power supply can power only one telephone/voice terminal. Table A-4 contains the individual power supply limitations for distance, wire gauge, and adjuncts.



MSP-1 Power Supply



329A
(NOTE 1)



2012D TRANSFORMER
WITH 248B ADAPTER
(NOTE 2)

NOTES:

1. THE 329A AND THE KS-22911, L2
ARE SIMILAR IN APPEARANCE.
2. THE 2012D TRANSFORMER AND 248B
TRANSFORMER MUST BE ORDERED
SEPARATELY AND FIELD ASSEMBLED
AS SHOWN.

Figure A-21. Individual Power Supplies

Table A-4. Individual Power Supply Adjunct and Distance Limitations

Power Unit	Adjunct Limits	Wire Gauge	Distance Feet
MSP-1 (– 48 volt dc)	One voice terminal plus adjunct	24	250
2012D with 248B Adapter (18 volt ac)	One speakerphone or headset only	24	150
KS-22911, L1 (– 48 volt dc)	One digital module plus speakerphone or headset	24	300
329A* (– 48 volt dc)	One digital module plus speakerphone or headset	24	500
	Two digital modules plus speakerphone or headset	24	350
	Three digital modules plus speakerphone or headset	24	250

* The 329A should not be used to power attendant consoles.

Individual Power Supply Ordering Information

Description	Comcode
MSP-1 Power Supply*	106838550
2012D Transformer†	102600517
248B Adapter†	102802103
KS-22911, L1 Power Unit†	405331711
329A Power Unit†	103873998

* Always order the MSP-1 for new installations.

† Manufacture discontinued.

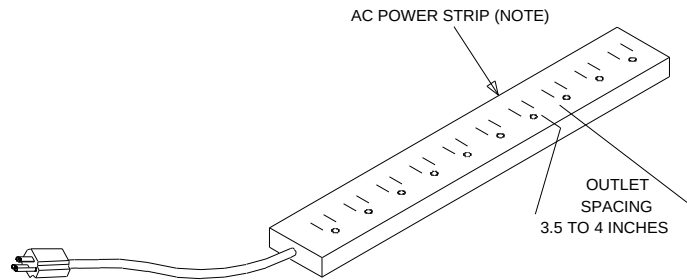
When more than one individual power supply is at the equipment room or at a site or satellite location, an ac power strip (Figure A-22) may be installed to accommodate the various sizes of power supplies.

⇒ NOTE:

A 543A power unit (Comcode 104034541) maybe required for inrush protection for a 20 amp 120-volt ac line serving multiple power units. Contact your SYSTIMAX for details. Most multiple powering requirements should

be served by the 1145A1 bulk power supply.

The MSP-1 power supply and its installation is described in Chapter 10, “Wiring Your Network”. (The exact page is listed in the Index.)



NOTE: THIS AC POWER STRIP MUST BE
LOCALLY PROVIDED.

Figure A-22. AC Power Strip

Bulk Power Supply

The 1145A1 closet power arrangement provides an uninterruptible -48V DC power source with battery and 1146A1 distribution unit for ISDN/DCP terminal equipment, terminal adjuncts, and other customer premises equipment. During AC power interruptions, batteries are automatically switched on to provide continuous power to the load.

The 1145A1 and 1146A1 and their installation are described in chapter 10, “Wiring Your Network”. (The exact page is listed in the Index.)

Option Switch Settings

B

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 (MPDM), modular trunk data modules (MTDM), 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.

Distributed Communications System (DCS) Option Settings for G3i Systems

The 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 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 DCS must be connected through a MPDM which serves as the interface link for DCS. The option settings for the MPDM in this application are shown in Table B-1.

Table B-1. Option Switch Settings on MPDM for DCS

Switch	Setting
9600 BAUD	ON
SYNC	ON
INT	ON
KYBD	ON
AANS	ON
All Others	OFF

Modem Pooling (Combined) Option Settings

Combined Modem Pooling requires option switch settings on different modems and MTDMs. The following paragraphs describe the option settings for each application.

103JR Modem Option Settings

When the 103JR modem is used with a MTDM, set the options on the MTDM as shown in Table B-2. Options for the 103JR modem are shown in Table B-3. When used for modem pooling, all factory-furnished options on the modem are used.

Table B-2. Option Switch Settings on MTDM Used With 103JR Modem

Switch	Setting
300 baud	ON
SW	ON
SIGLS	ON
CN25	ON
All Others	OFF

Table B-3. Option Switch Settings for 103JR Modem

Feature		Option	Switch Setting S2 Switch on CM1 Contact Setting						
			1	2	3	4	5	6	7
Receive Space Disconnect	YES	V*	—	—	O	—	—	—	—
Send Space Disconnect	YES	T*	X	—	—	—	—	—	—
Loss of Carrier Disconnect	YES	S*	—	—	—	O	—	—	—
CC Indication	EARLY	ZD*	—	—	—	—	—	—	O
CB and CF Indications	COMMON	A*	—	X	—	—	—	—	—
CC Indication for Analog Loop	ON	ZF*	—	—	—	—	O	—	—
Automatic Answer	YES	ZH*	—	—	—	—	—	O	—
			S3 Switch on CP1 Contact Setting						
			1	2	3				
Fail Safe State of CN Circuit	OFF	J*		O					
Common Ringer	NO	ZA*	O						
Tip-Ring Make Busy	NO	E*			O				
Common Grounds	YES	Q*	Close S1 screw switch on Data Mounting						

* = Factory furnished

X = Contact closed

O = Contact open

— = Contact not applicable

201CR Modem Option Settings

When the 201CR modem is used with a MTDM, set the options on the MTDM as shown in Table B-4. Options on the 201CR modem are shown in Table B-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 B-4. Option Switch Settings on MTDM Used with 201CR Modem

Switch	Setting
2400 baud	ON
SW	ON
SIGLS	ON
SYNC	ON
HDX	ON
CN18	
All Others	OFF

Table B-5. Option Switch Settings for 201CR Modem

Option			Line Control Board (TP1B)								
Description		Desig	Strap In (Vertical)				Strap Out (Horizontal)				
Transmit Line Sig- nal Level	-4 dBm	ZE*					1,2,4,8				
			Switch Setting								Digital Board (JB4B)
			1	2	3	4	5	6	7	8	
Transmitter Timing	External	YD					O				
Automatic Answer	DTR-Controlled Only	YF*								X	
Grounding	Signal Ground Connected to Frame Ground	YK*									Install E1-E2
Function of EIA Interface Pin 18	Initiates Analog	YS				X					Install
	Receiver										E3-E4
Continu- ous Receiver Bit Clock	Out	YP*							X		
Satellite	In	YQ*			X						

* = Factory furnished

X = Closed (switch contacts are closed when rocker is down on side adjacent to numbers).

O = Open

202SR Modem Option Settings

When the 202SR modem is used with a MTDM, set the options on the MTDM as shown in Table B-6. Options on the 202SR modem are shown in Table B-7. When used for modem pooling, all factory-furnished options are used except option YI must be selected instead of option YJ.

Table B-6. Option Switch Settings on MTDM Used with 202SR Modem

Switch	Setting
1200 baud	ON
SW	ON
SIGLS	ON
HDX	ON
All Others	OFF

Table B-7. Option Switch Settings for 202SR Modem

Option		Output Level dBm	S4 Switch Contact Setting On Transmitter-Receiver													
			Without Reverse Channel							With Reverse Channel						
Description	Desig		1	2	3	4	5	6	7	1	2	3	4	5	6	7
Transmit Line Signal Level	ZO*	-4	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		Soft Turnoff	Squelch				S2 Switch Contact Setting On Transmitter-Receiver									
							1	2	3	4	5	6	7	8	9	0
Soft Turnoff and Squelch Intervals	R*	24 ms	156 ms				—	X	X	—	—	—	—	0	—	0
Fast Carrier Detection	N*	Out (23 ms)					—	—	—	—	—	—	X	—	—	—
Clear To Send Interval	G*	180 ms					—	—	—	X	X	—	—	—	—	—
Automatic Answer	B*	In					X	—	—	—	—	—	—	—	—	—
Local Copy on Primary Channel	ZB*	Out					—	—	—	—	—	X	—	—	—	—
Condition of CC (DSR) During Analog Loop-back	YI	On					—	—	—	—	—	—	—	—	X	—

X = Contact closed

O = Contact open

— = Contact not applicable

* = Factory furnished

Table B-7. Option Switch Settings for 202SR Modem *Continued*

Option			S3 Switch Contact Setting					
DESCRIPTION	DESIG		1	2	3	4	5	6
Reverse Channel	ZD*	Out	X	X	—	—	—	—
Transmit Only	YH*	Out	—	—	O	—	—	—
Echo Suppressor Enable	YR*	Out	—	—	—	X	—	—
Carrier- Controlled Turnaround	YS*	In	—	—	—	—	—	O
Early CC (DSR) Indication	YV*	Out	—	—	—	—	X	—
			Screw Switch Setting On Interface Circuit					
Grounding Option	ZG*	Signal Ground Connected to Frame Ground	Screw Switch S1 Closed on Data Mounting					

X = Contact closed

O = Contact open

— = Contact not applicable

* = Factory furnished

208BR Modem Option Settings

When the 208BR modem is used with a MTDM, set the options on the MTDM as shown in Table B-8. Options for the 208BR modem are shown in Table B-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 B-8. Option Switch Settings on MTDM Used with 208BR Modem

Switch	Setting
4800 baud	ON
SW	ON
SIGLS	ON
SYNC	ON
HDX	ON
All Others	OFF

Table B-9. Option Switch Settings for 208BR Modem

Option		Output Level dBm	Switch			
Description	Desig		S1A	S1B	S1C	S2A
Transmit Line Signal Level	ZE*	-4	DOWN	UP	DOWN	UP
		Switch	Option Strap Position			
Compromise Equalizer (4-dB Slope)	WU*	S2B	Up			
		S2C	Up			
DSR on in Analog Loop Mode	YM	S3A	Up			
Automatic Answer	YP*	S3B	Down			
Transmitter Externally Timed	YD	S3C	Up			
		S4A**	Up			
			Down*			
		S4B**	Up			
			Down*			
RS-CS Interval of 50 ms	(Customer Switch)	50	In			
RS-CS Interval of 150 ms			Out			

* Factory installed

** Down position must be selected

Asynchronous 212AR Modem Option Settings

When the asynchronous 212AR modem is used with a MTDM, set the options on the MTDM as shown in Table B-10. Options on the asynchronous 212AR modem are shown in Table B-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 B-10. Option Switch Settings on MTDM Used with 212AR Modem

Switch	Setting
300 baud	ON
1200 baud	ON
SW	ON
SIGLS	ON
CI12	ON
TM25	ON
CN18	ON
CH23	ON
RL21	ON
All Others	OFF

Table B-11. Option Switch Settings for Asynchronous 212AR Modem

Feature	Option	Description	Switch Setting											
			S1 Switch Contacts											
			1	2	3									
Tip, Ring, Make Busy	E*	OUT	O	—	—									
CC Indication for Analog Loop	ZF*	ON	—	—	X									
			Switch Contacts											
			S2									S5		
			1	2	3	4	5	6	7	8	9	1	2	
Speed Control	XJ	INTERFACE	O	—	—	—	—	—	—	—	—			
Interface-Controlled Make Busy/ Analog Loop-CN	YE	IN	—	O	—	—	—	—	—	—	—			
Transmitter Timing	YC*	INTERNAL	—	—	O	O	—	—	—	—	—			
1200-bps Operation	YG*	ASYNC/ START-STOP	—	—	—	—	O	—	—	—	—	O	O	
Character Length (Use With YG)	YJ*	10-BIT	—	—	—	—	—	X	—	—	—			
Receiver Responds to Digital Loop	YK*	IN	—	—	—	—	—	—	O	—	—			
Interface-Controlled Remote Digital Loop	XL	IN	—	—	—	—	—	—	—	X	—			

* = Factory furnished X = Contact closed

<BREAK>

O = Contact open

— = Contact not applicable

</BREAK>

Table B-11. Option Switch Settings for Asynchronous 212AR Modem *Continued*

Feature	Option	Description	Switch Setting							
			S3 Switch Contacts							
			1	2	3	4	5	6	7	8
Loss of Carrier Disconnect	S*	IN	X	—	—	—	—	—	—	—
Receive Space Disconnect	V*	IN	—	X	—	—	—	—	—	—
CB and CF Indications	A*	COMMON	—	—	X	—	—	—	—	—
Send Space Disconnect	T*	IN	—	—	—	X	—	—	—	—
Automatic Answer	ZH*	IN	—	—	—	—	X	—	—	—
Answer Mode Indication	W*	CE OFF	—	—	—	—	—	O	—	—
Speed Mode	YP*	DUAL	—	—	—	—	—	—	O	—
Interface Speed Indication-CI	YQ	IN	—	—	—	—	—	—	—	X
			Strapping Options							
CN and TM Assignments	XR	CN 18, TM 25	INSTALL E2 - E3, E4 - E5							
Signal Ground to Frame Connection	Q*	IN	S1 CLOSED							

* = Factory furnished X = Contact closed

<BREAK>

O = Contact open

— = Contact not applicable

</BREAK>

Synchronous 212AR Modem Option Settings

When the synchronous 212AR modem is used with a MTDM, set the options on the MTDM as shown in Table B-10. Options on the synchronous 212AR modem are shown in Table B-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 B-12. Option Switch Settings for Synchronous 212AR Modem

Feature	Option	Description	Switch Setting											
			S1 Switch Contacts											
			1	2	3									
Tip, Ring, Make Busy	E*	OUT	O	—	—									
CC Indication for Analog Loop	ZF*	ON	—	—	X									
			SWITCH CONTACTS											
			S2										S5	
			1	2	3	4	5	6	7	8	9	1	2	
Speed Control	XK*	HS BUTTON	X	—	—	—	—	—	—	—	—			
Interface-Controlled Make Busy/ Analog Loop-CN	YE	IN	—	O	—	—	—	—	—	—	—			
Transmitter Timing	YD	EXTERNAL	—	—	O	X	—	—	—	—	—			
1200-bps Operation	YH	SYNC	—	—	—	—	X	—	—	—	—	X	X	
Character Length (Use With YG)	YJ*	10-BIT	—	—	—	—	—	X	—	—	—			
Receiver Responds to Digital Loop	YK*	IN	—	—	—	—	—	—	O	—	—			
Interface-Controlled Remote Digital Loop	XL	IN	—	—	—	—	—	—	—	X	—			

* = Factory furnished X = Contact closed

<BREAK>

O = Contact open

— = Contact not applicable

</BREAK>

Continued next page

Table B-12. Option Switch Settings for Synchronous 212AR Modem *Continued*

Feature	Option	Description	S3 Switch Settings							
			1	2	3	4	5	6	7	8
Loss of Carrier Disconnect	S*	IN	X	—	—	—	—	—	—	—
Receive Space Disconnect	V*	IN	—	X	—	—	—	—	—	—
CB and CF Indications	A*	COMMON	—	—	X	—	—	—	—	—
Send Space Disconnect	T*	IN	—	—	—	X	—	—	—	—
Automatic Answer	ZH*	IN	—	—	—	—	X	—	—	—
Answer Mode Indication	W*	CE OFF	—	—	—	—	—	O	—	—
Speed Mode	YO	HUGH	—	—	—	—	—	—	X	—
Interface Speed Indication-CI	YR*	OUT	—	—	—	—	—	—	—	O
			Strapping Options							
CN and TM Assignments	XR	CN 18, TM 25	INSTALL E2 - E3, E4 - E5							
Signal Ground to Frame Connection	Q*	IN	S1 CLOSED							

* = Factory furnished X = Contact closed

<BREAK>

O = Contact open

— = Contact not applicable

</BREAK>

Asynchronous 2224A Modem Option Settings

When the asynchronous 2224A modem is used with a MTDM, set the options on the MTDM as shown in Table B-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 B-13. Option Switch Settings on MTDM Used with Asynchronous 2224A Modem

Switch	Setting
300 baud	ON
1200 baud	ON
2400 baud	ON
SW	ON
SIGLS	ON
CI12	ON
TM25	ON
CN18	ON
CH23	ON
RL21	ON
CI13	ON
CH19	ON
All Others	OFF

Synchronous 2224A Modem Option Settings

When the synchronous 2224A modem is used with a MTDM, set the options on the MTDM as shown in Table B-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 B-14. Option Switch Settings on MTDM Used with Synchronous 2224A Modem

Switch	Setting
1200 baud	ON
2400 baud	ON
SW	ON
SIGLS	ON
CI12	ON
TM25	ON
CN18	ON
CH23	ON
RL21	ON
SYNC	ON
CH19	ON
All Others	OFF

7400A Option Settings

Determine if the 7400A will be interfacing with D-lead modems or AT control modems. Use Table B-15 to set the options to interface with D lead modems and Table B-16 to set the options to interface with AT control modems.

Table B-15. 7400A Options for D Lead Modems

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

Notes:

1. Set speed to agree with remote modem.
At least one speed must be set to ON.
 2. Set to agree with remote modem.
-

Table B-16. 7400A Options—AT Control Modems

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

Notes:

1. Set speed to agree with remote modem.
At least one speed must be set to ON.
 2. Set to agree with remote modem.
-

Printer Option Settings

Printers can be used with a DEFINITY 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.

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 SMDR. In each case, the printer option switch settings are the same. Table B-17 shows the option switch settings for the 475 printer when it is used in these applications.

475 Printer Used as System Printer

The 475 printer can be connected to the DEFINITY G1/G3 as the system printer to be used by the Report Scheduler. Table B-18 shows the option switch settings for the 475 printer as a system printer.

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 B-19 shows the option switch settings for the 475 and 476 printers in this application.

When MPDM or MTDM are used with the 475 or 476 journal printers, the option switches on the MPDM or MTDM must be set as shown Table B-20.

Table B-17. Option Switch Settings for a 475 Printer Connected to a G3-MT or Used for SMDR

Section	Setting	Description
Switch 1		
1	OFF	Character Set
2	ON	
3	OFF	
4	OFF	
5	OFF	DC1 and DC3
6	ON	Line Feed
7	ON	Print Command Mode
8	OFF	LF on CR
Switch 2		
1	OFF	Numeric Display of Zero
2	OFF	Buffer Selection
3	OFF	TOF-to-TOF
4	OFF	Power on Line Feed Pitch
5	OFF	Power on Character Pitch
6	ON	Selection on 7 or 8 Bit Data
7	ON	Power on Off-line or Ready
8	OFF	Uni- or Bi-directional Printing
Switch 21		
1	OFF	Number of Stop Bits
2	OFF	Select SD
3	OFF	Parity
4	ON	
5	OFF	Not ready
6	OFF	7-Bit or 8-Bit Data
7	OFF	X/ON X/OFF
8	ON	

Continued next page

Table B-17. Option Switch Settings for a 475 Printer Connected to a G3-MT or Used for SMDR *Continued*

Section	Setting	Description
Switch 22		
1	OFF	Baud Rate*
2	ON	
3	ON	
4	OFF	Not Used
Switch 23		
1	ON	RS232
2	OFF	
3	OFF	Use of DSR
4	OFF	
5	ON	
6	OFF	Not Used
Switch 24		
1	OFF	Select DTR Timing
2	ON	
3	ON	Select RTS Timing
4	OFF	
5	OFF	Use of CTS
6	ON	
7	OFF	
8	ON	

* 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 B-18. Option Switch Settings for a 475 Printer Connected as System Printer

Section	Setting	Description
Switch 1		
1	ON	Character Set
2	ON	
3	OFF	
4	ON	
5	ON	DC1 and DC3
6	OFF	Line Feed
7	OFF	Print Command Mode
8	ON	LF on CR
Switch 2		
1	OFF	Numeric Display of Zero
2	OFF	Buffer Selection
3	OFF	TOF-to-TOF
4	OFF	Power on Line Feed Pitch
5	OFF	Power on Character Pitch
6	OFF	Selection on 7 or 8 Bit Data
7	ON	Power on Off-line or Ready
8	OPEN	Uni- or Bi-directional Printing
Switch 21		
1	OFF	Number of Stop Bits
2	OFF	Select SD
3	OFF	Parity
4	OFF	
5	ON	Not ready
6	ON	7-Bit or 8-Bit Data
7	ON	X/ON X/OFF
8	OFF	

Table B-18. Option Switch Settings for a 475 Printer Connected as System Printer *Continued*

Section	Setting	Description
Switch 22		
1	OFF	Baud Rate*
2	ON	
3	ON	
4	OFF	Not Used
Switch 23		
1	ON	RS232
2	OFF	
3	OFF	Use of DSR
4	OFF	
5	ON	
6	OFF	Not Used
SWITCH 24		
1	ON	Select DTR Timing
2	ON	
3	OFF	Select RTS Timing
4	ON	
5	ON	Use of CTS
6	OFF	
7	OFF	
8	ON	

* 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 B-19. Option Switch Settings for a 475 or 476 Journal Printer

Section	Setting	Description
Switch 1		
1	OFF	Character Set
2	ON	
3	OFF	
4	OFF	
5	OFF	DC1 and DC3
6	ON	Line Feed
7	ON	Print Command Mode
8	OFF	LF on CR
Switch 2		
1	OFF	Numeric Display of Zero
2	OFF	Buffer Selection
3	OFF	TOF-to-TOF
4	OFF	Power on Line Feed Pitch
5	OFF	Power on Character Pitch
6	ON	Selection on 7 or 8 Bit Data
7	ON	Power on Off-line or Ready
8	OFF	Uni- or Bi-directional Printing
Switch 21		
1	OFF	Number of Stop Bits
2	OFF	Select SD
3	OFF	Parity
4	ON	
5	OFF	Not ready
6	OFF	7-Bit or 8-Bit Data
7	OFF	X/ON X/OFF
8	ON	

Table B-19. Option Switch Settings for a 475 or 476 Journal Printer *Continued*

Section	Setting	Description
Switch 22		
1	OFF	Baud Rate
2	OFF	
3	OFF	
4	OFF	Not Used
Switch 23		
1	ON	RS232
2	OFF	
3	OFF	Use of DSR
4	OFF	
5	ON	
6	OFF	Not Used
Switch 24		
1	OFF	Select DTR Timing
2	ON	
3	ON	Select RTS Timing
4	OFF	
5	OFF	Use of CTS
6	ON	
7	OFF	
8	ON	

Table B-20. Option Switch Settings on MPDM or MTDM for 475 or 476 Journal Printer

Switch	Setting
SELF TEST	OFF
LOC LOOP/REM LOOP	OFF
1200 BAUD	ON
AANS (MPDM Only)	ON
SIGLS	ON
PRTY	ON
I/OD	ON
DISC	ON
KYBD	ON
All Others	OFF

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. The table below shows the option switch settings for the 470 or 471 printers when they are used in this application.

Table B-21. Option Switch Settings for a 470 or 471 Journal Printer

Section	Setting	Description
Switch 1		
1	OFF	Character Set
2	ON	
3	OFF	
4	OFF	
5	OFF	DC1 and DC3
6	ON	Line Feed
7	ON	Print Command Mode
8	OFF	LF on CR
Switch 2		
1	OFF	Numeric Display of Zero
2	OFF	Buffer Selection
3	OFF	TOF-to-TOF
4	OFF	Power on Line Feed Pitch
5	OFF	Power on Character Pitch
6	ON	Selection on 7 or 8 Bit Data
7	ON	Power on Off-line or Ready
8	OFF	Uni- or Bi-directional Printing
Switch 3		
1	ON	Input-Busy to Pin 36
2	OFF	Not Used
3	ON	Logic Ground on Pin 14
4	OFF	Not Used

572 Printer

A 572 printer can function as a G3 Management Terminal, SMDR, system printer, or journal printer. The options on the 572 printer are set with function keys rather than DIP switches. Figure B-1 shows the arrangement of the function keys on the printer control panel.

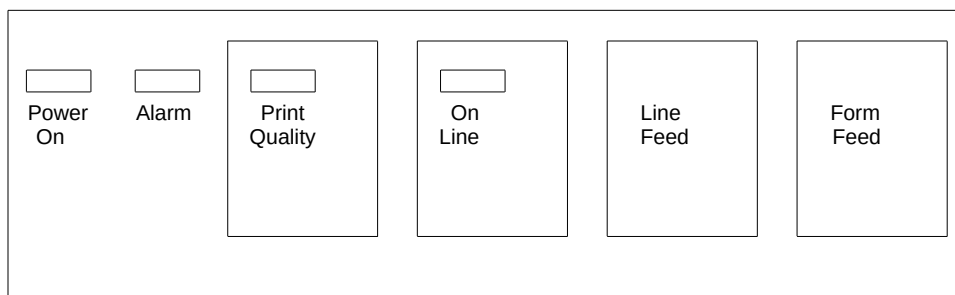


Figure B-1. Control Panel for 572 Printer



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, SMDR, or as a Journal printer, set the options as shown in the table below. If the printer is being used as a the system printer, set the options as shown in the table after next.
 - Use **Line Feed** button to step forward through the list of functions or use **Form Feed** button to step backward.

Table B-22. 572 Printer Used with G3 Management Terminal, SMDR, or Journal Printer

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

Table B-23. 572 Printer used as System Printer

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

- 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.
3. Repeat Step 3 for each option to be set.
 4. When the options are set, depress **Print Quality** button. The printer is now in the normal print mode.

Station Message Detail Recording (SMDR) Interface Option Settings

The interface between the G1 switch and SMDR equipment may be one of the following:

- MPDM or MTDM—The recommended option settings for the MPDM or MTDM are shown in the following table.
- 212-type modem—The recommended option settings for the 212-type modem are shown in the table after next.
- TN726 Data Line circuit pack and an Asynchronous Data Unit (ADU)—MPDMs, MTDMs, or 212-type modems are not required.
- Connected directly to the **DATA COMMUNICATIONS EQUIPMENT** connector (EIA Port) located on the back of the Control Carrier—MPDMs, MTDMs, or 212 modems are not required.
- 7400A—The recommended option settings for the 7400A Data Module are given elsewhere in this chapter under the heading: *7400A Option Settings*.

Refer to Chapter 8 for SMDR connections.

The 475 or 572 printers can be used as an output receiving device for SMDR, and 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 Provided Equipment (CPE) can be used as the output receiving device. Administration procedures for SMDR equipment are provided in *DEFINITY Communications System Generic 1 Implementation*, 555-204-654, or *DEFINITY Communications System Generic 3 V2 Implementation*, 555-230-653.

Table B-24. Option Switch Settings on MPDM or MTDM for SMDR

Switch	Setting
SELF TEST	OFF
LOC LOOP/REM LOOP	OFF
1200 BAUD	ON
AANS (MPDM Only)	ON
SIGLS	ON
PRTY	ON
I/OD	ON
All Others	OFF

Table B-25. Option Switch Settings on 212-Type Modem for SMDR

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

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 the remaining three circuits on the processor interface to be used to support AUDIX must be connected through a MPDM which serves as the interface link for AUDIX. The option settings recommended for the MPDM in this application are shown in Table B-26.

Table B-26. Option Switch Settings on MPDM for AUDIX

Switch	Setting
9600 BAUD	ON
SYNC	ON
INT	ON
AANS	ON
All Others	OFF

TN760B,C,D Tie Trunk Circuit Pack

Option Settings

The TN760 circuit pack interfaces between four 6-wire tie trunks and the 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 DC signaling leads used for call setup. The E lead receives signals from the tie trunk and the M lead transmits signals to the tie trunk.

To choose the preferred signaling format (Tables B-30 and B-31), set switches on the TN760 circuit pack and administer the port per Figure B-2 and Table B-32.

**CAUTION:**

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

Table B-27. Signaling Formats for TN760

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

Table B-28. Signaling Type Summary

Signaling Type	Transmit (M Lead)		Receive (E Lead)	
	On-Hook	Off-Hook	On-Hook	Off-Hook
Type I Std.	grd	bat	bat	grd
Type I Compat.	bat	grd	grd	bat
Type V	open/bat*	grd	open/bat*	grd

* An open circuit is preferred over voltage.

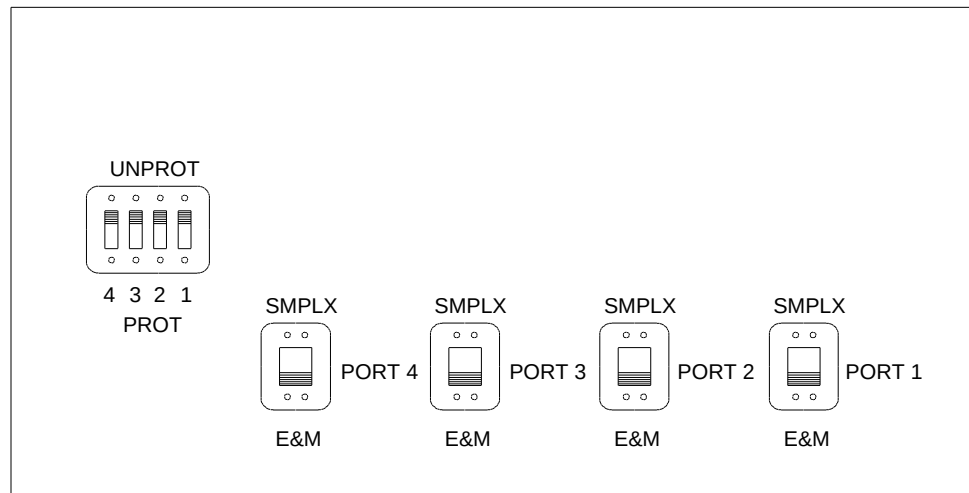


Figure B-2. TN760B Tie Trunk Circuit Pack (Component Side)

Table B-29. TN760B Option Switch Settings and Administration

G1 Installation Situation		Preferred Signaling Format		Set E&M/SMPLX Option Switch	Set Prot/ Unprot Option Switch	Administer The Port
Circumstance	To	G1	Far-End			
Co-Located	Sys75/G1	Simplex Type 5	Simplex Type 5	SMPLX	Either	Type 5
Inter-Bldg.	Sys75/G1	Simplex Type 5	Simplex Type 5	SMPLX	Either	Type 5
Co-Located	Sys85/G2	Simplex Type 5	Simplex Type 5	SMPLX	Either	Type 5
Inter-Bldg.	Sys85/G2	Simplex Type 5	Simplex Type 5	SMPLX	Either	Type 5
Co-Located	DIMENSION® PBX	E&M Type 1 Compatible	E&M Type 1 Standard	E&M	Unprot	Type 1 Compatible
Inter-Bldg.	DIMENSION PBX	Prot. Type 1 Compatible	Prot. Type 1 Standard	E&M	Prot	Type 1 Compatible
Co-Located	Other	E&M Type 1 Compatible	E&M Type 1 Standard	E&M	Unprot	Type 1 Compatible
Inter-Bldg.	Other	Prot. Type 1 Compatible	Prot. Type 1 Std. Plus Protection Unit	E&M	Prot	Type 1 Compatible
Co-Located	Net Int.	E&M Type 1 Standard	Any PBX	E&M	Unprot	Type 1

The Hardware Group Tests

C

The Hardware Group Tests (HGT) make available on demand an extension of the scheduled tests that continually take place in an operating system. If these tests are run in the foreground, results are printed, as they occur, on the G3 Management Terminal screen.

Available Tests

You can choose to test any of the following hardware groups.

- SPE (Switch Processing Element: the central processor)
- Board
- Cabinet
- Carrier
- PNC (Port Network Connectivity)
- Port Network
- System

Type **test hardware group** at the G3 Management Terminal command line to access these tests. Having accessed the tests, tab through the options shown on the screen (and given above) to highlight the option you want. Press the **(ENTER)** key when the option you want is indicated. (You may also add one of the hardware groups shown above as an argument to group.) This way, you can test the complete system or any listed subset of the complete system.

When the tests discover a failure, it is not only displayed on the screen, it is also written into the error log. So you can execute **display errors** to look over the error records at your liesure.

Such error records as “*Error Type*” and “*Aux Data*,” are given in the *Maintenance Service Documents* which give you a detailed description of what the failure is and what procedure is required to repair the failure.

Use the “allports” option to test both administered and unadministered ports. If you do not use the “allports” option then only administered ports can be tested. (Allports is commonly used after an installation.) Certain tests require a connected station. Tests that require a connected station will abort where a station is not connected. So, in cases where a port is not connected, you can ignore such records.

Test Modes

You can run tests in the “foreground” mode, confident that you can temporarily interrupt the tests to use the G3 Management Terminal for other purposes. If you press “Cancel” to interrupt tests that are running in the foreground, your place in the tests is stored so you can resume the tests by typing **resume hardware-group**. The tests will resume in the mode and at the place at which they were cancelled.

You can use the G3 Management Terminal for other purposes while a number of hardware group tests are being performed, if you put the tests in the background. You can then use the “status hardware-group” command from time to time, to check on the tests as they run. Type **cancel hardware-group** to halt background tests.

Use the Autopage option to prevent stopping at the bottom of the screen. In this mode, the G3 Management Terminal refreshes its screen after each screenful, and continues.

If your test is made in failure mode, only “failure” results are logged (that is, “passing” and “aborted” results are not logged).

If your test is made in “SPE Interchange” mode and if your SPE is duplicated, that will force an interchange of the SPE and a retest of the SPE. That is, it will test the SPE both before and after the interchange.

The short test is a subset of the long test.

To run a long test in the “allports” mode requires several hours. It may be best to run the test in the background or at night or both.

CAUTION:

The HGTs use more of the system's processor capacity than is normally used for testing. This doesn't present a problem when you are testing a freshly installed system that is not yet used by your customers. At any other stage of the switch's life, hardware group tests should be executed only when there is little or no customer use of the switch.

Having run the test, go to the alarms log, type “display alarms” and, where you see alarms, resolve them in the usual way.

Command Reference

This section of the document offers detailed reference material about the hardware-group tests.

Test Hardware-Group

This command allows a user to perform a set of hardware diagnostic tests on the whole system, a cabinet, carrier, port network, port network connectivity, spe, or board. The tests will vary according to the configuration of the system and the specified command options.

Synopsis

test hardware-group [**system** | **carrier** carrier location | **cabinet** cabinet location | **port-network** pn location | **pnc** pnc location | **board** board location | **spe**]

Permissions

The following logins may execute this command: craft, inads, init, nms.

Examples

```
test hardware-group system
test hardware-group carrier 1a
test hardware-group cabinet 2
test hardware-group port-network 11
test hardware-group pnc a-pnc
test hardware-group board 01c07
test hardware-group spe
```

Description

The *test hardware-group* command will run a series of tests on all the hardware on the entire system, an individual carrier, cabinet, port network, port network connectivity, spe, or board. The tests will vary depending on options chosen and board types. Each individual test will exercise diagnostics on all the hardware in the specified hardware group and return results of the test along with any possible error codes. Concurrent testing is done to enhance performance, therefore, test results are displayed on the G3 Management Terminal in the order they are received. Consequently, test results of one maintenance object may be inter-mixed with test results of other maintenance objects.

Because the tests in the *test hardware-group* command are not destructive, the coverage of tests on a particular maintenance object performed with either the

“short” or the “long” option of the *test hardware-group* command may not be the same as its corresponding demand test.

A hardware-group command executing in the foreground may be aborted by either pressing the “cancel” key on the G3 Management Terminal or by entering the *cancel hardware-group* command on another G3-MT. If the “cancel” key is pressed on the G3 Management Terminal or the *cancel hardware-group* command is entered to cancel a *test hardware-group* command executing in the foreground with the “continuously” option, then, for security reasons, the G3 Management Terminal running the *test hardware-group* command will be automatically logged off.

However, if the system technician wishes to cancel a *test hardware-group* command running in the background the *cancel hardware-group* command needs to be entered on the G3 Management Terminal.

A canceled *test hardware-group* command can be resumed at the point it left off by entering the *resume hardware-group* command on the G3 Management Terminal. Restarts are not allowed for *test hardware-group* commands entered with either the “all-ports” option or the “spe-interchange” option.

Defaults

The default for the command is short with a repeat of 1.

Parameters

Carrier Location A “carrier location” represents the carrier to be tested and is entered as UUC format where “UU” is a valid cabinet number (1-22) and the “c” represents any value between A-E. The type of carrier may be port, processor, switch node, or expansion control. In the case of a port carrier, all universal port and tone-clock boards (see reference 4) and its affiliated MOs residing in the specified carrier are tested. For a processor carrier, all SPE complex and tone-clock boards and its affiliated MOs are tested. In a switch node all SNI and SNC boards and its affiliated MOs are tested. In an expansion control all maintenance and EI boards and its affiliated MOs are tested.

Cabinet Location A “cabinet location” represents the cabinet to be tested. It can be any value between 1-22. All PN and PNC related MOs plus cabinet specific MOs, including maintenance boards and environment (ring generator, battery, power, emergency transfer, external alarms, fans, and temperature) will be tested if they reside in the specified “cabinet location.”

Port Network Location A “port network location” represents the port network to be tested. It can be any value between 1-22. All carrier related MOs for all carriers in the specified “port network location” will be tested.

Port Network Connectivity Location A "port network connectivity location" represents all switch node carrier related MOs in the specified "port network connectivity location" to be tested. It can be either a-pnc or b-pnc.

Board Location A "board location" represents the physical location of the board and is entered as "UUcSS" format, where "UU" is a valid cabinet number (1-22), "c" is a carrier number between A-E, and "SS" is the slot position. All MOs on the specified "board location" including ports will be tested.

Help Messages

If the system technician presses HELP after entering *test hardware-group*, the following message will be displayed:

```
board cabinet carrier pnc port-network spe system
```

If the system technician presses HELP after entering *test hardware-group board*, the following message will be displayed:

```
Enter board location: [cabinet (1-22);carrier(A-E);slot(00-20)]
```

If the system technician presses HELP after entering *test hardware-group cabinet*, the following message will be displayed:

```
Enter cabinet (1-22)
```

If the system technician presses HELP after entering *test hardware-group carrier*, the following message will be displayed:

```
Enter carrier location: ['cabinet'(1-22)]; carrier (A-E)
```

If the system technician presses HELP after entering *test hardware-group pnc*, the following message will be displayed:

```
Enter "a-pnc" or "b-pnc"
```

If the system technician presses HELP after entering *test hardware-group port-network*, the following message will be displayed:

```
Enter port network (1-22)
```

If the system technician presses HELP after entering *test hardware-group system*, the following message will be displayed:

```
Entry is not required
```

If the system technician presses HELP after entering *test hardware-group spe*, the following message will be displayed:

Entry is not required

Error Messages

If there is another *test hardware-group*, active the following message will be displayed:

Command aborted - another hardware-group test already in progress

If an “add station” command is entered for a non-customer translated port at the same time as it is being tested because of the *test hardware-group* command with the “all-ports” option, the request to “add station” will fail and the following message will be displayed:

Object in use; please try later

If an invalid physical location is specified with the *test hardware-group board* command, the following message will be displayed:

Board invalid

If an unassigned board is specified with the *test hardware-group board* command, the following message will be displayed:

Board not assigned

If an invalid carrier is specified with the *test hardware-group carrier* command, the following message will be displayed:

Invalid carrier specified

If an unassigned carrier is specified with the *test hardware-group carrier* command, the following message will be displayed:

Carrier not assigned

If an invalid cabinet is specified with the *test hardware-group cabinet* command, the following message will be displayed:

Invalid cabinet specified

If an unassigned cabinet is specified with the *test hardware-group cabinet* command, the following message will be displayed:

Cabinet number not assigned

If an invalid port network is specified with the *test hardware-group port-network* command, the following message will be displayed:

Invalid port network specified

If an unassigned port network is specified with the *test hardware-group port-network* command, the following message will be displayed:

Port Network number not assigned

If an invalid port network connectivity is specified with the *test hardware-group pnc* command, the following message will be displayed:

Invalid pnc specified

If an unassigned port network connectivity is specified with the *test hardware-group pnc* command, (i.e if b-pnc is specified for a simplex system), the following message will be displayed:

Cannot execute command for non duplicated port network connectivity (pnc)

If the command entered is in conflict with another currently executing command, then a message will be displayed showing the login id of the conflicting user and the conflicting command. The message is as follows:

login id: command has a command conflict

If during the execution of a command a resource problem occurs that requires the user to restart the command, then the following message will be displayed:

Command resources busy; Press CANCEL to clear, and then resubmit

If all of the available maintenance resources are currently in use, then, the following message will be displayed:

All maintenance resources busy; try again later

Form Input

Once the user has entered the desired action (test hardware-group) and the object (board, carrier, etc.), then the user is presented with an options form.

Test sequence This allows the user to specify whether the short (non-destructive) or the long (more comprehensive and still non-destructive) test sequence should be exercised.

Test Repetition This allows the user to enter either "repeat" with a corresponding repeat value (between 1 and 99) or the key

“continuously.” The repeat option will cause each test to be executed the number of times specified on each physical object. The continuously option, on the other hand, will cause all tests on all the hardware specified to be executed until the CANCEL key is hit or the “cancel hardware-group” command is run.

count : This field allows the technician to enter a repeat value between 1 and 99. If the “test sequence” field is set to continuously, then this field is removed from the screen. When the “test sequence” field is set to repeat, then this field is added to the screen.

Auto-page? This option provides the ability to continue testing and display of test results to take place, by providing a new screen every time the G3 Management Terminal screen is filled with test results. The screen does not scroll to accommodate new results; instead a new screen is provided after the current screen fills up.

This option is not allowed if the “background” option has been chosen.

If the “auto-page” option is not specified, the G3 Management Terminal screen will not be refreshed once it is filled with test results and testing will stop until the user enters the “page” key to continue or “cancel” key to halt the testing.

Background? This option provides the ability to run the command in the background thus freeing up the G3 Management Terminal. The error results will be tabulated in the error log but no results will be displayed on the terminal.

This option may not be used if the “continuously” option or the “auto-page” option is specified.

Failures? This option will select only failing test results to be displayed on the test results screen. Test results which pass or abort are not displayed. The “failures” option has no effect if entered with the “background” option.

All-ports? The “all-ports” option will allow testing of all customer translated line and trunk ports and also a set of line and trunk ports without customer translations. Untranslated ports for the following board types will be tested:

- MET Line
- 8 port Analog Line
- 16 port Analog Line
- 16 port Analog line
- Analog Line with Message Waiting
- Digital Line
- Digital Line
- Hybrid Line

- Central Office Trunk
- Direct-Inward-Dial Trunk
- Tie Trunk
- Auxiliary Trunk
- DS1 Tie Trunk
- ISDN BRI Line
- Data Line

SPE-interchange? The “spe-interchange” option will allow for the planned interchange of duplicated SPEs and subsequent testing of both the active and standby SPEs.

test hardware-group system

Page 1 of 1

TEST HARDWARE-GROUP SELECTIONS

Select the desired options for the specified test.

Test sequence: short
 Test repetition: repeat count: 1

OUTPUT OPTIONS:

Auto-page? n
 Background? n
 Failures? n

HARDWARE OPTIONS:

All-ports? n
 SPE-interchange? n

Field Help

Following are the help messages that the system technician will see upon tabbing to the specified field and pressing the HELP key.

Test sequence <BREAK> Enter short or long </BREAK>

Test Repetition <BREAK> Enter repeat or continuously </BREAK>

count: <BREAK> Enter repeat number between 1-99 </BREAK>

Auto-page? <BREAK> n(o) y(es) </BREAK>

Background? <BREAK> n(o) y(es) </BREAK>

Failures? <BREAK> n(o) y(es) </BREAK>

All-ports? <BREAK> n(o) y(es) </BREAK>

SPE-interchange? <BREAK> n(o) y(es) </BREAK>

Field Error Message

Following are the error messages that will be displayed on the screen. The message are displayed when the system technician tabs out of a field and the validation routines are executed. In the following messages, an "x" represents what was entered by the user.

Test sequence "x" is an invalid entry, please press HELP

Test Repetition "x" is an invalid entry, please press HELP
<BREAK> "x" The background option cannot be chosen
with continuous testing </BREAK>

count: Entry must be all digits <BREAK> Entry out of range
</BREAK>

Auto-page? "x" is an invalid entry, please press HELP <BREAK>
"x" The auto-page and background options may not both
be activated </BREAK>

Background? "x" is an invalid entry, please press HELP
<BREAK> "x" The background option cannot be chosen
with continuous testing </BREAK> <BREAK> "x" The
auto-page and background options may not both be
activated </BREAK>

Failures? <BREAK> "x" is an invalid entry, please press HELP
</BREAK>

All-ports? <BREAK> "x" is an invalid entry, please press HELP
</BREAK>

SPE-interchange? <BREAK> "x" is an invalid entry, please press
HELP </BREAK>

Output

If the "background" option was chosen, then the following message is displayed:

Command started in background mode

Progress information will be displayed on the G3 Management Terminal screen for a *test hardware-group* command run in the foreground. While testing is in progress, a running count of MOs tested, the total number of MOs to be tested, and the current pass number will be displayed on the screen (figure 1).

If the all-ports option is entered, the following message will be displayed before testing has begun:

Preparing unadministered ports for testing

If the "failures" option was selected and no tests fail, the following message will be displayed:

No failing test results available

If no tests are available for the MOs in the specified hardware group, the following message is displayed:

No tests available for MOs in the specified hardware group

If the spe-interchange option was selected, the following message is displayed while the interchange takes place:

SPE interchange in progress, please wait

If an interchange cannot be performed, the following message is displayed:

Cannot perform SPE interchange, for information use ''status spe''

The responses to a *test hardware-group* command run in the foreground will be displayed on a test-by-test basis with one line of data displayed for each test result.

Port The port address (cabinet-carrier-slot-circuit) of the maintenance object that has been tested.

Maintenance Name The type of maintenance object that has been tested.

Alt. Name The alternate means of identifying the maintenance object. This field contains the extension when the object is a station, and it contains xx/yy when the object is a trunk, where xx is the trunk group number and yy is the member number. It contains P/xx when the object is a private CO line, where xx is the private CO line group number.

Test No. The actual test that has been executed.

Result An indicator as to whether the test failed, passed or was aborted.

Error Code A numerical description of why the test failed or was aborted.

For the following output example, assume that the board in cabinet 1, carrier c, slot 7 is an analog board with three ports administered. The command that was entered was *test hardware-group system* and a repeat with count of 3 was chosen.

```
test hardware-group system
```

TEST RESULTS

Port	Maintenance Name	Alt. Name	Test No.	Result	Error Code
01C07	ANL-BD		51	PASS	
01C07	ANL-BD		52	PASS	
01C0703	ANL-LINE		35	PASS	
01C0702	ANL-LINE		35	PASS	
01C0703	ANL-LINE		48	PASS	
01C0701	ANL-LINE		35	FAIL	1000
01C0702	ANL-LINE		48	PASS	
01C0703	ANL-LINE		36	PASS	
01C0702	ANL-LINE		36	PASS	
01C0701	ANL-LINE		48	FAIL	1000
01C0701	ANL-LINE		36	PASS	

```
Testing system, 11070 of 12300 (90%) M0s tested for repetition 1
```

For the following output example, the command that was entered was *test hardware-group system* and the background option was chosen.

```
test hardware-group system
```

```
Command started in background mode
```

Feature Interactions

Test hardware-group

Only one *test hardware-group* command can be active at any given time.

Interactions with TTI

If the *test hardware-group* command is issued with the “all-ports” option when the TTI background task is active, some unadministered ports may not be tested. In addition, active alarms on line ports may be cleared by this task. The “status tti” command may be used to determine the state of the TTI background task.

Add Station

If an “add station” command is entered for an untranslated port at the same time as it is being tested because of the *test hardware-group* command with the “all-ports” option, the request to “add station” will fail and the following message will be displayed:

```
Object in use; please try later
```

Trunk Administration

If an attempt is made to add an unadministered trunk port to a trunk group at the same time as it is being tested because of the *test hardware-group* command with the “all-ports” option, the request will fail and the following message will be displayed:

```
Object in use; please try later
```

Save Translation

If the *test hardware-group* command is issued with the “all-ports” option when a translation save operation is active, some unadministered ports may not be tested. All other hardware will be tested normally.

Hardware Alarms

When a hardware error is detected by the *test hardware-group* command the hardware goes through the standard escalation strategy. Alarms will be raised on hardware that manifest “hard” errors. This alarming strategy is the same, regardless of whether the ports are translated or not.

System Interaction

The performance of *test hardware-group* is affected by call processing traffic, administration activity, choice of the “short” or “long” option, whether the “all-ports” option was chosen, whether the “spe-interchange” option was chosen, and other demand maintenance activity.

Scheduled and Periodic maintenance

When a *test hardware-group* command is entered, all activity related to scheduled background maintenance, periodic background maintenance, and data audits is suspended for the duration of the execution of the *test hardware-group* command. When a *test hardware-group* command is canceled or when the *test hardware-group* command completes, all suspended periodic, scheduled, and data audits background maintenance activity will be restarted where it left off.

Demand Testing of SPE Components

When a *test hardware-group* command is entered with the “SPE-interchange” option, demand tests of SPE components may abort while the interchange is in progress.

Cancel Hardware-Group

This command allows a user to cancel an active *test hardware-group* command executing in the background or foreground mode.

Synopsis

cancel hardware-group

Permissions

The following logins may execute this command: craft, inads, init, nms.

Examples

cancel hardware-group

Description

A system technician, in the course of the execution of a *test hardware-group* command may find the need to halt the testing either temporarily or permanently. This can be accomplished by entering the *cancel hardware-group* command on the G3 Management Terminal. The canceled *test hardware-group* command may be restarted where it left off with the *restart hardware-group* command or another *test hardware-group* may be entered.

In addition to the *cancel hardware-group* command, the “cancel” key on the G3 Management Terminal may be pressed to cancel a hardware-group command executing in the foreground.

The status of a canceled *test hardware-group* command will show up as “inactive” on the *status hardware-group* screen.

When a *test hardware-group* command is executing in the foreground with the “continuously” option and the “cancel” key on the G3 Management Terminal is pressed or the *cancel hardware-group* command is entered, then the hardware-group command is canceled and for security reasons, the G3 Management Terminal running the *test hardware-group* command will be logged off. However, after logging back on the system, the user still maintains the capability to restart the canceled *test hardware-group* command with the *restart hardware-group* command.

Defaults

None.

Parameters

None.

Help Messages

If the system technician presses help after entering *cancel hardware-group* the following message will be displayed:

```
Entry is not required
```

Error Messages

If there is no *test hardware-group* command currently active to be canceled, the following message will be displayed:

```
Command aborted - no hardware-group test in progress
```

If the command entered is in conflict with another currently executing command, then a message will be displayed showing the login id of the conflicting user and the conflicting command. The message is as follows:

```
login id: command has a command conflict
```

If during the execution of a command a resource problem occurs that requires the user to restart the command, then the following message will be displayed:

```
Command resources busy; Press CANCEL to clear, and then  
resubmit
```

If all of the available maintenance resources are currently in use, then the following message will be displayed:

```
All maintenance resources busy; try again later
```

Output

If a *test hardware-group* command executing in the background is successfully canceled with the *cancel hardware-group* command, the following response will be displayed:

Hardware-group command successfully canceled

If a *test hardware-group* command executing in the foreground is successfully canceled with a *cancel hardware-group* command from another G3 Management Terminal terminal, the following response will be displayed on the G3 Management Terminal terminal where the hardware-group command was executing:

Hardware-group command aborted with cancel command entered from another G3 Management Terminal

Applicability

This command applies only to the DEFINITY Generic 3 system with the RISC processor (G3r).

Feature Interactions

Scheduled and Periodic Maintenance

When a *test hardware-group* is entered, all activity related to scheduled background maintenance, periodic background maintenance, and data audits is suspended for the duration of the execution of the *test hardware-group* command. All activity related to scheduled background maintenance, periodic background maintenance, and data audits will restart if the *test hardware-group* command is canceled.

Status System

The state of a canceled *test hardware-group* command can be displayed by means of the *status hardware-group* command and the state will show up as "inactive."

Resume Hardware-Group

A *test hardware-group* command which had been canceled can be resumed by the user with this command. The reactivated hardware-group command will start testing where it previously left off.

Synopsis

resume hardware-group

Permissions

The following logins may execute this command: craft, inads, init, nms.

Examples

```
resume hardware-group
```

Description

A system technician, in the course of the execution of a *test hardware-group* command, may find the need to halt the testing, either temporarily or permanently. A *test hardware-group* command executing in the background can be canceled with the *cancel hardware-group* command. A *test hardware-group* command executing in the foreground can be canceled by pressing the “cancel” key on the G3 Management Terminal or by entering the *cancel hardware-group* command from another G3 Management Terminal. The *resume hardware-group* command provides the technician the ability to resume the previous *test hardware-group* command from where it was canceled. This ability to resume a canceled *test hardware-group* command is lost if another *test hardware-group* command is entered.

The state of a canceled *test hardware-group* command will appear on the *status hardware-group* screen as “inactive.” The state of a resumed *test hardware-group* command will appear on the *status hardware-group* screen as “active.”

Defaults

None.

Parameters

None.

Help Messages

If the system technician presses HELP after entering *resume hardware-group*, the following message will be displayed:

```
Entry is not required
```

Error Messages

If there is no *test hardware-group* command to be resumed, i.e, no *test hardware-group* command was previously canceled, or some system recovery had occurred and no *test hardware-group* command had since been entered and subsequently canceled, then the following message will be displayed:

```
Command aborted - no hardware-group test available to resume
```

If the command entered is in conflict with another currently executing command, then a message will be displayed showing the login id of the conflicting user and the conflicting command. The message is as follows:

```
'login id': 'command' has a command conflict
```

If during the execution of a command a resource problem occurs that requires the user to resume the command, then the following message will be displayed:

```
Command resources busy; Press CANCEL to clear, and then  
resubmit
```

If all of the available maintenance resources are currently in use, then the following message will be displayed:

```
All maintenance resources busy; try again later
```

If the previously entered hardware-group command used the "all-ports" option, the following message will be displayed:

```
Resume disallowed with ''all-ports'' option in original com-  
mand
```

If the previously entered hardware-group command used the "SPE-interchange" option, the following message will be displayed:

```
Resume disallowed with ''SPE-interchange'' option in origi-  
nal command
```

Output

If a *test hardware-group* command is successfully resumed as a consequence of the *resume hardware-group* command and the previous *test hardware-group* was executing in the background, then the following response will be displayed:

```
Hardware-group command successfully resumed in background
```

If a *test hardware-group* command is successfully resumed as a consequence of the *resume hardware-group* command and the previous *test hardware-group* was executing in the foreground, then the test results will start being displayed on the G3 Management Terminal.

Feature Interactions

Cancel hardware-group

When a *test hardware-group* command is canceled, the test command is put in a inactive state. This state can be displayed using the *status hardware-group* screen.

When the *resume hardware-group* command is entered to resume a previously canceled *test hardware-group* command, the state of the test command will be changed to “active” on the *status hardware-group* screen.

Cable Ductwork

D

The cable duct is assembled from various group numbers from ED-1E465 (facia paneling to cover the I/O ducts is assembled from ED-1E464). The assembly, installed after the cabinets have been installed, provides ducts for three types of cables: intercabinet cables, input/output (I/O) cables (tip and ring), and AC power cables. (DC power cables are installed in ductwork per national and local codes.) Typical assembled duct work is shown in Figure D-1.

The shielded intercabinet cable duct provides the path for cables connected between the cabinets of a module. This duct is the first installed. Covers for the shielded duct should be stored until the intercabinet cabling is completed.

The I/O cable duct provides the path for I/O cables to the cross-connect field. The I/O cables originate at connectors on the backs of the cabinets and terminate on connectors at the cross-connect field.

The AC power duct provides the path for the AC wiring that will power the system. This duct mounts to the back of the shielded duct that runs across each cabinet. Five group numbers provide various arrangements of receptacles necessary for different types of cabinets. Knockouts are provided for 1-in., 1-1/2 in., or 2-in. conduits which provide AC power connection at one end of each cabinet lineup. Covers for the power duct should be stored until the AC wiring is completed.

Three methods are available for running I/O cables from the I/O ducts to the cross-connect field. These methods are:

- Using an overhead cable rack
- Using cable duct groups 22 to 26, and 39
- Using multiples of either group as required

Equipment room layout and expected growth determines which method is to be used. Installation of an overhead rack is covered by *Cable Racks* (800-614-157).



NOTE:

Ensure that you install screws in all the appropriate places to comply with electromagnetic interference (EMI) requirements for shielding.

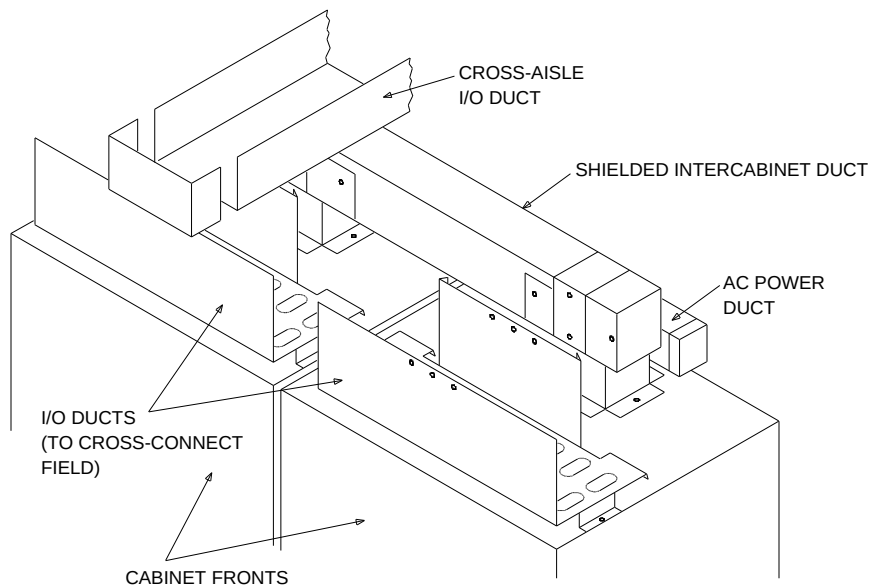


Figure D-1. Typical Layout of Assembled Ductwork

Installation

This ductwork consists of ED-1E465 group numbers (facia paneling to cover the I/O ducts is assembled from ED-1E464). The group numbers match those in the customer service document (CSD) and floor plan layout.

Inventory the materials received and mark a copy of the floor plan with the location of each group number to be installed. Hardware used to assemble each item is packaged with the individual groups.

Table D-1 shows the available group numbers and a brief description of each group. Some ducts are equipped with covers which should be stored until all cabling is completed. When storing, tag the covers with their associated group numbers for ease in identification.

Table D-1. ED-1E465 Group Numbers and Descriptions

Group	Description
6	Rear or front end plate for I/O ductwork
8	I/O cable rack coupling to rear of cabinet
9	I/O cable rack riser to side of cabinet
10	I/O cross-aisle ductwork
12	AC power duct
13	AC power duct with one 3-wire twist-lock receptacle (right side viewed from the rear)
14	AC power duct with one 3-wire twist-lock receptacle (left side viewed from the rear)
15	AC power duct with two 3-wire twist-lock receptacles (right side)
16	AC power duct with four 3-wire twist-lock receptacles (left side)
17	Raceway cover
18	Raceway cover with utility outlet
19	AC power duct combination end
21	AC power duct with one 4-wire twist-lock receptacle (right side viewed from the rear)
22	I/O duct-side of cabinet to wall (43 in. aisle)
23	I/O duct-side of cabinet to wall over one cabinet

Table D-1. ED-1E465 Group Numbers and Descriptions *Continued*

Group	Description
24	I/O duct-side of cabinet to wall over two cabinets
25	I/O duct-side of cabinets to wall over three cabinets
26	I/O duct-rear of cabinet to wall (43 in. aisle)
27	Transition between older DIMENSION system-type cabinet and new DEFINITY system cabinets for shielded cable ducts
28	Transition between older DIMENSION system-type cabinet and new DEFINITY system cabinets for I/O cables
29	Shielded duct assembly transition from the front of a System 85-R1 cabinet to the rear of a DEFINITY cabinet
30	I/O duct transition assembly for cross-aisle (System 85-R1 lineup to bridge a DEFINITY lineup)
31	Shielded duct assembly transition from rear of a System 85-R1 cabinet to front of a DEFINITY cabinet
32	AC power with a 4-wire twist-lock receptable (left side viewed from the rear)
33	Ladder rack supported 86 or 88-1/2 in. from the floor
34	AC power duct with two 3-wire receptacles (250V) (right side)
35	AC power duct with one 3-wire receptacle (250V) (right side)
37	AC power duct with one 3-wire receptacle (30A, 208V) for CC
39	I/O cross-aisle ductwork (48 in. aisle)
41	Basic hardware for one cabinet
42	Right or left end plate for shielded ductwork
44	Front end plate for shielded ductwork Rear end plate for shielded ductwork
51	Shielded cross-aisle ductwork
78	Shielded cross-aisle ductwork (48 in. aisle)

Install the various cable ducts in the order shown in table D-2. Refer to the figures for detailed information.

Figure D-2 shows an overhead view of a typical ductwork installation. Callouts indicate other figures in this part which describe the group numbers and assembly procedures in detail.

**WARNING:**

To prevent damage to the cabinet circuitry or to cables, place cardboard or its equivalent in the cable ducts to catch any metal filings that may fall from the self-threading screws.

Table D-2. Installation Sequence

Step	Group	Remarks
1	41	Install basic duct work on each cabinet
2	51	Install cross-aisle shielded duct work
3	10 or 26	Install I/O cross-aisle or cabinet to wall cable trough
	22-25	Install I/O cross-aisle to wall trough duct
4	8	Install I/O cable rack coupling to rear of cabinet
	or 9	or install I/O cable rack riser to end of cabinet
5	12-19, 21, 32, 34, & 35	Install AC power ducts
6	27	Install shielded cable ducts between DEFINITY and DIMENSION cabinets
7	28	Install I/O cable ducts between DEFINITY and DIMENSION cabinets
8	29 & 31	Install shielded duct assembly from front of System 85-R1 cabinet to rear of a DEFINITY cabinet (group 29) or front of a DEFINITY cabinet to rear of System 85-R1 cabinet (group 31)
9	30	I/O transition assembly for cross-aisle (System 85-R1 to DEFINITY)
10	33	Ladder rack supported 86 or 88-1/2 in. from the floor

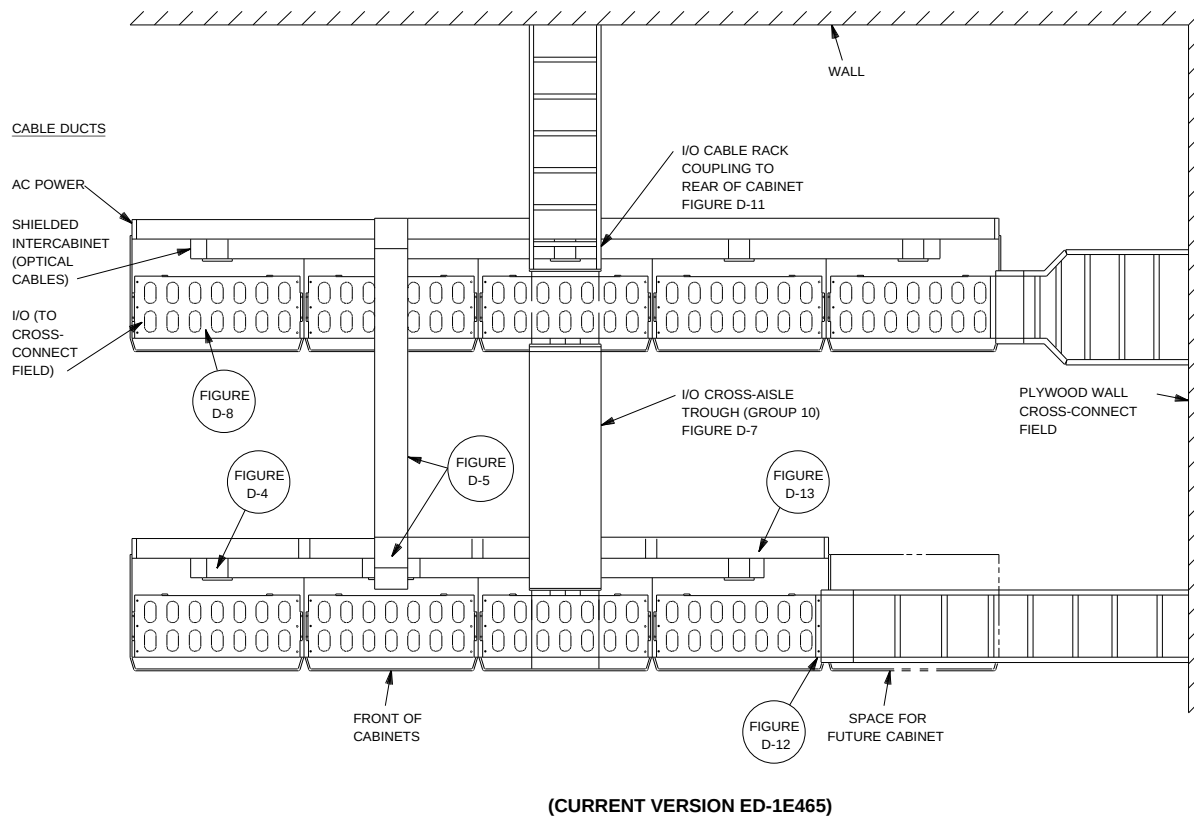


Figure D-2. Overhead View of a Typical Ductwork Layout

Installation of Intercabinet Shielded Ducts

1. Loosen, but do not remove, the four bolts that hold the dust cover to the cable access hole in the top of the cabinet.

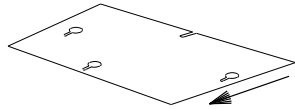


Figure D-3. Dust Cover Removal

2. Remove the dust cover by sliding it in the direction shown by the arrow (here illustrated). Move the dust cover until it is released by the bolts. Do not remove the bolts.
3. Set the cabinet riser ("A" on Figure D-4) with its base in place of the dust cover just removed. The four slots in its base should be just behind the bolts and the heads of the two middle bolts should have cleared the holes provided for them. Push the riser forward to seat the bolts in the four slots in the base of the riser. Then tighten the bolts.

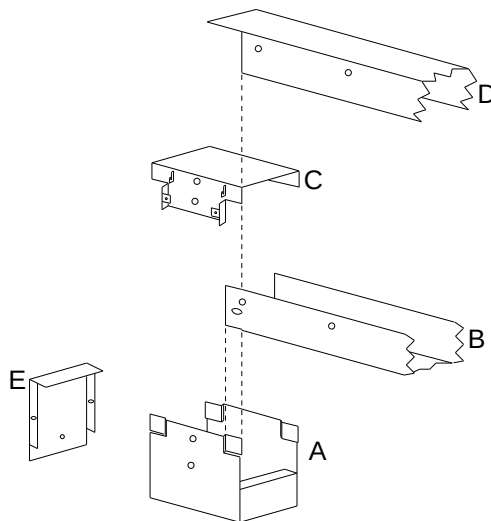


Figure D-4. Assembly of Intercabinet Shielded Ducts

4. Install risers (as in 3 above) on any other cabinets that require shielded-duct connections.
5. Set a shielded trough ("B") between two cabinet risers. Push down on the trough so that the slots in the ends of the trough engage the ears at the corners of the risers. (The walls of the trough go inside the walls of the risers and outside of the ears of the risers.)
6. Seat the bottom of the shielded trough on the support walls of the two cabinet risers that it connects. Attach the trough to each riser with a self-tapping screw.
7. Install shielded troughs (as in 6 above) on any other pairs of cabinets that require shielded-duct connections.
8. At this time you can route the appropriate cables between the cabinets just connected.
9. If a given cabinet is to support a cross-aisle shielded duct, set a cross-aisle riser ("C" on Figure D-5) on the cabinet riser ("A"). Otherwise set a shielded coupling ("C" on Figure D-4) on the cabinet riser. In either case, position the device so that the two holes on the back wall line up with the holes on the back wall of the cabinet riser. Bolt the two pieces together at the holes just described.
10. If there is no trough to install in one end of the cabinet riser, press a shielded end cap ("E") on the unused end of the riser. The side walls of the end cap go inside the walls of the riser and outside of the ears of the riser. The top of the end cap should rest on top of the shielded coupling or cross-aisle riser previously installed. Bolt the bottom of the end cap to the cabinet riser with a self-tapping screw.
11. Set the shielded cover ("D") on the shielded trough ("B") and press it down so that the dimples on the cover engage the holes in the trough.

Installation of Cross-Aisle Shielded Ducts

1. You should have the inter-cabinet ducts and cross-aisle risers installed (as described above) before you start work on any cross-aisle ductwork.
2. Set the tongue on the bottom of a cross-aisle trough ("G" on Figure D-5) into the platform of the cross-aisle riser ("C"). From above the trough, run a self-tapping screw through the slot in the trough and into the hole in the riser.

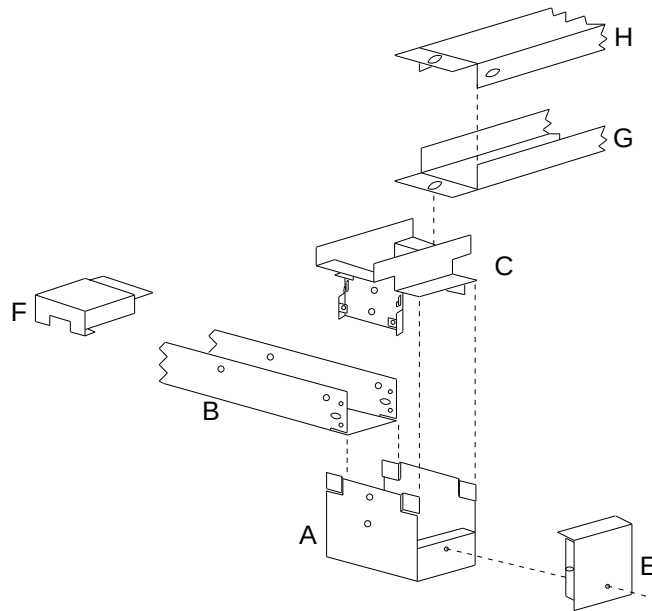


Figure D-5. Assembly of Cross-Aisle Shielded Ducts

3. Install cross-aisle troughs (as just described) on any other cabinets that require such connections.
4. If there is no trough ("G" on Figure D-5) to install in one end of the cross-aisle riser ("C"), press a cross-aisle shielded end cap ("F") on the unused end of the riser. (Unlike earlier ductwork, the endcap will fit either end of the cross-aisle riser.) The side walls of the end cap go outside the walls of the riser. The ears on the bottom of the end cap go outside of the riser's bottom plate, and the bottom plate of the end cap goes inside of the riser's bottom plate.
5. At this time you can route the appropriate cables between the cabinets just connected.
6. Finally, set the shielded cross-aisle trough cover ("H") on top of the trough with its side walls outside of the walls of the trough, and press it down until it completely covers the trough.

Mating Cross-Aisle Risers to Old Cabinet Risers

The new shielded ductwork is so constructed that cross-aisle risers can be attached to cabinet risers of the former design.

1. Remove the shielded coupling from the old cabinet riser. (This assembly is illustrated in the older system's installation document.)
2. Replace the shielded coupling with a cross-aisle riser. Set the cross-aisle riser ("C" on Figure D-6) on the cabinet riser ("A"). Position the cross-aisle riser so that the two holes on the back wall line up with the holes on the back wall of the cabinet riser. Bolt the two pieces together at the holes just described.

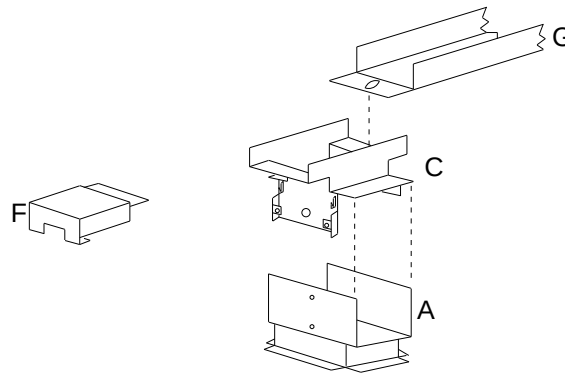


Figure D-6. Mating Cross-Aisle Risers to System 85-R2 Cabinet Risers

3. Assemble cross-aisle ductwork as already described.

Mating New Shielded Ducts to System 85-R2 Risers

The new shielded ductwork is so constructed that new cross-aisle troughs can be attached to risers of the former design. They fit outside of the older risers.

To attach the new shielded trough to a System 85-R2 riser, first set it under the trough on the riser and install the other side of the trough as already described. Lift the trough as shown on Figure D-7, with the walls of the trough outside of the walls of the riser. Hold a nut under the trough, and bolt the parts together as shown.

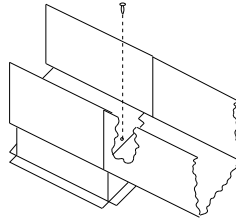
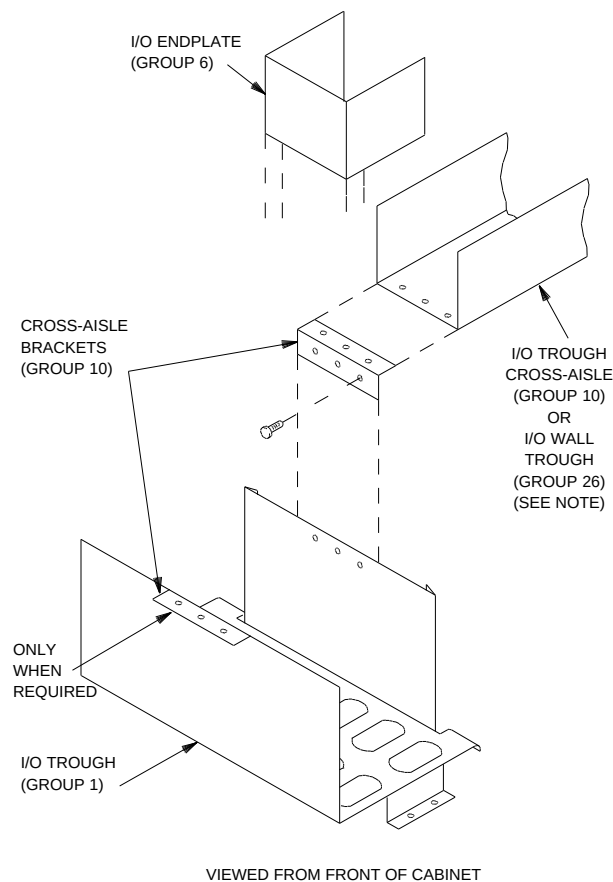


Figure D-7. Shielded Duct Connected to Old Style Riser

Install Cross Aisle I/O Ductwork

Refer to Figure D-8 and assemble the ductwork in the following order:

1. If required, attach I/O endplate (group 6) to the cross-aisle brackets (group 10).
2. Install a cross-aisle bracket on both sides of the I/O trough where cross-aisle or wall trough is to be used. Place the bracket inside the I/O trough with its angle end outside. Secure the bracket using three thread-forming screws in each trough (use the holes in the bracket closest to the angle).
3. If cross-aisle, install brackets on I/O trough of cross-aisle cabinet.
4. Place I/O cross-aisle trough (group 10) or I/O wall trough (group 26) on brackets and secure with thread-forming screws.



NOTE:

1. If wall trough is being installed, locally provided hardware is required at wall end of duct.

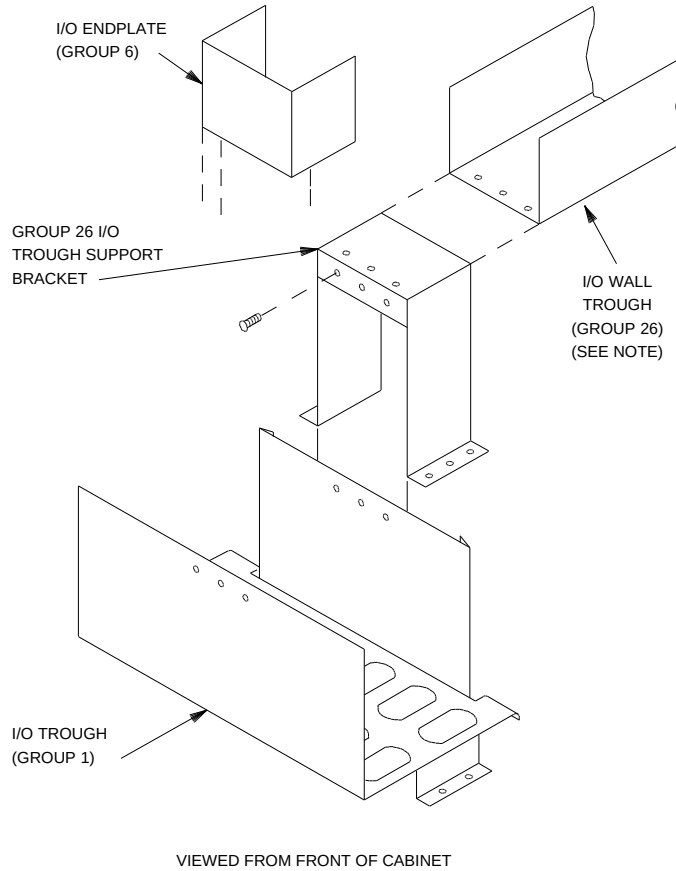
Figure D-8. Installation of Cross-Aisle I/O Ductwork (Group 10) or I/O Cross-Aisle to Wall Trough (Group 26) Using Group 10 Angle Braces

Alternate Cross-Aisle Ductwork Installation

When connecting to older systems, you may have to deal with the cross-aisle ductwork of Figure D-9. (Manufacture of this alternative has been discontinued.) Such ductwork was assembled as follows:

1. Install an I/O trough support bracket on both sides of the I/O trough where the wall trough is to be used. Secure to the cabinet and the I/O trough with the thread-forming screws.
2. If required, attach the I/O endplate (group 6) to the I/O trough support bracket.
3. Place I/O wall trough (group 26) on brackets and secure with thread-

forming screws.



NOTE:

1. If wall trough is being installed, locally provided hardware is required at the wall end of duct.

Figure D-9. Installation of I/O Cross-Aisle to Wall Trough (Group 26) Using Group 26 I/O Trough Support

Install Cross-Aisle to Wall Trough

Refer to Figure D-10 and assemble the ductwork in the following order:

1. Install wall mounting bracket to designated location. Hardware to mount bracket should be determined according to wall type and should be locally provided.
2. Use thread-forming screws to attach the 3-hole face of the angle bracket to the I/O trough.
3. Attach the angle bracket to the 6-hole face of the cross-aisle bracket using three 10-24 $\times$ 3/4 in. screws, connected to nuts and washers through the bottom holes.
4. Attach the I/O cable duct to the cross-aisle bracket using the thread-forming screws. Attach the other end of the I/O duct to the wall mounting using 10-24 $\times$ 3/4 in. screws, nuts and washers.

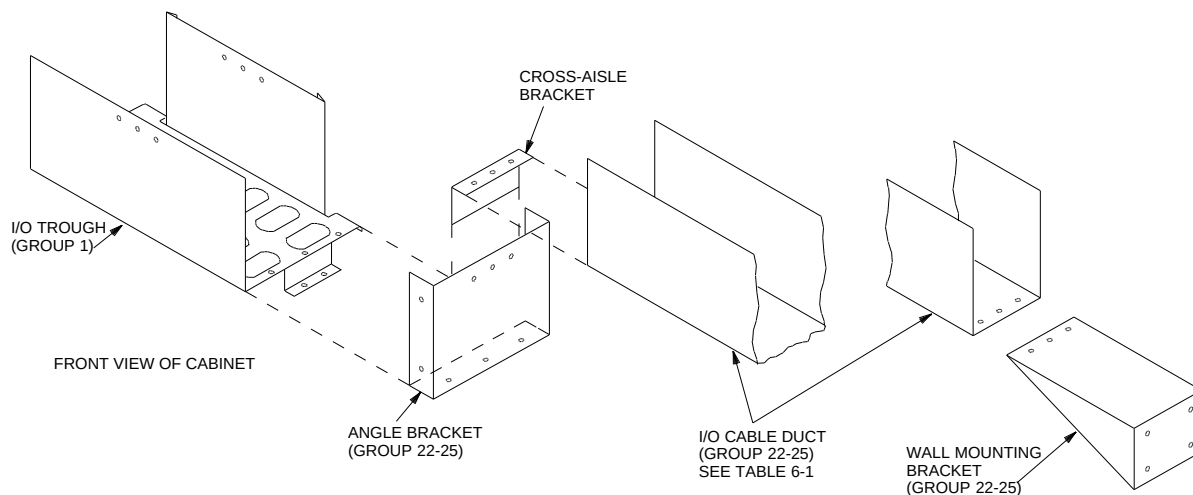


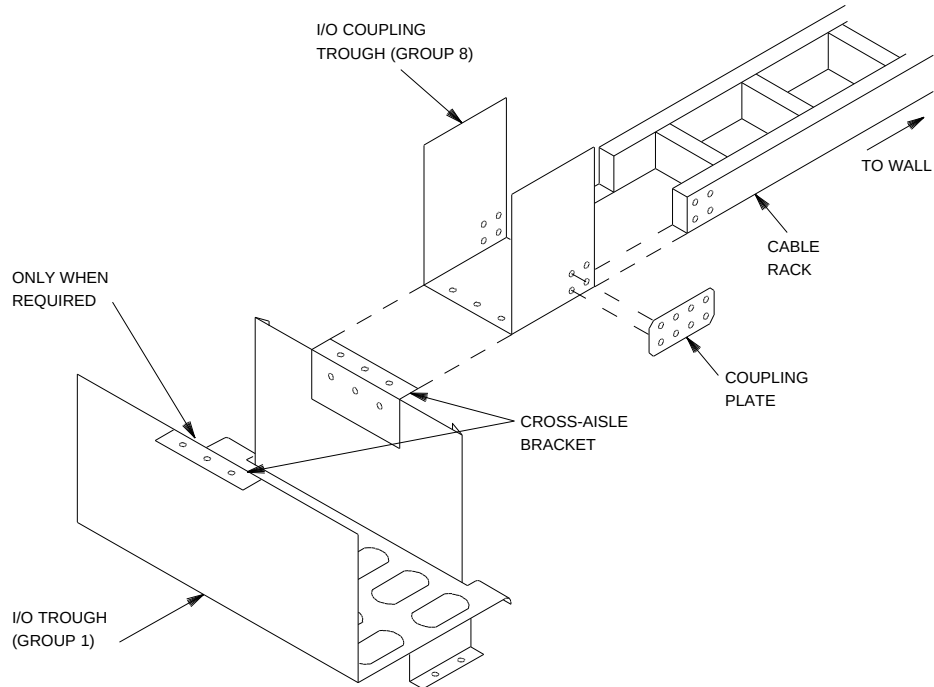
Figure D-10. Installation of I/O Cross-Aisle to Wall Trough (Group 22-25)

Install I/O Cable Rack Coupling

Refer to Figure D-11 and assemble the ductwork in the following order:

1. Attach I/O trough to top of cabinet using thread-forming screws.
2. Attach cross-aisle bracket to I/O trough using thread-forming screws through the top three holes on the bracket's 6-hole face.
3. Attach I/O coupling trough to cross-aisle bracket using thread-forming screws.

4. Attach cable rack to coupling trough using coupling plates and 3/8-18 × 1/2 in. hex head bolts with nuts.
5. Attach other end of cable rack to wall using locally provided hardware suitable to type of wall.



NOTE:

1. Cable rack and coupling plates are locally engineered and provided.

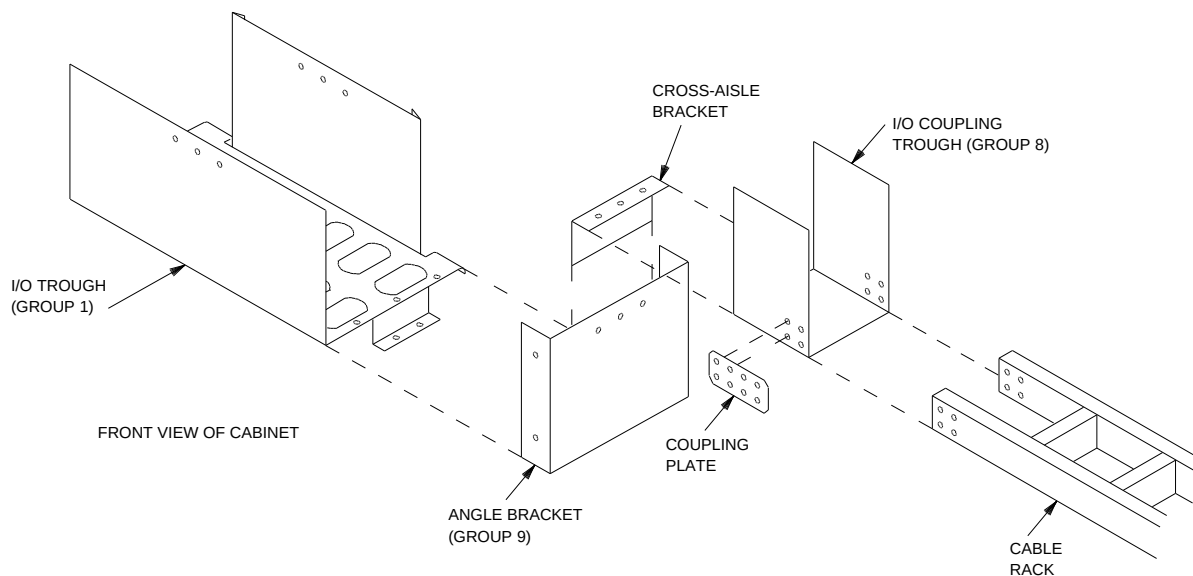
Figure D-11. Installation of I/O Cable Rack Coupling to Rear of Cabinet (Group 8)

Install I/O Cable Rack Riser

Refer to Figure D-12 and assemble the ductwork in the following order:

1. Attach angle bracket (group 9) to I/O trough using thread-forming screws.
2. Attach cross-aisle bracket to angle bracket using thread-forming screws. Attach the angle bracket to the 6-hole face of the cross-aisle bracket using three thread-forming screws through the bottom holes.
3. Attach I/O coupling trough (group 8) to cross-aisle bracket using thread-forming screws.
4. Attach cable rack to coupling trough using coupling plates and 3/8-18 × 1/2 in. hex bolts and nuts.

5. Attach other end of cable rack to wall using locally provided hardware suitable to type of wall.



NOTE:

1. Cable rack and coupling plate should be locally engineered and provided.

Figure D-12. Installation of I/O Cable Rack Riser to End of Cabinet (Group 9)

Install AC Power Duct

Refer to Figure D-13 and assemble the ductwork in the following order:

1. Hang AC power duct (group 12 through 16 and 21) on back of shielded duct and anchor in place using one thread-forming screw at each cabinet.
2. If required, slide utility outlet assembly (P/O group 18) into the duct from the end.
3. Repeat steps 1 and 2 for each cabinet.
4. Interconnect ducts with couplings using four round-head machine screws.
5. Insert 4 wire holders into each duct spaced evenly along duct.
6. If equipped with an AC outlet, snap two group 18 raceway covers into place onto the AC power ducts.
7. If not equipped with an AC outlet, snap a group 17 raceway cover into place onto the AC power ducts.
8. If required, attach group 19 (combination end cap) by using two round head machine screws.

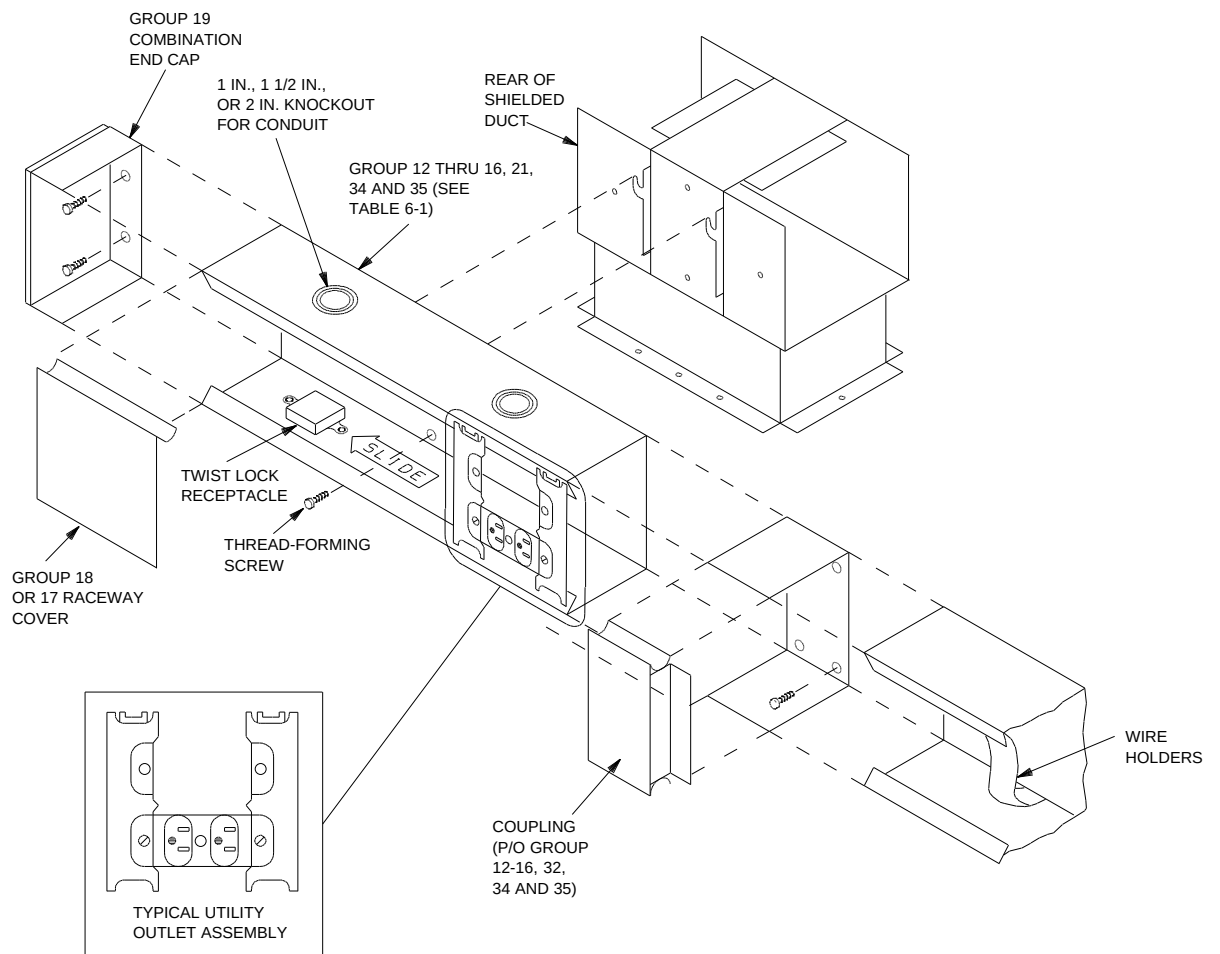


Figure D-13. Installation of AC Power Duct

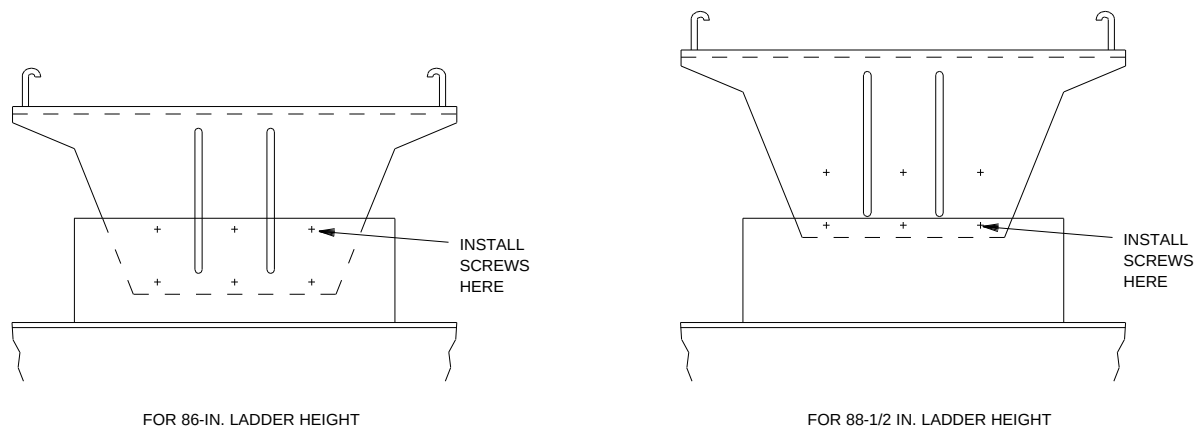


Figure D-14. Assembly of Ladder Rack (Supported 86 or 88-1/2 in. from Floor) (GRP 33)

Connecting and Handling Fiber-Optic Cables

E

Signals between the cabinets that compose your switch are carried by fiber-optic cables. To accomplish this, the electronic signals at the connectors on the back of a cabinet must be converted into optical signals and optical signals from another cabinet must be converted back into electronic signals. AT&T provides opto-electronic devices, the 9823-type lightwave transceivers, that provide this interface.

A completed signal from one cabinet to another, therefore, goes through a transceiver, then through a fiber-optic cable, and through another transceiver to its destination. If the two cabinets are close together, the optical signal may go through a single, directly connected fiber-optic cable. If the two cabinets are further apart, it may be convenient to connect the cabinets by way of your cross-connect field. This appendix discusses the hardware and methods required to connect and route fiber-optic cables.

Cable-Routing Recommendations

These guidelines provide recommendations for the installation of fiber between system cabinets in DEFINITY systems. The methods set out here draw from experience gained from the installation of G1 systems and G2 Universal Modules. We understand that different circumstances may call for different ways of handling these cables.

The objective of these guidelines is to prevent mechanical stress on these relatively delicate cables. In particular, you should avoid bending the cables to a radius smaller than the 1½ inches specified. And you should avoid weighing down the cables (especially with power and grounding conductors and 25-pair cables).

These guidelines offer methods of routing the fiber cables separately. That is, they should be routed away from groups of other cables where they may be stretched by the weight of (relatively flexible) metal cable bundles or pressed against a sheet metal edge (for example) by subsequently installed cables.

General Guidelines

1. The fiber cable used in DEFINITY product is of the AT&T FL2P-P-xx family of cables (where xx is length in feet). (At this time FL2E-E-xx cable cannot be used because it is not physically compatible with the 9823A or 9823B transceivers.)
2. Use the 9823A for distances of up to 4900 feet, the 9823B for distances of up to 25,000 feet. The 9823A/B cannot be mixed, that is, both ends of the fiber must use the same model of transceiver.
3. Although the fiber cable will withstand some abuse, it does require special handling and routing. Avoid routing the cable over sharp edges and corners since the minimum bend radius of the fiber is 1.5 inches. 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.
4. When possible separate the routing of the fiber cable from the I/O cables (the B25As) in DEFINITY systems. Route the fiber cable away from the Multi-Carrier Cabinet (MCC) cable troughs or Single-Carrier Cabinet stack (SCC) B25A cable bundles.
5. If you are connecting two adjacent cabinets without benefit of ductwork, use the 846929883 cover to protect the optical fiber.

Recommended Fiber Routing

The following sections describe the recommended fiber cable routing in various DEFINITY system installations.

Raised Floor or Cable Slack Managers Used with MCC Systems

Figure E-1 shows the recommended fiber routing for a system with either cable slack managers or raised floors. In systems on a raised floor or systems with cable slack managers, route the fiber cable to the outsides of the carriers behind the rear connector panel and cable troughs. Do not route fiber in the side cable troughs that are used for the B25A cables. However, since the B25A cables are routed out of the bottom of the trough, loop slack fiber at the top of the trough. Use the cable tie holes provided at the top of the cabinet to secure the fiber. Route the fiber through the holes over the cable troughs in the corners of the cabinet tops. Protect cables routed between cabinets with an 846929883 cover. When routing fiber to a cabinet that is not adjacent, route the fiber back into and under the top of the intermediate cabinet.

Overhead DEFINITY Ductwork

Figure E-2 shows the recommended fiber routing for a system with DEFINITY ductwork installed. For DEFINITY systems with overhead ductwork, route the fiber cable to the outsides of the carriers behind the rear connector panel and cable troughs and into the shielded ductwork. Do not route fiber in the side cable troughs that are used for the B25A cables. Use the shielded ductwork to manage slack fiber and use the cable tie holes at the top of the MCC cabinet as needed.

Raised Floor or Cable Slack Managers Used with SCC Systems

Figure E-3 shows the recommended fiber routing for a single-carrier cabinet system that has a cable slack manager or is on a raised floor. In these systems, route the fiber up towards the top of the cabinet. The excess should be looped and stored from the B25A cable clamp on the top cabinet in the stack. In order to dress the cable running up the back of the cabinets, tie wrap the fiber to the outside of the B25A cable clamp (do not put the cable inside the clamp holding the B25A cables).

Connections for Remote Applications Through a Fiber Cross-Connect

Figure E-4 illustrates systems that require connection to a PDS fiber cross-connect (for connection to remote cabinets). In some such systems it may be necessary to run fiber with the I/O cables such as in the cable slack manager or under a raised floor. In these situations protect the fiber by running it in a dedicated area if possible. In any situation where the fiber-optic cable must be run with other cabling, protect it by running it through flexible conduit.

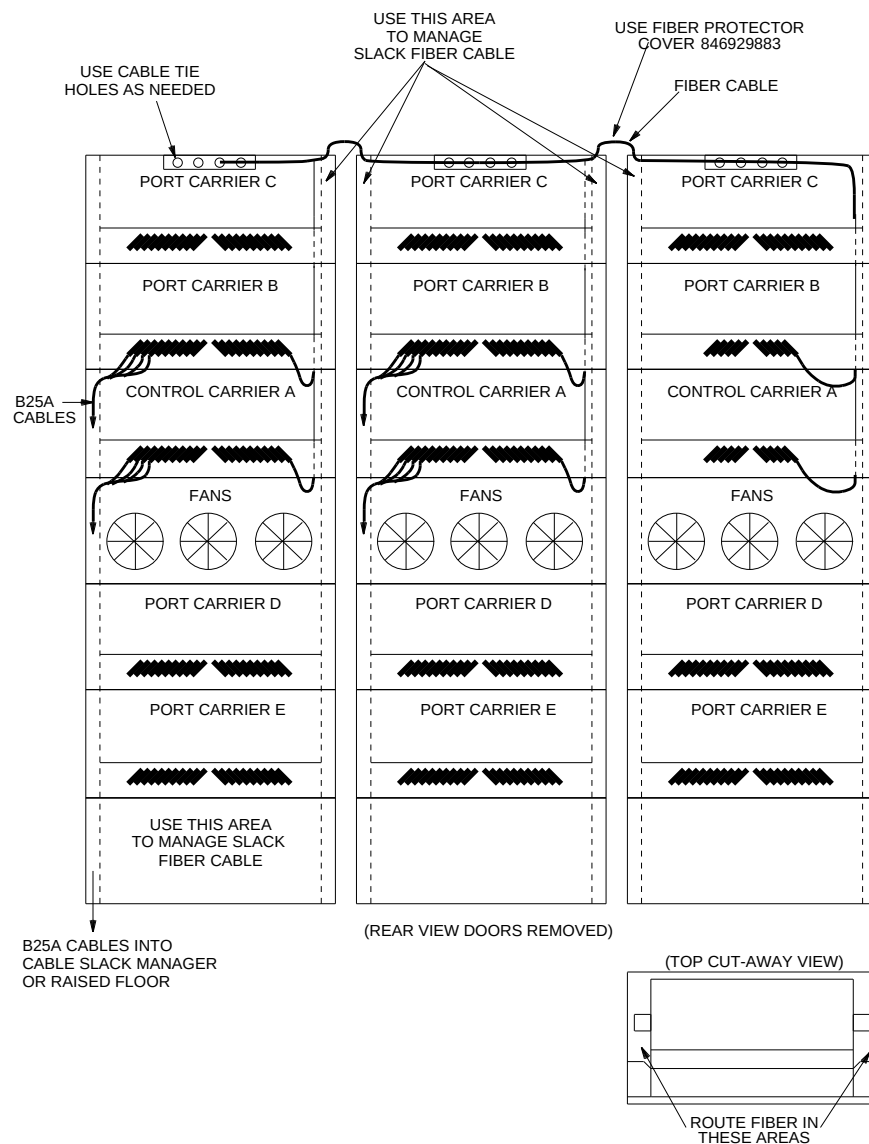


Figure E-1. Routing Fiber Between Adjacent Cabinets

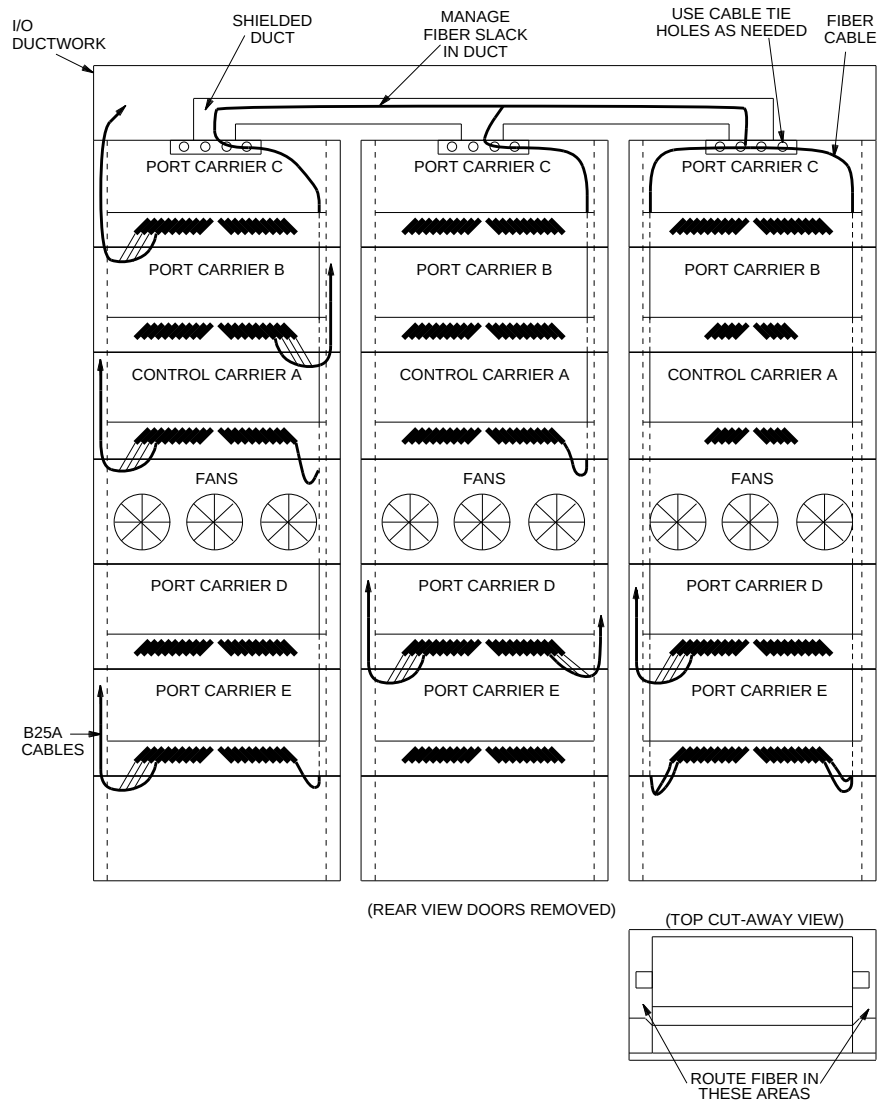


Figure E-2. Routing Fiber Through DEFINTY Ductwork

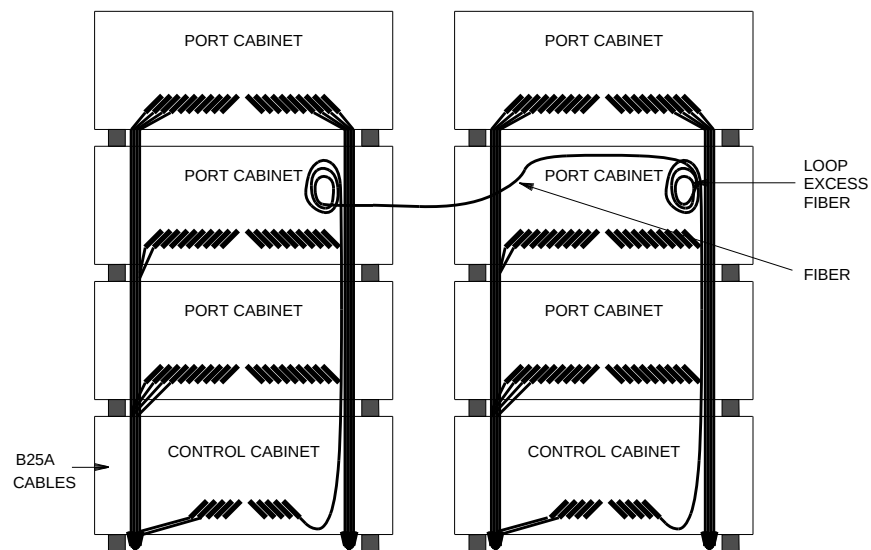


Figure E-3. Single-Carrier Cabinet Fiber Routing

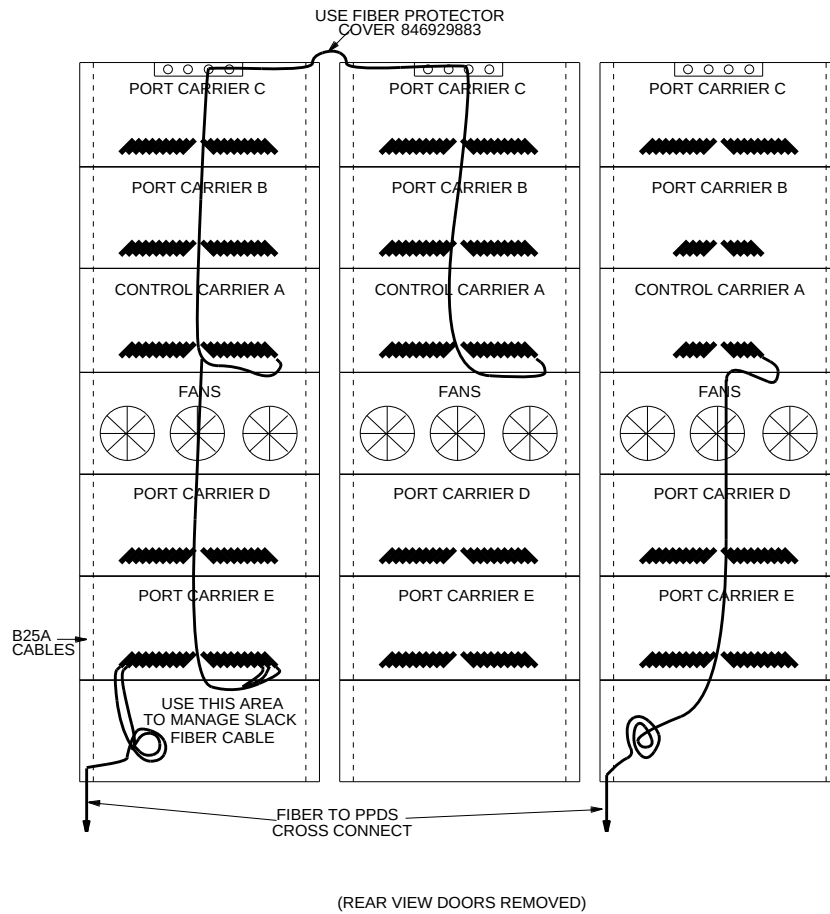


Figure E-4. Routing Fiber Under Raised Flooring or Through Cable Slack Managers

Optical Cross-Connect Hardware

Optical cross-connects (shown in Figure E-5) consist of lightguide interconnect units (LIU) with lightguide troughs in between them. One LIU terminates the incoming cables and the other terminates the outgoing cables. A fiber optic patch cord or jumper is used to connect the circuits. Circuits can be rerouted the same as on 110- or 66-type connecting blocks, by moving the patch cord from one point on the cross-connect field to another.

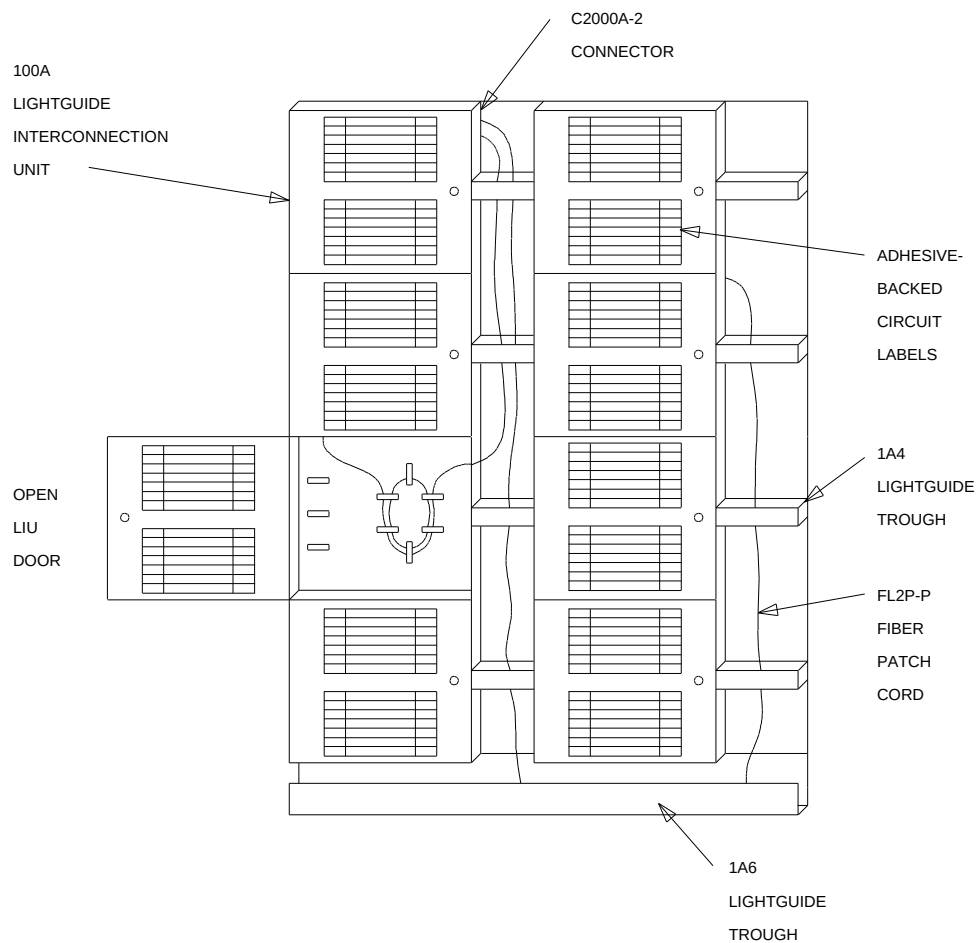


Figure E-5. Optical Cross-Connect Field

Optical interconnects (shown in Figure E-6) consist of LIUs without a trough between them. Incoming and outgoing cables are connected directly to each other. This arrangement makes circuit changes more difficult, but it cuts down on optical losses.

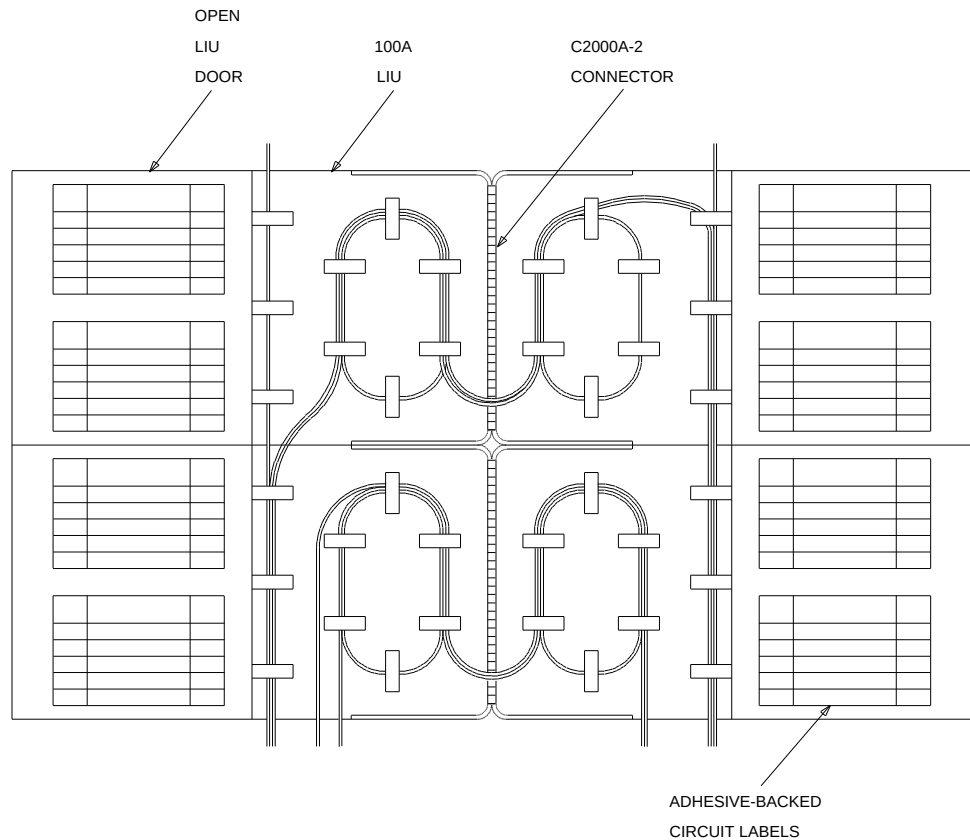


Figure E-6. Optical Interconnect Field

Optical cross-connect and interconnect fields are both made up of the same components:

- 100A LIU
- 10A lightguide connector panel
- C2000A-2 connector coupling
- 1A4 lightguide trough
- 1A6 lightguide trough
- FL2P-P fiber interconnection cable

100A Lightguide Interconnection Unit

The 100A LIU (Figure E-7) is the cornerstone of the cross-connect and interconnect field. It consists of a cabinet with retainer rings to hold slack fiber cables, mounting cutouts for two 10A lightguide connector panels, and a door with circuit labels on each side.

Ordering Information	
Description	Comcode
100A LIU	104141841

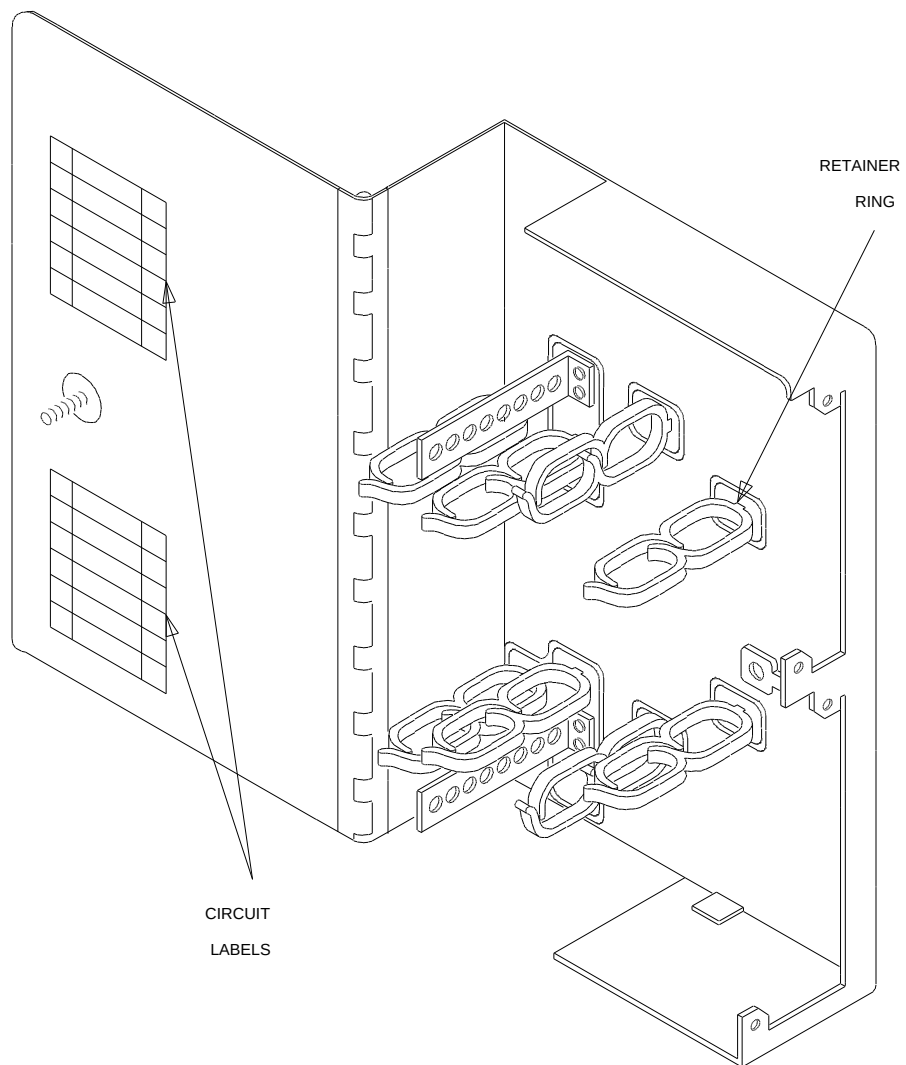


Figure E-7. 100A Lightguide Interconnection Unit

10A Lightguide Connector Panel

The 10A lightguide connector panel (Figure E-8) mounts in the cutouts of a 100A LIU. A LIU mounts two connector panels. The connector panel will mount 6 C2000A-2 connector couplings (Figure E-9).

Ordering Information	
Description	Comcode
10A Lightguide Connector Panel	104141858

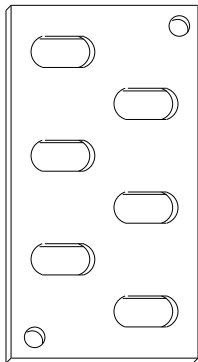


Figure E-8. 10A Lightguide Connector Panel

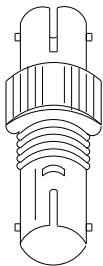


Figure E-9. C2000A-2 Connector Coupling

C2000A-2 Connector Coupling

The C2000A-2 connector coupling (Figure E-9) is used to join fiber optic cables that are equipped with ST connectors. It has a threaded midsection that allows it to be screwed into the 10A lightguide connector panel.

Ordering Information	
Description	Comcode
C2000A-2 Connector Coupling	104148028

Lightguide Troughs

Two types of troughs are used with optical cross-connect fields. The 1A4 lightguide trough secures single fiber optic jumpers routed between LIU columns, and the 1A6 lightguide trough is used at the bottom of a LIU column to prevent cable slack (Figure E-5). Figure E-10 shows the individual lightguide troughs.

Ordering Information	
Description	Comcode
1A4 Lightguide Trough	104141866
1A6 Lightguide Trough	104141874

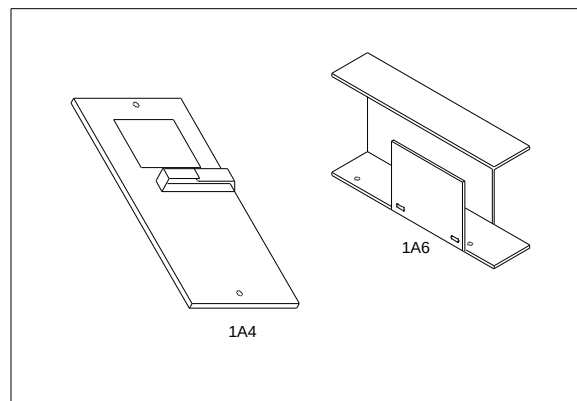


Figure E-10. 1A4 and 1A6 Lightguide Troughs

FL2P-P Fiber Interconnection Cable

The FL2P-P fiber interconnection cables are used as patch cords and to connect fiber optic equipment to lightguide cross-connect and interconnect fields. The FL2P-P is a dual fiber cable equipped with ST connector plugs on each end.

Ordering Information

Description	Length(ft)	Comcode
FL2P-P-20 Fiber Interconnection Cable	20	104266465
FL2P-P-25 Fiber Interconnection Cable	25	104266473
FL2P-P-30 Fiber Interconnection Cable	30	104266481
FL2P-P-35 Fiber Interconnection Cable	35	104266499
FL2P-P-40 Fiber Interconnection Cable	40	104266507
FL2P-P-50 Fiber Interconnection Cable	50	104266523
FL2P-P-75 Fiber Interconnection Cable	75	104266556
FL2P-P-100 Fiber Interconnection Cable	100	104266564
FL2P-P-125 Fiber Interconnection Cable	125	104266572
FL2P-P-150 Fiber Interconnection Cable	150	104266580
FL2P-P-175 Fiber Interconnection Cable	175	104266598
FL2P-P-200 Fiber Interconnection Cable	200	104266606

Labels for Fiber Optic Cables

General

There are two types of labels used with fiber optic cables:

- Cable labels
- Cross-connect labels

Cable labels are used on the cables and cross-connect labels are used on the cross-connect equipment.

Cable Labels

Cable labels, with adhesive backing, are installed on each end of a fiber optic cable. Each label displays the following information:

- The numbers of the cabinets, carriers, and slots connected by the cable.
- Information on the cable itself, such as cable comcode number, and how it is used (inter cabinet, in the case illustrated).

Figure E-11 shows an example of a fiber optic cable label. Its associated cable is run between slot 19 of carrier E on cabinet 1 and slot 1 of carrier A on cabinet 3.

UNIDUAL									
INTER-CABINET									
CAB	CAR	SLOT	CAB	CAR	SLOT				
01	E	19	03	A	01				

Figure E-11. Fiber Optic Cable Label

Cross-Connect Labels

The label used with cross-connect fiber-optic cables shows the cabinet, carrier and slot numbers of the source of the cable. It also indicates that the cable goes to the cross-connect field. The type of cable is indicated by its comcode number.

Figure E-12 shows an example of a fiber optic cross-connect label. This label (Figure E-12) shows that the far end of the cable is terminated at slot 19 of carrier E on cabinet 1. The cable's comcode number is 104266465 (cross-referenced earlier in this chapter).

BROADBAND									
CROSS-CONNECT FIELD									
CAB	CAB	SLOT	CAB	CAB	SLOT	CAB	CAB	SLOT	
RE	E	IS	LCOT						

Figure E-12. Fiber Optic Cross-Connect Label

Administering Fiber Optic Cables

When a fiber optic cable has been properly labeled, it is easy to trace the desired circuit by looking at the labels on the cross-connect, the cable itself, and the individual fibers in the cable. For more information, see the *PDS Fiber Installation Manual*, 555-401-102.

Making Changes at an Optical Cross-Connect Field

Circuit changes are made with fiber optic patch cords in the same way as you would make changes using 110P patch cords.

To Remove a Fiber Optic Patch Cord

1. At the optical cross-connect field (Figure E-5), locate the patch cord to be removed.
2. Unplug the patch cord at one end.
3. Gently, lift the patch cord straight upward until it can be located in the trough. See the following note.



NOTE:

Take care to ensure that the patch cord is not bent beyond the minimum bend radius of 1.5 inches.

4. Remove the patch cord from the trough.
5. Trace the other end of the patch cord to its termination point and unplug it.
6. Remove label associated with removed patch cord.
7. Place plastic covers over the connectors to prevent damage.

To Make a New Cross-Connection

1. At the optical cross-connect field (Figure E-5), locate the connector couplings associated with the circuit to be added.
2. Select a patch cord of the appropriate length for the cross-connection to be made. Excess cord length causes congestion in the trough and may cause the cable to be damaged.
3. Plug one end of the cord into the appropriate connector coupling.
4. Route the patch cord through the vertical and horizontal troughs.
5. Plug the other end of the patch cord into the appropriate connector coupling.
6. Prepare label for the circuit added.
7. Test the circuit for loss levels. For more information, see the *PDS Fiber Installation Manual*, 555-401-102.

Making Circuit Changes on an Optical Interconnect Field

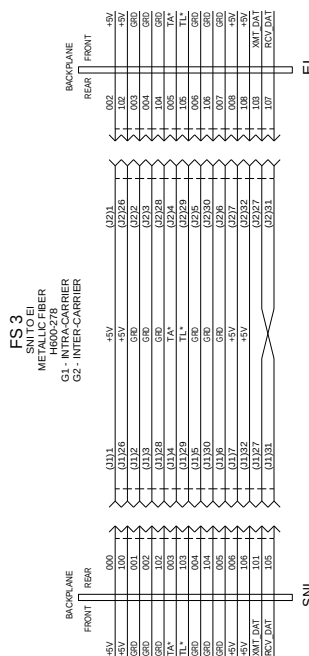
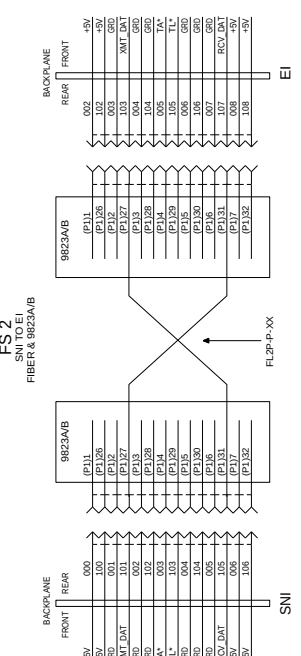
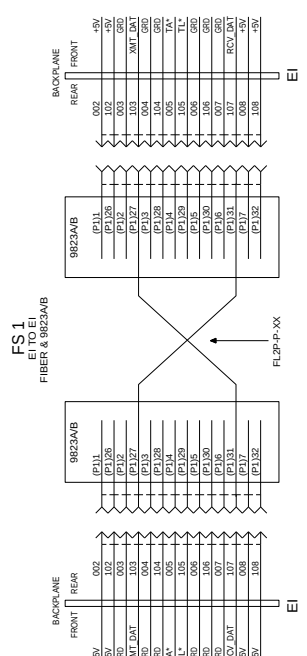
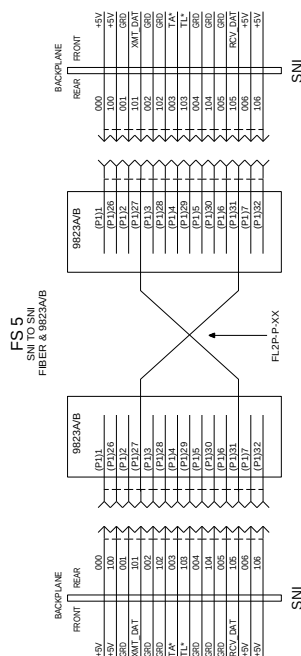
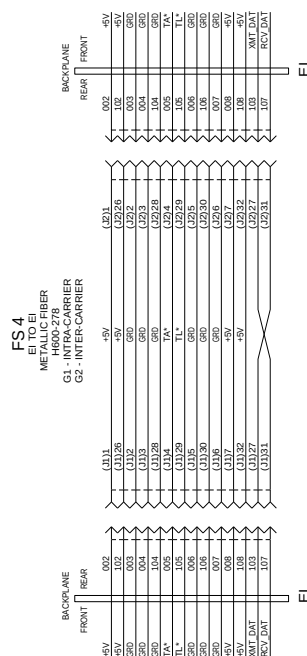
To Make a New Interconnection

1. At the optical interconnect field (Figure E-6), locate the cable to be moved and unplug it from the connector coupling.
2. Unwind the cable from around the retainer rings, remembering to maintain the minimum bend radius of 1.5 inches.
3. If it is necessary to remove the cable from the module, carefully guide it through the split rings on the side of the module.
4. Locate the appropriate interconnection unit on the other side of the interconnect field and carefully route the cable through the split rings of the new module.
5. Wrap the cable from around the retainer rings, remembering to maintain the minimum bend radius of 1.5 inches.
6. Plug the cable into the appropriate connector coupling.
7. Prepare a label for the changed circuit.
8. Test the circuit for loss levels. For more information, see the *PDS Fiber Installation Manual*, 555-401-102.

Connector and Cable Diagrams

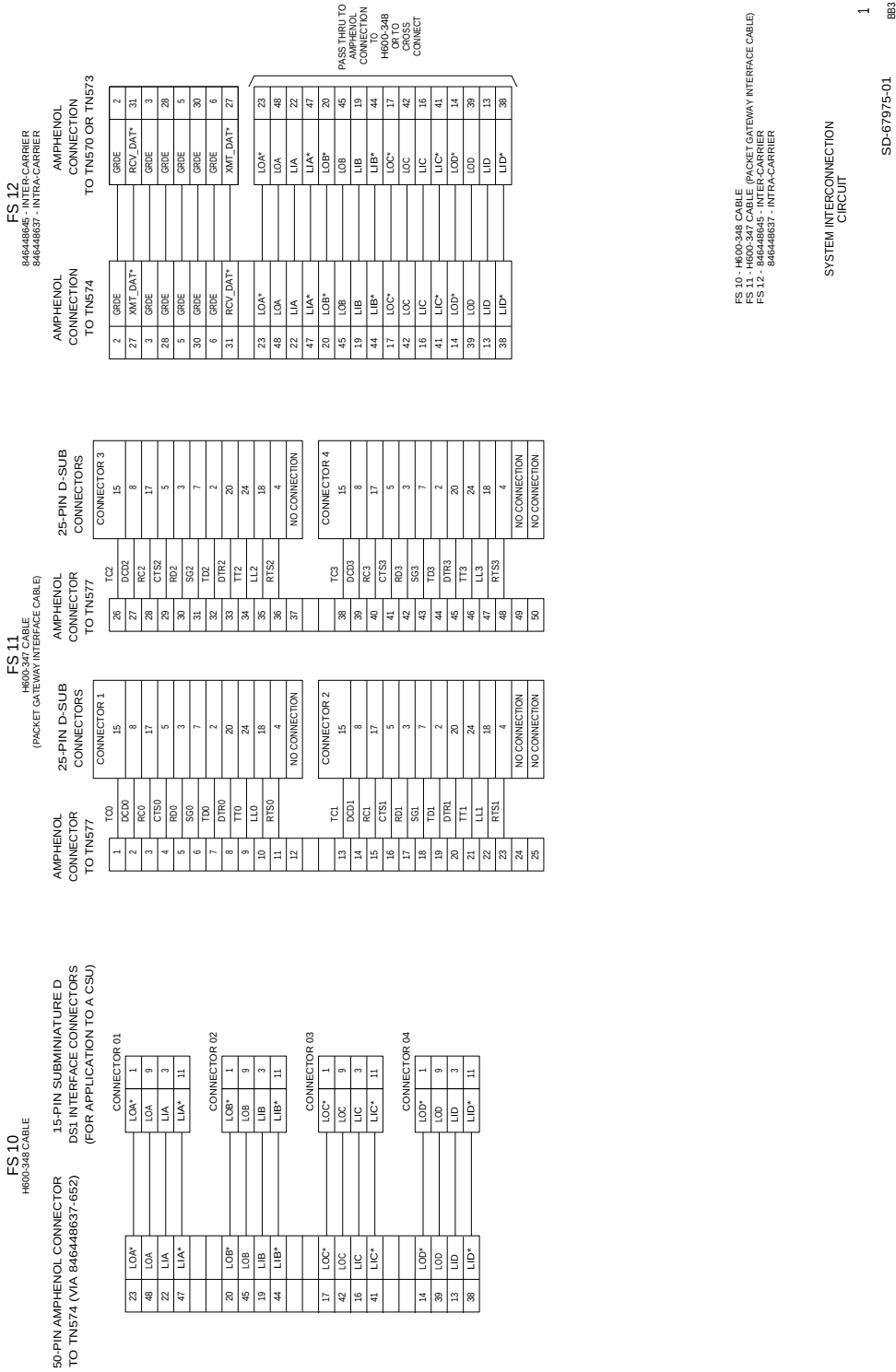
F

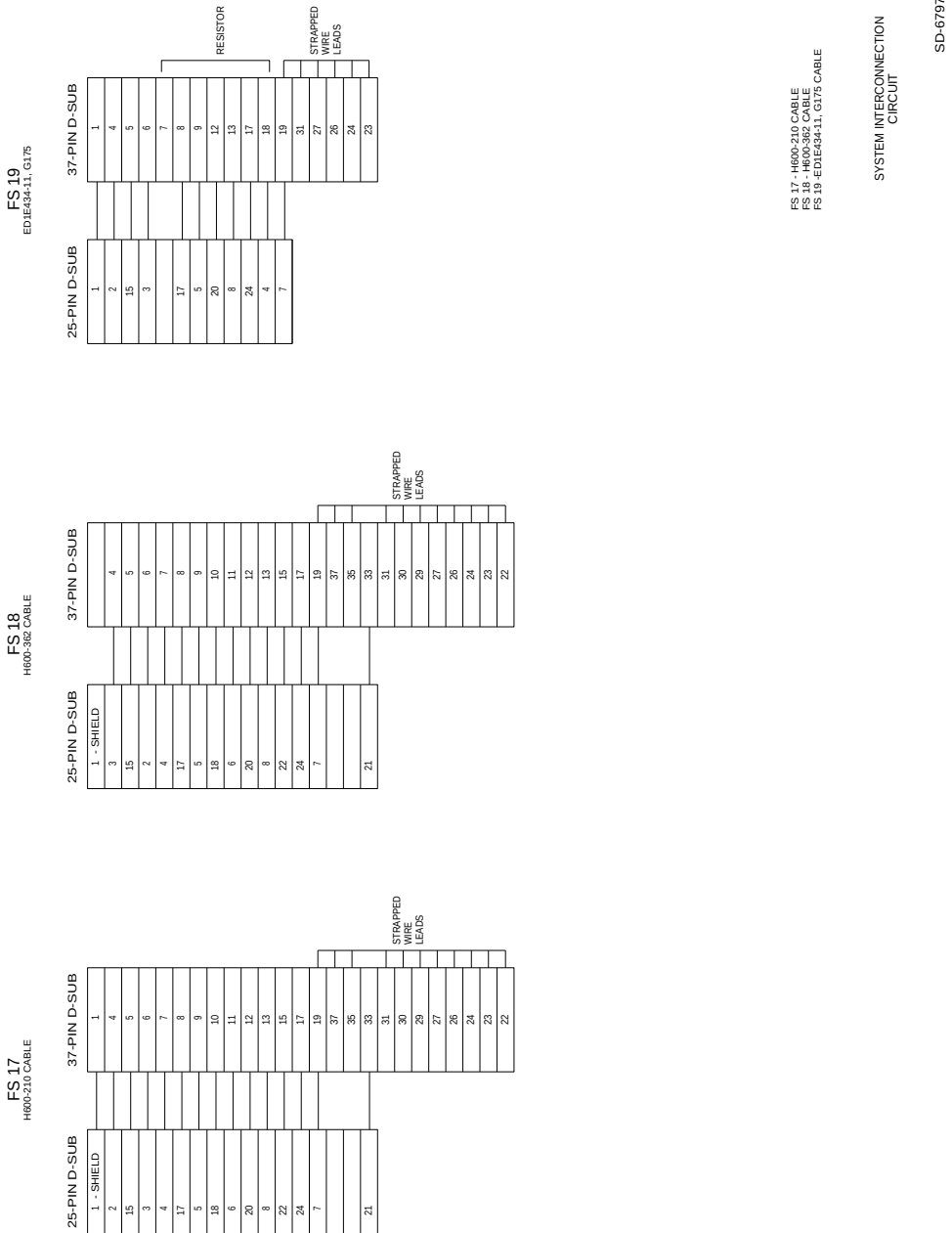
 **NOTE:**
See Table 9-7 for more lead designations.



FS 1 - EI TO EI - FIBER & 9823A/B
FS 2 - SNI TO EI - FIBER & 9823A/B
FS 3 - SNI TO EI - METALLIC FIBER - H600-278
FS 4 - EI TO EI - METALLIC FIBER - H600-278
FS 5 - SNI TO SNI - FIBER & 9823A/B

- NOTES:
1. A 9823A FIBER TRANSCEIVER IS USED WITH ANOTHER 9823A FOR APPLICATIONS UP TO 4,900 FEET. A 9823B FIBER TRANSCEIVER IS USED WITH ANOTHER 9823B FOR APPLICATIONS UP TO 25,000 FEET.
 2. FL2P-P-XX FIBER CABLE, WHERE XX DENOTES LENGTH IN FEET FROM 20 TO 200.





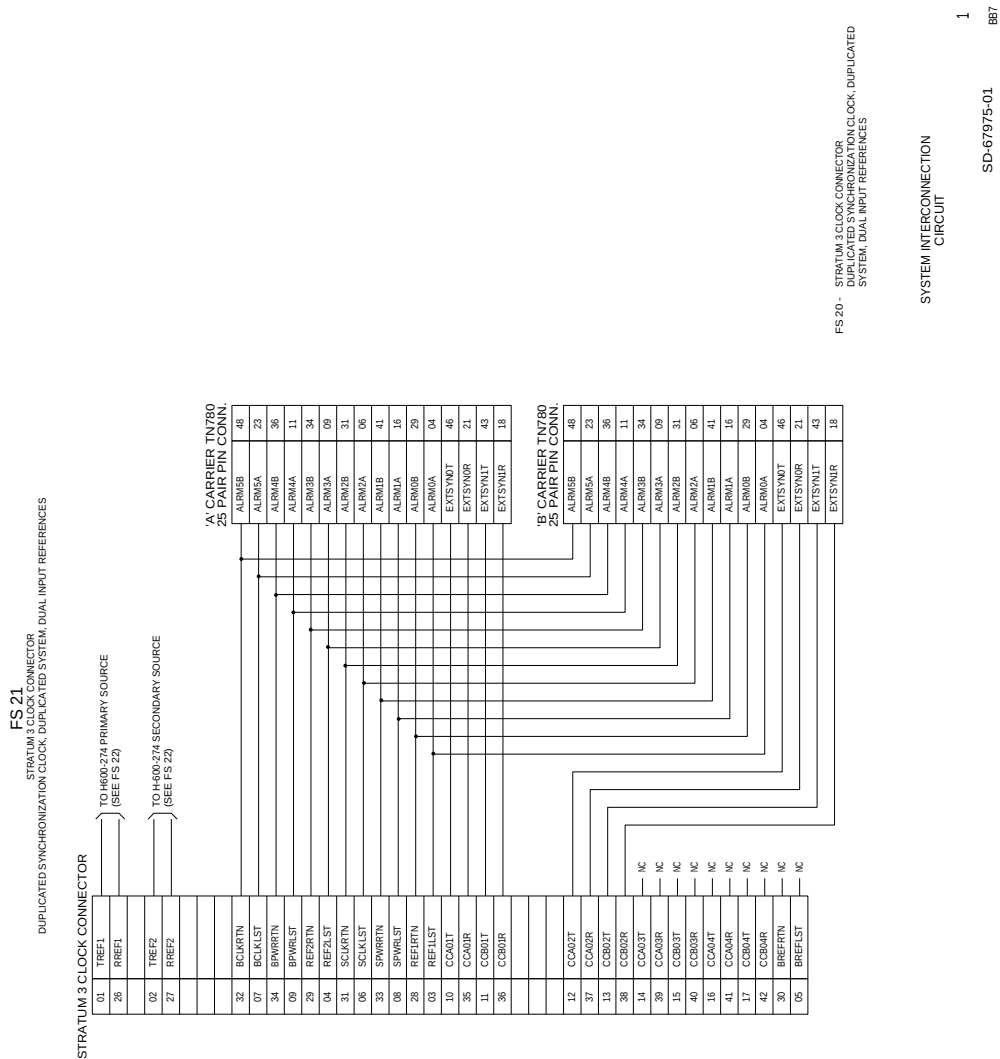
FS 20
STRATUM 3 CLOCK CONNECTOR
DUPLICATED SYNCHRONIZATION CLOCK, SIMPLEX SYSTEM, DUAL INPUT REFERENCES

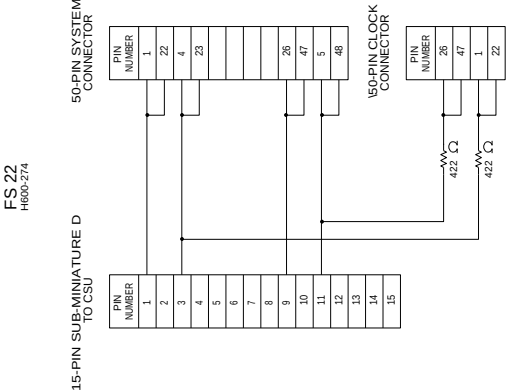
STRATUM 3 CLOCK CONNECTOR	
01	TREF1
26	RREF1
) TO H600.274 PRIMARY SOURCE (SEE FS 22)	
02	TREF2
27	RREF2
) TO H600.274 SECONDARY SOURCE (SEE FS 22)	
32	BCLARTN
07	BCLALST
34	BPMRTN
09	BPMALST
29	REF2RTN
04	REF2ALST
31	SCUARTN
06	SCUALST
33	SPMRTN
08	SPMALST
28	REF1RTN
03	REF1ALST
10	COA01T
35	COA01R
11	CB001T
36	CB001R
12	COA02T
	MC
37	COA02R
	MC
13	CB002T
	MC
38	CB002R
	MC
14	COA03T
	MC
39	COA03R
	MC
15	CB003T
	MC
40	CB003R
	MC
16	COA04T
	MC
41	COA04R
	MC
17	CB004T
	MC
42	CB004R
	MC
30	BREF1RTN
	MC
05	BREF1ALST
	MC

'A' CARRIER TN780 25 PAIR PIN CONN.	
ALRM5B	48
ALRM5A	23
ALRM4B	36
ALRM4A	11
ALRM3B	34
ALRM3A	09
ALRM2B	31
ALRM2A	06
ALRM1B	41
ALRM1A	16
ALRM0B	29
ALRM0A	04
EXTSYN0T	46
EXTSYN0R	21
EXTSYN1T	43
EXTSYN1R	18

FS 20 - STRATUM 3 CLOCK CONNECTOR
DUPLICATED SYNCHRONIZATION CLOCK, SIMPLEX
SYSTEM, DUAL INPUT REFERENCES

SYSTEM INTERCONNECTION
CIRCUIT





FS 22 - H600-274

TN574 Lead Designations

Pin	Color	Desig.	Pin	Color	Desig.
26	W-BL	+5E	01	BL-W	+5E
27	W-O	XMT DAT*	02	O-W	GRDE
28	W-G	GRDE	03	G-W	GRDE
29	W-BR	TL*	04	BR-W	TA*
30	W-S	GRDE	05	S-W	GRDE
31	R-BL	RCV DAT*	06	BL-R	GRDE
32	R-O	+5E	07	O-R	+5E
33	R-G	PSS	08	G-R	PSSG
34	R-BR	ENVB*	09	BR-R	CHG RT*
35	R-S	ON RES*	10	S-R	RES FLT*
36	BK-BL	BAT DISC*	11	BL-BK	PTD*
37	BK-O	CPETXD	12	O-BK	CPERXD
38	BK-G	LID*	13	G-BK	LID
39	BK-BR	LOD	14	BR-BK	LOD*
40	BK-S	RSS1*	15	S-BK	RSS0*
41	Y-BL	LIC*	16	BL-Y	LIC
42	Y-O	LOC	17	O-Y	LOC*
43	Y-G	GSP2*	18	G-Y	GSP3*
44	Y-BR	LIB*	19	BR-Y	LIB
45	Y-S	LOB	20	S-Y	LOB*
46	V-BL	GSP1*	21	BL-V	GSP1/3
47	V-O	LIA*	22	O-V	LIA
48	V-G	LOA	23	G-V	LOA*
49	V-BR	GSP0*	24	BR-V	GSP0/2
50	V-S	GRD	25	S-V	GRD

**DS1 Interface Cable
H600-348**

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

**DS1 Interface Cable
H600-307 (and C6C)**

50-Pin			15-Pin		
Pin	Color	Desig.	Pin	Color	Desig.
02	W-BL				
03	BL				
47	W-G	LI*	11	W-G	LI*
22	G	LI	03	G	LI
48	W-BR	LO	09	W-BR	LO
23	BR	LO*	01	BR	LO*
49	W-S	LOOP2	06	W-S	LOOP2
24	S	LOOP1	05	S	LOOP1

All other pins empty.

BACKPLANE PIN	CARRIER I/O CONNECTOR PIN	GENERIC LEAD NAME	PORT BOARD LEAD DESIGNATIONS							
			TN742 TN742B TN747 TN747B TN753 TN769	TN726 TN754	TN750 TN760B TN760C	TN762 TN762B	TN763 TN763B TN763C	TN735	TN767 TN722 TN722B TN464C	TN746
102	26	TA.0	T.0		T.0	T.0	T.0	T.0		T.0
002	01	RA.0	R.0		R.0	R.0	R.0	R.0		R.0
103	27	TB.0		TXT.0	T1.0	TXT.0	SZ.0	BT.0	GRD	T.1
003	02	RB.0		TXR.0	R1.0	TXR.0	SZ1.0	BR.0	GRD	R.1
104	28	TC.0		PXT.0	E.0	PXT.0	S.0	LT.0	GRD	T.2
004	03	RC.0		PXR.0	M.0	PXR.0	S1.0	LR.0	GRD	R.2
105	29	TA.1	T.1		T.1	T.1	T.1	T.1		T.3
005	04	RA.1	R.1		R.1	R.1	R.1	R.1	GRD	R.3
106	30	TB.1		TXT.1	T1.1	TXT.1	SZ.1	BT.1		
006	05	RV.1		TXR.1	R1.1	TXR.1	SZ1.1	BR.1	GRD	
107	31	TC.1		PXT.1	E.1	PXT.1	S.1	LT.1	GRD	
007	06	RC.1		PXR.1	M.1	PXR.1	S1.1	LR.1	GRD	
108	32	TA.2	T.2		T.2	T.2	T.2	T.2		
008	07	RA.2	R.2		R.2	R.2	R.2	R.2		
109	33	TB.2		TXT.2	T1.2	TXT.2	SZ.2	BT.2		
009	08	RB.2		TXR.2	R1.2	TXR.2	SZ1.2	BR.2	GRD	
110	34	TC.2		PXT.2	E.2	PXT.2	S.2	LT.2	GRD	T.4
010	09	RC.2		PXR.2	M.2	PXR.2	S1.2	LR.2	GRD	R.4
111	35	TA.3	T.3		T.3	T.3	T.3	T.3		T.5
011	10	RA.3	R.3		R.3	R.3	R.3	R.3	GRD	R.5
112	36	TB.3		TXT.3	T1.3	TXT.3	SZ.3	BT.3		T.6
012	11	RB.3		TXR.3	R1.3	TXR.3	SZ1.3	BR.3	GRD	R.6
113	37	TC.3		PXT.3	E.3	PXT.3	S.3	LT.3	+5	T.7
013	12	RC.3		PXR.3	M.3	PXR.3	S1.3	LR.3	+5	R.7
302	38	TA.4	T.4		T.4	T.4	T.4	T.4		T.8
202	13	RA.4	R.4		R.4	R.4	R.4	R.4		R.8
303	39	TB.4		TXT.4	T1.4	TXT.4	SZ.4	BT.4	GRD	T.9
203	14	RB.4		TXR.4	R1.4	TXR.4	SZ1.4	BR.4	GRD	R.9
304	40	TC.4		PXT.4	E.4	PXT.4	S.4	LT.4	GRD	T.10
204	15	RC.4		PXR.4	M.4	PXR.4	S1.4	LR.4		R.10
305	41	TA.5	T.5		T.5	T.5	T.5	T.5	LBACK1	T.11
205	16	RA.5	R.5		R.5	R.5	R.5	R.5	LBACK2	R.11
306	42	TB.5		TXT.5	T1.5	TXT.5	SZ.5	BT.5	GRD	
206	17	RB.5		TXR.5	R1.5	TXR.5	SZ1.5	BR.5	GRD	
307	43	TC.5		PXT.5	E.5	PXT.5	S.5	LT.5	GRD	
207	18	RC.5		PXR.5	M.5	PXR.5	S1.5	LR.5	GRD	
308	44	TA.6	T.6		T.6	T.6	T.6	T.6	LO	
208	19	RA.6	R.6		R.6	R.6	R.6	R.6	LO*	
309	45	TB.6		TXT.6	T1.6	TXT.6	SZ.6	BT.6	GRD	
209	20	RB.6		TXR.6	R1.6	TXR.6	SZ1.6	BR.6	GRD	
310	46	TC.6		PXT.6	E.6	PXT.6	S.6	LT.6	GRD	T.12
210	21	RC.6		PXR.6	M.6	PXR.6	S1.6	LR.6		R.12
311	47	TA.7	T.7		T.7	T.7	T.7	T.7	LI*	T.13
211	22	RA.7	R.7		R.7	R.7	R.7	R.7	LI	R.13
312	48	TB.7		TXT.7	T1.7	TXT.7	SZ.7	BT.7	GRD	T.14
212	23	RB.7		TXR.7	R1.7	TXR.7	SZ1.7	BR.7	GRD	R.14
313	49	TC.7		PXT.7	E.7	PXT.7	S.7	LT.7	+5	T.15
213	24	RC.7		PXR.7	M.7	PXR.7	S1.7	LR.7	+5	R.15
300	50	GRD	GRD	GRD	GRD	GRD	GRD	GRD	GRD	GRD
200	25	GRD	GRD	GRD	GRD	GRD	GRD	GRD	GRD	GRD

TN746B Lead Designations

Pin	Color	Desig.	Pin	Color	Desig.
26	W-BL	T1	01	BL-W	R1
27	W-O	T2	02	O-W	R2
28	W-G	T3	03	G-W	R3
29	W-BR	T4	04	BR-W	R4
30	W-S		05	S-W	
31	R-BL		06	BL-R	
32	R-O		07	O-R	
33	R-G		08	G-R	
34	R-BR	T5	09	BR-R	R5
35	R-S	T6	10	S-R	R6
36	BK-BL	T7	11	BL-BK	R7
37	BK-O	T8	12	O-BK	R8
38	BK-G	T9	13	G-BK	R9
39	BK-BR	T10	14	BR-BK	R10
40	BK-S	T11	15	S-BK	R11
41	Y-BL	T12	16	BL-Y	R12
42	Y-O		17	O-Y	
43	Y-G		18	G-Y	
44	Y-BR		19	BR-Y	
45	Y-S		20	S-Y	
46	V-BL	T13	21	BL-V	R13
47	V-O	T14	22	O-V	R14
48	V-G	T15	23	G-V	R15
49	V-BR	T16	24	BR-V	R16
50	V-S	GRD	25	S-V	GRD

DS1 Interface Cable H600-307 (and C6C)

Connects to TN464E/F

50-Pin			15-Pin		
Pin	Color	Desig.	Pin	Color	Desig.
02	W-BL				
03	BL				
47	W-G	LI*	11	W-G	LI*
22	G	LI	03	G	LI
48	W-BR	LO	09	W-BR	LO
23	BR	LO*	01	BR	LO*
49	W-S	LOOP2			
24	S	LOOP1			
All other pins empty.					

16-Port, Two-Wire DCP Lead Designations
TN2181, TN2177

Pin	Color	Desig.	Pin	Color	Desig.
26	W-BL	T1	01	BL-W	R1
27	W-O	T2	02	O-W	R2
28	W-G	T3	03	G-W	R3
29	W-BR	T4	04	BR-W	R4
30	W-S		05	S-W	
31	R-BL		06	BL-R	
32	R-O		07	O-R	
33	R-G		08	G-R	
34	R-BR	T5	09	BR-R	R5
35	R-S	T6	10	S-R	R6
36	BK-BL	T7	11	BL-BK	R7
37	BK-O	T8	12	O-BK	R8
38	BK-G	T9	13	G-BK	R9
39	BK-BR	T10	14	BR-BK	R10
40	BK-S	T11	15	S-BK	R11
41	Y-BL	T12	16	BL-Y	R12
42	Y-O		17	O-Y	
43	Y-G		18	G-Y	
44	Y-BR		19	BR-Y	
45	Y-S		20	S-Y	
46	V-BL	T13	21	BL-V	R13
47	V-O	T14	22	O-V	R14
48	V-G	T15	23	G-V	R15
49	V-BR	T16	24	BR-V	R16
50	V-S		25	S-V	

TN2136 Lead Designations

Pin	Color	Desig.	Pin	Color	Desig.
26	W-BL	TXT1	01	BL-W	TXR1
27	W-O		02	O-W	
28	W-G		03	G-W	
29	W-BR	TXT2	04	BR-W	TXR2
30	W-S		05	S-W	
31	R-BL		06	BL-R	
32	R-O	TXT3	07	O-R	TXR3
33	R-G		08	G-R	
34	R-BR		09	BR-R	
35	R-S	TXT4	10	S-R	TXR4
36	BK-BL		11	BL-BK	
37	BK-O		12	O-BK	
38	BK-G	TXT5	13	G-BK	TXR5
39	BK-BR		14	BR-BK	
40	BK-S		15	S-BK	
41	Y-BL	TXT6	16	BL-Y	TXR6
42	Y-O		17	O-Y	
43	Y-G		18	G-Y	
44	Y-BR	TXT7	19	BR-Y	TXR7
45	Y-S		20	S-Y	
46	V-BL		21	BL-V	
47	V-O	TXT8	22	O-V	TXR8
48	V-G		23	G-V	
49	V-BR		24	BR-V	
50	V-S		25	S-V	

Approved Grounds

G

An approved ground is the closest acceptable medium for grounding the building entrance protector, entrance cable shield, or single-point ground of electronic 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.

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 in diameter, in direct contact with the earth for at least 10 feet. 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 (solid rod) or 3/4 inch (conduit or pipe) electrode driven to a minimum depth of 8 feet
- Plate electrodes — Must have a minimum of 2 square feet of metallic surface exposed to the exterior soil

Concrete Encased Ground — An electrode encased by at least 2 inches 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 of one or more steel reinforcing bars or rods 1/2 inch in diameter, or at least 20 feet of

bare, solid copper, No. 4 AWG wire.

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

APPROVED FLOOR GROUNDS

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

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



WARNING:

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

Abbreviations

A

AAR

Automatic Alternate Routing

ACD

Automatic Call Distribution

ADU

Asynchronous Data Unit

AIM

Asynchronous Interface Module

AP

Applications Processor

ARS

Automatic Route Selection

ASAI

Adjunct-Switch Application Interface

ATMS

Automatic Transmission Measurement System

AUDIX

Audio Information Exchange

B

BCMS

Basic Call Management System

BCT

Business Communications Terminal

BRI

Basic Rate Interface

C

CAAVT

Call Answer From any Voice Terminal

CAS

Centralized Attendant Service

CBC

Coupled Bonding Conductor

CCSA

Common Control Switching Arrangement

CDRU

Call Detail Recording Unit

CI

Clock Input

CMS

Call Management System

CO

Central Office

COR

Class of Restriction

COS

Class of Service

CPE

Customer-Provided Equipment

CSD

Customer Service Drawing

CSO

Customer Service Order

CSSO

Customer Service Support Organization

CSU

Channel Service Unit

D

DCE

Data Communications Equipment

DCP

Digital Communications Protocol

DCS

Distributed Communications System

DDC

Direct Department Calling

DID

Direct Inward Dialing

DIW

D-inside Wire

DLP

Data Link Protector

DMI

Digital Multiplexed Interface

DSI

Digital Service Interface

DTDM

Digital Terminal Data Module

DTE

Data Terminal Equipment

DXS

Direct Extension Selection

E

EAS

Expert Agent Selection

ECS

Evolutionary Control System

EI

Expansion Interface

EIA

Electronics Industry Association

Abbreviations

EMI

Electromagnetic Interference

EPN

Expansion Port Network

EPSCS

Enhanced Private Switched Communications Service

ESF

Extended Superframe

ETN

Electronic Tandem Network

ETP

Emergency Transfer Panel

F

FAST

Field Assistance and Support Team

FSO

Field Services Organization

FX

Foreign Exchange

H

HGT

Hardware Group Tests

I

IC

Intercabinet

INADS

Initialization and Administration System

ISDN

Integrated Services Digital Network

ISN

Information System Network

L

LAT

Local Administration Terminal

LDN

Listed Directory Number

LIU

Lightguide Interconnection Units

LMT

Local Maintenance Terminal

LSU

Local Storage Unit

M

MBO

Marketing Branch Office

MCC

Multi-Carrier Cabinet

MPDM

Modular Processor Data Modules

N

NCSO

National Customer Support Organization

O

OSS

Operations Support System

P

PDM

Processor Data Module

PE

Processing Element

PLS

Premises lightwave system

PMS

Property Management System

PPN

Processor port network

PTC

Positive Temperature Coefficient (thermistor)

R

RAM

Random Access Memory

RHNPA

Remote Home Numbering Plan Area Code

RMSS

Removable Mass Storage Subsystem

RNX

Private Network Office Code

ROM

Read Only Memory

S

SAT

System Administration Terminal

SCC

Single-Carrier Cabinet

SMDR

Station Message Detail Recording

Abbreviations

SNI

Switch Node Interface

SPGT

Single Point Ground Terminal

SPID

Service Profile Identifier

SSI

Standard Serial Interface

STARLAN

Star-based Local Area Network

T

TC

Technical Consultant

TDM

Time-Division Multiplex

U

UC

Universal Coupler

UCD

Uniform Call Distribution

UL

Underwriters Laboratories

UPS

Uninterruptible Power Supply

W

WATS

Wide Area Telecommunications Service

Glossary

800 Service

A service that allows incoming calls from a certain area or areas to an assigned number for a flat-rate charge based on usage.

A

Access Code

A 1-, 2-, or 3-digit dial code used to activate or cancel a feature or access an outgoing trunk. The star (*) and pound (#) can be used as the first digit of an access code.

Access Endpoint

Either a non-signaling channel on a DS1 interface or a non-signaling port on an Analog Tie Trunk circuit pack that is assigned a unique extension.

Access Tie Trunks

Tie trunks used to handle normal ETN calls between Main and Tandem switches.

Adjunct-Switch Application Interface (ASAI)

An AT&T recommendation for interfacing adjuncts and communications systems, based on the CCITT Q.932 specification for layer 3.

Administer

To access and change the parameters associated with the services or features of the system.

Answer-Back Code

A code dialed to retrieve a parked call.

Appearance

See Call Appearance.

Applications Processor

A minicomputer used to support several user-controlled applications such as traffic analysis and electronic documentation.

Asynchronous Data Transmission

A scheme for transmitting data where each character is preceded by a start bit and followed by a stop bit, thus permitting data elements to occur at irregular intervals. This type transmission is advantageous when transmission is not regular (characters typed at a keyboard).

Asynchronous Data Unit (ADU)

A data communications equipment (DCE) type device that allows direct connection between RS-232C equipment and the system digital switch.

Attendant

The operator of the console.

Attendant Console

An electronic call-handling position with pushbutton control. Used by attendants to answer and place calls and to manage and monitor some of the system operations.

Audio Information Exchange (AUDIX)

A unit that provides voice mail service to users.

Automatic Restoration

A service that restores disrupted connections between access endpoints (non-signaling trunks) and data endpoints (devices that connect the switch to data terminal/communications equipment). This restoration is achieved within seconds of a service disruption so that critical data applications can remain operational.

Automatic Trunk

A trunk that does not require the sending or receiving of digits. The destination is predetermined. A request for service on the trunk (called a seizure) is sufficient to route the call. The normal destination of an automatic trunk is the system attendant group.

B

Barrier Code

A security code used with the Remote Access feature to prevent unauthorized access to the system.

Bit (Binary Digit)

One unit of information in binary notation (having two possible states or values, zero or one).

Bridged Appearance

A call appearance on a voice terminal that matches a call appearance on another voice terminal for the duration of a call.

Bridge (Bridging)

The appearance of a voice terminal's extension at one or more other voice terminals.

Buffer

A circuit or component that isolates one electrical circuit from another. Typically, a buffer holds data from one circuit or process until another circuit or process is ready to accept the data.

Bus

A multi-conductor electrical path used to transfer information over a common connection from any of several sources to any of several destinations.

Business Communications Terminal

An advanced series of semi-intelligent terminals.

Bus, Time Division Multiplex

See Time Division Multiplex Bus.

Bypass Tie Trunks

One-way, outgoing tie trunks from a Tandem switch to a Main switch in an ETN. These trunks, provided in limited quantities, are used as a “last-choice” route when all trunks to another Tandem switch are busy. Bypass tie trunks are used only if all applicable intertandem trunks are busy.

Byte

A sequence of bits, 8 bits long, that is usually shorter than a word. A word is 16 bits long.

C

Call Appearance, Attendant Console

Six buttons, labeled a through f, used to originate, receive, and hold calls. Each button has two associated lamps to show the status of the call appearance.

Call Appearance, Voice Terminal

A button labeled with an extension number used to place outgoing calls, receive incoming calls, or hold calls. Two lamps next to the button show the status of the call appearance or status of the call.

Callback Call

A call that is automatically returned to a voice terminal user who activated the Automatic Callback or Ringback Queuing feature.

Call Management System (CMS)

An adjunct processor that collects data from an ACD and generates reports to be stored or displayed concerning status of agents, splits, and trunks.

Call Vector

A set of up to 15 vector commands to be performed for an incoming or internal call.

Call Waiting Ringback Tone

A low-pitched tone identical to the ringback tone except the tone decreases the last 0.2 second. This tone notifies the attendant that the Attendant Call Waiting feature has been activated and that the called user is aware of

the waiting call.

Call Work Code

A number, up to 16 digits, entered by ACD agents to record the occurrence of customer-defined events (such as account codes, social security numbers, or phone numbers) on ACD calls.

Central Office

The location housing telephone switching equipment that provides local telephone service and access to toll facilities for long-distance calling.

Central Office Codes

The first three digits of a 7-digit public network telephone number. These codes are numbered from 200 through 999.

Central Office Trunk

A telecommunications channel that provides access from the system to the public network through the local central office.

Channel

A communications path for transmitting voice and data.

Class of Restriction (COR)

A number (0 through 63) that specifies the restrictions assigned to voice terminals, voice terminal groups, data modules, and trunk groups.

Class of Service (COS)

A number (0 through 15) that specifies if voice terminal users can activate the Automatic Callback, Call Forwarding—All Calls, Data Privacy, or Priority Calling features.

Common Control Switching Arrangement (CCSA)

A private telecommunications network using dedicated trunks and a shared switching for interconnecting company locations.

Confirmation Tone

Three short bursts of tone followed by silence; indicates that the feature activated, deactivated, or canceled has been accepted.

Console

See Attendant Console.

Coverage Answer Group

A group of up to eight voice terminals that ring simultaneously when a call is redirected to it by Call Coverage. Any one of the group can answer the call.

Coverage Call

A call that is automatically redirected from the called party's extension number to an alternate answering position when certain coverage criteria are met.

Coverage Path

The order in which calls are redirected to alternate answering positions.

Coverage Point

The attendant positions (as a group), Direct Department Calling group, Uniform Call Distribution group, Coverage Answer Group, a voice terminal extension, or Message Center Hunt Group designated as an alternate answering position in a coverage path.

Covering User

The person at an alternate answering position who answers a coverage call.

D

Data Channel

A communications path between two points used to transmit digital signals.

Data Communications Equipment (DCE)

The equipment on the network side of a communication link that provides all the functions required to make the binary serial data from the source or transmitter compatible with the communications channel.

Data Terminal Equipment (DTE)

Equipment comprising the source or link of data, or both, that also provides communication control functions (protocol). DTE is any piece of equipment at which a communications path begins or ends.

Delay-Dial Trunk

After a request for service (called a seizure) is detected on an incoming trunk, the system sends a momentary signal followed by a steady tone over the trunk. This informs the calling party that dialing can start. This type of trunk allows dialing directly into the system. That is, the digits are received as they are dialed.

Designated Voice Terminal

The specific voice terminal to which calls, originally directed to a certain extension number, are redirected. Commonly used to mean the "forwarded-to" terminal when Call Forwarding All Calls is active.

Dial Repeating Tie Trunk

A telecommunications channel between two private switching systems. The number dialed is repeated or dialed-in at the distant end.

Digital Communications Protocol (DCP)

Defines the capability for providing simultaneous voice and data transmission over the same channel.

Digital Data Endpoints

In DEFINITY Generic 1, digital data endpoints include the following: 510D Personal Terminal or 515-Type Business Communications Terminal 7404D Terminals 7406D or 7407D Equipped With Optional Data Module Base Asynchronous Data Units Digital Terminal Data Modules (Modular) Processor Data Modules (Modular) Trunk Data Modules 3270 Data Modules Internal Data Channels.

Digital Multiplexed Interface (DMI)

Specifies the remote interface requirements for multiplexed data communications between a host computer and a private switching system.

Digital Terminal Data Module (DTDM)

An adjunct to Model 7403D or 7405D voice terminals. Provides the required interface between the system and a data terminal such as a 513 Business Communications Terminal.

Digital Trunk

A circuit in a telecommunications channel designed to handle digital voice and data.

Digit Conversion

A process used to convert specific dialed numbers into other dialed numbers. ARS uses Digit Conversion to convert public network numbers (ARS) to private network numbers (AAR) in order to save toll charges. AAR uses Digit Conversion to convert private network numbers (ARS) to other private or public network numbers (AAR).

Direct Extension Selection (DXS)

An option at the attendant console that allows an attendant direct access to voice terminals by pressing a Group Select button and a DXS button.

Distributed Communications System (DCS)

A network of two or more switches, each with its terminals and trunks, configured to function as a single large system.

E

Electronic Tandem Network (ETN)

A special tandem tie trunk network that has automatic call routing capabilities based on the number dialed and most preferred route available at the time the call is placed. Each switch in the network is assigned a unique private network office code (RNX) and each voice terminal is assigned a unique extension number.

End-to-End Signaling

The transmission of touch-tone signals generated by dialing from a voice terminal user to remote computer equipment. A connection must first be established over an outgoing trunk from the calling party to the computer equipment. Then additional digits can be dialed to transmit information to be processed by the computer equipment.

Enhanced Private Switched Communications Service (EPSCS)

A private telecommunications network that provides advanced voice and data telecommunications services to companies with many locations.

Extension Number

A 1- to 5-digit number assigned to each voice terminal, certain system groups, data modules, 510D Personal Terminal, or 515 Business Communications Terminal within the system. A 1- or a 5-digit extension number is available for Version 2 and Version 3.

External Call

A connection between a system user and a party on the public telephone network or on a tie trunk.

F

Facility

A general term used for the telecommunications transmission pathway and associated equipment.

Feature

A specifically defined function or service provided by the system.

Feature Button

A labeled button on a voice terminal or attendant console designating a specific feature.

Foreign Exchange Trunk

A telecommunications channel that directly connects the system to a central office other than its local central office.

Foreign Exchange (FX)

A central office other than the one providing local access to the public telephone network.

Foreign Numbering Plan Area Code

An area code other than the local area code. The foreign area code must be dialed to call outside the local geographical area.

G

Ground-Start Trunk

On outgoing calls, the system transmits a request for services to the distant switching system by grounding the trunk ring lead. When the distant system is ready to receive the digits of the called number, that system grounds the trunk tip lead. When the system detects this ground, the digits are sent. (Tip and ring are common nomenclature to differentiate between ground-start trunk leads.) On incoming calls, detection of ground on the ring lead is sufficient to cause the call to route to a predetermined destination, normally the system attendant group. No digits are received.

H

Handshaking Logic

A format used to initiate a data connection between two data module devices.

Home Numbering Plan Area Code

The local area code. The area code does not have to be dialed to call numbers within the local geographical area.

I

Immediate-Start Tie Trunk

After establishing a connection with the distant switching system for an outgoing call, the system waits a nominal 65 milliseconds before sending the digits of the called number. This allows time for the distant system to prepare to receive the digits. Similarly, on an incoming

call, the system has less than 65 milliseconds to prepare to receive the digits.

Information Exchange

The exchange of data between users of two different systems (DEFINITY G1 and host computer) over a local area network.

Intercept Tone

An alternating high and low tone; indicates a dialing error or denial of the service requested.

Interface

A common boundary between two systems or pieces of equipment.

Internal Call

A connection between two users within the system.

In-Use Lamp

A red lamp on a multi-appearance voice terminal that lights to show which call appearance will be selected when the handset is lifted or which call appearance is active when a user is off-hook.

ISDN Gateway

An adjunct network that forwards information from the switch to a host for data screen delivery to agents in an ACD split.

L

Link

A transmitter-receiver channel or system that connects two locations.

Loop-Start Trunk

After establishing a connection with the distant switching system for an outgoing call, the system waits for a signal on the loop formed by the trunk leads before sending the digits of the called number. On incoming calls, the received request for service is sufficient to cause the call to route to a predetermined destination, normally the system attendant group. No digits are received.

M

Main/Satellite/Tributary

A Main switch provides: interconnection, via tie trunks, with one or more subtending switches, called Satellites; all attendant positions for the Main/Satellite configuration; and, access to and from the public network. To a user outside the complex, a Main/Satellite configuration appears as a single switch, with a single Listed Directory Number (LDN). A Tributary is a switch, connected to the Main via tie trunks, but which has its own attendant position(s) and its own LDN.

Message Center

An answering service for calls that might otherwise go unanswered; an agent accepts and stores messages for later retrieval. (Requires an Applications Processor.)

Message Center Agent

A member of the Message Center Hunt Group who takes and retrieves messages for voice terminal users.

Modem Pooling

Provides shared-use conversion resources that eliminate the need for a dedicated modem when a data module accesses, or is accessed by, an analog line or trunk.

Modular Processor Data Module

See Processor Data Module.

Modular Trunk Data Module

See Trunk Data Module.

Multiplexer

A device for simultaneous transmission of two or more signals over a common transmission medium.

Multi-Appearance Voice Terminal

A terminal equipped with several call appearance buttons for the same extension number. Allows the user to handle more than one call, on that same extension number, at the same time.

N

Network

An arrangement of inter and/or intra location circuits designed to perform specific functions.

P

Paging Trunk

A telecommunications channel used to access an amplifier for loudspeaker paging.

Pickup Group

A group of individuals authorized to answer any call directed to an extension number within the group.

Port

A designation of the location of a circuit that provides an interface between the system and lines and/or trunks.

Principal (User)

In terms of Call Coverage, a person for whom a call was originally intended.

Private Network

A network used exclusively for handling the telecommunications needs of a particular customer.

Private Network Office Code (RNX)

The first three digits of a 7-digit private network number. These codes are numbered 220 through 999, excluding any codes that have a 0 or 1 as the second digit.

Processor Data Module (PDM)

Provides the required interface between the system and an EIA computer or data terminal.

Property Management System (PMS)

A stand-alone computer which Lodging and Health Services organizations use for services such as reservations, housekeeping, billing, etc.

Protocol

A set of conventions or rules governing the format and timing of message exchanges to control data movement and correction of errors.

Public Network

The network that can be openly accessed by all customers for local or long-distance calling.

Q

Queue

An ordered sequence of calls waiting to be processed.

Queuing

The process of holding calls in order of their arrival to await connection to an attendant, to an answering group, or to an idle trunk. Calls are automatically connected in first-in, first-out sequence.

R

Random Access Memory (RAM)

A storage arrangement whereby information can be retrieved at a speed independent of the location of the stored information.

Read Only Memory (ROM)

A storage arrangement primarily for information retrieval applications.

Recall Dial Tone

Three short bursts of tone followed by steady dial tone; indicates the system has completed some action (such as holding a call) and is ready to accept dialing.

Redirection Criteria

The information administered for each voice terminal's coverage path that determines when an incoming call is redirected to coverage.

Remote Home Numbering Plan Area Code (RHNPA)

A foreign numbering plan area code that is treated as a home area code by the Automatic Route Selection feature. Calls can be allowed or denied based on the area code and the dialed central office code rather than just the area code. If the call is allowed, the Automatic Route Selection pattern used for the call is determined by these six digits.

Removable Mass Storage Subsystem (RMSS)

A tape storage device that stores the software information for the system.

Reorder Tone

A fast-busy tone repeated 120 times a minute; indicates that at least one of the facilities, such as a trunk or a digit transmitter, required for the call was not available at the time the call was placed.

S

Service Profile Identifier (SPID)

A unique number of up to 10 digits, assigned to an Integrated Services Digital Network (ISDN) terminal, that will be used for terminal identification during level-3 initialization.

Single-Line Voice Terminals

Voice terminals served by a single-line tip and ring circuit (Models 500, 2500, 7101A, 7103A).

Software

A set of computer programs that accomplish one or more tasks.

Split

A condition whereby a caller is temporarily separated from a connection with the attendant. This split condition automatically occurs when the attendant, active on a call, presses the Start button.

Standard Serial Interface (SSI)

A communications protocol developed by AT&T Tele-type Corporation for use with the 500 Business Communications Terminals and the 400-series printers.

Status Lamp

A green lamp that shows the status of a call appearance or a feature button by the state of the lamp (lighted, flashing, fluttering, broken flutter, or dark).

Stroke Counts

Method used by ACD agents to record up to nine customer-defined events on a per call basis when the Call Management System (CMS) is active.

Switchhook

The button(s) on a voice terminal located under the receiver.

Synchronous Data Transmission

A scheme for sending and receiving data, where data elements may occur only at regular specified times. Sending and receiving devices must operate in step with each other.

System Manager

A person responsible for specifying and administering features and services for the system.

System Reload

A process that allows stored data to be written from a tape into the system memory (normally after a power outage).

T

Tandem Switch

A switch within an ETN that provides the logic to determine the best route for a network call, possibly modifies the digits outpulsed, and allows or denies certain calls to certain users.

Tandem Through

The switched connection of an incoming trunk to an outgoing trunk without human intervention.

Tandem Tie Trunk Network

A private network that interconnects several customer switching systems by dial repeating tie trunks. Access to the various systems is dictated by codes that must be individually dialed for each system.

Tie Trunk

A telecommunications channel that directly connects two private switching systems.

Time Division Multiplex Bus

A special bus that is time shared by preallocating short time slots to each transmitter on a regular basis. In a PBX, all port circuits are connected to the time division multiplex bus permitting any port to send a signal to any other port.

Tone Ringer

A device with a speaker, used in electronic voice terminals to alert the user.

Trunk

A telecommunications channel between two switching systems.

Trunk Data Module

Provides the required interface between the system and a data set (modem) or data service unit connected to a private or switched data line.

Trunk Group

Telecommunications channels assigned as a group for certain functions.

U

Uniform Dial Plan

A feature that allows a unique 4- or 5-digit number assignment for each terminal in a multi-switch configuration, such as a Distributed Communications System (DCS) or Main/Satellite/Tributary configuration.

V

Voice Terminal

A single-line or multi-appearance voice instrument (telephone).

W

Wide Area Telecommunications Service (WATS)

A service that allows calls to a certain area or areas for a flat-rate charge based on expected usage.

Wink-Start Tie Trunk

After establishing a connection with a distant switching system for an outgoing call, the system waits for a momentary signal (wink) before sending the digits of the called number. Similarly, on an incoming call, the system sends the wink signal when ready to receive digits.

Write Operation

The process of putting information onto a storage medium such as magnetic tape.