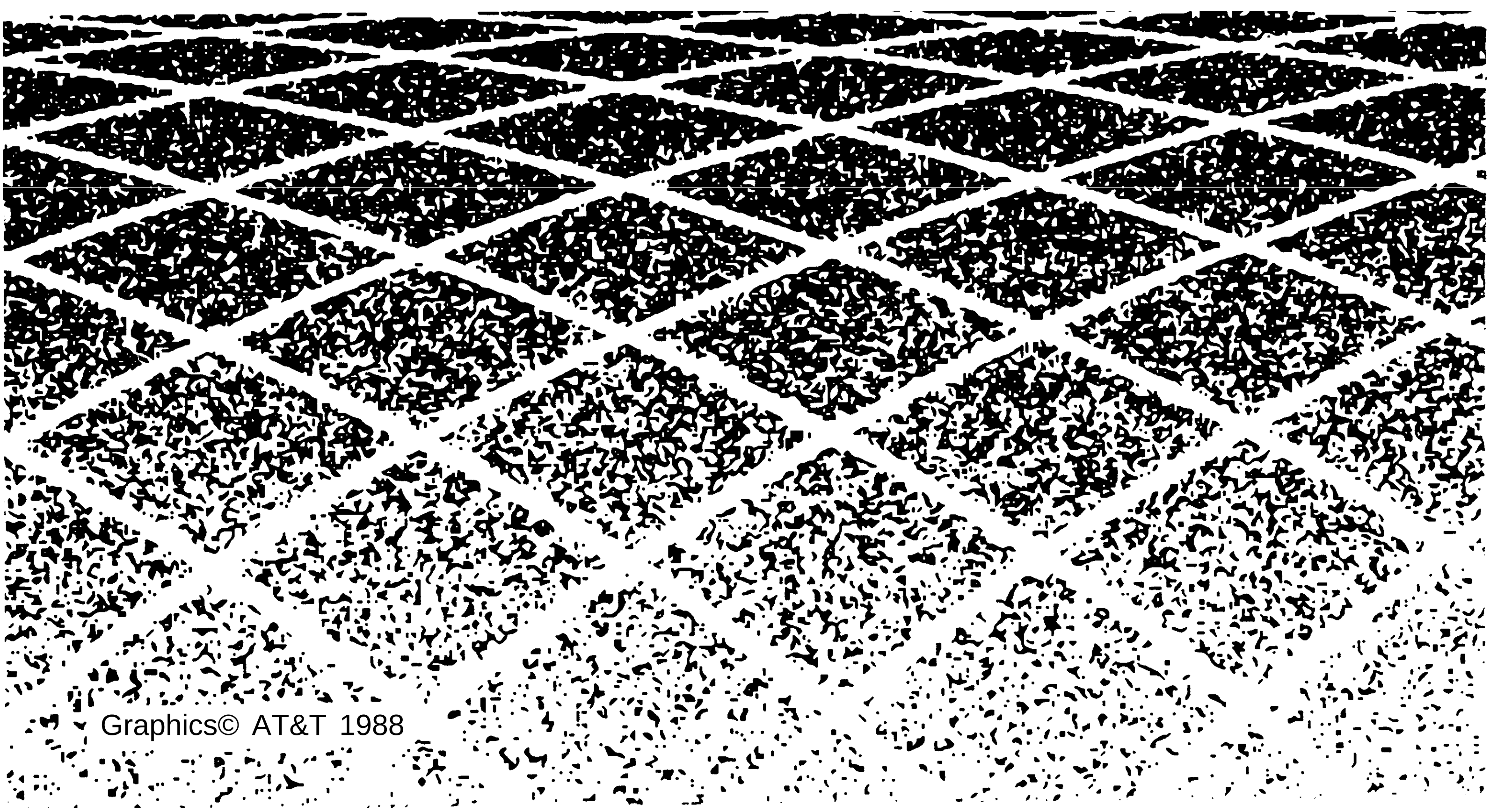
AT&T

555-204-111
Issue 2, January 1992

DEFINITY® Communications System Generic 1 & Generic 3i

Wiring



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CHAPTER 1. INTRODUCTION

General

This guide is one of the three documents (Figure 1-1) required to install a DEFINITY® Communications System Generic 1 and Generic 3i. The following conventions are used to describe the systems referred to in this guide.

- DEFINITY Communications System Generic 1 and Generic 3i multi-carrier cabinets will be referred to as G1 and G3i multi-carrier cabinets.
- DEFINITY Communications System Generic 1 and Generic 3i single-carrier cabinets will be referred to as a G1 and G3i single-carrier cabinets.

Note: DEFINITY is a registered trademark of AT&T. In this guide DEFINITY Communications System Generic 1 is abbreviated to G1 and Generic 3i is abbreviated to G3i. The terms G1 and G3i are used when discussing both the multi-carrier and single-carrier cabinet switches.

This guide describes the hardware, job planning, equipment ordering, and installation information 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).

All information in this guide is compatible with both multi-carrier and single-carrier cabinet switches, except when a statement is made that a topic is strictly for a specific switch.

This issue replaces all previous issues of this manual. Reasons for reissue include the following:

- Add the information included in Addendum 1 dated October 1990.
- Add connections for Stratum 3 External Clock.

The other documents required for the installation of the G1 and G3i switches are as follows:

DEFINITY® Communications System Generic 1 and Generic 3i—Installation and Test, 555-204-104 contains the information required to install and test a G1 or G3i switch and attendant console. For continuity purposes, the attendant console wiring is covered in this guide.

DEFINITY® Communications System and System 75, and System 85—Terminals and Adjuncts, Installation and Tests, 555-015-104 contains the information required to install and test telephones/voice terminals and their associated adjuncts.

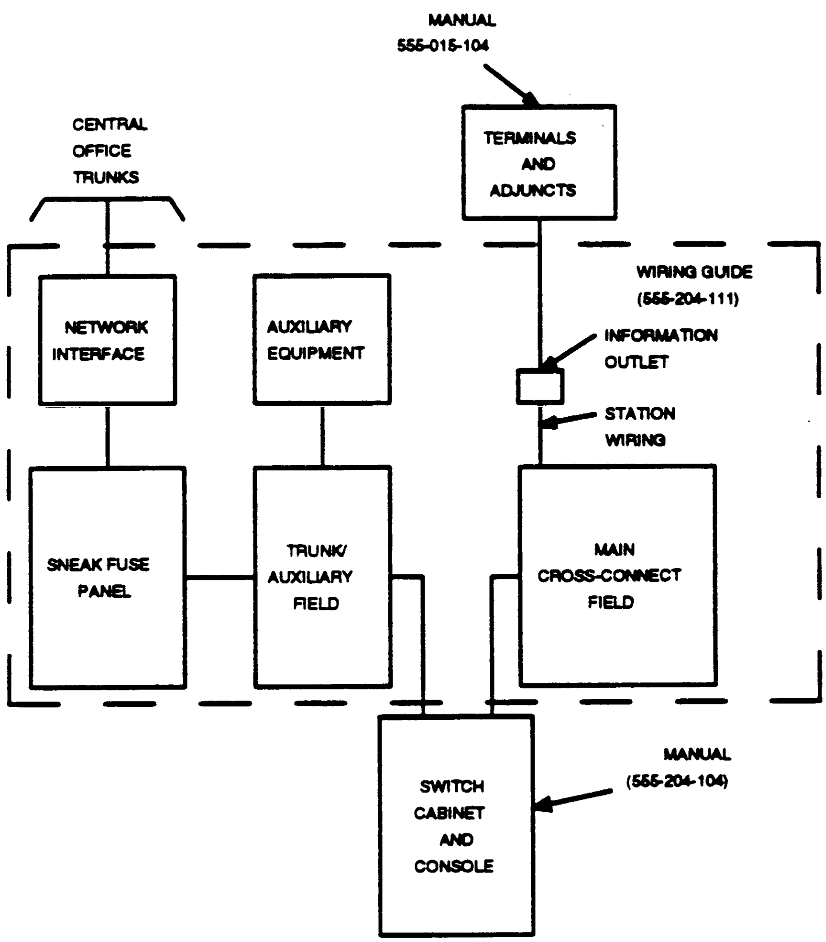


FIGURE 1-1. Documentation Block Diagram

Organization

This guide is organized into eight chapters:

- **Chapter 1: Introduction** presents an overview of the system Uniform Wiring Plan, general guidelines on hardware selection, and organization of this manual.
- **Chapter 2: Hardware (66- and 110-Type)** describes the 66- and 110-type connecting blocks and associated hardware, job planning, equipment ordering codes, and how to install the hardware.
- **Chapter 3: Equipment Room Design** describes hardware application in the equipment room, labeling procedures, and grounding techniques.
- **Chapter 4: Fiber-Optic Hardware** describes the fiber-optic cross-connect hardware and the connections between the processor port network (PPN) and the expansion port network (EPN).
- **Chapter 5: Station Wiring** describes station and miscellaneous wiring, adjunct powering, and administration and installation of patch cords and jumper wires.
- **Chapter 6: Auxiliary Equipment** provides connection information for the various types of auxiliary equipment that can be used with the switch.
- **Chapter 7: References** contains a list of related documents.
- **Chapter 8: Abbreviations and Acronyms** contains definitions of the abbreviations and acronyms used in DEFINITY documentation.
- **Glossary:** contains a brief description of some of the terms used in this manual.
- **Index:** contains an index.

Use of This Manual

This manual provides information for planning, designing, and installing a cost-effective wiring installation that allows moves, changes, and additions to be made quickly and easily. To make the best use of this manual, take the time to read it thoroughly and become familiar with its contents and organization. For quick access to information needed to answer most questions, refer to the table of contents and locate the specific item in question.

To answer questions requiring more information than this manual contains, consult the documents listed previously in this introduction section. If you need additional help, contact technical support for AT&T SYSTIMAX® Premises Distribution System (PDS).

For further technical assistance, the recommended channel for AT&T System Technicians is as follows:

1. Contact your Field Assistance and Support Team (FAST).
2. If a satisfactory answer is not obtained from the FAST center, contact your supervisor.
3. Your supervisor should contact the regional staff, if necessary.

Equipment

Most of the items specified in this guide are available through the local AT&T Marketing Branch Office (MBO). However, some common use hardware items may have to be obtained from other sources.

System Wiring

System wiring plays a significant role in customers' information systems. Technological innovations enable both voice and data transmission to be provided through the system wiring. Also, the system wiring has been simplified by reducing the number of cable pairs required by voice terminals equipped with enhanced feature options.

This guide provides planning, ordering, and installation guidelines for a system Uniform Wiring Plan (Figures 1-2 and 1-3) using 110-type, 66-type, or fiber-optic hardware.

The switch ports for data and voice terminals require three pairs of wire per circuit. Voice terminal adjuncts require an additional pair for remote powering. To provide maximum flexibility for voice terminal changes, rearrangements, and powering, all data and voice terminal information outlets are wired with 4-pair cable. With proper administration, this allows any telephone/voice terminal to be located at any information outlet.

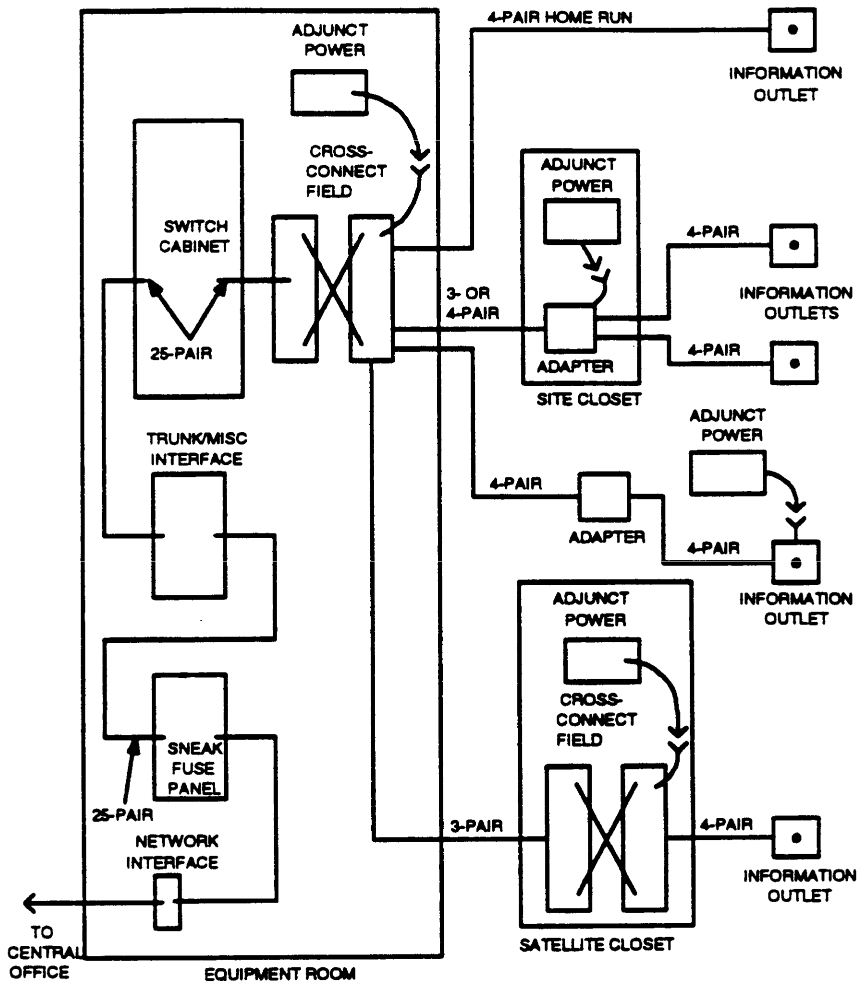


FIGURE 1-2. System Uniform Wiring Plan

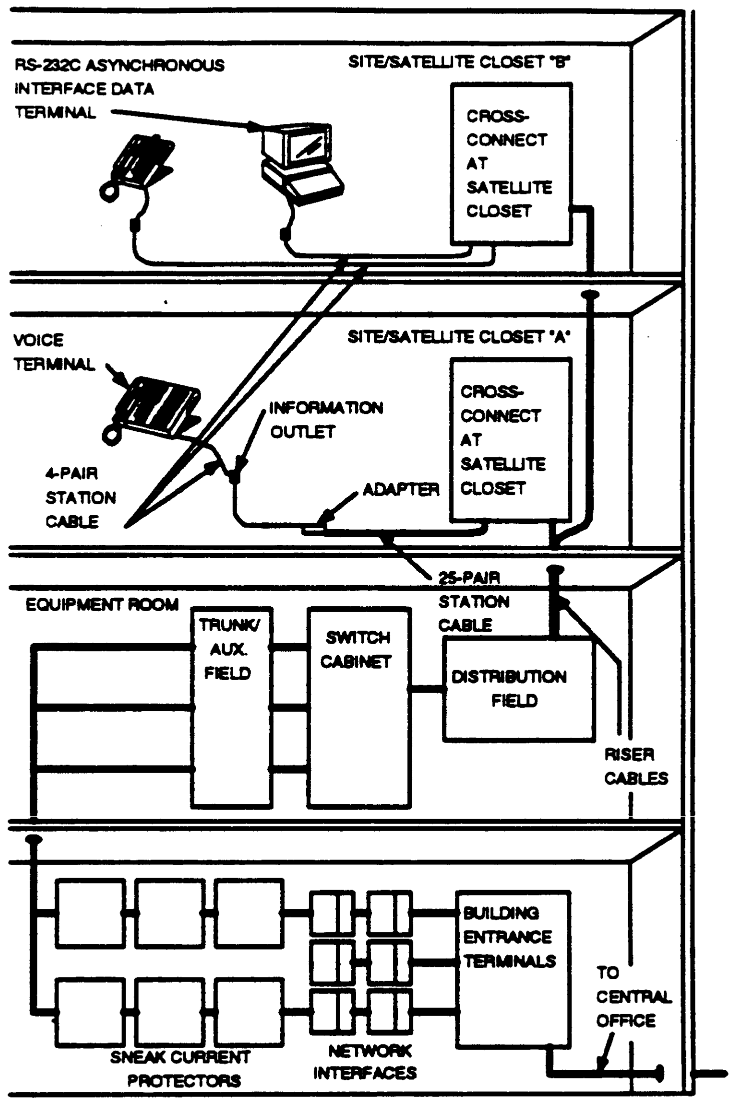


FIGURE 1-3. Sample Uniform Wiring Installation

Cross-Connect Hardware Selection

For new wiring installations, the following cross-connect hardware is available for use in the system. Each item lists certain considerations that should help to select the appropriate hardware.

1. 110P hardware
   - Patch cord design allows customer to administer cross-connections.
   - Requires some technical skill to administer cross-connections.
2. 110A hardware
   - Design does not permit customer participation in cross-connect administration—requires technically skilled personnel to administer cross-connections.
   - Hardware is less expensive than the patch cord systems, but installation and administrative costs are greater.
3. 66-type hardware
   - Design does not permit customer participation in cross-connect administration—requires technically skilled personnel to administer cross-connections.
   - Hardware is less expensive than the patch cord systems, but installation and administrative costs are greater.
4. Fiber-optic hardware
   - Two types of fiber-optic cross-connect hardware—optical cross-connects and optical interconnects
   - Optical cross-connects are made with fiber-optic jumpers.
   - Optical interconnects are made directly between two fiber-optic cables. No jumpers are used.

Obviously, the customer's interest and preference for administering cross-connections (because of likely lower *total annual costs,* as well as the capability to administer the cross-connections at the most convenient time) should be given primary consideration in recommending cross-connect hardware.

Figure 1-4 shows a block diagram of the equipment required to install a G1 or G3i switch. The sites shown in Figure 1-4 are physical locations (closets) for pass-through connections where adjunct power may be applied. The satellite is a physical location (closet) where cross-connect administration can take place and adjunct power may be applied.

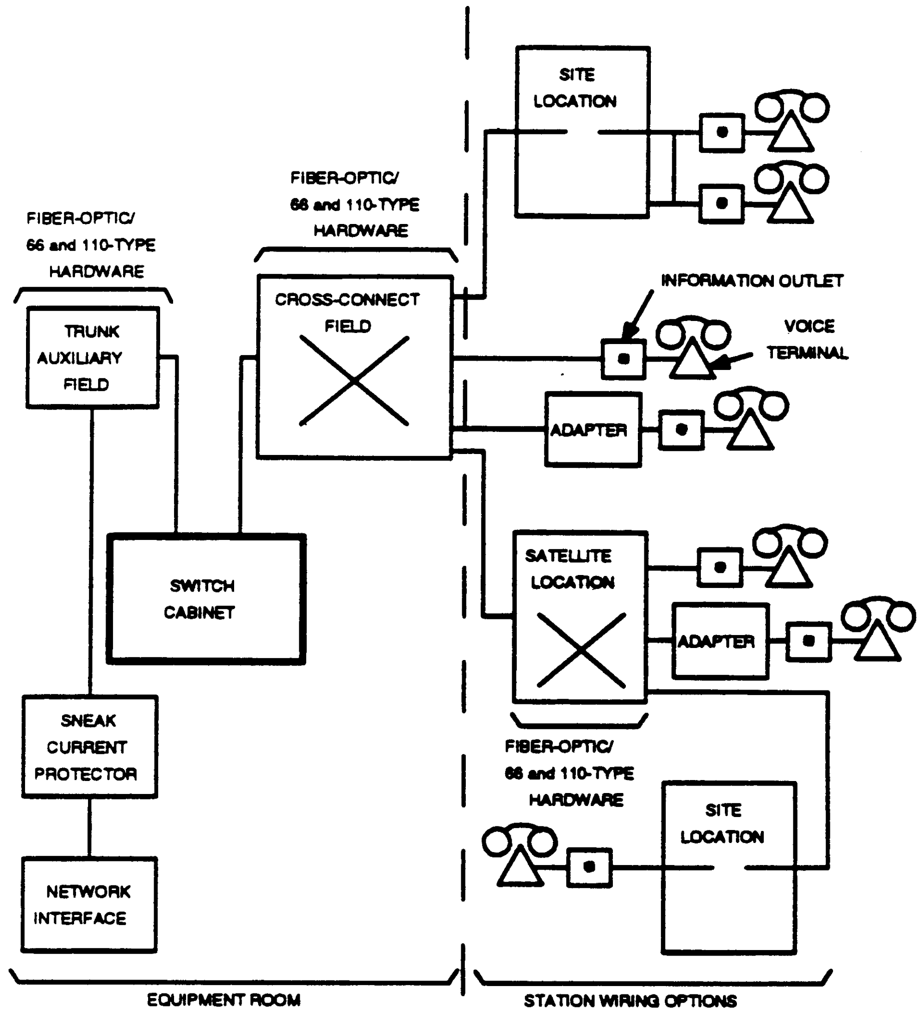


FIGURE 1-4. Block Diagram of G1 and G3i Multi-Carrier or Single-Carrier Cabinet Installation

Wiring Hardware Changes

All jobs engineered by SYSTIMAX PDS based on customer requirements and preferences **should not** be redesigned by the Field Services Organization (FSO) without approval by the SYSTIMAX PDS MDO. If changes are required, a change order must be issued to ensure correct billing.

Planning

The following information will help you design a uniform wiring plan with growth potential. The plan is simple, flexible, easy to administer, and reasonable in cost.

Job Aids

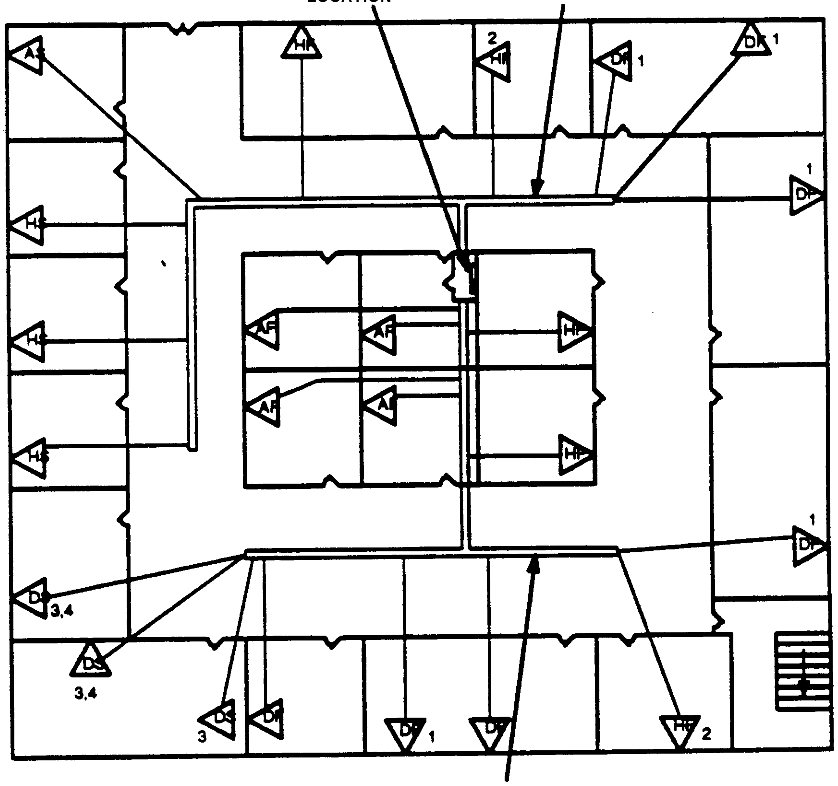
Blueprints (floor plans) are important when planning, designing, and installing station wiring. The floor plans (Figure 1-5) provide a complete view of all conduit and other cabling facilities in the building. These facilities should be considered when planning site or satellite locations and cabling.

Voice Terminals

The number of information outlets to be installed per voice terminal location is determined by customer requirments. It may be advantageous to install any additional information outlets that may be required for future growth or voice terminal rearrangements during the initial installation.

To begin designing the station wiring, show the following information on the floor plan(s):

- Location of each information outlet and associated telephone/voice terminal type if known (analog, hybrid, or digital).
- Any associated telephone/voice terminal adjuncts or modules and the required powering arrangements.



*AN OPTION TO THE CABLE DUCT SHOWN IS TO RUN CABLES
(PLENUM-APPROVED, IF APPROPRIATE OR REQUIRED)
ABOVE A DROP/FALSE CEILING.

△ • INFORMATION OUTLET LOCATION

A - ANALOG VOICE TERMINAL
H - HYBRID VOICE TERMINAL
D - DIGITAL VOICE TERMINAL
S - SURFACE MOUNTED INFORMATION OUTLET
F - FLUSH MOUNTED INFORMATION OUTLET

1 - SPEAKERPHONE
2 - AMPLIFIED HEADSET
3 - CALL COVERAGE MODULE
4 - FUNCTION KEY MODULE
5. DISPLAY MODULE

FIGURE 1-5. Sample Floor Plan With Telephone/Voice Terminal Locations Marked

Site or Satellite Closets

When determining the location of site or satellite closets, use the following information as a guide. Show the locations on the floor plan.

a. Keep the number of locations to a minimum.

b. Centrally locate the site or satellite closets among the information outlets to minimize station wiring distances.

c. Site or satellite closets must be easily accessible and contain enough alternate current (AC) power receptacles to serve the equipment that will be located there. Telephones/voice terminals equipped with adjuncts that require power can be remotely powered from:

   - a site or satellite location
   - from the main equipment room
   - information outlets

d. The distance between the power supply and the telephone/voice terminal cannot exceed 250 feet of 24-gauge wire.

e. Locks should be provided for the site or satellite closet doors to prevent tampering with the equipment.

Cabling Facilities

The method of riser cable distribution between the main equipment room and site or satellite closets is usually determined by the type of cabling facilities (riser closets, conduit size, cabling shafts, etc.) in the building (Figure 1-6).

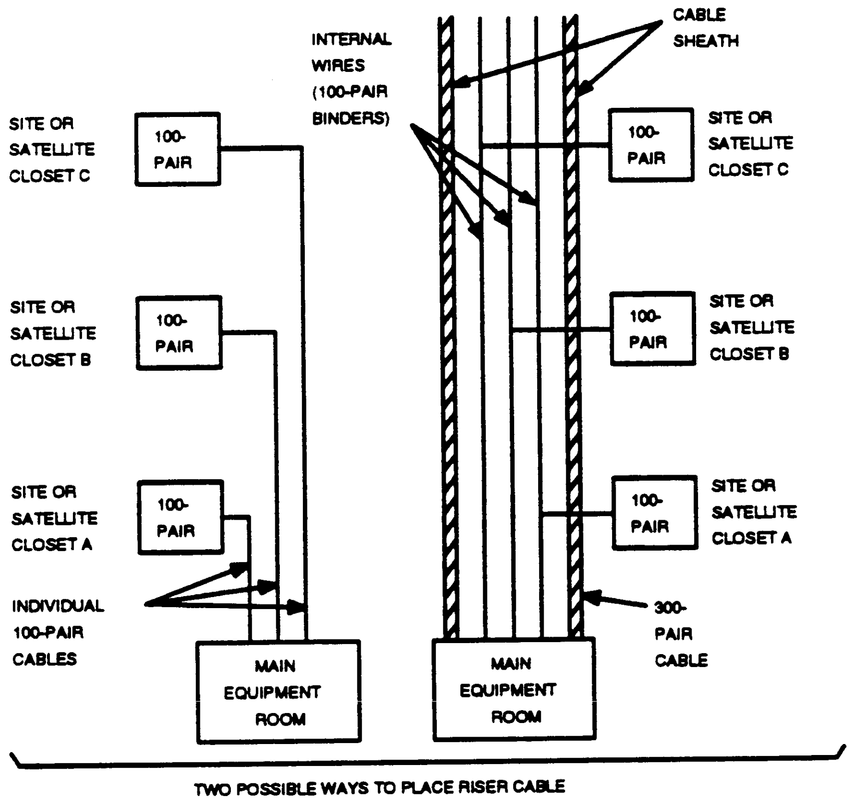
a. The preferred arrangement is to have individual cables supply each site or satellite closet.

b. A second method is to have one or two large cables supply all the site or satellite closets. This requires that smaller cables be installed between the main riser cable and the site or satellite closet. These smaller cables are then spliced into the main cable.

Determine the type of cabling required and mark the type and routing on the floor plan. Also, show any additional cabling facilities required for riser and terminal cabling.

PREFERRED
INDIVIDUAL 100-PAIR
RISER CABLES

ACCEPTABLE
MAIN RISER CABLE WITH
SMALLER CABLES SPLICED TO IT



CAUTION: THE UNIFORM WIRING PLAN SHOULD NOT CONTAIN ANY BRIDGE TAPS (AN UNUSED CABLE PAIR CONNECTED TO A WORKING CABLE OR THE CONTINUATION OF A WORKING PAIR PAST THE POINT AT WHICH A TERMINAL HAS BEEN CONNECTED).

FIGURE 1-6. Riser Cable Placement

CHAPTER 2. HARDWARE (66- AND 110-TYPE)

General

Figure 2-1 shows the equipment required to install a G1 or G3i switch. This chapter describes the hardware (66- and 110-type) used in the installation process. Ordering information is provided for the required hardware.

The sites shown in Figure 2-1 are physical locations (closets) for satellite location is a place (closet) where cross-connect administration can be carried out and adjunct power can be applied.

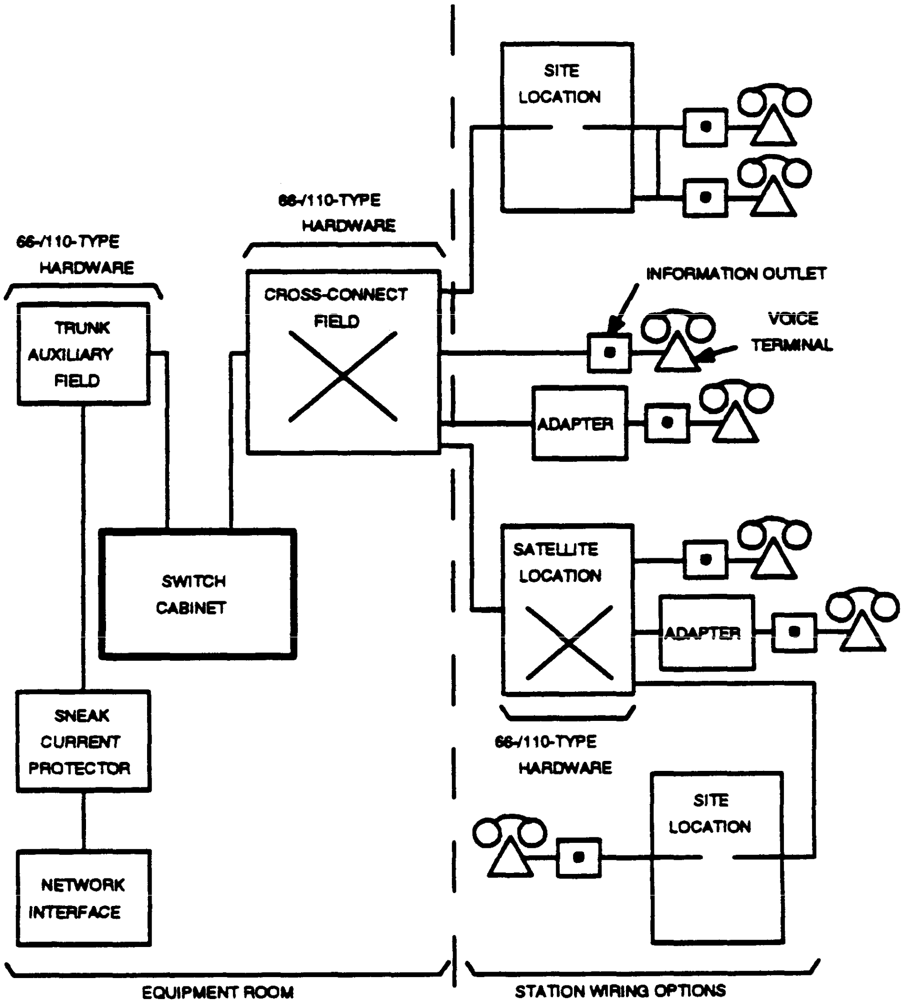


FIGURE 2-1. Block Diagram of G1 or G3i Multi-Carrier or Single-Carrier Cabinet Installation

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
- three-, four-, and five-pair connecting blocks

110-Type Wiring Blocks

The 110-type wiring block (Figure 2-2) is a plastic wiring block equipped with permanently attached index strips.

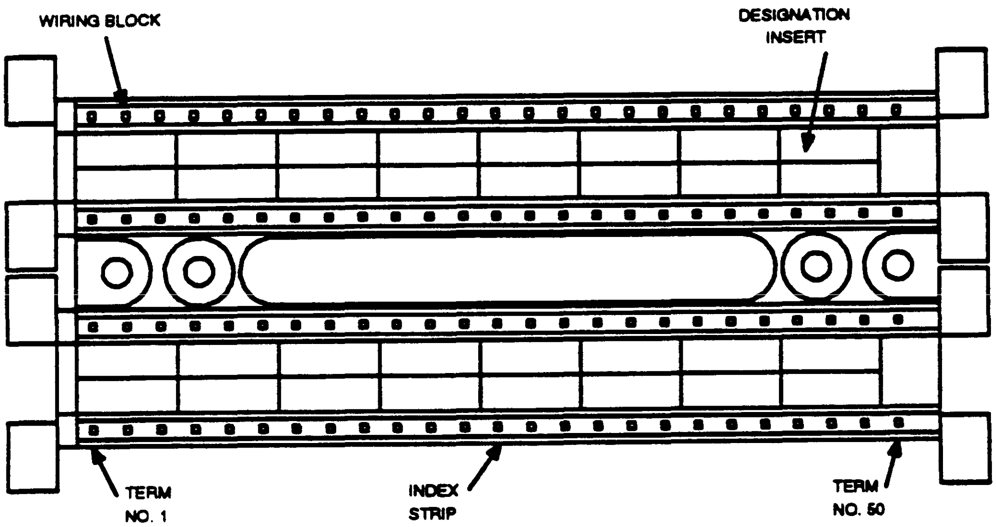


FIGURE 2-2. 110-Type Wiring Block

Index Strips and Connecting Blocks

The index strips (Figure 2-3) 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 2-A.

Note: Both 10-foot and 15-foot B25A connector cables are shipped with the switch in the required quantities.

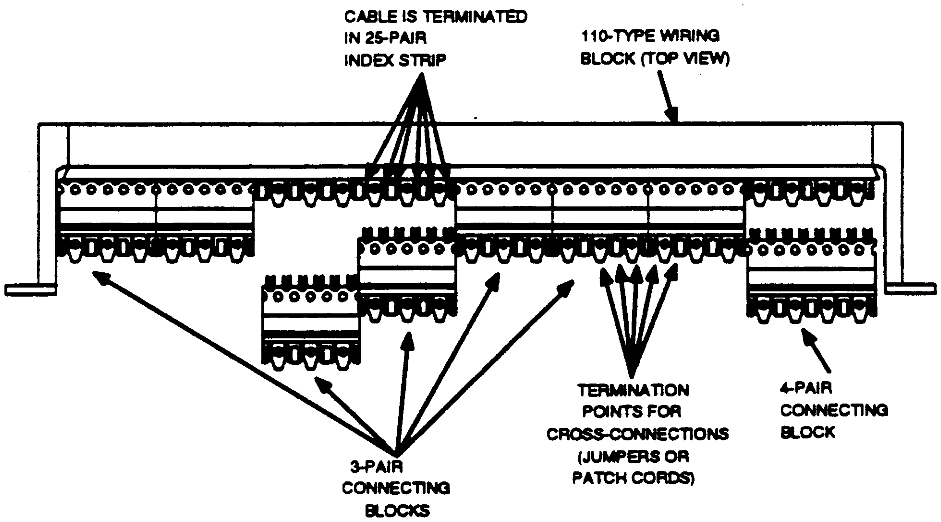


FIGURE 2-3. 110-Type Index Strip With Connecting Blocks

TABLE 2-A. 25-Pair Cable Terminations on 110-Type Wiring Blocks and 66-Type Connecting Blocks

25-Pair Cable			110-Type 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
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

TABLE 2-A *(continued).*
25-Pair Cable Terminations on 110-Type Wiring Blocks and 66-Type Connecting Blocks

25-Pair Cable			110-Type 66-Type Wiring/Conn Block Terminals
Connector Pin Numbers	Pair	Color	
43	18	Y-G	35
18		G-Y	36
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	48
49	24	V-BR	47
24		BR-V	48
50	25	V-S	49
25		S-V	50

The connecting blocks (Figure 2-3) 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 is 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 three-, four-, and five-pair blocks. When three- or four-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 three- and four-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 2-4) are arranged for field termination. The 300-pair wiring blocks (Figure 2-5) come in both field-terminated and connectorized (with six feet cable stubs) types.

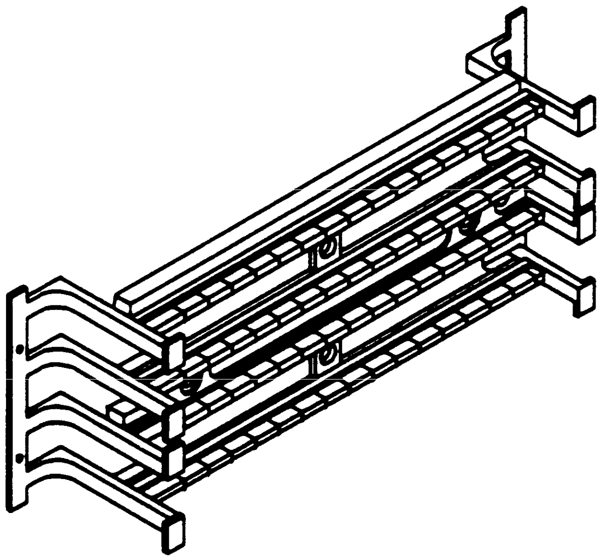


FIGURE 2-4. 110A-Type 100-Pair Terminal Block

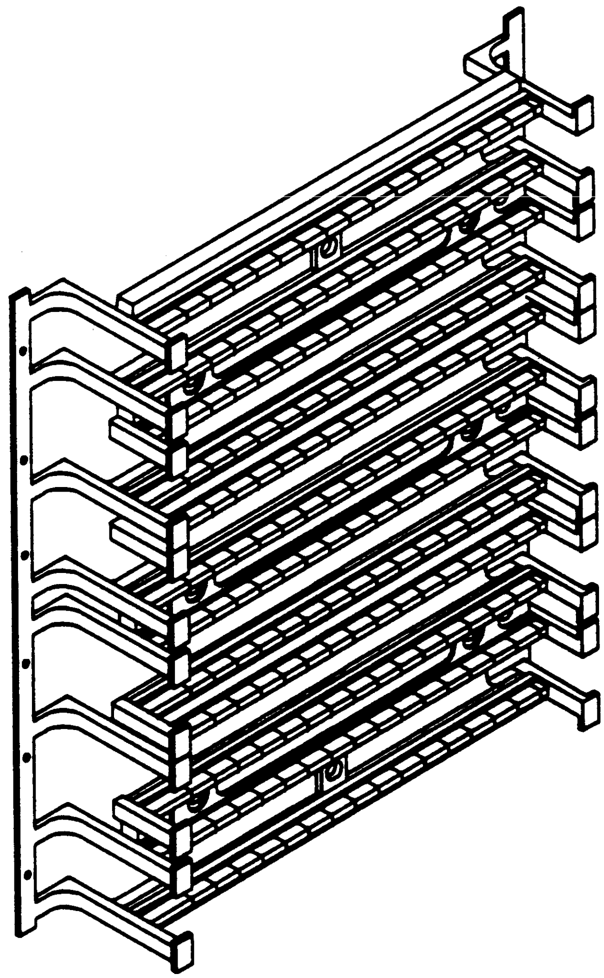


FIGURE 2-5. 110A-Type 300-Pair Terminal Block

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 eight 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.
- 110-AB1-300FT 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 (six-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 (six-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	104-049-093
110AB1-100FT Terminal Block	103-823-845
110AC1-100FT Terminal Block	103-826-780
110AB1-300FT Terminal Block	104-049-051
110AC1-300FT Terminal Block	104-049-069
110AC1-300STF/6 Terminal Block	104-049-077
110AC1-300STM/6 Terminal Block	104-049-085
110AW1-100 Wiring Block	103-804-894
110AW1-300 Wiring Block	103-804-902
110C-3 3-Pair Connecting Block	103-801-239
110C-4 4-Pair Connecting Block	103-801-247

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 that can be either oonnectorized 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 2-6.

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 2-7 and 2-8).

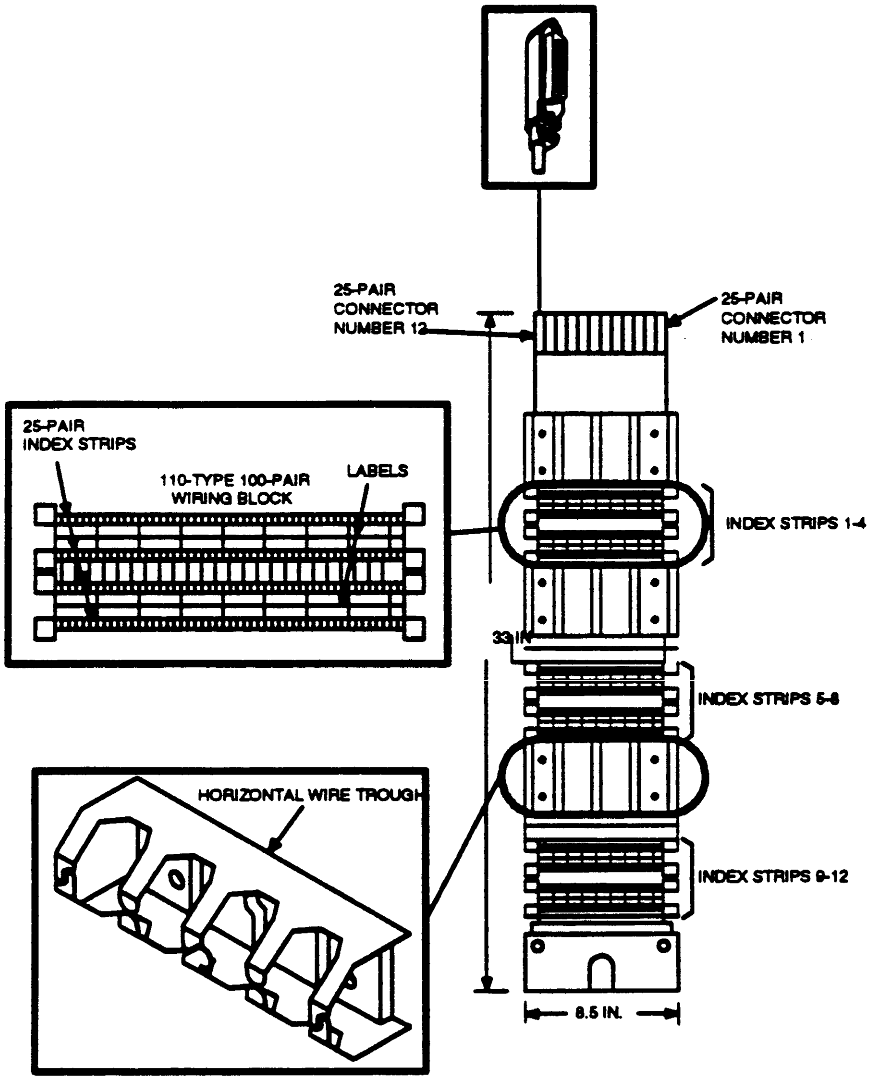


FIGURE 2-6. 110P-Type Terminal Block—300-Pair Connectorized

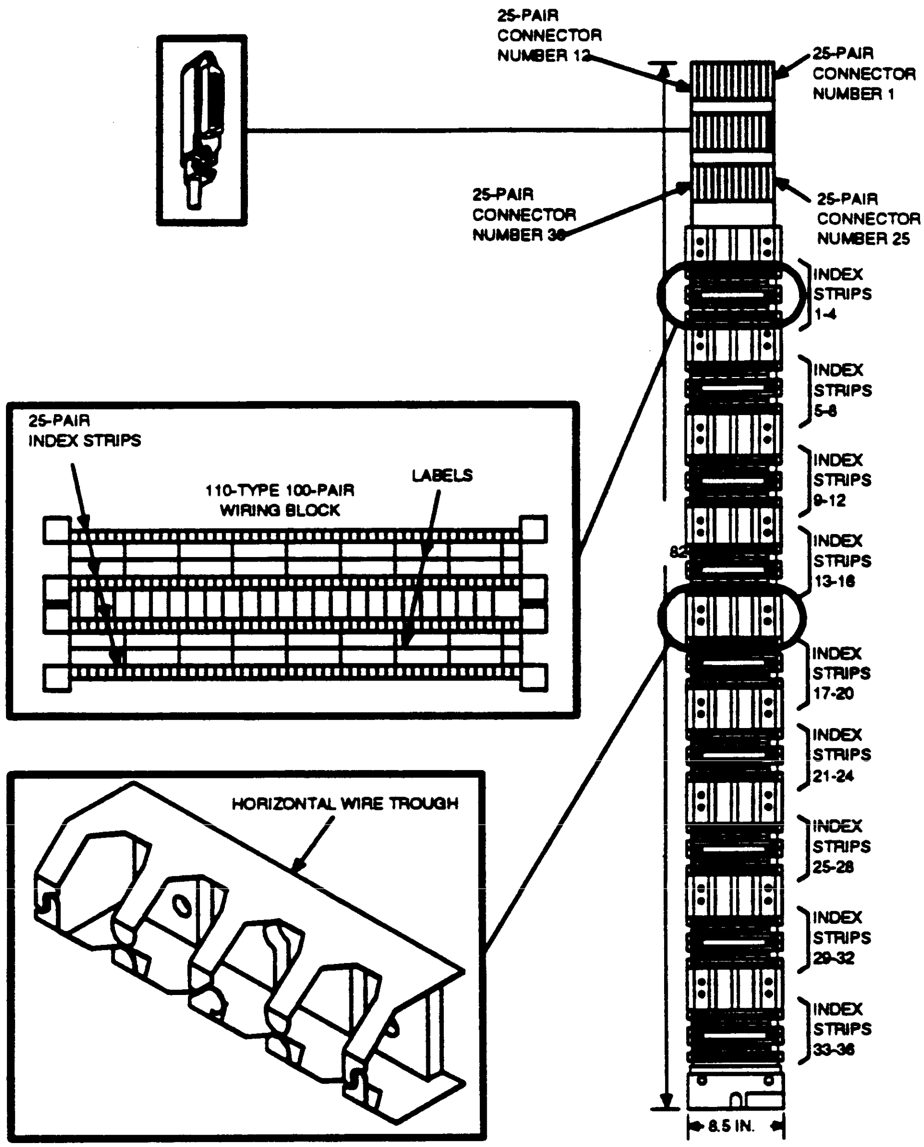


FIGURE 2-7. 110P-Type Terminal Block—900-Pair Connectorized (Top)

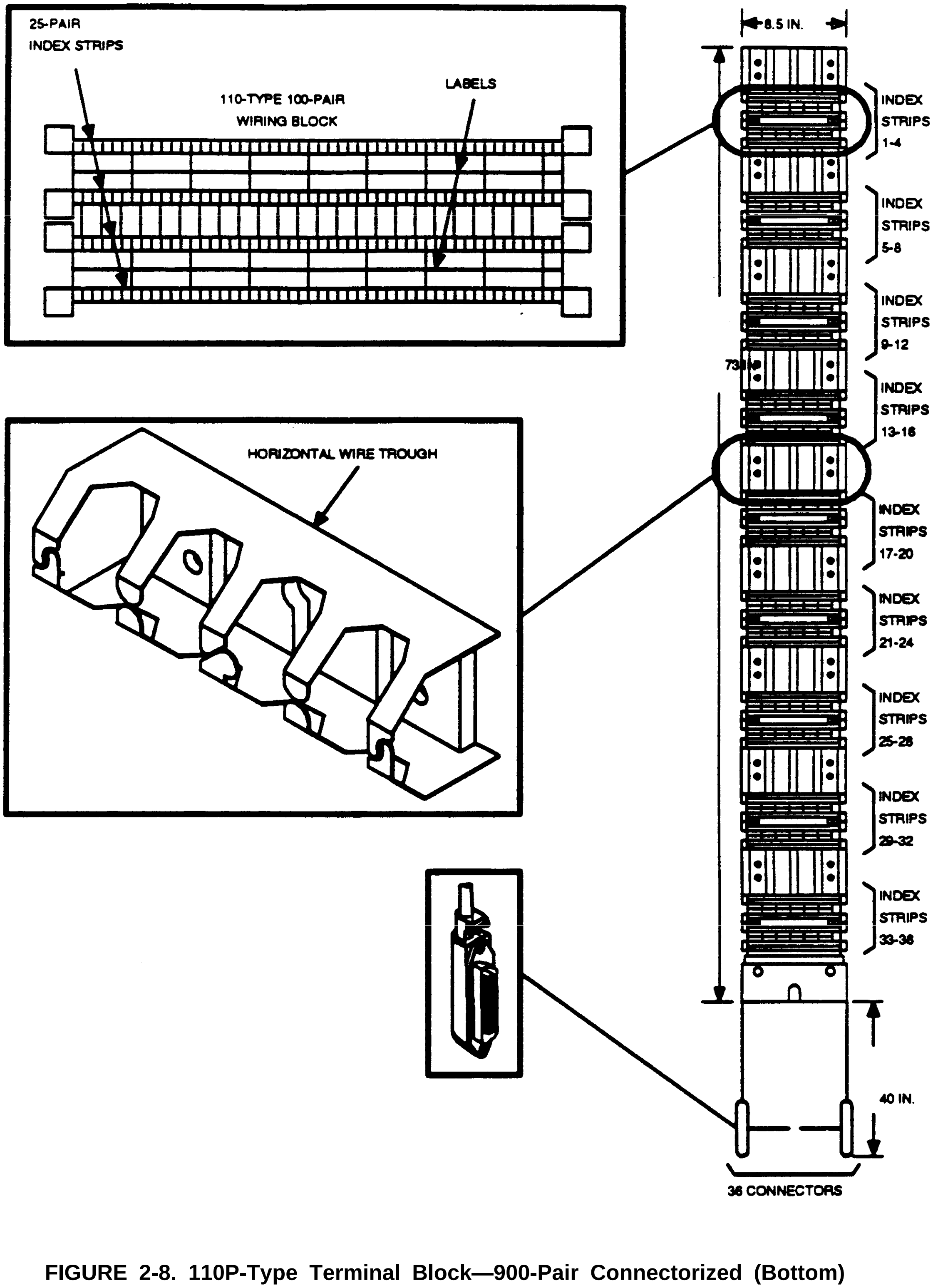


FIGURE 2-8. 110P-Type Terminal Block—900-Pair Connectorized (Bottom)

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 three-pair wiring block in continuous numerical order. The four-pair wiring block are available as a kit of parts to allow field termination of the four-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 four-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.
- 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 three-pair wiring blocks in a continuous numerical order. The four-pair wiring blocks are available as a kit of parts to allow field termination of the four-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	103-823-886
110PC1-300CT Terminal Block	103-804-852
110PB1-300FT Terminal Block	103-804-829
110PC1-300FT Terminal Block	103-804-860
110PE1-300CT Terminal Block	104-017-066
110PE1-300CT/FT Terminal Block	104-173-166
110PE1-300FT Terminal Block	103-823-902
110PB1-900CB Terminal Block	104-173-158
110PC1-900CB Terminal Block	104-166-590
110PB1-900CT Terminal Block	103-804-837
110PC1-900CT Terminal Block	103-048-878
110PB1-900FT Terminal Block	103-804-845
110PC1-900FT Terminal Block	103-804-886
110PE1-900CT/FT Terminal Block	104-173-174
110PE1-900FT Terminal Block	103-823-910

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	102-689-569
188C2 Backboard	104-031-794
188D2 Backboard	104-032-404
188E2 Backboard	104-031-802

Cords

110-Type Patch Cords

The one-pair and three-pair patch cords (Figure 2-9) 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.

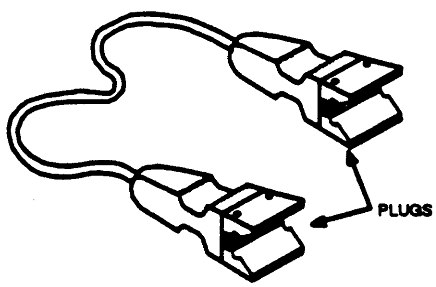


FIGURE 2-9. Three-Pair Patch Cord Used With 110-Type Hardware

110-TYPE PATCH CORD ORDERING INFORMATION

Cord	Description	Length	Comcode (1 per package)	Comcode (10 per package)
F-61679-2	1-Pair	2 ft	103-991-873	Not Available
F-61679-3	1-Pair	3 ft	103-991-881	Not Available
F-61679-4	1-Pair	4 ft	103-991-899	Not Available
F-61679-5	1-Pair	5 ft	103-991-907	104-073-606
F-61679-6	1-Pair	6 ft	103-991-915	Not Available
F-61679-7	1-Pair	7 ft	103-991-923	Not Available
F-61679-8	1-Pair	8 ft	103-991-931	Not Available
F-61679-9	1-Pair	9 ft	103-991-949	104-073-614
F-61679-19	1-Pair	19 ft	103-991-956	104-073-622
110P6A2B	3-Pair	2 ft	Not Available	103-882-965
110P6A3B	3-Pair	3 ft	Not Available	103-882-957
110P6A4B	3-Pair	4 ft	Not Available	103-882-940
110P6A5B	3-Pair	5 ft	Not Available	103-882-973
110P6A6B	3-Pair	6 ft	Not Available	103-882-932
110P6A7B	3-Pair	7 ft	Not Available	103-882-924
110P6A8B	3-Pair	8 ft	Not Available	103-882-916
110P6A9B	3-Pair	9 ft	Not Available	103-882-908
110P6A19B	3-Pair	19 ft	Not Available	103-882-890

F-61789 Power Adapter Cords

The F-61789 power adapter cord (Figure 2-10) is used at the equipment room or satellite closet cross-connect field to connect an adjunct power supply to a four-pair connecting block that is mounted on a 110-type wiring block. The power adapter cord is a one-pair cable equipped with a six-conductor modular plug on one end and a one-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.

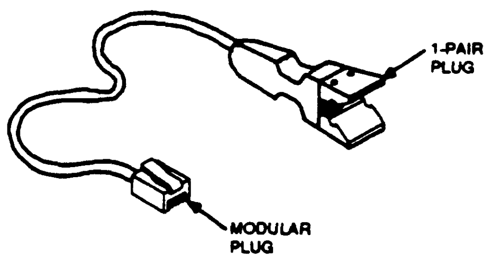


FIGURE 2-10. F-61789 Power Adapter Cord

POWER ADAPTER CORD ORDERING INFORMATION

Cord	Length	Comcode (1 per package)	Comcode (10 per package)
F-61789-5	5 ft	103-907-184	103-891-800
F-61789-9	9 ft	103-907-192	103-891-792
F-61789-19	19 ft	103-907-200	103-891-784

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	402-023-949
D Test Cord	8 ft	402-023-956

Jumpers

Solid wire jumpers can be used to make cross-connections instead of the one- and three-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	103-252-557
DT 24P-W/BRN	1-Pair	102-484-045
DT 24P-Y/BL	1-Pair	102-379-195
DT 24P-Y/G	1-Pair	103-252-565
DT 24P-Y/O	1-Pair	103-252-573
DT 24P-Y/R	1-Pair	103-252-581

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	402-024-723
788J1 Impact Tool	102-648-839
788K1 Conductor Retention Tool	102-655-495

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	401-149-802

Designation Strips

Designation strips (Figure 2-11) 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	103-895-504

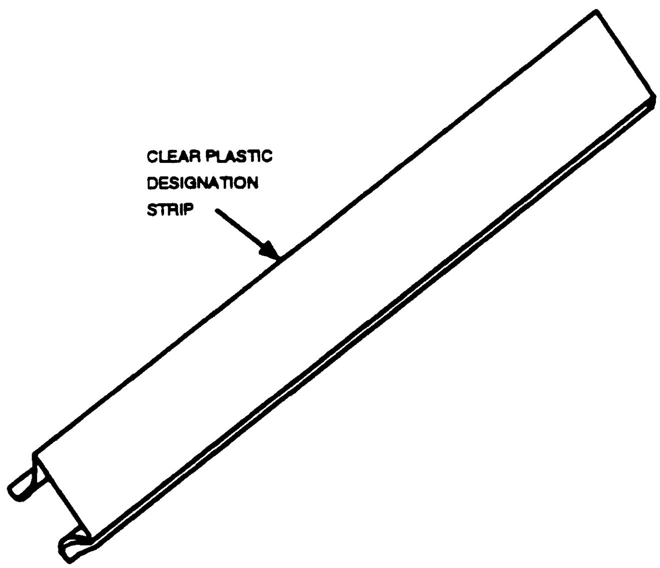


FIGURE 2-11. Designation Strip

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 (Figure 2-12) 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 (Figure 2-12). 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 2-A. 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.

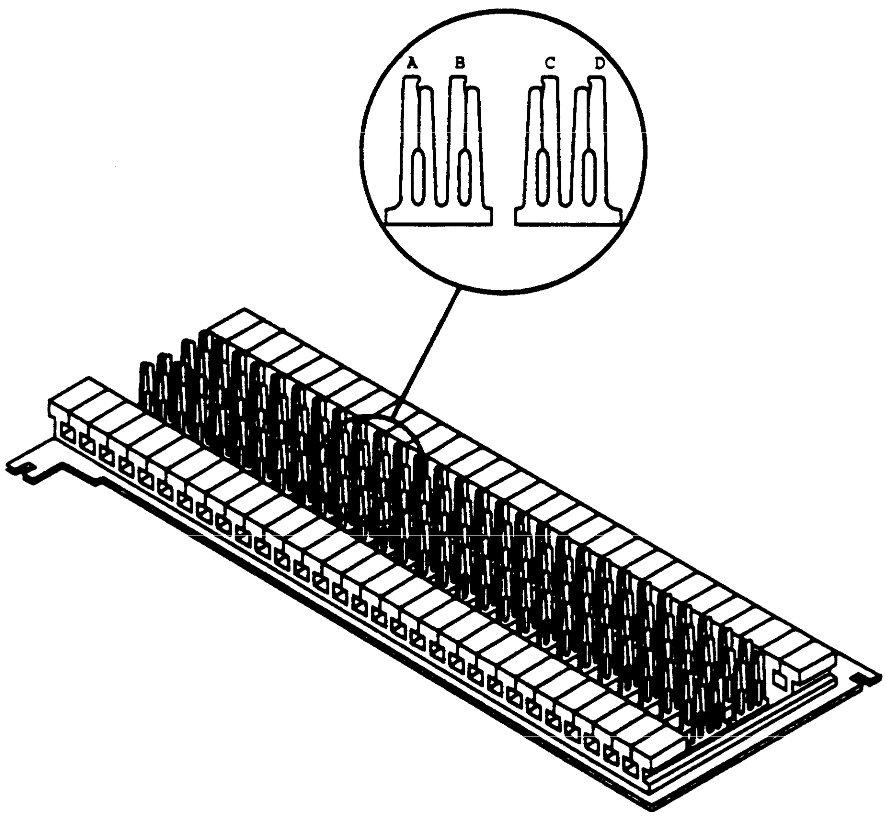


FIGURE 2-12. 66M1-50 Connecting Block

Connectorized 66-Type Connecting Blocks

The connectorized version of the 66-type connecting block is the 157B (Figure 2-13) 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.

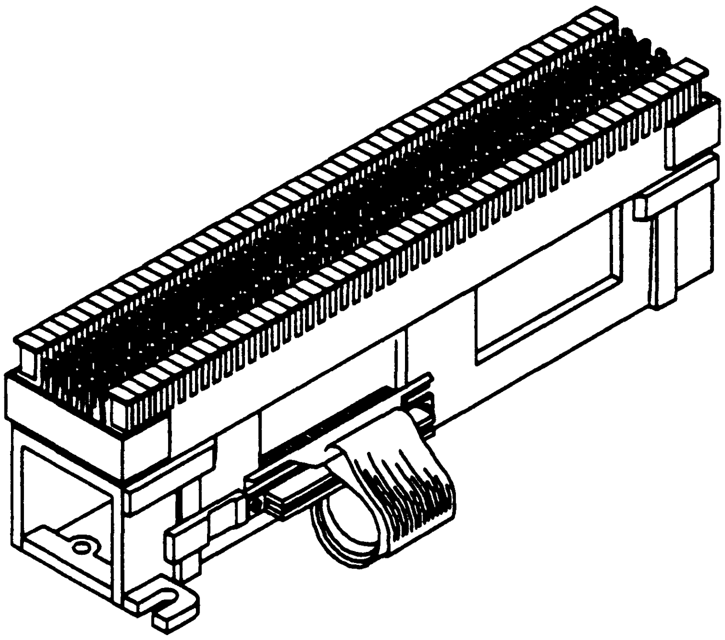


FIGURE 2-13. 157B Connecting Block

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 16 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	101-238-178
157B Connecting Block	403-613-003
166-Type Backboard	403-612-922
154A-Type Backboard	403-612-997

183-Type Backboards

The 183-type backboard (Figure 2-14) 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.

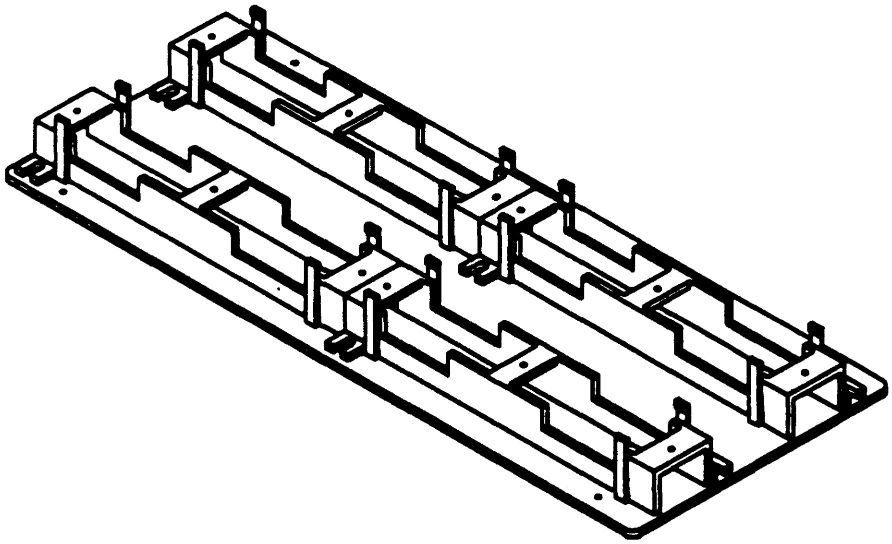


FIGURE 2-14. 183A-Type Backboard

183-TYPE BACKBOARD ORDERING INFORMATION

Code	Color	Mounts	Comcode
183A1	Blue	(4) 66M1-50 Conn Blocks	101-412-963
183A2	Green	(4) 66M1-50 Conn Blocks	101-412-971
183A4	Purple	(4) 66M1-50 Conn Blocks	101-937-902
183A5	Yellow	(4) 66M1-50 Conn Blocks	101-986-446
183B1	Blue	(8) 66M1-50 Conn Blocks	101-412-989
183B2	Green	(8) 66M1-50 Conn Blocks	101-564-631
183B4	Purple	(8) 66M1-50 Conn Blocks	101-937-928
183B5	Yellow	(8) 66M1-50 Conn Blocks	101-986-453
183C1	Blue	(2) 66M1-50 Conn Blocks	103-222-790

187B1 Backboard

The 187B1 backboard (Figure 2-15) 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.

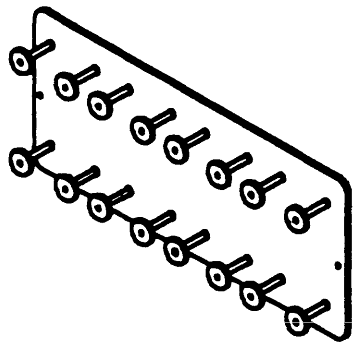


FIGURE 2-15. 187B1 Backboard

187B1 BACKBOARD ORDERING INFORMATION

Description	Comcode
187B1 Backboard	101-937-944

Power Adapter Cords

The power adapter cord (Figure 2-16) connects an adjunct power supply to a four-pair station circuit terminated on a 66-type connecting block. The cord consists of a two-pair cable equipped with a six-conductor modular plug. The plug end connects to the power supply and the other end terminates on the 66-type connecting block.

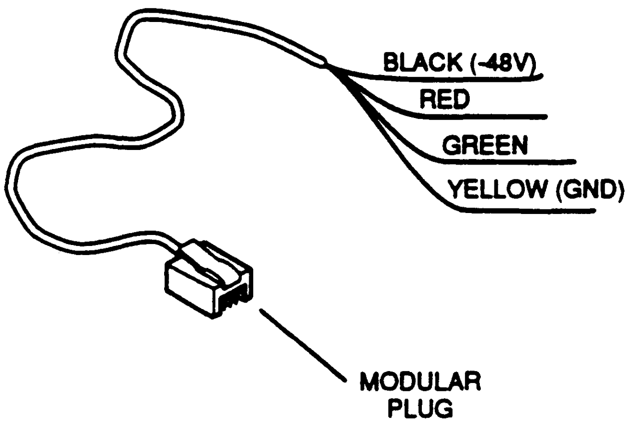


FIGURE 2-16. Power Adaptor Cord

POWER ADAPTER CORD ORDERING INFORMATION

Length	**Comcode**
10 ft	103-935-623
25 ft	103-895-660

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	103-252-557
DT 24P-W/BRN	1-Pair	102-484-045
DT 24P-Y/BL	1-Pair	102-379-195
DT 24P-Y/G	1-Pair	103-252-565
DT 24P-Y/O	1-Pair	103-252-573
DT 24P-Y/R	1-Pair	103-252-581

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	100-755-511
Blade AT-8762	402-024-681
D Impact Tool	402-024-723
724A Tool	100-755-636

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	403-596-035

Associated Hardware

Cable Slack Managers

General

The cable slack managers (Figure 2-17) 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.

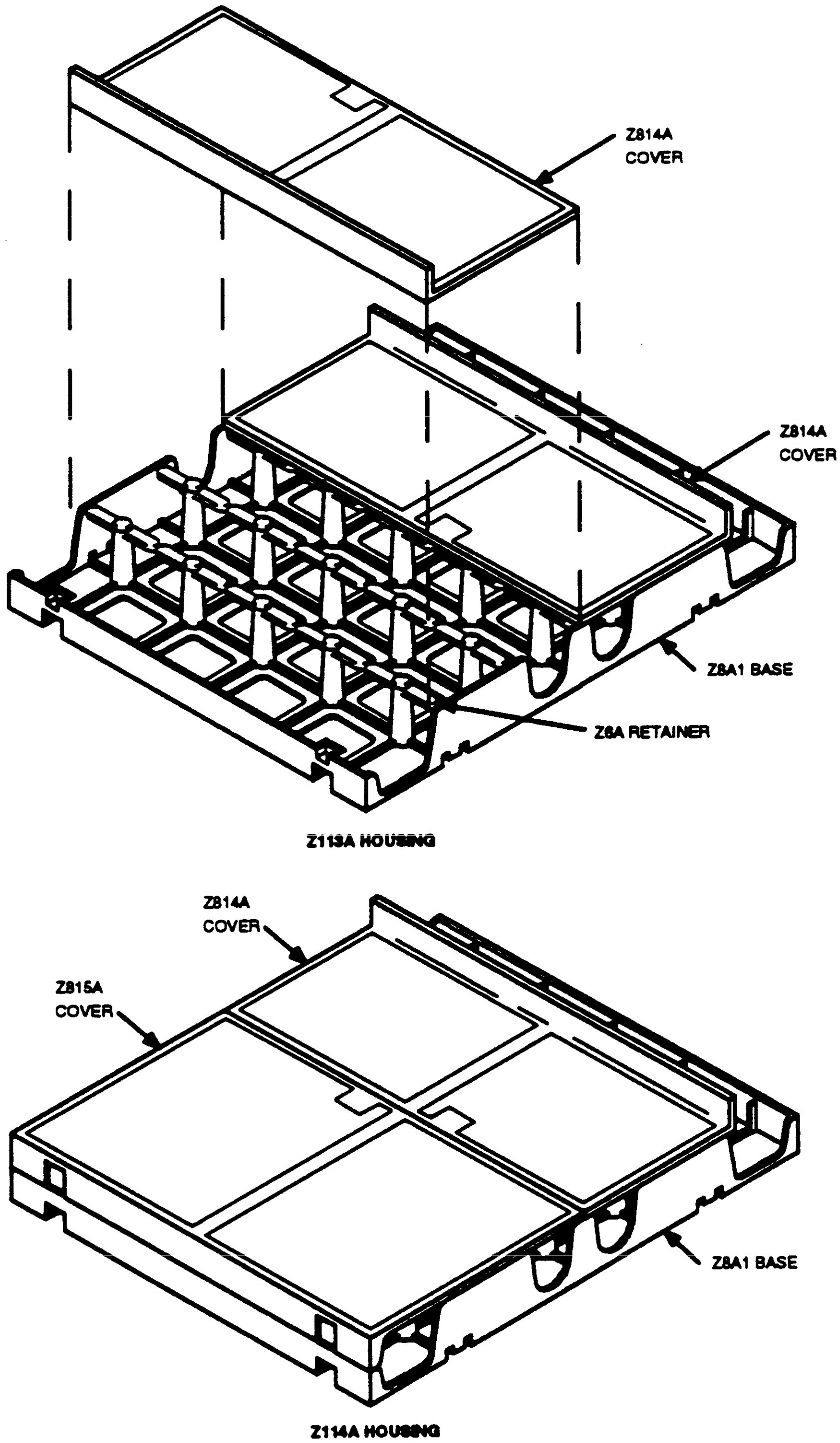


FIGURE 2-17. Cable Slack Managers

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	103-961-322
Z114A Housing	103-961-330
Z8A1 Base	103-965-133
Z814A Cover	103-965-141
Z815A Cover	103-965-158
Z6A Retainer	103-965-166

Network Interfaces

RJ21X Network Interface

The RJ21X network interface is the connection point between the local telephone company lines (one-pair trunks) and the switch. The interface is supplied and installed by the local telephone company. See Table 3-G for network interface pin assignments on Central Office (CO) and Direct Invalid Dial (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 3-G 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 Data Services Level 1 (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 Telephone Wiring” in Chapter 4). The Model 575-4 sneak current fuse panel (Figure 2-18), 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	403-613-003
SCP-1 Protector*	403-617-632
575-4 Sneak Current Fuse Panel	402-989-016
79A Two-Pair Fuse	103-351-610

Note: Sneak current protectors with a rating of 350ma at 600 volts must be Underwriters Laboratories (UL) listed for domestic installation and Canadian Safety Association (CSA) certified for Canadian installation.

* The SCP-1 protectors must be ordered separately and installed on the 157B connecting block. Each block requires 24 protectors.

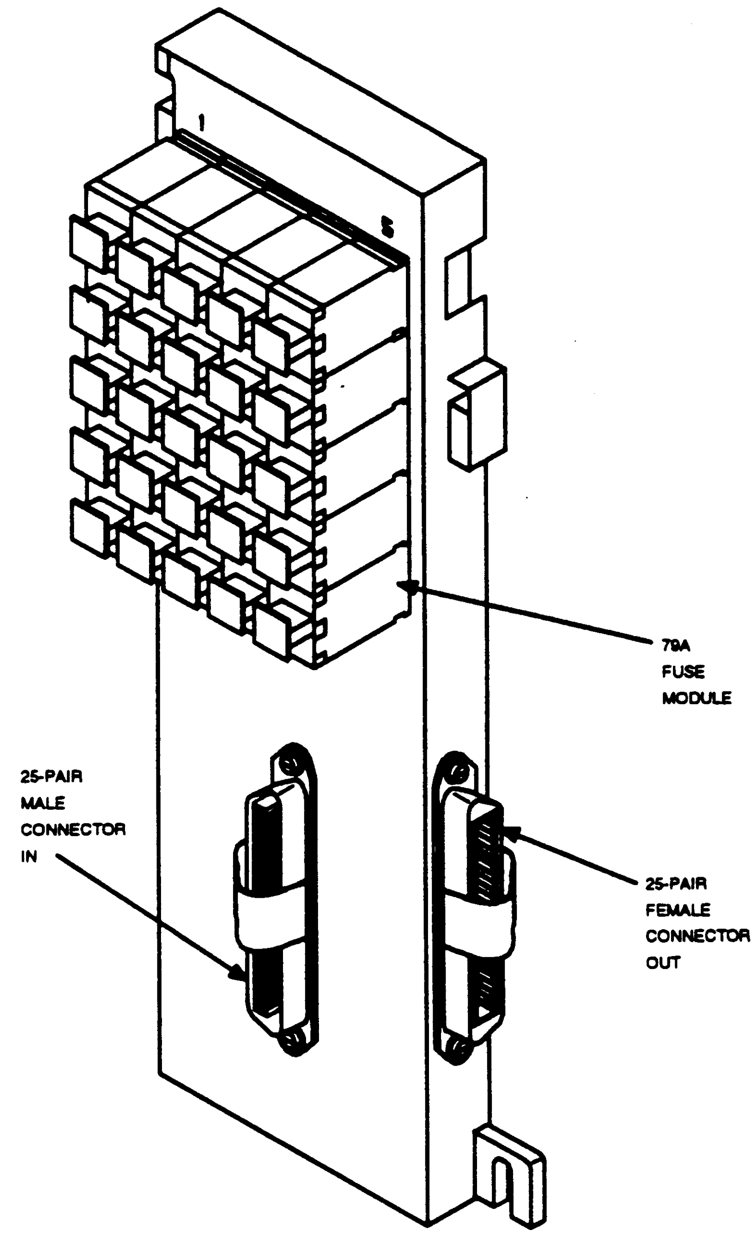


FIGURE 2-18. Model 575-4 Sneak Fuse Panel

Emergency Transfer Units

General

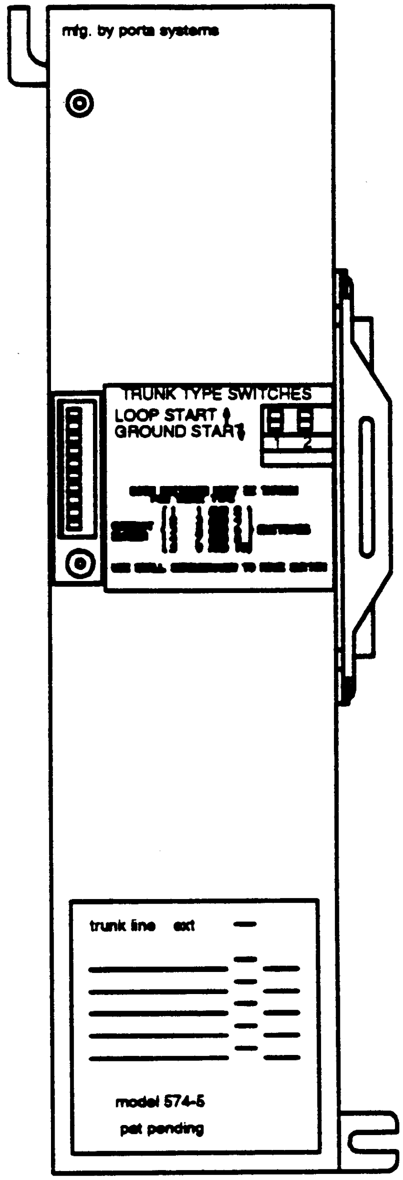
The emergency transfer units used with the 66-type/110-type hardware are the 808A Emergency Transfer Panel and the 574-5 Power Transfer Panel. The units mount on the plywood backboard to the left of the trunk/auxiliary field.

808A Emergency Transfer Panel

The 808A Emergency Transfer Panel provides emergency transfer connections for five analog telephones. This unit provides automatic ground start. It also provides a "restore after busy" feature. That is, an emergency call proceeds uninterrupted even after the PBX is restored to normal operation. The call, in such a case, terminates as normal.

574-5 Power Transfer Unit

The 574-5 power transfer unit (Figure 2-19) provides power transfer connections for five analog telephones. This unit provides automatic ground start.



Mounting

FIGURE 2-19. Model 574-5 Power Transfer Unit

Trunk Concentrator Cables

Trunk concentrator cables are used for the following purposes:

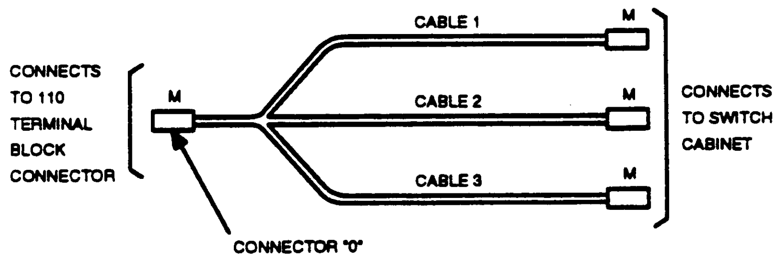
- To match one-pair local telephone company trunks to three-pair switch circuits at the cross-connect field.
- To match one-pair local telephone company trunks provided for off-premises lines to three-pair switch circuits at the cross-connect field.
- To split eight three-pair analog tie trunks into two groups of four three-pair tie trunks.

The trunk concentrator cables are 25 feet long. They are coded as cable assemblies and described in the following sections.

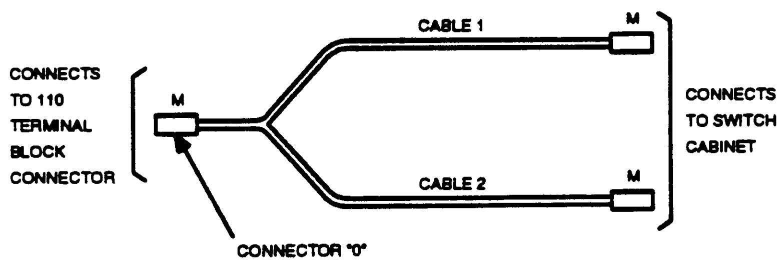
Note: The WP-90929, List 1 and List 3 cable assemblies are used with 110-type hardware, while List 2 and 4 cable assemblies are used with 66-type hardware.

WP-90929, List 1, Cable Assembly (For 110-Type Hardware Only)

The WP-90929, List 1, cable assembly (Figure 2-20 and Table 2-B) 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 24 one-pair trunk circuits with 24 three-pair trunk circuits.



LIST 1 CABLE



LIST 3 CABLE

LEGEND:

M = 25-PAIR MALE CONNECTOR

F = 25-PAIR FEMALE CONNECTOR

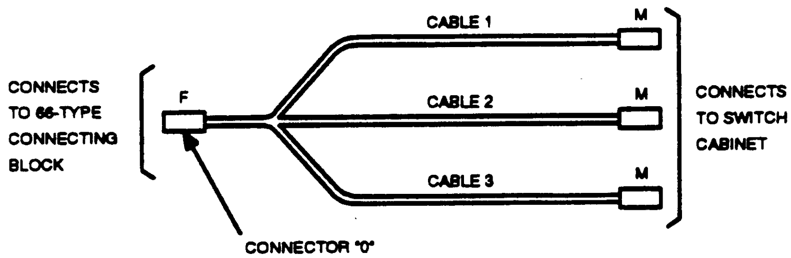
FIGURE 2-20. Trunk Concentrator Cables (WP-90929, L1 & L3)
(For 110-Type Hardware Only)

TABLE 2-B. WP-90929, List 1 and List 2, Cable Assembly Wiring

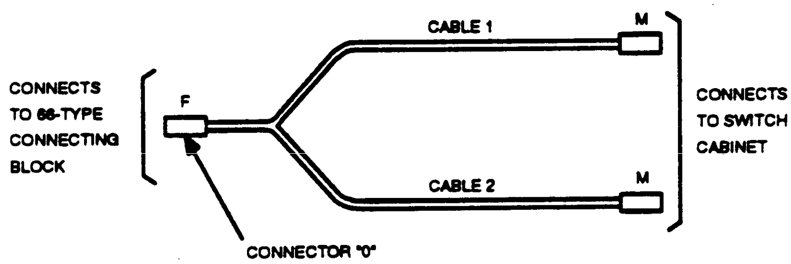
Conn. 0 Pin No.	Cable No. 1	Cable No. 2	Cable No. 3	Conn. 0 Pin Numbers	Cable No. 1	Cable No. 2	Cable No. 3
26	W-BL	-	-	1	BL-W	-	-
27	W-BR	-	-	2	BR-W	-	-
28	R-O	-	-	3	O-R	-	-
29	R-S	-	-	4	S-R	-	-
30	BK-G	-	-	5	G-BK	-	-
31	Y-BL	-	-	6	BL-Y	-	-
32	Y-BR	-	-	7	BR-Y	-	-
33	V-O	-	-	8	0-V	-	-
34	-	W-BL	-	9	-	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-0	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 2-21 and Table 2-B) 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 three-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 24 one-pair trunk circuits with 24 three-pair trunk circuits.



LIST 2 CABLE



LIST 4 CABLE

LEGEND:

M = 25-PAIR MALE CONNECTOR

F = 25-PAIR FEMALE CONNECTOR

FIGURE 2-21. 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 2-20 and Table 2-C) 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 three-pair tie-trunk circuits with two groups of four three-pair tie-trunk circuits.

TABLE 2-C. 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 2-21 and Table 2-C) provides a way to connect tie-trunk circuits to the switch. The two-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 three-pair tie-trunk circuits with two groups of four three-pair tie-trunk circuits.

TRUNK CONCENTRATOR CABLE ORDERING INFORMATION

Description	Comcode
WP-90929, List 1, Cable Assembly	405-064-999
WP-90929, List 2, Cable Assembly	405-065-012
WP-90929, List 3, Cable Assembly	405-075-482
WP-90929, List 4, Cable Assembly	405-075-540

16-Port Analog Line Circuit Pack Adapter Cable (For 110-Type Hardware Only)

The 16-port analog line circuit pack (TN746) contains 16 one-pair circuits that appear on a 25-pair connector at the switch. The 16-port analog line adapter cable (Figure 2-22) separates the one-pair circuits (from the switch) into three-pair circuits that appear on two 25-pair connectors at the other end of the cable.

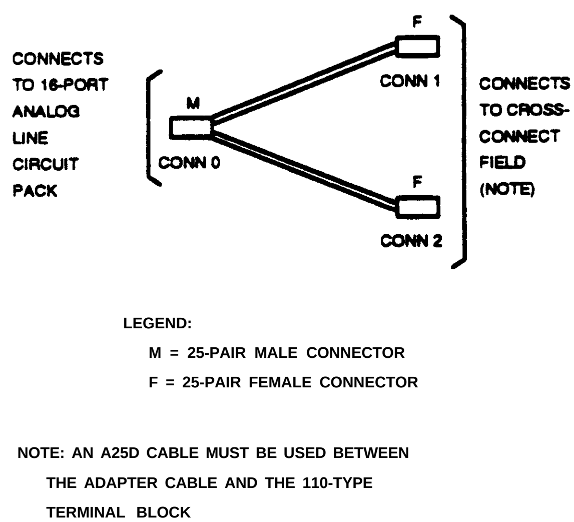


FIGURE 2-22. 16-Port Analog Line Circuit Pack Adapter Cable (853B Adapter)

The adapter cable is eight 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	104-305-834

Four-Port Multibutton Electronic Telephone (MET) Line Circuit Pack Concentrator Cable

The MET line circuit pack (TN735) contains four three-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 2-19 and 2-20, 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.

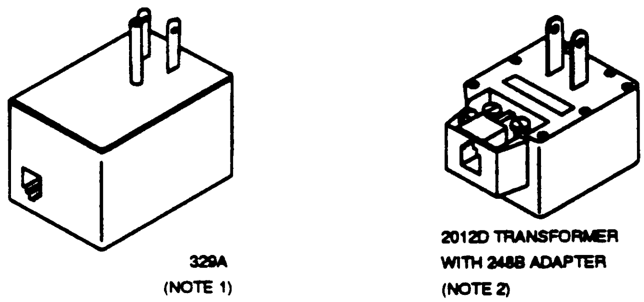
Adjunct Power Units

General

There are two types of power supplies used for adjunct powering, individual and bulk. The power supplies are specified by the FSO for firm quote price lists. For all other quotes, the power supplies are specified by AT&T SYSTIMAX PDS.

Individual Power Supplies

Individual power supplies (Figure 2-23) 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 2-D contains the individual power supply limitations for distance, wire gauge, and adjuncts.



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 2-23. Individual Power Supplies

TABLE 2-D. Individual Power Supply Adjunct and Distance Limitations

Power Unit	Adjunct Limits	Wire Gauge	Distance Feet
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

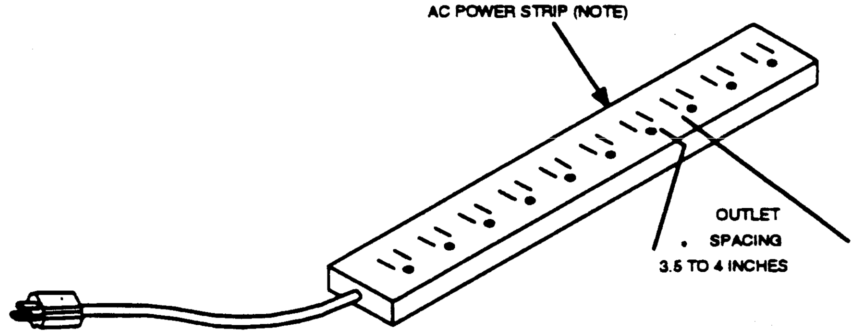
* The 329A should not be used to power attendant consoles.

INDIVIDUAL POWER SUPPLY ORDERING INFORMATION

Description	Comcode
2012D Transformer	102-600-517
248B Adapter	102-802-103
KS-22911, L1 Power Unit	405-331-711
329A Power Unit	103-873-998

When more than one individual power supply is at the equipment room or at a site or satellite location, an AC power strip (Figure 2-24) must be installed to accommodate the various sizes of power supplies.

Note: A 543A power unit (Comcode 104 034 541) may be required for in-rush protection for a 20-amp 120-volt AC line serving multiple 329A power units. Contact your AT&T SYSTIMAX PDS representative for details. Most multiple powering requirements should be served by the 346 modular bulk power supply.



NOTE: THIS AC POWER STRIP MUST BE
LOCALLY PROVIDED

FIGURE 2-24. AC Power Strip

Bulk Power Supply

The 346 modular bulk power supply consists of a 346A1 power panel and up to three 346A power units (Figure 2-25). The panel has three two-amp circuit breakers, one for each 346A power unit (Figure 2-26). Power panels may be used with one, two, or three power units connected.

A five-foot line cord provides AC power to the 346A1 power panel. Service to the AC receptacle must be provided by a dedicated (nonswitched) 20-amp circuit. A maximum of four power panels can be connected to a 20-amp circuit.

> **Note:** Electrical codes of Chicago and Cook County, IL require the use of a metallic 346B1 power panel equipped with a fused AC power cord (POP-6/217 by JDS Product).

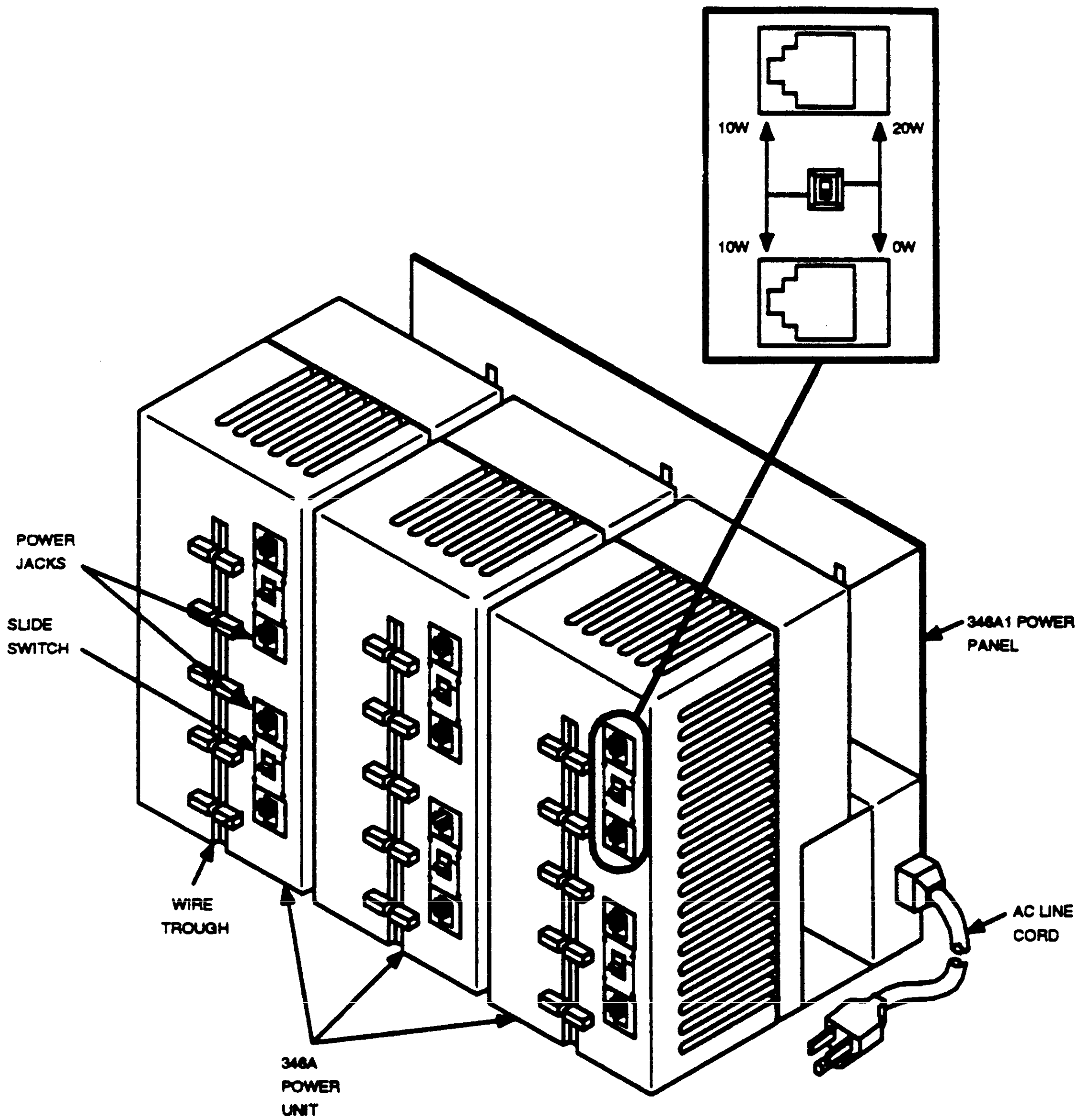


FIGURE 2-25. 346 Modular Bulk Power Supply

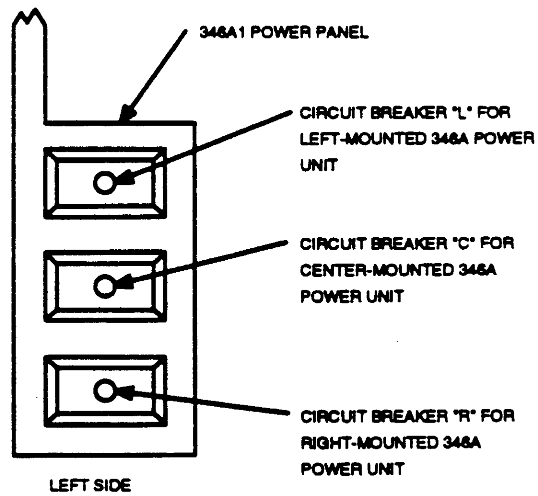


FIGURE 2-26. 346A1 Power Panel Circuit Breaker Locations

Each 346A power unit contains four power jacks. A slide switch is located between the top and bottom jacks. When the slide switch is in the down position, 10 watts of power are available at both jacks. When the slide switch is in the up position, 20 watts of power are available at the jack above the switch. The jack below the switch has no power.

Note: If two consoles are connected to a power supply, and an addition is made that requires a 20-watt source, remove the second console and move the power supply switch to the 20-watt position. Connect the second console to another power supply.

Table 2-E lists adjunct powering limitations for each 346A power unit.

TABLE 2-E. 346A Power Unit Adjunct and Distance Limitations

Slide Switch Position	Adjuncts Powered (Maximum per Unit)	Wire Gauge	Distance Feet
Down (10 w)	Any four telephone/voice terminals equipped with one speakerphone or one headset	24	260
	Any four digital voice terminals equipped with one digital module and a speakerphone or headset each		
Up (20 w)	Any two digital voice terminals equipped with up to three digital modules and a speakerphone or headset each		

BULK POWER SUPPLY ORDERING INFORMATION

Description	Comcode
346A Power Unit	104-174-768
346A1 Power Panel	104-174-750

CHAPTER 3. EQUIPMENT ROOM DESIGN

General

The *DEFINITY® Communications System Generic 1 and Generic 3i—System Description, 555-230-200,* provides equipment room specifications for temperature, humidity, air purity, lighting levels, and grounding. Also provided is information on the floor and wall space requirements for the switch and the associated peripheral equipment that is to be installed in the equipment room.

Hardware Equipment Room Applications

In the equipment room, 66- and 110-type hardware is used for the cross-connect field that 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:

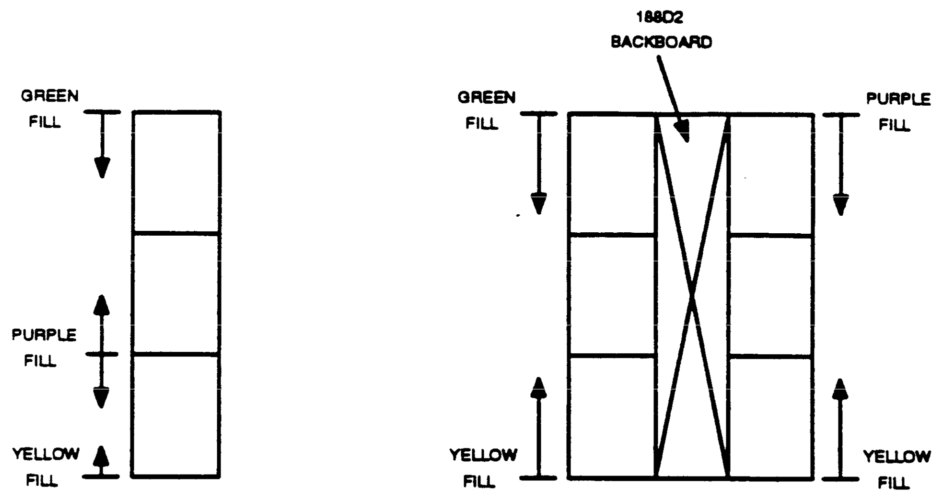
- The green field terminates the network interface leads (from the CO) and provides the terminals to cross-connect the CO leads to the purple or yellow fields as required. A single row of the 66-type connecting block or the 110-type terminal block can terminate 24 one-pair, eight three-pair, or 12 two-pair trunks.
- The purple field terminates the trunk circuits from the switch with WP-90929, List 1 or List 3 (110-type terminal block) or WP-90929, List 2 or List 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 24 one-pair, eight three-pair, or 12 two-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 3-1 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.



CAPACITY = 96 3-PAIR CIRCUITS

CAPACITY = 192 3-PAIR CIRCUITS

FIGURE 3-1. 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 six feet long and is 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 six feet long and is 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 six feet long and is equipped with a 50-pin female connector.

Figure 3-2 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.

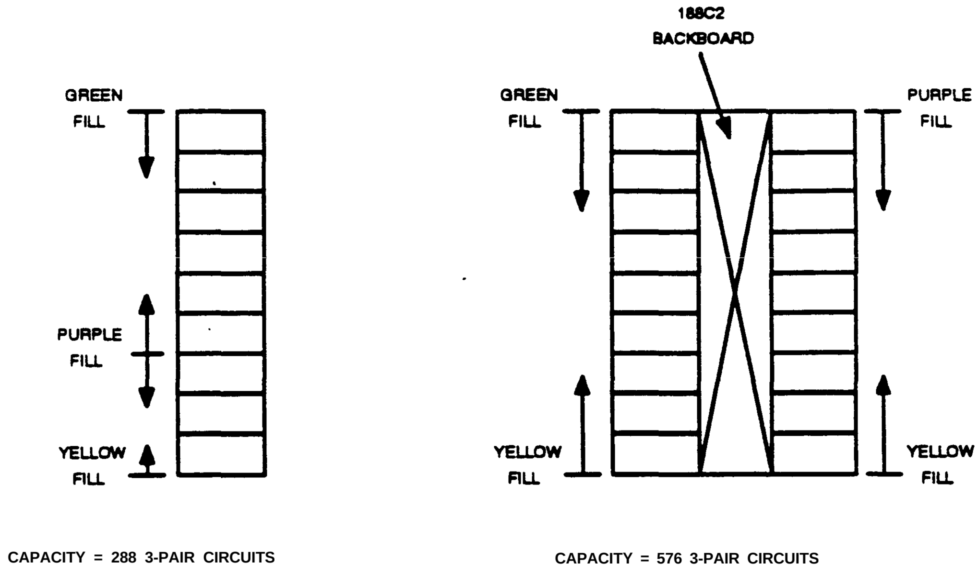


FIGURE 3-2. 900-Pair Trunk/Auxiliary Field Arrangements

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:

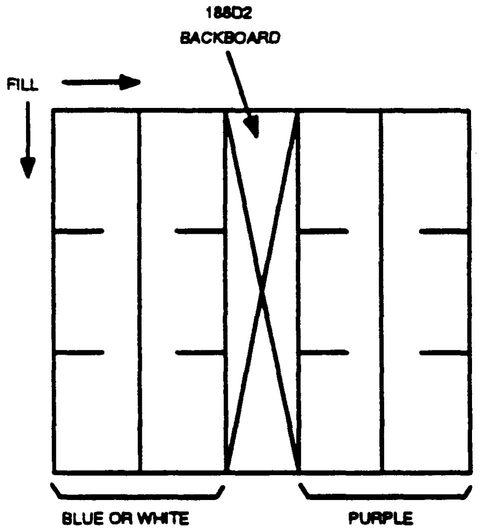
- The purple field (port field) terminates 25-pair cables from the switch. Each line circuit pack connects to one 66-type connecting block or to one 25-pair row of the 110-type terminal block. One 25-pair cable is required for each line circuit pack.

  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 three-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 three and/or four-pair station circuits (eight or six circuits, respectively, per 25-pair cable). The fourth pair of the four-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)

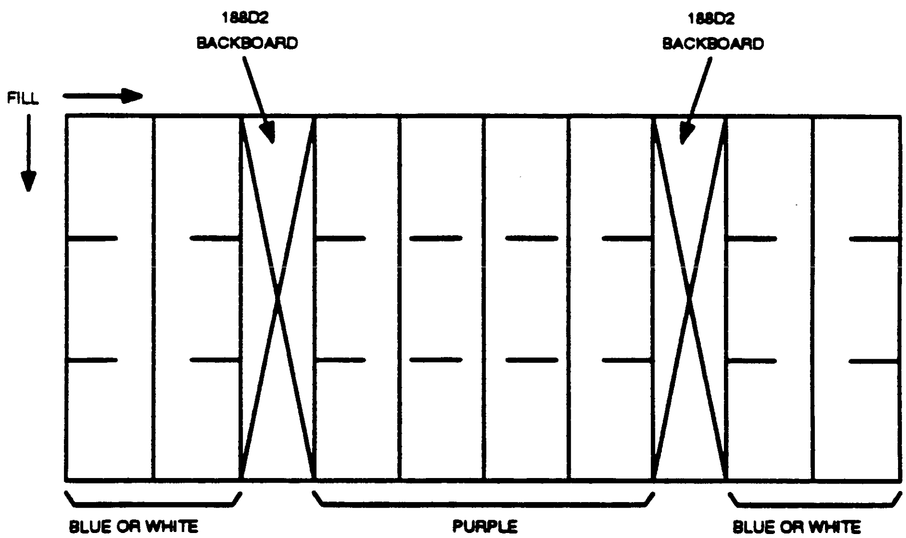
Figure 3-3 shows a typical 300-pair terminal block configuration of 110-type hardware arranged for use in the distribution field. One 300-pair terminal block will terminate 192 three-pair port circuits (purple field), and either 192 three-pair station circuits (white or blue field) or 144 four-pair station 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 3-3. Distribution Field Arrangement of 110-Type Hardware—Four 300-Pair Terminal Blocks

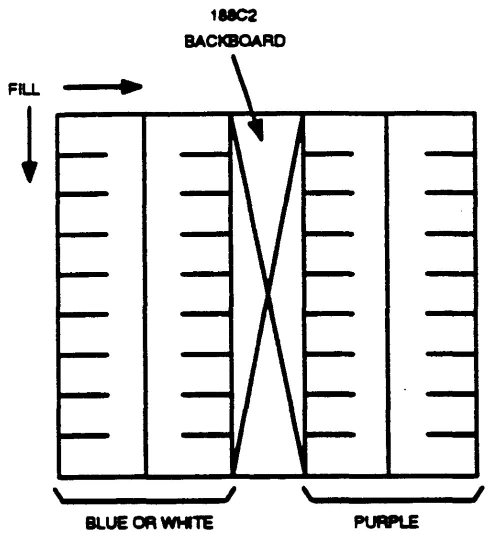
Figure 3-4 shows-a typical 300-pair terminal block configuration of 110-type hardware arranged for use in the distribution field. This configuration will terminate 384 three-pair port circuits (purple field), and either 384 three-pair station circuits (white or blue field) or 288 four-pair station circuits (blue field).



CAPACITY WHITE FIELD = 384 3-PAIR CIRCUITS
CAPACITY BLUE FIELD = 288 4-PAIR CIRCUITS OR
384 3-PAIR CIRCUITS
CAPACITY PURPLE FIELD = 384 3-PAIR CIRCUITS

FIGURE 3-4. Distribution Field Arrangement of 110-Type Hardware—Eight 300-Pair Terminal Blocks

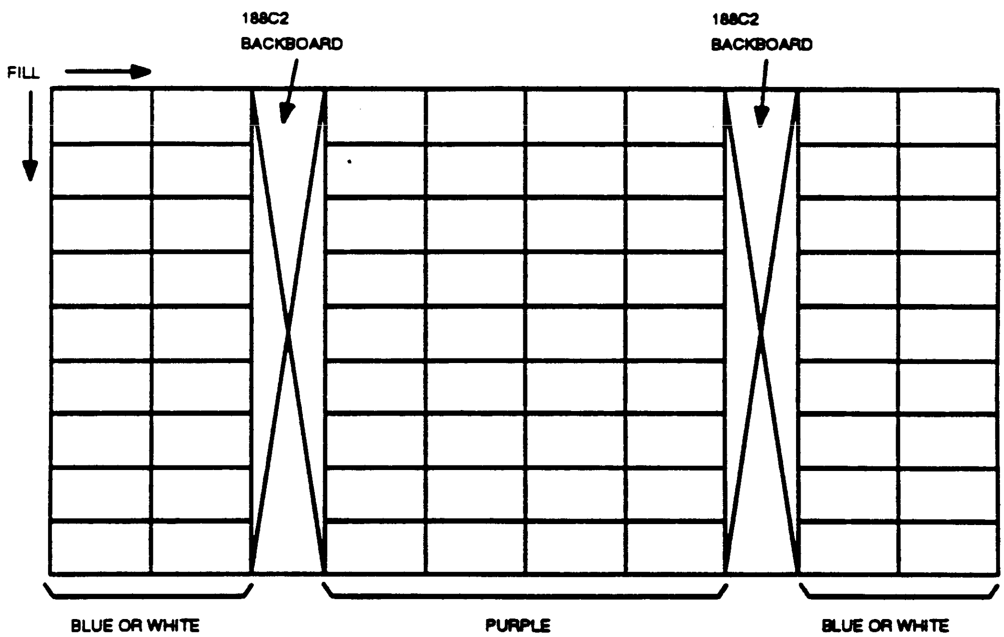
Figure 3-5 shows a typical 900-pair terminal block configuration of 110-type hardware arranged for use in the distribution field. This configuration will terminate 576 three-pair port circuits (purple field), and either 576 three-pair station circuits (white or blue field) or 432 four-pair station circuits (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 3-5. Distribution Field Arrangement of 110-Type Hardware—Four 900-Pair Terminal Blocks

Figure 3-6 shows a typical 900-pair terminal block configuration of 110-type hardware arranged for use in the distribution field. This configuration will terminate 1,152 three-pair port circuits (purple field), and either 1,152 three-pair station circuits (white or blue field) or 864 four-pair station circuits (blue field).



CAPACITY WHITE FIELD = 1152 3-PAIR CIRCUITS

CAPACITY BLUE FIELD = 864 4-PAIR CIRCUITS OR
1152 3-PAIR CIRCUITS

CAPACITY PURPLE FIELD = 1152 3-PAIR CIRCUITS

FIGURE 3-6. Distribution Field Arrangement of 110-Type Hardware—Eight 900-Pair Terminal Blocks

The following 110-type terminal blocks (Table 3-A) can be used in the distribution field.

a. The 110AC1-300STM/6 is a factory-assembled 300-pair terminal block. It is equipped with 12 six 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 12 six 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 24 four-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 72 four-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 32 three-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 96 three-pair circuits.

TABLE 3-A. 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 3-B) can be used in the distribution field.

a. The 110PC1-300CT is a factory-assembled 300-pair terminal block. It is equipped with 12 female 50-pin miniature ribbon connectors that are mounted at the top of the block. The terminal block provides termination space for 96 three-pair circuits.

b. The 110PB1-300CT is a factory-assembled 300-pair terminal block. It is equipped with 12 female 50-pin miniature ribbon connectors that are mounted at the top of the block. The terminal block provides termination space for 72 four-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 72 four-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 96 three-pair circuits.

TABLE 3-B. 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 3-C) can be used in the distribution field.

a. The 110PC1-900CT is a factory-assembled 900-pair terminal block. It is equipped with 36 female 50-pin miniature ribbon connectors that are mounted at the top of the block. The terminal block provides termination space for 576 three-pair circuits.

b. The 110PC1-900CB is a factory-assembled 900-pair terminal block. It is equipped with 36 female 50-pin miniature ribbon connectors that are mounted at the bottom of the block. The terminal block provides termination space for 576 three-pair circuits.

c. The 110PB1-900CT is a factory-assembled 900-pair terminal block. It is equipped with 36 female 50-pin miniature ribbon connectors that are mounted at the top of the block. The terminal block provides termination space for 432 four-pair circuits.

d. The 110PB1-900CB is a factory-assembled 900-pair terminal block. It is equipped with 36 female 50-pin miniature ribbon connectors that are mounted at the bottom of the block. The terminal block provides termination space for 432 four-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 four-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 three-pair circuits.

TABLE 3-C. 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

Distribute Field (66-Type Hardware Only)

Figure 3-7 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 are 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.

The 66-type connecting blocks can be mounted directly onto the wall without using colored back-boards. If this is the case, all of the cross-connect field functional colors should be identified on the wall.

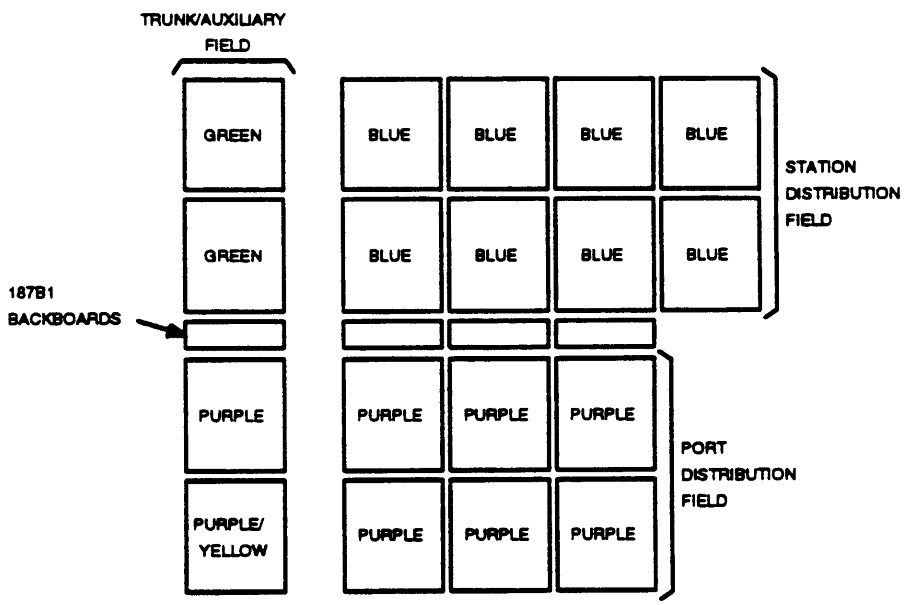


FIGURE 3-7. Typical Cross-Connect Field Arrangement Using 66-Type Hardware

Typical System Equipment Room Floor Plans

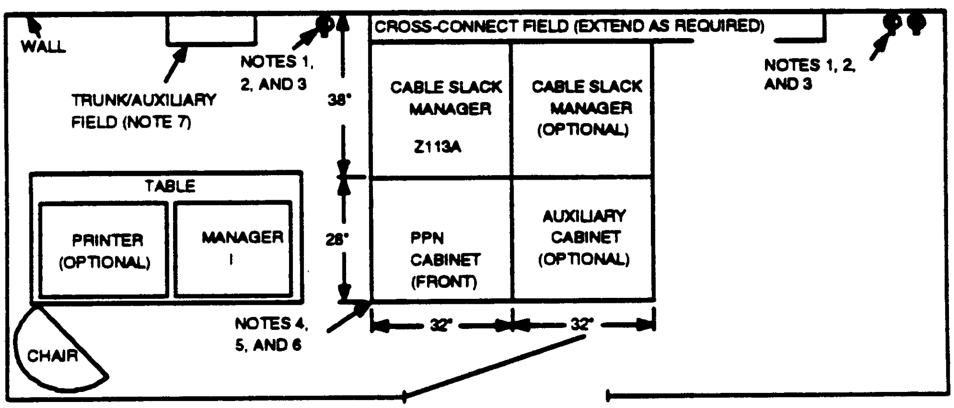
General

The equipment room floor plan must be provided by the FSO for firm quote price lists. For all other quotes, the equipment room floor plans must be provided by AT&T SYSTIMAX PDS technical support. Factors that influence the design are:

- Size and layout of the equipment room
- Number of equipment cabinets
- Location of AC receptacles
- Size of the switch

Typical Floor Plans

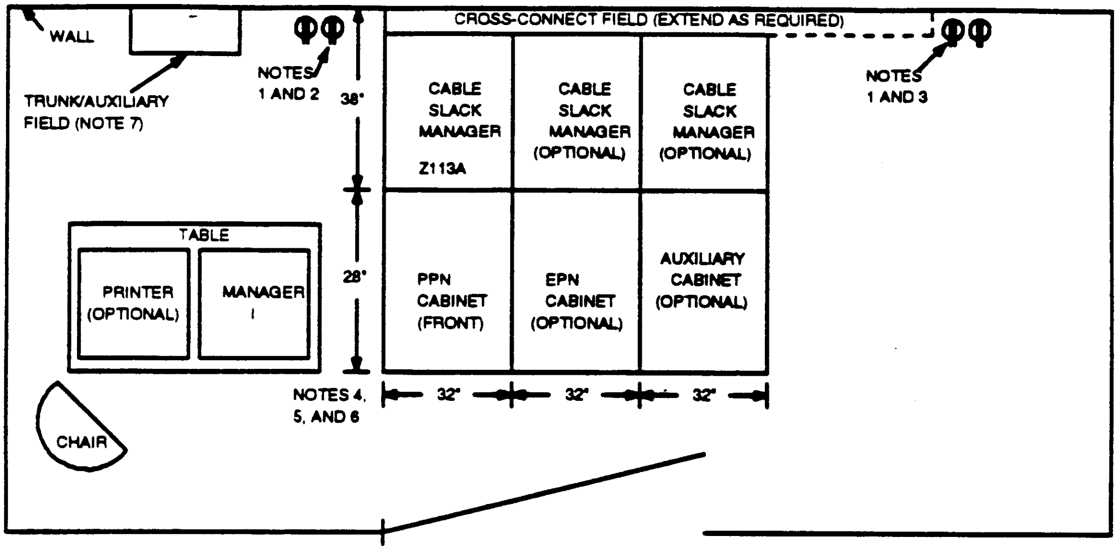
Figures 3-8 and 3-9 show typical floor plans for G1 or G3i multi-carrier cabinets. Figures 3-10 and 3-11 show typical floor plans for G1 or G3i single-carrier cabinets.



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. PPN CABINET REQUIRES A SPECIAL 115-VOLT, 60-HZ, 50-AMP AC RECEPTACLES (NEMA 5-50R RECEPTACLE OR EQUIVALENT), OR 208-VOLT, 60-HZ, 30-AMP AC RECEPTACLES (NEMA L6-30R RECEPTACLE OR EQUIVALENT).
3. AUXILIARY CABINETS REQUIRE A SPECIAL 115-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/AUXILIRY FIELD MAY BE LOCATED WITHIN THE CR0SS-CONNECT FIELD.

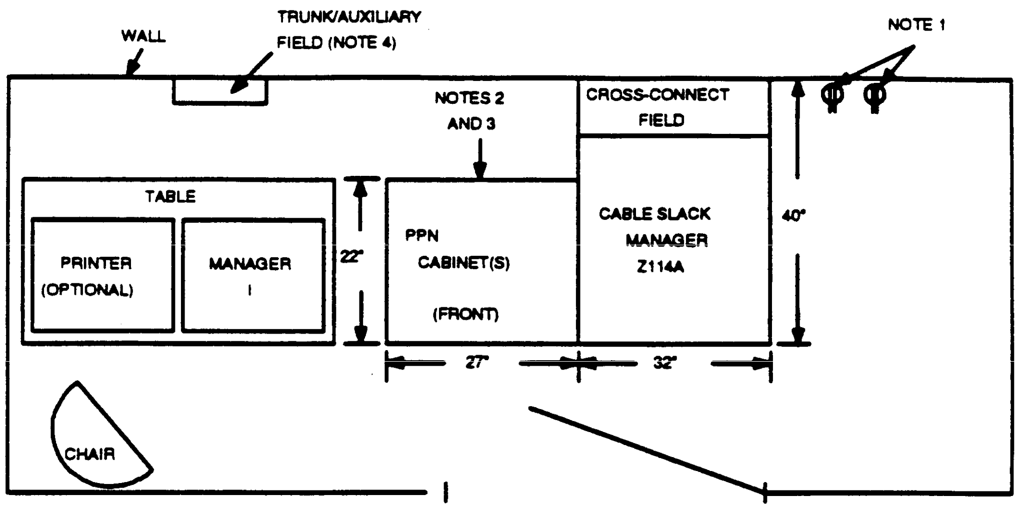
FIGURE 3-8. Typical Floor Plan for G1 or G3i Multi-Carrier Cabinet



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-C0NNECT FIELD AREA.
2. PPN AND EPN CABINETS REQUIRE SPECIAL 115-VOLT, 60-HZ, 50-AMP AC RECEPTACLES (NEMA 5-50R RECEPTACLE, OR EQUIVALENT), OR 208-VOLT, 60-HZ, 30-AMP AC RECEPTACLES (NEMA L6-30R OR EQUIVALENT).
3. AUXILIARY CABINETS REQUIRE SPECIAL 115-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.

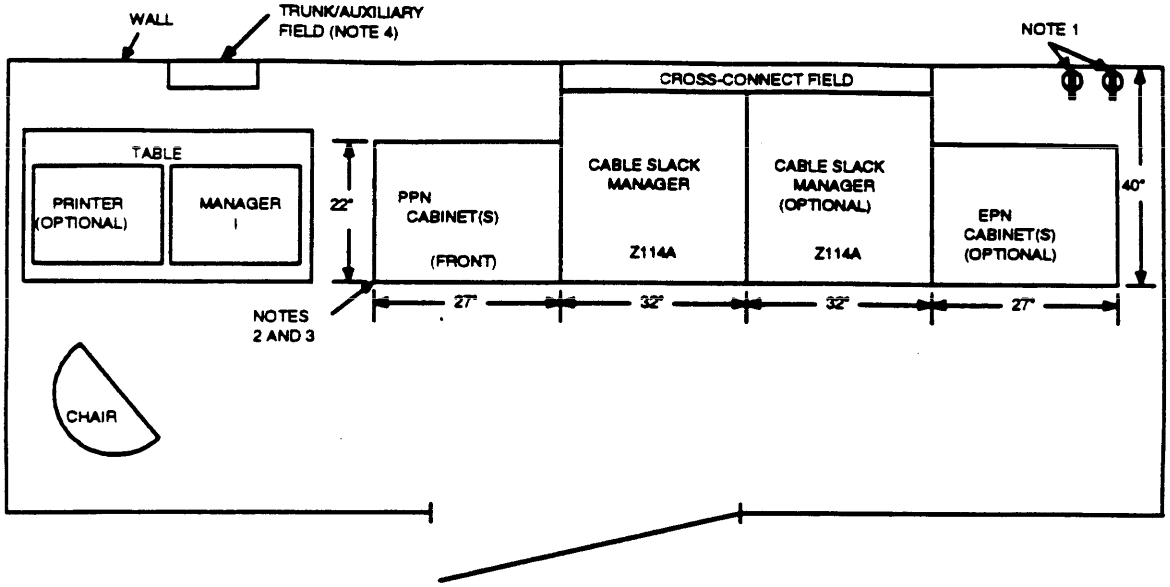
FIGURE 3-9. Typical Floor Plan for G1 or G3i Multi-Carrier Cabinet with EPN



NOTES:

1. AC RECEPTACLES MUST BE SEPARATELY FUSED AND NOT UNDER CONTROL OF A WALL SWITCH. RECEPTACLES MUST NOT BE SHARED WITH OTHER EOUIPMENT 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 3-10. Typical Floor Plan for G1 or G3i Single-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. 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 3-11. Typical Floor Plan for G1 or G3i Single-Carrier Cabinet with EPN

Typical Cross-Connect Field Using 110-Type Hardware

The cross-connect field is located directly behind the switch cabinet. Figure 3-12 shows a typical cross-connect field installation using 110A-type terminal blocks. Figure 3-13 shows a typical cross-connect field installation using 300-pair 110P-type terminal blocks, and Figure 3-14 shows a typical cross-connect field using 900-pair 110P-type teminal blocks.

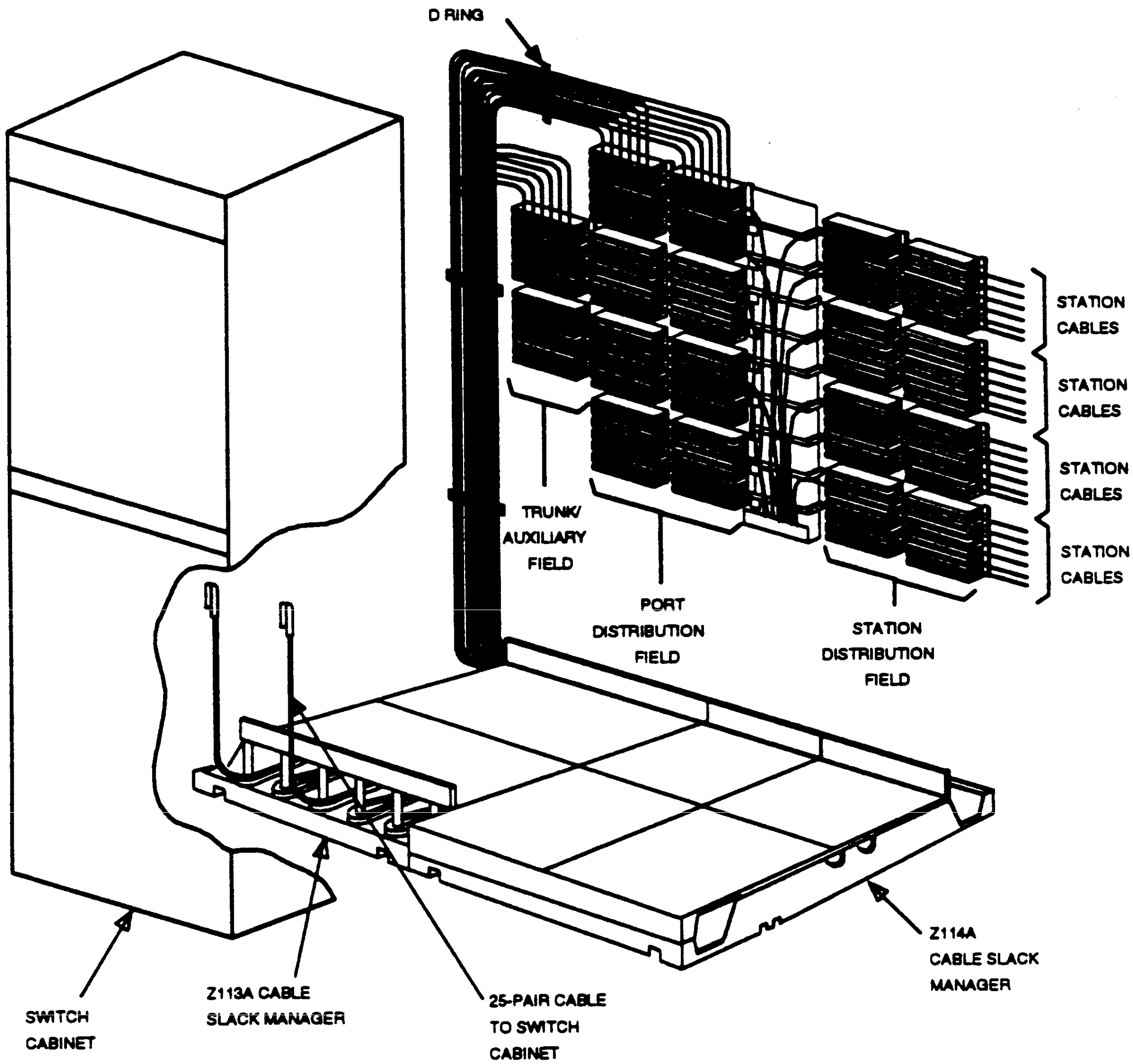


FIGURE 3-12. Typical Cross-Connect Field Installation—110A-Type Terminal Blocks (Approximately 576 4-Pair or 768 3-Pair Station Capacity Illustrated)

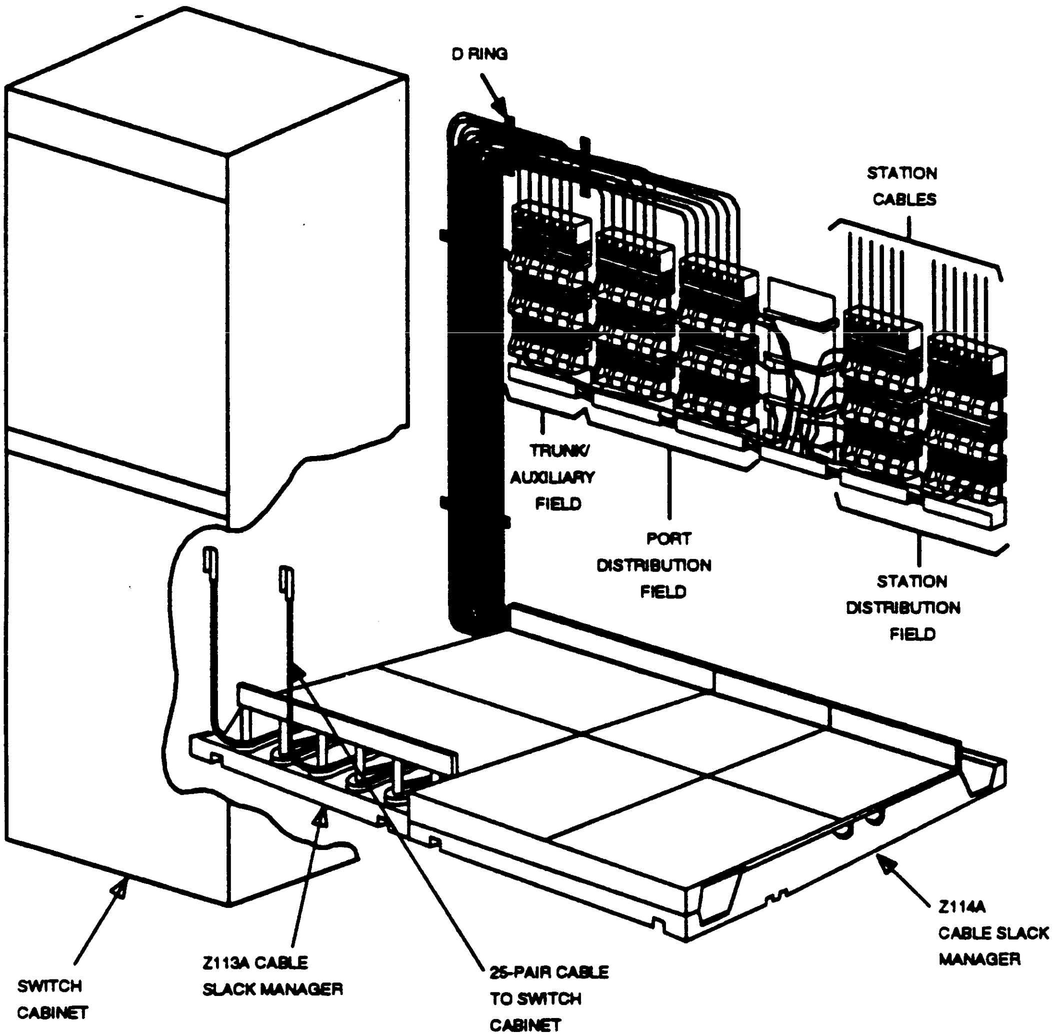


FIGURE 3-13. Typical Cross-Connect Field Installation—300-Pair 110P-Type Terminal Blocks (Approximately 288 4-Pair or 384 3-Pair Station Capacity Illustrated)

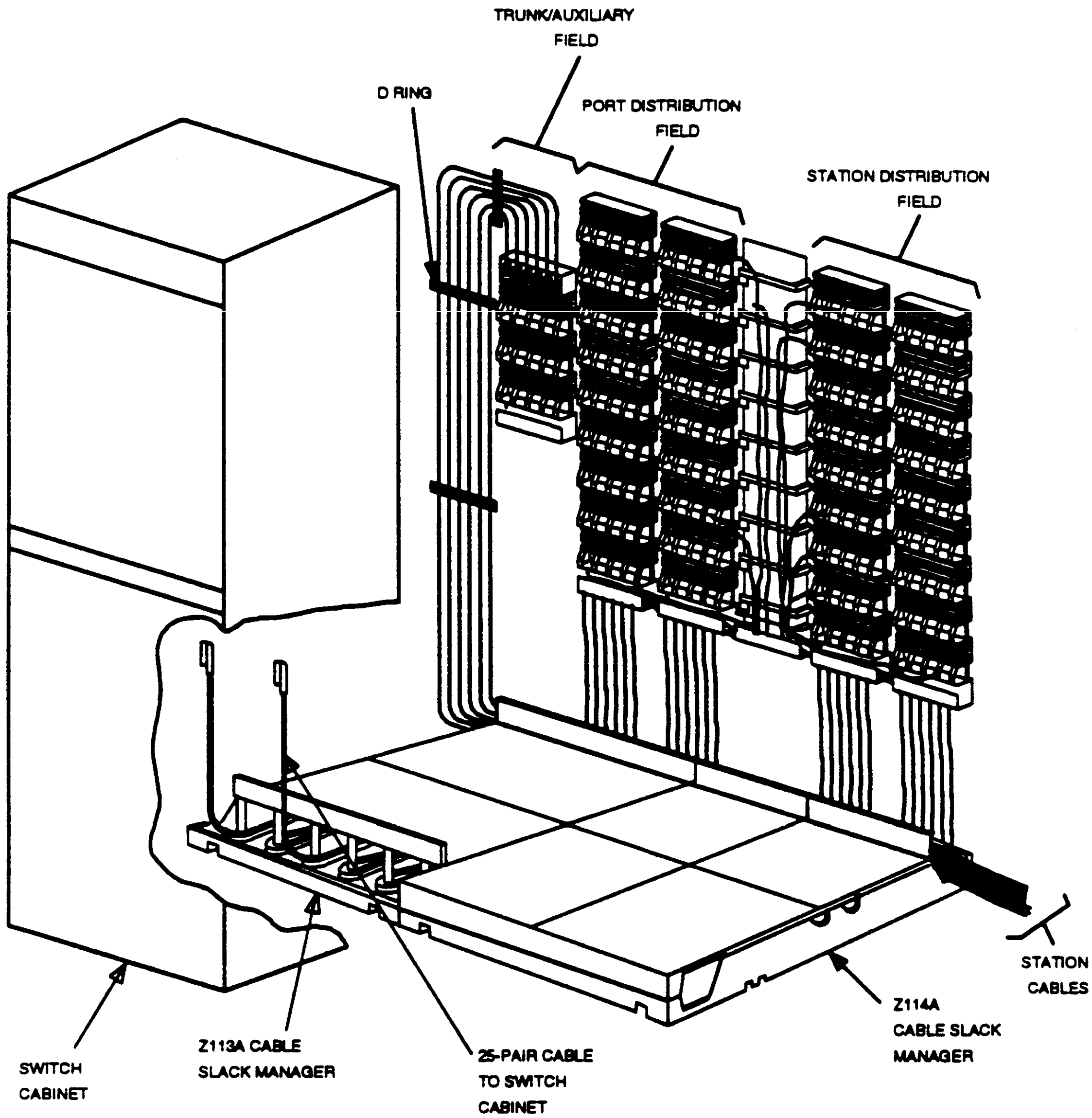


FIGURE 3-14. Typical Cross-Connect Field Installation—900-Pair 110P-Type Terminal Blocks (Approximately 432 4-Pair or 576 3-Pair Station Capacity Illustrated)

Typical Cross-Connect Field Using 66-Type Hardware

Figure 3-15 shows a typical cross-connect field installation using 66-type connecting blocks.

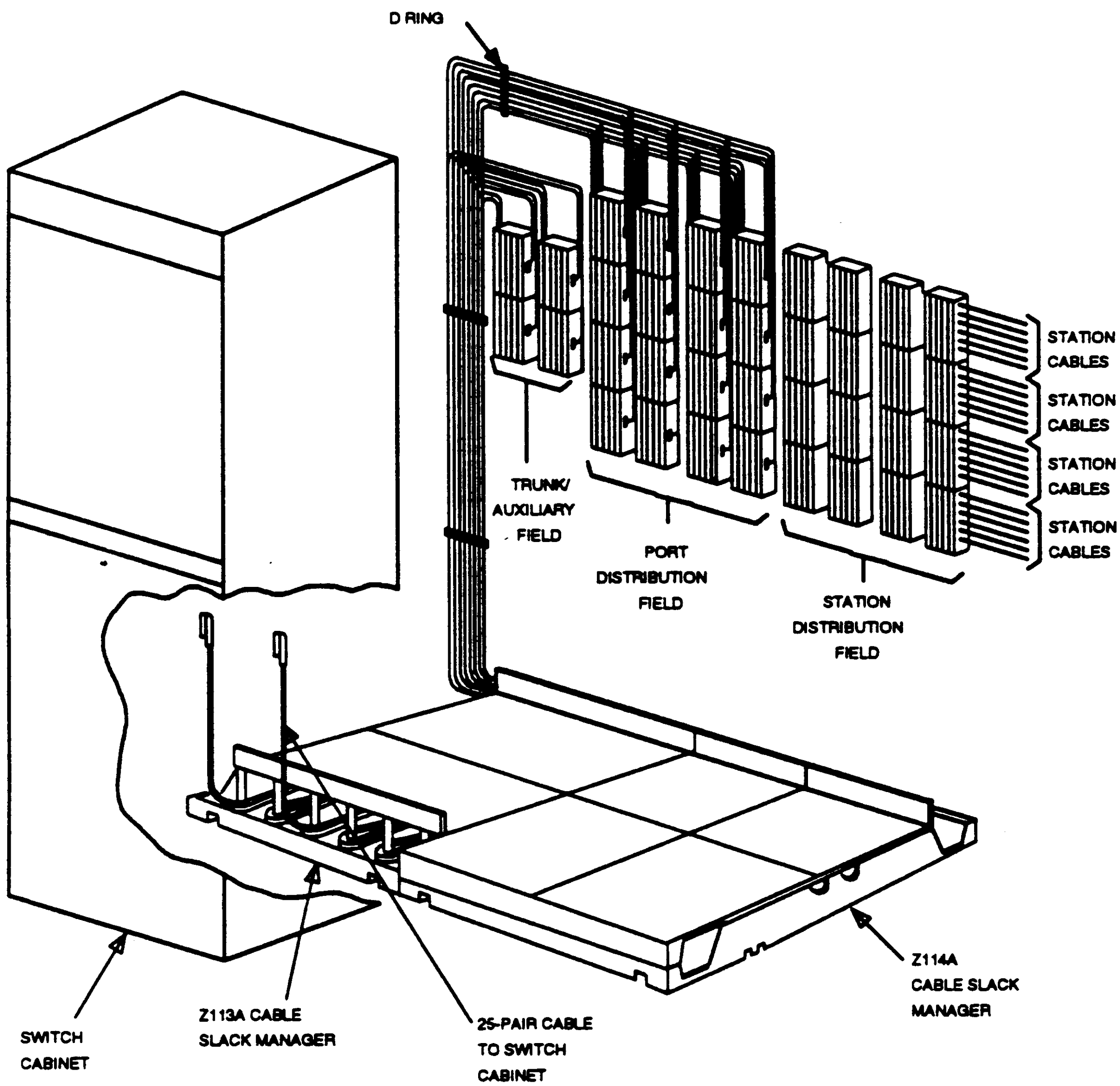


FIGURE 3-15. Typical Cross-Connect Field Installation Using 66-Type Connecting Blocks

Wall Space Requirements

Approximately eight inches of horizontal wall space is required for each column of sneak fuse panels. Horizontal wall space must also be provided for Emergency Transfer Panels.

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 block 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. 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 0.4 or less should be rounded down, and a partial number of 0.5 or more should be rounded up (for example, 2.4 = two cable slack managers and 2.5 = three cable slack managers required).

110-Type Hardware and Patch Cord Requirements

Table 3-D lists the amount of 110-type hardware required to provide one-, two-, three-, or four-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 3-D. 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 are only possible for analog type telephones that are cross-connected with 110A-type hardware.

Table 3-E shows an algorithm for patch cord requirements based on the line capacity of the switch.

TABLE 3-E. 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 3-F lists the amount of 66-type hardware required to provide one-, two-, three-, or four-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 3-F. 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 are 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 3-11. The distance between the mounting screw holes on the terminal blocks is 10-13/16 inches. If a vertical patch cord trough is to 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 3-14 or 3-15). 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 3-16). If 900-pair terminal blocks are to be mounted, draw a level horizontal line on the wall 23 inches above the floor (Figure 3-17).

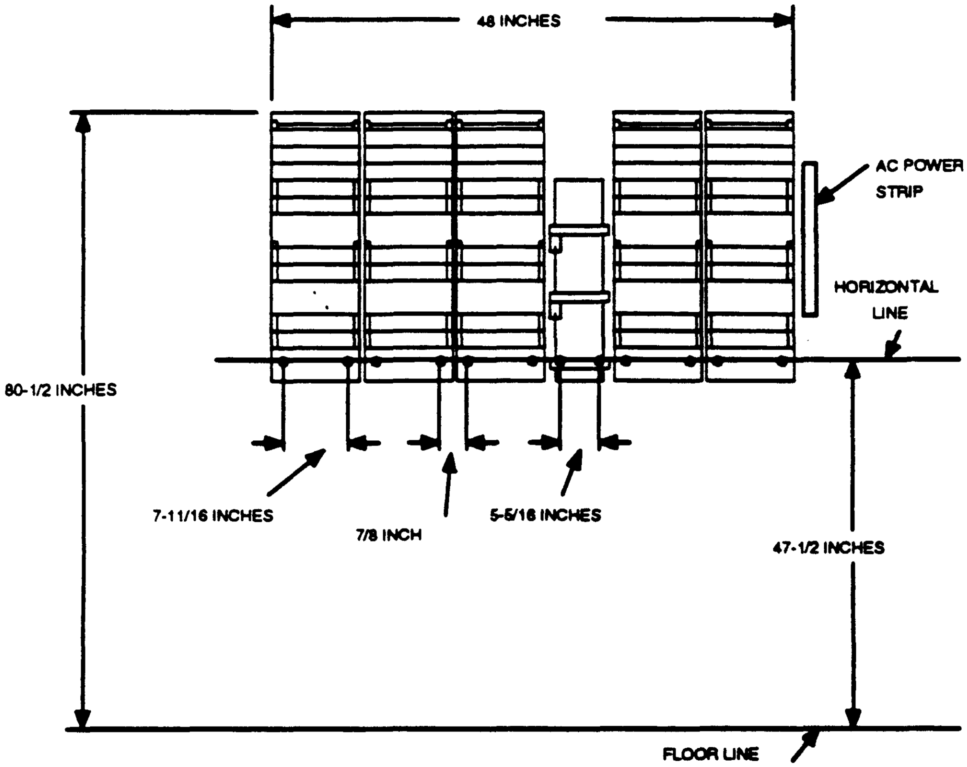


FIGURE 3-16. Mounting 300-Pair 110P-Type Terminal Blocks (Approximately 288 4-Pair or 384 3-Pair Station Capacity Illustrated)

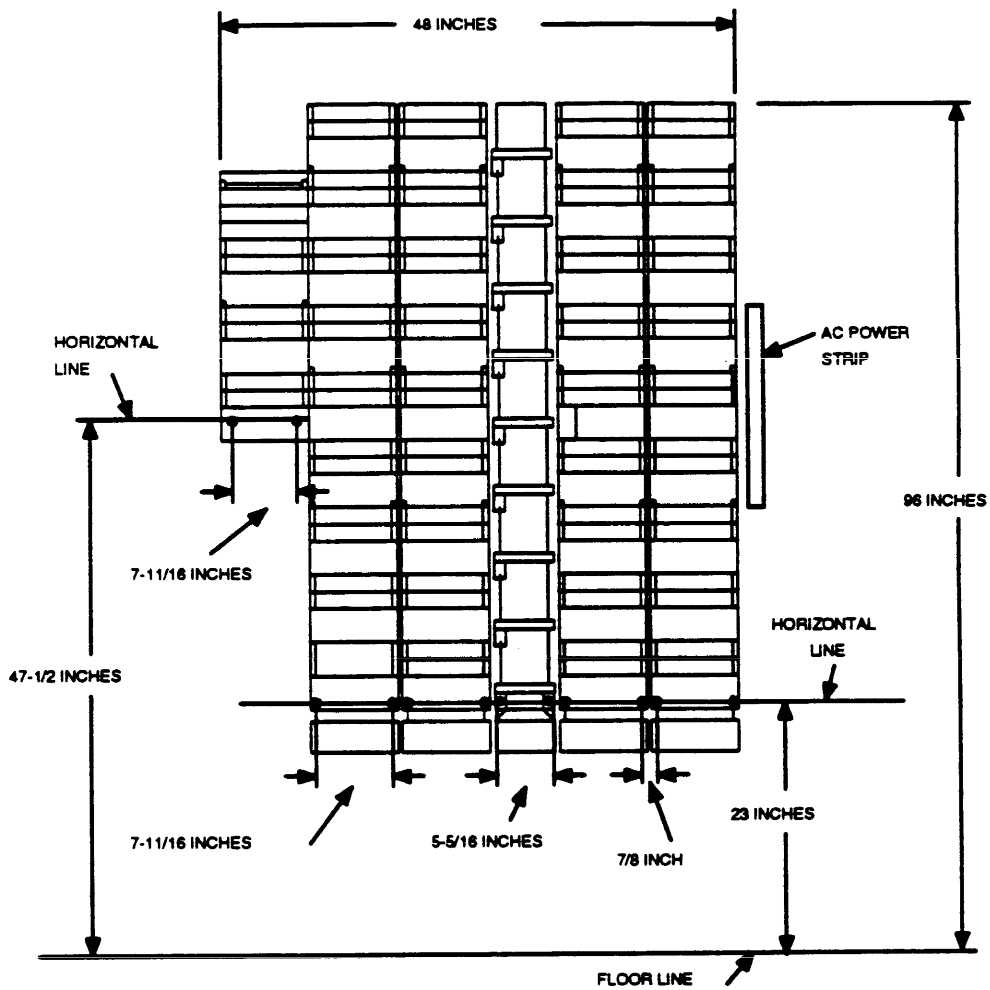


FIGURE 3-17. Mounting 900-Pair 110P-Type Terminal Blocks (Approximately 432 4-Pair or 576 3-Pair Station Capacity Illustrated)

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 also can be mounted on a free-standing, floor-mounted 1110A2 apparatus mounting frame (Figure 3-18). 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.

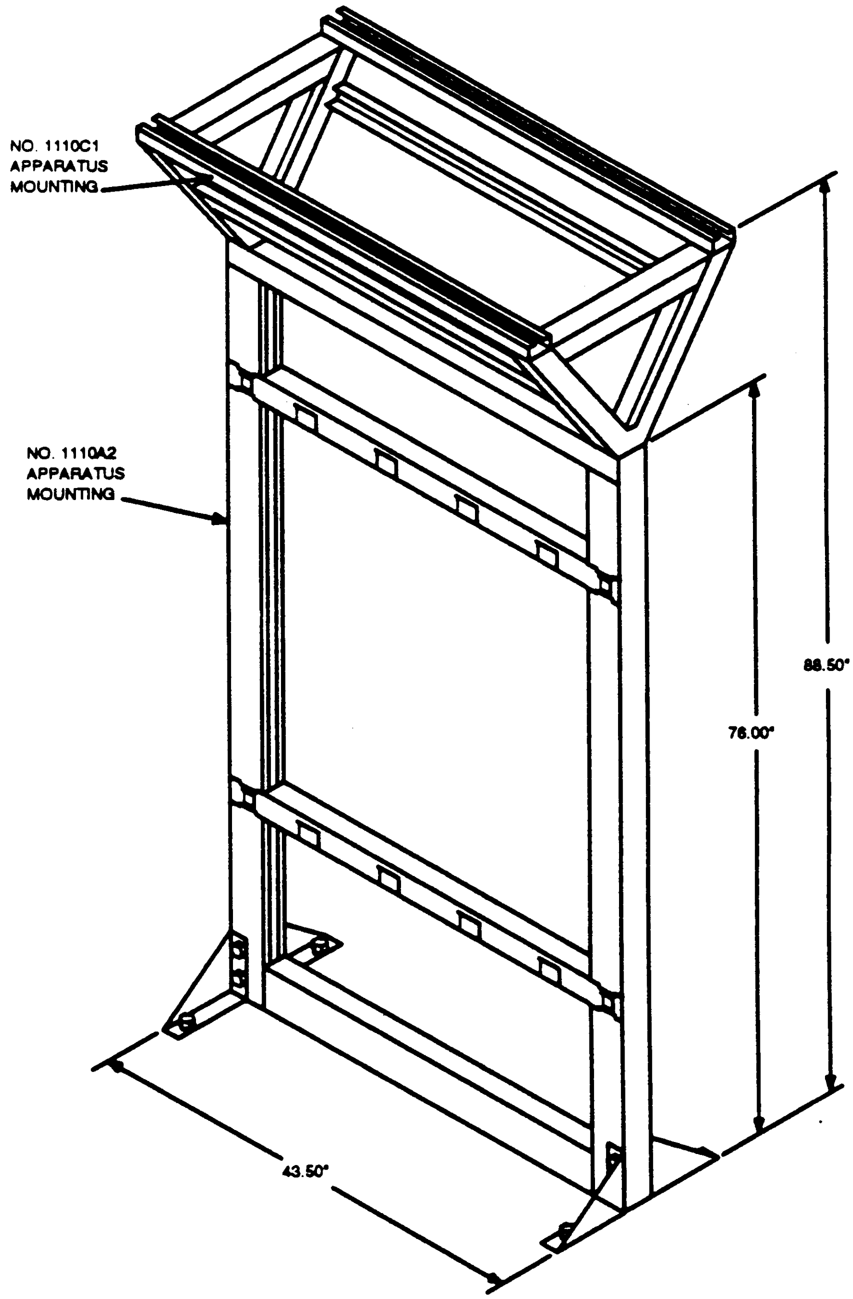


FIGURE 3-18. 1110A2 and 1110C1 Apparatus Mountings

APPARATUS MOUNTING FRAME ORDERING INFORMATION

Code Number	Description	Comcode
1110A2	Apparatus Mounting Frame	104-032-495
1110C1	Cable Support Assembly	104-175-120
1110A1	End Dress Panel	104-176-268
2110A1	Top Dress Panel	104-176-276
2110B1	Bottom Dress Panel	104-176-284

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 3-7). 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 VELCRO® 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 3-19).

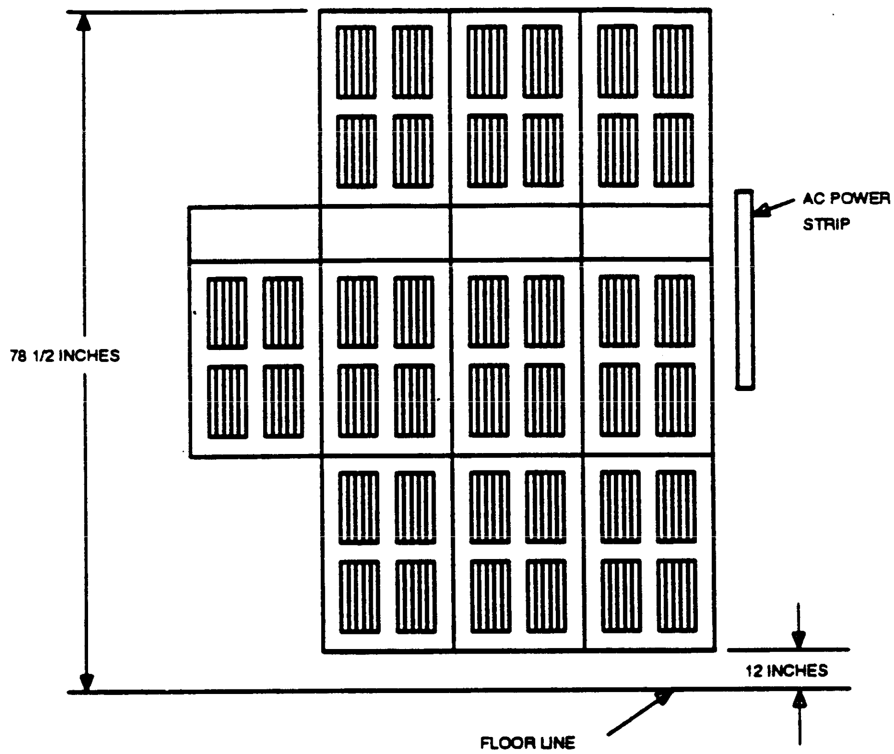


FIGURE 3-19. Cross-Connect Field Installation, 66-Type Connecting Blocks

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 3-15), proceed as follows:

1. Place the Z113A cable slack manager against the wall under the cross-connect field (Figure 3-11), 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 3-20 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 (three-pair)

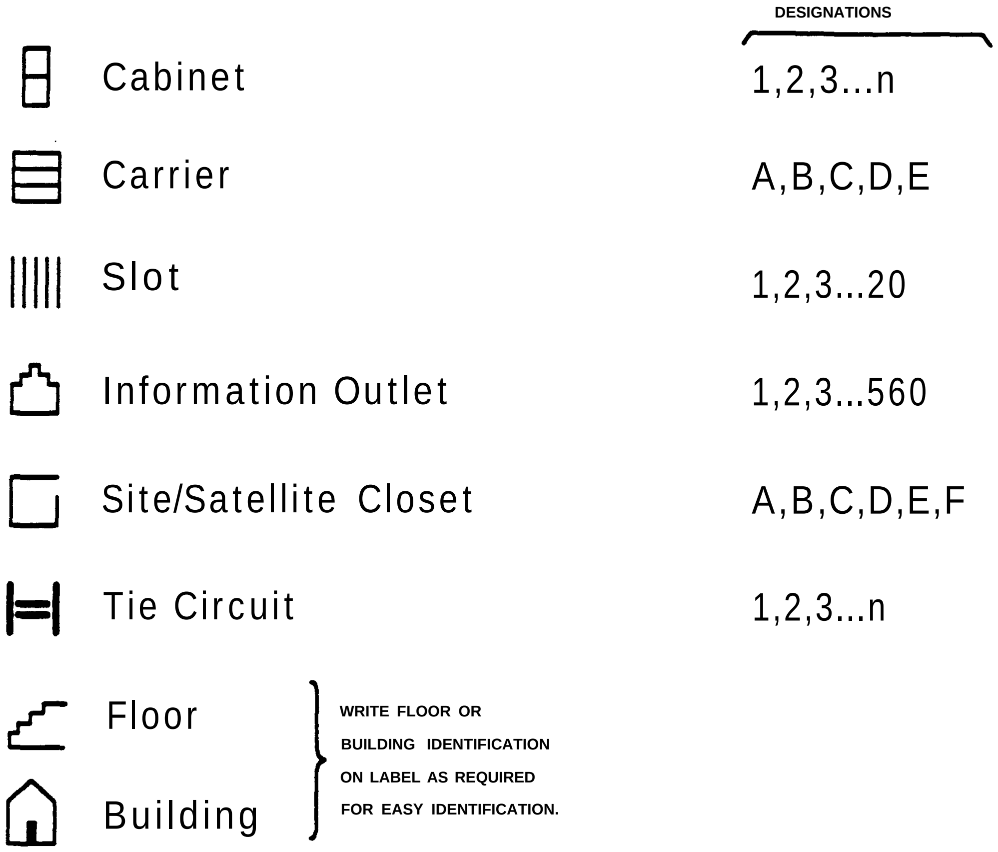


FIGURE 3-20. System Label Graphic Symbols and Designation Nomenclature

Each 110-type label is used to identify two 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 3-21) 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 103-970-000) contains all of the 110-type labels.

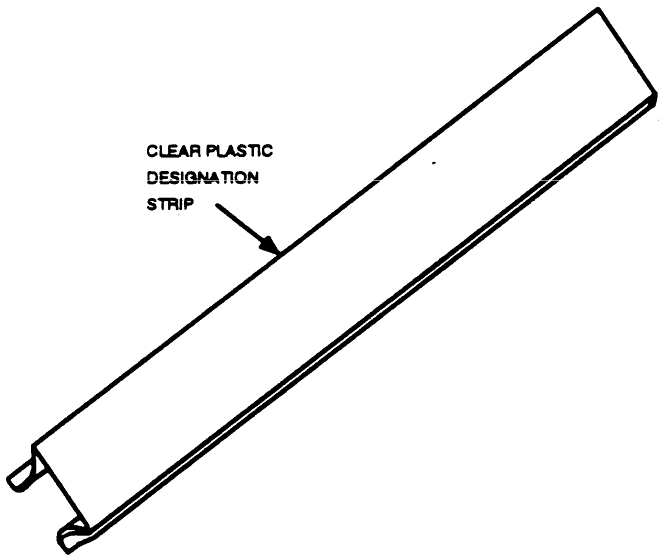


FIGURE 3-21. Clear Plastic Designation Strip

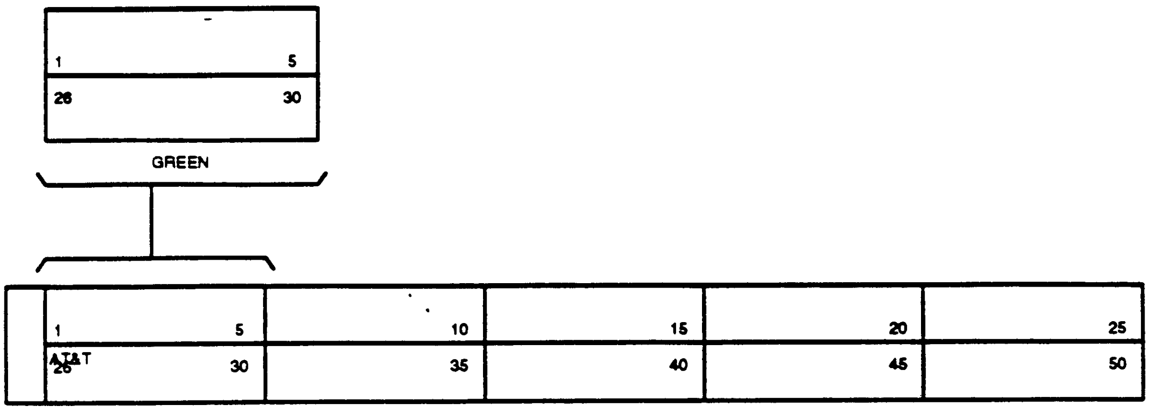
CO Trunk Labels (Green)

The labels shown in Figure 3-22 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.

Label Code 221A—Green Labels (Comcode 103-970-018)

Label code number 221A contains the following CO trunk labels:

- 6 green trunk labels (Figure 3-22). The labels are numbered from 1 to 300. Each label identifies 50 trunk pairs.
- 4 unnumbered green labels (Figure 3-22). Each label identifies 50 trunk pairs.

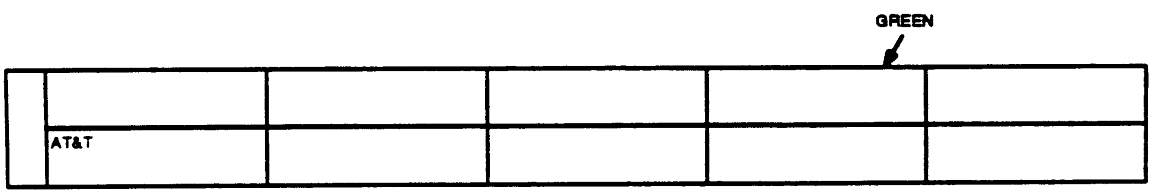


- **USAGE:**

  IDENTIFIES NETWORK INTERFACE TRUNK PAIRS.

- **CODE NO:**

  221A



- **USAGE:**

  CUSTOMER IDENTIFICATION OF NETWORK INTERFACE TRUNK PAIRS.

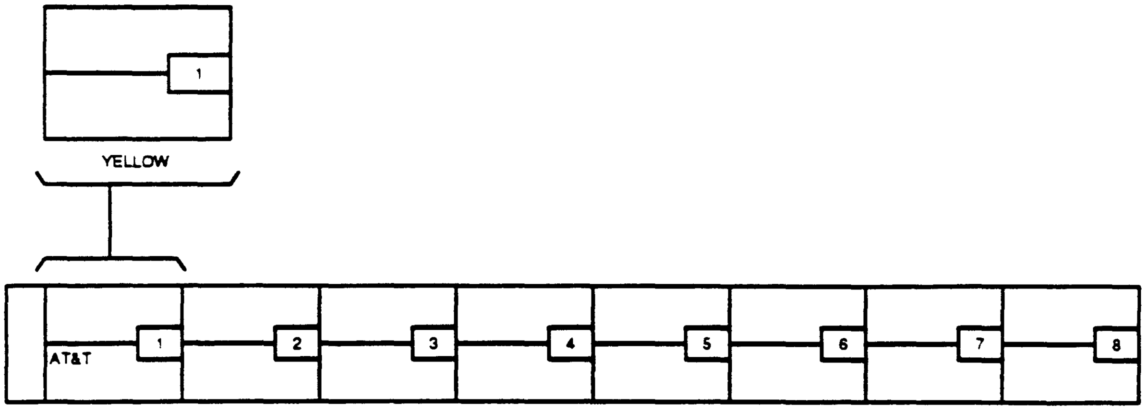
- **CODE NO:**

  221A

FIGURE 3-22. CO Trunk Labels for 110-Type Terminal Blocks

Auxiliary Labels (Yellow)

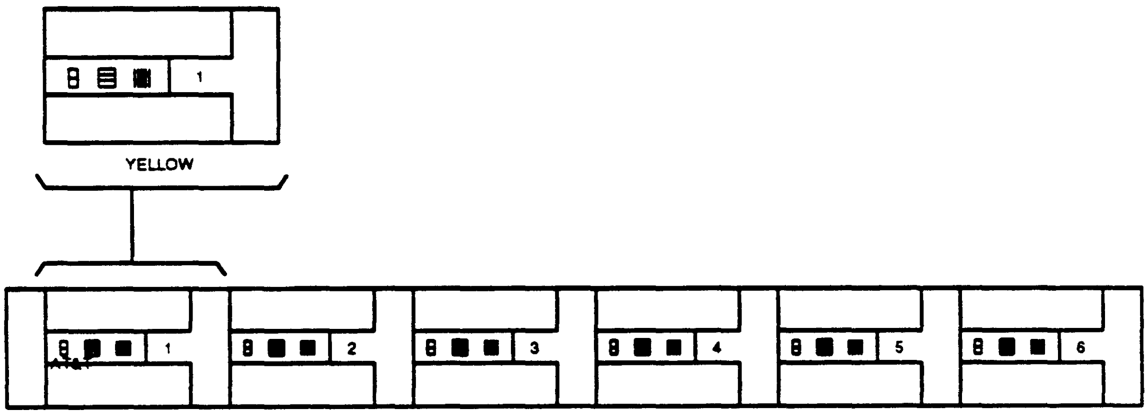
Auxiliary Port and Circuit Labels The labels shown in Figure 3-23 identify auxiliary port and circuit appearances at the cross-connect field. The labels must be filled in manually.



- **USAGE:**

  IDENTIFIES 3-PAIR AUXILIARY CIRCUITS 1 THROUGH 8.
- **CODE NO:**

  222A



- **USAGE:**

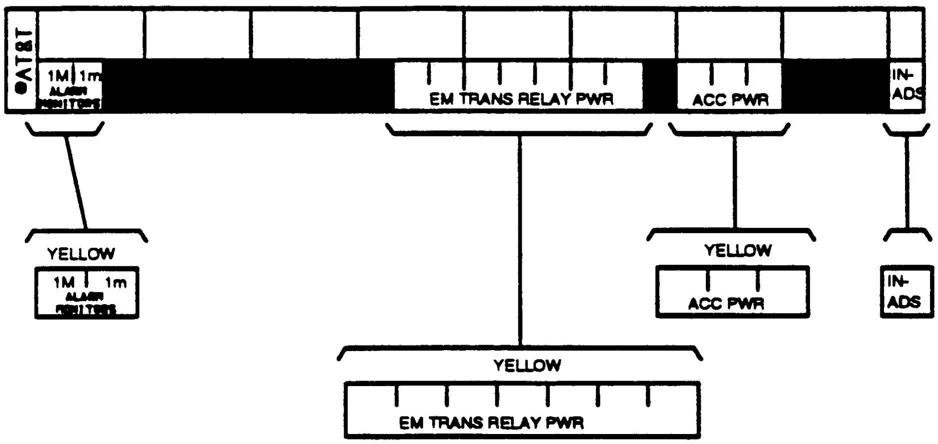
  IDENTIFIES SSI PORTS 1 THROUGH 6 FROM AN AP.
- **CODE NO:**

  222A

FIGURE 3-23. Auxiliary Port and Circuit Appearance Labels for 110-Type Terminal Blocks

Auxiliary Circuit and Control Carrier Outputs (Auxiliary) Labels

The labels shown in Figures 3-24 and 3-25 identify auxiliary circuit appearances and the control carrier **AUXILIARY** connector outputs for G1 or G3i 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.



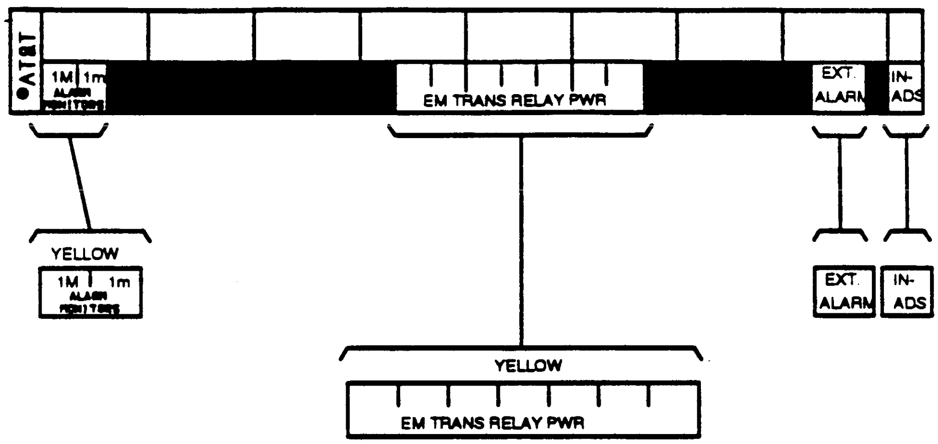
- USAGE:

  IDENTIFIES CONTROL CARRIER OUTPUTS (AUXILIARY) AND AUXILIARY CIRCUITS.

- CODE NO:

  222A

FIGURE 3-24. Auxiliary Circuit and Control Carrier Outputs (AUXILIARY) Labels for 110-Type Terminal Blocks—G1 or G3i Multi-Carrier Cabinet



- **USAGE:**

  IDENTIFIES CONTROL CARRIER OUTPUTS (AUXILIARY) AND AUXILIARY CIRCUITS

- **CODE NO:**

  222A

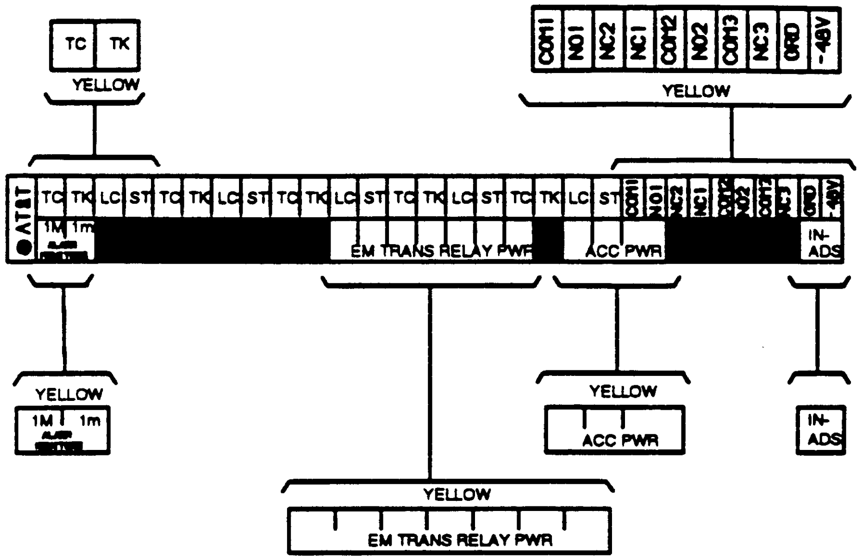
FIGURE 3-25. Auxiliary Circuit and Control Carrier Outputs (AUXILIARY) Labels for 110-Type Terminal Blocks—G1 or G3i Single-Carrier Cabinet

808A Emergency Transfer Panel and Control Carrier Outputs (Auxiliary) Labels

The labels shown in Figures 3-26 and 3-27 identify the leads and connection point for –48 volt DC power to the 808A Emergency Transfer Panel and the control carrier **AUXILIARY** connector outputs for G1 or G3i multi-carrier and single-carrier cabinets, respectively.

Note: For complete installation instructions for the 808A Emergency Transfer Panel, see *AT&T 808A Emergency Transfer Panel Installation Instructions, 846-774-701.*

The top half of the labels identify the 808A Emergency Transfer Panel 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.



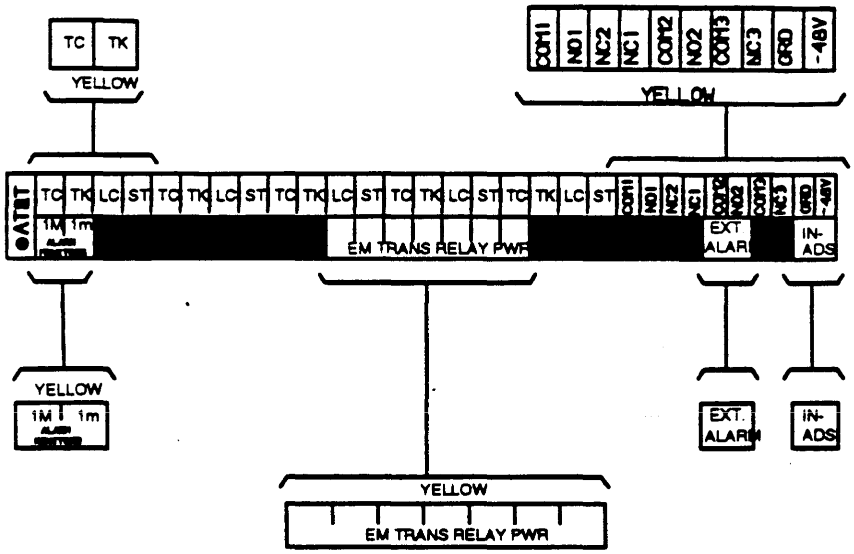
- USAGE:

  IDENTIFIES CONTROL CARRIER OUTPUTS (AUXILIARY) AND 574-5 EMERGENCY TRANSFER UNIT CIRCUITS.

- CODE NO:

  222A

FIGURE 3-26. 808A Emergency Transfer Unit and Control Carrier Outputs (AUXILIARY) Label for 110-Type Terminal Block—G1 or G3i Multi-Carrier Cabinet



- **USAGE:**

  IDENTIFIES CONTROL CARRIER OUTPUTS (AUXILIARY) AND 574-5 EMERGENCY TRANSFER UNIT CIRCUITS.

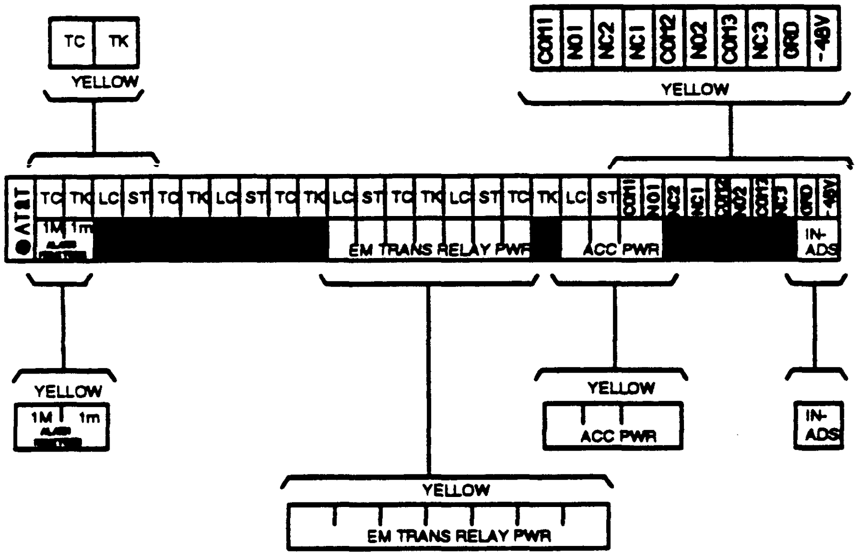
- **CODE NO:**

  222A

FIGURE 3-27. 808A Emergency Transfer Unit and Control Carrier Outputs (AUXILIARY) Labels for 110-Type Terminal Block—G1 or G3i Single-Carrier Cabinet

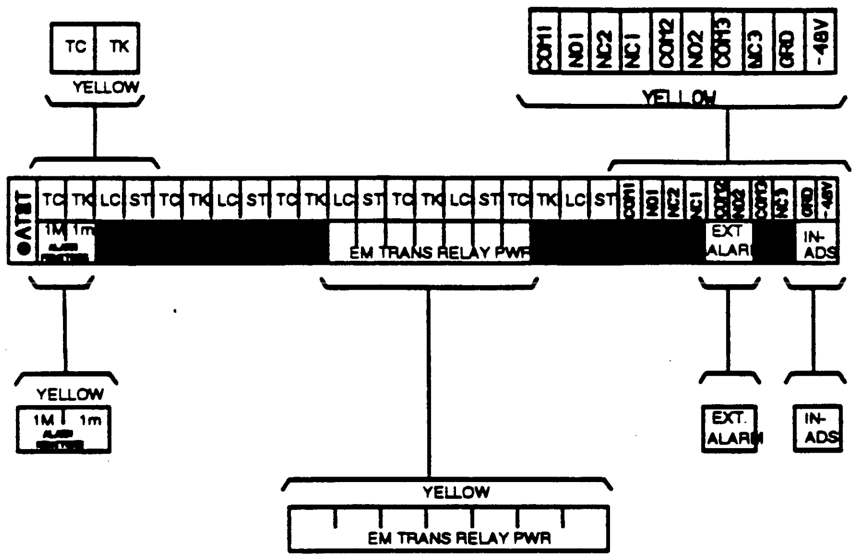
574-5 Power Transfer Unit and Control Carrier Outputs (Auxiliary) Labels

The labels shown in Figures 3-28 and 3-29 identify the leads to the 574-5 power transfer unit and the control carrier **AUXILIARY** connector outputs for G1 or G3i 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.



- **USAGE:**
  IDENTIFIES CONTROL CARRIER OUTPUTS (AUXILIARY) AND 574-5 EMERGENCY TRANSFER UNIT CIRCUITS.
- **CODE NO:**
  222A

FIGURE 3-28. 574-5 Power Transfer Unit and Control Carrier Outputs (AUXILIARY) Labels for 110-Type Terminal Block—G1 or G3i Multi-Carrier Cabinet



- USAGE:
  IDENTIFIES CONTROL CARRIER OUTPUTS (AUXILIARY) AND 574-5 EMERGENCY TRANSFER UNIT CIRCUITS.
- CODE NO:
  222A

FIGURE 3-29. 574-5 Power Transfer Unit and Control Carrier Outputs (AUXILIARY) Labels for 110-Type Terminal Block—G1 or G3i Single-Carrier Cabinet

808A Emergency Transfer Panel Labels

The label shown in Figure 3-30 identifies the emergency transfer leads and the -48 volt dc power connection for the 808A Emergency Transfer Panel.

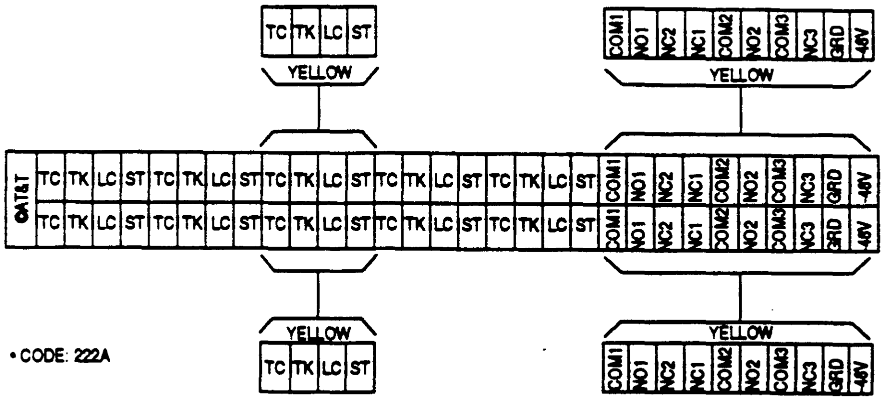


FIGURE 3-30. 808A Emergency Transfer Unit Label

574-5 Power Transfer Unit Label

Both sections of the label shown in Figure 3-31 identify leads to the 574-5 power transfer unit.

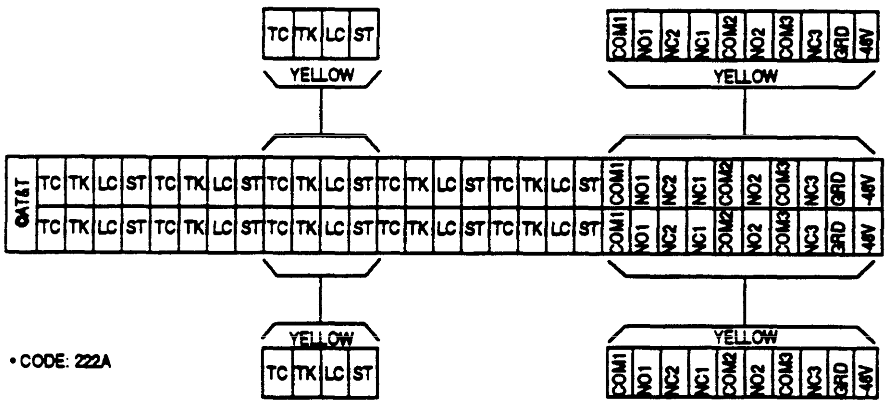
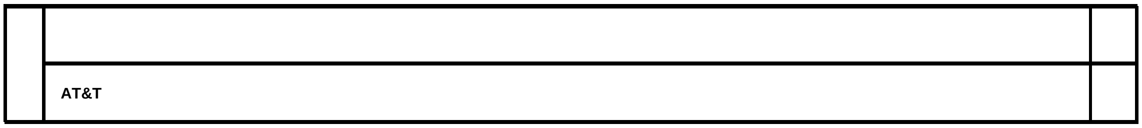


FIGURE 3-31. 574-5 Power Transfer Unit Label

Blank Auxiliary Label

The blank label shown in Figure 3-32 identifies auxiliary equipment and must be filled in manually.



- USAGE:
  CUSTOM IDENTIFICATION OF AUXILIARY EQUIPMENT
- CODE NO:
  222A

FIGURE 3-32. Blank Auxiliary Labels

Label Code 222A—Yellow Labels (Comcode 103-970-026)

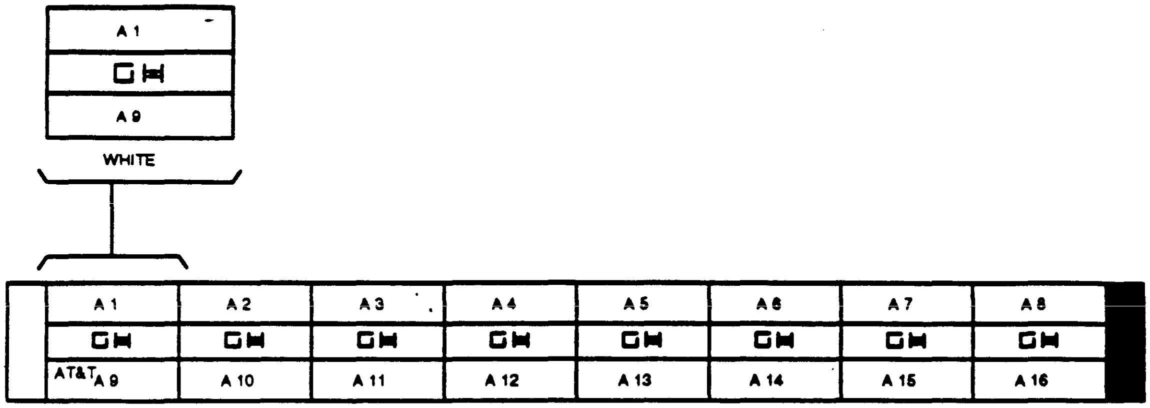
Label code 222A contains the following labels:

- Four AP Standard Serial Interface (SSI) port labels (Figure 3-22)
- Four three-pair auxiliary circuit labels (Figure 3-22)
- Two unnumbered auxiliary circuit and control carrier **AUXILIARY** connector labels (Figures 3-24 or 3-25)
- Two 808A Emergency Transfer Panel and control carrier **AUXILIARY** connector labels (Figures 3-26 or 3-27)
- Two 574-5 power transfer unit and control carrier **AUXILIARY** connector labels (Figures 3-28 or 3-29)
- Two 808A Emergency Transfer Panel labels (Figure 3-30)
- Two 574-5 power transfer unit labels (Figure 3-31)
- Six blank labels (Figure 3-32)

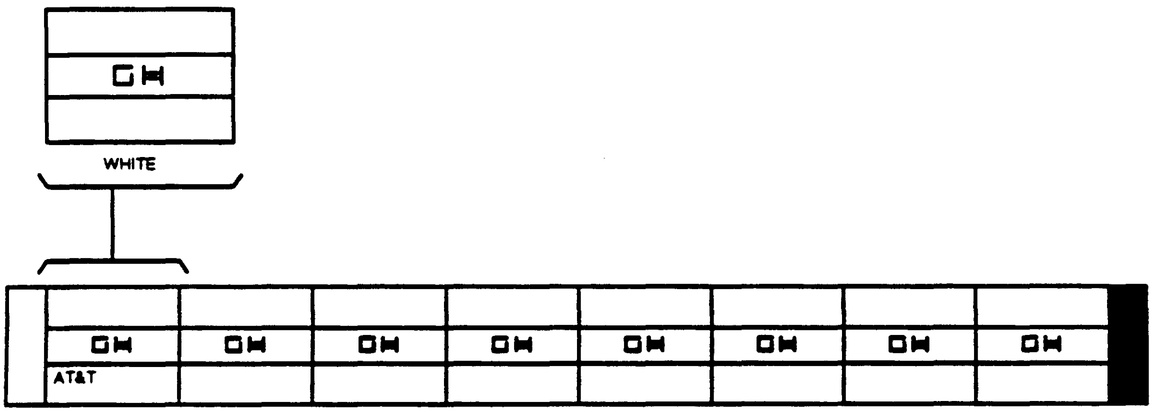
Station Labels (White and Blue)

Three-Pair White Station Labels

The white labels shown in Figure 3-33 identify three-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.



- USAGE:
  IDENTIFIES 3-PAIR CIRCUIT APPEARANCES THAT CONNECT TO A SATELLITE LOCATION.
- CODE NO:
  223A



- USAGE:
  CUSTOM IDENTIFICATION OF 3-PAIR CIRCUIT APPEARANCES THAT CONNECT TO A SATELLITE LOCATION
- CODE NO:
  223A

FIGURE 3-33. 3-Pair White Station Wiring (Equipment Room) Labels

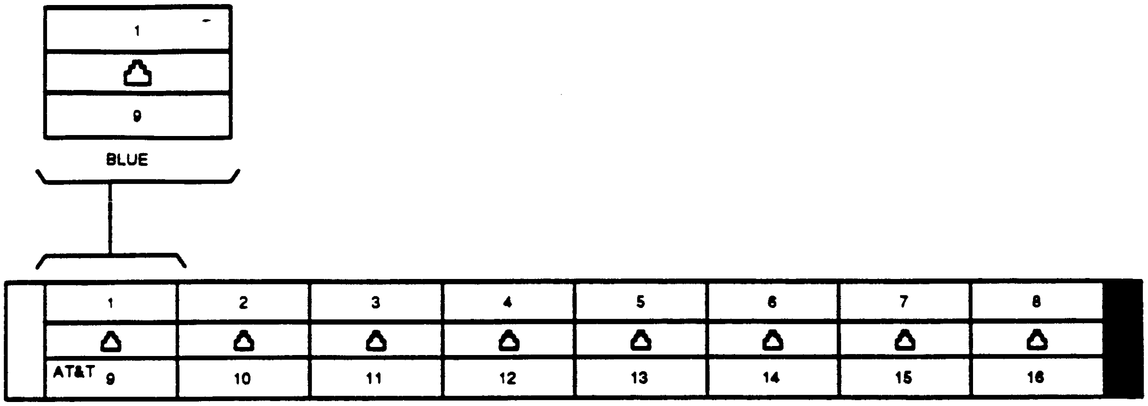
Label Code 223A—White Labels (Comcode 103-970-034)

Label code 223A contains the following labels:

- 60 white labels that identify three-pair circuits from the equipment room to the satellite closet (Figure 3-33). 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 3-33) that identify three-pair station circuits from the satellite closet. Each label identifies 12 three-pair station circuits.

Three-Pair Blue Station Labels

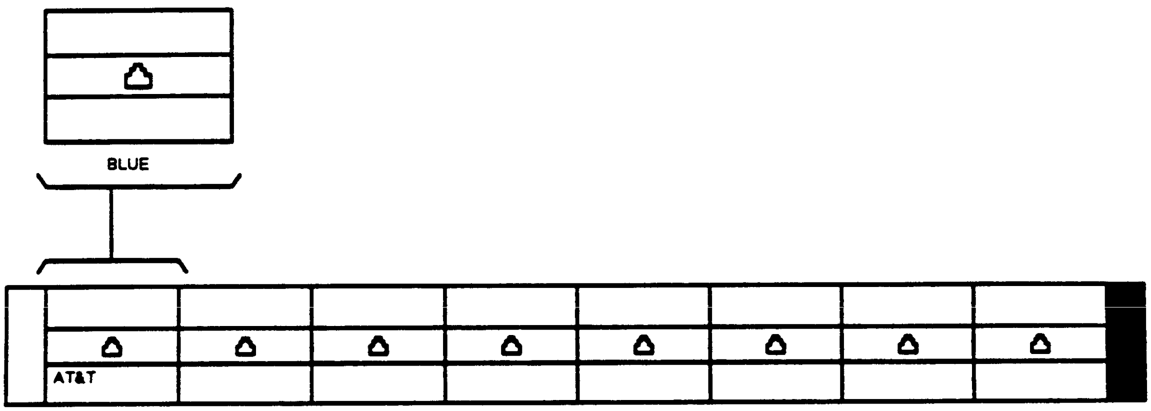
The labels shown in Figure 3-34 identify three-pair blue station appearances at the cross-connect field. The top labels are numbered and should be installed in sequence (1 to 560) starting with the first terminal block in the blue field. The bottom label must be filled in manually.



- USAGE:

  IDENTIFIES 3-PAIR STATION APPEARANCES THAT CONNECT TO A 356A ADAPTER. LABELS ARE NUMBERED IN SEQUENCE FROM 1 TO 580.
- CODE NO:

  224A



- USAGE:

  CUSTOMER IDENTIFICATION OF 3-PAIR STATION APPEARANCES THAT CONNECT TO A 358A ADAPTER.
- CODE NO:

  224A

FIGURE 3-34. 3-Pair Blue Station Wiring (Equipment Room) Labels

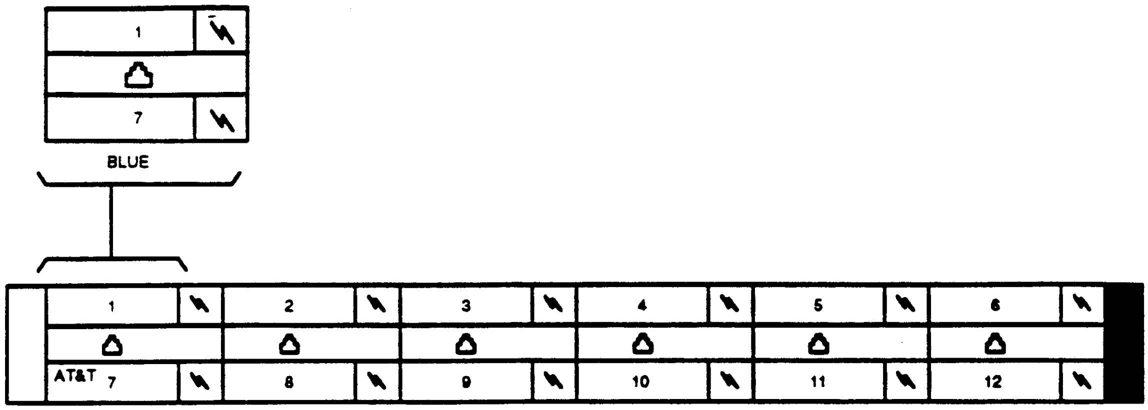
Label Code 224A—Blue Labels (Comcode 103-970-042)

Label code 224A contains the following labels:

- 35 blue labels (Figure 3-34) that identify three-pair station circuits from the equipment room. Each label identifies 16 three-pair station circuits. The labels are numbered sequentially from 1 to 560.
- 40 blue labels (Figure 3-35) that identify four-pair station circuits from the equipment room. Each label identifies 12 four-pair station circuits. The labels are numbered sequentially from 1 to 480.
- 102 blue labels (Figure 3-35) that identify four-pair station circuits from the satellite closet. Each label identifies 12 four-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 3-34) that identify three-pair station circuits from the equipment room. Each label identifies 16 three-pair station circuits.
- Unnumbered blue labels (Figure 3-35) that identify four-pair station circuits from the equipment room. Each label identifies 12 four-pair station circuits.
- 28 unnumbered blue labels (Figure 3-36) that identify four-pair station circuits from the satellite closet. Each label identifies 12 four-pair station circuits.

Four-Pair Blue Station Labels

The labels shown in Figure 3-35 identify four-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 3-36 identify four-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.

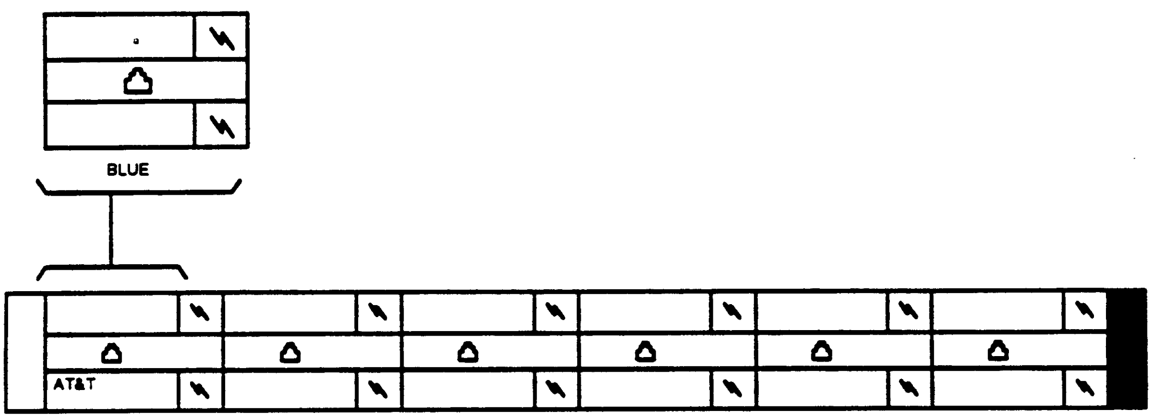


- USAGE:

  IDENTIFIES 4-PAIR STATION APPEARANCES. LABELS ARE NUMBERED IN SEQUENCE FROM 1 TO 480.

- CODE NO:

  224A



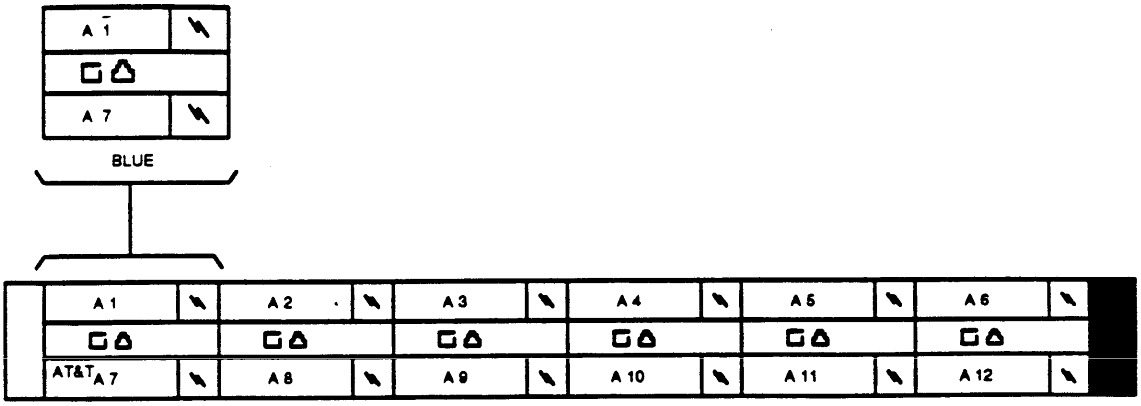
- USAGE:

  CUSTOMER IDENTIFICATION OF 4-PAIR STATION APPEARANCES.

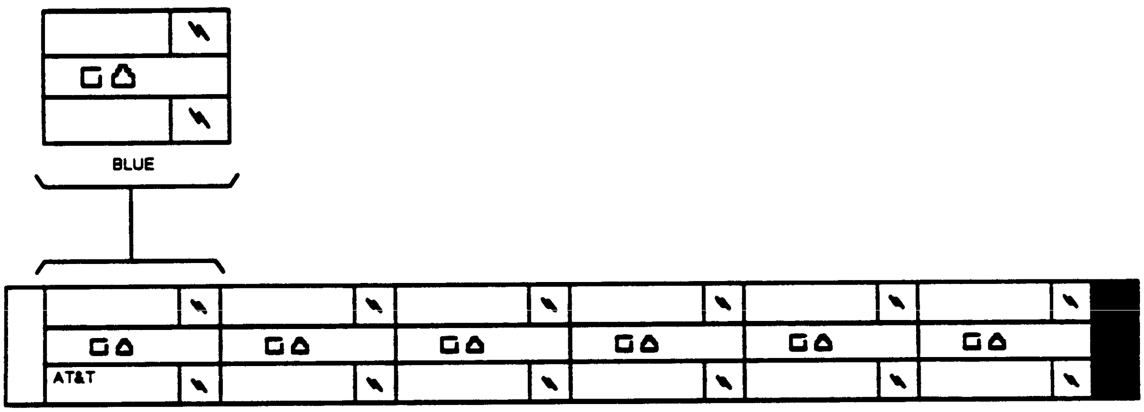
- CODE NO:

  224A

FIGURE 3-35. 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

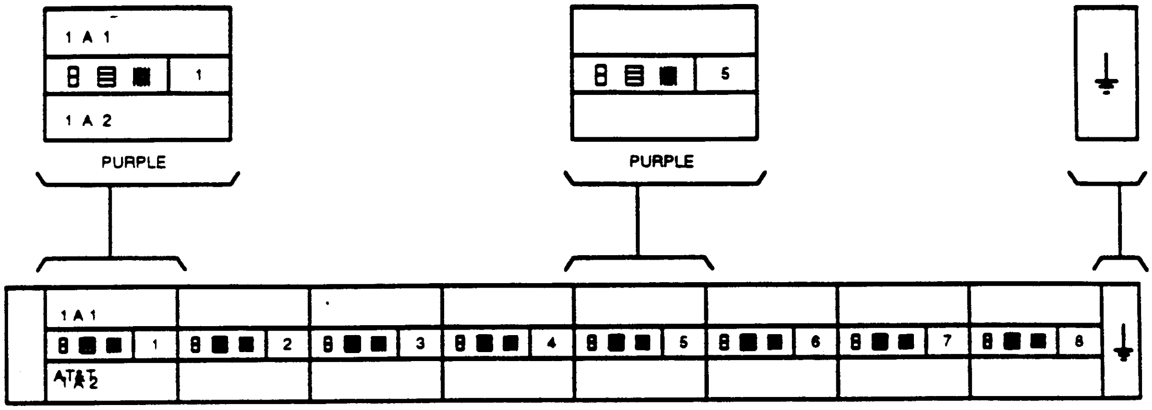
FIGURE 3-36. 4-Pair Blue Station Wiring (Satellite Closet) Labels

Port Labels (Purple)

Port Labels

The labels shown in Figure 3-37 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 3-38. An example of how to fill out the label for the 16-port analog circuit pack is shown in Figure 3-39. 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 3-40 and 3-41 for these circuits. Figure 3-40 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).

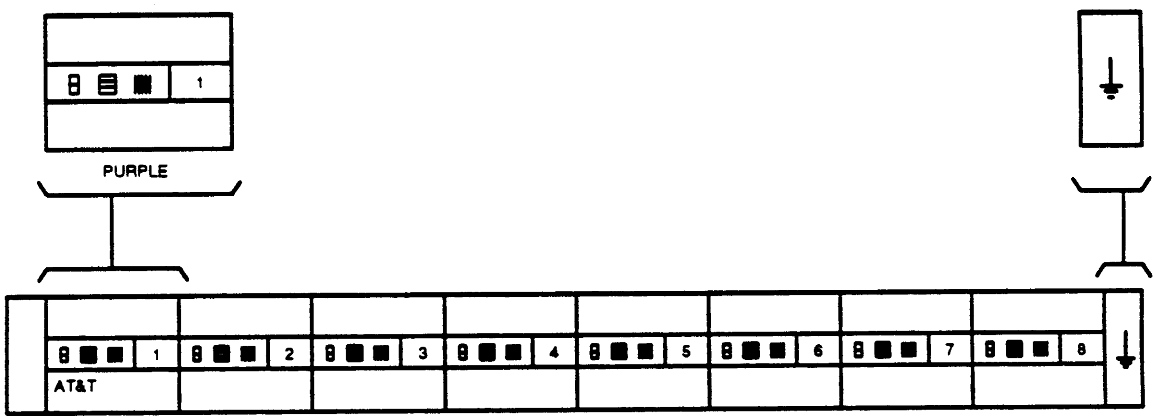


- USAGE:

  IDENTIFIES CABINET, CARRIER, PORT CIRCUIT SLOT NUMBERS, AND EIGHT PORT CIRCUITS.

- CODE NO:

  225A



- USAGE:

  CUSTOM IDENTIFICATION OF CABINET, CARRIER, PORT CIRCUIT SLOT NUMBERS, AND EIGHT PORT CIRCUITS.

- CODE NO:

  225A

FIGURE 3-37. Port Labels

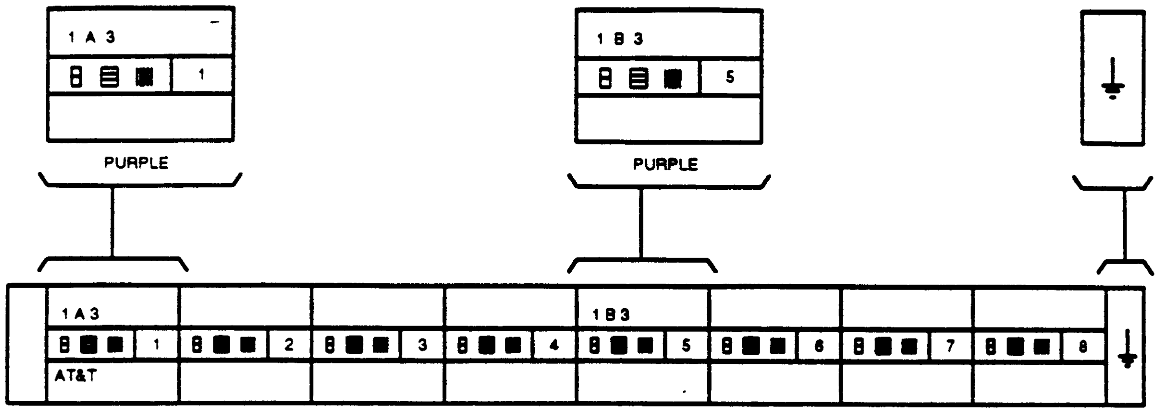


FIGURE 3-38. Example of Port Label for MET Line Circuit Pack

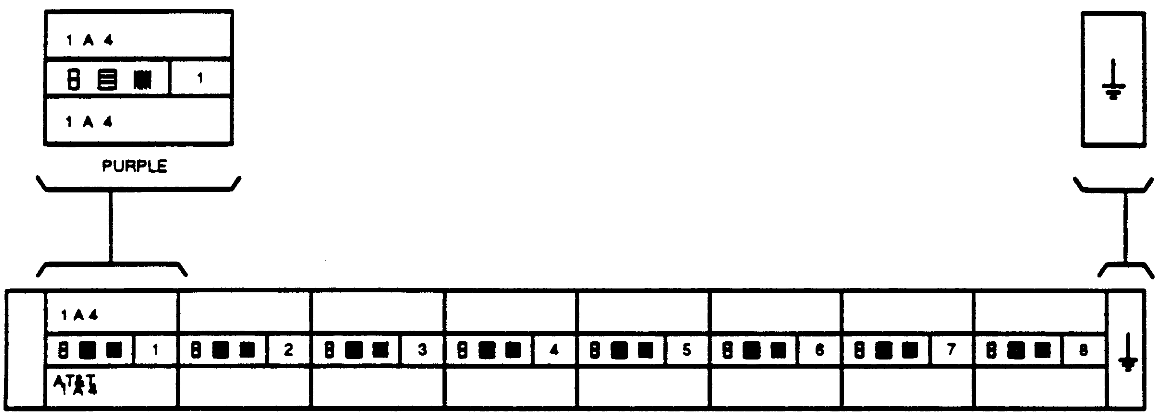
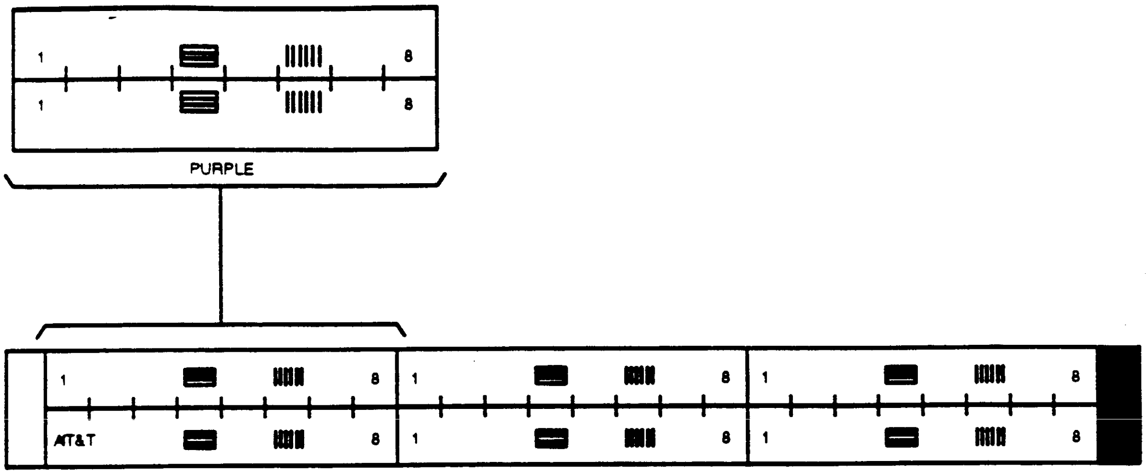


FIGURE 3-39. Example of Port Label for 16-Port Analog Line Circuit Pack

System Trunk and Tie Trunk Port labels

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 3-40 identifies three-pair trunk circuits from the switch cabinet. The label shown in Figure 3-41 identifies three-pair tie trunk circuits from the switch cabinet.



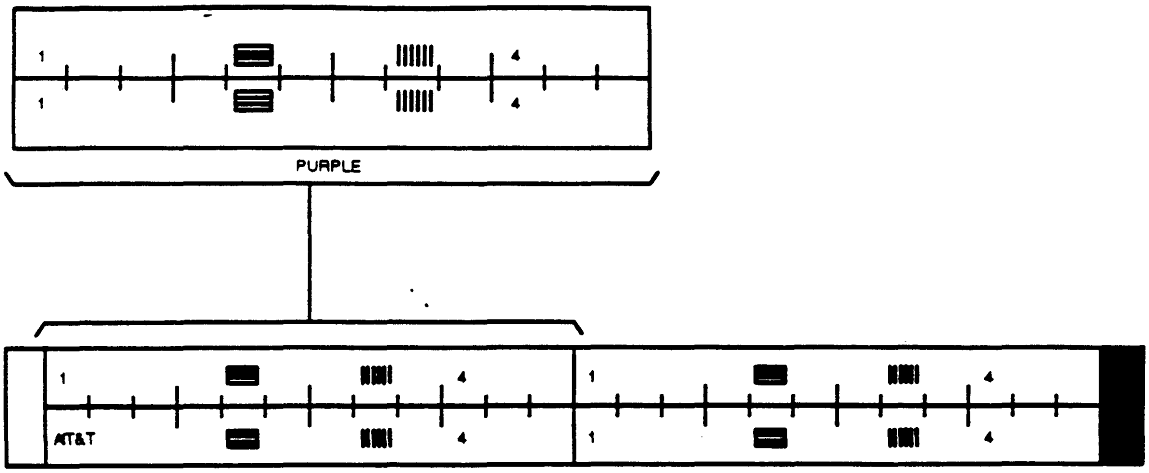
- USAGE:

  IDENTIFIES CO TRUNK CIRCUIT PORTS WHEN
  WP-90929, LIST 1 CONCENTRATOR CABLE IS USED.

- CODE NO:

  225A

FIGURE 3-40. Switch Trunk Port Circuit Labels



- USAGE:

  IDENTIFIES TIE TRUNK CIRCUIT PORTS WHEN
  WP-90929, LIST 3 CONCENTRATOR CABLE IS USED.

- CODE NO:

  225A

FIGURE 3-41. Switch Tie Trunk Port Circuit Labels

Dual-Purpose Emergency Transfer Stations Labels

The label shown in Figure 3-42 identifies the telephone connections at the cross-connect field for both normal use and emergency transfer stations.

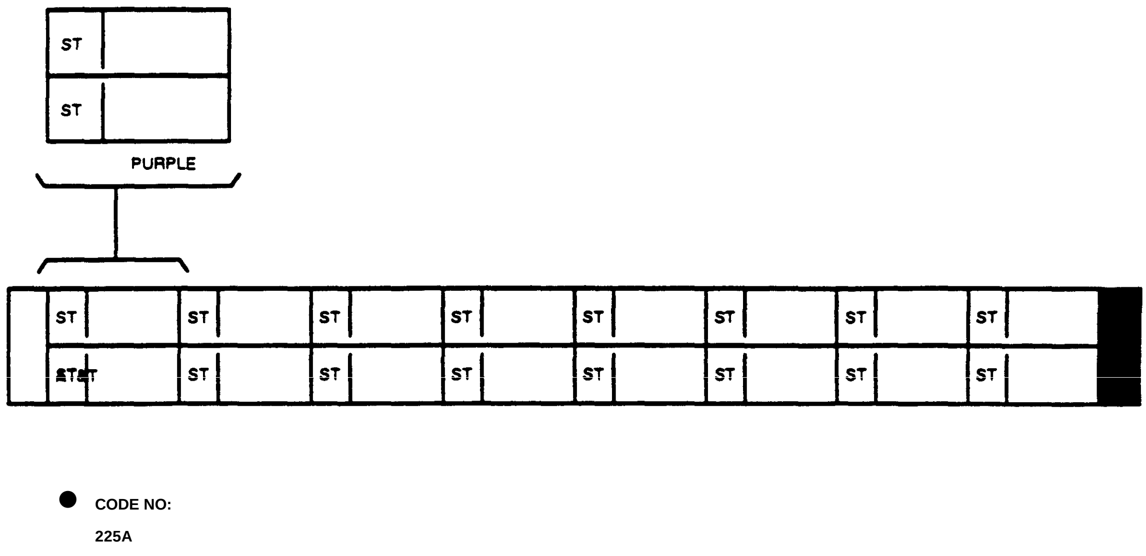


FIGURE 3-42. Dual-Purpose Emergency Transfer Station Labels

Label Code 225A—Purple Labels (Comcode 103-970-059)

Label code number 225A contains the following port labels:

- 45 purple labels (Figure 3-37) that identify three-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 three-pair circuits.
- 10 unnumbered purple labels (Figure 3-38) that identify three-pair port circuits from the switch. Each label identifies 16 three-pair circuits.
- Three purple labels that identify three-pair system trunk port circuits from the switch when WP-90929, List 1 (Figure 3-42) concentrator cables are used.
- Three purple labels that identify three-pair system tie trunk port circuits from the switch when WP-90929, List 3 (Figure 3-41) concentrator cables are used.
- Five purple labels to identify connections to dual-purpose emergency transfer stations (Figure 3-42).

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 (three-pair)

A permanent felt-tipped pen can be used to write the lead designations on the 66-type connecting blocks (Figure 3-43). Table 3-G shows the lead designations for the switch port appearances at the cross-connect field, and Table 3-H 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.

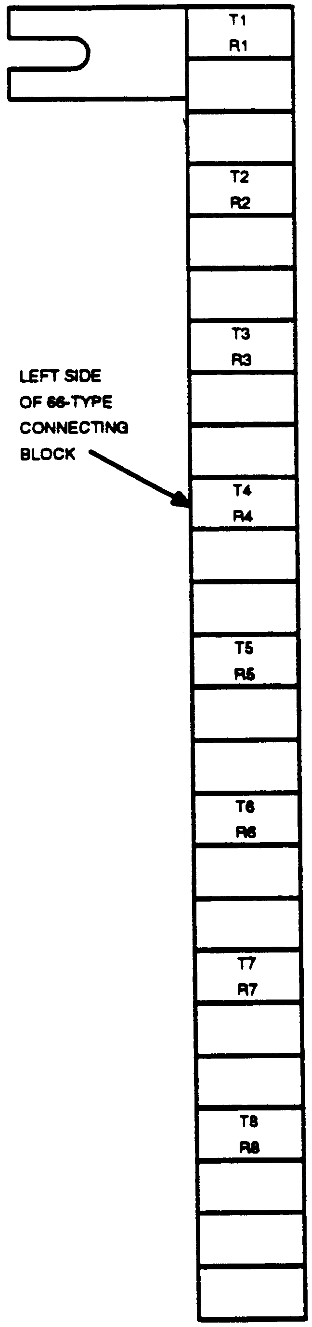


FIGURE 3-43. Labeling 66-Type Connecting Blocks

TABLE 3-G. Lead Designations at Cross-Connect Field

Color	Conn. Pin Numbers	Anal. Line (8) TN742 or TN769	Anal. Line (16) TN746L TN746B	Data Line TN726	Dig. Line TN754 TN754B	Hyb. Line TN762 TN762B	MET Line TN735	AUX. Trk. TN763 TN763B	CO Trk. TN747 TN747B	DID Trk. TN753	Tie Trk. TN760 TN760B	Tie Trk. TN722 TN722B TN767B	TN556
W-BL	01	T1	T1			V1T1	T1	T1	T1	T1	T1		PXT0
BL-W	02	R1	R1			V1R1	R1	R1	R1	R1	R1		TXR0
W-O	03		T2	TXT1	TXT1	CT1	TXT1	SZ1			T11		PXT1
O-W	04		R2	TXR1	TXR1	CR1	TXR1	SZ11			R11		TXR1
W-G	05		T3	PXT1	PXT1	P-1	PXT1	S1			E1		PXT2
G-W	06		R3	PXR1	PXR1	P+1	PXR1	S11			M2		TXR2
W-BR	07	T2	T4			V1T2	T2	T2	T2	T2	T2		PXT3
BR-W	08	R2	R4			V1R2	R2	R2	R2	R2	R2		TXR3
W-S	09			TXT2	TXT2	CT2	TXT2	SZ2			T12		PXT4
S-W	10			TXR2	TXR2	CR2	TXR2	SZ12			R12		TXR4
R-BL	11			PXT2	PXT2	P-2	PXT2	S2			E2		PXT5
BL-R	12			PXR2	PXR2	P+2	PXR2	S12			M2		TXR5
R-O	13	T3				V1T3	T3	T3	T3	T3	T3		PXT6
O-R	14	R3				V1R3	R3	R3	R3	R3	R3		TXR6
R-G	15			TXT3	TXT3	CT3	TXT3	SZ3			T13		PXT7
G-R	16			TXR3	TXR3	CR3	TXR3	SZ13			R13		TXR7
R-BR	17		T5	PXT3	PXT3	P-3	PXT3	S3			E3		PXT8
BR-R	18		R5	PXR3	PXR3	P+3	PXR3	S13			M3		TXR8
R-S	19	T4	T6			V1T4	T4	T4	T4	T4	T4		PXT9
S-R	20	R4	R6			V1R4	R4	R4	R4	R4	R4		TXR9
BK-BL	21		T7	TXT4	TXT4	CT4	TXT4	SZ4			T14		PXT10
BL-BK	22		R7	TXR4	TXR4	CR4	TXR4	SZ14			R14		TXR10
BK-O	23		T8	PXT4	PXT4	P-4	PXT4	S4			E4		PXT11
O-BK	24		R8	PXR4	PXR4	P+4	PXR4	S14			M4		TXR11
BK-G	25	T5	T9			V1T5			T5	T5			
G-BK	26	R5	R9			V1R5			R5	R5			PXR0
BK-BR	27		T10	TXT5	TXT5	CT4							TXT0
BR-BK	28		R10	TXR5	TXR5	CR4							PXR1

TABLE 3-G *(continued).*
Lead Designations at Cross-Connect Field

Color	Conn. Pin Numbers	Anal. Line (8) TN742 or TN769	Anal. Line (16) TN746L TN746B	Data Line TN726	Dig. Line TN754 TN754B	Hyb. Line TN762 TN762B	MET Line TN735	AUX. Trk. TN763 TN763B	CO Trk. TN747 TN747B	DID Trk. TN753	Tie Trk. TN760 TN760B	DS1 Tie Trk. TN722 TN722B TN767B	TN556
BK-S	29		T11	PXT5	PXT5	P-5							TXT1
S-BK	30		R11	PXR5	PXR5	P+5							PXR2
Y-BL	31	T6	T12			V1T6			T6	T6			TXT2
BL-Y	32	R6	R12			V1R6			R6	R6			PXR3
Y-O	33			TXT6	TXT6	CT6							TXT3
O-Y	34			TXR6	TXR6	CR6							PXR4
Y-G	35			PXT6	PXT6	P-6							TXT4
G-Y	36			PXR6	PXR6	P+6							PXR5
Y-BR	37	T7				V1T7			T7	T7			TXT5
BR-Y	38	R7				V1R7			R7	R7			PXR6
Y-S	39			TXT7	TXT7	CT7							TXT6
S-Y	40			TXR7	TXR7	CR7							PXR7
V-BL	41		T13	PXT7	PXT7	P-7							TXT7
BL-V	42		R13	PXR7	PXR7	P+7							PXR8
V-O	43	T8	T14			V1T8			T8	T8		L1*	TXT8
O-V	44	R8	R14			V1R8			R8	R8		L1	PXR9
V-G	45		T15	TXT8	TXT8	CT8						L0	TXT9
G-V	46		R15	TXR8	TXR8	CR8						L0*	PXR10
V-BR	47		T16	PXT8	PXT8	P-8						LBACK2	TXT10
BR-V	48		R16	PXR8	PXR8	P+8						LBACK1	PXR11
V-S	49											TXT11	
S-V	50												

* Denotes ring side or high side of pair.

In Table 3-H, in the 808A and 574-5 Emergency Transfer Panel columns, the first letter denotes tip or ring (T or R) and the next two letters denote Private Branch Exchange (PBX) trunk circuit (TC), CO trunk circuit (TK), PBX line port (LC), or emergency terminal (ST).

TABLE 3-H. Auxiliary Lead Appearances at 66-Type Cross-Connect Field

<table>
<tr><th>Color</th><th>66-Type Conn Block Term</th><th colspan="2">G1 or G3i Multi-Carrier Aux Conn Outputs</th><th colspan="2">G1 or G3i Single-Carrier Aux Conn Outputs</th><th>808A Emerg Xfr Unit Outputs</th><th>574-5 Power Xfr Unit Outputs</th></tr>
<tr><td>W-BL</td><td>01</td><td colspan="2" rowspan="2">1M</td><td colspan="2" rowspan="2">1M</td><td>TTC1</td><td>TTC1</td></tr>
<tr><td>BL-W</td><td>02</td><td>RTC1</td><td>RTC1</td></tr>
<tr><td>W-O</td><td>03</td><td colspan="2" rowspan="2">1m</td><td colspan="2" rowspan="2">1m</td><td>TTK1</td><td>TTK1</td></tr>
<tr><td>O-W</td><td>04</td><td>RTK1</td><td>RTK1</td></tr>
<tr><td>W-G</td><td>05</td><td colspan="2" rowspan="2">2M (Note 1)</td><td colspan="2" rowspan="2">2M (Note 1)</td><td>TLC1</td><td>TLC1</td></tr>
<tr><td>G-W</td><td>06</td><td>RLC1</td><td>RLC1</td></tr>
<tr><td>W-BR</td><td>07</td><td colspan="2" rowspan="2">2m (Note 1)</td><td colspan="2" rowspan="2">2m (Note 1)</td><td>TST1</td><td>TST1</td></tr>
<tr><td>BR-W</td><td>08</td><td>RST1</td><td>RST1</td></tr>
<tr><td>W-S</td><td>09</td><td colspan="2" rowspan="2">3M (Note 1)</td><td colspan="2" rowspan="2">3M (Note 1)</td><td>TTC2</td><td>TTC2</td></tr>
<tr><td>S-W</td><td>10</td><td>RTC2</td><td>RTC2</td></tr>
<tr><td>R-BL</td><td>11</td><td colspan="2" rowspan="2">3m (Note 1)</td><td colspan="2" rowspan="2">3m (Note 1)</td><td>TTK2</td><td>TTK2</td></tr>
<tr><td>BL-R</td><td>12</td><td>RTK2</td><td>RTK2</td></tr>
<tr><td>R-O</td><td>13</td><td colspan="2" rowspan="2">3W (Note 1)</td><td colspan="2" rowspan="2">3W (Note 1)</td><td>TLC2</td><td>TLC2</td></tr>
<tr><td>O-R</td><td>14</td><td>RLC2</td><td>RLC2</td></tr>
<tr><td>R-G</td><td>15</td><td colspan="2" rowspan="6">Not Connected</td><td colspan="2" rowspan="6">Not Connected</td><td>TST2</td><td>TST2</td></tr>
<tr><td>G-R</td><td>16</td><td>RST2</td><td>RST2</td></tr>
<tr><td>R-BR</td><td>17</td><td>TTC3</td><td>TTC3</td></tr>
<tr><td>BR-R</td><td>18</td><td>RTC3</td><td>RTC3</td></tr>
<tr><td>R-S</td><td>19</td><td>TTK3</td><td>TTK3</td></tr>
<tr><td>S-R</td><td>20</td><td>RTK3</td><td>RTK3</td></tr>
<tr><td>BK-BL</td><td>21</td><td>GND</td><td rowspan="6">Emerg Xfr Relay Power</td><td>GND</td><td rowspan="6">Emerg Xfr Relay Power</td><td>TLC3</td><td>TLC3</td></tr>
<tr><td>BL-BK</td><td>22</td><td>-48</td><td>-48</td><td>RLC3</td><td>RLC3</td></tr>
<tr><td>BK-O</td><td>23</td><td>GND</td><td>GND</td><td>TST3</td><td>TST3</td></tr>
<tr><td>O-BK</td><td>24</td><td>-48</td><td>-48</td><td>RST3</td><td>RST3</td></tr>
<tr><td>BK-G</td><td>25</td><td>GND</td><td>GND</td><td>TTC4</td><td>TTC4</td></tr>
<tr><td>G-BK</td><td>28</td><td>-48</td><td>-48</td><td>RTC4</td><td>RTC4</td></tr>
</table>

Note: These leads are not available on DEFINITY G1 or G3i. if your system is being upgraded from System 75 to DEFINITY G1 or G3i and these leads were previously used, these alarm connections will have to be dropped.

TABLE 3-H *(continued).*
Auxiliary Lead Appearances at 66-Type Cross-Connect Field

Color	66-Type Conn Block Term	G1 or G3i Multi-Carrier Aux Conn Outputs		G1 or G3i 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	TTK4	TTK4
BR-BK	28	-48		-48	RTK4	RTK4
BK-S	29	GND		GND	TLC4	TLC4
S-BK	30	-48		-48	RLC4	RLC4
Y-BL	31	GND		GND	TST4	TST4
BL-Y	32	-48		-48	RTS4	RTS4
Y-O	33	GND		GND	TTC5	TTC5
O-Y	34	-48		-48	RTC5	RTC5
Y-G	35	Not Connected		Not Connected	TTK5	TTK5
G-Y	36				RTK5	RTK5
Y-BR	37	GND	ACC Power		TLC5	TLC5
BR-Y	38	-48			RLC5	RLC5
Y-S	39	GND			TST5	TST5
S-Y	40	-48			RST5	RST5
V-BL	41	GND			COM1	COM1
BL-V	42	-48			NO1	NO1
V-O	43	Not Connected			NC2	NC2
O-V	44				NC1	NC1
V-G	45	Ext Alarm A		Ext Alarrm A	COM2	COM2
G-V	46	Ext Alarm B		Ext Alarm B	NO2	NO2
V-BR	47	Not Connected		Not Connected		COM3
BR-V	48					NC3
V-S	49	INADS		INADS	GRD	GRD
S-V	50				-48V	-48V

Note: Because there are two single-pole double-throw contacts available for auxiliary functions, the 808A has only one auxiliary relay contact.

Installling Sneak Fuse Panels

The sneak fuse panel (Figure 2-18) 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 Figure 3-44 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.

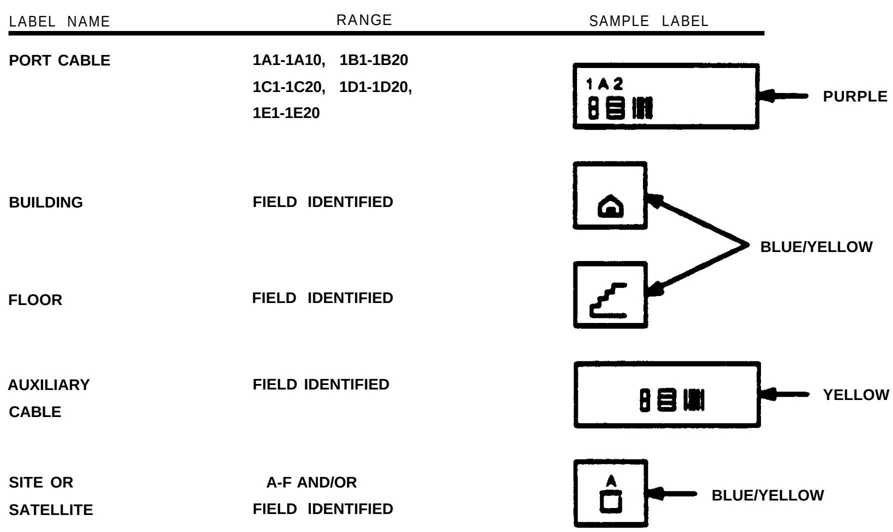


FIGURE 3-44. Equipment Room Cabling Labels

CABLE/CONNECTOR/BUILDING LABEL ORDERING INFORMATION

Description	Qty. Per. Code	Comcode
201A Labels	34 sheets	103-969-994

Figure 3-45 shows the proper way to install a label on a 25-pair cable connector (see Note).

Note: The label should be installed near the rear of the connector as shown in Figure 3-45 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.

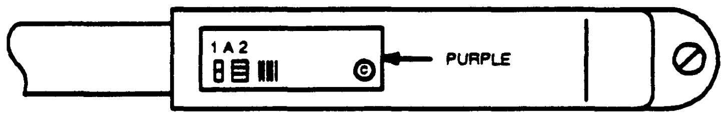


FIGURE 3-45. Installing Self-Stick Label on 25-Pair Cable Connector

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 3-46 and 3-47 show typical cable routing from the switch cabinet to the top and bottom of the cross-connect field, respectively.

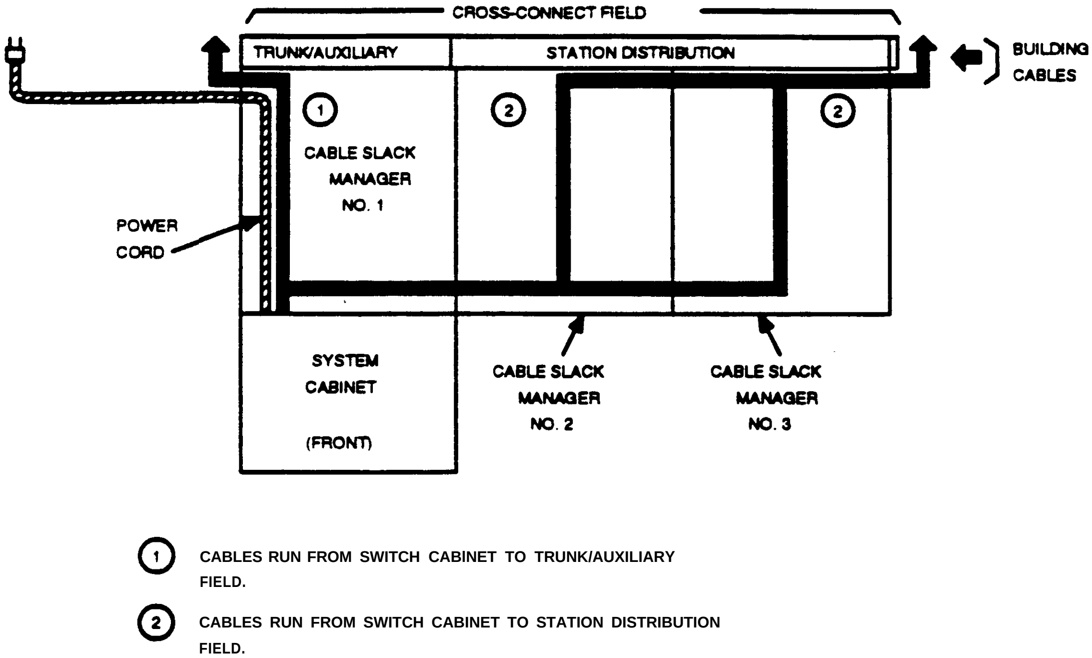


FIGURE 3-46. Cable Routing From Switch Cabinet to Cross-Connect Field (Using Top Terminal Blocks)

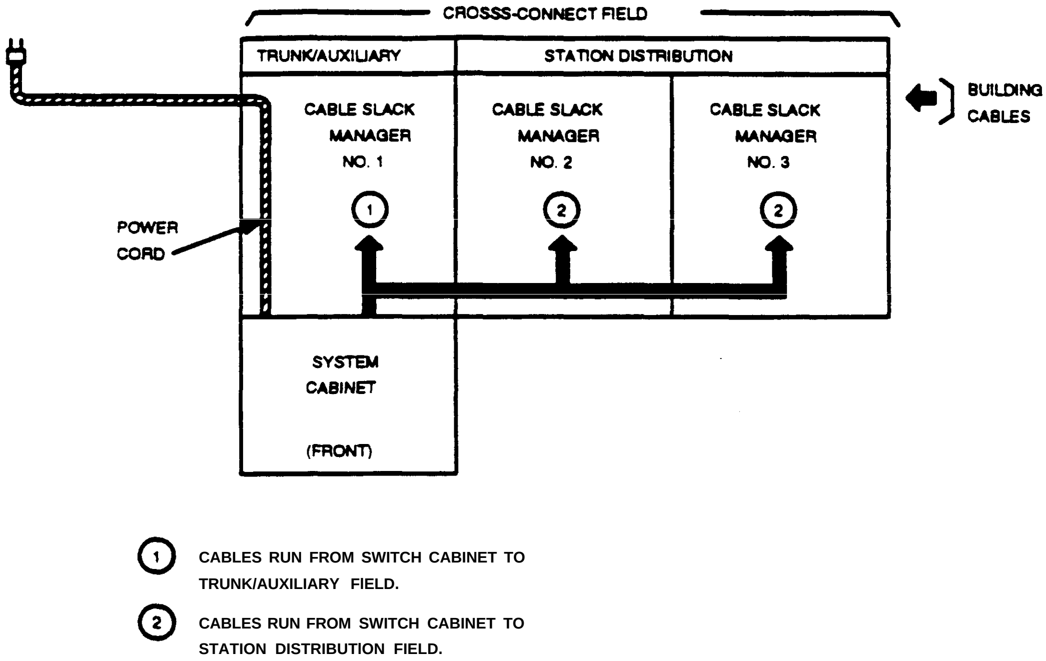


FIGURE 3-47. Cable Routing From Switch Cabinet to Cross-Connect Field (Using Bottom Terminal Blocks)

Routing Cables Using 110-Type Terminal Blocks

Figures 3-48 and 3-49 show the cable routing pattern through the cable slack manager for a single-cabinet installation using 110-type terminal block 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 center 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 center trough.

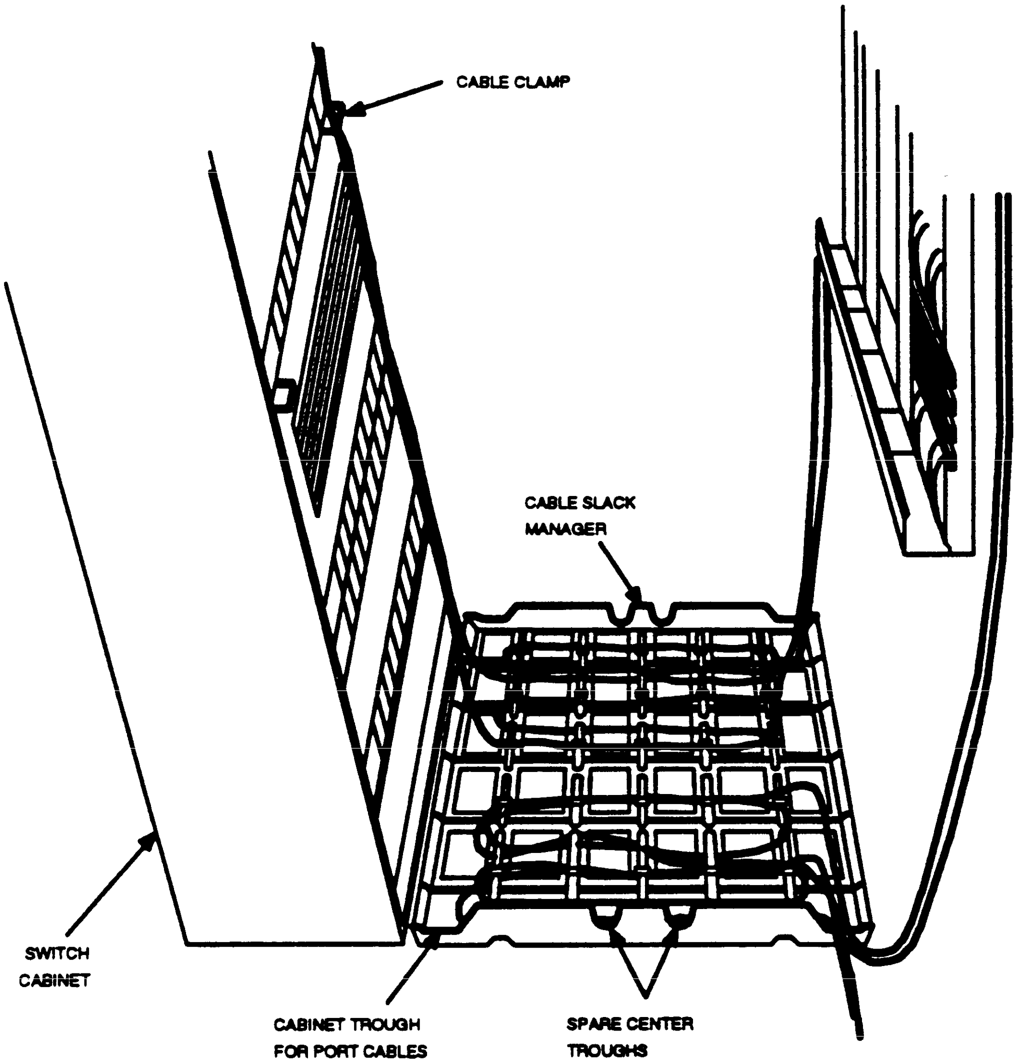


FIGURE 3-48. Cable Routing Through Cable Slack Manager—Single-Cabinet Installation (Using Connectorized Top Terminal Blocks)

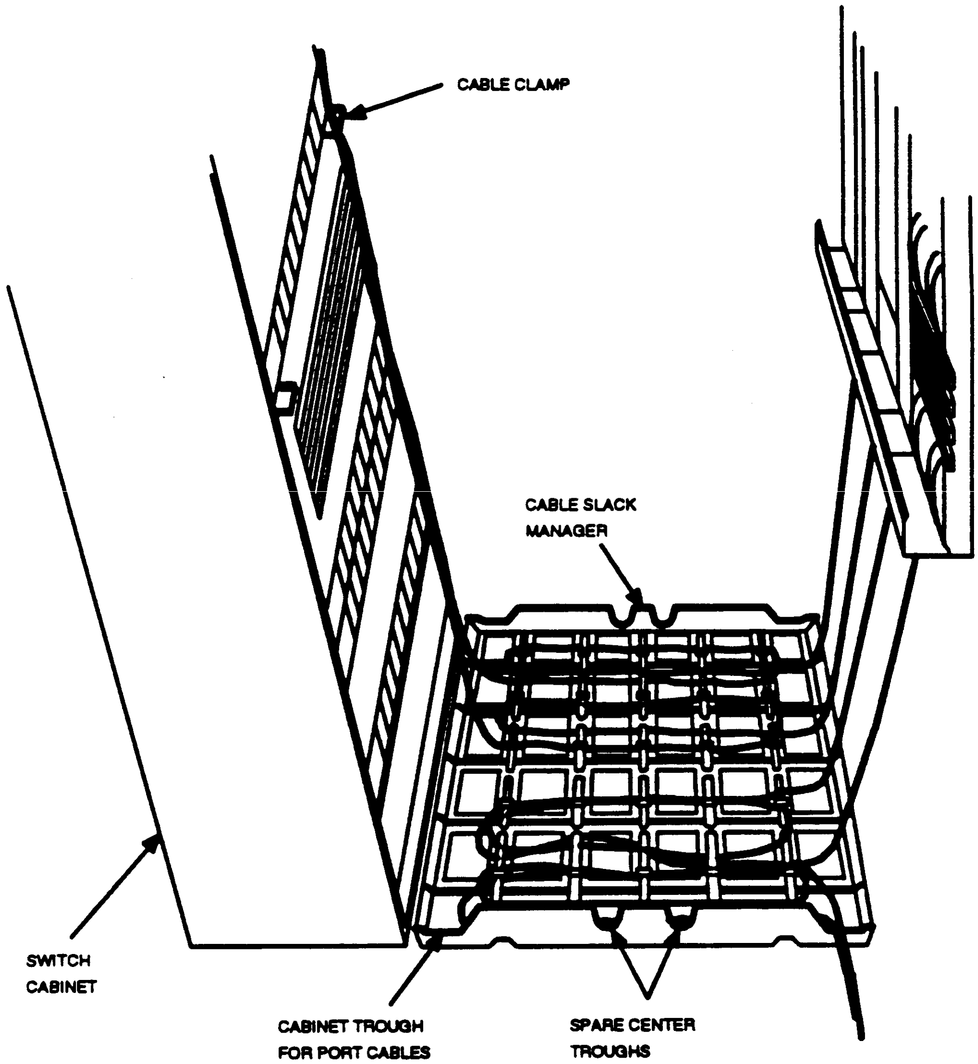


FIGURE 3-49. Cable Routing Through Cable Slack Manager—Single-Cabinet Installation (Using Connectorized Bottom Terminal Blocks)

Routing Cables Using 66-Type Connecting Blocks

Figures 3-50 and 3-51 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 center 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 center trough.

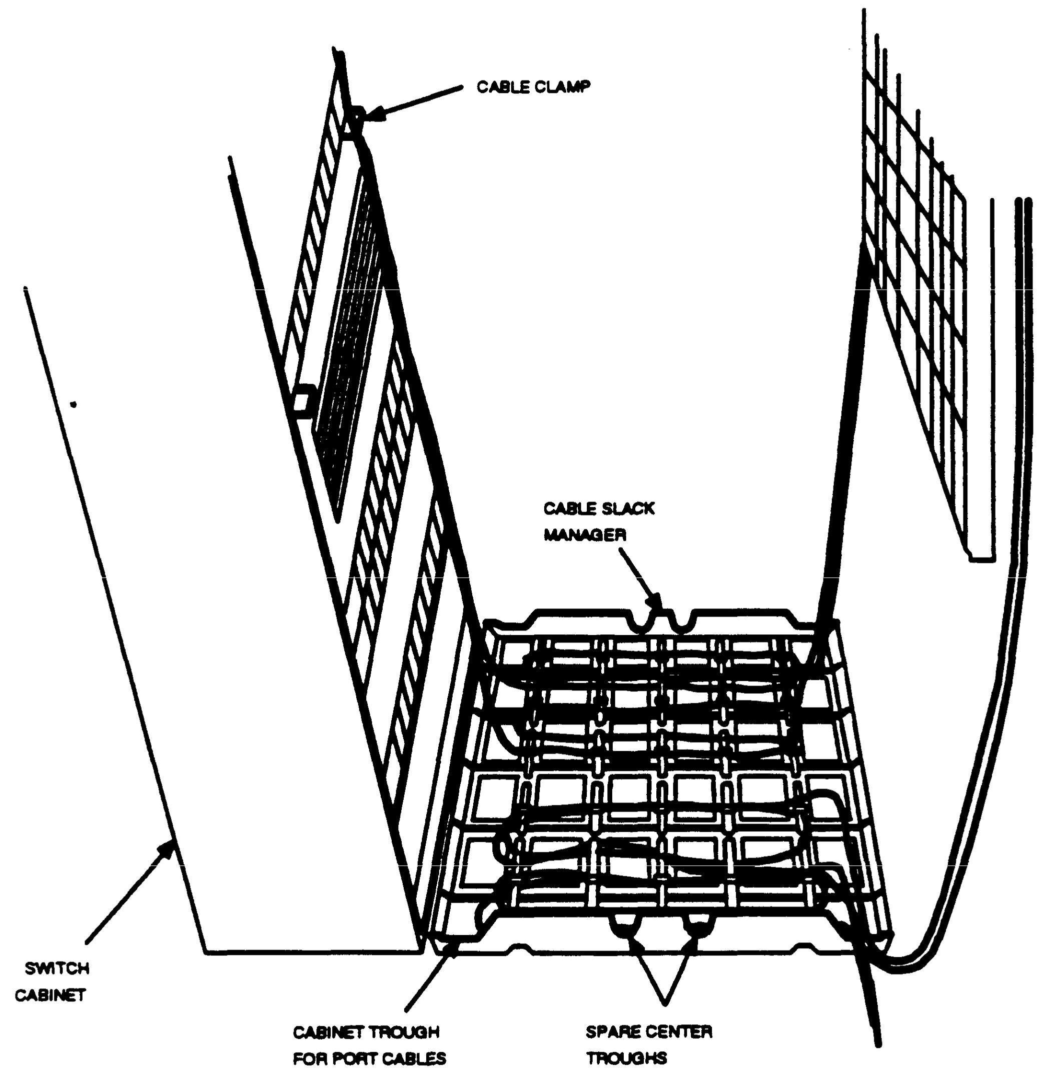


FIGURE 3-50. Cable Routing Through Cable Slack Manager—Single-Cabinet Installation (Using 66-Type Connecting Blocks With Cables Routed From Top of Cross-Connect Field)

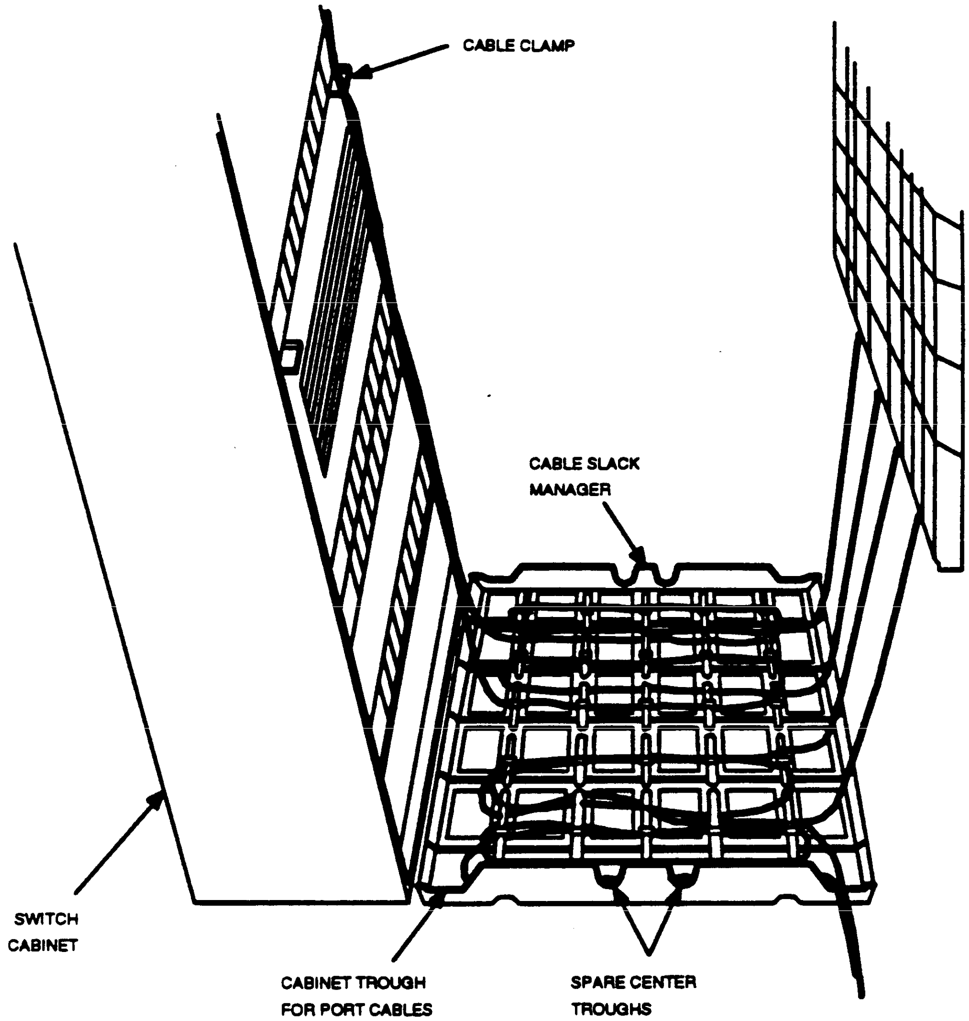


FIGURE 3-51. Cable Routing Through Cable Slack Manager—Single-Cabinet Installation (Using 66-Type Connecting Blocks With Cables Routed From Bottom of Cross-Connect Field)

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 3-52).
- 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 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.

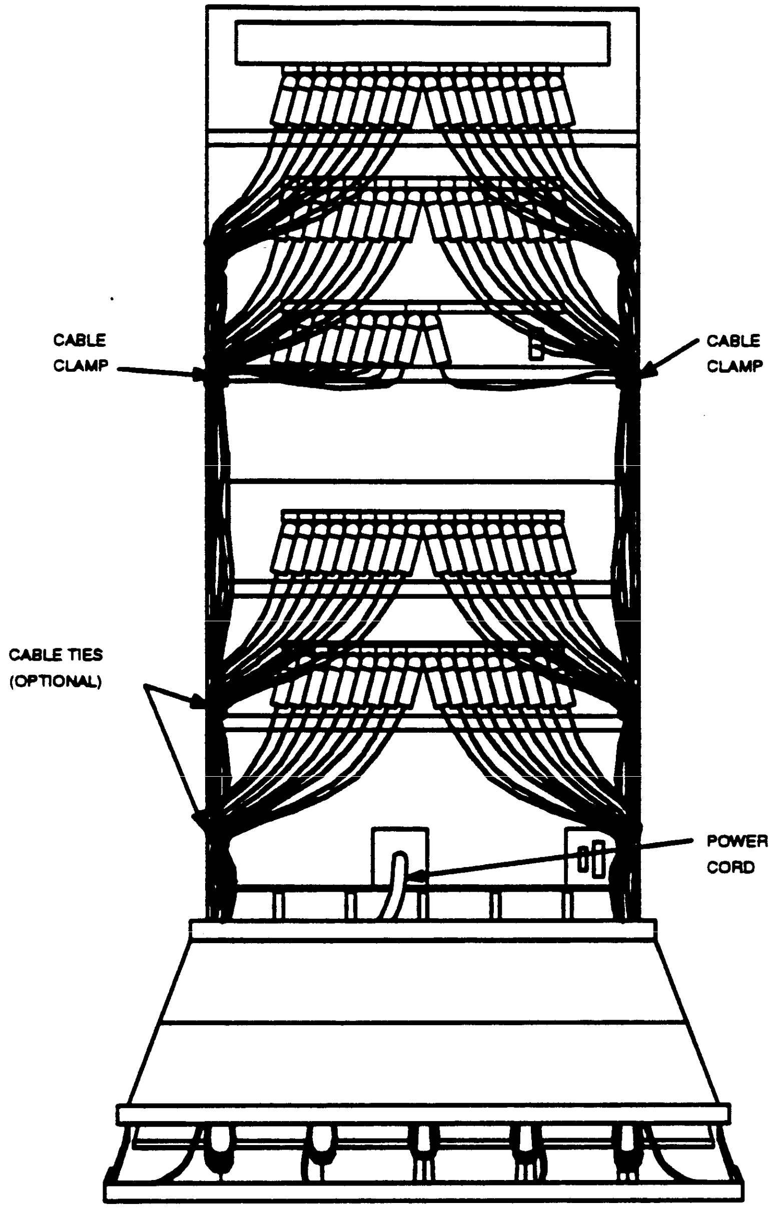


FIGURE 3-52. Typical Port Cable Installation at Switch Cabinet

Installing Control Carrier Outputs Cable

The control carrier **AUXILIARY** connector outputs include the following:

- Alarm monitoring for the AP and auxiliary cabinet.
- Seven DC power (-48 volts) sources for emergency transfer units.
- Three DC power (-48 volts) 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 3/4 amps.

A 25-pair cable connects the control carrier **AUXILIARY** connector (Figures 3-54 and 3-55) to a 66-type connecting block or 110-type terminal block in the yellow field of the trunk/auxiliary field.

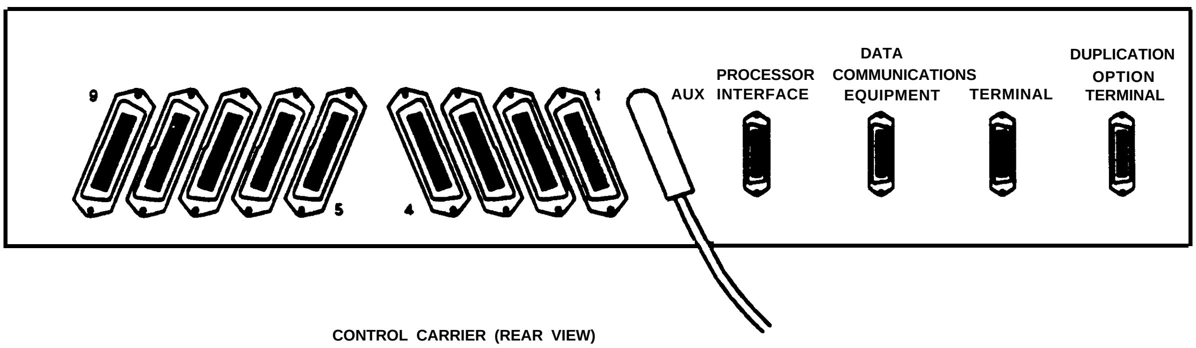


FIGURE 3-53. Control Carrier Outputs (AUXILIARY Connector)—G1 or G3i Multi-Carrier Cabinet

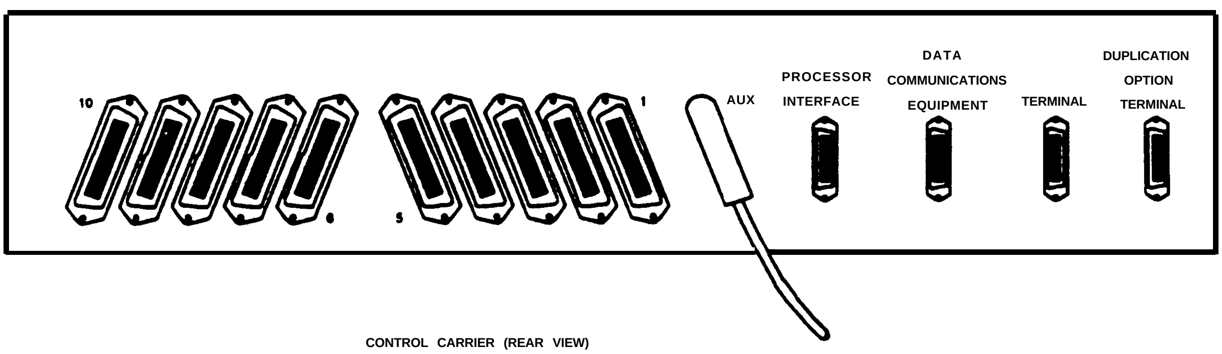


FIGURE 3-54. Control Carrier Outputs (AUXILIARY Connector)—G1 or G3i Single-Carrier Cabinet

Labeling Control Carrier Cable (Used With 110-Type Hardware)

Place the appropriate **AUXILIARY** connector label (Figure 3-32) on the assigned 110-type terminal block row. On the control carrier cable, place a yellow auxiliary label (Figures 3-44 and 3-45) 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 3-G) on the 66-type connecting block. If cable labels are to be used, place a yellow auxiliary label (Figures 3-44 and 3-45) 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 are contained in “Miscellaneous Wiring Installation” in Chapter 5.

Installing Trunk Cables Between Network Interface, Sneak Fuse Panel, and Switch Cabinet

The one-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 three-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 one-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 three-pair modularity. Table 3-H shows switch port appearances at the cross-connect field. Figures 3-55, and 3-56 show the carrier connectors on the rear of the switch that connect to the purple field.

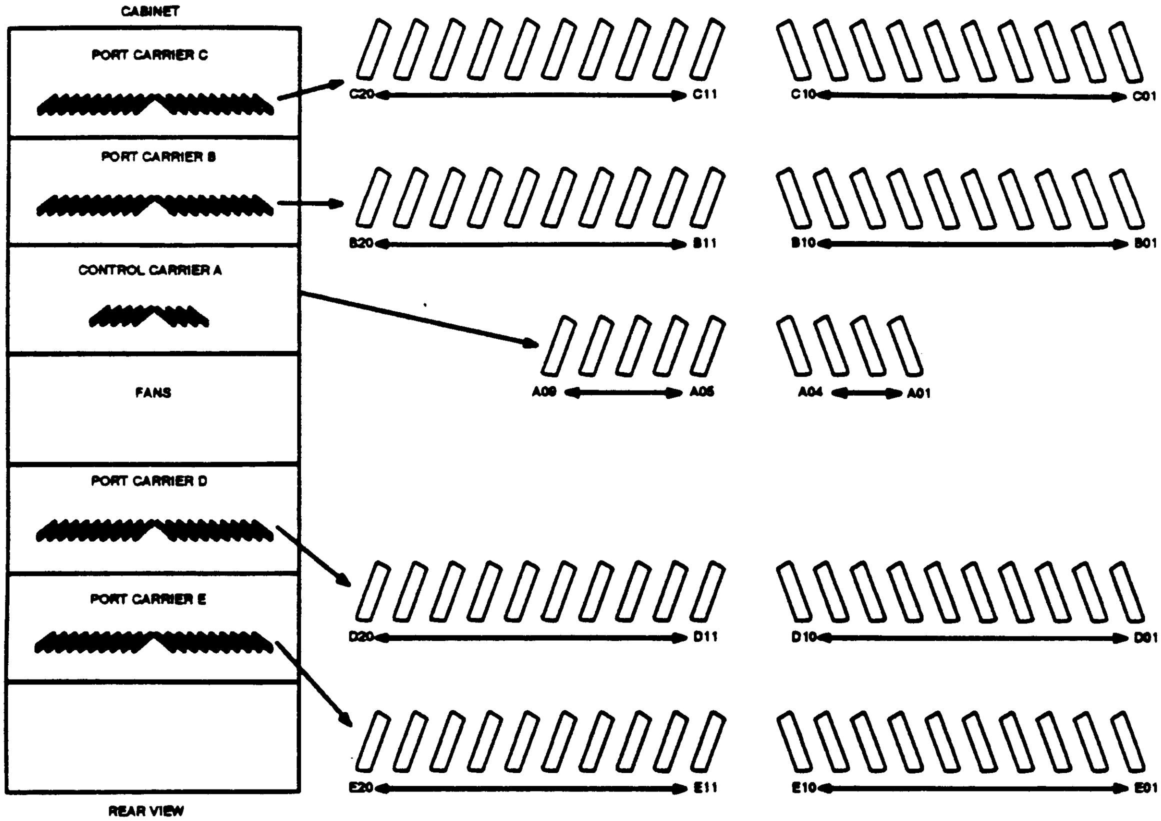


FIGURE 3-55. G1 or G3i Multi-Carrier Cabinet Slot Addresses

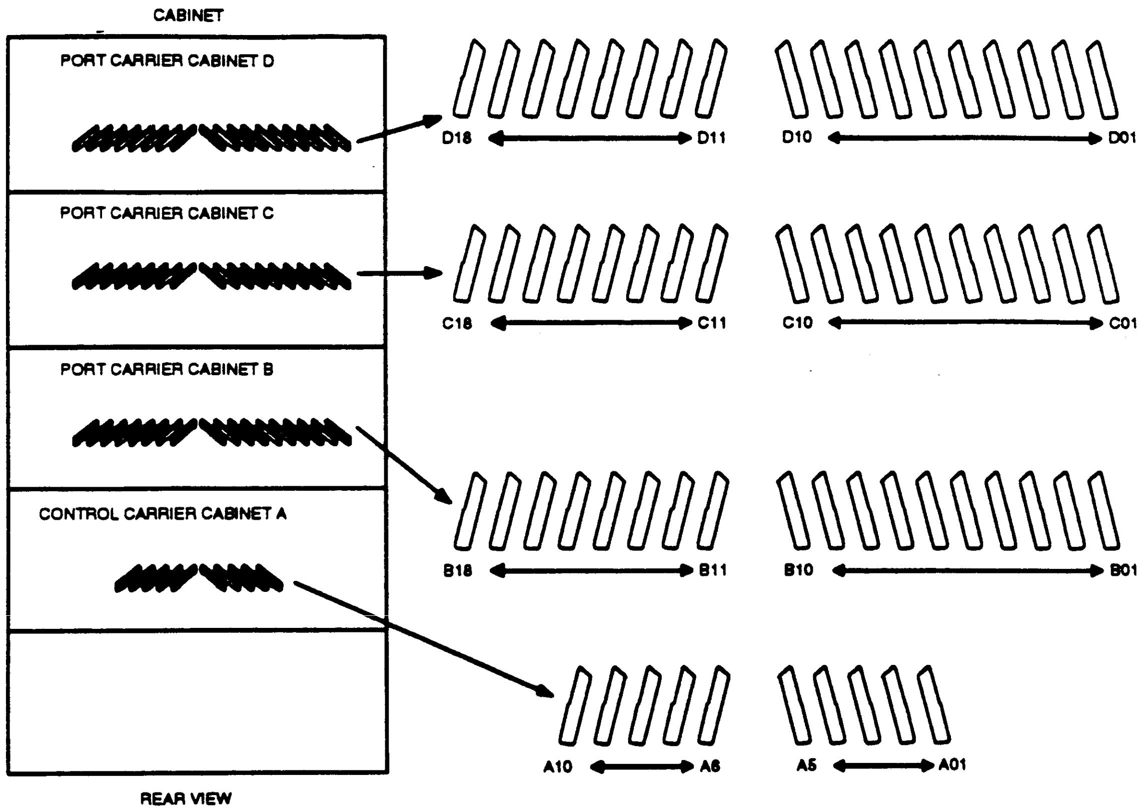


FIGURE 3-56. G1 or G3i Single-Carrier Cabinet Slot Addresses

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 three-pair modularity for the one- and three-pair trunks. Table 3-H shows switch port appearances at the cross-connect field. Figures 3-55, and 3-56 show the 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 3-57 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 (Figures 3-55 and 3-56. 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.

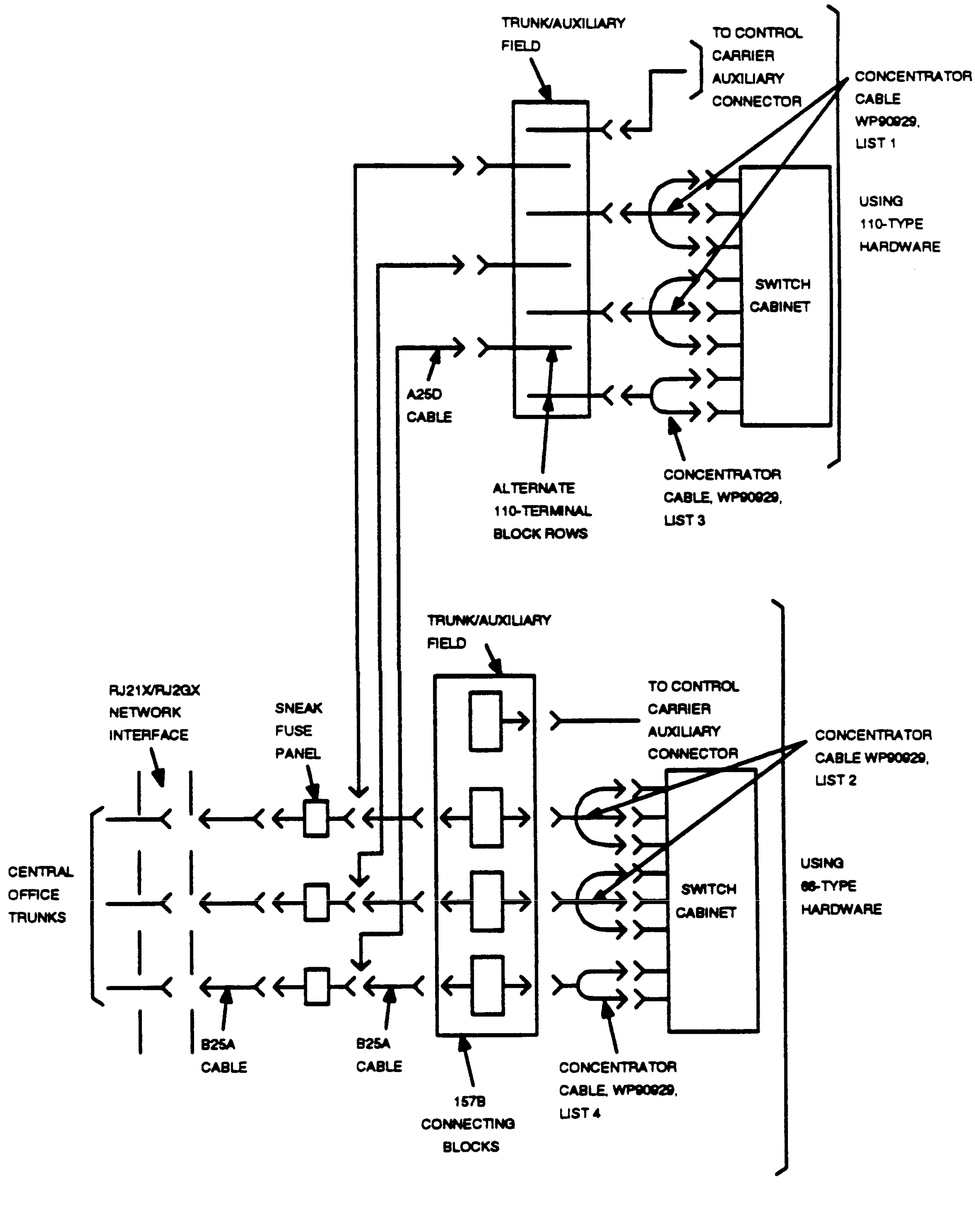


FIGURE 3-57. Connecting Trunk Pairs Used for 1-Pair Trunk Circuits; DID, Loop Start, Ground Start Using Concentrator Cables

Connecting Trunk Pairs to the Switch Cabinet Using Jumper Wires to Establish Three-Pair Modularity

Figures 3-58 and 3-59 show trunk pairs connected to the switch cabinet with jumper wires to establish three-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 3-57).
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 3-57).
3. Connect one-pair patch cords/jumper wires from each 110-type terminal block row or 66-type connecting block in the green field to the 110-type terminal block rows or 66-type connecting blocks in the purple field as shown in Figure 3-57 for one-pair CO trunks or in Figure 3-59 for three-pair tie trunks.

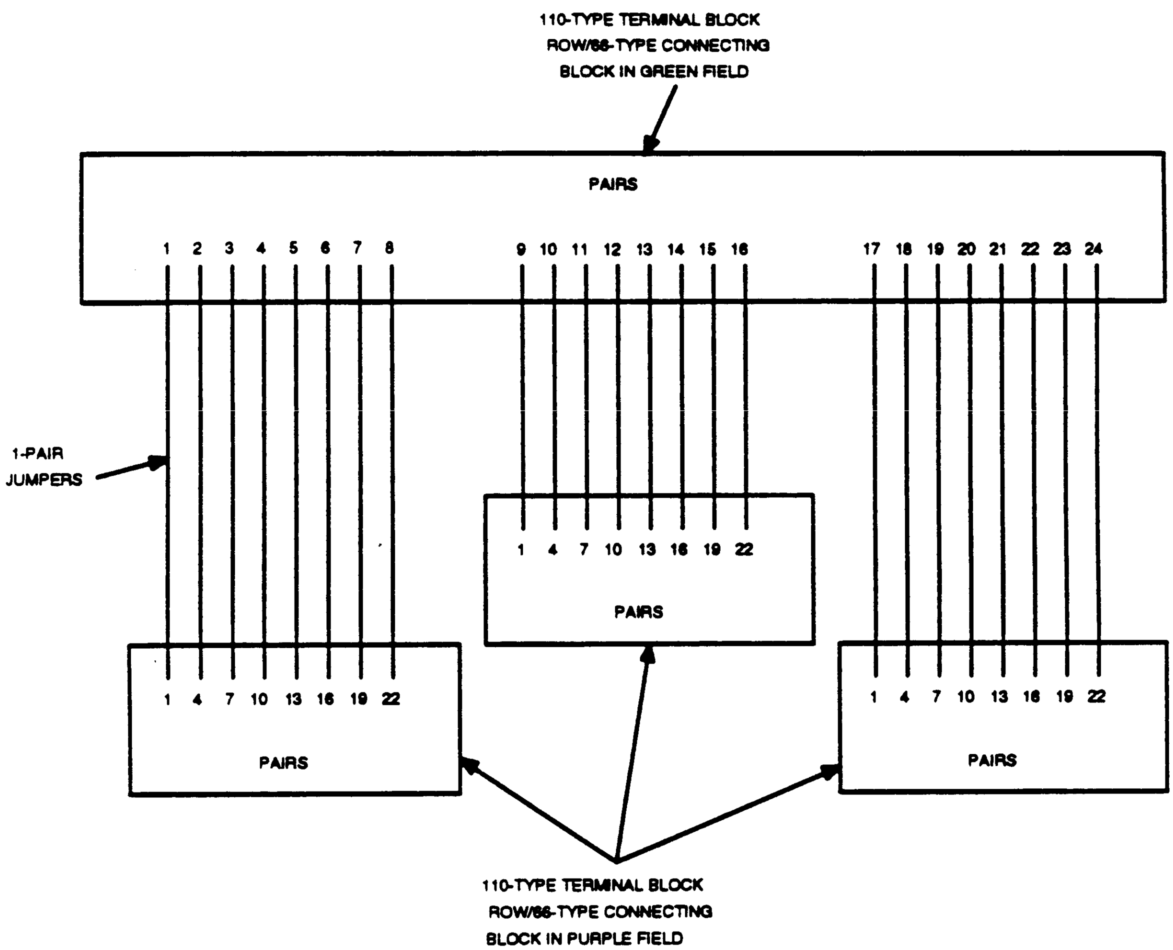


FIGURE 3-58. Example of Establishing 3-Pair Modularity for Trunk Pairs Used for 1-Pair Trunk Circuits; DID, Loop Start, Ground Start

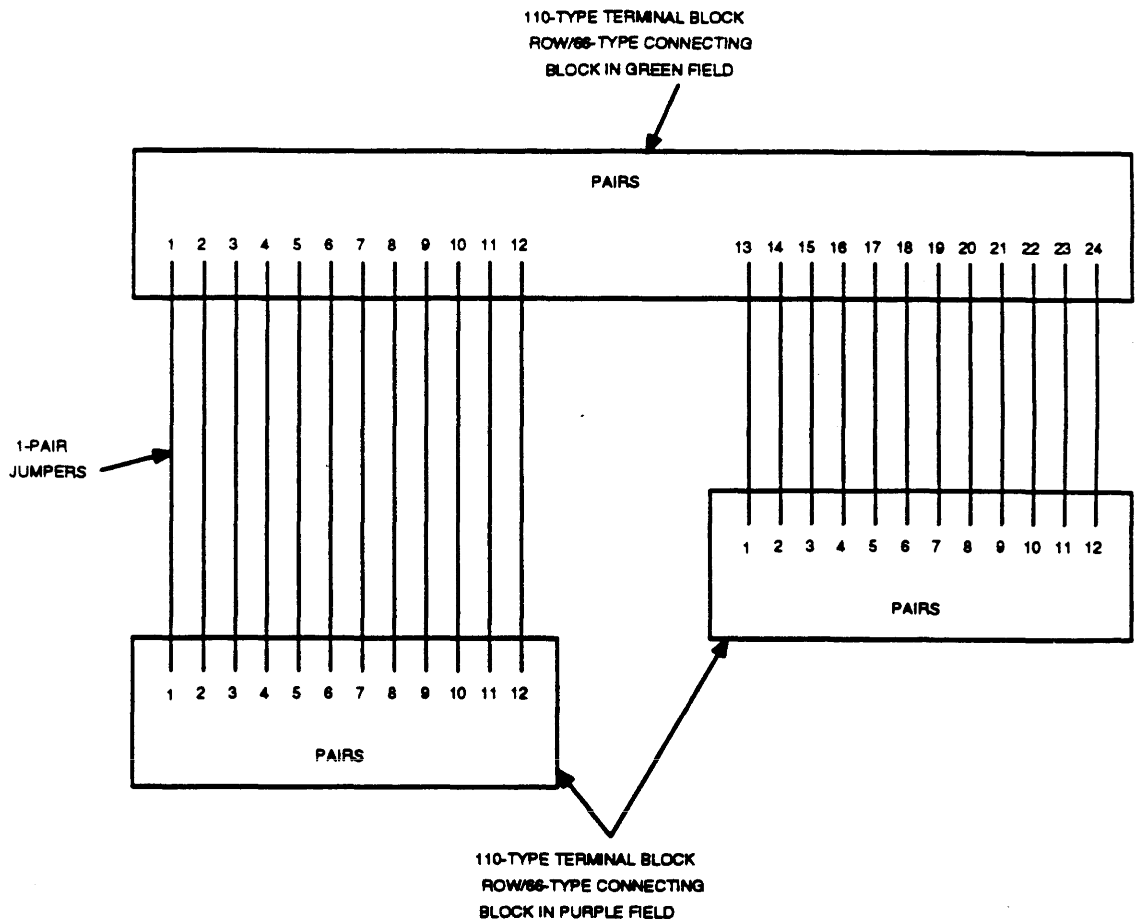


FIGURE 3-59. Example of Establishing 3-Pair Modularity for Trunk Pairs Used for 3-Pair Tie Trunks

Installing Coupled Bonding Conductor (CBC) Grounding

A 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 3-60).

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.

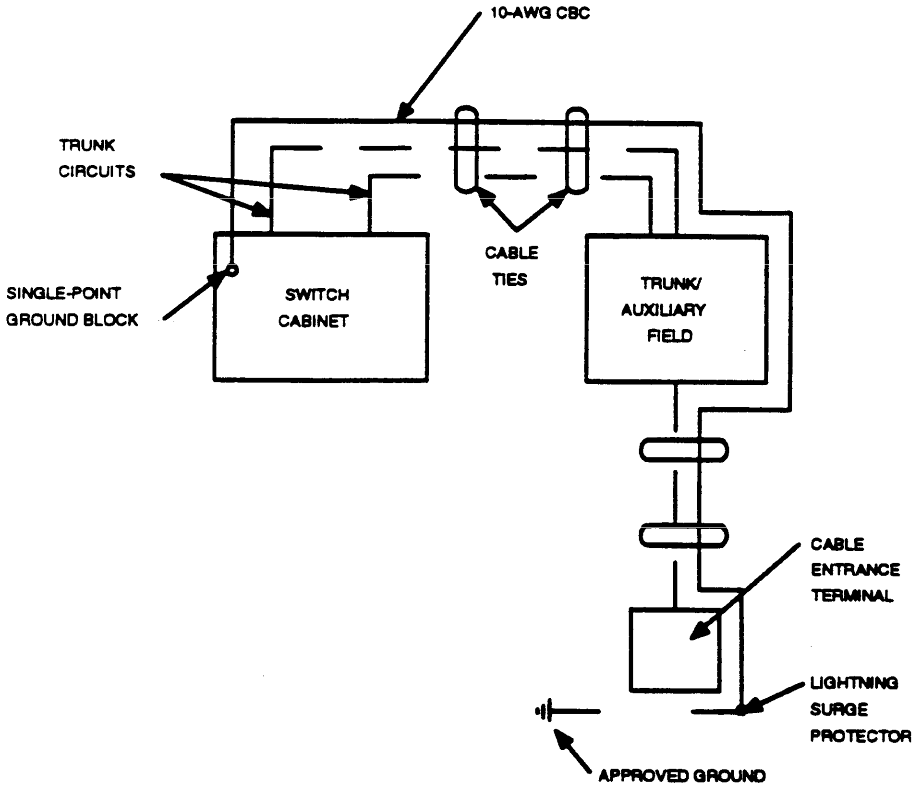


FIGURE 3-60. Installing the Coupled Bonding Conductor

Approved Grounds

An approved ground is the closest acceptable medium for grounding the building entrance protector, entrance cable shield, or single-point ground of electronic 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 eight feet.
- Plate electrodes—expose a minimum of two square feet of metallic surface to the exterior soil.

Concrete Encased Ground — an electrode encased by at least two 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, 4-AWG wire.

Grounded 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

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.

Installing Connector Cables Between Switch Cabinet and the Cross-Connect Field

Before starting the following procedure, refer to the “Routing Cables From Cabinet to Cross-Connect Field” earlier in this chapter. Also, all purple labels should have been previously installed as described earlier in this chapter in the section “Labeling the Cross-Connect Field.”

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 3-45).

   Note: 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 3-45).

   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

General

The following hardware and cabling are 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 *SYSTIMAX® Premises Distribution System Equipment and Supplies Catalog.*

Information Outlets

Information Outlets are eight-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 four-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 four-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 four-pair station cable—Use this cable when four-pair station cables are to be field-terminated on the 110-type terminal block or 66-type connecting blocks in the equipment room or satellite closet and the information outlets require push-on connections.
- Single modular plug-ended four-pair station cable (Figure 3-61)—Use this cable between adapters and information outlets that require push-on connections. It can also be used when four-pair station cables are field-terminated on the 110-type terminal blocks or 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

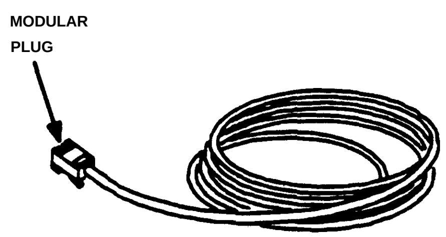


FIGURE 3-61. 4-Pair Single Modular Plug-Ended Station Cable

- Double modular plug-ended four-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 four-pair station cable is required, a 451A in-line adapter (double-ended modular female connector) is attached to the cable and a second four-pair cable of the required length is plugged into the adapter (Figure 3-62).

451A ADAPTER ORDERING INFORMATION

Color	**Comcode**
Gray	103-942-272
Ivory	103-786-240

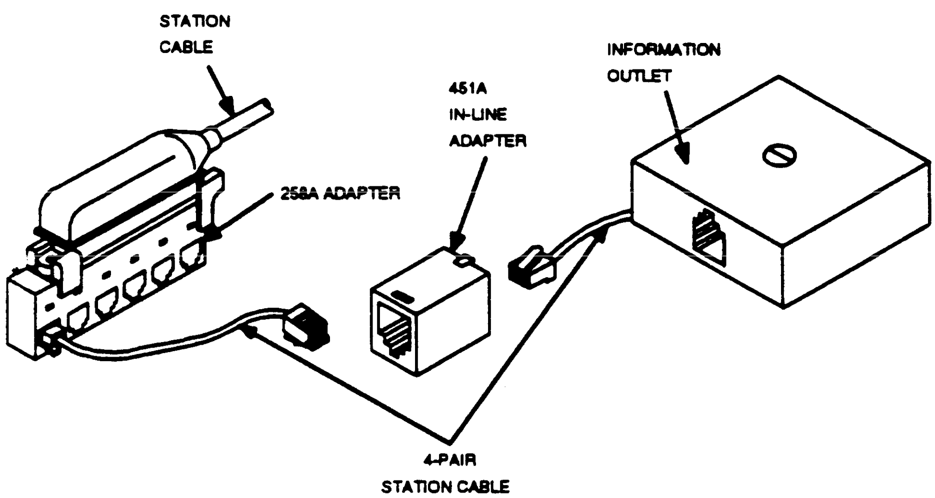


FIGURE 3-62. Example of Extending 4-Pair Station Cables

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 four-pair station cables.

258A and BR2580A Adapters

The 258A and BR2580A adapters (Figure 3-63) plug into a 25-pair female cable connector. These adapters divide the 25-pair cable into six four-pair (modular jack) circuits. See "Adjunct Powering" in Chapter 5 for details.

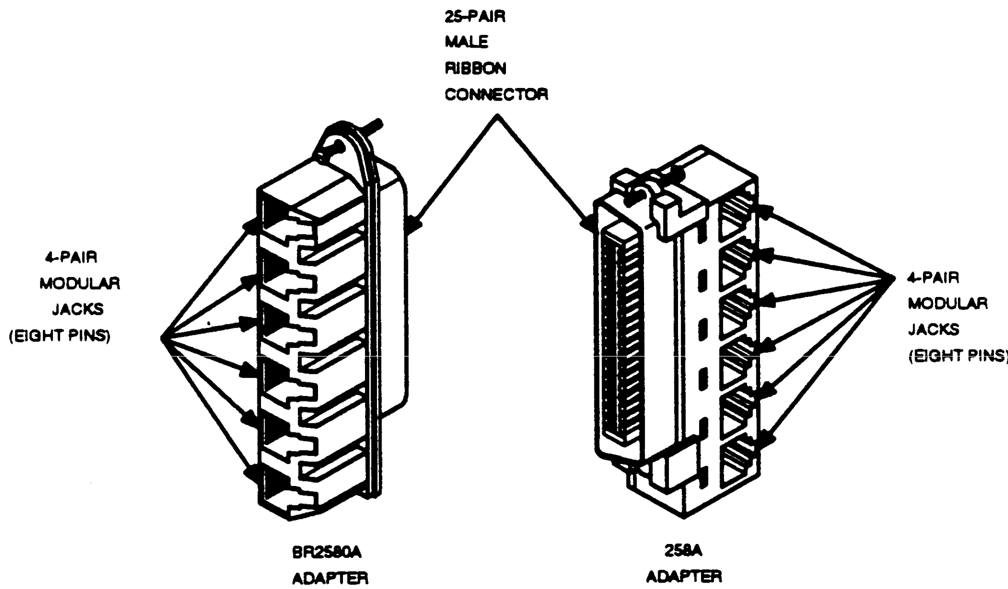


FIGURE 3-63. 258A and BR2580A Adapters

356A Adapter

The 356A adapter (Figure 3-64) plugs into a 25-pair female cable connector. The 356A adapter divides the 25-pair cable into eight three-pair circuits. Although the circuits are three-pair, the adapter's modular jacks will accept the eight-pin modular plug used on the four-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 four-pair plugs.**

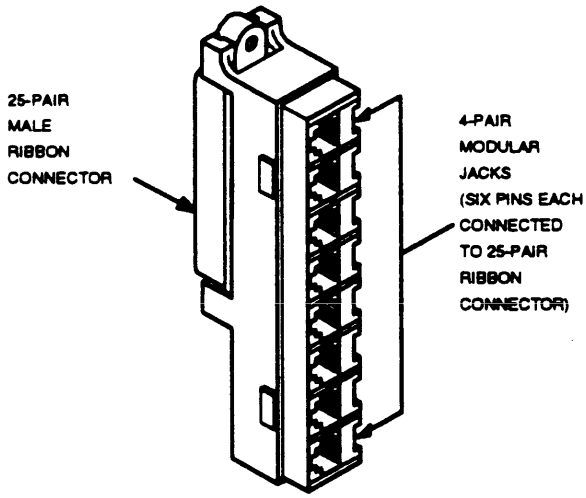


FIGURE 3-64. 356A Adapter

ZD8AJ Adapter

Use the ZD8AJ adapter to connect a MET line cord to an information outlet. The adapter interchanges pairs three and four 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	102-605-136
BR2580A Adapter	403-384-720
356A Adapter	104-158-829
400B Adapter	103-848-859
400B2 Adapter	104-152-558
ZD8AJ Adapter	103-881-421

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 three-pair. The hardware at the equipment room has been described previously. At the satellite location, four-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 three-pair (white field) and a four-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:

- 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 three-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 four-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, four-pair station circuits are run from the equipment room to the information outlets. If this is not the case, or if the customer requires two-point administration, three-pair station circuits are run from the equipment room to satellite locations. Then, the four-pair station circuits are run from the satellite locations to the information outlets.

Four-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 3-65. The four-pair station cables connect the adapter to the information outlets.

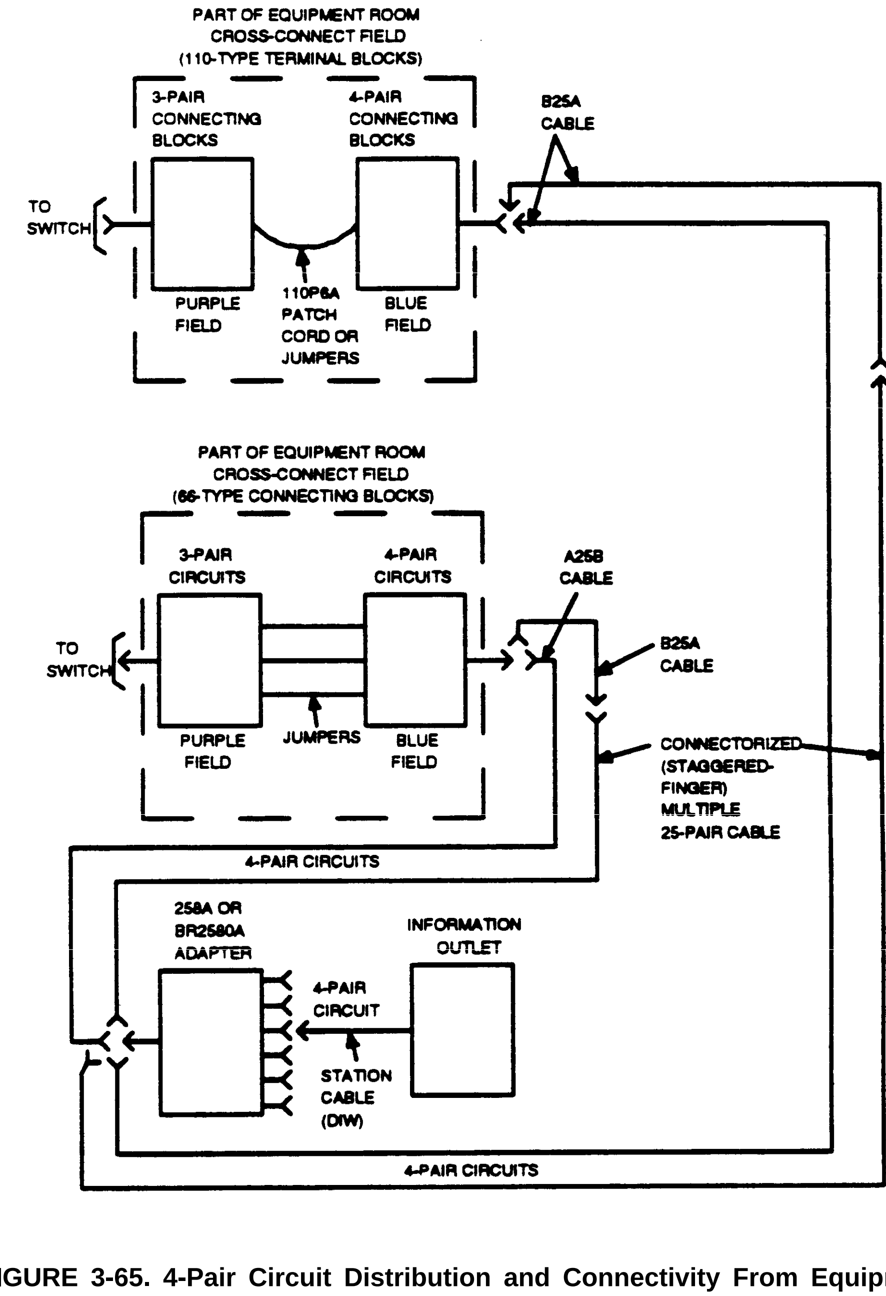


FIGURE 3-65. 4-Pair Circuit Distribution and Connectivity From Equipment Room Cross-Connect Field

The four-pair station cables can be run directly from the equipment room to the information outlets if four-pair terminal blocks are used in the distribution field (Figure 3-66). 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 3-67).

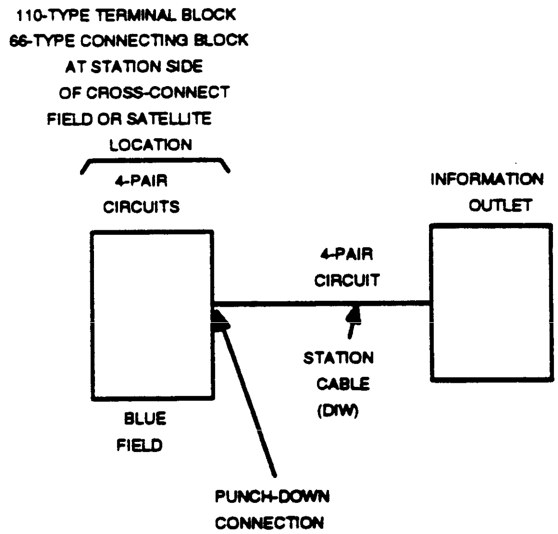


FIGURE 3-66. 4-Pair Home Run to Equipment Room or Satellite Location

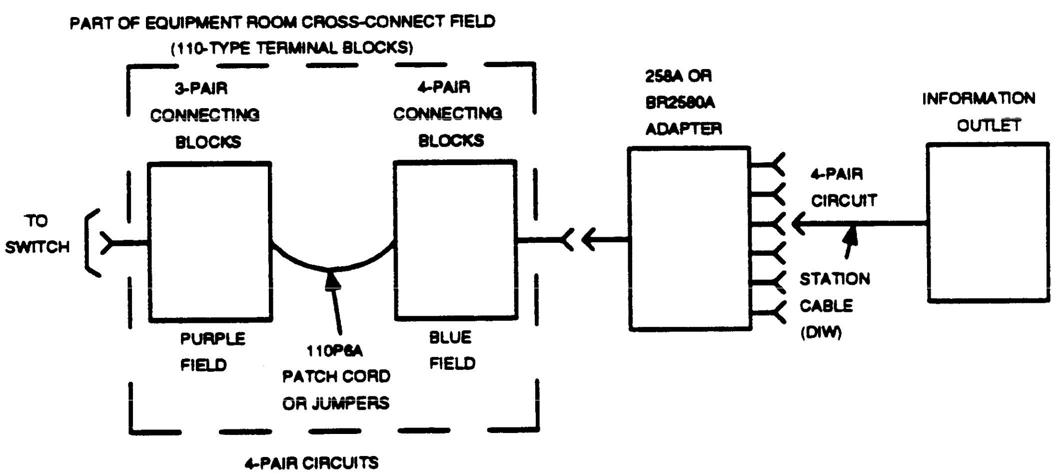
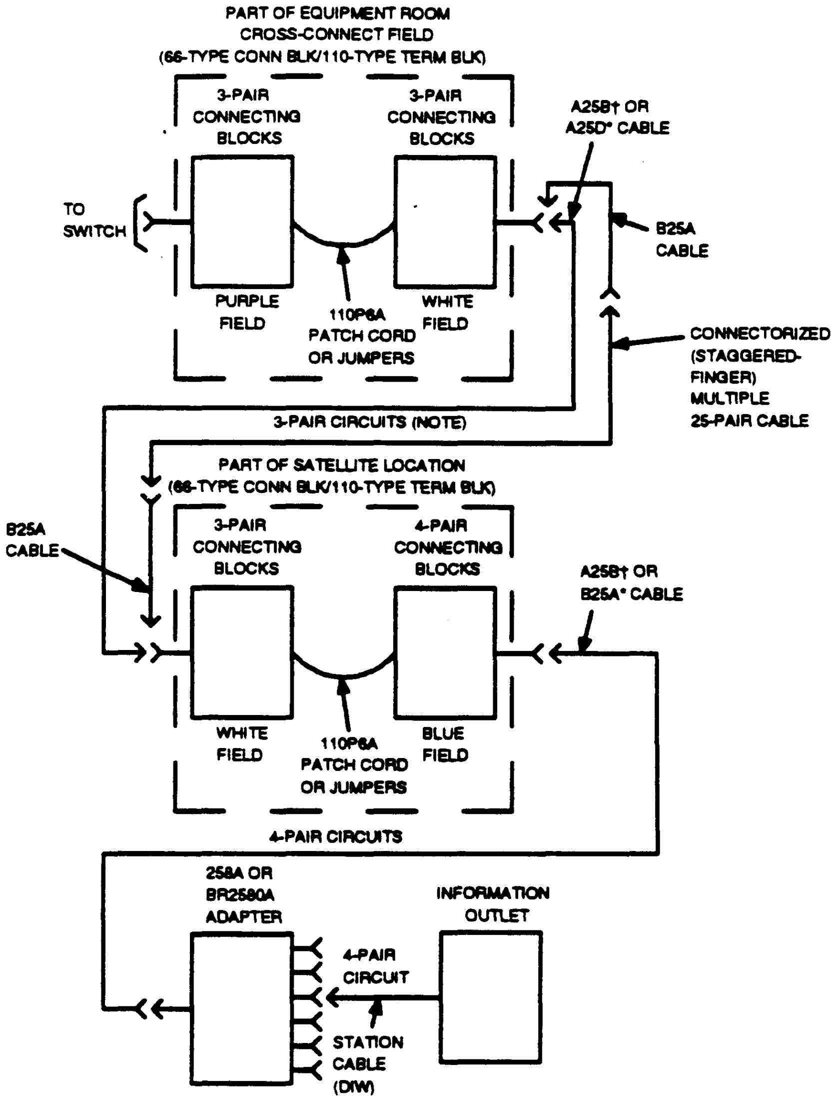


FIGURE 3-67. Example of 4-Pair Home Run to Equipment Room or Satellite Location Using Modular Plug-Ended Station Cable

Three-Pair to Four-Pair Station Circuit Distribution

Figures 3-68 and 3-69 show the three-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.



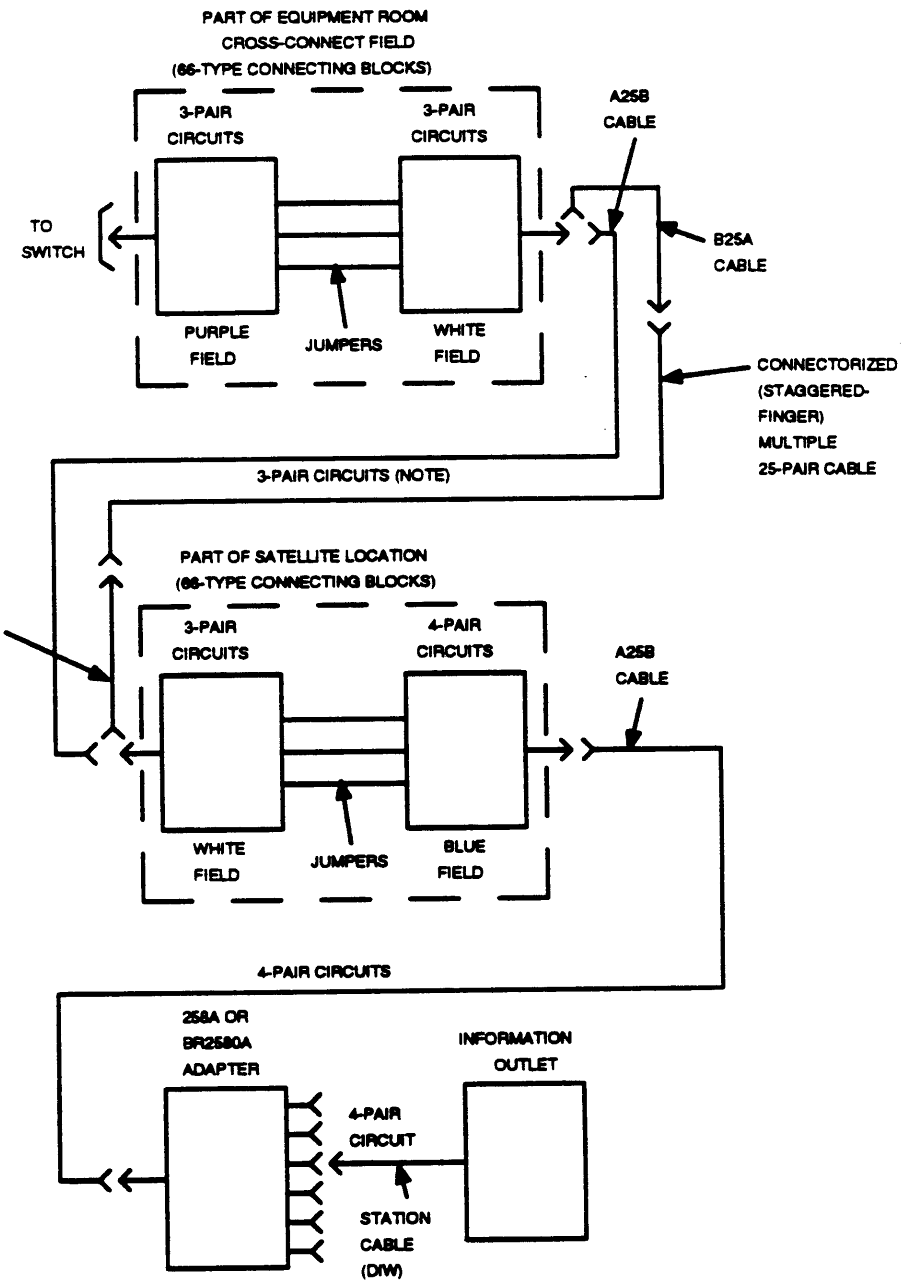
* USED WITH 110-TYPE TERMINAL BLOCKS

† USED WITH 66-TYPE CONNECTING BLOCKS

NOTE:

1. IF FIELD TERMINATED 66-TYPE CONNECTING BLOCKS OR 110-TYPE TERMINAL BLOCKS ARE USED AT THE EQUIPMENT ROOM AND SATELLITE LOCATION, BULK CABLE MAY BE USED TO RUN THE 3-PAIR CIRCUITS.

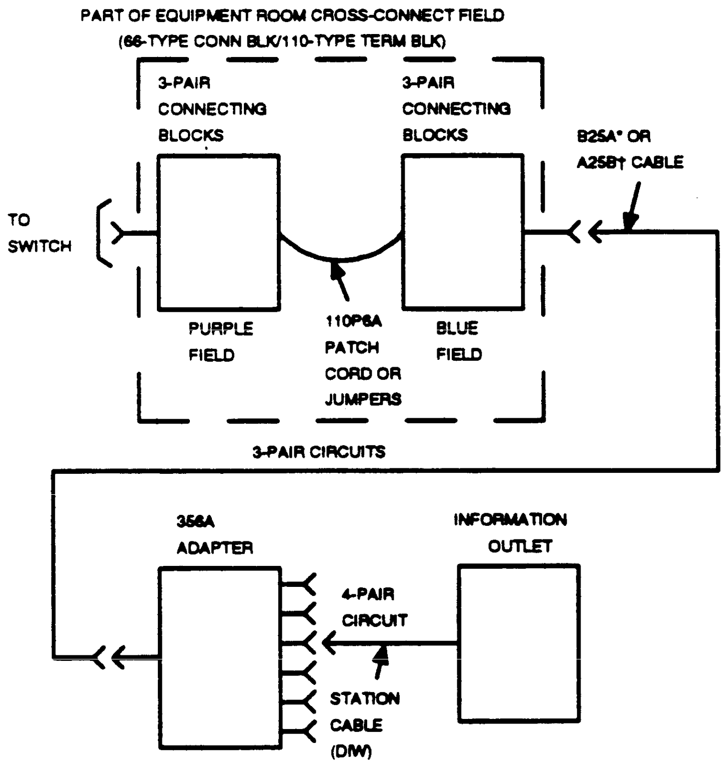
FIGURE 3-68. 3-Pair to 4-Pair Circuit Distribution and Connectivity From Equipment Room Using 110-Type Hardware



NOTE:
1. IF FIELD TERMINATED 66-TYPE CONNECTING BLOCKS ARE USED AT THE EQUIPMENT ROOM AND SATELLITE LOCATION, BULK CABLE MAY BE USED TO RUN THE 3-PAIR CIRCUITS.

FIGURE 3-69. 3-Pair to 4-Pair Circuit Distribution and Connectivity From Equipment Room Using 66-Type Hardware

Three-pair circuits also can be run directly from the equipment room cross-connect field to a 356A adapter as shown in Figure 3-70. 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 3-66 and 3-67).



* USED WITH 110-TYPE TERMINAL BLOCK.
† USED WITH 66-TYPE CONNECTING BLOCK.

FIGURE 3-70. 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.

TABLE 3-I. 3-32 System Wiring

25-Pair Cable							4-Pair Cable	
	Voice Term Lead Functions							
Term. No.	500,* 2500, 7100 Series	7300 Series	7400 Series Att. Cons.	EIA Term* PDM TDM	D-Inside Cable Color Code	BR2580A or 258A Adapter Pin Num.	D-Inside Cable Color Code	Info. Outlet Term.
1	T	V1T			W-BL	26	W-BL	1
	R	V1R			BL-W	1	BL-W	2
		CT	TXT	TXT	W-O	27	W-O	3
		CR	TXR	TXR	O-W	2	O-W	4
		P-	PXT	PXT	W-G	28	W-G	5
		P+	PXR	PXR	G-W	3	G-W	6
	P-		P-		W-BR	29	W-BR	7
	P+		P+		BR-W	4	BR-W	8
2	T	V1T			W-S	30	W-BL	1
	R	V1R			S-W	5	BL-W	2
		CT	TXT	TXT	R-BL	31	W-O	3
		CR	TXR	TXR	BL-R	6	O-W	4
		P-	PXT	PXT	R-O	32	W-G	5
		P+	PXR	PXR	O-R	7	G-W	6
	P-		P-		R-G	33	W-BR	7
	P+		P+		G-R	8	BR-W	8
3	T	V1T			R-BR	34	W-BL	1
	R	V1R			BR-R	9	BL-W	2
		CT	TXT	TXT	R-S	35	W-O	3
		CR	TXR	TXR	S-R	10	O-W	4
		P-	PXT	PXT	BK-BL	36	W-G	5
		P+	PXR	PXR	BL-BK	11	G-W	6
	P-		P-		BK-O	37	W-BR	7
	P+		P+		O-BK	12	BR-W	8

* R1V2/V3 Only

TABLE 3-I *(continued).*
3-32 System Wiring

25-Pair Cable							4-Pair Cable	
	Voice Term Lead Functions							
Term. No.	500,* 2500, 7100 Series	7300 Series	7400 Series Att. Cons.	EIA Term* PDM TDM	D-Inside Cable Color Code	BR2580A or 258A Adapter Pin Num.	D-Inside Cable Color Code	Info. Outlet Term.
4	T	V1T			BK-G	38	W-BL	1
	R	V1R			G-BK	13	BL-W	2
		CT	TXT	TXT	BK-BR	39	W-O	3
		CR	TXR	TXR	BR-BK	14	O-W	4
		P-	PXT	PXT	BK-S	40	W-G	5
		P+	PXR	PXR	S-BK	15	G-W	6
	P-		P-		Y-BL	41	W-BR	7
	P+		P+		BL-Y	16	BR-W	8
5	T	V1T			Y-O	42	W-BL	1
	R	V1R			O-Y	17	BL-W	2
		CT	TXT	TXT	Y-G	43	W-O	3
		CR	TXR	TXR	G-Y	18	O-W	4
		P-	PXT	PXT	Y-BR	44	W-G	5
		P+	PXR	PXR	BR-Y	19	G-W	6
	P-		P-		Y-S	45	W-BR	7
	P+		P+		S-Y	20	BR-W	8
6	T	V1T			V-BL	46	W-BL	1
	R	V1R			BL-V	21	BL-W	2
		CT	TXT	TXT	V-O	47	W-O	3
		CR	TXR	TXR	O-V	22	O-W	4
		P-	PXT	PXT	V-G	48	W-G	5
		P+	PXR	PXR	G-V	23	G-W	6
	P-		P-		V-BR	49	W-BR	7
	P+		P+		BR-V	24	BR-W	8
Spare						50		
						25		

* R1V2/V3 Only

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.

Maximum Wiring Distances for ISDN-BRI Voice Terminals

The following table contains the maximum wiring distances for ISDN-BRI voice terminals (the 7505, 7506, 7507, and 8503T).

TABLE 3-J. Maximum Wiring Distances

Equipment	24-AWG Wire (0.5106-mm)		26-AWG Wire (0.4049-mm)	
	Feet	Meters	Feet	Meters
7500 Series (Point-to Point)				
Termination Resistor (3 feet)	1900	579	1600	466
Termination Resistor (250 feet)	1600	488	1300	396
8503 Set	1600	488	1330	407

Adapter Requirements

One 258A/BR2580A adapter is required for each 25-pair station cable containing four-pair station circuits. One 356A adapter is required for each 25-pair station cable containing three-pair station circuits.

Hardware Requirements

Hardware requirements are the same as for the equipment room.

Sizing Four-Pair Station Cables

Use the scale of the floor plan to determine the approximate length of the station cables required per the standard SYSTIMAX PDS 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 three-pair or four-pair circuits. Note the length and size on the floor plan to aid in the ordering and installation of the station cables.

Three-Pair Station Cable Circuits

To determine the size of station cables containing three-pair circuits, multiply the number of three-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.

Four-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 four (see 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.

CHAPTER 4. FIBER-OPTIC HARDWARE AND CONNECTIONS

Optical Cross-Connect Hardware

There are two types of optical hardware used in SYSTIMAX PDS wiring: optical cross-connects and optical interconnects.

Optical cross-connects (Figure 4-1) consists 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.

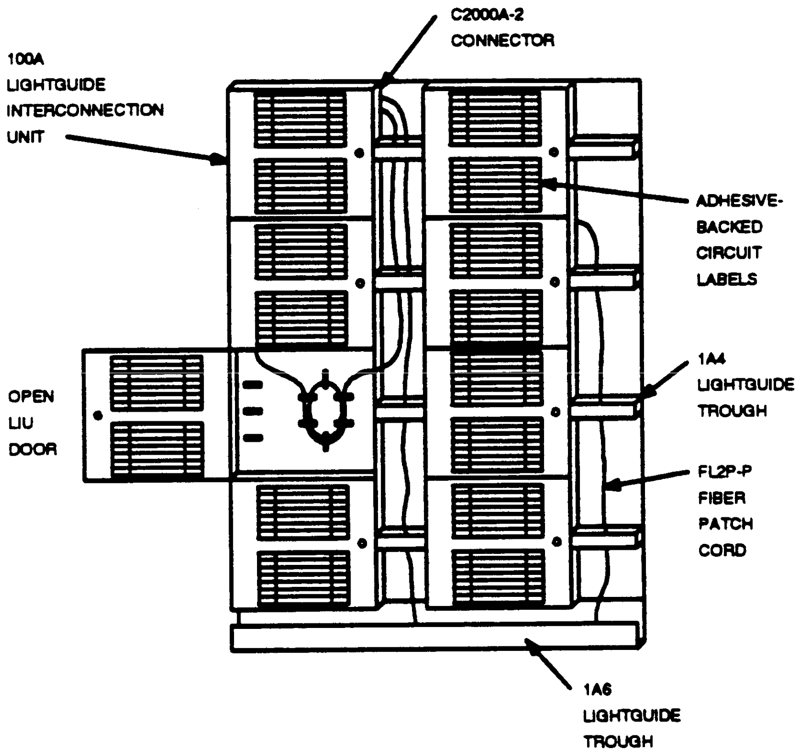


FIGURE 4-1. Optical Cross-Connect Field

Optical interconnects (Figure 4-2) consists of LIU 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.

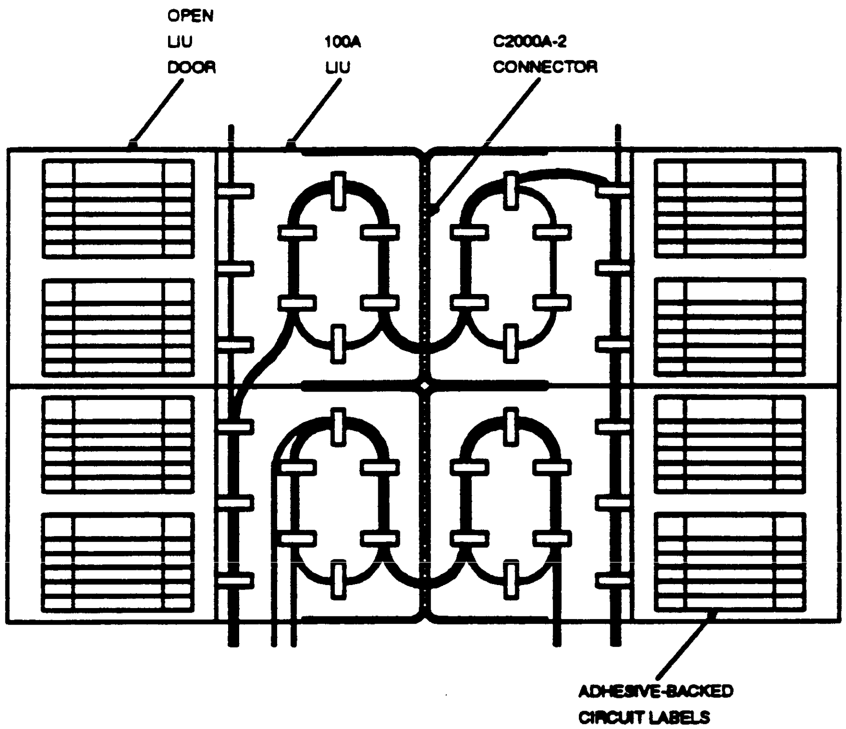


FIGURE 4-2. Optical Interconnect Field

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 LIU

The 100A LIU (Figure 4-3) 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	104-141-841

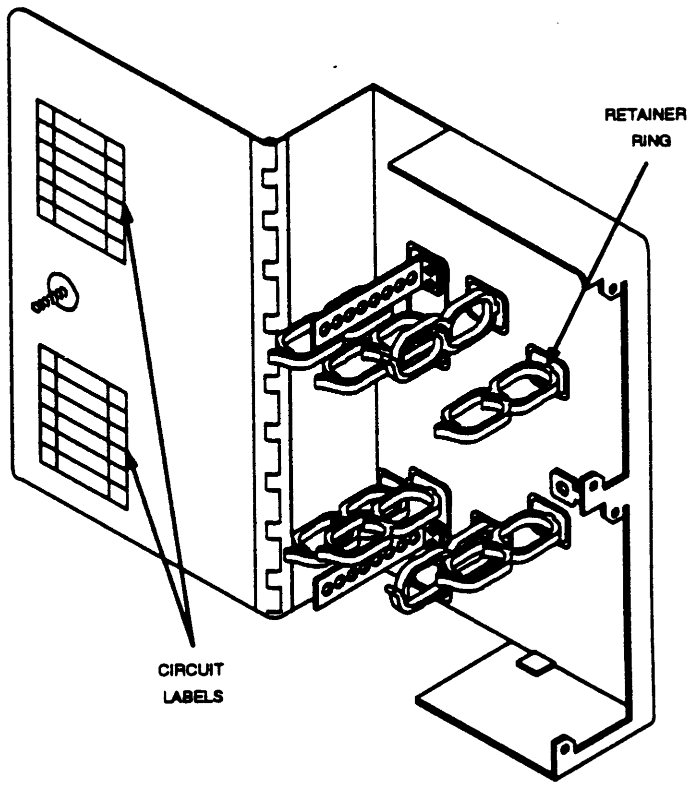


FIGURE 4-3. 100A Lightguide Interconnection Unit

10A Lightguide Connector Panel

The 10A lightguide connector panel mounts in the cutouts of a 100A LIU. A LIU mounts two connector panels. The connector panel will mount six C2000A-2 connector couplings.

ORDERING INFORMATION

Description	Comcode
10A Lightguide Connector Panel	104-141-858

C2000A-2 Connector Coupling

The C2000A-2 connector coupling 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	104-148-028

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 4-1). Figure 4-4 shows the individual lightguide troughs.

ORDERING INFORMATION

Description	Comcode
1A4 Lightguide Trough	104-141-866
1A6 Lightguide Trough	104-141-874

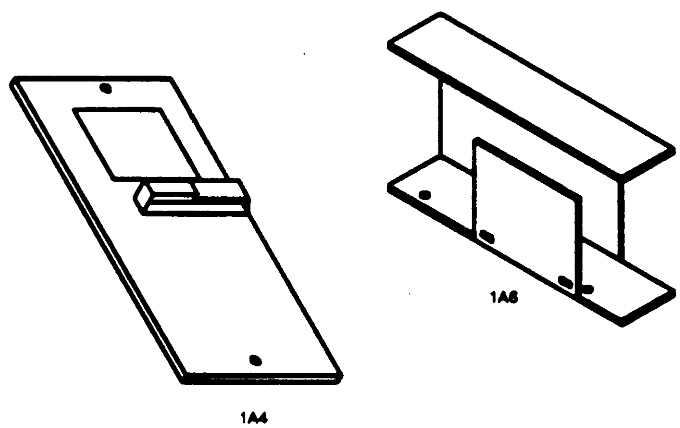


FIGURE 4-4. 1A4 and 1A6 Lightguide Troughs

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-02 Fiber Interconnection Cable	2	104-266-408
FL2P-P-04 Fiber Interconnection Cable	4	104-266-416
FL2P-P-06 Fiber Interconnection Cable	6	104-266-424
FL2P-P-08 Fiber Interconnection Cable	8	104-266-432
FL2P-P-10 Fiber Interconnection Cable	10	104-266-440
FL2P-P-15 Fiber Interconnection Cable	15	104-266-457
FL2P-P-20 Fiber Interconnection Cable	20	104-266-465
FL2P-P-25 Fiber Interconnection Cable	25	104-266-473
FL2P-P-30 Fiber Interconnection Cable	30	104-266-481
FL2P-P-35 Fiber Interconnection Cable	35	104-266-499
FL2P-P-40 Fiber Interconnection Cable	40	104-266-507
FL2P-P-50 Fiber Interconnection Cable	50	104-266-523
FL2P-P-75 Fiber Interconnection Cable	75	104-266-556
FL2P-P-100 Fiber Interconnection Cable	100	104-266-564

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:

- Location where the far end of the cable is terminated, including the building and room numbers.
- Information on the cable itself, such as cable number, active optical fiber count, spare optical fiber count, and length of the cable (in feet).

Figure 4-5 shows an example of a fiber-optic cable label. This label (Figure 4-5) shows that the far end of the cable is in the MUS building, room A77. The cable number is 17, the active fiber-optic count is six, the spare fiber count is two, and the cable is 357 feet long.

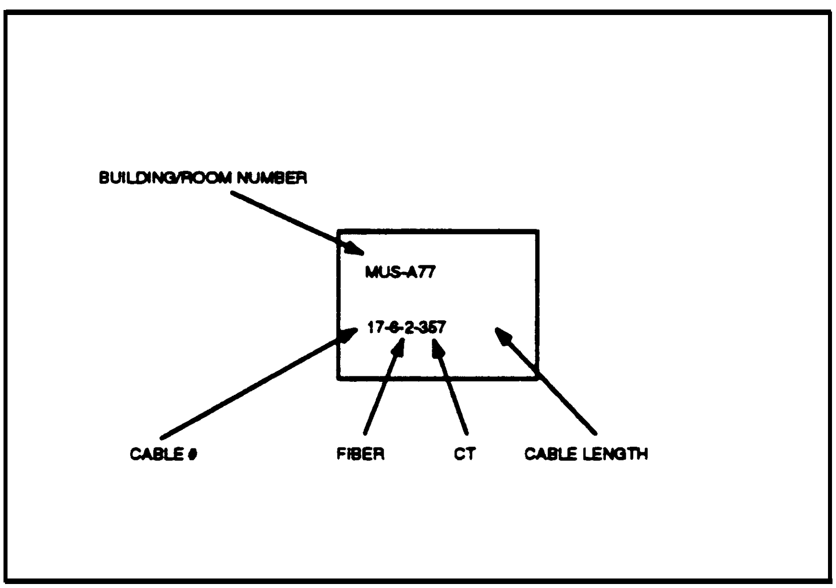


FIGURE 4-5. Fiber-Optic Cable Label

Cross-Connect Labels

There are two types of cross-connect labels. The first type shows the type of terminal equipment that is assigned to the fiber-optic cable. The second label shows two types of information; where the far end of the cable is terminated and a description of the cable itself. This information is broken down as follows:

- Location of the far end of the cable, that is, the closest point to the termination point, where the cable appears on a cross-connect, or on a wall or floor connector, or is connected to a piece of wall equipment.
  - If the far end is a cross-connect, the information shows the location of the cross-connect field, which is really the building number and room number of the closet. It also shows the location of the fiber on the cross-connect field, which is the column letter and row number.
  - If the far end is terminated at a wall or floor connector, the information shows the building and room number of the connector, as well as the connector number inside the room.
  - If the far end is connected directly to a piece of terminal equipment, the connection is treated the same as if it were a wall or floor connector. The terminal equipment is assigned a connector number, and the label shows the building, room, and connector number of the terminal equipment.
- Optical fiber type.
- Number of the cable containing the fiber. Because the fiber may pass through two or more cables on the way to the far end, the number of the cable refers to the cable closest to the cross-connect on which the label appears.
- Color code of the optical fiber within the cable closet to the label. This color code should not be confused with the colored labels used to identify 25-pair cables at cross-connect fields using 110-type hardware.

Figure 4-6 shows an example of a fiber-optic cross-connect label. This label (Figure 4-6) shows that the far end of the cable is terminated in building 1, room 1A313, column C, fiber number 37. The fiber type is 62, and the closest fiber optic cable is 15. The color code is red.

Note: If the closet does not have a formal room number within the building, the room number should reflect the informal closet numbering scheme that is described in the permanent records kept for each customer.

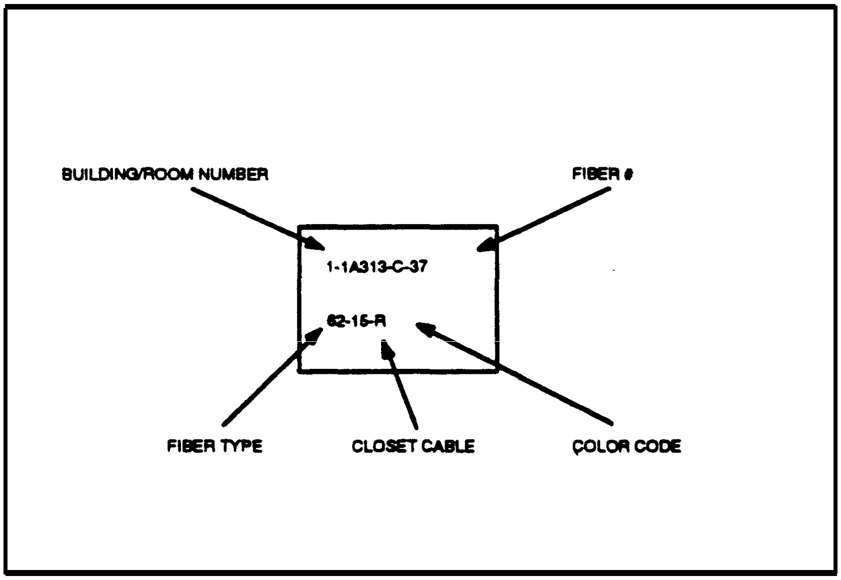


FIGURE 4-6. Fiber-Optic Cross-Connect Label

Administering Fiber-Optic Cables

General

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 *SYSTIMAX® 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 4-1), 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 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.

To Make a New Cross-Connection

1. At the optical cross-connect field (Figure 4-1), 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 *SYSTIMAX® 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 4-2), 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 *SYSTIMAX® PDS Fiber Installation Manual, 555-401-102.*

Fiber-Optic Cable Connections for G1 or G3i Multi-Carrier Cabinet With EPN Cabinet

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 Multi-Carrier Cabinet

Without Duplication Option

When the EPN and PPN cabinets are located side-by-side, one FL2P-P-20 fiber-optic cable and two 9823-type lightwave transceivers are required.

When the EPN cabinet is installed remotely from the PPN cabinet, two FL2P-P-20 fiber-optic cables and two 9823-type lightwave transceivers are required.

With Duplication Option

When the EPN and PPN cabinets are located side-by-side, two FL2P-P-20 fiber-optic cables and four 9823-type lightwave transceivers are required.

When the EPN cabinet is installed remotely from the PPN cabinet, four FL2P-P-20 fiber-optic cables and four 9823-type lightwave transceivers are required.

Connections Without Duplication Option (Adjacent Cabinets)

1. At the rear of the PPN cabinet, control carrier A (Figure 4-7):
   - Install 9823-type lightwave transceiver on connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01 (Figure 4-8).
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and upward out of the cabinet. Then, route the cable down into the cable tray of the EPN cabinet.
2. At rear of the EPN cabinet, control carrier A:
   - Install 9823-type lightwave transceiver on connector at slot 2A01.
   - Connect the other end of the fiber-optic cable to the 9823-type lightwave transceiver slot 2A01.
   - Secure the fiber-optic cable (with cable ties) against the cable tray wall at the cable tie positions built into the tray.
   - At top of cabinet, coil the surplus length of fiber-optic cable. Secure the cable against the cable tray wall with cable ties.

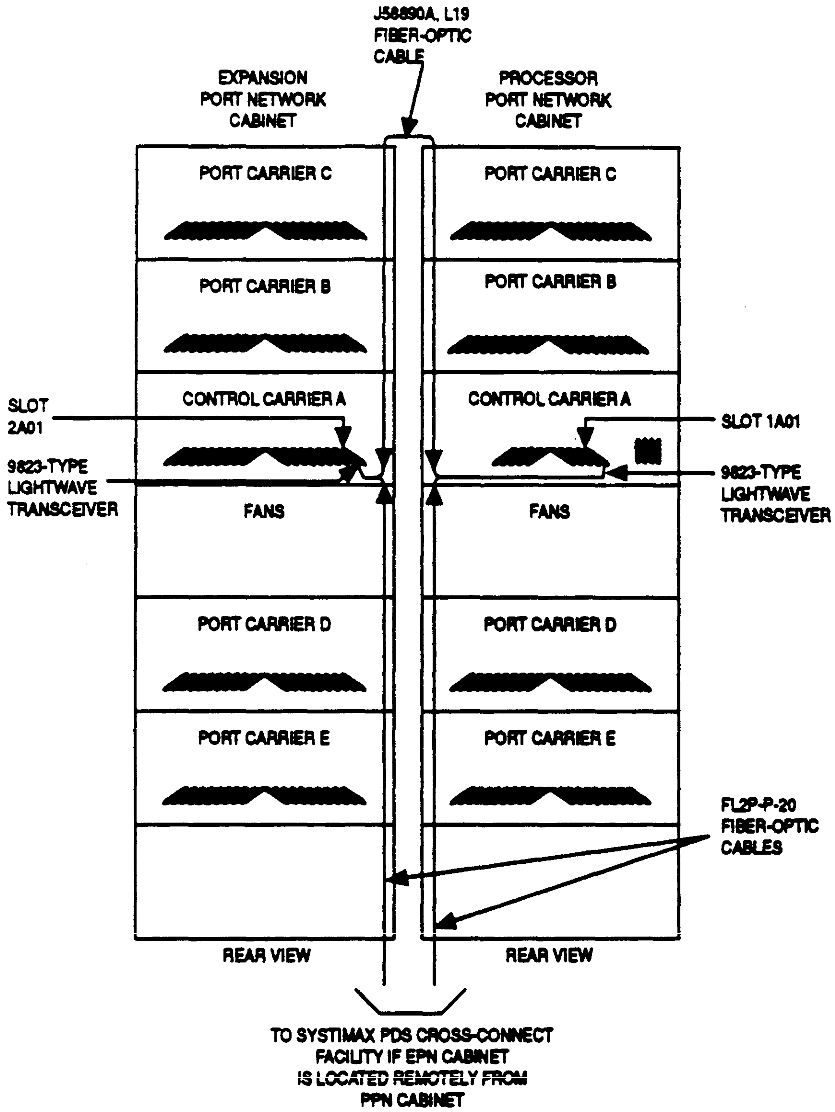


FIGURE 4-7. EPN Fiber-Optic Cable Connections for G1 or G3i Multi-Carrier Cabinet Without Duplication Option

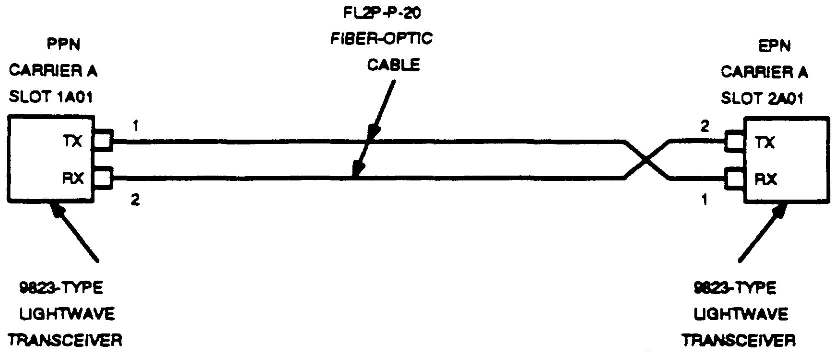


FIGURE 4-8. Fiber-Optic Cable Connections for Adjacent Cabinets Without Duplication Option

Connections Without Duplication Option (Remote Cabinets)

1. At the rear of the PPN cabinet, control carrier A (Figure 4-7):
   - Install 9823-type lightwave transceiver on connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01 (Figure 4-9).
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and downward out of the cabinet (Figure 4-7) through the cable manager to the PDS cross-connect facility.
2. At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave interface unit provided (Figure 4-9).

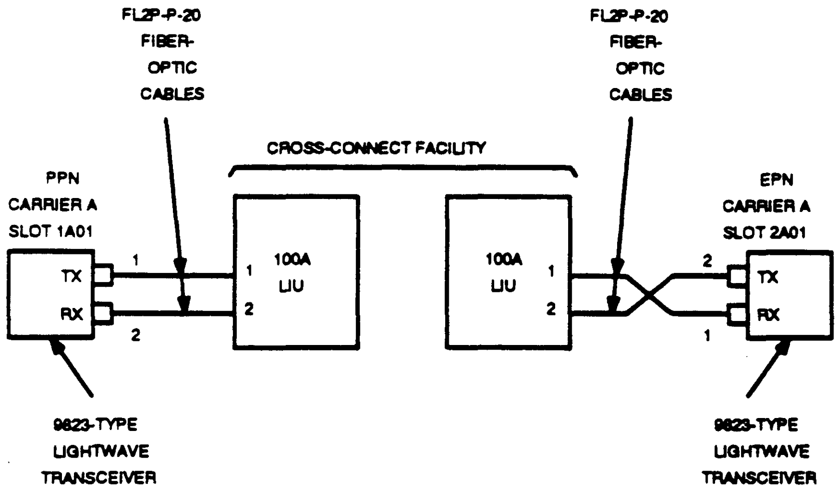


FIGURE 4-9. Fiber-Optic Cable Connections for Remote Cabinets Without Duplication Option

3. Secure the fiber-optic cable (with cable ties) against the cable tray wall at the cable tie positions built into the tray.
4. At rear of the EPN cabinet, control carrier A:
   - Install 9823-type lightwave transceiver on connector at slot 2A01.
   - Connect the fiber-optic cable to the 9823-type lightwave transceiver slot 2A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and downward out of the cabinet (Figure 4-7) through the cable manager to the PDS cross-connect facility.
5. At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave interface unit provided (Figure 4-9).
6. Secure the fiber-optic cable (with cable ties) against the cable tray wall at the cable tie positions built into the tray.
7. At top of cabinet, coil the surplus length of fiber-optic cable and secure the cable against the cable wall with cable ties.

Connections With Duplication Option (Adjacent Cabinets)

1. At the rear of the PPN cabinet, control carrier A (Figure 4-10):
   - Install 9823-type lightwave transceiver on connector at slot 1A01.
   - Connect one end of fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01 (Figure 4-11).
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and upward out of the cabinet (Figure 4-10). Then, route the cable down into the cable tray of the EPN cabinet.
2. At the rear of the PPN cabinet control carrier B:
   - Install 9823-type lightwave transceiver on connector at slot 1B01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1B01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and upward out of the cabinet (Figure 4-10). Then, route the cable down into the cable tray of the EPN cabinet.
3. At the rear of the EPN cabinet control carrier A:
   - Install 9823-type lightwave transceiver on connector at slot 2A01.
   - Connect fiber-optic cable, coming from the PPN cabinet, control carrier A, to the 9823-type lightwave transceiver at slot 2A01.

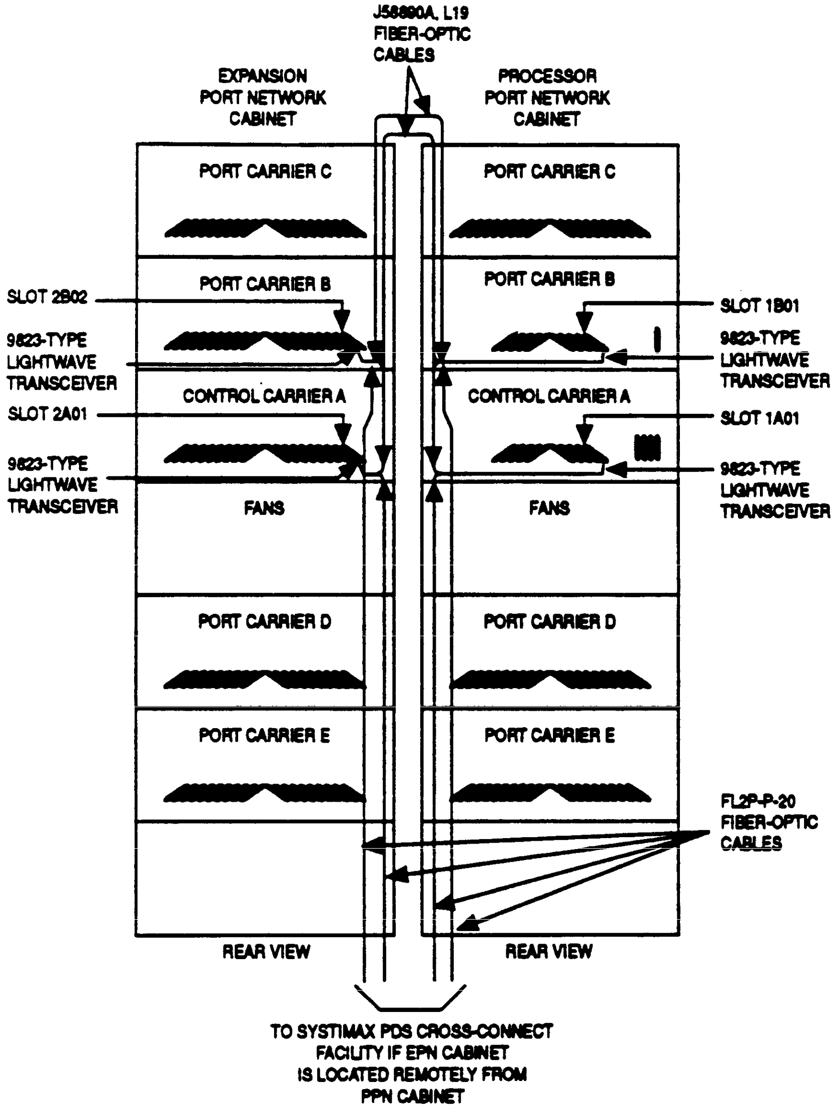


FIGURE 4-10. EPN Fiber-Optic Cable Connections for G1 or G3i Multi-Carrier Cabinet With Duplication Option

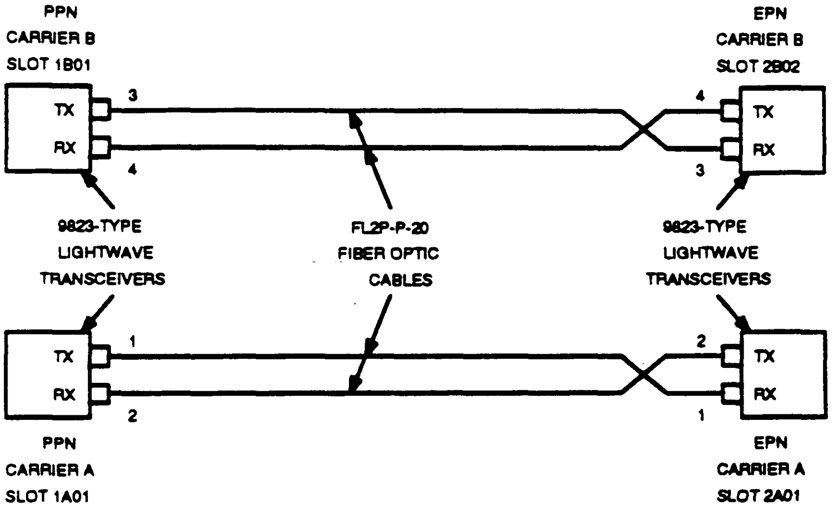


FIGURE 4-11. Fiber-Optic Cable Connections for Adjacent Cabinet With Duplication Option

4. At the rear of the EPN cabinet port carrier B:
   - Install 9823-type lightwave transceiver on connector at slot 2B02.
   - Connect the fiber-optic cable, coming from the PPN cabinet, control carrier B, to the 9823-type lightwave transceiver at slot 2B02.
5. Secure the fiber-optic cables (with cable ties) against the cable tray walls at the cable tie positions built into the trays.
6. At top of cabinet, coil the surplus length of each fiber-optic cable. Secure the cables against the cable tray wall with cable ties.

Connections With Duplication Option (Remote Cabinets)

1. At the rear of the PPN cabinet, control carrier A (Figure 4-10):
   - Install 9823-type lightwave transceiver on connector at slot 1A01.
   - Connect one end of fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01 (Figure 4-12).
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and downward out of the cabinet (Figure 4-10) through the cable manager to the PDS cross-connect facility.
2. At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave interface unit provided (Figure 4-12).
3. Secure the fiber-optic cable (with cable ties) against the cable tray wall at the cable tie positions built into the tray.
4. At the rear of the PPN cabinet control carrier B:
   - Install 9823-type lightwave transceiver on connector at slot 1B01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1B01 (Figure 4-12).
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and downward out of the cabinet (Figure 4-10) through the cable manager to the PDS cross-connect facility.
5. At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave interface unit provided (Figure 4-12).
6. Secure the fiber-optic cable (with cable ties) against the cable tray wall at the cable tie positions built into the tray.
7. At the rear of the EPN cabinet, control carrier A:
   - Install 9823-type lightwave transceiver on connector at slot 2A01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1B01 (Figure 4-12).
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and downward out of the cabinet (Figure 4-10) through the cable manager to the PDS cross-connect facility.
8. At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave interface unit provided (Figure 4-12).
9. Secure the fiber-optic cable (with cable ties) against the cable tray wall at the cable tie positions built into the tray.

10. At the rear of the EPN cabinet, port carrier B:
    - Install 9823-type lightwave transceiver on connector at slot 2B02.
    - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1B01 (Figure 4-12).
    - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and downward out of the cabinet (Figure 4-10) through the cable manager to the PDS cross-connect facility.
11. At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave interface unit provided (Figure 4-12).
12. Secure the fiber-optic cable (with cable ties) against the cable tray wall at the cable tie positions built into the tray.

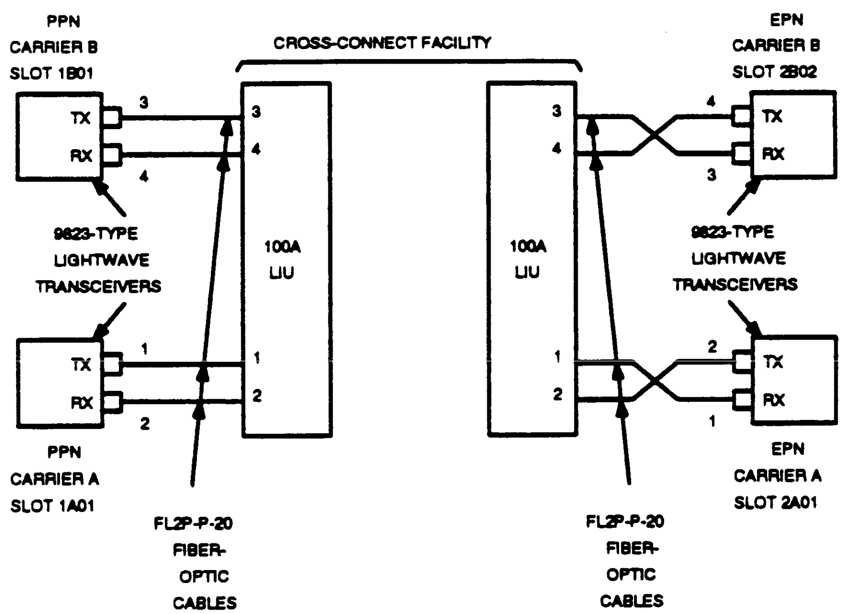


FIGURE 4-12. Fiber-Optic Cable Connections for Remote Cabinet With Duplication Option

Fiber-Optic Cable Connections for G1 or G3i Single-Carrier Cabinet With EPN Cabinet

Connect Fiber-Optic Cables for Single-Carrier Cabinet

Without Duplication Option

When the EPN and PPN cabinets are located side-by-side, one FL2P-P-20 fiber-optic cable and two 9823-type lightwave transceivers are required.

When the EPN cabinet is installed remotely from the PPN cabinet, two FL2P-P-20 fiber-optic cables and two 9823-type lightwave transceivers are required.

With Duplication Option

When the EPN and PPN cabinets are located side-by-side, two FL2P-P-20 fiber-optic cables and four 9823-type lightwave transceivers are required.

When the EPN cabinet is installed remotely from the PPN cabinet, four FL2P-P-20 fiber-optic cables and four 9823-type lightwave transceivers are required.

Connections Without Duplication Option (Adjacent Cabinets)

1. At the rear of the PPN, control cabinet A (Figure 4-13):
   - Install 9823-type lightwave transceiver on connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01 (Figure 4-14).
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet (Figure 4-13). Then route the cable into the cable tray of the EPN cabinet.

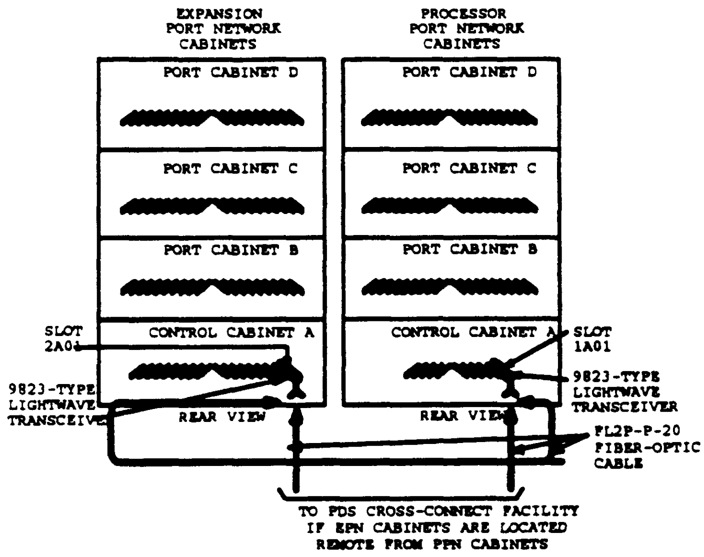


FIGURE 4-13. EPN Fiber-Optic Cable Connections for G1 or G3i Single-Carrier Cabinet Without Duplication Option

2. At rear of the EPN, control cabinet A:
   - Install 9823-type lightwave transceiver on connector at slot 2A01.
   - Connect the other end of the fiber-optic cable coming from the PPN to the 9823-type lightwave transceiver at slot 2A01.

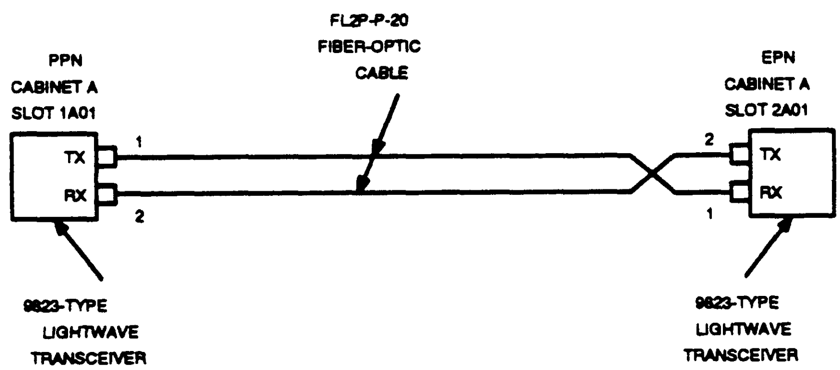


FIGURE 4-14. Fiber-Optic Cable Connections for Adjacent Cabinets Without Duplication Option

3. Secure the fiber-optic cable (with cable ties) against the cable tray walls at the cable tie positions built into the trays.
4. At top of cabinet, coil up the surplus length of fiber-optic cable. Secure the cable against the cable tray wall with cable ties.

Connections Without Duplication Option (Remote Cabinets)

1. At the rear of the PPN, control cabinet A (Figure 4-13):
   - Install 9823-type lightwave transceiver on connector at slot 1A01.
   - Connect one end of the fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01 (Figure 4-15).
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet (Figure 4-13) through the cable manager to the PDS cross-connect facility.
2. At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave interface unit provided (Figure 4-15).

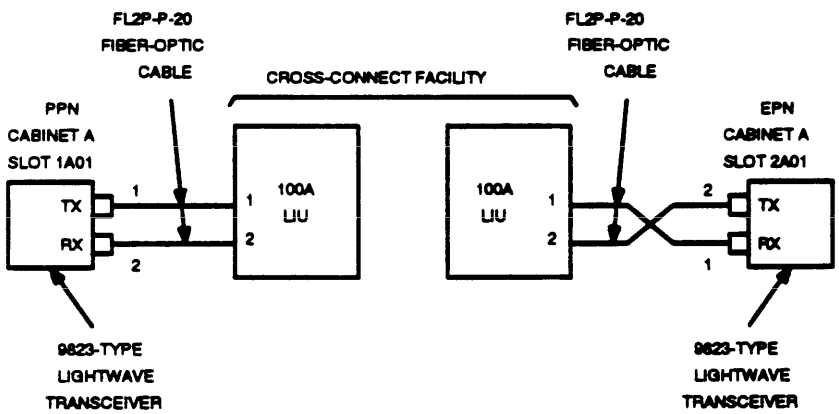


FIGURE 4-15. Connections for Fiber-Optic Cable for Remote Cabinets Without Duplication Option

3. Secure the fiber-optic cable (with cable ties) against the cable tray wall at the cable tie positions built into the tray.
4. At rear of the EPN, control cabinet A:
   - Install 9823-type lightwave transceiver on connector at slot 2A01 (Figure 4-15).
   - Connect the fiber-optic cable to the 9823-type lightwave transceiver at slot 2A01 (Figure 4-15).
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet (Figure 4-13) through the cable manager to the PDS cross-connect facility.

5. At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave interface unit provided (Figure 4-15).
6. Secure the fiber-optic cable (with cable ties) against the cable tray walls at the cable tie positions built into the trays.

Connections With Duplication Option (Adjacent Cabinets)

1. At the rear of the PPN, control cabinet A (Figure 4-16):
   - Install 9823-type lightwave transceiver on connector at slot 1A01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01 (Figure 4-17).
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet (Figure 4-16). Then route the cable into the cable tray of the EPN cabinet.
2. At the rear of the PPN, control cabinet B:
   - Install 9823-type lightwave transceiver on connector at slot 1B01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1B01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet (Figure 4-16). Then route the cable into the cable tray of the EPN cabinet.
3. At the rear of the EPN, control cabinet A:
   - Install 9823-type lightwave transceiver on connector at slot 2A01.
   - Connect fiber-optic cable, coming from the PPN cabinet, control carrier A, to the 9823-type lightwave transceiver at slot 2A01.

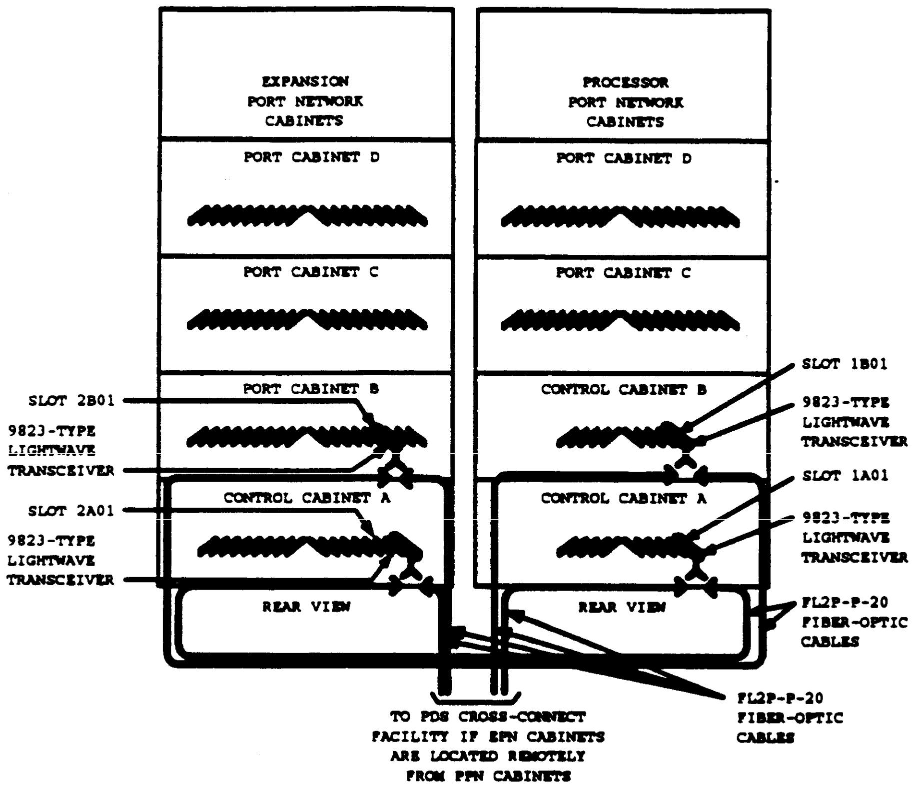


FIGURE 4-16. EPN Fiber-Optic Cable Connections for G1 or G3i Single-Carrier Cabinet With Duplication Option

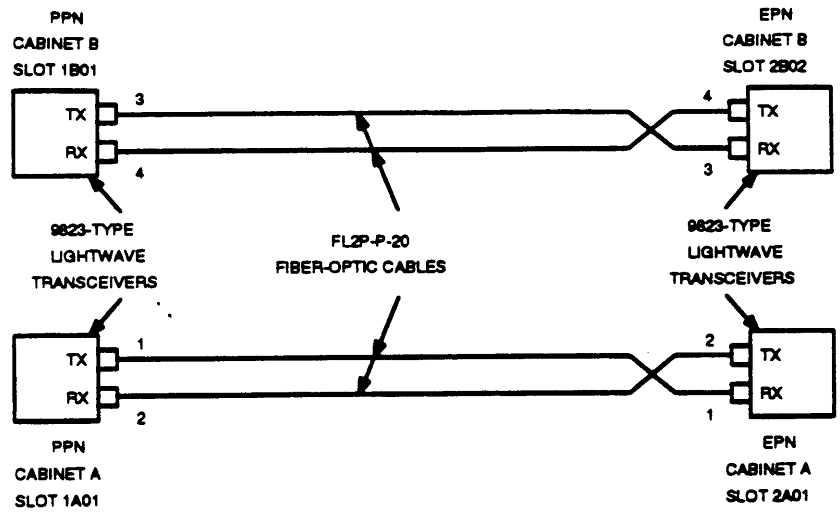


FIGURE 4-17. Fiber-Optic Cable Connections for Adjacent Cabinets With Duplication Option

4. At the rear of the EPN, port carrier B:
   - Install 9823-type lightwave transceiver on connector at slot 2B02.
   - Connect the fiber-optic cable, coming from the PPN, control cabinet B, to the 9823-type lightwave transceiver at slot 2B02.
5. Secure the fiber-optic cables (with cable ties) against the cabinets cable tray walls at the cable tie positions built into the trays.
6. At top of cabinet, coil the surplus length of each fiber-optic cable and secure each cable against the cable tray wall with cable ties.

Connections With Duplication Option (Remote Cabinets)

1. At the rear of the PPN, control cabinet A (Figure 4-16):
   - Install 9823-type lightwave transceiver on connector at slot 1A01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1A01 (Figure 4-18).
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet (Figure 4-16) through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave interface unit provided (Figure 4-18).
   - Secure the fiber-optic cable (with cable ties) against the cable tray walls at the cable tie positions built into the trays.

2. At the rear of the PPN, control cabinet B:
   - Install 9823-type lightwave transceiver on connector at slot 1B01.
   - Connect one end of a fiber-optic cable to the 9823-type lightwave transceiver at slot 1B01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet (Figure 4-16) through the cable manager to the PDS cross-connect facility.
   - At the PDS cross-connect facility, connect the fiber- optic cable to the lightwave interface unit provided (Figure 4-18).
   - Secure the fiber-optic cable (with cable ties) against the cable tray walls at the cable tie positions built into the trays.

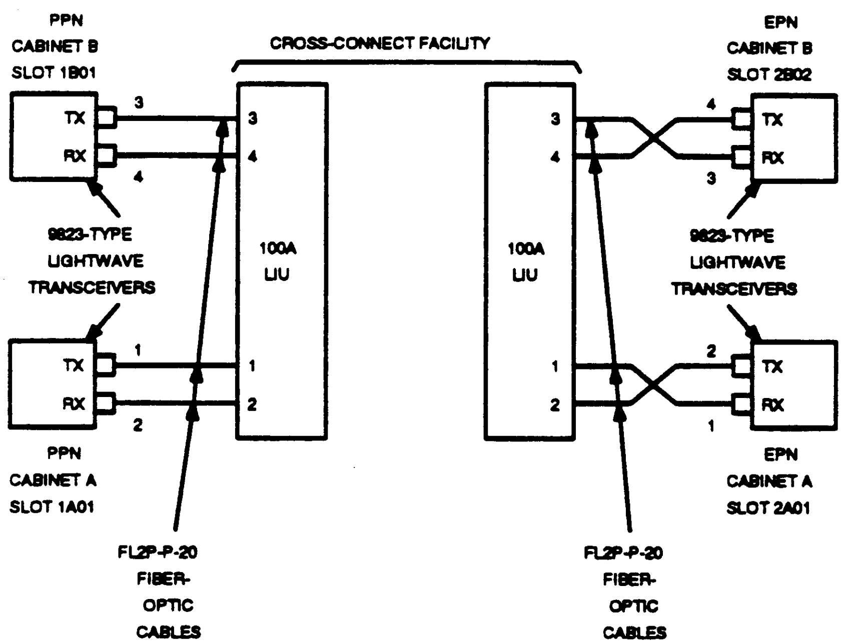


FIGURE 4-18. Fiber-Optic Cable Connections for Remote Cabinets With Duplication Option

3. At the rear of the EPN, control cabinet A:
   - Install 9823-type lightwave transceiver on connector at slot 2A01.
   - Connect fiber-optic cable, coming from the PPN, control cabinet A, to the 9823-type lightwave transceiver at slot 2A01.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet (Figure 4-16) through the cable manager to the PDS cross-connect facility.

4. At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave interface unit provided (Figure 4-18).
5. Secure the fiber-optic cable (with cable ties) against the cable tray walls at the cable tie positions built into the trays.
6. At the rear of the EPN cabinet port carrier B:
   - Install 9823-type lightwave transceiver on connector at slot 2B02.
   - Connect the fiber-optic cable, coming from the PPN, control cabinet B, to the 9823-type lightwave transceiver at slot 2B02.
   - Route the fiber-optic cable from the 9823-type lightwave transceiver to the cabinet cable tray and out of the cabinet (Figure 4-16) through the cable manager to the PDS cross-connect facility.
7. At the PDS cross-connect facility, connect the fiber-optic cable to the lightwave interface unit provided (Figure 4-18).
8. Secure the fiber-optic cable (with cable ties) against the cable tray walls at the cable tie positions built into the trays.

CHAPTER 5. STATION WIRING

Installation of Station Wiring and Associated Hardware

Installing Station Cables

The station labels shown in Figure 5-1 must be installed on each end of a 25-pair station cable. The labels are provided with the 201A cable/jack station labels (Figure 3-42). 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/66-type connecting block connector with jacks labeled 1 through 6, the cable label must be numbered 1 through 6 (see Note).

Note: If cable/jack station labels are not available, the information can be written on the cable connector with a felt-tipped pen.

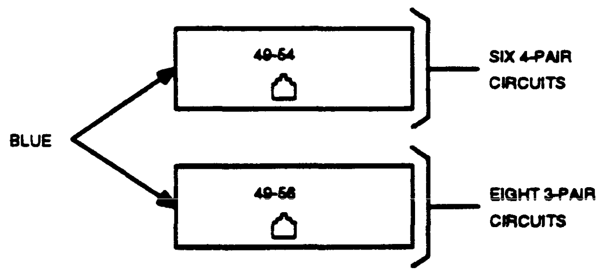


FIGURE 5-1. 25-Pair Station Cable Labels

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 5-2). The staggered-finger station cables are run to the site locations or adapters.

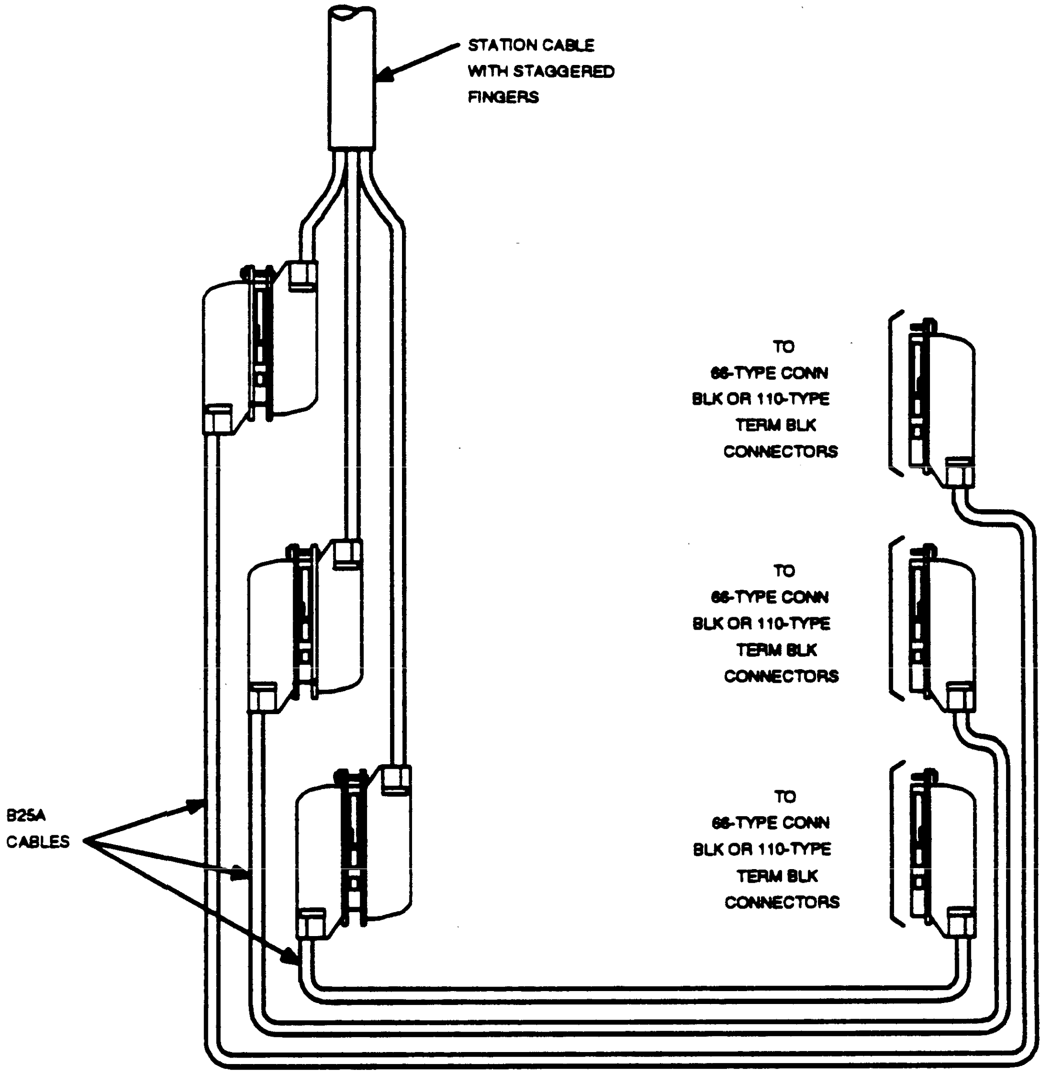


FIGURE 5-2. Multiple 25-Pair Station Cable With Factory-Installed Staggered Fingers Connected to a 110-Type Terminal Block/66-Type Connecting Block

Installing 110-Type Hardware at Satellite Locations

To install 110-type terminal blocks at a satellite location, use the same installation procedure described in “Installing the Cross-Connect Field” in Chapter 3. Figure 5-3 shows typical satellite location layouts.

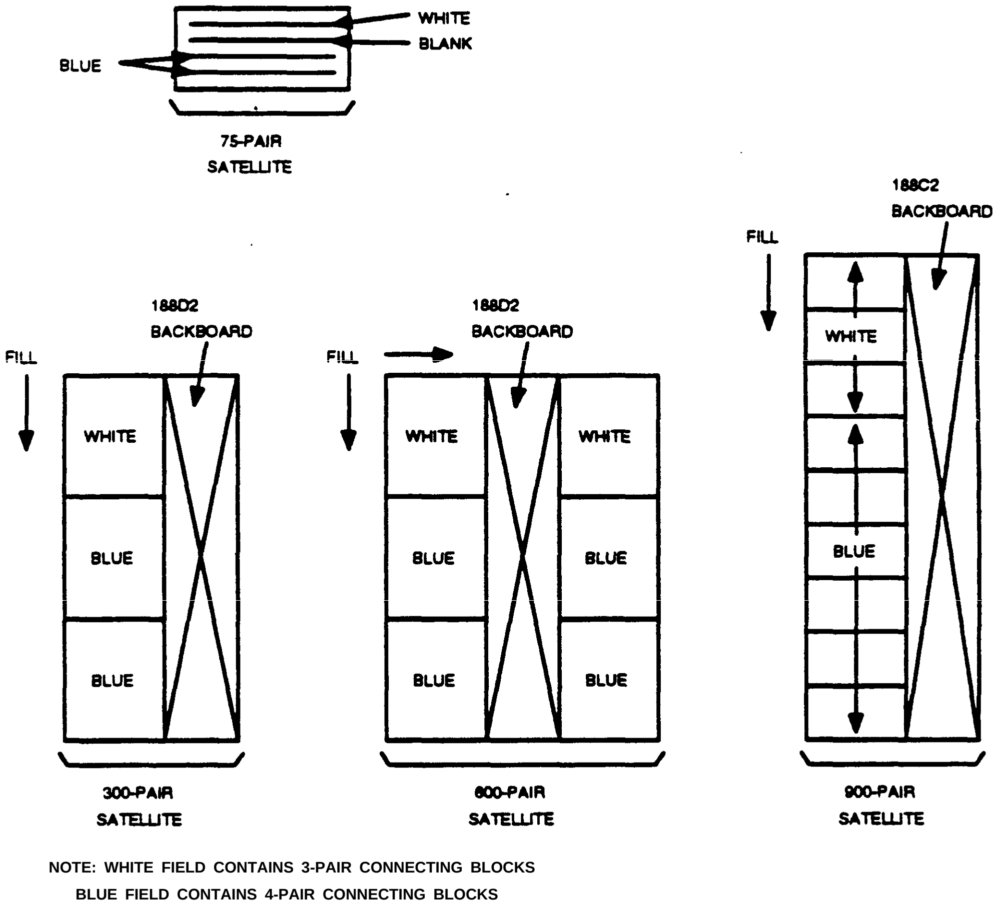


FIGURE 5-3. Typical Satellite Location Layouts

The three-pair station circuits from the equipment room connect to the three-pair terminal block rows (white field). The four-pair station circuits to the information outlets connect to the four-pair terminal blocks (blue field). Connections to both the three- and four-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 5-3 shows the fill directions for the blue and white fields at a satellite location. Use the labels described in “Labeling the Cross-Connect Field” in Chapter 3 (with the satellite symbols) at a satellite location.

Figure 5-4 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 identicality labeled terminal block row at the satellite closet. This is always the case for either one-point or two-point administration. See “Patch Cord/Jumper Installation and Administration” later in this chapter for details.

The satellite symbol must be installed at all connection points between the blue field and the information outlet. It also must be installed at the information outlet itself. Figure 5-5 shows the labeling scheme for four-pair circuits from the equipment room to the information outlets.

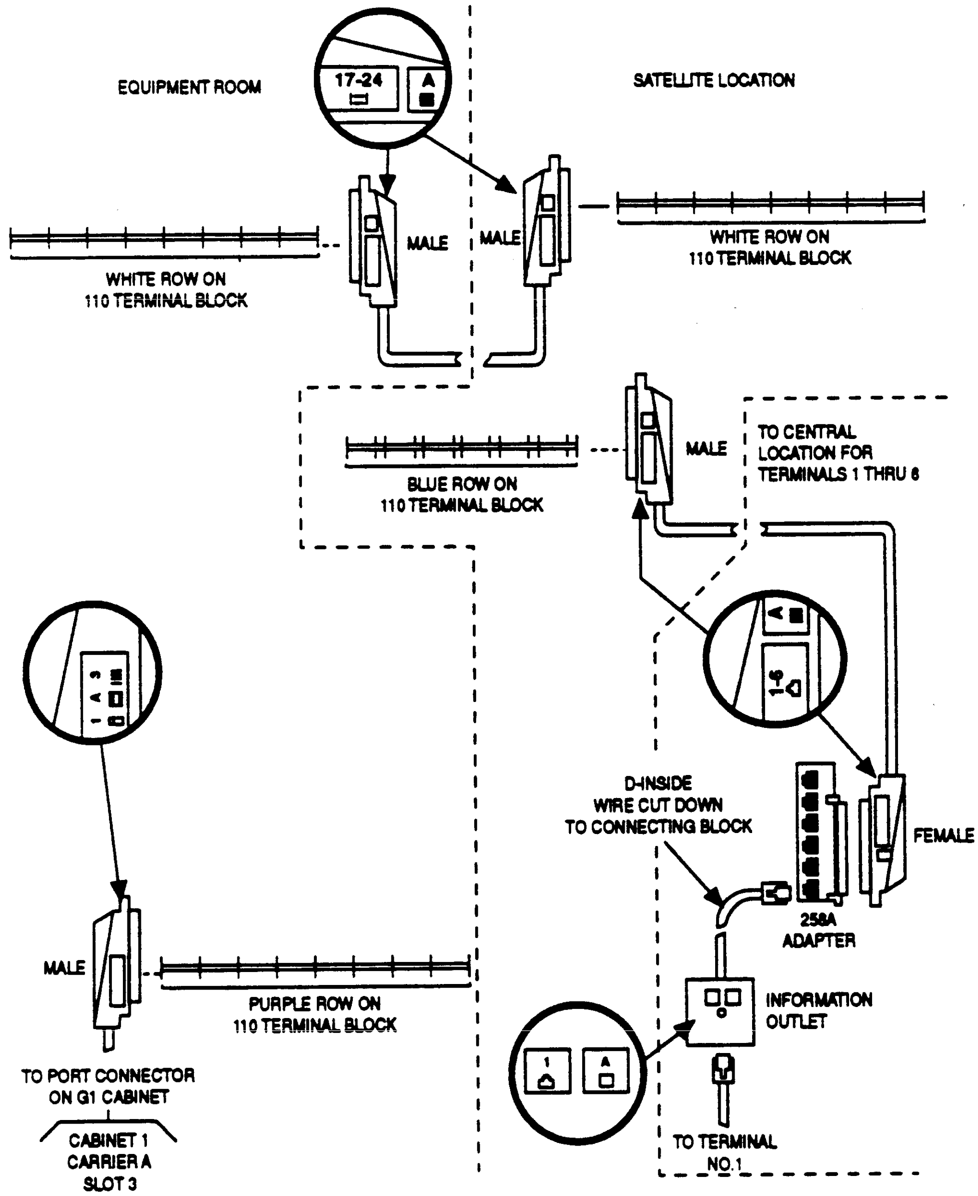


FIGURE 5-4. 3-Pair to 4-Pair Wiring Labeling From Equipment Room to Information Outlet

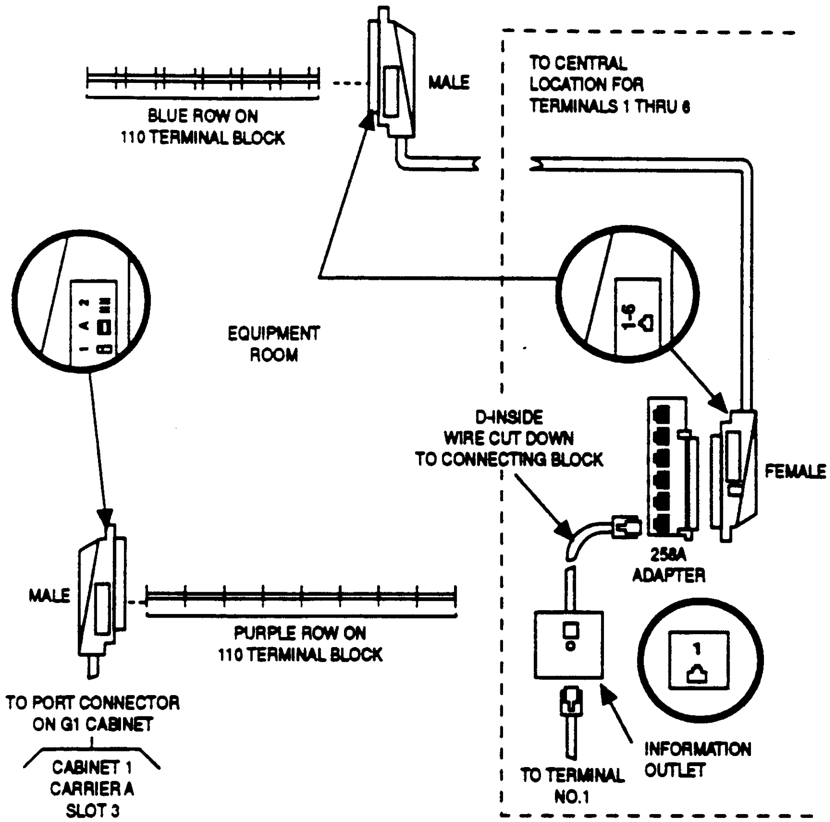


FIGURE 5-5. 4-Pair Station Wiring Labeling From Equipment Room to Information Outlet

Installing 66-Type Hardware at Satellite Locations

To install 66-type connecting blocks at a satellite location, use the installation procedure described in “Installing the Cross-Connect Field” in Chapter 3. Figure 5-6 shows a typical satellite location layout.

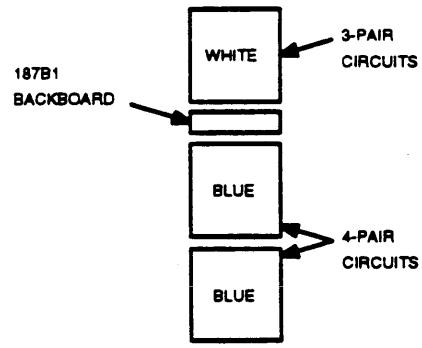


FIGURE 5-6. Typical Satellite Location Layout Equipped With 66-Type Connecting Blocks

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 5-6 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 “Labeling the Cross-Connect Field” in Chapter 3.

Installing Four-Pair Station Cables

The four-pair station cables can be either 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 5-7) at the designated telephone/voice terminal locations. See Table 3-I for connection information.

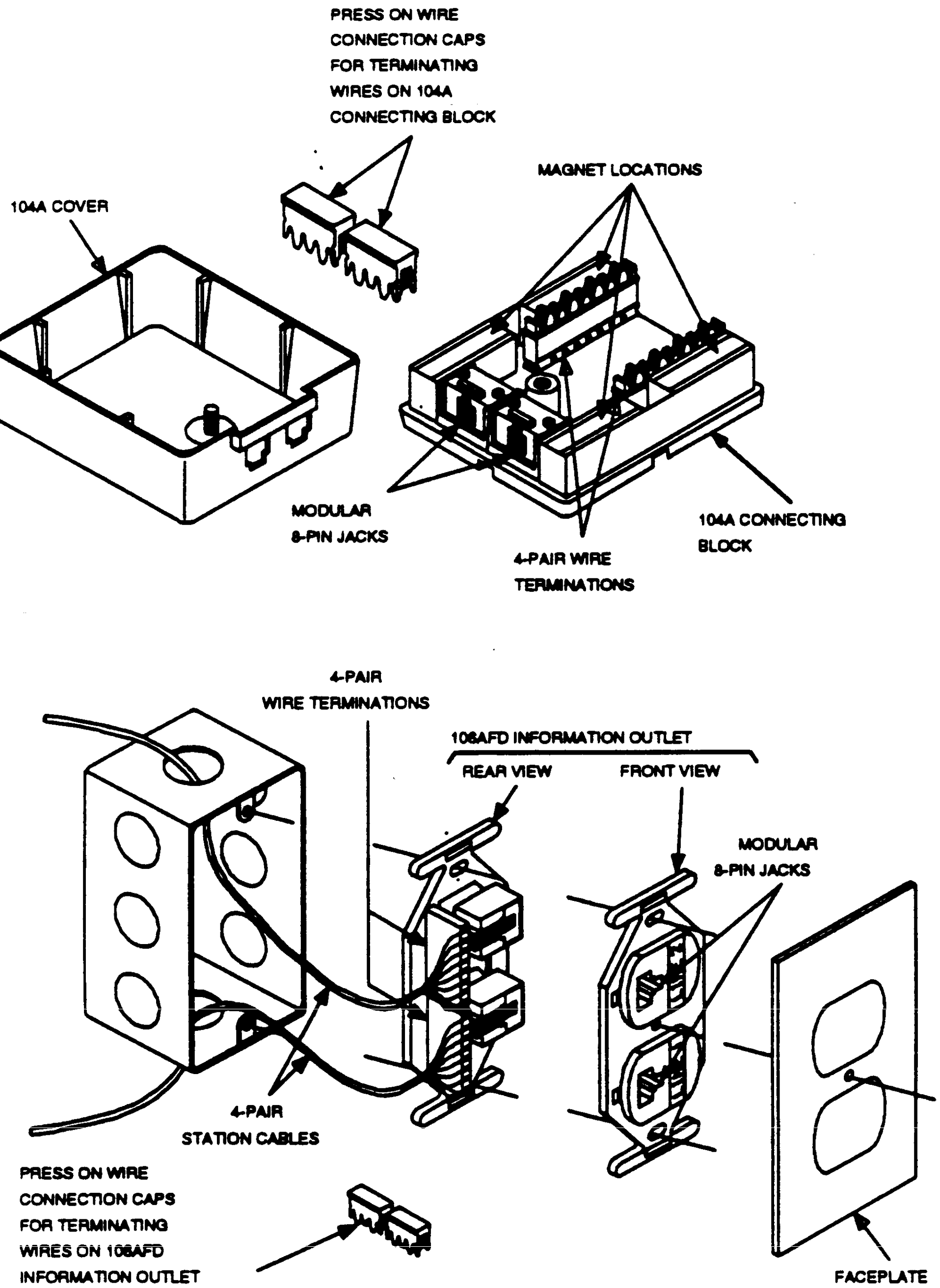


FIGURE 5-7. Typical 8-Pin Modular Information Outlets

Adjunct Powering

Adjunct Powering From the Equipment Room and Satellite Locations

Adjunct power is provided at cross-connect fields or satellite locations when four-pair circuits are required for station wiring. Figure 5-8 shows the connection arrangement at the cross-connect field. The power adapter cord is routed from the connecting block to the power supply.

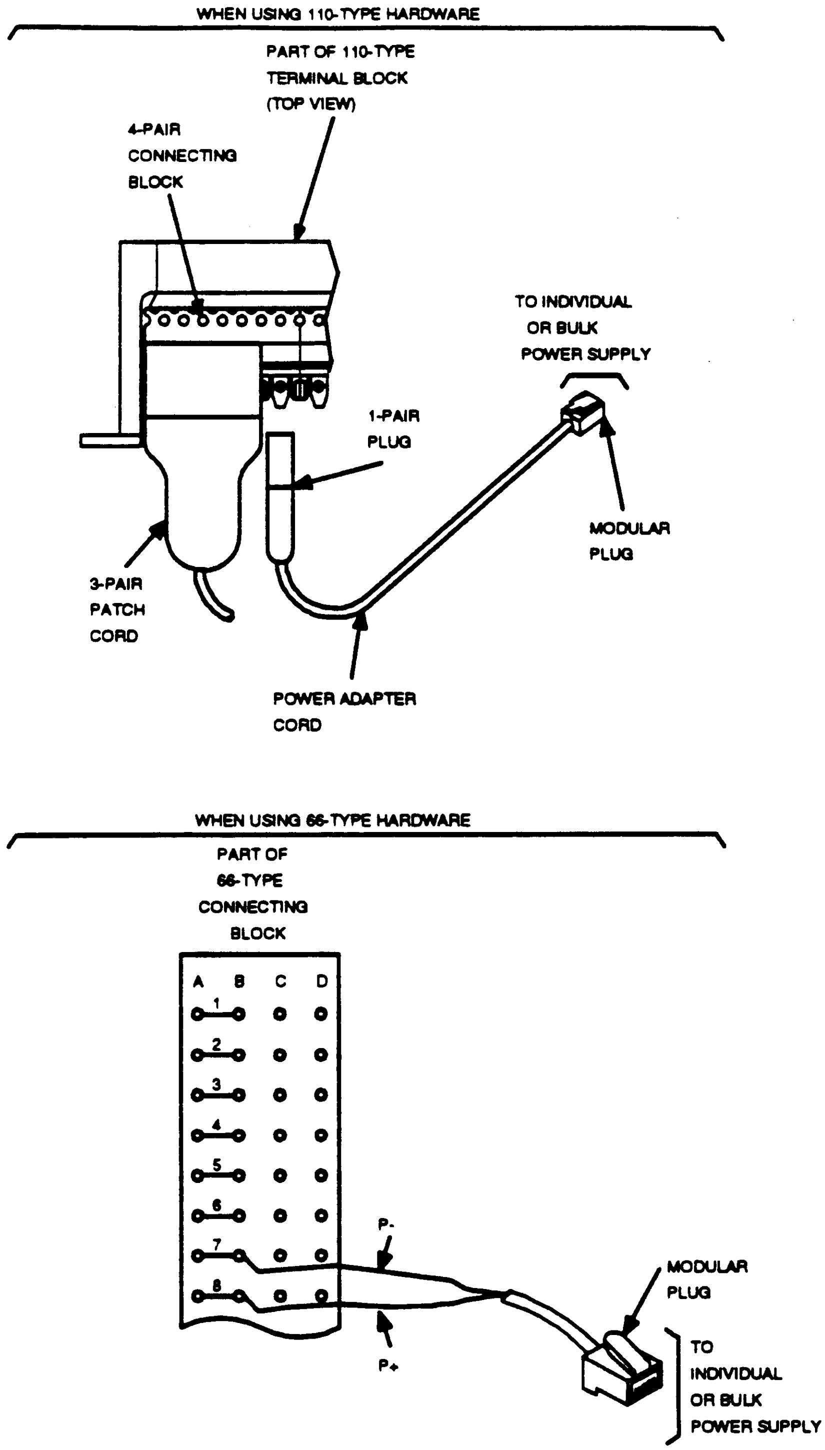


FIGURE 5-8. Remote Powering From the Equipment Room or Satellite Location

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 four-pair station wiring from the equipment room or satellite location is more than 250 feet or when the three-pair station wiring is run from the cross-connect field to a 356A adapter.

Figure 5-9 shows connections for the 258A and 356A adapters. The 400B2 adapter and D6AP power cord provide power on the fourth pair of the four-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.

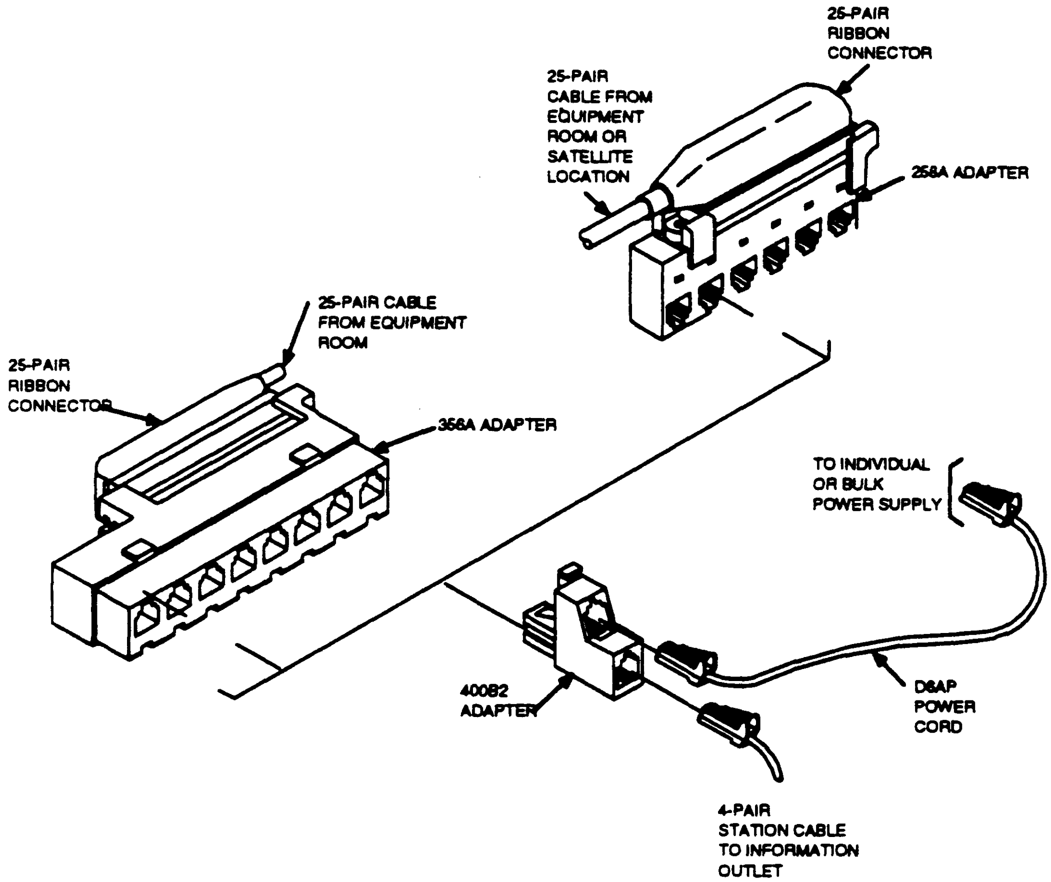


FIGURE 5-9. Remote Powering From a 256A/356A Adapter in a Site Closet

Adjunct Powering From Information Outlets

Adjunct powering from the information outlet is described in the *DEFINITY® Communications System and System* 75, *System* 75 *XE and System 85—Terminals and Adjuncts Installation and Tests, 555-015-104.* An individual power supply is the only source of local power at an information outlet. Figure 5-10 shows typical connections at an information outlet using the 400B2 adapter and a D6AP power cord.

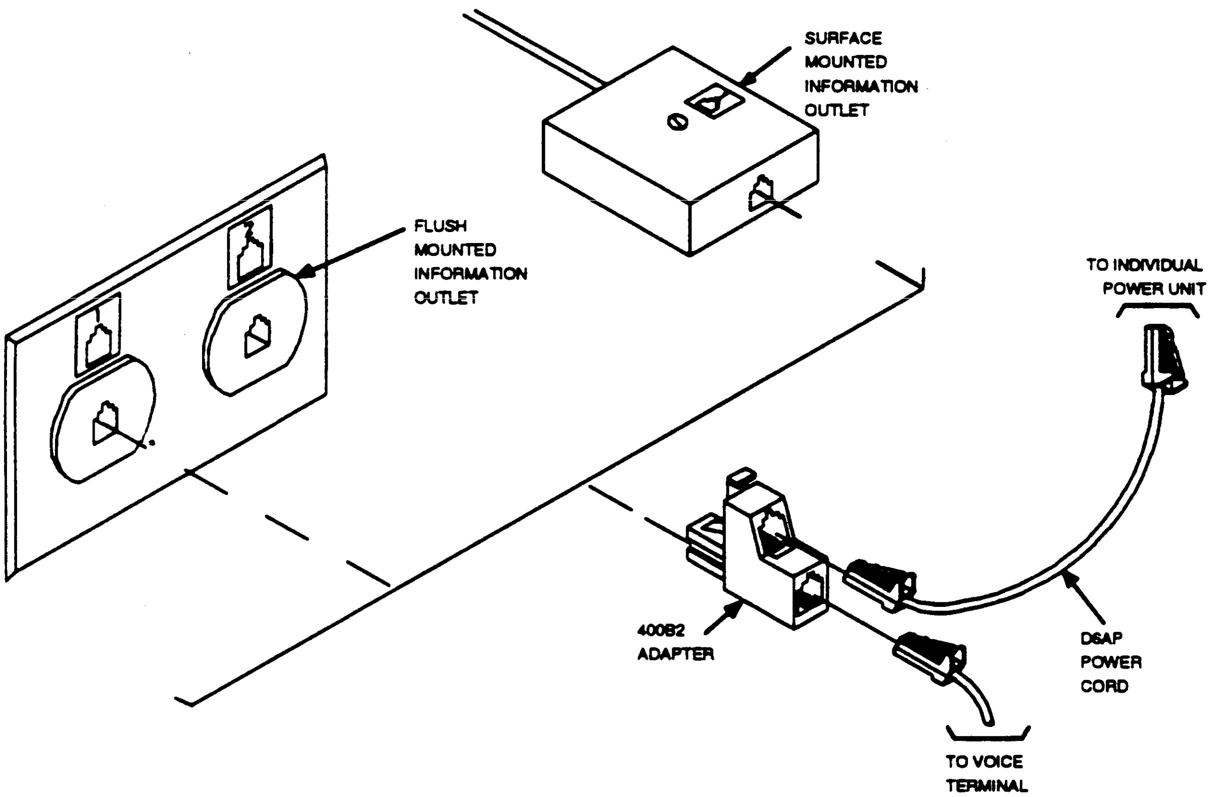


FIGURE 5-10. Typical Local Powering From a 400B2 Adapter—Flush/Surface-Mounted Information Outlet

Patch Cord/Jumper Installation and Administration

Before starting the patch cord installation, obtain a copy of the Port Assignment Record forms (Figure 5-11) 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 one-point administration (Figure 5-12), 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 two-point administration (Figure 5-13), the station jack numbers (blue field) at the satellite locations also must 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 ______

			Extension Number		Bldg Flr Rm	Voice Terminal		Voice Terminal Adjunct				
Slot	Port	Jack*	Old	New		Type	Color		Module	Power*		User Name/Use
	01											
	02											
	03											
	04											
	05											
	06											
	07											
	08											
	09											
	10											
	11											
Slot	12											
	13											
	14											
CKT PK Type	15											
	16											
	17											
	18											
	19											
	20											
	21											
	22											
	22											
	24											

*** To be completed by installation technician**

FIGURE 5-11. Port Assignment Record Form

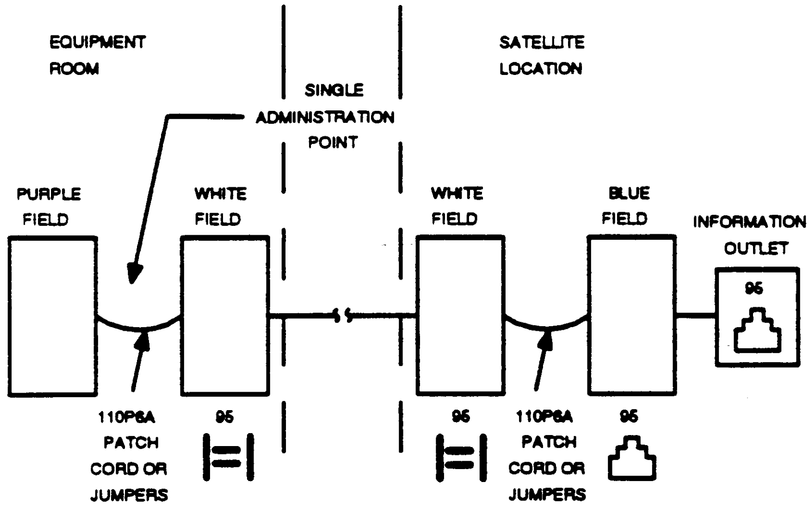


FIGURE 5-12. 1-Point Administration

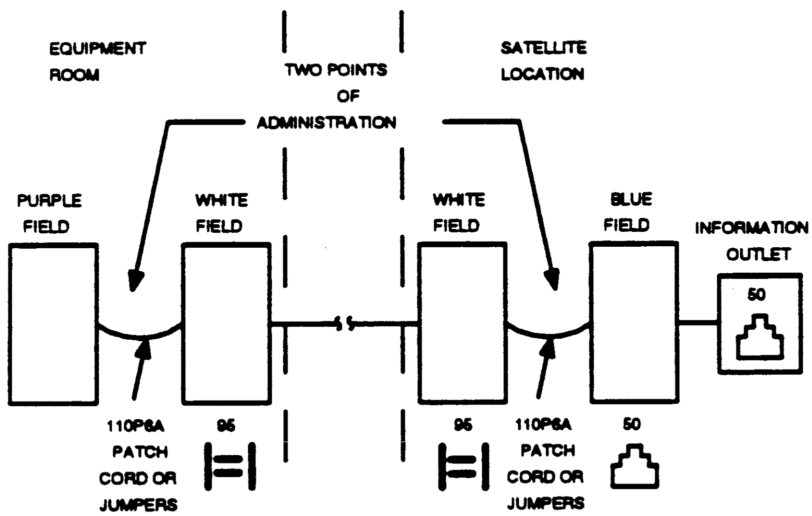


FIGURE 5-13. 2-Point Administration

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® G1 Manager I or G3-MT 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 always should 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 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 5-11).
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 5-11), 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 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 5-11).
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 5-8). The power adapter cords can be used only with the four-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 5-11), 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).

One-Point Administration

For one-point administration (Figure 5-12), 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).

Two-Point Administration

For two-point administration (Figure 5-13), 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.

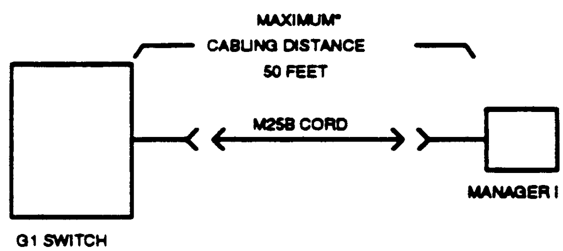
Miscellaneous Wiring Installation

Installing G1 Manager I or G3-MT

The G1 Manager I or G3-MT is connected to the **TERM** connector located on the rear of the control carrier. A M25B cord is used to make the connection. See Figure 5-14 for the connections for an AC-powered single- or multi-carrier cabinet.

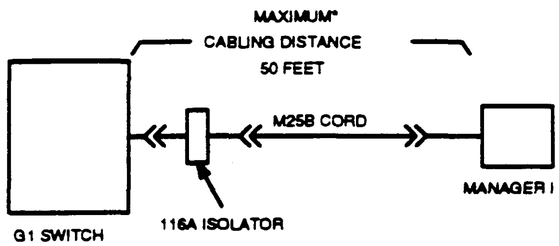
When the G1 Manager I or G3-MT is connected to a DC-powered switch through the asynchronous Electronic Industries Association (EIA) EIA-232 interface on the PPN A or B carrier or the EPN maintenance circuit pack, an isolator is required. The isolator is plugged into the EIA-232 interface connector. The cable from the G1 Manager I or G3-MT is then plugged into the isolator. Figure 5-15 shows the connections for a DC-powered multi-carrier cabinet.

The apparatus code for the isolator is 116A and the Comcode is 106-005-242.



* THE MAXIMUM DISTANCE BETWEEN MANAGER I AND THE SWITCH IS 50 FEET WHEN USING 24-AWG WIRE. THE DISTANCE MAY BE REDUCED IF HIGHER-GAUGE WIRE IS USED OR IF THE CAPACITIVE LOAD ON THE LINE IS INCREASED. IN GENERAL, THE MANAGER I AND THE G1 SWITCH SHOULD BE DIRECTLY CONNECTED BY THE SHORTEST POSSIBLE CABLE

FIGURE 5-14. G1 Manager I or G3-MT Connections to AC-Powered Single- or Multi-Carrier Cabinet



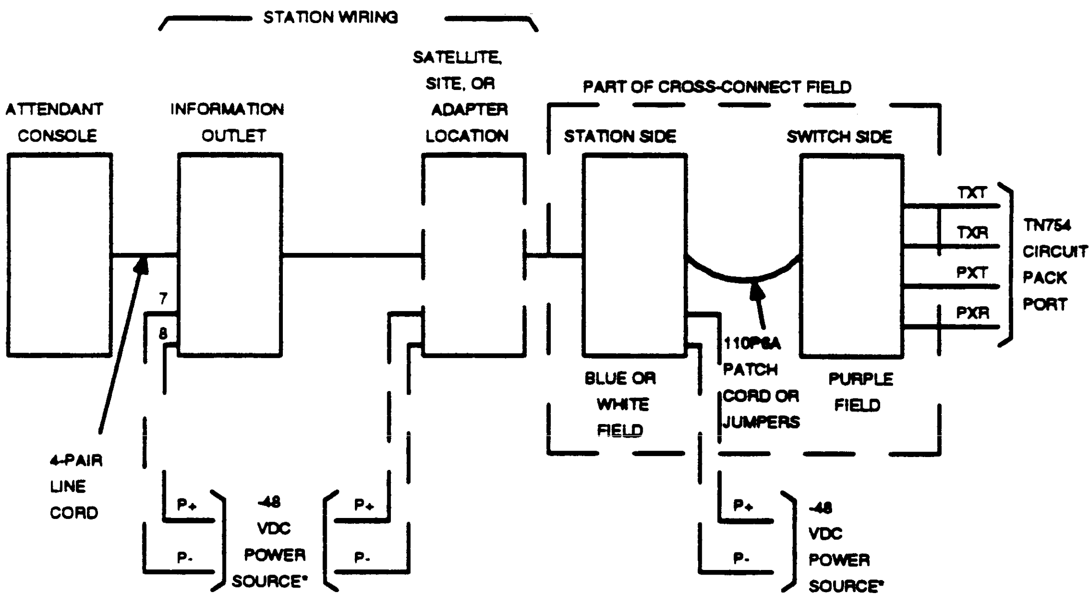
* THE MAXIMUM DISTANCE BETWEEN MANAGER I AND THE SWITCH IS 50 FEET WHEN USING 24-AWG WIRE. THE DISTANCE MAY BE REDUCED IF HIGHER-GAUGE WIRE IS USED OR IF THE CAPACITIVE LOAD ON THE LINE IS INCREASED. IN GENERAL, THE MANAGER I AND THE G1 SWITCH SHOULD BE DIRECTLY CONNECTED BY THE SHORTEST POSSIBLE CABLE

FIGURE 5-15. G1 Manager I or G3-MT Connections to DC-Powered Multi-Carrier Cabinet

Installing Attendant Console

Requirements

The attendant console is connected to an information outlet the same as any telephone/voice terminal. Figure 5-16 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 5-16. Connections for Attendant Console

Power for two 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” earlier 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. A KS-22911, L1 or 346A power unit should be used.

The maximum cabling distance for an attendant console powered from the switch cabinet is 350 feet when using 24-AWG 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 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 or G3i multi-carrier cabinet and a better chance of uninterrupted service on the G1 or G3i single-carrier cabinet if a port carrier fails.

3. If power is to be supplied from the switch cabinet (not available on G1 or G3i single-carrier cabinet), do Step 4 and omit Step 5; otherwise, go to Step 5.
4. Connect jumpers (-48 volt and GND) from terminal/connecting block in yellow trunk/auxiliary Field to attendant console appearance on the station side of the distribution field (Figure 5-17).
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 the cross-connect field, provide power as described in “Adjunct Powering” earlier 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 5-16).
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 console per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

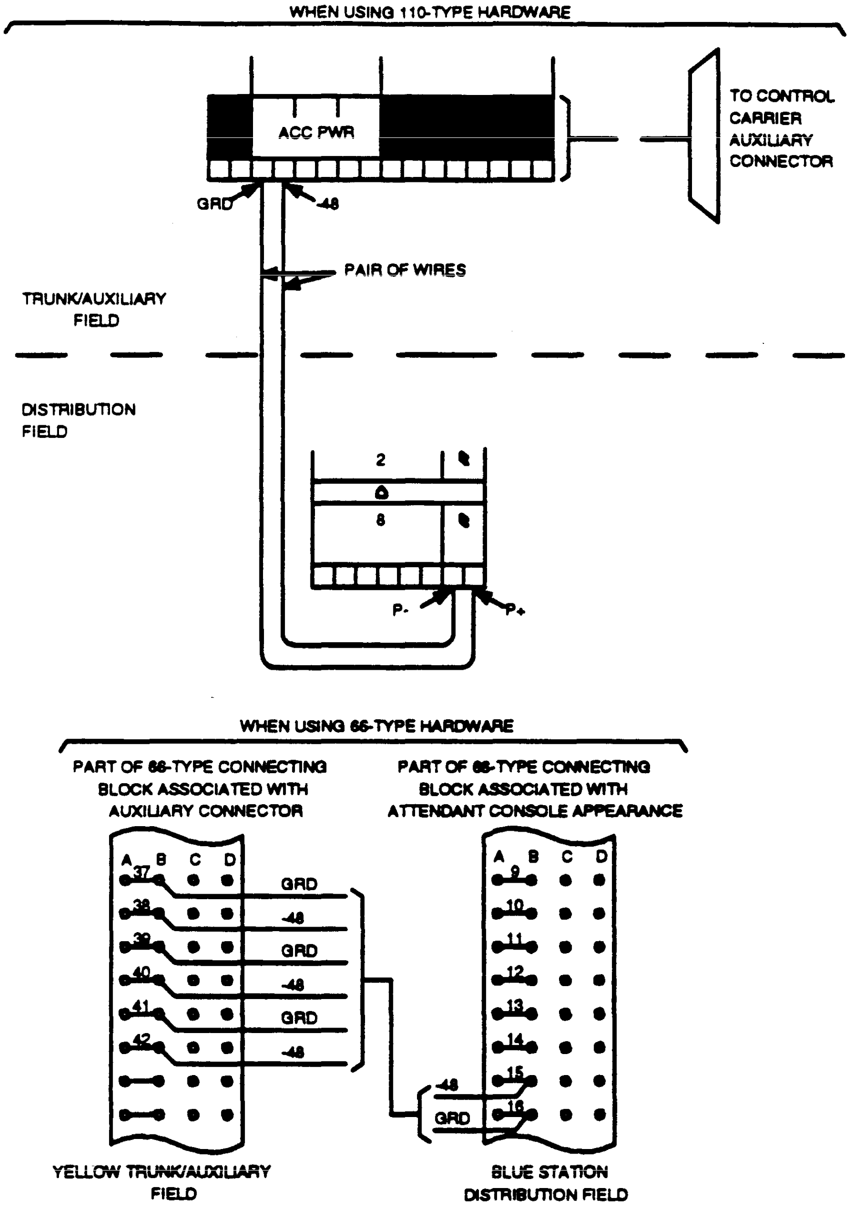


FIGURE 5-17. Wiring Required at Cross-Connect Field for Attendant Console Remotely Powered From Switch Cabinet—G1 or G3i Multi-Carrier Cabinet Only

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 5-18).

Note: When a basic attendant console, equipped with a selector console, is powered by a 346A power unit, the slide switch on the power unit must be set to the up position. This provides 20 watts of power to the jack located above the slide switch. The console must be connected to this jack.

Installation

1. Connect the D8AC cord between DXS/BLF jack on the bottom of the attendant console and the modular jack on the bottom of the selector console.
2. Install labels per Attendant Console Form.
3. Administer per *DEFINITY® Communications System General 1—Implementation 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation 555-230-650* and *DEFIFITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

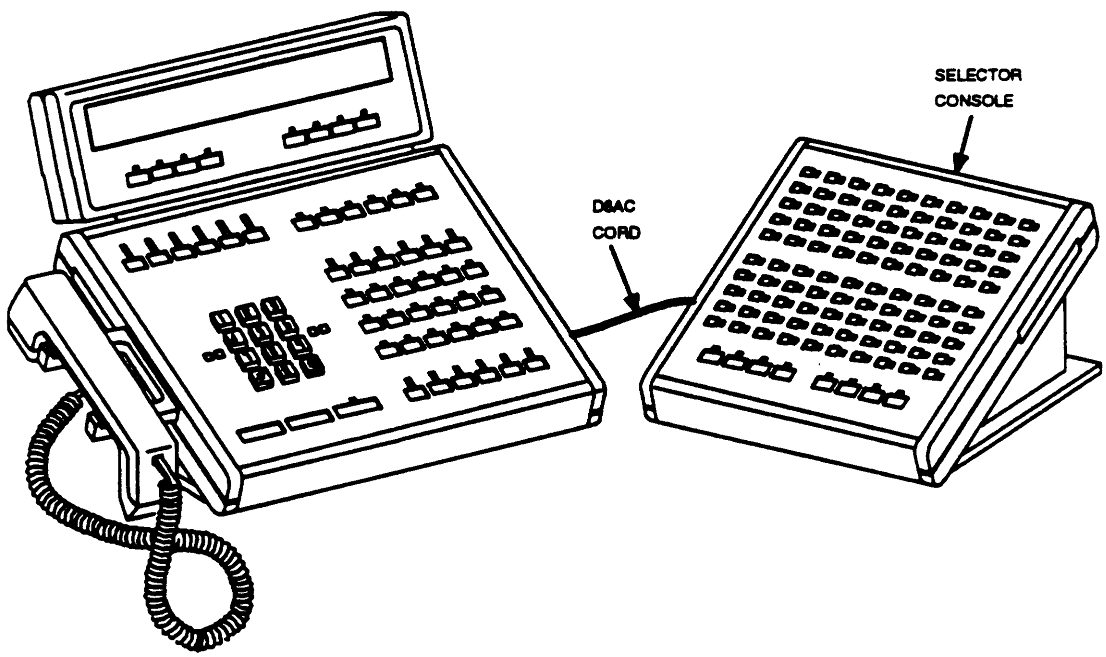


FIGURE 5-18. Selector Console Installation

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 the TN731 maintenance circuit pack through the INADS terminals at the trunk/auxiliary cross-connect field. Figure 5-19 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.

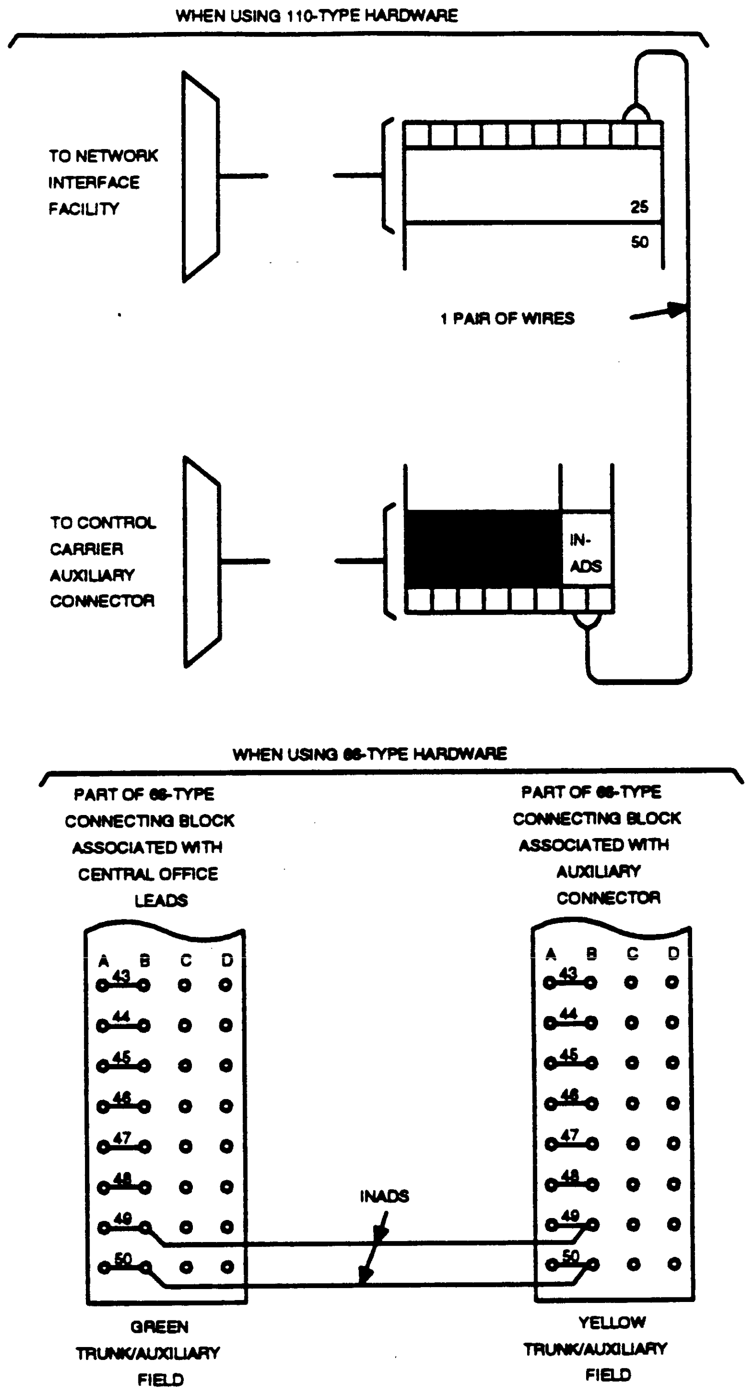


FIGURE 5-19. Connections at Trunk/Auxiliary Field for INADS Trunk

Installing DS1 Tie Trunks

DS1 tie trunks provide a 1.544 Mbps digital data service between two collocated G1 or G3i multi-carrier or single-carrier cabinets or between the system and a data network using T1 carrier facilities. The TN722 DS1 tie trunk circuit pack provides connection capability to the DS1 facility for 24 independent trunks. Table 3-H shows the lead designations for the DS1 circuit pack.

The following connector cables are available to connect the DS1 tie trunk circuit pack to DS1 digital facilities:

- C6C connector cable (Comcode 104-307-327)—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 104-307-376)—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 or G3i multi-carrier or single-carrier cabinets.
- C6E connector cable (Comcode 104-307-434)—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 104-307-475)—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.

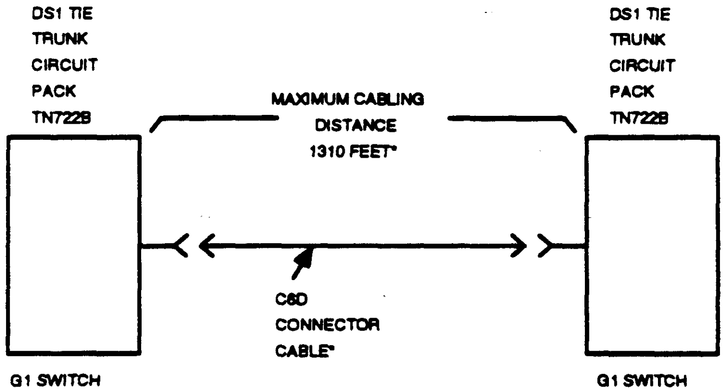
C6F CONNECTOR CABLE LEAD IDENTIFICATION

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 5-20 shows the connections for two DS1 tie trunk circuit packs in collocated G1 or G3i multi-carrier or single-carrier cabinets.



* FOR DISTANCES OVER 50 FEET USE C6E CONNECTOR CABLE(S) BETWEEN C6D CONNECTOR CABLE AND DS1 TIE TRUNK CIRCUIT PACK.

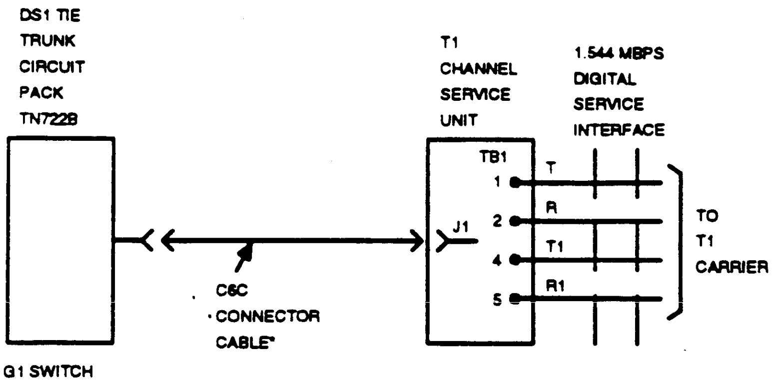
FIGURE 5-20. Connections for DS1 Tie Trunks Between Two G1 or G3i Multi-Carrier or Single-Carrier Cabinets

DS1 Tie Trunks Using 551-Type CSU

Figure 5-21 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



* FOR DISTANCES OVER 50 FEET USE C6E CONNECTOR CABLE(S) BETWEEN C6C CONNECTOR CABLE AND DS1 TIE TRUNK CIRCUIT PACK.

FIGURE 5-21. Connections Between DS1 Tie Trunk and T1 CSU

Installing Customer-Provided Alarm

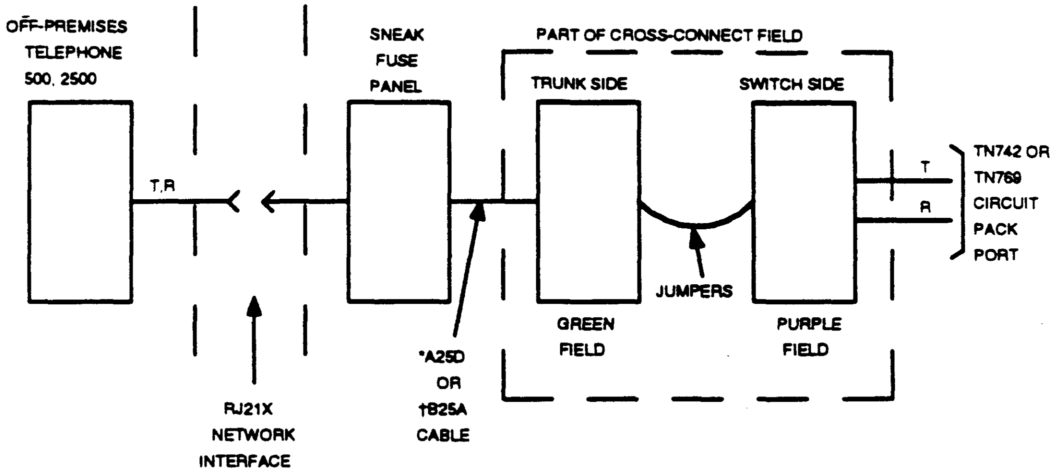
Requirements

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 3-H 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 Federal Communications Commission (FCC) approved analog type telephone, for example, a 2500-type, can be used as an off-premises station. Figure 5-22 shows the connections for off-premises stations. The TN746 analog line circuit pack cannot be used for off-premises stations.



* USE WITH 110-TYPE TERMINAL BLOCK.
† USE WITH 66-TYPE CONNECTING BLOCK.

FIGURE 5-22. Connections For Off-Premises Stations

Installation

To install an off-premise station:

1. Install a B25A cable between the RJ21X network interface and a sneak fuse panel. See "Sneak Fuse Panels" in Chapter 2, "Hardware."
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 3-58.
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 per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

Installing Out-of-Building Campus Stations

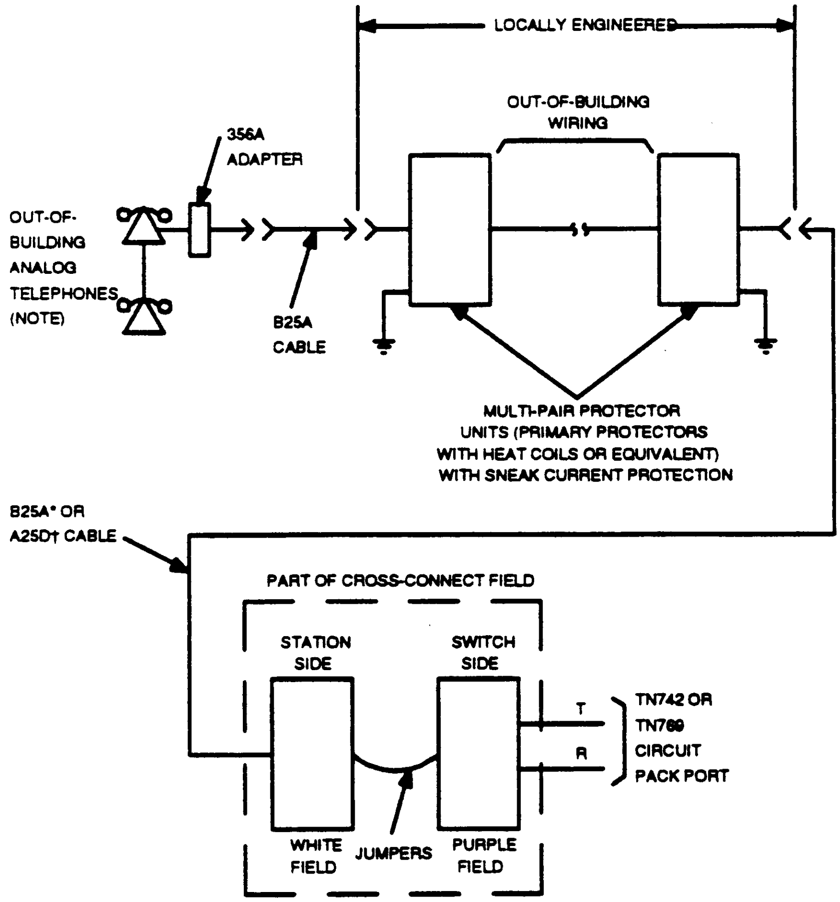
Out-of-building campus stations are those telephones/voice terminals that are not physically located in the same building as the PBX equipment room but are located on the same property.

Both analog telephones and digital voice terminals can be used as out-of-building stations.

Analog Out-of-Building Stations

Figure 5-23 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 (the TN746B is a 16-port, rather than an eight-port, analog line circuit pack).

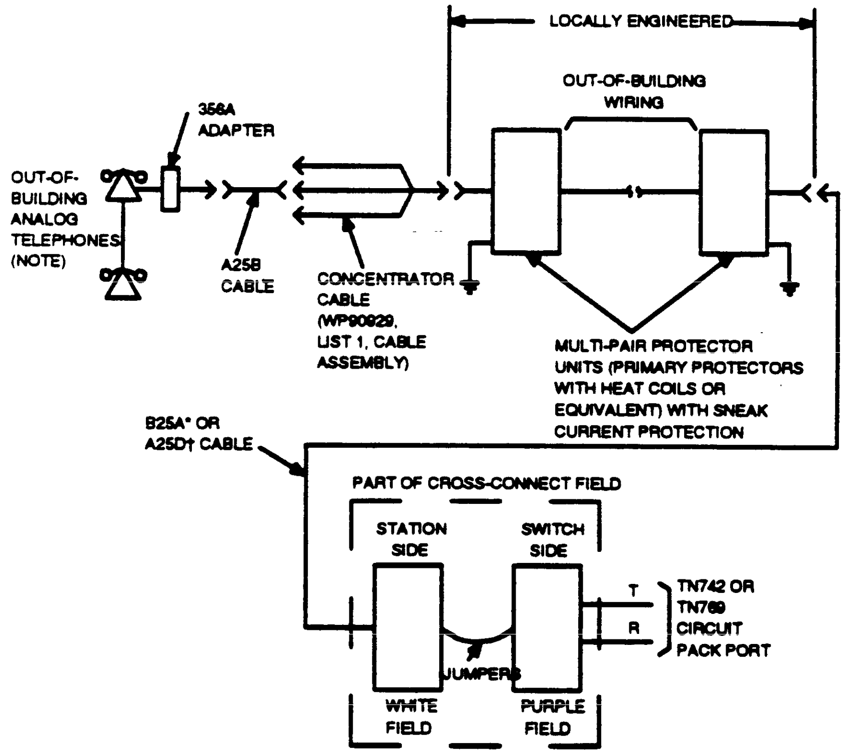
Figure 5-24 shows the connections for up to 24 off-premises analog telephones. Concentration of analog line pairs is used at both buildings to minimize the off-premises wiring required. At the cross-connect field, jumpers must be connected between one row/connecting block in the white field and up to three rows/connecting blocks in the purple field as shown in Figure 3-56. 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 5-23. 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 5-24. 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 four-type protector or a three-type protector plus a separate sneak current protector. The four-type protector is equipped with a heat coil for sneak current protection. The four-type protector is the preferred device. For installations not making use of existing primary protection, four-type protectors should always be used. When the three-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 *SYSTIMAX® Premises Distribution Systems Equipment and Supplies Catalog.*

Table 5-A. shows the recommended protectors.

TABLE 5-A. 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 three-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 three-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 1,300 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)	102-381-779
3B1E-W (Wide Gap Gas Tube)	104-410-147
3C1S (Solid State)	105-514-756
4B1C (Carbon Block with Heat Coil)	102-904-893
4B1E-W (Wide Gap Gas Tube w/Heat Coil)	104-401-856
4C1S (Solid State with Heat Coil)	104-386-545
SCP-1 Sneak Current Protector	403-617-632
79A Fuse (Sneak Current Protector)	103-351-610

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 only may 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 5-B list the approved digital voice circuit protectors.

TABLE 5-B. 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 five-pin plug-in 4C3S-75 protector. All reuse wiring installations should, whenever possible, encourage the use of five-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 five-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.

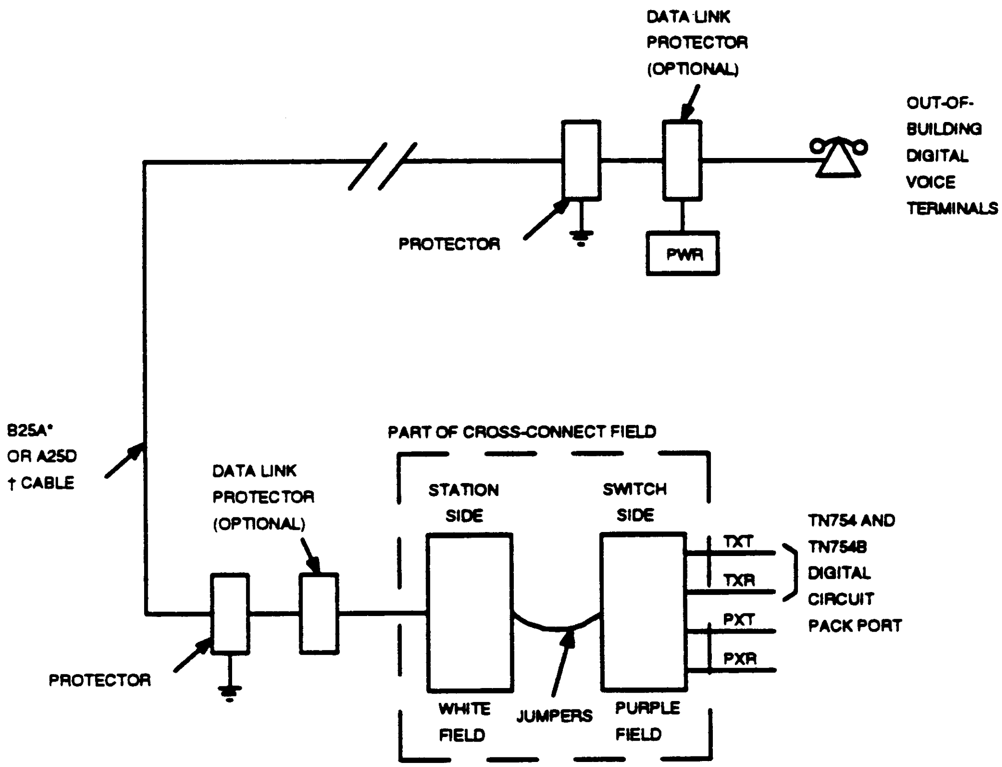
For the 4C3S-75 protector there are a variety of 25-, 50-, and 100-pair protector panels that are equipped with 66- or 110-type connecting blocks and/or RJ21X connectors. The ITW Linx Enhanced Protector mounts directly on 66-type connecting blocks and requires a separate ground bar.

The maximum range for out-of-building digital voice terminals is 3,400 feet when using 24-AWG wire and 2,200 feet when using 26-AWG wire. The range can be extended to 5,000 feet (24-AWG wire) or 4,000 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)	105-581-086
ITW LINX (Gas Tube, Avalanche Suppress)	406-144-907
ITW Linx Ground Bar (used with above)	901-007-120
ITW Linx Replacement Fuse	406-304-816
Data Link Protector (one ckt)	103-972-758
Data Link Protector (eight ckts)	103-972-733

Figure 5-25 shows the connections for digital out-of-building voice terminals.



* USED WITH 66-TYPE CONNECTING BLOCK.
† USED WITH 110-TYPE TERMINAL BLOCK.

FIGURE 5-25. Connections for Digital Out-of-Building Voice Terminals

Installing Emergency Transfer Units and Associated Telephones

Requirements

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

Only 500- or 2500-type 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:

- 574-5 power transfer unit—Each unit serves up to five power failure transfer telephones. The unit provides automatic ground start.
- 808A Emergency Transfer Panel—Each unit serves up to five power failure transfer telephones. The panel provides automatic ground start. The panel also provides “restore after busy,” which means that an emergency call continues uninterrupted if the PBX is restored to normal operation. Such a call would terminate normally.

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 (-48 V DC) 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 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 5-26) are set for the trunk type (two per trunk). The switches are set at the factory for ground start trunks.

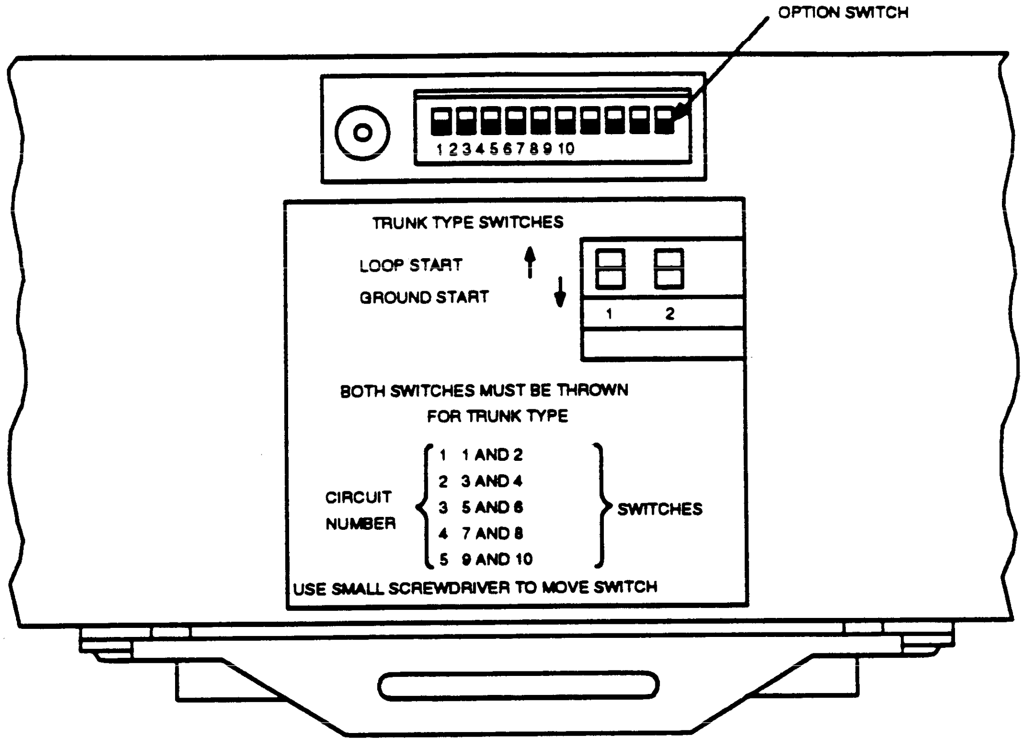
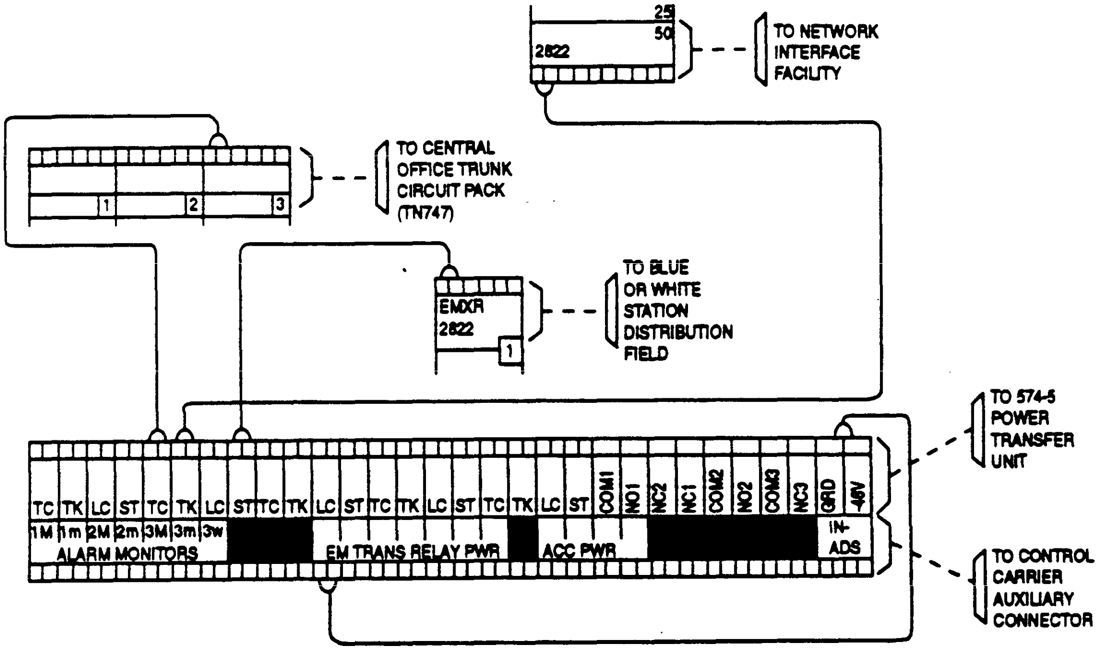


FIGURE 5-26. 574-5 Power Transfer Unit Option Switches

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 5-27 and 5-28 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 only for emergency transfer. Figures 5-29 and 5-30 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.



NOTE: EACH SOLID CONNECTING LINE REPRESENTS A PAIR OF WIRES

FIGURE 5-27. Connections at Trunk/Auxiliary Field Equipped with 110-Type Hardware for Telephone Used Only for Emergency Transfer

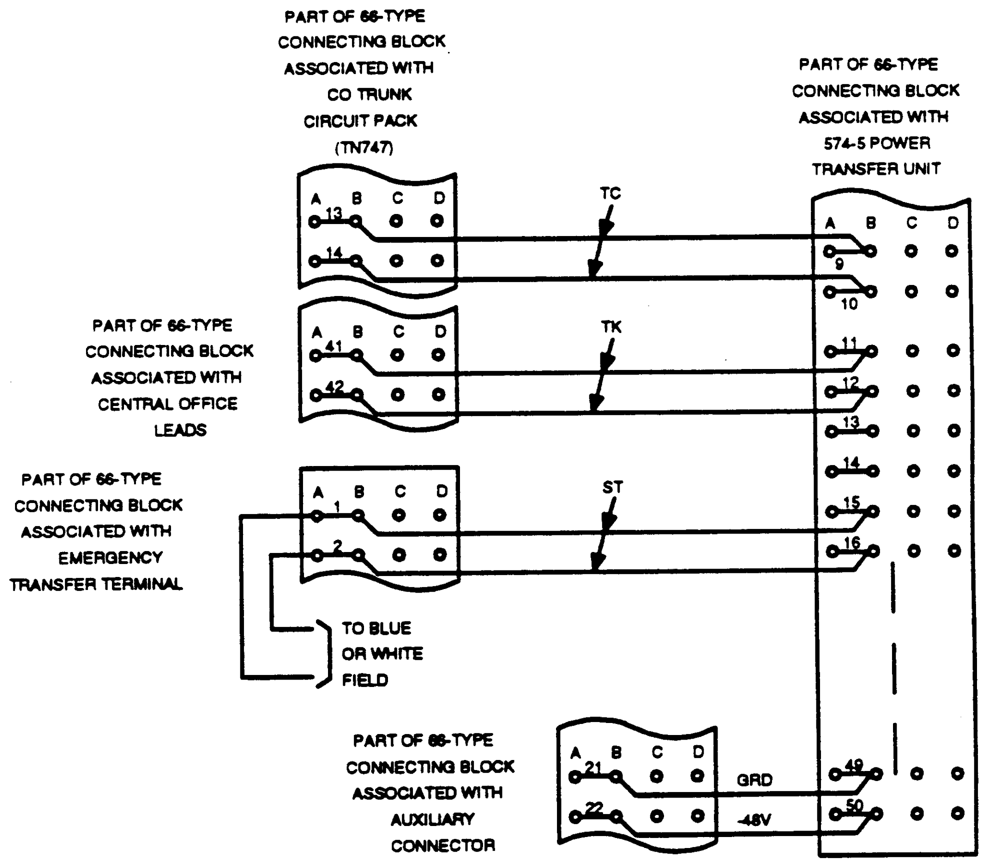
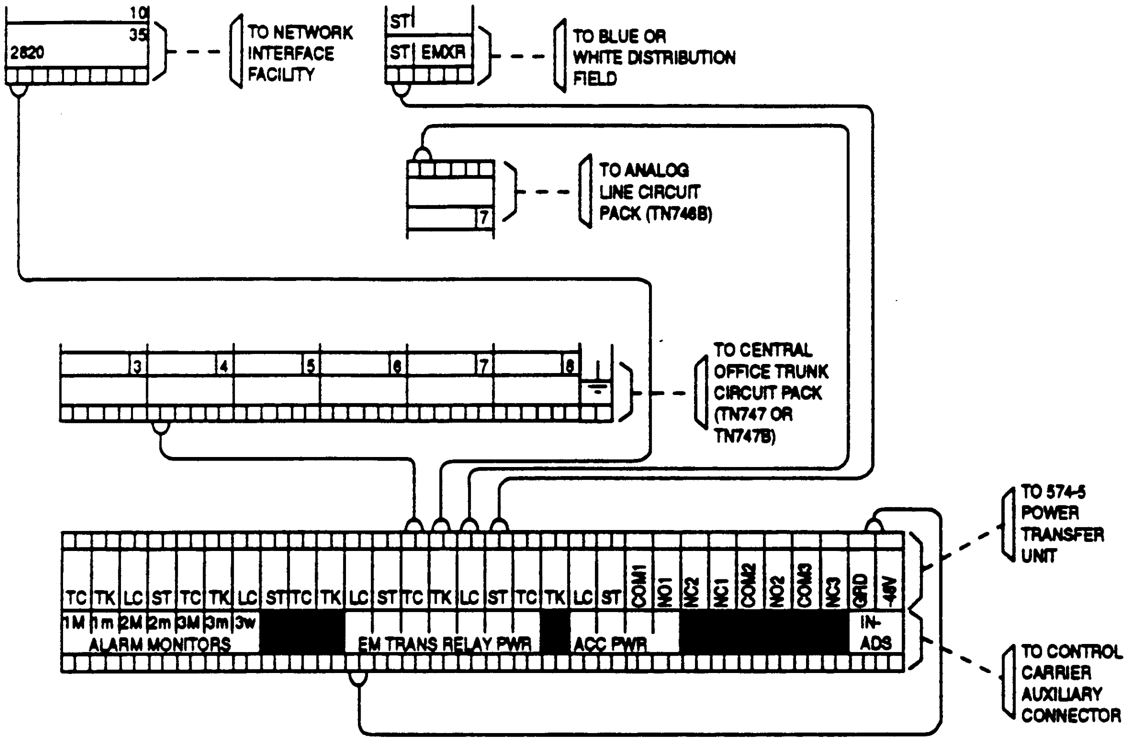


FIGURE 5-28. Connections at Trunk/Auxiliary Field Equipped with 66-Type Hardware for Telephone Used Only for Emergency Transfer



NOTE: EACH SOLID CONNECTING LINE REPRESENTS A PAIR OF WIRES

FIGURE 5-29. Connections at Trunk/Auxiliary Field Equipped with 110-Type Hardware for Telephone Used for Emergency Transfer and as Normal Extension

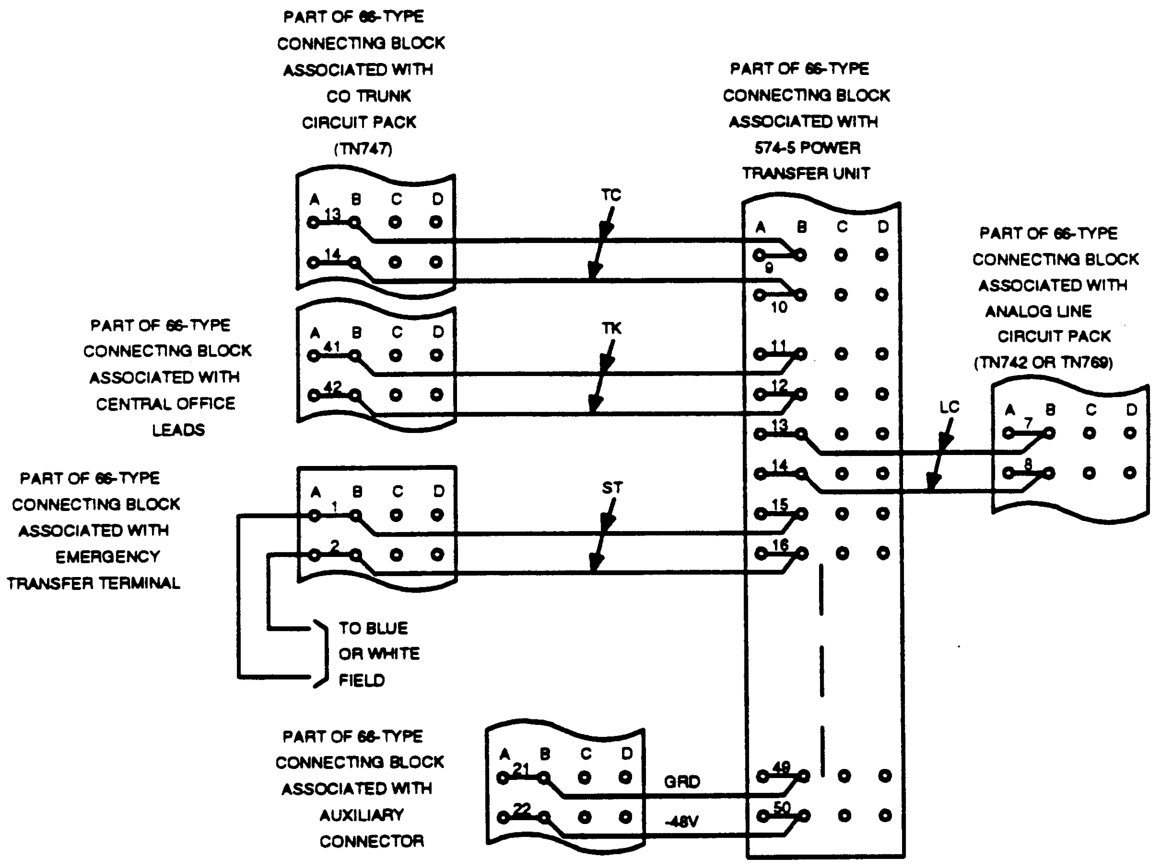


FIGURE 5-30. Connections at Trunk/Auxiliary Field Equipped with 66-Type Hardware for Telephone Used for Emergency Transfer and as Normal Extension

Installing Optional DID Make-Busy Trunk for Use with 574-5 Power Transfer Unit

Requirements

Figure 5-31 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.

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 5-31).
2. Connect a jumper from the other DID make-busy lead to terminal **NC3** on the yellow emergency transfer row/connecting block.

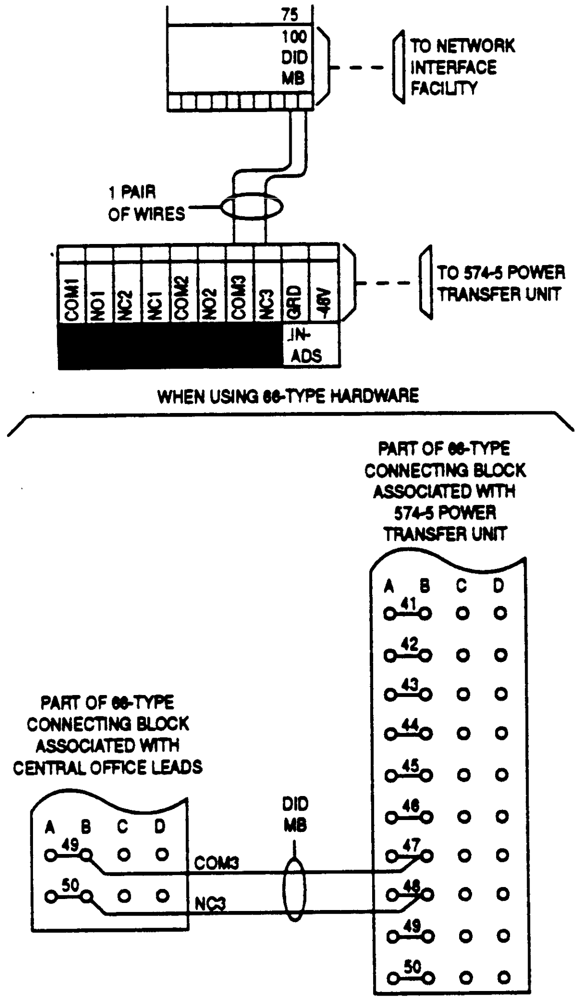


FIGURE 5-31. Connections at Trunk/Auxiliary Field for DID Make-Busy Trunk—574-5 Power Transfer Unit

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 **-48 volt** and **GRD** terminals on the yellow emergency transfer row/connecting block and the **EM TRANS RELAY PWR** terminal (Figures 5-27 and 5-28, 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 **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 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 three-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 **-48 volt** and **GRD** terminals on the yellow emergency transfer row/connecting block to the **EM TRANS RELAY PWR** terminal (Figures 5-29 and 5-30, 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 the Z1A Emergency Transfer Unit

If a Z1A emergency transfer unit is used with CO trunks that require ground start, a ground start switch must be installed on each telephone to be used for emergency transfer. Ground is provided on the twenty-fifth pair of leads on each purple row/connecting block associated with a switch cable. Ground is connected to the third pair of a three-pair terminal appearance. This pair becomes the second pair at the information outlet. A ground start switch is mounted on the side of the telephone and wired to the ground and ring leads inside the terminal.

Figures 5-32 and 5-33 show the connections on 110-type terminal blocks and 66-type connecting blocks, respectively, at the trunk/auxiliary field for a telephone used only for emergency transfer. Figures 5-34 and 5-35 show the connections on 110-type terminal blocks and 66-type connecting blocks, respectively, at the trunk/auxiliary field for a telephone used for emergency transfer as well as a normal extension.

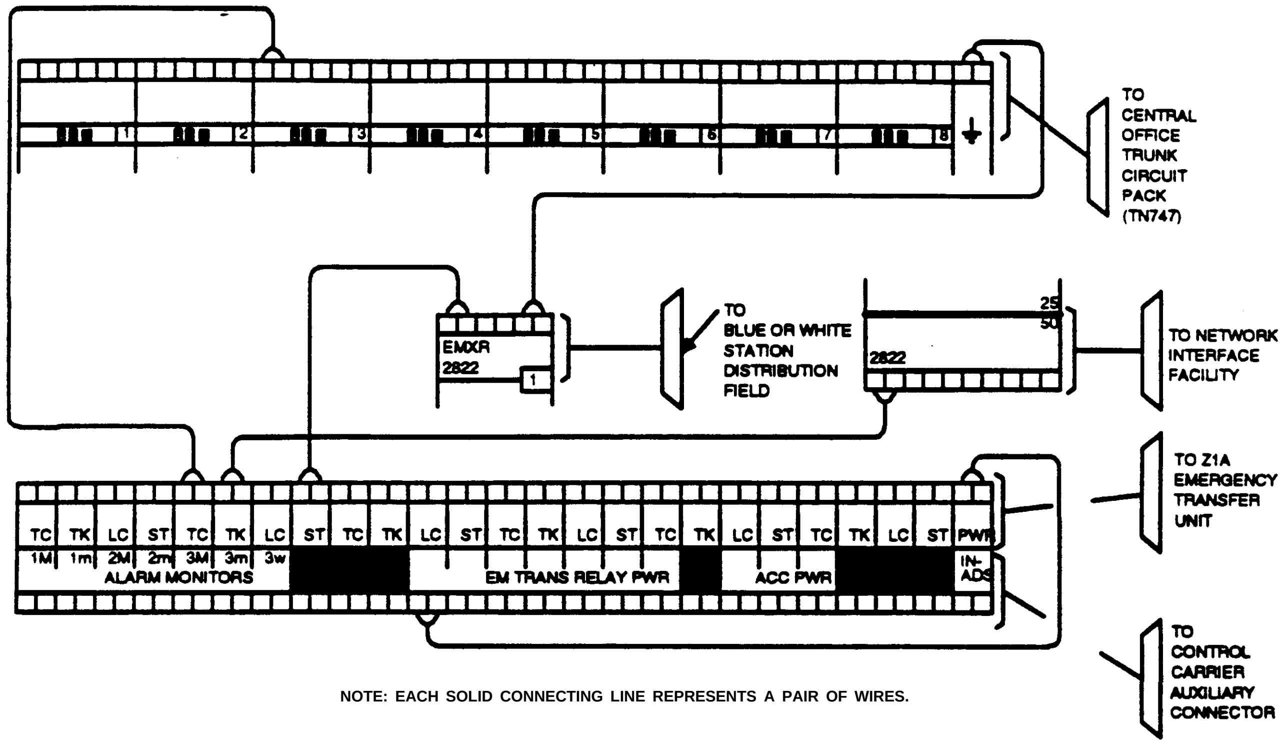


FIGURE 5-32. Connections at Trunk/Auxiliary Field Equipped with 110-Type Hardware for Telephone Used Only for Emergency Transfer (Ground Start Trunk)

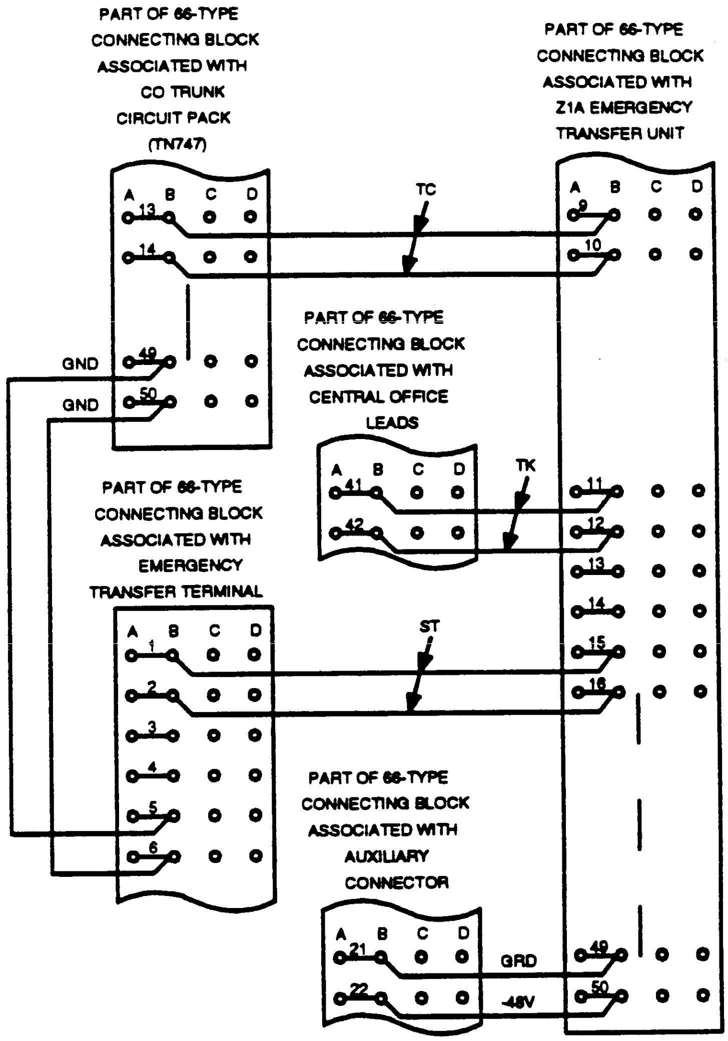


FIGURE 5-33. Connections at Trunk/Auxiliary Field Equipped with 66-Type Hardware for Telephone Used Only for Emergency Transfer (Ground Start Trunks)

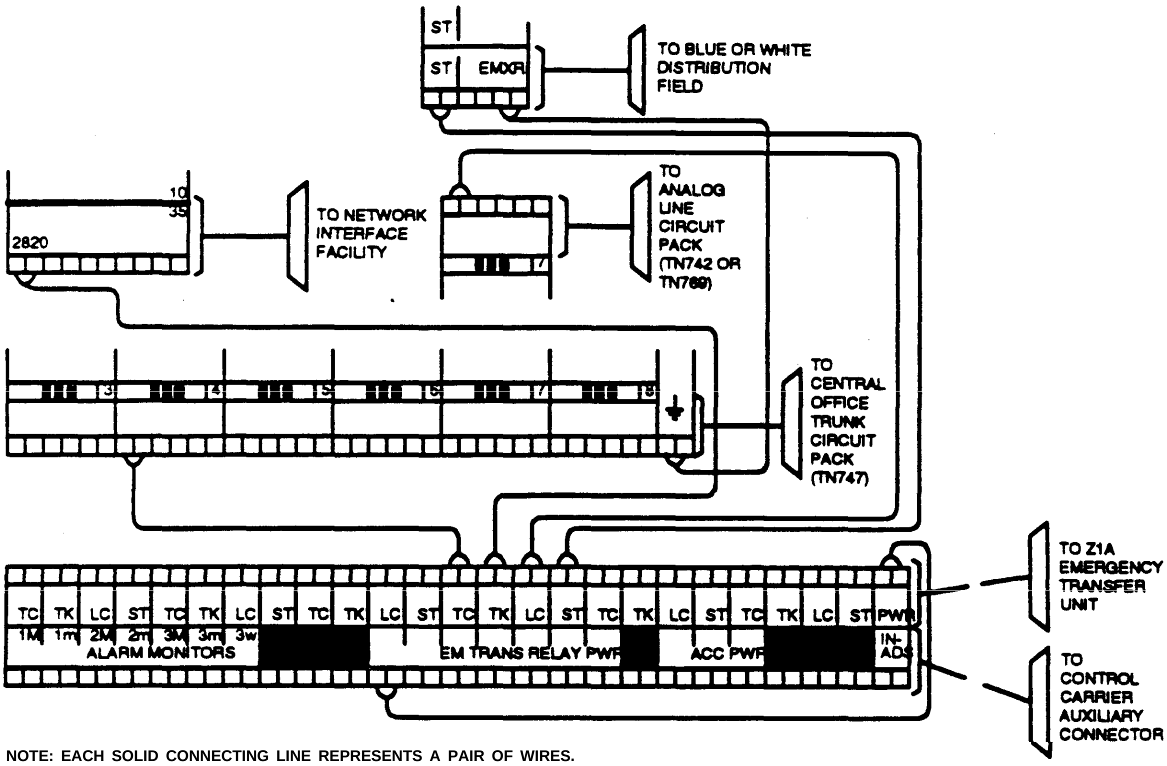


FIGURE 5-34. Connections at Trunk/Auxiliary Field Equipped with 110-Type Hardware for Telephone Used for Emergency Transfer and as Normal Extension (Ground Start Trunks)

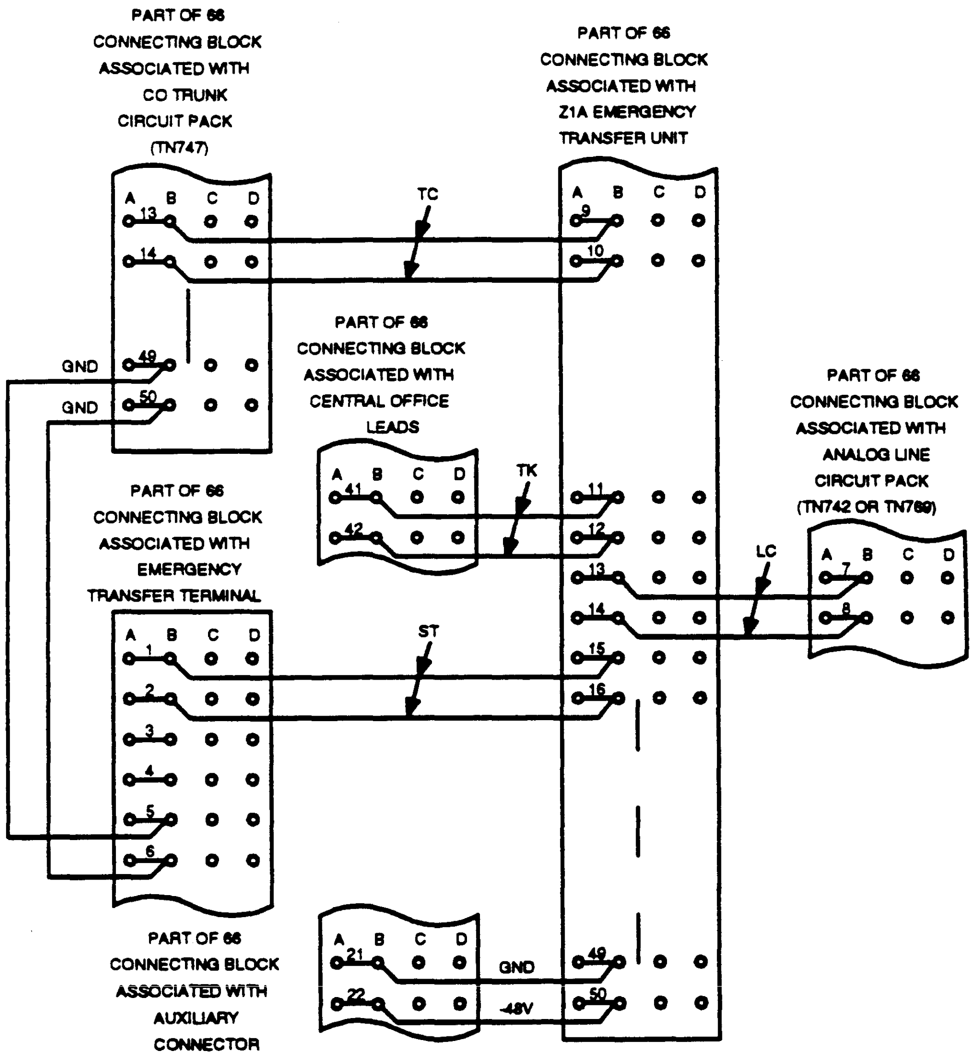


FIGURE 5-35. Connections at Trunk/Auxiliary Field Equipped with 66-Type Hardware for Telephone Used for Emergency Transfer and as Normal Extension (Ground Start Trunks)

Installing Optional DID Make-Busy Trunk for Use with Z1A Emergency Transfer Unit

Requirements

Figure 5-36 shows the connections at the trunk/auxiliary cross-connect field for an optional 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 dedicated to this purpose and appears on the twenty-fifth pair of a network interface jack.

Installation

Make connections as follows:

1. At cross-connect field, connect a jumper from one DID make-busy lead to the **TK** terminal (first appearance) on the yellow emergency transfer row/connecting block (Figure 5-36).
2. Connect a jumper from the other DID make-busy lead to the **ST** terminal (first appearance) on the yellow emergency transfer row/connecting block.

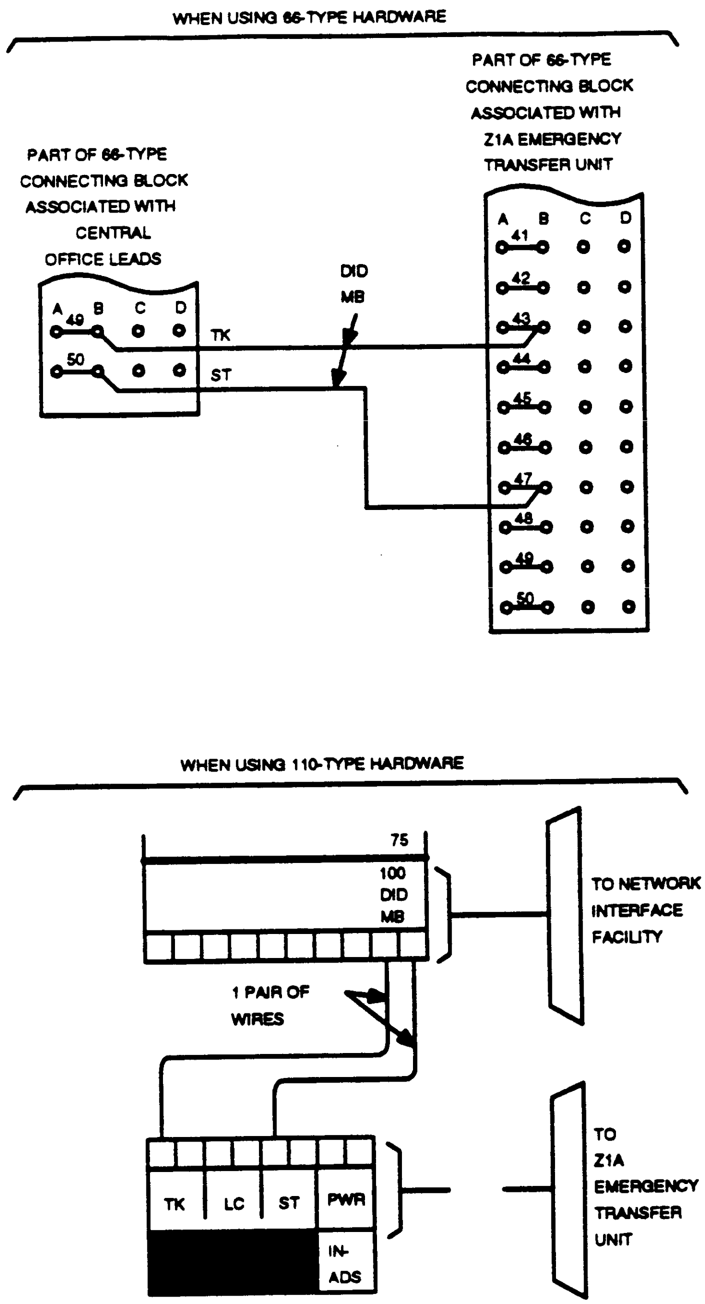


FIGURE 5-36. Connections at Trunk/Auxiliary Field for Optional DID Make-Busy Trunk—Z1A Emergency Transfer Unit

Installing the Z1A Emergency Transfer Unit

Install the Z1A emergency transfer unit as follows:

1. Mount emergency 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 emergency 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 Z1A Emergency 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 **-48 volt** and **GRD** terminals on the yellow emergency transfer row/connecting block to the **EM TRANS RELAY PWR** terminal (Figures 5-32 and 5-33, 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 cross-connect field (see 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 three-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.
6. If ground start is required, connect two wires from the ground terminals to the third pair of each emergency telephone appearance on the yellow trunk/auxiliary row created in Step 4. Loop the wires from the first appearance through to the last appearance if enough ground terminals are not available (Figure 5-37).

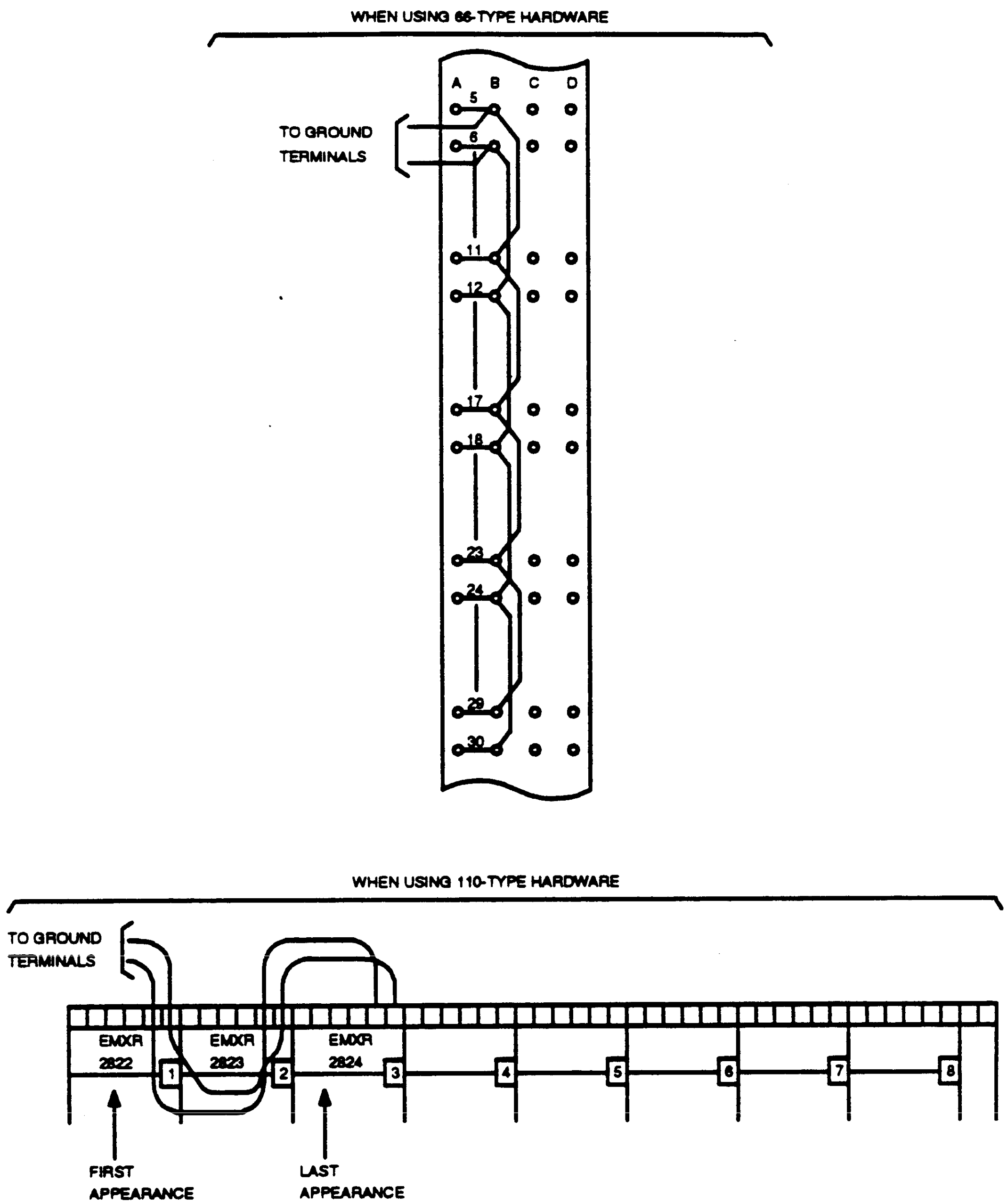
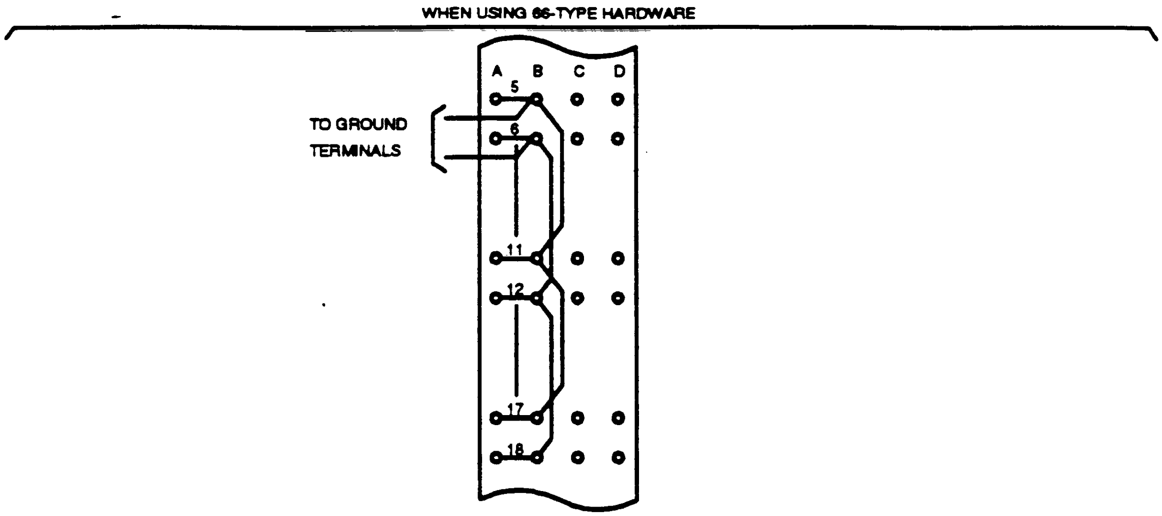


FIGURE 5-37. Ground Wiring Example (Three Telephones Used Only for Emergency Transfer)

Trunk/Auxiliary Field Connections—Telephone Used for Emergency Transfer and as a Normal Extension

Connect telephone as follows:

1. At trunk/auxiliary cross-connect field, connect a pair of wires between the **-48 volt** and **GRD** terminals on the yellow emergency transfer row/connecting block and the **EM TRANS RELAY PWR** terminal (Figures 5-34 and 5-35, 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 cross-connect 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.
7. If ground start is required, connect two wires from the ground terminals to the third pair of each emergency telephone appearance on the yellow trunk/auxiliary row created in Step 5. Loop the wires from the first appearance through to the last appearance if enough ground terminals are not available (Figure 5-38).



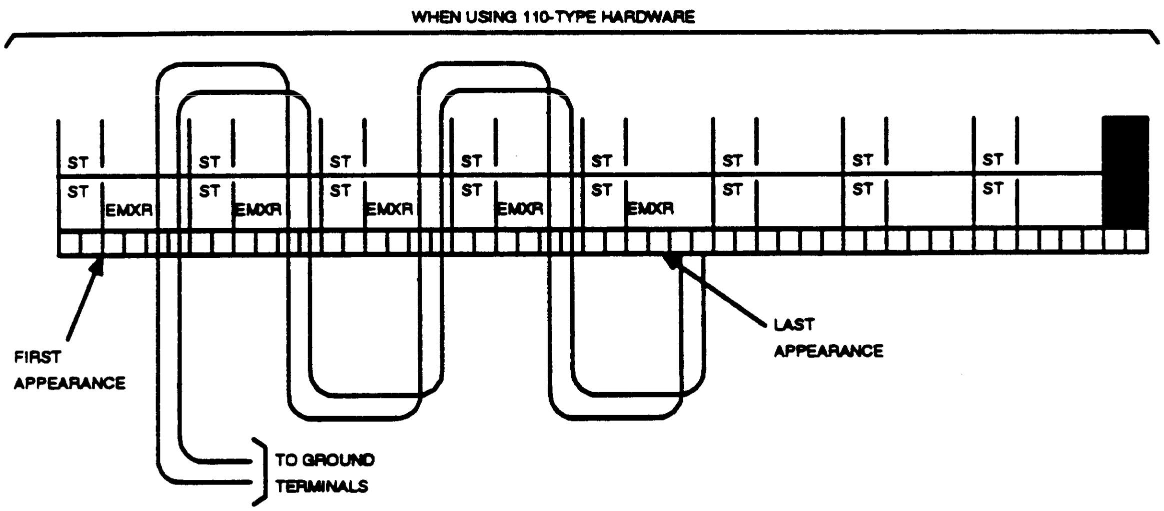


FIGURE 5-38. Ground Wiring Example (Five Telephones Used for Emergency Transfer and as Normal Extensions)

Telephone Installation

Install telephones assigned to emergency transfer as follows:

1. If ground start is required, do Steps 2 through 9 to install the ground start switch; otherwise, go to Step 10.
2. Remove cover from 551A key.
3. Mount base of 551A key to 77A bracket using screws provided with bracket.
4. Remove housing from 500- or 2500-type telephone.
5. Connect wire from red lead (R) on telephone through 551A key to yellow and/or black lead on telephone.
6. Replace cover on 551A key.
7. Place groove in bracket over Iip of telephone base (Figure 5-39).
8. Replace telephone housing.
9. Repeat Steps 2 through 8, as required.
10. Connect telephones to the information outlets.
11. Install patch cords/jumper wires between the switch side and the terminal side of the station distribution field.

FIGURE 5-39. Ground Start Key Installation

Installing External Ringing

Requirements

Figure 5-40 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, TN746B, or TN769 analog line circuit pack located in a port carrier. The TN742 or TN769 circuit pack contains eight ports. The TN746B circuit pack contains 16 ports.

A maximum of three devices can be connected to one TN742, TN746B, 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 two-pair line cord (modular plug at one end) from the information outlet to the ringing device (Figure 5-40).
5. Connect red (R) and green (T) leads to the ringing device.
6. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

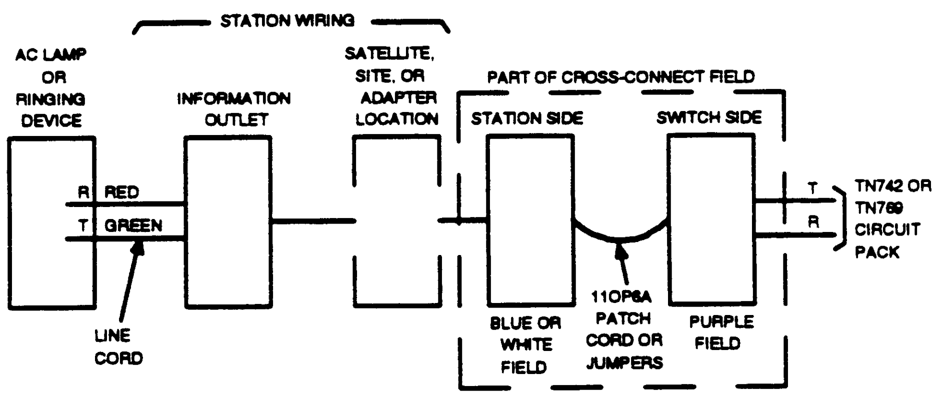


FIGURE 5-40. Connections for External Ringing or Queue Warning Indicator

Installing Queue Warning Indicator

Requirements

Figure 5-40 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, TN746B, or TN769 analog line circuit pack located in a port carrier. The TN742 or TN769 circuit packs each contain eight ports. The TN746B circuit pack contains 16 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 two-pair line cord (modular plug at one end) from the information outlet to the indicator (Figure 5-40).
5. Connect red (R) and green (T) leads to the indicator.
6. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

Installing the 945-1 Bulk Unit (Power Supply)

WARNING: **In closet or equipment room installations, the bulk power supply shall be stored in a manner to prevent spillage of a foreign substance (liquid) on this equipment. It is not recommended that such material be stored near power equipment installations. Such foreign substances can be hazardous, can cause damage to the power supply, and can result in a loss of power. In such cases, damage to the power units may result in a voided warranty.**

The bulk power supply unit can power a combination of terminals, NT1s, and ISDN consoles from a satellite closet (see Warning). The 945-1 provides 144 watts maximum at 38 volts minimum. The 13 outputs are modular six-pin jacks. Each port is capable of up to 19.2 watts maximum. Not all ports can provide maximum power simultaneously. When engineering the power supply load, the maximum power of 19.2 watts per port cannot be exceeded, nor can the maximum of 144 watts per individual 945-1 power supply. Each port can provide normal power to two terminal endpoints. Exceeding this design criteria can result in a loss of functionality of associated terminal equipment serviced by the power supply. The individual ports are not DC current isolated from each other. An optional reserve capability is provided by its companion 945-2 reserve unit with the Gates Cell battery. The 945-1 consumes five watts (internally) to keep the 945-2 charged (when connected). This does not affect the unit’s rating of 144 watts. The bulk power units may be ordered in the following configurations.

- One 945-1 with a single enclosure (order 945-4)
- One 945-1 with a system enclosure (order 945-3)
- A 945-2 reserve unit and/or 945-1 unit may be ordered separately (for mounting in a system enclosure)

The Figure 5-41 shows the ISDN Bulk Power Supply in a single enclosure (945-4). Single enclosures are equipped with flanges suitable for wall mounting. This unit may be rack-mounted by using the horizontal bars (provided by the equipment rack manufacturer).

Figure 5-42 shows a 945-3 system enclosure, which is always equipped with a 945-1 bulk power unit. The system enclosure then can be mounted in a standard 19-, 23-, or 25-inch rack (Figure 5-43). Figure 5-48 shows a battery reserve unit (945-2). This unit and a KS-21906, L9 Gates Cell (see Note) can provide battery backup for two bulk power units. This unit must be mounted in a system enclosure.

The AC power cords and reserve unit connecting cords are provided with the units. Output cords (D6AP, DW4A-SE) must be ordered separately. Each jack can power NT1Ms, NT1M-200s, terminals, NT1Us, or NT1U-200.

Table 5-C contains the specifications for the bulk power supply. Table 5-D provides data on how long the bulk power supply can bridge transient commercial power interruptions. The length of holdover time depends on the load in watts. The lower the load, the longer the holdover time.

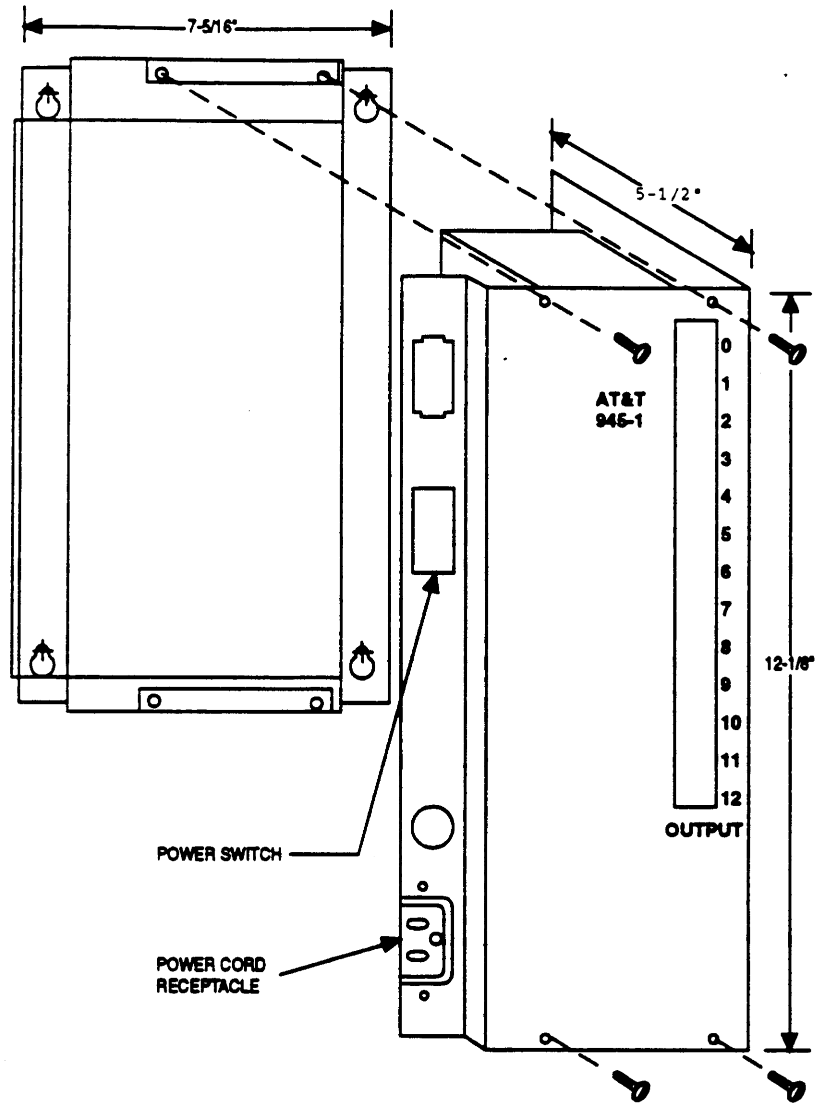


FIGURE 5-41. Bulk Power Supply With Single Enclosure—Front View (945-4)

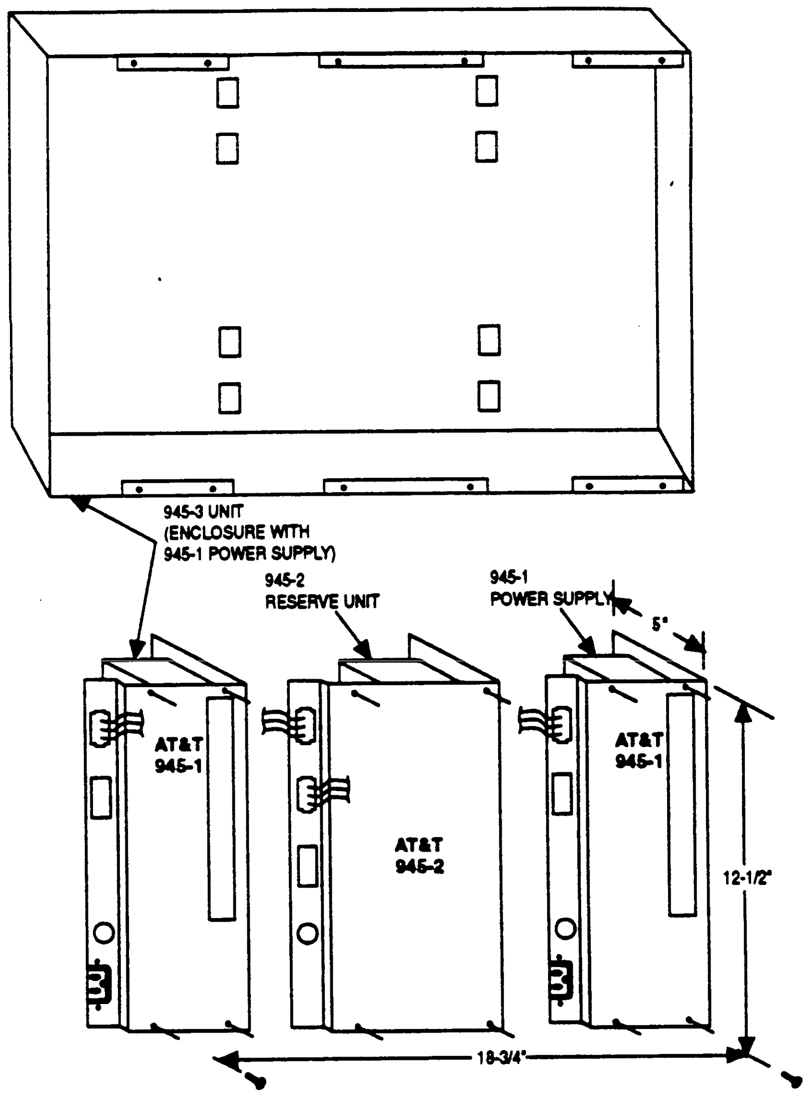


FIGURE 5-42. Bulk Power Supply With System Enclosure—Front View (945-3)

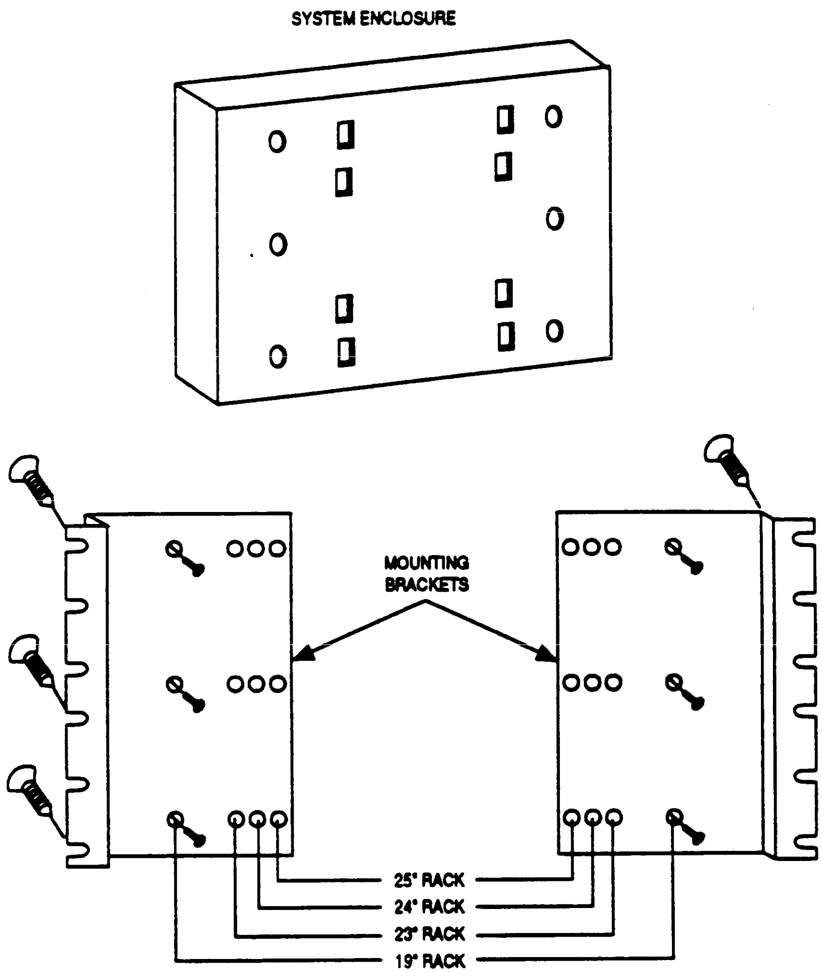


FIGURE 5-43. Bulk Power Supply System Enclosure—Rear View

TABLE 5-C. 945-1 Bulk Power Supply Specifications

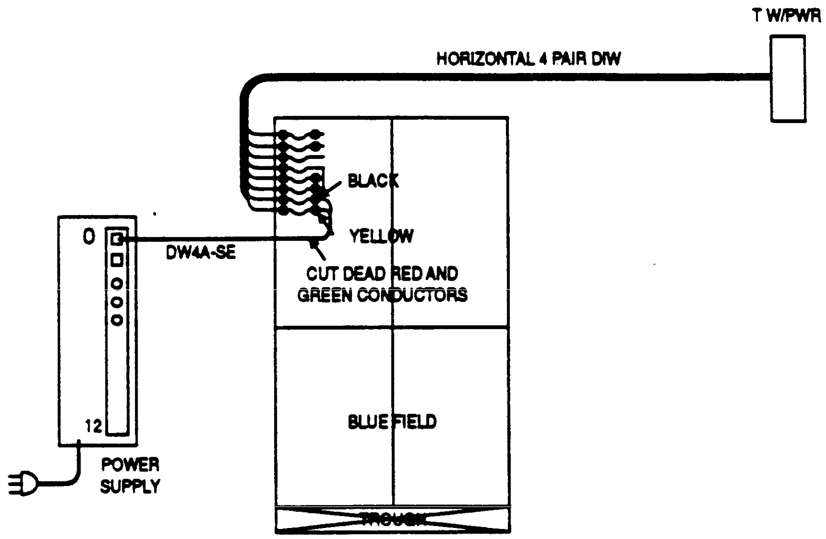
Type	Specifications
Input	99 V AC to 129 V AC 60 Hz 3 amps max. 0.80 power factor (input voltage is set to 117 V AC)
Output	144 W total for 13 ports 19.2 W maximum per port 40 V DC +/-5%
Ripple	10mvpp nominal, 400 mvpp max.
Hold Up	100 ms @ nominal line
Protection	Current limit PTC @ 0.9 amp on each output
Storage	-20°C to +80°C
Connection	8-ft line cord FCC phone jacks (6-position) -40 V DC pin-2, ground pin-5
Compliance	FCC Part 15 J Class A EMI UL & CSA
Size	7.3 X 12.6 X 5.5 wall mount 18.7 X 12.6 X 5.5 wall mount or 19-, 23-, 24-, 25-inch rack mount
Weight	14.4 lb shipping
Power Dissipation	64 watts at 117 V AC input (typical)
Heat Dissipation	218.24 btus/hr at 117 V AC input (typical)
Operating Environment	0°C to +50°C ambient air temperature
Humidity	5% to 80% noncondensing

TABLE 5-D. Holdover Time for 945-1 Bulk Power Supply*

Output Power (watts)	Holdover Time (milliseconds)
144	114
137	129
129	139
120	168
107	203
98	229
81	326
72	370
59	482
50	619
41	778
28	1220

* Input voltage set to 117 V AC.

Figure 5-44 shows the terminal equipment power in satellite closet 66 hardware connections.



P	E	C
1	-	VACANT
2	BK	-40 VDC
3	R	INACTIVE
4	G	INACTIVE
5	Y	GND
6		VACANT

66 M1-80
TERMINAL BLOCKS
(SIX REQUIRED FOR 48 IOs)
ON 183-TYPE BACKBOARD

FIGURE 5-44. Terminal Equipment Power in Satellite Closet (66-Hardware)

Wiring the 945-1 Bulk Power Supply

Figure 5-45 shows the modular plug end of a DW4A-SE cord connected to the 945-1 Bulk Power Supply jack. The stub end of the cord is connected to the Blue Field. Terminate the black wire to position seven of the four-pair circuit for negative voltage and the yellow wire to position eight for ground at the Blue Field.

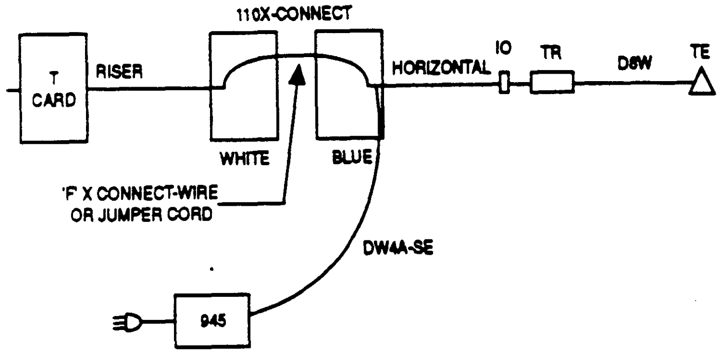


FIGURE 5-45. 945-1 Bulk Power Supply in Point-to-Point Configuration

One port of the 945 Bulk Power Supply can provide normal power to two terminal endpoints through a bridged 110 field. See Figures 5-46 and 5-47 for illustrations of this configuration and its wiring.

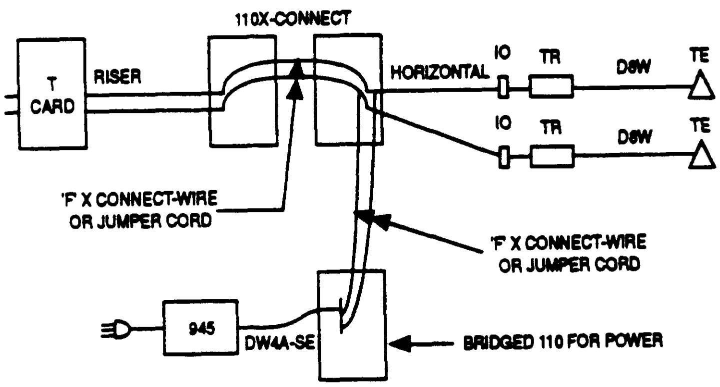
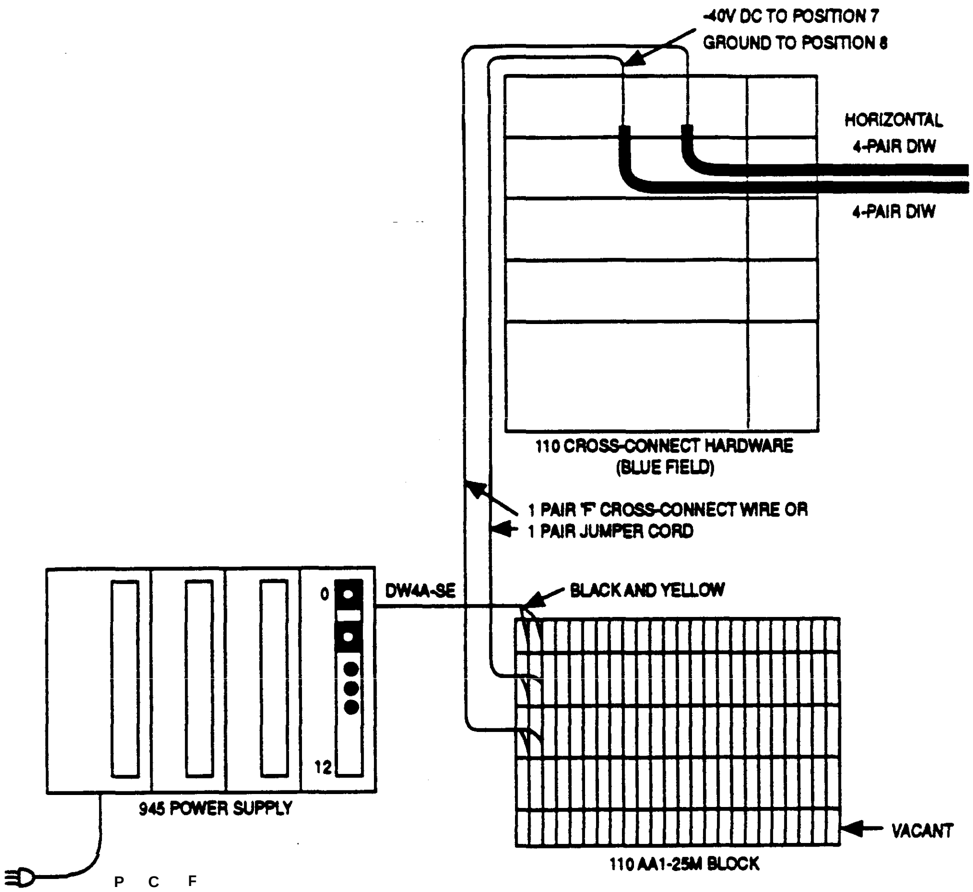


FIGURE 5-46. 945-1 Bulk Power Supply in Point-to-Point Configuration, Bridged



P	C	F
1	-	VACANT
2	BK	-40V DC
3	R	INACTIVE
4	G	INACTIVE
5	Y	GROUND
6	-	VACANT

FIGURE 5-47. Power Bridging of 945-1 Bulk Power Supply for Two Terminal Endpoints

Reserve Unit and Battery

An optional battery reserve unit (Figure 5-48) provides five minutes of reserve power for two fully loaded bulk power supply units (see Figure 5-42). Should a power failure occur, the CPE powered by bulk power supply with reserve remains fully functional for a length of time that is dependant on the power drain. If commercial power is restored or a backup power source is operational within reserve time, service is uninterrupted. Refer to Table 5-E for the reserve power unit specifications.

The reserve power unit can support one or two bulk power supply units (945-1) in a system enclosure. The system enclosure (945-3) houses two bulk power supply units and the reserve power unit. The system enclosure is shipped with one bulk power supply unit and may be wall- or rack-mounted. The second bulk power supply unit and the reserve power supply unit are ordered separately and can be added at a later time. A third bulk power supply unit cannot occupy the space provided for the reserve power supply unit.

If the 945 system has two 945-1 units and one 945-2 (battery), the 945-1 units should be powered from the same power strip. If one unit loses power, while the other still has power, the battery will not be activated. Terminals connected to the unit that loses power will be inoperable.

The Gates Cell has a shelf life of seven years when operating at 77°F or less. Shelf life will decrease by approximately half for each 10°F increase in temperature.

Note: The Gates Cell (KS-21906,L9) must be ordered separately. It is not included in the 945-2.

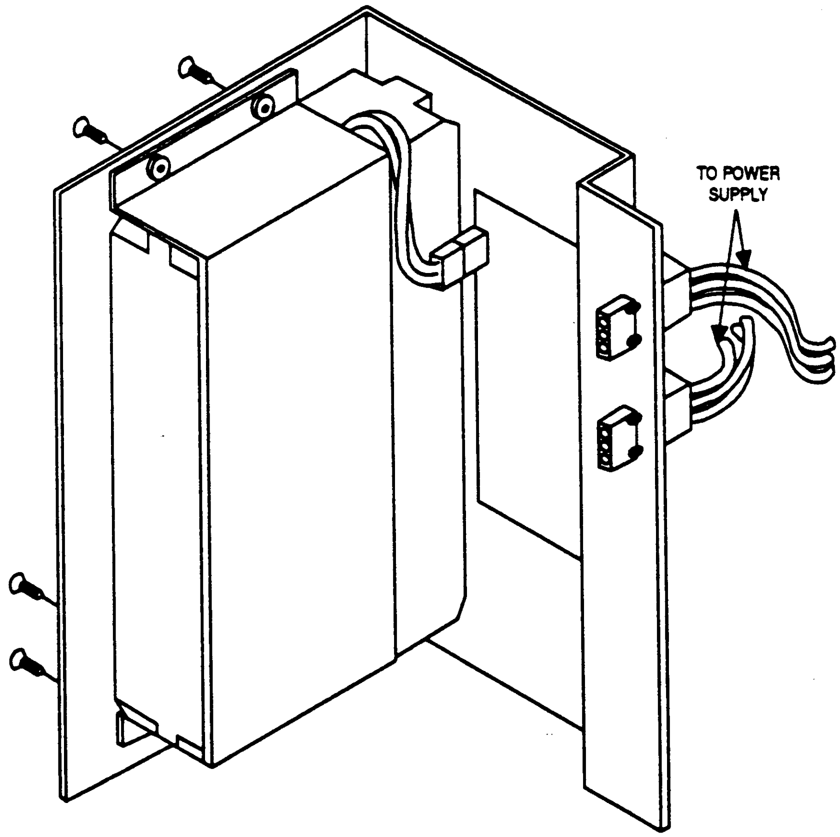


FIGURE 5-48. Reserve Power Unit—Rear View (945-2)

TABLE 5-E. 945-2 Reserve Power Unit Specifications

Type	Specifications
Input/Output	60 V AC and 45 V DC
Charge Time	30 hours minimum Float type w/temp compensation
Discharge	@ 300 W 3-minute minimum
Disconnect	@ 1.6 V DC per cell
Battery	KS-21906,L9 Gates 48 V DC @ 2.5 amp/hr
Size	7.1 X 12.6 X 5.5 inches
Mount	Center position 945-3 carrier
Connection	Two cables supplied
Weight	4.8 lb shipping weight

Installing the 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 110AR1-12 terminating resistor block are UL listed. 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.

Modular Adapter 440A4 TR

When used in an exposed environment with the possibility of an AC power cross, protectors with heat coils must be used at both the port and terminal endpoint sides. In other words, the cabling must have an Enhanced Primary Protector 4C3S-75 at the cross-connect field coming out of the PPN or EPN before ity exits the building, a carbon block protector where the cable reenters the next building and the 440A4 at the work location.

When protectors with heat coils are used, reduce the riser/backbone distance by 190 feet multiplied by the scaling factors in Table 5-F for the appropriate cable.

TABLE 5-F. Scaling Factor for Riser/Backbone Signaling Distance

Cable Code Prefix*	Wire Gauge	Scaling Factor
AFA-, ALA	22	1.8
ARM-	24	1.2
AFM-, ALM-	24	1.3
BKM-	24	1.1
DIW, Plenum & Non-Plenum	24	1.0
ALT-	26	0.9
BKT-	26	0.8

* The fourth letter of the cable code, represented by a dash, indicates the sheath type. The fourth letter may be any of the following: A, G, H, M, N, P, W, or Z.

Figure 5-49 depicts an eight-pin 440A4 TR. The TR is three inches long with plugs at both ends and comes with a short cord to connect the eight-conductor jack. When the TR is connected, a tool such as a small screwdriver is needed for removal.

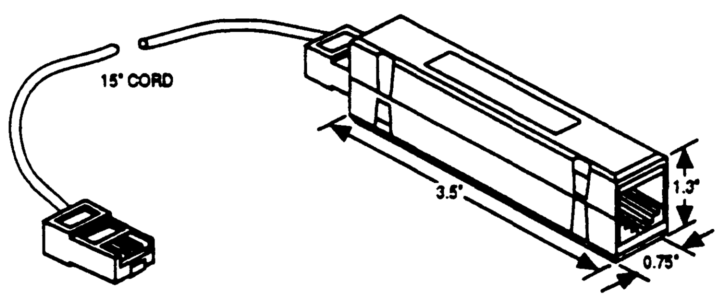


FIGURE 5-49. Eight-Pin Terminating Resistor Adapter (440A4)

Figure 5-50 shows the schematic for the 440A4 Terminating Resistor.

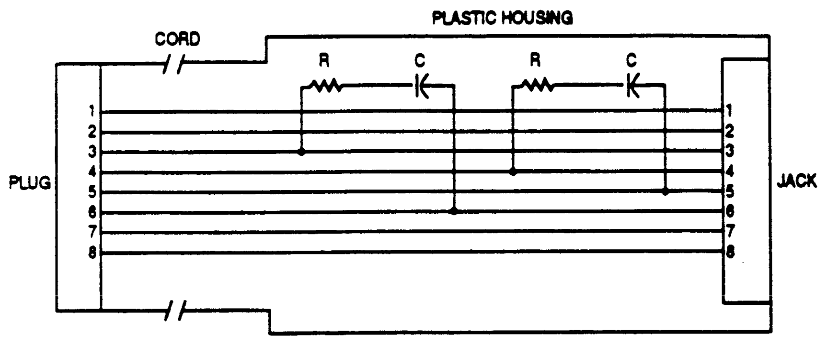


FIGURE 5-50. Eight-Pin Terminating Resistor Adapter (440A4) Schematic

Closet Mounted (110AR1-12)

The 110AR1-12 terminating resistor block is designed to mount in the telecommunications wire closet. It consists of 12 (two-pair) circuits and provides the 100-ohm termination used for ISDN circuits. Figure 5-51 depicts the circuit wiring of the 110AR1-12. 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 110AR1-12 is shipped (already assembled) with preprinted designation strips to simplify circuit identification and installation.

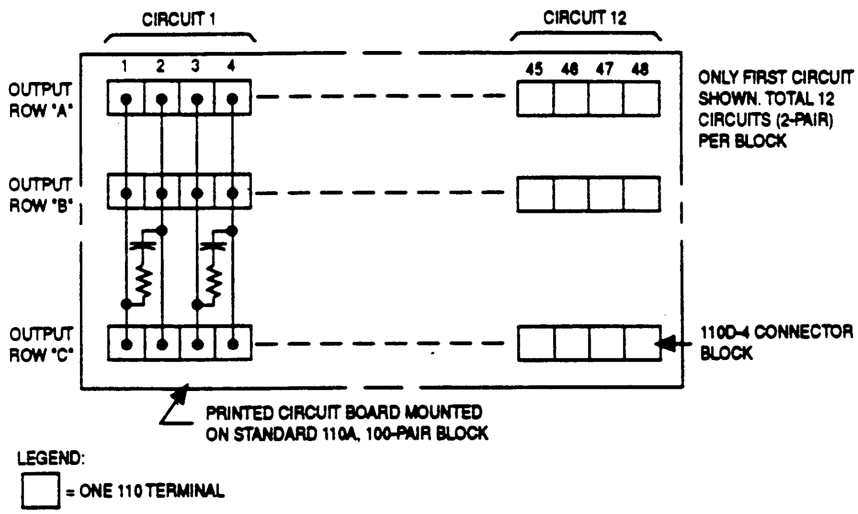
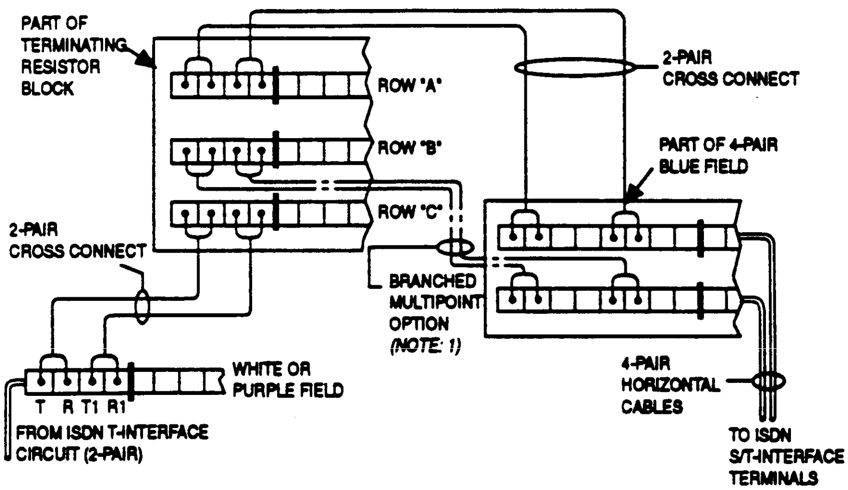


FIGURE 5-51. Terminating Resistor Block (110AR1-12)

Figure 5-52 shows the wiring connections for the 110AR1-12 terminal block. The ISDN S/T-interface 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 is mapping from the 110AR1-12 to the standard four-pair circuit. Pair one from the 110AR1-12 is connected to Pair one of the station field, and Pair two is connected to Pair three of the station field.



NOTE 1: **For Branched Multipoint option using three or four terminal equipments, use 110AB1-025M or 110AB-050M.**

FIGURE 5-52. Typical Installation of Terminating Resistor Block (110AR1-12)

Installing Multipoint Adapters

Multipoint Adapters are used to provide signal fanout of the T-interface. Fanout can be performed at the terminal endpoint by the BR851-B. This adapter supports more than one ISDN terminal per horizontal four-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 110AR1-12 provides fanout for two horizontal runs and also contains the 100-ohm terminating resistor. This can be used for Basic Multpoint 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 eight-position device with a single plug and two jacks. Figure 5-53 depicts the wiring diagram of the BR851-B.

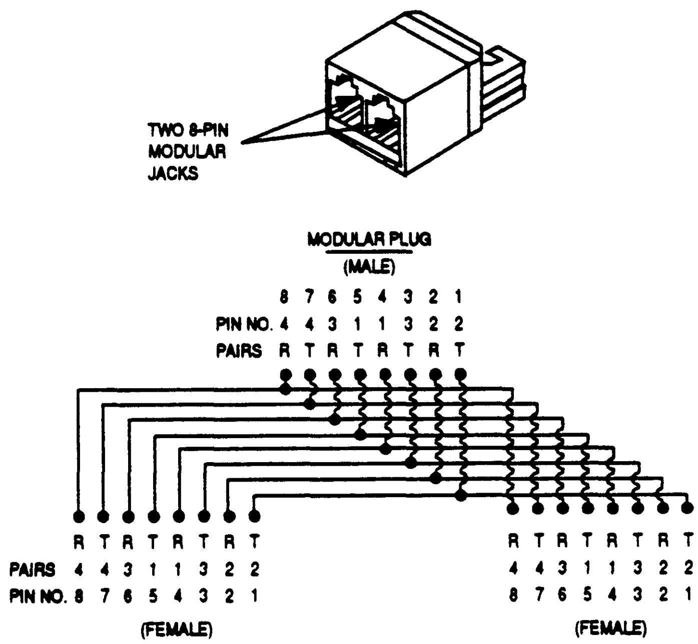


FIGURE 5-53. Diagram of BR851-B

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 is a power adapter. Figure 5-54 shows the side-by-side adapter.

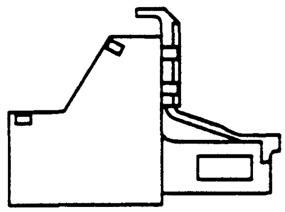


FIGURE 5-54. Side View of Adapter

400B2

This piggyback adapter (Figure 5-55) provides power from the KS-22911 to pair four of the terminal endpoint. It consists of the following:

- One eight-position, six-conductor plug
- One eight-position, eight-conductor jack
- One six-position, two-conductor jack

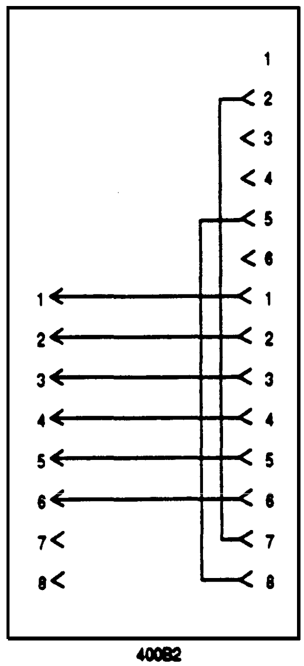


FIGURE 5-55. Diagram of 400B2 Adapter

Local Power Supplies

The following power supplies power terminal endpoints through pair four (pins seven and eight) of the four-pair extension cord. The 7500 data module receives power from its own power supply and a special power cord, which is not discussed here.

353A Power Supply

The 353A power supply provides up to 12 watts of continuous power at -40 VDC and is used at the work location. It can power two terminal endpoints in normal operation. For more information on this power supply, see *5ESS® Switch Integrated Services Digital Network, Customer Premises Planning Guide, 533-700-100.* Figure 5-56 shows the 353A Power Supply.

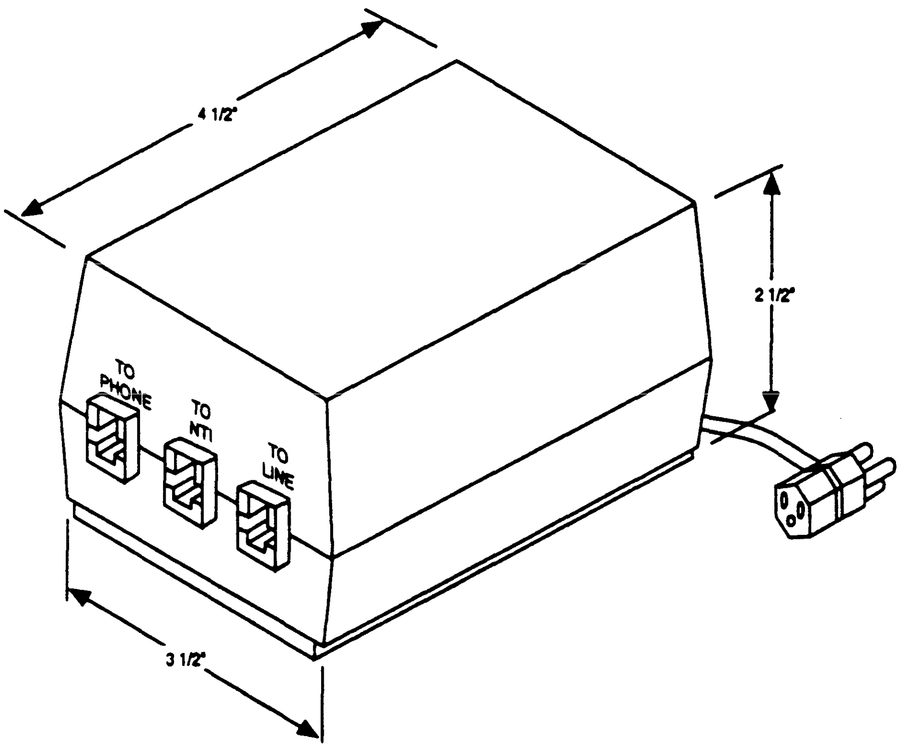


FIGURE 5-56. 353A Power Supply

Figure 5-57 shows the connections for the 353A Power Supply. One end of a D6AP cord connects to the line side jack of the 353A Power Supply and the other end connects to the jack end of the terminating resistor adapter (440A4). The short cord on the terminating resistor adapter connects to the Information Outlet. The phone jack of the 353A Power Supply accepts one end of a D8W cord while the other end of this cord goes to the terminal endpoint. The 353A Power Supply receives power from the AC outlet.

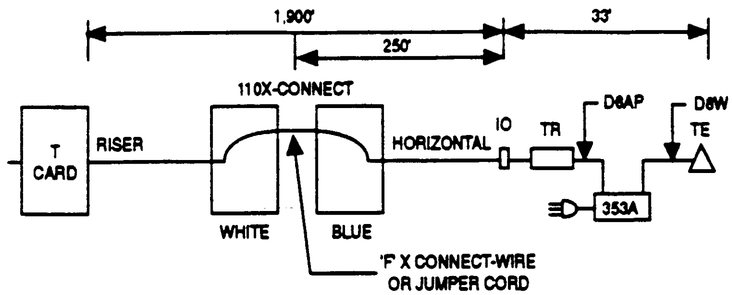


FIGURE 5-57. 353A Power Supply Point-to-Point Configuration

At the Blue Field, the port transmit pair is pair one and the port receive pair is pair three.

KS-22911 Power Supply

The KS22911 Power supply provides 9.6 watts at non-regulated -48 VDC nominal. This power supply is used at the work location to power one terminal endpoint.

The KS22911 power supply is used with the 400B2 adapter, which is connected to the information Outlet. A D6AP cord connects the power supply to the adapter, and a D8W extension cord connects the terminal endpoint to the adapter. Figure 5-58 shows the KS-22911 Power Supply and 400B2 Adapter.

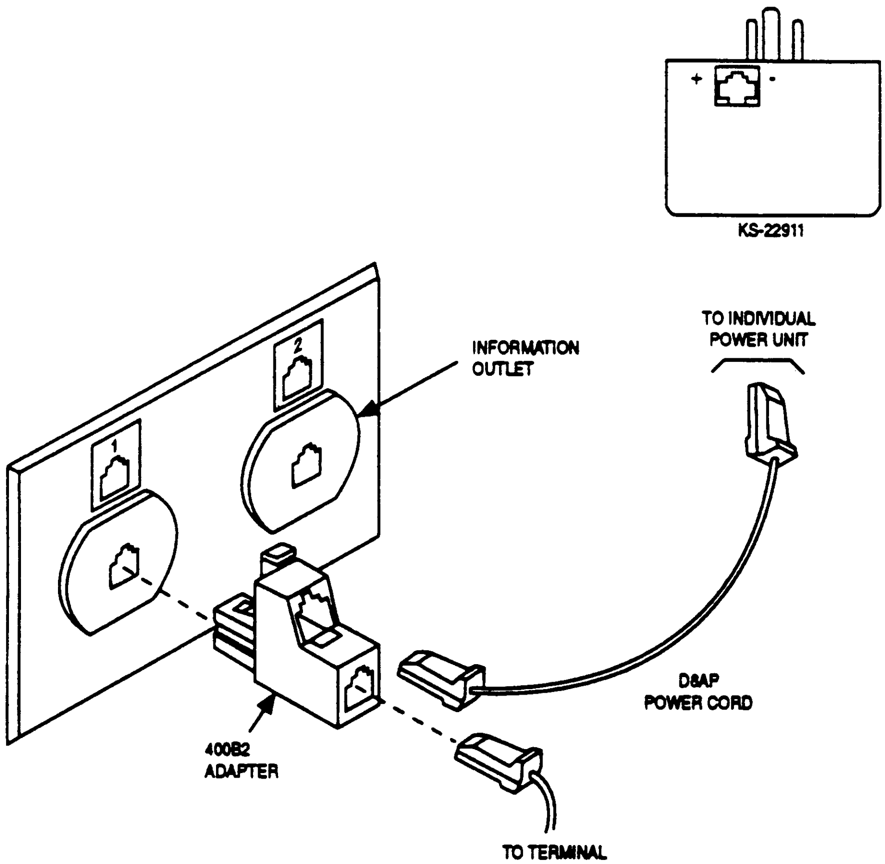


FIGURE 5-58. KS22911 Power Supply and 400B2 Adapter

Basic Multipoint Installation Distances

The combination of Figure 5-59 and Tables 5-G and 5-H provides cabling distances for fanout of Basic Multipoint installations of ISDN. "A" is the distance from the T-interface source to the work location. This distance depends on the number of terminals. "B" is the distance from the closet to the work location. "C" is less than 33 feet of mounting cord. In Table 5-H, the terminating resistor (TR) is in the closet. All distances assume 24-gauge DIW.

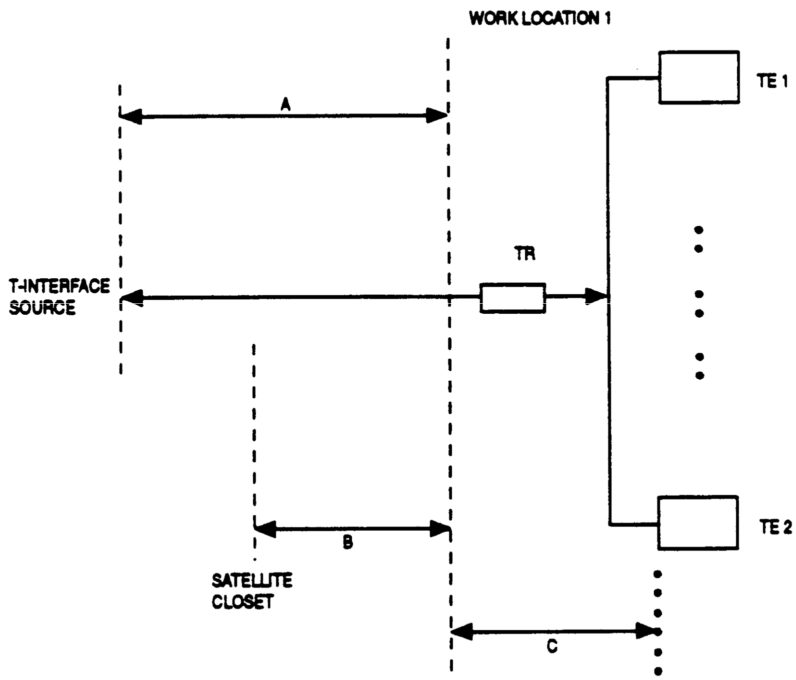


FIGURE 5-59. Basic Multipoint With One Work Location

TABLE 5-G. Basic Multipoint Cabling Distances, TR at Work Location

No. of Terminals	A	C
2	1900 ft	33 ft

TABLE 5-H. Basic Multipoint Cabling Distances, TR in Closet

No. of Terminals	A	B	C
2	1600 ft	250 ft	33 ft

Point-to-Point Installations

The following sections provide guidelines for point-to-point configurations. Figure 5-60 shows the typical configurations for the DEFINITY G3i.

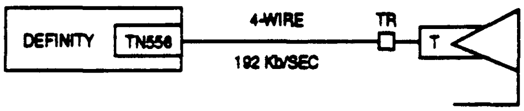


FIGURE 5-60. Typical G3i Point-to-Point Configuration with T-interface

Terminating Resistor at Work Location

Consultation Committee for International Telephone and Telegraph (CCITT) and ANSI standards limit the insertion loss of the cable plant, which is terminated with a 100-ohm resistor, to 6 dB measured at 96 kHz for point-to-point configurations with the terminating resistor at the work location.

Different cables exhibit different loss characteristics. Use the worst case values for particular cables when determining the T-distances so that the measured loss falls within the 6 dB limit. The table below gives the worst case unit loss at 96 kHz for some typical AT&T cables.

The cables shown in the following table have the following characteristics:

- There is a minimum of two twists per foot for each cable pair.
- Cable pairs are not individually shielded; however, a multipair cable might contain a shield for all pairs.
- The pair-to-pair near-end crosstalk loss at 96 kHz is greater than 60 dB.

TABLE 5-I. Worst Case Unit Losses for Typical AT&T Cables

Cable Code Prefix*	AWG	dB Per Kft at 96 kHz	6 dB Distance, Kft
AFA-,ALA-	22	1.8	3.3
ARM-	24	2.7	2 2
AFM-,ALM-	24	2.5	2.4
BKM-	24	2.9	2.1
DIW, Plenum and Non-Plenum	24	3.2	1.9
ALT-	26	3.4	1.8
BKT-	26	3.8	1.6

* The fourth letter of the cable code, represented by a dash, indicates the sheath type. The fourth letter may be any of the following: A, G, H, M, N, P, W, or Z.

The unit loss values in the preceding table are applicable for AT&T cables under the following circumstances:

- There are no load coils or bridged taps. Existing wiring other than those listed in Table 5-I must be qualified to ensure its distances meet the 6 dB insertion loss limit at 96 kHz. Remove bridged taps if they exist.
- The loss values have taken into account cable variations, maximum temperature conditions (100° F for buried cables and 140° F for aerial cables), and affect of impedance mismatch loss at splices. Distances engineered with these unit loss values will result in losses within the 6 dB limit when measured with the HP4935A Transmission Impairment Measuring Set or equivalent. In the design phase, if the calculated loss exceeds the 6 dB limit by a small amount, it is possible to reduce the loss by rearranging the loop plant or using better cable.
- The losses for short lengths of interface cable, F cross-connecting wire, and D8W mounting cord can be neglected.
- When the ST terminals are being served by a cable exposed to lightning in a campus environment, carbon block protectors have to be provided as a minimum to protect the terminal equipment. These protectors, without heat coils, do not add loss to the link.

  For the switch side of the DEFINITY system, the Enhanced Primary Protector 4C3S-75 must be used. This protector has a built-in heat coil. If the cable is exposed to commercial AC power, protectors with heat coils are required on both the switch and terminal endpoint sides. Each protector with a heat coil adds 0.3 dB loss to the link. In this case, reduce the riser/backbone distance by 190 feet multiplied by the scaling factors in Table 5-F.

Sample Worst Case Calculations

The following example illustrates the calculation procedure using the worst case loss values.

An information outlet is located 100 feet from its satellite closet, which in turn is located 150 feet from the building entrance field. The building is 1,880 feet from the building in which the T-card is located. The two buildings are in a campus environment with danger of power cross. It must be verified if AFMW, ARMM, and DIW cables can be used for the campus, riser, and horizontal runs, respectively. Table 5-J shows the calculation.

TABLE 5-J. Sample Calculation for Worst Case Loss

Description	Distance (Kft)	Loss (dB)
AFMW - 100 Campus	1.88	4.7
4C3S-75 Protector, Switch Side		0.3
4C3S-75 Protector, Terminal Side		0.3
ARMM-100 Riser	.15	0.4
DIW-4 Horizontal	.1	0.3
Total	2.13	6.0

The above calculation shows an acceptable loss. When engineering for a 6 dB loss link, make sure of the accuracy of actual cable distance. Incorporate some margin of error to compensate for inaccuracy in installed cable distances when working with estimated distances.

Terminating Resistor at Satellite Closet

Installing the terminating resistor at the satellite closet should be considered as a special case of passive bus arrangement. In this case, in addition to attenuation, other factors such as impedance mismatch with resulting reflection and ease of transition to passive bus configurations must be considered. See Figures 5-61, 5-62, and 5-63 for the wiring.

The maximum total signaling distance for this point-to-point configuration is 1,600 feet. The maximum horizontal distance is 250 feet. For distances with riser/backbone cables other than DIW 24-AWG, scale the riser/backbone distance only by the factors in Table 5-F. In other words, the maximum total distance of other cable in feet equals the riser/backbone distance times the scale factor plus the horizontal distance.

For campus applications, use the 440A4 Adapter together with carbon block protector on the terminal endpoint side and the Enhanced Primary Protector 4C3S-75 on the switch side. The 4C3S-75 has a built-in heat coil. Use connectors with heat coils for power cross situations.

These point-to-point configurations are offered to allow uniform administration of terminating resistors from the satellite closet. Figure 5-61 shows the terminating resistor at the satellite closet with a local power supply (the 353A Power Supply) at the work location. Figure 5-62 shows the terminating resistor at the satellite closet with a bulk power supply (the 945-1 Bulk Power Supply).

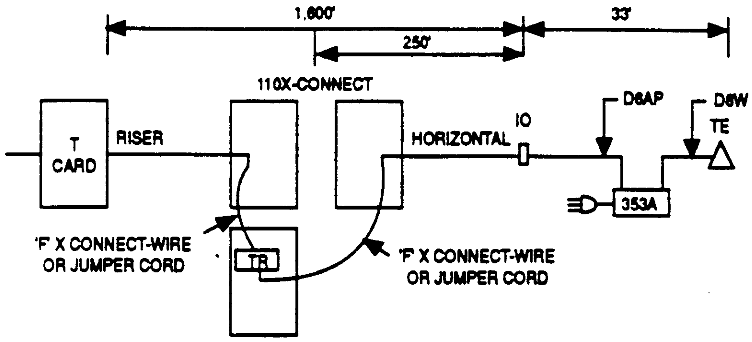


FIGURE 5-61. Terminating Resistor at Satellite Closet, Local Power

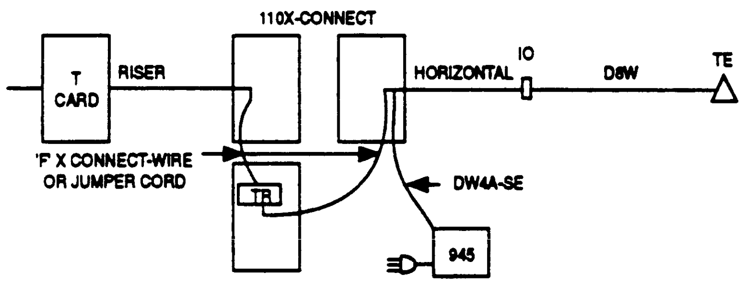


FIGURE 5-62. Terminating Resistor at Satellite Closet, Bulk Power

Note the use, in Figure 5-63, of a Bridged 110 Field. Jumper the White Field to a row on the Bridged 110 Orange Field where the labeling strip is located. Use the 110AR1-12 as the terminating resistor in satellite closets at 110 cross-connects. Jumper a remaining free row to pairs one and three on the Blue Field to complete the circuit.

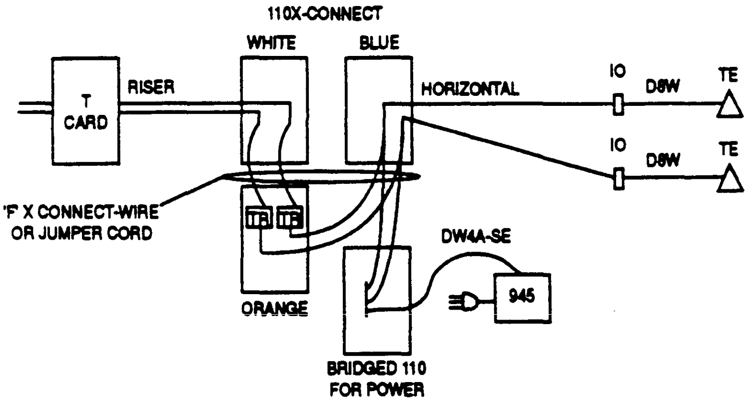


FIGURE 5-63. Terminating Resistor at Satellite Closet, Bulk Power With Bridged 110 Field

Point-to-Multipoint (Passive Bus)

Table 5-K shows the maximum signaling distances for point-to-multipoint (passive bus) configurations for one or two terminal endpoints. The "Figure" column in Table 5-K describes the figure that corresponds to the table entry.

TABLE 5-K. Signaling Distances for Passive Bus on 24-AWG PDS DIW

Terminal Resistor Location	Figure	Max Total Signal Distance (feet)	Max Total Horizontal Sig. Distance (feet)
Work Location	5-64 and 5-65	1,900	250
Satellite Closet, 2 Branches	5-66, 5-67 and 5-68	1,600	250
Satellite Closet, 1 Branch	5-69 and 5-70	1,500	250

The following sections describe the wiring for passive bus configurations where the terminating resistor is located at the work location, where it is located at the satellite closet with one branch, and where it is located at the satellite closet with two branches.

Terminating Resistor at Work Location

Figure 5-64 describes the wiring for a passive bus configuration where the terminating resistor (440A4) is installed at the work location and uses local power (353A). Note also the BR851-B Adapter for the two terminal endpoints.

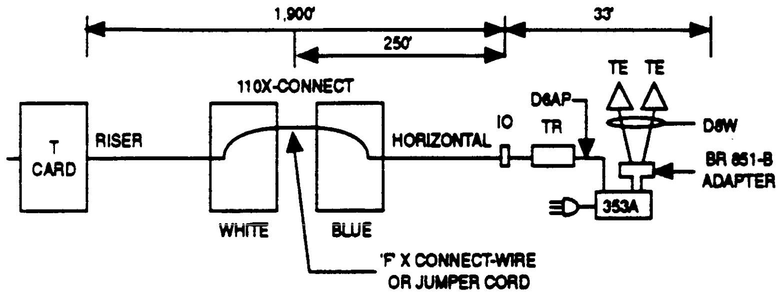


FIGURE 5-64. Passive Bus Wiring, Terminating Resistor at Work Location, Local Power

Figure 5-65 describes the wiring for a passive bus configuration where the terminating resistor (440A4) is installed at the work location and uses the bulk power supply (945-1).

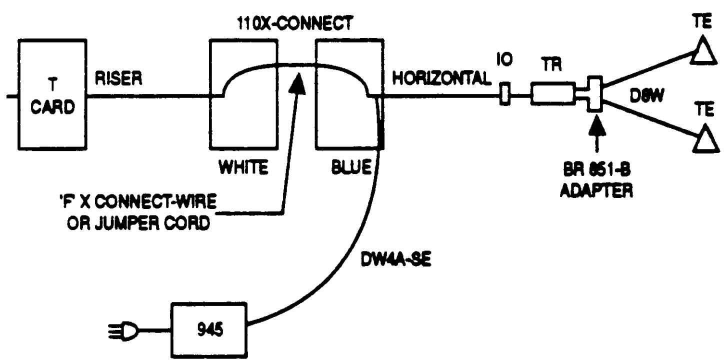


FIGURE 5-65. Passive Bus Wiring, Terminating Resistor at Work Location, Bulk Power

Terminating Resistor at Satellite Closet, Two Branches

Figure 5-66 describes the wiring for a passive bus configuration where the terminating resistor (110AR1-12) is installed at the satellite closet, two terminal endpoints at different work locations are connected to the same branched point at the closet, and the terminal endpoints use local power.

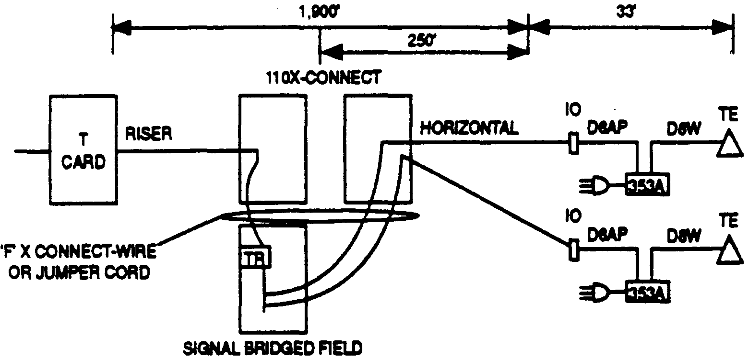


FIGURE 5-66. Passive Bus Wiring, Terminating Resistor at Satellite Closet, Two Branches, Local Power

Figure 5-67 describes the wiring for a passive bus configuration where the terminating resistor (110AR1-12) is installed at the satellite closet and two terminal endpoints at different work locations are powered from each power output port of the 945-1 Bulk Power Supply.

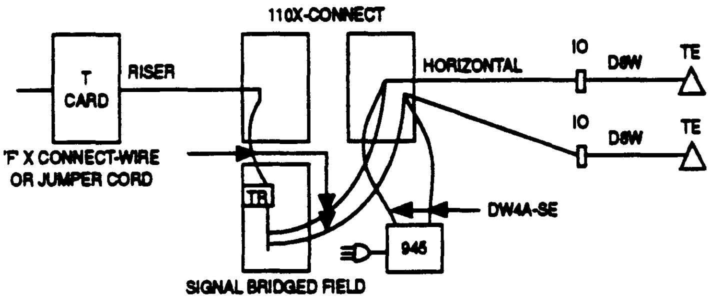


FIGURE 5-67. Passive Bus Wiring, Terminating Resistor at Satellite Closet, Two Branches, Bulk Power

Figure 5-68 describes the wiring for a passive bus configuration where the terminating resistor (110AR1-12) is installed at the satellite closet and two terminal endpoints at different work locations are powered by bridging the 945-1 Bulk Power Supply.

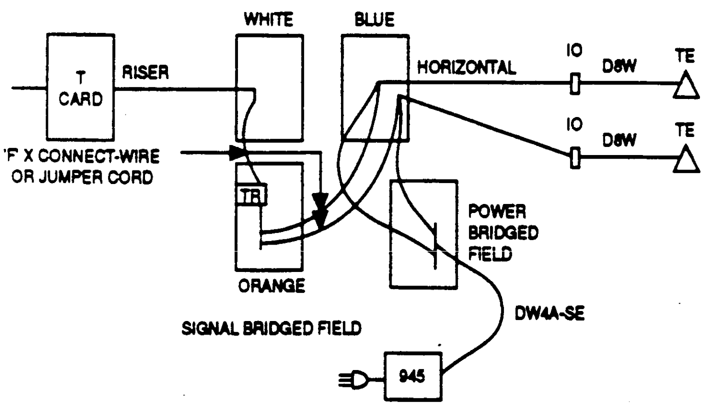


FIGURE 5-68. Passive Bus Wiring, Terminating Resistor at Satellite Closet, Two Branches, Bridged Bulk Power

Terminating Resistor at Satellite Closet, One Branch

Figure 5-69 describes the wiring for a passive bus configuration where the terminating resistor (110AR1-12) is installed at the satellite closet, there are two terminals at the same work location connected to the same horizontal run, and the terminal endpoints use local power.

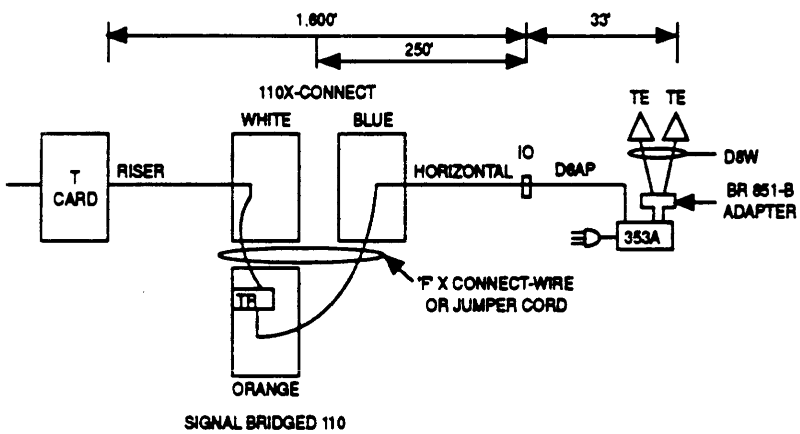


FIGURE 5-69. Passive Bus Wiring, Terminating Resistor at Satellite Closet, One Branch, Local Power

Figure 5-70 describes the wiring for a passive bus configuration where the terminating resistor (110AR1-12) is installed at the satellite closet, there are two terminals at the same work location connected to the same horizontal run, and the terminal endpoints use a bulk power supply.

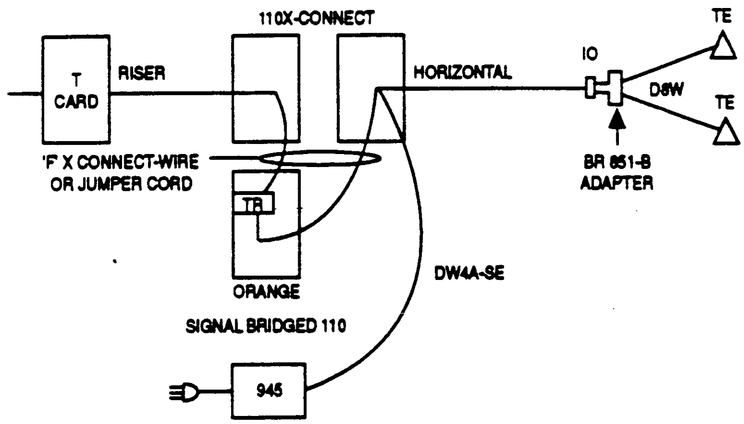


FIGURE 5-70. Passive Bus Wiring, Terminating Resistor at Satellite Closet, One Branch, Bulk Power

CHAPTER 6. AUXILIARY EQUIPMENT INSTALLATION

Auxiliary Equipment Description

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

- 278A adapter—provides an interface to customer-provided equipment for the Loudspeaker Paging feature. The 278A adapter requires -24 volt DC power; however, it can be modified for -48 volt DC power by adding a D-181321 kit of parts (Comcode 103-031-181).
- 89A control unit—provides an interface to customer-provided equipment for the Loudspeaker Paging feature. A 2012D transformer is required to provide -48 volt DC power to the control unit.
- PagePac® 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 nine 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 one 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 117-volt AC power.
- 36A voice coupler—provides an interface and also protects the customer-provided equipment required for Intercept Treatment—Recorded Announcement, Music-on-Hold, and Recorded Telephone Dictation Access features. The 36A voice coupler is powered by a 2012D transformer. The 36A voice coupler is arranged for wall-mounting.
- PEC 65270 or 65272 Digital Announcer—provides recorded announcements for Recorded Announcement feature. PEC 65270 provides one channel of voice. PEC 65272 provides four channels of voice. Both models can be powered by -48V DC or an optional AC power supply (PEC 65271).

  Note: PEC 65270 and 65272 digital announcers do not require 36A voice couplers.
- Audichron 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 -48V DC at 1.2 amps.
- 3270 data module—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).
- 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

Requirements

The Loudspeaker Paging feature provides a connection from the TN763B auxiliary trunk to a customer-provided paging amplifier. All attendants and voice terminal users have access to the voice paging equipment.

The Music-on-Hold feature provides a connection from the TN763B auxiliary trunk to a customer-provided music source. 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 also can be connected through a paging amplifier to provide background music over the loudspeakers.

Figure 6-1 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.

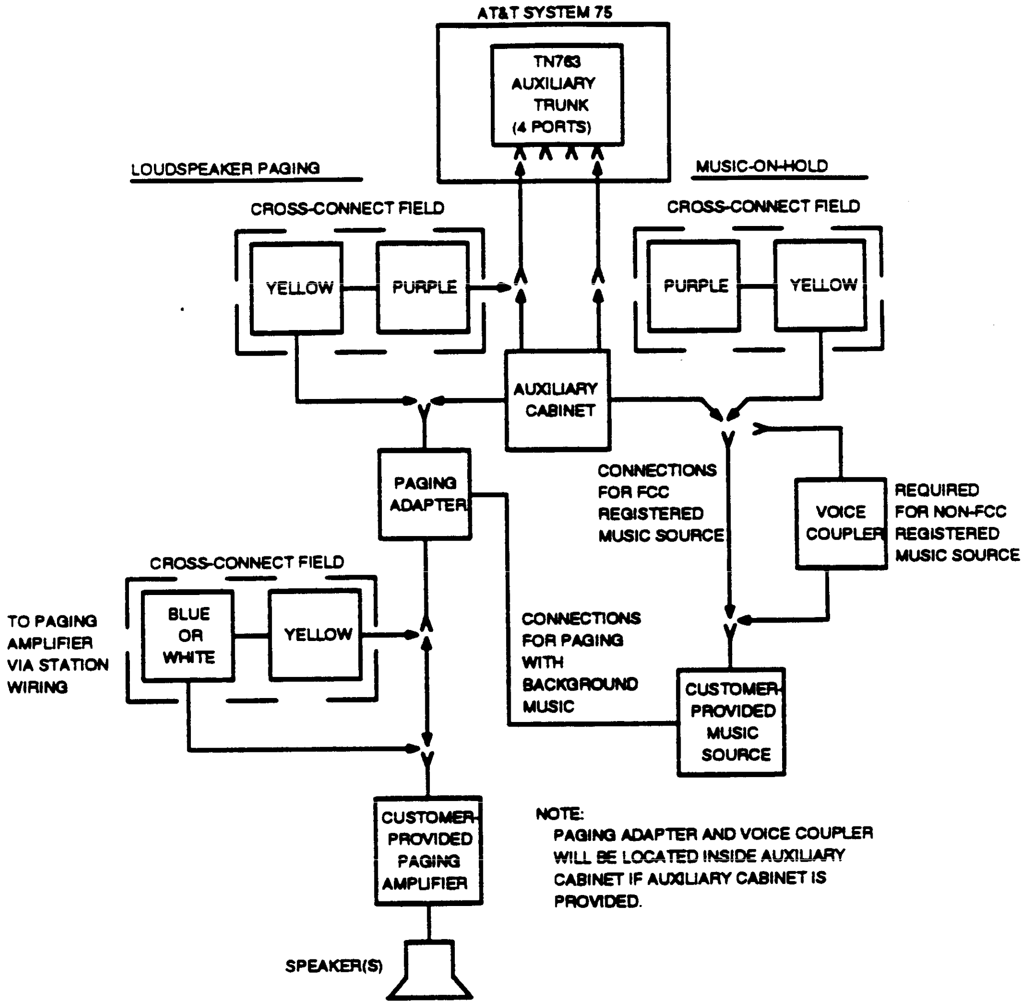


FIGURE 6-1. Block Diagram for Loudspeaker Paging and Music-on-Hold Features

Installing Loudspeaker Paging Access—278A Paging Adapter

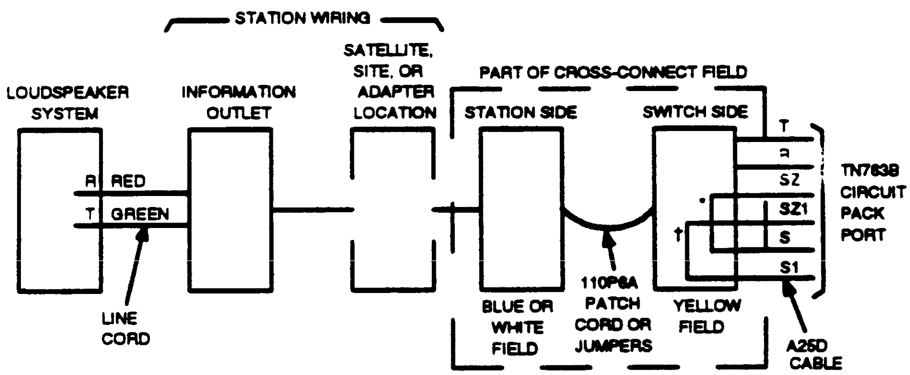
Requirements

Access to loudspeaker paging is provided by an information outlet. The switch side of the cross-connect field is connected to a 278A adapter. The 278A adapter is designed to operate on -24 V DC. If it is to be operated on -48 V DC, it must be modified with a D-181321 kit of parts. The adapter is mounted in the auxiliary cabinet, if one is available.

If the 278A is not mounted in an auxiliary cabinet, provisions must be made for obtaining the DC power. If the adapter is being used with a G1 or G3i Multi-Carrier Cabinet, 48 V DC can be obtained from the Auxiliary connector (Table 3-H). If the adapter is being used with a Single-Carrier Cabinet or in a situation where using the -48 V DC from the Multi-Carrier Cabinet isn't feasible, the DC power source must be locally engineered.

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 auxiliary trunk circuit pack located in a port carrier. A TN763B circuit pack contains four ports.

Figure 6-3 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.



* AT CONNECTING BLOCK, PLACE A STRAP BETWEEN TERMINALS S AND SZ.

† AT CONNECTING BLOCK, PLACE A STRAP BETWEEN TERMINALS S1 AND SZ1.

FIGURE 6-2. Connections for Loudspeaker Paging—Without Paging Adapter

Installation

Install loudspeaker paging access as follows:

1. Determine port assignment of paging zone(s) from Loudspeaker Paging Form:

EXAMPLE:	Port Number	B	02	01
		Carrier	Slot	Circuit

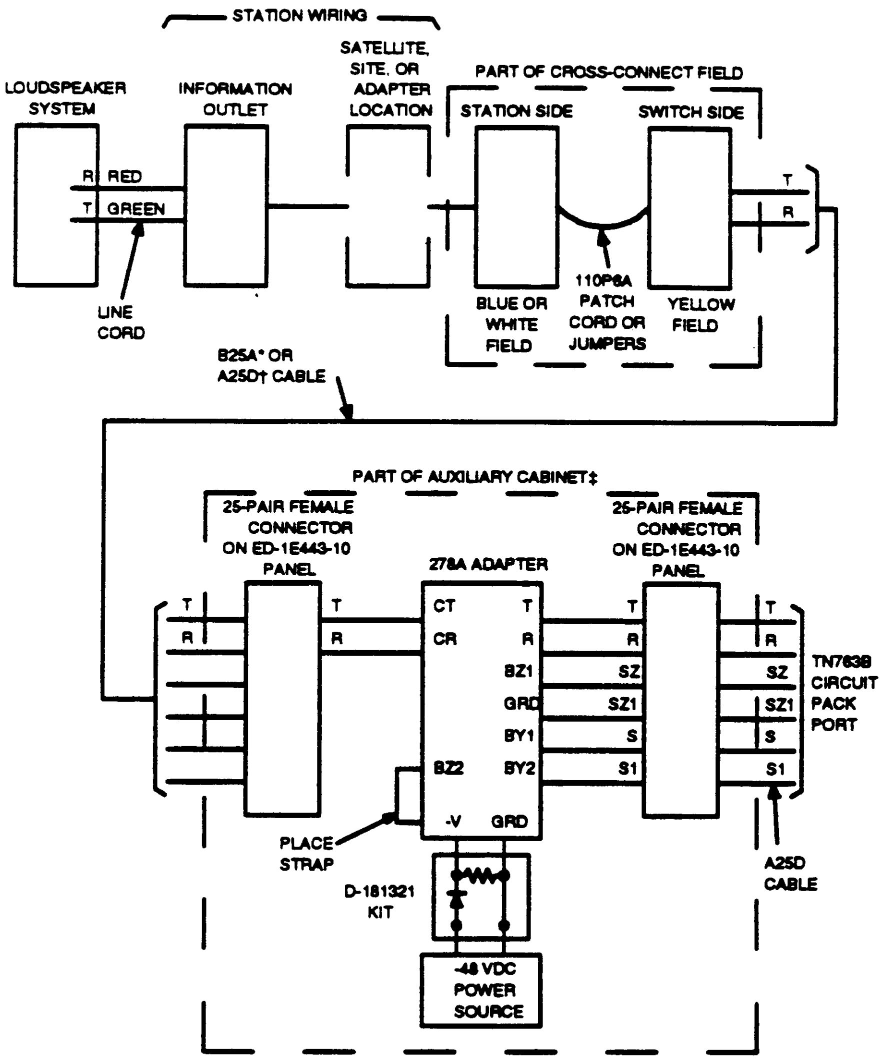
2. At cross-connect field, locate the connecting block assigned to the port selected in Step 1.
3. On the connecting block find the terminals (Table 3-G) dedicated to the port selected in Step 1.
4. On the connecting block place a strap between terminals S and SZ.
5. On the connecting block place a strap between terminals S1 and SZ1.
6. Install patch cord/jumper wires at cross-connect field.
7. Connect a two-pair line cord (modular plug at one end) from the information outlet to the loudspeaker system (Figure 6-2).
8. Install loudspeaker equipment per the manufacturer's instructions.
9. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

Installing Loudspeaker Paging Access—278A Paging Adapter

Requirements

Access to loudspeaker paging is provided by an information outlet. The switch side of the cross-connect field is connected to a 278A adapter. The 278A adapter is designed to operate on -24V DC. If it is to be operated on -48V DC, it must be modified with a D-181321 kit of parts. The adapter is mounted in the 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. Six leads (T, R, SZ, SZ1, S, and S1) connect the adapter to a TN763B auxiliary trunk circuit pack located in a port carrier. A TN763B circuit pack contains four ports.

Figure 6-3 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.



* USE WITH 66-TYPE CONNECTING BLOCK.
† USE WITH 110-TYPE TERMINAL BLOCK.
‡ AUXILIARY CABINET IS OPTIONAL
STRAP BZ2 TO -V.

FIGURE 6-3. Connections for Loudspeaker Paging—278A Adapter

Installation

Install loudspeaker paging access as follows:

1. Determine port assignment of paging zone(s) from Loudspeaker Paging Form:

EXAMPLE:	Port Number	B	02	01
		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 6-3).
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 (Figure 6-3).
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. Remove the cover from the 278A adapter, and install the adapter on a vertical surface.
7. Make connections from the 278A adapter to the 110-type wiring blocks on the ED-1E443-10 intra-connection panel (Figure 6-3).
8. On the 278A adapter:
   - Install a strap between terminal **BZ2** and terminal **-V.**
   - Connect a -24V DC, 40-ma power source to the **-V** and **GRD** terminals. If the auxiliary cabinet is providing the power, install a D-181321 kit of parts to reduce the -48V DC to -24V DC.
   - Install straps between terminals **E** and **F** and terminals **G** and **H** for the first 278A adapter.
   - Install option straps between terminals **C** and **D** on each 278A adapter.
9. Install the cover on the 278A adapter.
10. Install patch cord/jumper wires at cross-connect field.
11. Connect a two-pair line cord (modular plug at one end) from the information outlet to the loudspeaker system (Figure 6-3).
12. Install loudspeaker equipment per the manufacturer's instructions.
13. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

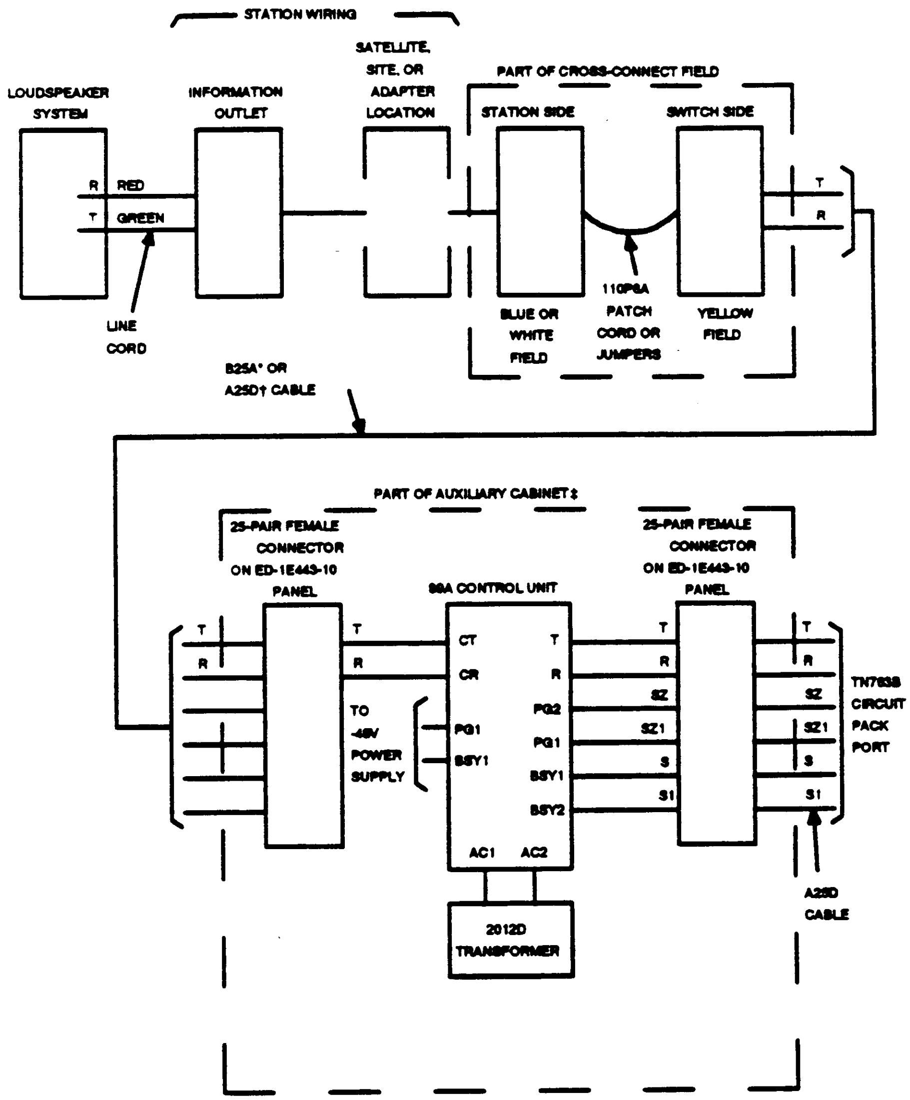
Installing Loudspeaker Paging Access—89A Control Unit

Requirements

Access to loudspeaker paging is provided by an information outlet. The switch side of the cross-connect field is connected to a 89A control unit. The control unit is mounted in the 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's ED-1E443-10 intra-connection panel. Six leads (T, R, SZ, SZ1, S, and S1) connect the 89A control unit to a TN763B auxiliary trunk circuit pack located in a port carrier. A TN763B circuit pack contains four ports.

Figure 6-4 shows the connections for the Loudspeaker Paging feature. The connections are for one zone. Repeat the connections for each paging zone.

The connections shown in Figure 6-4 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.



* USE WITH 66-TYPE CONNECTING BLOCK.
† USE WITH 110-TYPE TERMINAL BLOCK
‡ AUXILIARY CABINET IS OPTIONAL.

FIGURE 6-4. Connections for Loudspeaker Paging—89A Control Unit

Installation

Install loudspeaker paging access as follows:

1. Determine port assignment of paging zone(s) from Loudspeaker Paging Form:

EXAMPLE:	Port Number	B	02	01
		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 6-4).
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 6-4).
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. Remove the cover from the 89A control unit, and install the control unit.
7. Make connections from the 89A control unit to the 110-type wiring blocks on the ED-1E443-10 intra-connection panel (Figure 6-4).
8. On the 89A control unit:
   - Connect terminals **PG1** and **BSY1** to a -48V DC power supply.
   - Connect a 2012D transformer to terminals **AC1** and **AC2.**
9. Install the cover on the 89A control unit.
10. At the cross-connect field, install patch cord/jumper wires as required.
11. Install loudspeaker equipment per the manufacturer's instructions.
12. At the information outlet, connect a two-pair line cord (modular plug at one end) and route it to the loudspeaker equipment (Figure 6-4).
13. Plug the 2012D transformer into a 117-volt AC receptacle not under control of a wall switch.
14. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

Installing PagePac Paging System

General

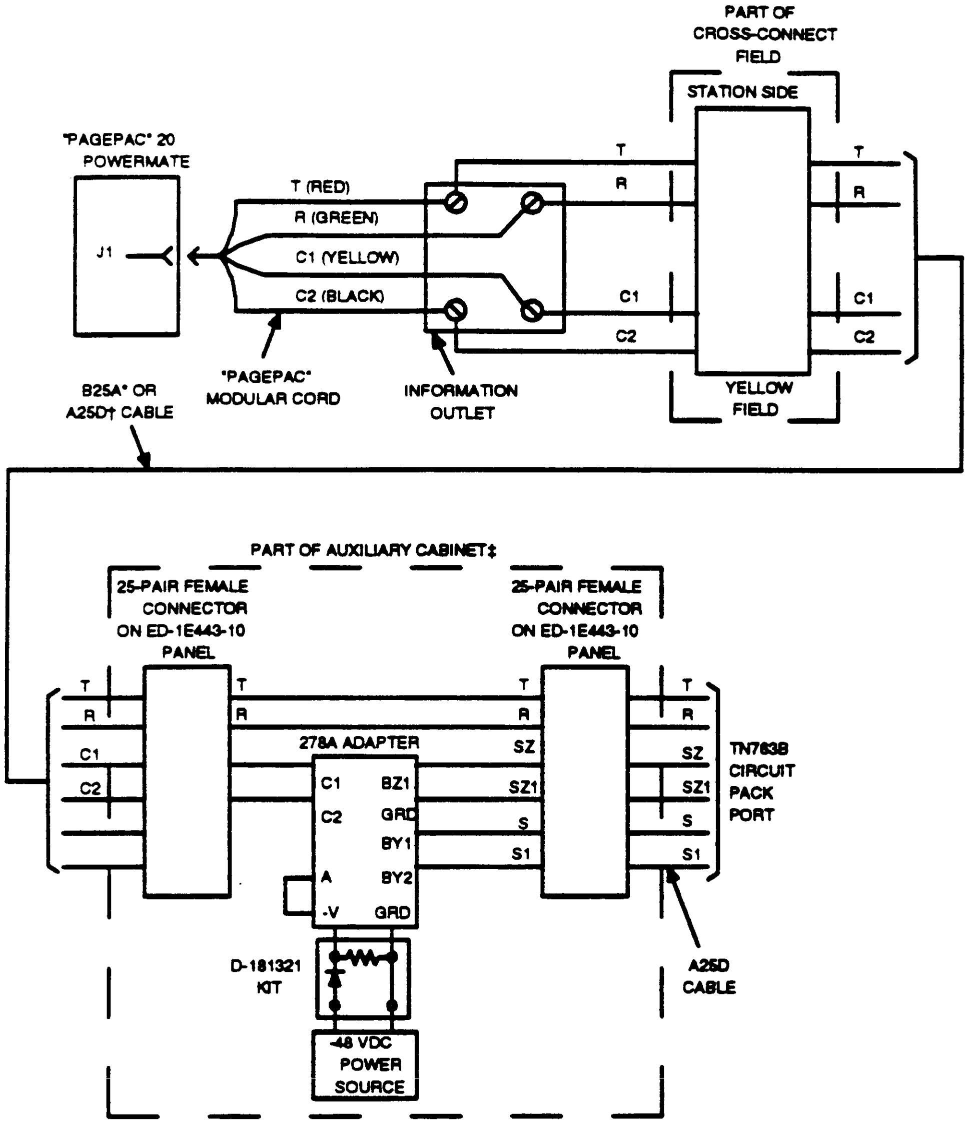
The PagePac paging systems use a single port to provide single- or multi-zone loudspeaker paging. A PagePac system may be used in addition to the standard loudspeaker paging and code-calling capabilities of the system.

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 6-5). It can also be equipped with a Zone-Mate 9 or 39 to provide multiple paging zones (Figure 6-6). If the PagePac 20 is used alone, a 278A adapter is required.



* USE WITH 66-TYPE CONNECTING BLOCK.
† USE WITH 110-TYPE CONNECTING BLOCK.
‡ AUXILIARY CABINET IS OPTIONAL
STRAP TERMINALS -V AND A.

FIGURE 6-5. Connections for PagePac 20 Without Zone-Mate 9 or 39

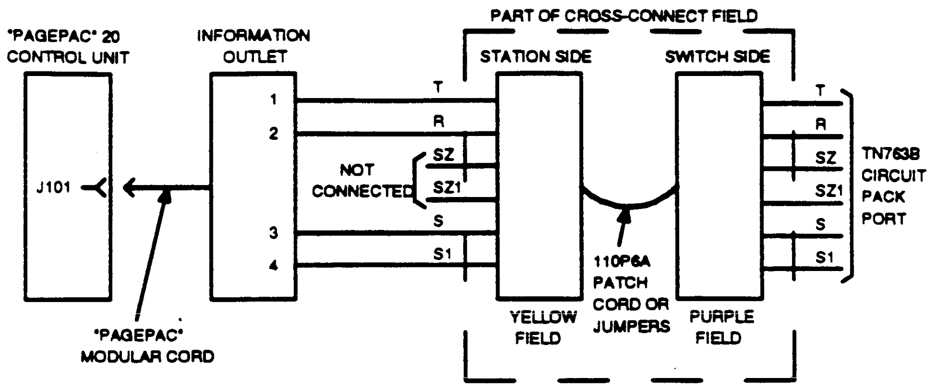


FIGURE 6-6. Connections for PagePac 20 With Zone-Mate 9 or 39

Installing PagePac VS

The PagePac VS is a 35-watt amplifier that provides up to three paging zones. The PagePac VS does not require a 278A adapter. Connect the PagePac VS as shown in Figure 6-7.

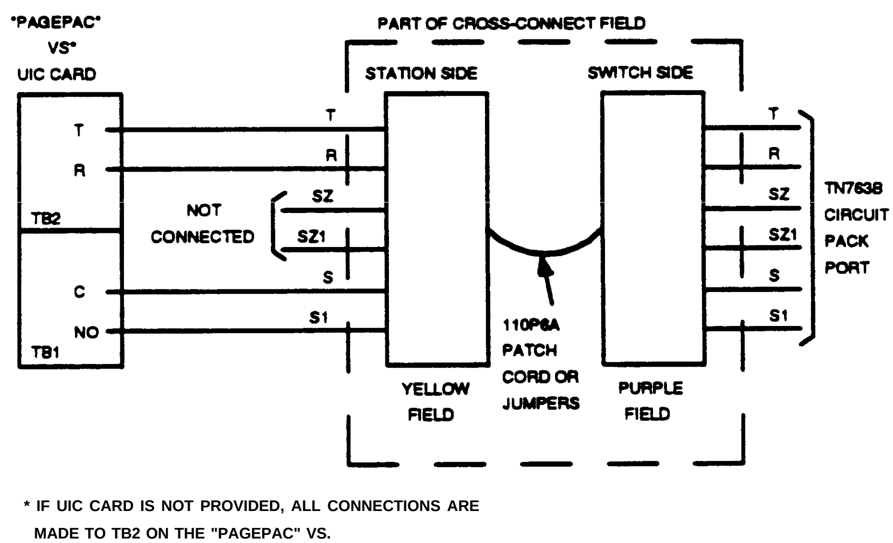
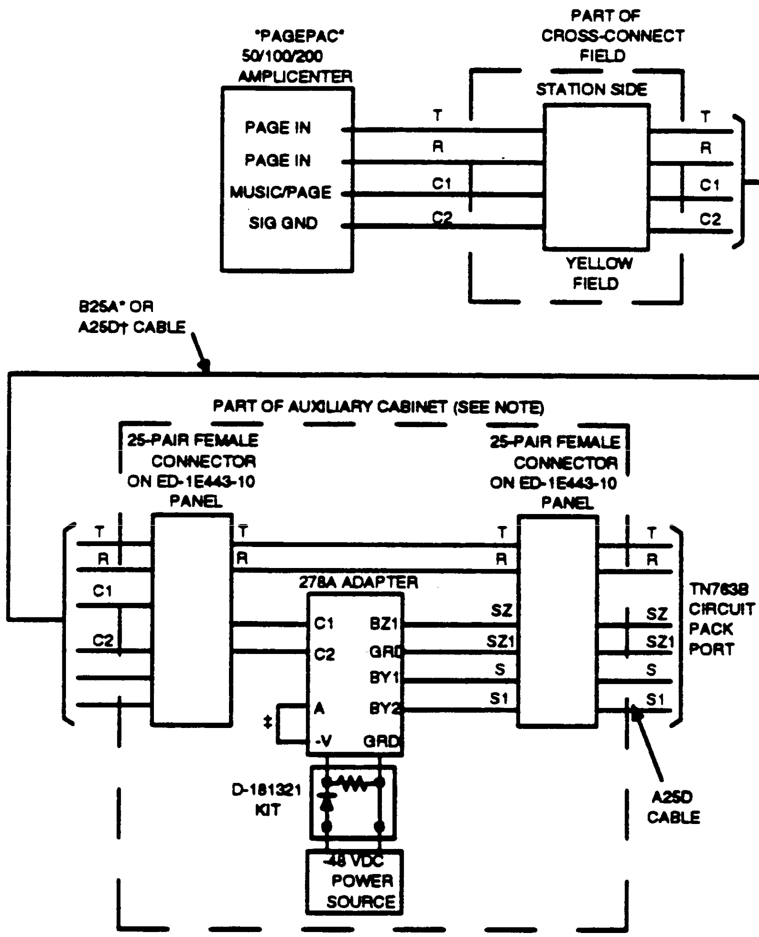


FIGURE 6-7. Connections for PagePac VS

Installing PagePac 50/100/200

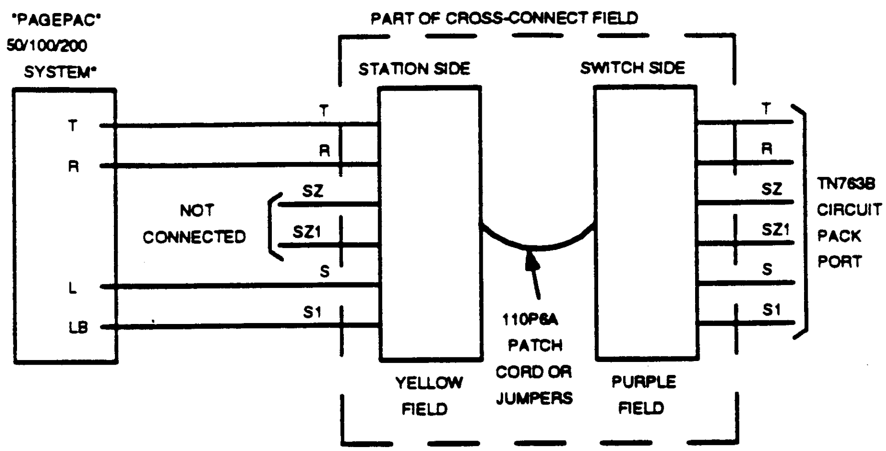
The 50/100/200 PagePac paging system mounts directly on a wall or on a 23-inch relay rack using the appropriate adapters. The unit provides three output wattages: 50, 100, and 200. The PagePac amplicenter can be used alone to provide a single zone of paging (Figure 6-8), or add-on units can be provided to create a paging system with up to 24 paging zones (Figure 6-9). If the PagePac 50/100/200 amplicenter is used alone, a 278A adapter is required.



NOTE: AUXILIARY CABINET IS OPTIONAL.

* USE WITH 66-TYPE CONNECTING BLOCK.
† USE WITH 110-TYPE TERMINAL BLOCK.
‡ STRAP TERMINALS -V AND A.

FIGURE 6-8. Connections for PagePac 50/100/200 Amplicenter Only



* OPTION C APPLIQUE FOR LOOP START WITH 24V BATTERY MUST BE PROVIDED.

FIGURE 6-9. 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 36A voice coupler. The 36A voice 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 auxiliary trunk circuit pack located in a port carrier. A TN763B circuit pack contains four ports.

Figure 6-10 shows the connections for the Music-on-Hold feature when the loudspeaker equipment is FCC registered. Figure 6-11 shows the connections for the Music-on-Hold feature when the loudspeaker equipment is not FCC registered.

The connections shown in Figures 6-10 and 6-11 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.

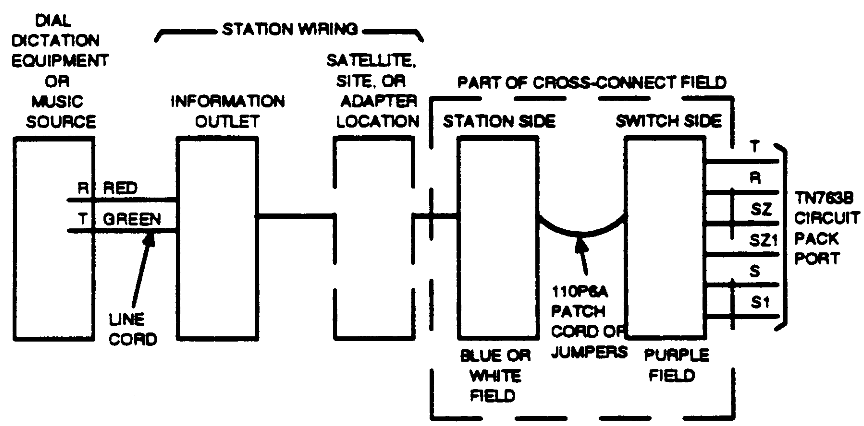
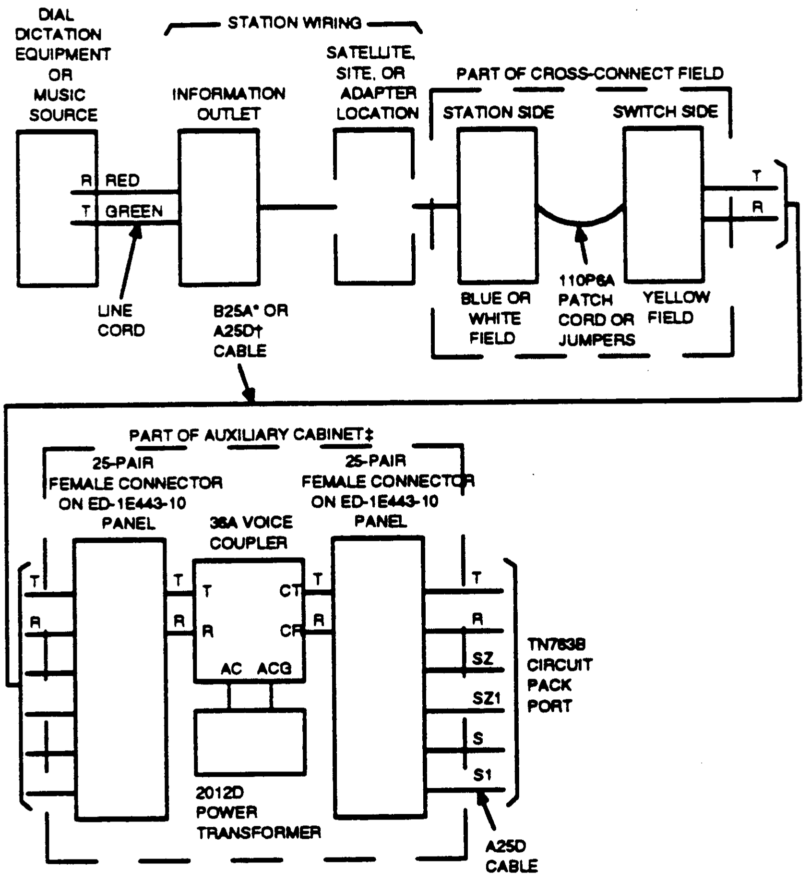


FIGURE 6-10. Connections for FCC Registered Equipment Provided for Music-on-Hold/Dial Dictation Equipment (Auxiliary Access)



* USE WITH 66-TYPE CONNECTING BLOCK.
† USE WITH 110-TYPE TERMINAL BLOCK.
‡ AUXILIARY CABINET IS OPTIONAL.

FIGURE 6-11. Connections for Non-FCC Registered Equipment Provided for Music-on-Hold/Dial Dictation 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 B 02 01

   Carrier Slot Circuit

2. Install music source per the manufacturers instructions.
3. Connect a line cord (modular plug at one end) from the information outlet to the music source (Figure 6-10).
4. Install patch cord/jumper wires at the cross-connect field.
5. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

Installation—Non-FCC Registered Music Source

Install a nonregistered FCC music source as follows:

1. Determine feature port assignment from Feature-Related System Parameters Form:

   EXAMPLE: Port Number B 02 01

   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 6-11).
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 (Figure 6-11).
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. Remove the cover from the 36A voice coupler, and install the voice coupler.
7. At the 36A voice coupler:
   - Make connections to the 110-type wiring blocks on the ED-1E443-10 intra-connection panel (Figure 6-11).
   - Connect a 2012D transformer to terminals **AC** and **ACG.**
   - Install the cover.

8. Install music source per the manufacturer's instructions.
9. Connect a two-pair line cord (modular plug at one end) from the information outlet to the music source (Figure 6-11).
10. Install patch cord/jumper wires at the cross-connect field.
11. Plug the 2012D transformer into a 117-volt AC receptacle not under control of a wall switch.
12. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

Installing Loudspeaker Paging With Background Music

Requirements

Figures 6-12 and 6-13 show the additional connections required when loudspeaker paging is installed with background music. Refer to the installation procedures for installing loudspeaker paging (278A adapter or 89A control unit) and music-on-hold.

Installation Using 278A Adapter

Connect the 278A adapter as follows:

1. On the 278A adapter (Figure 6-12), connect the music source to terminals **M1** and **M2.**
2. Adjust music source level.

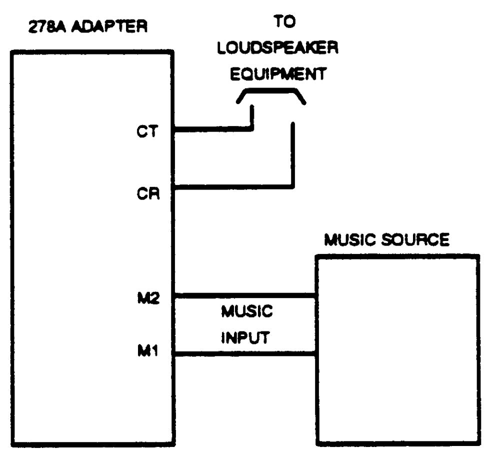


FIGURE 6-12. Loudspeaker Paging With Background Music Connections—278A Adapter

Installation Using 89A Control Unit

Connect the 89A control unit as follows:

1. On the 89A control unit (Figure 6-13), connect the music source to terminals **CMS1** and **CMS2.**
2. Adjust music source level.

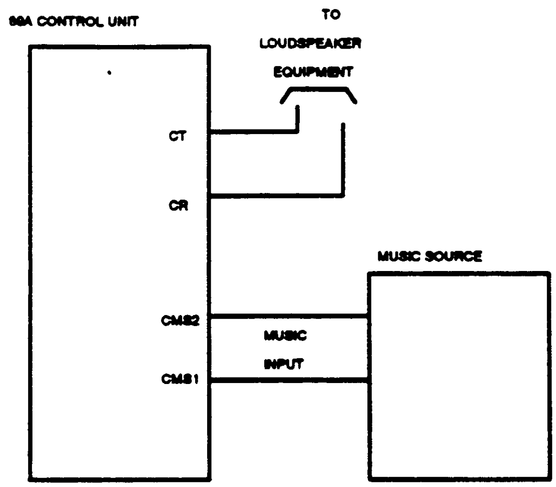


FIGURE 6-13. Loudspeaker Paging With Background Music Connections—89A Control Unit

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 36A voice coupler. The 36A 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 TN742 or TN769 analog line circuit pack located in a port carrier. The TN742 or TN769 circuit pack contains eight ports.

Figure 6-14 shows the connections for the Recorded Announcement feature when the recorded announcement equipment is FCC registered. Figure 6-15 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.

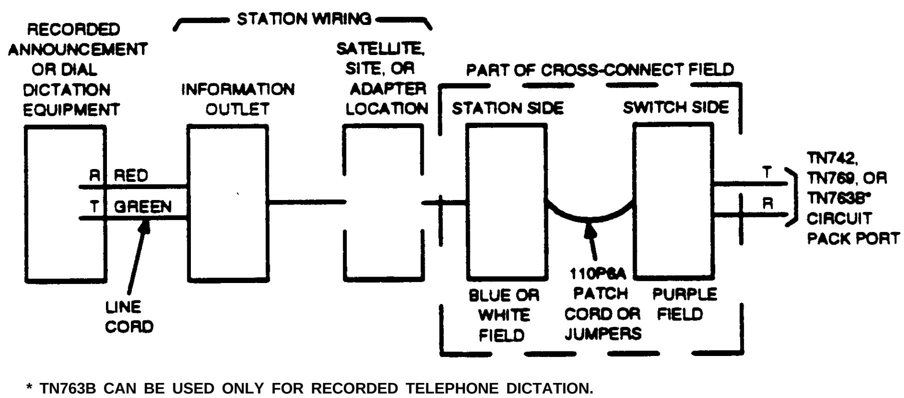
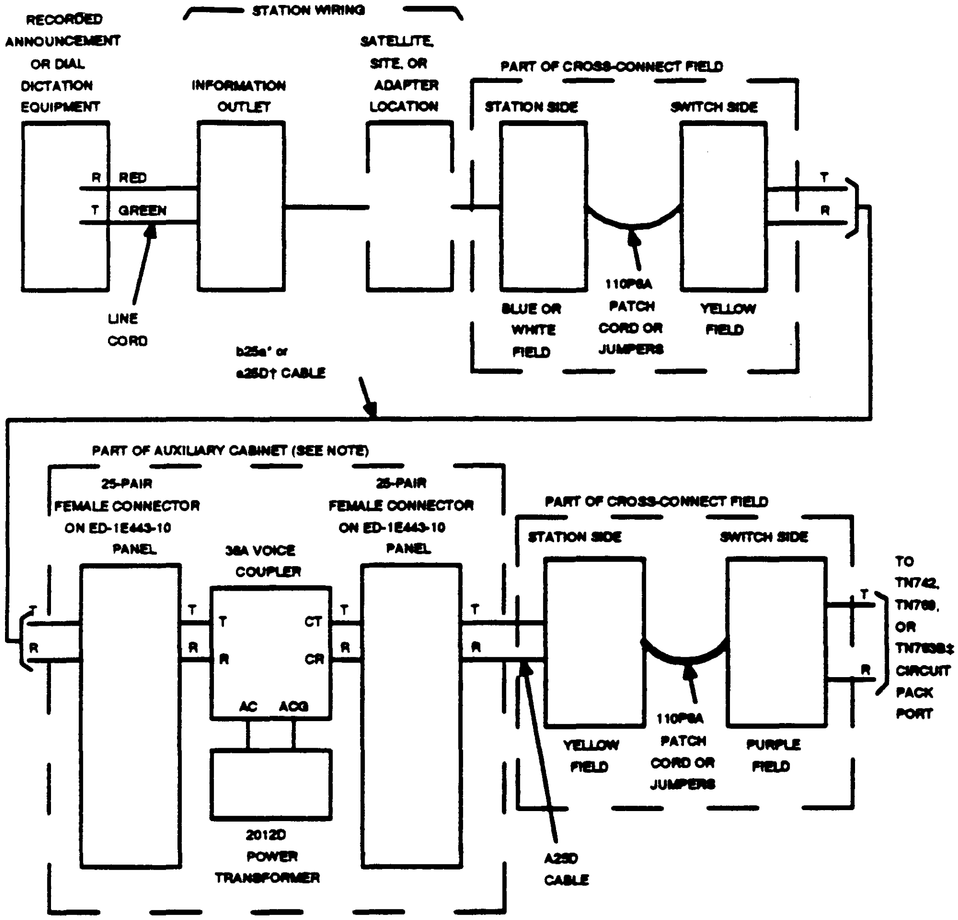


FIGURE 6-14. Connections for FCC Registered Equipment Provided for Recorded Announcement/Dial Dictation Equipment (Analog Access)



NOTE: AUXILIARY CABINET IS OPTIONAL

* USE WITH 66-TYPE CONNECTING BLOCK.

† USE WITH 110-TYPE TERMINAL BLOCK.

‡ TN763B CAN BE USED ONLY FOR RECORDED TELEPHONE DICTATION.

FIGURE 6-15. Connections for Non-FCC Registered Recorded Announcement/Dial Dictation Equipment (Analog Access)

Installation—FCC Registered Recorded Announcement Equipment

Install FCC registered recorded announcement equipment as follows:

1. Determine feature port assignment from Announcement Form:

EXAMPLE:	Port Number	B	02	01
		Carrier	Slot	Circuit

2. Install recorded announcement equipment per the manufacturer's instructions.
3. Connect a two-pair line cord (modular plug at one end) from the information outlet to the music source (Figure 6-15).
4. Install patch cord/jumper wires at cross-connect field.
5. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

Installation—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	B	02	01
		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 6-15).
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 6-15).
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. Remove the cover from the 36A voice coupler, and install the voice coupler.
7. At the 36A voice coupler:
   - Make connections to the 110-type wiring block on the ED-1E443-10 intra-connection panel (Figure 6-15).
   - Connect a 2012D transformer to terminals **AC** and **ACG.**
   - Install the cover.
8. Install recorded announcement equipment per manufacturer's instructions.

9. Plug the 2012D transformer into a 117-volt AC receptacle not under control of a wall switch.
10. Install patch cord/jumper wires at the cross-connect field.
11. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

Digital Announcer

Requirements

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 117-volt AC adapter furnished by Cook Electric. If the digital announcer is mounted inside the auxiliary cabinet, -48 volt DC power is provided by a rectifier mounted at the base of the cabinet. The alarm panel is mounted at the top of the cabinet.

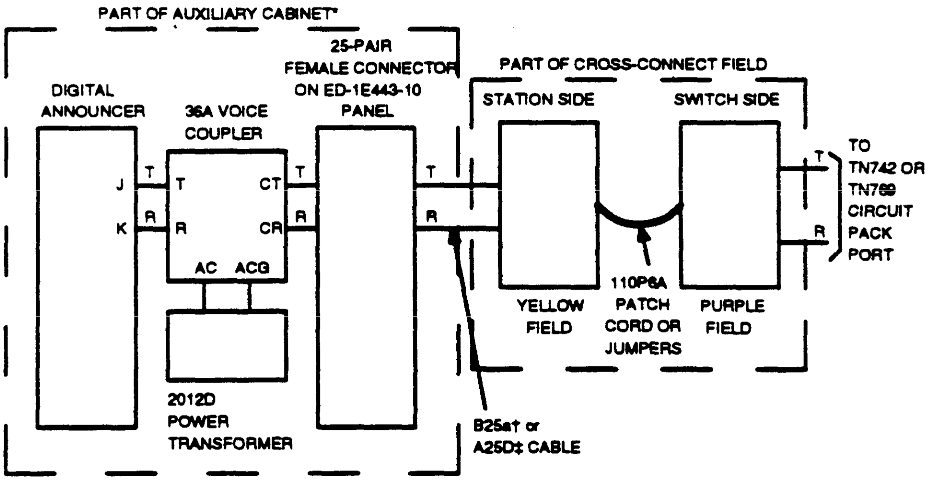
Note: If the TN750B announcement circuit pack is provided, it replaces all external announcement devices except the wake-up announcement unit.

Installation

Install the digital announcer as follows:

1. 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 6-16).
2. **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.
3. Connect a pair of wires from the alarm panel to the digital announcer connector **J2,** pins one and eight.
4. Remove the cover from the 36A voice coupler, and install the voice coupler.
5. At the 36A voice coupler:
   - Connect a pair of wires from terminals **T** and **R** to the digital announcer connector **J1,** pins J and K (Figure 6-16).
   - Make connections from terminals **CT** and **CR** to the 110-type wiring block on the ED-1E443-10 intra-connection panel (Figure 6-16).
   - Connect a 2012D transformer to terminals **AC** and **ACG.**
   - Install the cover.

6. Install patch cord/jumper wires at the cross-connect field.
7. Plug the 2012D transformer into a 117-volt AC receptacle not under control of a wall switch.
8. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*



* AUXILIARY CABINET IS OPTIONAL.
† USE WITH 66-TYPE CONNECTING BLOCK.
‡ USE WITH 110-TYPE TERMINAL BLOCK.

FIGURE 6-16. Connections for Digital Announcer Mounted in Auxiliary Cabinet

Installing Audichron Wake-Up Announcement System

Requirements

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 the TN742 or TN769 analog line circuit pack is provided by an information outlet. The TN742 and TN769 circuit packs contain eight ports. Access to the TN763B auxiliary trunk circuit pack is by the T and R leads through the cross-connect field. All four ports of the circuit pack are connected to the announcement unit.

Figures 6-17 and 6-18 show the connections for the Audichron wake-up announcement system. Figure 6-19 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	B	02	01
		Carrier	Slot	Circuit

2. Connect a two-pair line cord (modular plug on one end) from the information outlet (Figure 6-17) to the announcement unit.
3. Install patch cord at cross-connect field (Figure 6-17).
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 (Figure 6-18).
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 as shown in Figure 6-18.
10. Connect a -48 volt DC power source to the announcement unit (Figure 6-19). The power source must be supplied locally and be rated at -48 volt DC at 1.2 amps.
11. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

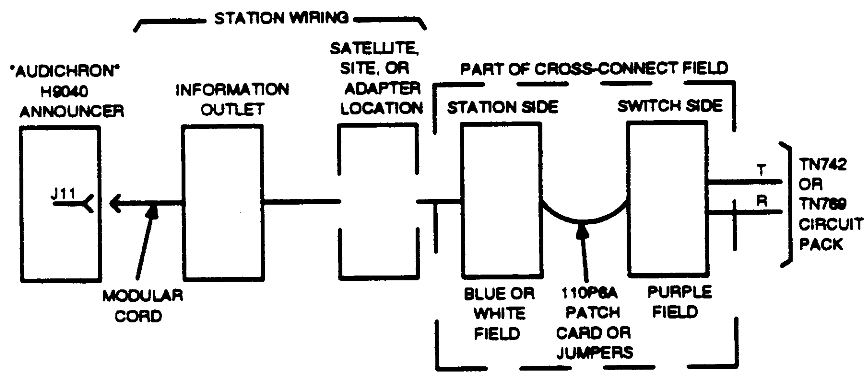
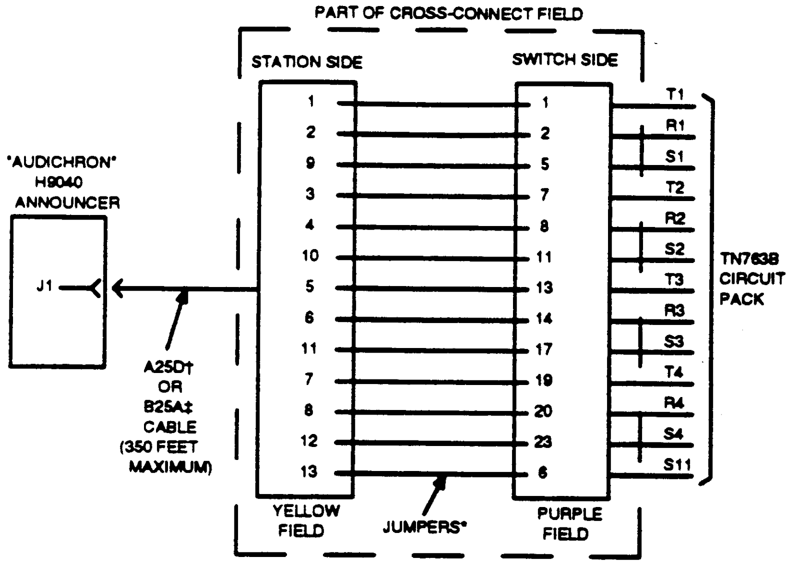


FIGURE 6-17. Connections for Analog Line Port to Wake-Up Announcement Unit

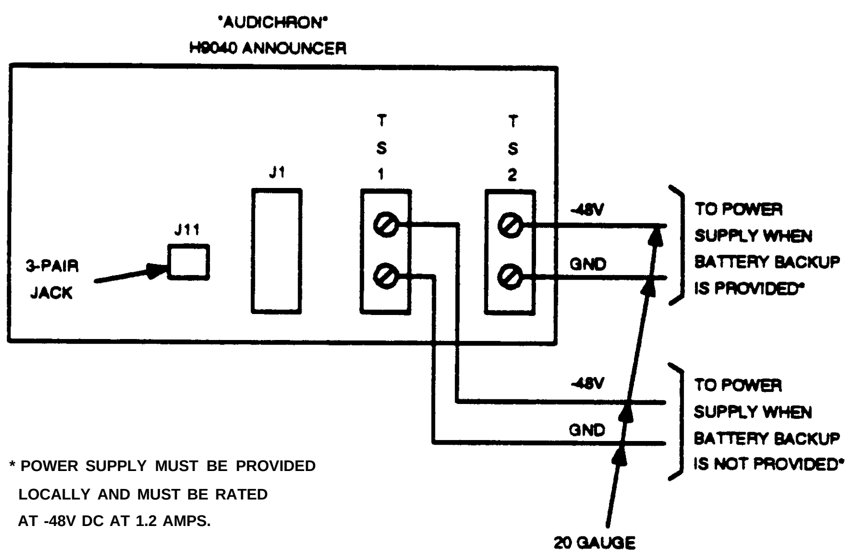


* TERMINAL NUMBERS SHOWN ARE CONNECTING BLOCK/TERMINAL BLOCK NUMBERS.

† USE WITH 110-TYPE TERMINAL BLOCKS.

‡ USE WITH 66-TYPE CONNECTING BLOCKS.

FIGURE 6-18. Connections for Auxiliary Trunk Circuit Pack to Wake-Up Announcement Unit



* POWER SUPPLY MUST BE PROVIDED LOCALLY AND MUST BE RATED AT -48V DC AT 1.2 AMPS.

FIGURE 6-19. Connections for Power Unit to Wake-Up Announcement Unit

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 (Figures 6-14 and 6-15) and the same as Music-on-Hold for auxiliary trunk access (Figures 6-10 and 6-11).

The port assignment for the feature is on the Station Record Form when a TN742 or TN769 circuit pack is used. The port assignment for the feature is on the Trunk Group Form For Customer-Provided Equipment (CPE) when a TN763B 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 TN754 digital line circuit packs. 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 6-20)

1. Determine port assignment of 3270A or 3270T Data Module from Data Module Form:

EXAMPLE:	Port Number	B	02	01
		Carrier	Slot	Circuit

2. Connect a four-pair line cord (modular plug on both ends) from the information outlet to the data module (Figure 6-20).
3. Install patch cord/jumper wires at cross-connect field.
4. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

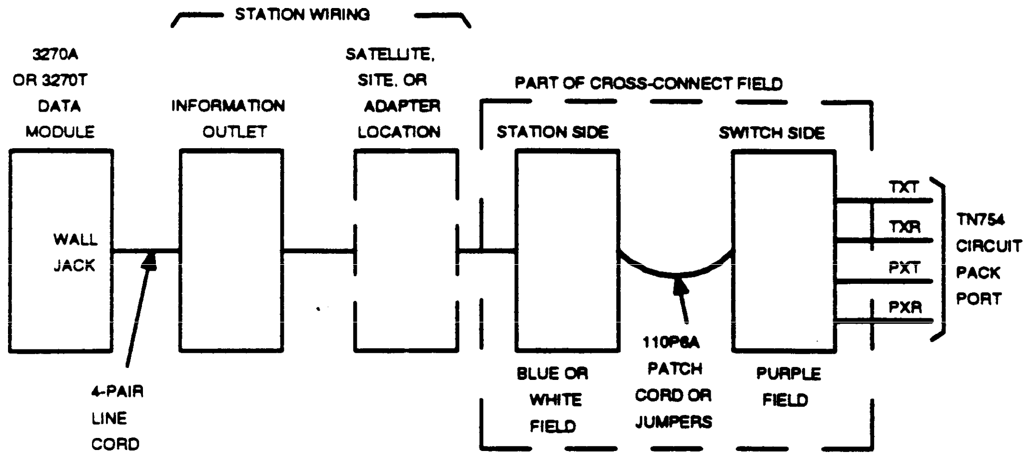


FIGURE 6-20. Connections for 3270A or 3270T Data Module

Connection to 3270C Data Module (Figure 6-21)

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 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 on the rear of the data module.
7. Install patch cord/jumper wires at cross-connect field.
8. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

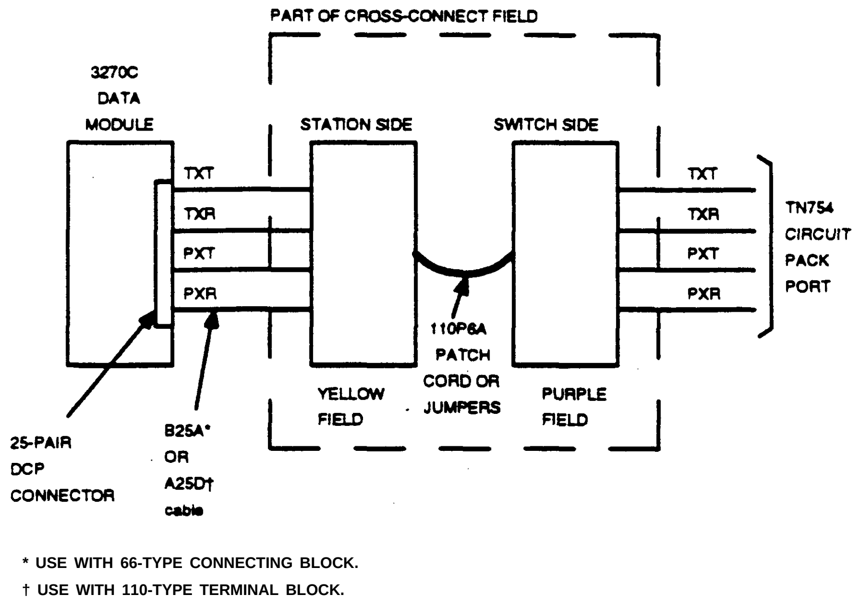


FIGURE 6-21. Connections for 3270C Data Module

Installing Processor Data Modules (PDMs)

Requirements

The interface between the system and many types of data equipment is provided by a TN754 digital line circuit pack connected to a PDM. The following types of data equipment can be connected by a PDM:

- AUDIX/Adjunct
- AUDIX/Terminal
- CMS
- DSC
- PMS
- Journal Printer
- Customer-provided terminals and host computers
- SMDR

PDMs are connected to TN754 digital line circuit packs and are mounted individually or in a 71A data mounting. 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 TN754 digital line circuit pack. The PDMs also can be mounted and connected individually through the cross-connect field.

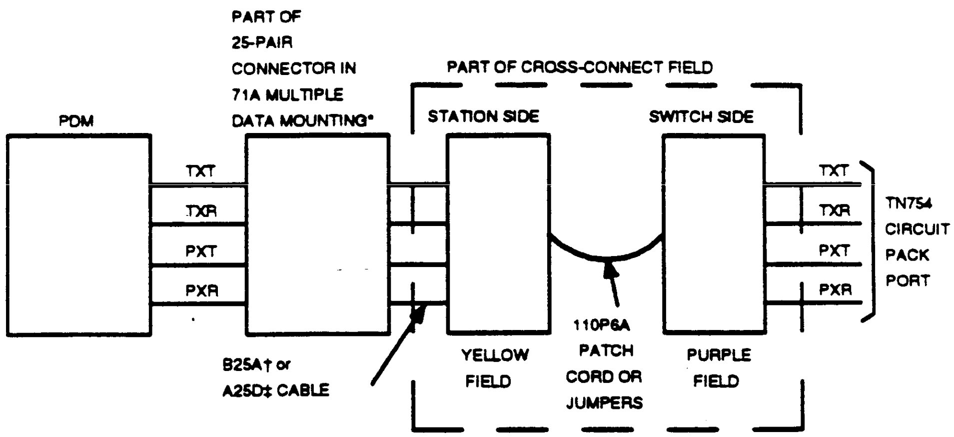
Installation

Connection to Data Mounting (Figure 6-22)

1. From the Data Module Form, determine port assignment of PDMs:

EXAMPLE:	Port Number	B	02	01
		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 6-22).
6. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*



* DATA MOUNTING IS LOCATED IN AUXILIARY CABINET, IF PROVIDED.
† USE WITH 66-TYPE CONNECTING BLOCK.
‡ USE WITH 110-TYPE TERMINAL BLOCK.

FIGURE 6-22. Connections for PDMs in Data Mounting

Connection to Individual PDMs (Figure 6-23)

1. Determine port assignment of PDM from Data Module Form:

EXAMPLE:	Port Number	B	02	01
		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 *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

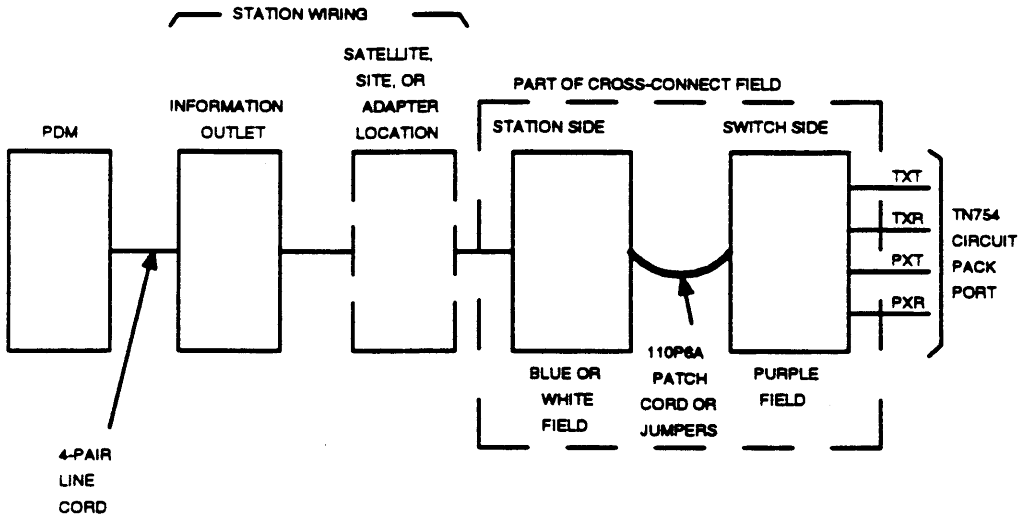


FIGURE 6-23. Connections for Individual PDMs

Installing AUDIX Interface

Requirements

The interface between the switch and the 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 either the G1 or G3i switches. The DEFINITY G1 or G3i uses the processor interface (TN765) as the required control circuit pack.

Connections between the AUDIX interface and the switch are covered in the section for installing PDMs (Figures 6-22 and 6-23). The AUDIX requires up to 16 analog circuit pack ports from the switch to be connected through the cross-connect field to the AUDIX. Refer to Table 3-H for port circuit pin numbers.

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.*

Installing CMS Interface

Requirements

The interface between the switch and the CMS is through PDMs. The DEFINITY G1 or G3i uses the processor interface (TN765) as the required control circuit pack.

Connections between the CMS interface and the switch is covered in the section for installing PDMs (Figures 6-22 and 6-23).

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.*

Installing DCS

Requirements

The DCS link to the switch can be provided by either PDMs or a DS1 tie trunk. The DEFINITY G1 or G3i uses the processor interface (TN765) as the required control circuit pack.

Connections for the DCS link using PDMs is covered in the section for installing PDMs (Figures 6-22 and 6-23). 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.

If the DCS link is to be provided by a DS1 tie trunk, refer to “Installing DS1 Tie Trunks” earlier in this chapter.

Installing PMS Interface

Requirements

The interface between the switch and the customers PMS is through PDMs. Connections between the PMS interface and the switch is covered in the section for installing PDMs (Figures 6-22 and 6-23).

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 6-24).

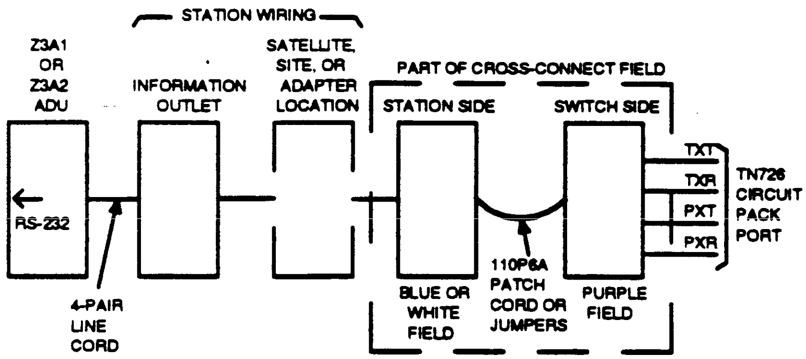


FIGURE 6-24. Connections to ADU for Data Terminal Equipment

Installing Customer-Provided Terminal Using ADUs

Requirements

The interface between the switch and the customer's data terminals and host computer is through PDMs. Refer to section on installing PDMs for details (Figures 6-22 and 6-23).

The customer's asynchronous data terminals can be connected through a Z3A ADU to a TN726 data line circuit pack (Figure 6-24). Normally, the ADU is powered from the connected data terminal. The ADU also can 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 *Z23A Asynchronous Data Unit User's Manual, 555-401-701.*

Installation

1. Determine ADU port assignment from Data Module Form:

EXAMPLE:	Port Number	B	02	01
		Carrier	Slot	Circuit

2. Connect the EIA-232 plug on the ADU to the data terminal.
3. Connect a four-pair line cord (modular plug on both ends) from the information outlet to the ADU (Figure 6-24).
4. Install patch cord/jumper wires at cross-connect field.
5. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

Installing SMDR Interface

The interface between the switch and SMDR is through a PDM, trunk data module (TDM), or 212-type modem. For connections between the switch and the PDM or TDM, refer to the section on installing PDMs (Figures 6-22 and 6-23). Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

The connection between the switch and the 212-type modem is the same as for external ringing (Figure 5-40). 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. Administer per *DEFINITY® Communications System Generic 1—Implementation, 555-204-655* or *DEFINITY® Communications System Generic 3i—Implementation, 555-230-650* and *DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports, 555-200-500.*

A TN726 data line circuit pack also may 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 6-24).

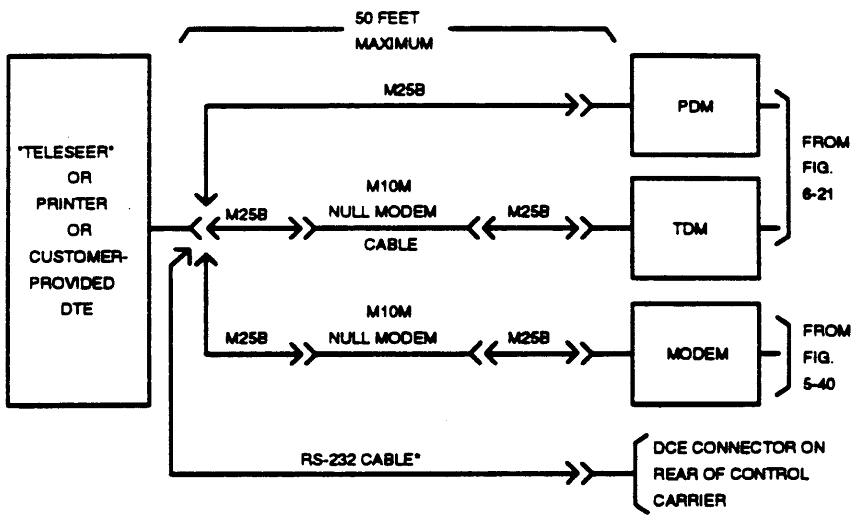
The SMDR output device can be connected directly to the DCE connector on the rear of the control carrier. This connection is made using a EIA-232 cable. A PDM or TDM, modem, or ADU is required (Figure 6-25 or 6-26).

Interface Cabling to SMDR Output Device

Figure 6-25 shows the cabling required to connect the TELESEER® unit, printer, or customer-provided DTE for an AC-powered single- or multi-carrier cabinet. The M25B/EIA-232 cable connects to the **P1** connector on the TELESEER unit.

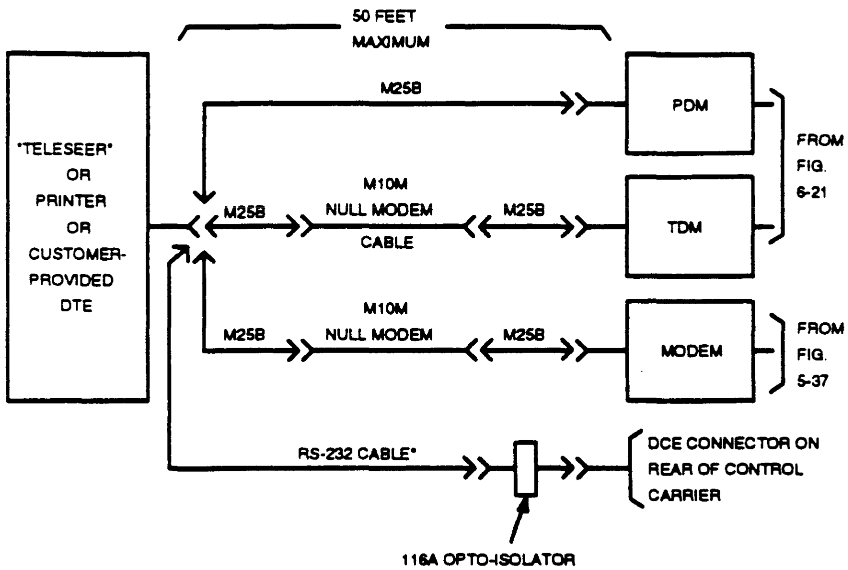
All peripherals, connected to a DC-powered switch through the asynchronous EIA-232 interface on the PPN A or B carrier or the EPN maintenance circuit pack, require an isolator. The isolator is plugged into the EIA-232 interface connector. The cable from the peripheral equipment is then plugged into the opto-isolator. Figure 6-26 shows the connections for a DC-powered multi-carrier cabinet.

The apparatus code for the isolator is 116A and the Comcode is 106-005-242.



* PDM, TDM, OR MODEM IS NOT REQUIRED
FOR DIRECT CONNECTION TO THE DCE CONNECTOR.

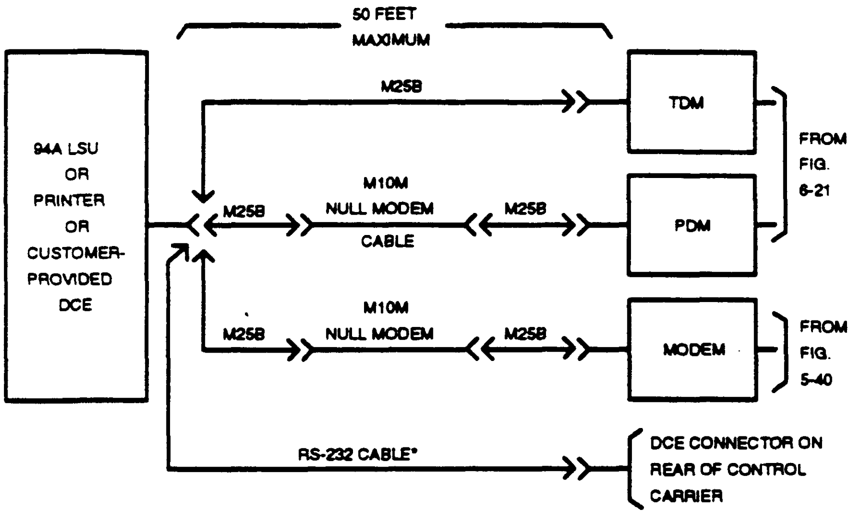
FIGURE 6-25. SMDR Cabling for Data Terminal Equipment From AC-Powered Single- or Multi-Carrier Cabinet



* PDM TDM, OR MODEM IS NOT REQUIRED
FOR DIRECT CONNECTION TO THE DCE CONNECTOR.

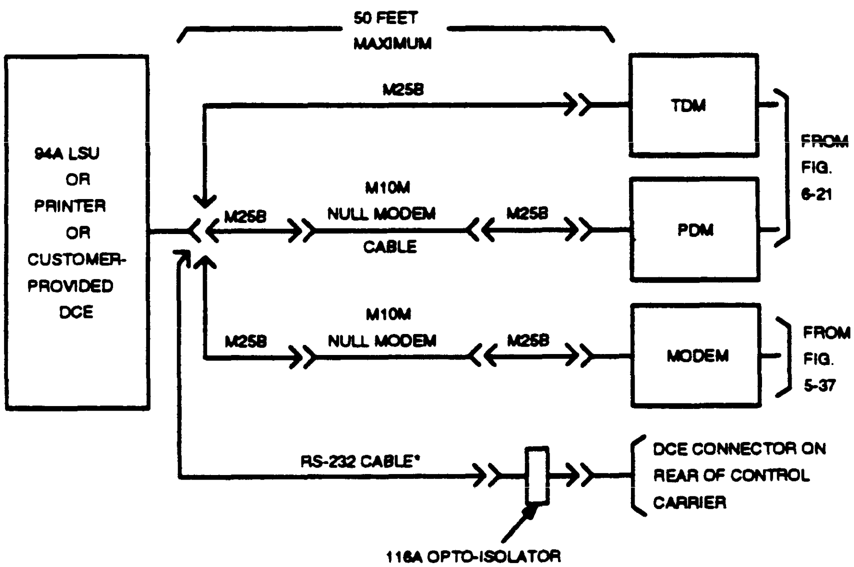
FIGURE 6-26. SMDR Cabling for Data Terminal Equipment From DC-Powered Multi-Carrier Cabinet

Figure 6-27 shows the cabling required to connect the 94A LSU, a printer, or customer-provided DCE for an AC-powered single- or multi-carrier cabinet. Figure 6-28 shows the connections for a DC-powered multi-carrier cabinet. The M25B/EIA-232 cable connects to the **C1** connector on the 94A LSU.



* TDM, PDM, OR MODEM IS NOT REQUIRED
FOR DIRECT CONNECTION TO THE DCE CONNECTOR.

FIGURE 6-27. SMDR Cabling for On-Premises Data Communications Equipment From AC-Powered Single- or Multi-Carrier Cabinet



* TDM, PDM, OR MODEM IS NOT REQUIRED
FOR DIRECT CONNECTION TO THE DCE CONNECTOR.

FIGURE 6-28. SMDR Cabling for On-Premises Data Communications Equipment From DC-Powered Multi-Carrier Cabinet

Figure 6-29 shows the connections for a remote host connected by a private line.

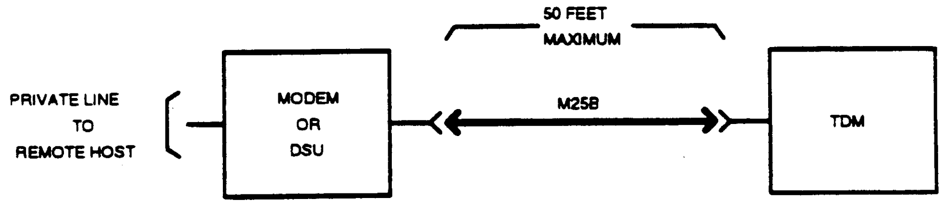


FIGURE 6-29. SMDR Cabling for a Remote Host

PDM, TDM, 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:

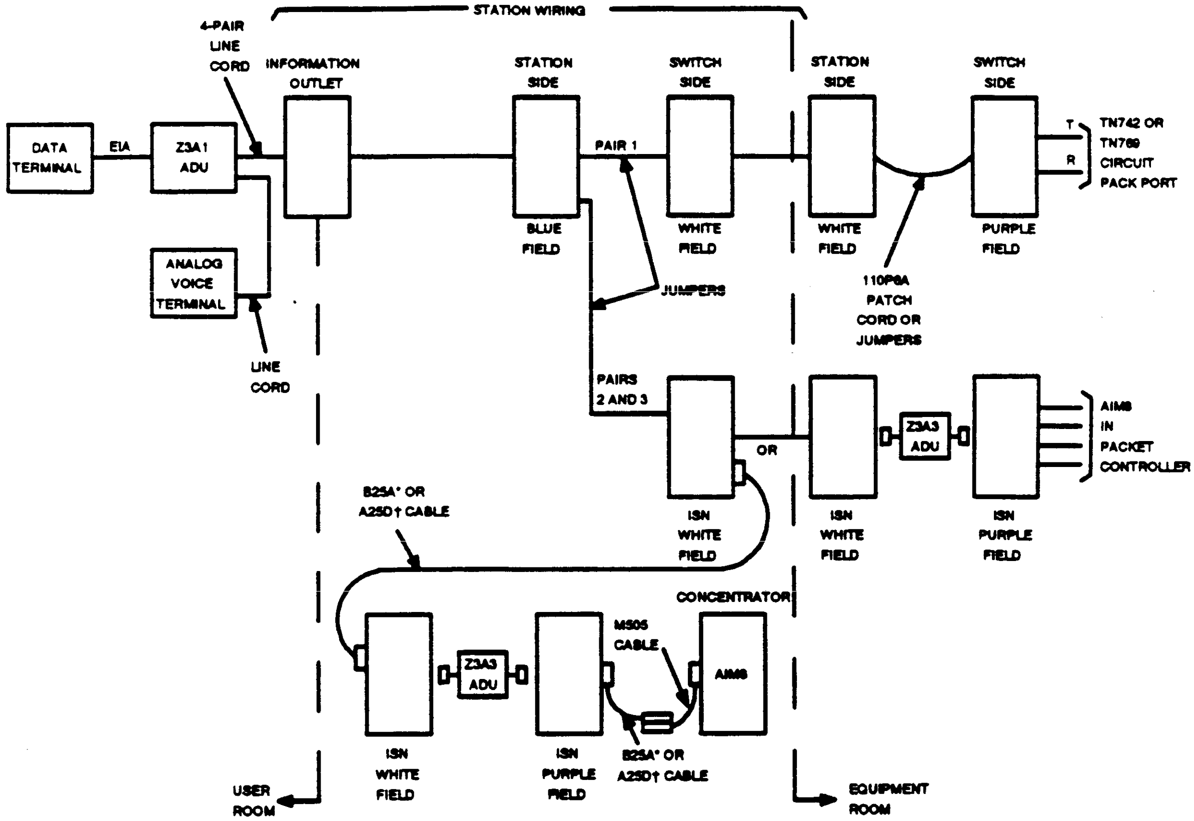
Switch	Setting
AL	OFF
ST	OFF
RDL	OFF
DL	OFF
HS	ON

Installing ISN Interface

The ISN interconnects computers and terminals on a customer's premises. When an ISN and a G1 or G3i switch are collocated, voice and data can be shared at the same information outlet as shown in Figure 6-30.

The voice pair that connects to a TN742 or TN769 analog line circuit pack port occupies the first pair of the information outlet. The ISN data pairs occupy the second and third pairs of the information outlet. The voice and data pairs can be separated as shown in Figure 6-28. 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 eight-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 also can 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.*



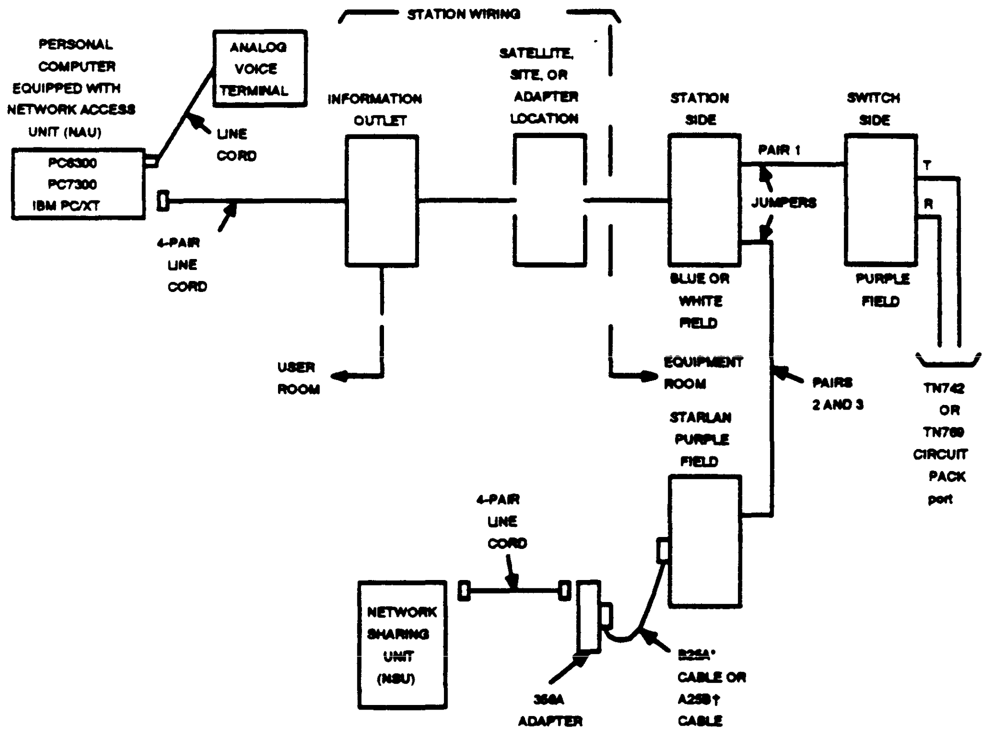
* USE WITH 66-TYPE CONNECTING BLOCK.
† USE WITH 110-TYPE TERMINAL BLOCK.

FIGURE 6-30. System Voice Circuits and ISN Data Circuits Sharing an Information Outlet

Installing StarLAN Network Interface

The StarLAN Network interconnects small quantities of personal computers, data terminals, resource units, and printers. When a StarLAN Network and a G1 or G3i switch are collocated, voice and data can be shared on the same information outlet as shown in Figure 6-31.

The voice pair that connects to a TN742 or TN769 analog line circuit pack port occupies the first pair of the information outlet. 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.



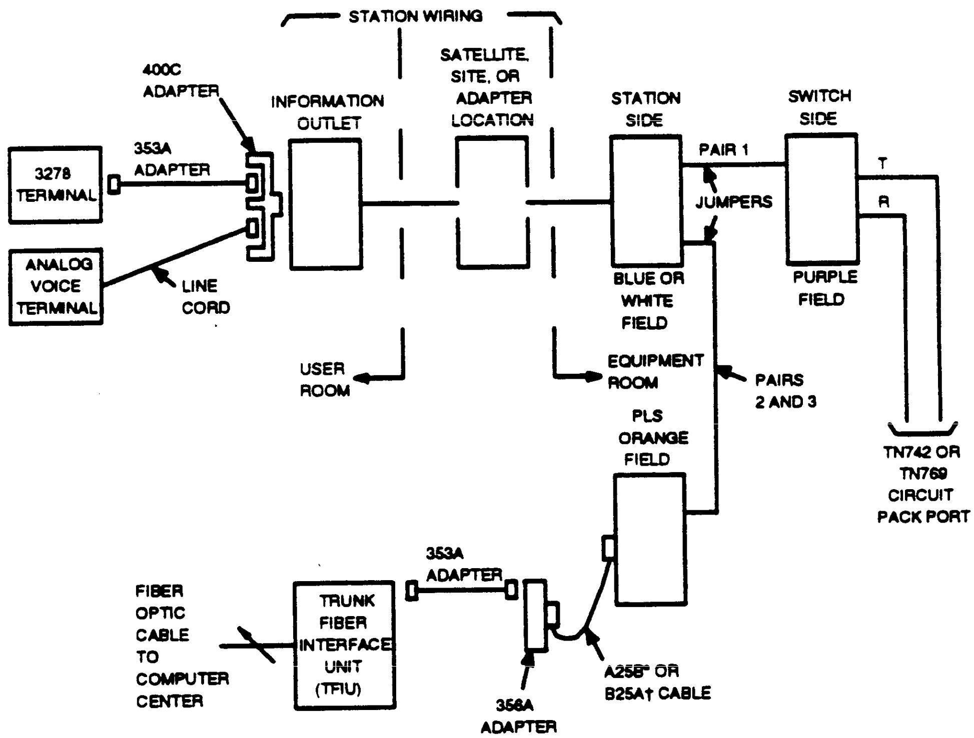
*USE WITH 110-TYPE TERMINAL BLOCK.
†USE WITH 66-TYPE CONNECTING BLOCK.

FIGURE 6-31. System Voice Circuits and StarLAN Network Data Circuits Sharing an Information Outlet

Installing Premises Lightwave System (PLS) Interface

The PLS is used to connect IBM 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 or G3i switch are collocated, voice and data can be shared on the same information outlet as shown in Figure 6-32.

The voice pair that connects to a TN742 or TN769 analog line circuit pack port occupies the first pair of the information outlet. 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.

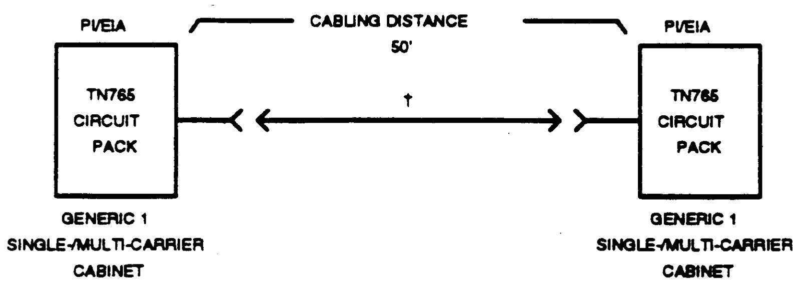


* USE WITH 66-TYPE CONNECTING BLOCK.
† USE WITH 110-TYPE TERMINAL BLOCK.

FIGURE 6-32. System Voice Circuits and PLS Data Circuits Sharing an Information Outlet

Installing Processor Interface/EIA Port

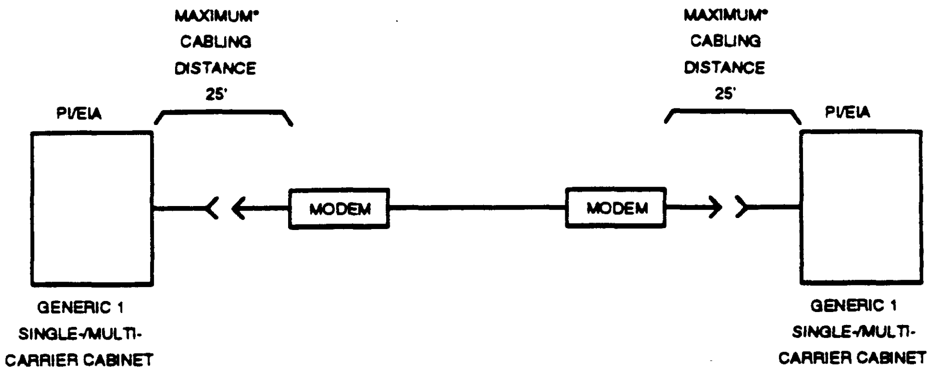
The processor interface circuit pack (TN765) provides a single EIA port that allows access to one data link. Figures 6-33 and 6-34 show direct connections and modem connections, respectively.



* THE MAXIMUM DISTANCE LIMITATION FOR TWO GENERIC 1 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 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 6-33. Direct Connections for Processor Interface/EIA Ports Between Two G1 or G3i Multi-Carrier or Single-Carrier Cabinets



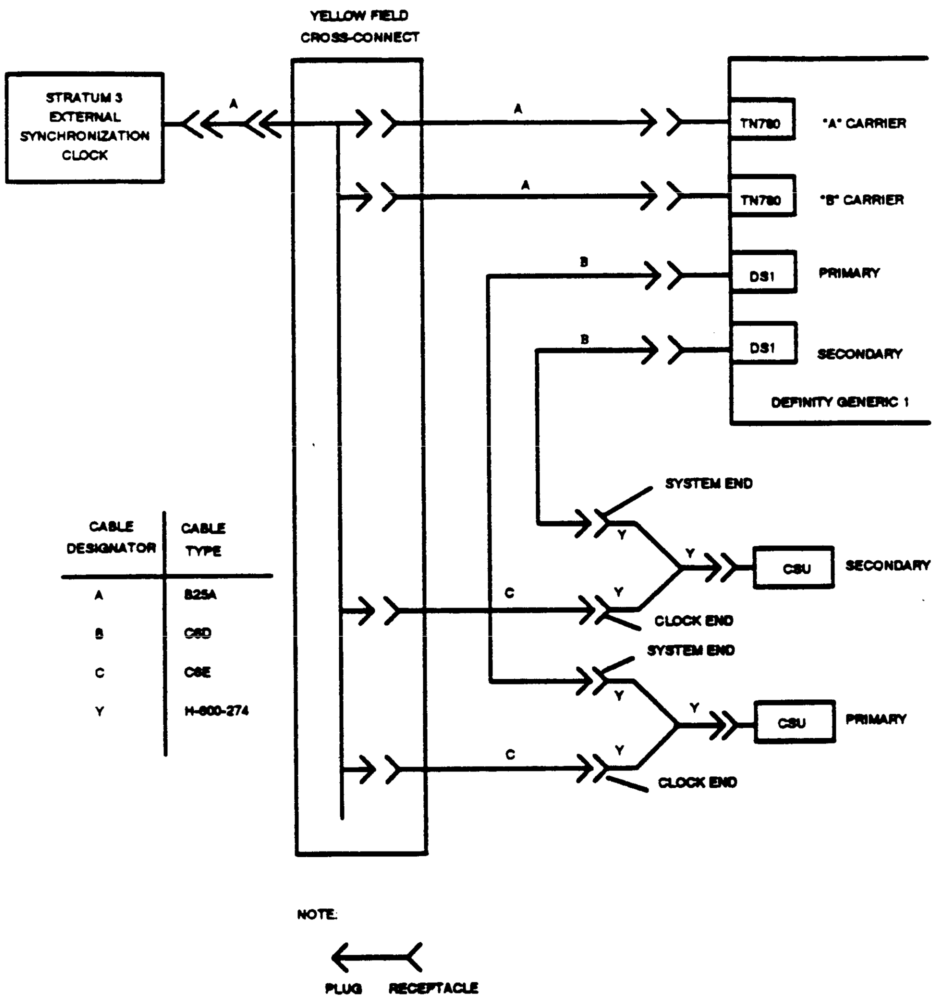
* WHEN THE CONNECTION FROM A GENERIC 1 SINGLE-/MULTI-CARRIER CABINET IS TERMINATED ON A MODEM, THE MAXIMUM DISTANCE BETWEEN THE CABINET AND THE MODEM IS DETERMINED BY CAPACITIVE LOAD. THE MODEM SHOULD BE CONNECTED TO THE CABINET BY THE SHORTEST POSSIBLE CABLE NOT TO EXCEED 25 FEET.

FIGURE 6-34. Modem Connections for Processor Interface/EIA Ports Between Two G1 or G3i Multi-Carrier or Single-Carrier Cabinets

Installing Stratum 3 External Synchronizing Clock

This guide provides the cross-connect information required to install the Stratum 3 clock. The procedures for installing the clock in an initial installation are in the *DEFINITY® Communications System Generic 1 and Generic 3i—Installation and Test, 555-230-104.* The procedures to add a Stratum 3 clock to an existing system are in the *DEFINITY® Communications System Generic 1 and Generic 3i—Upgrades and Additions, 555-204-106.*

Figure 6-35 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 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.



SIMPLEX PBX INCLUDES TN780 "A" CARRIER.
DUPLEX PBX INCLUDES TN780 "A" AND "B" CARRIERS.

FIGURE 6-35. Connections for the Stratum 3 External Synchronization Clock

The C6D cable connects the system end of the "Y" cable to the DS1 circuit pack. Although the default length of the cable shipped with the clock is 25 feet, you may order the C6D cable up to 500 feet in length.

ORDERING INFORMATION

Description	Length(ft)	Comcode
C6D Connector Cable	25	104-307-368
C6D Connector Cable	50	104-307-376
C6D Connector Cable	100	104-307-384
C6D Connector Cable	300	104-307-392
C6D Connector Cable	500	104-307-400

The C6E cable connects the clock end of the "Y" cable to the yellow field cross-connect. Although the default length of the cable shipped with the clock is 25 feet, you may order the C6E cable up to 500 feet in length.

ORDERING INFORMATION

Description	Length(ft)	Comcode
C6E Connector Cable	25	104-307-418
C6E Connector Cable	50	104-307-426
C6E Connector Cable	100	104-307-434
C6E Connector Cable	300	104-307-442
C6E Connector Cable	500	104-307-459

Stratum 3 Clock Wiring Installation Procedure

1. Connect the B25A (A) 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 6-35).
2. Connect the CSU plug end of the H-600-274 (Y) cable to the primary CSU. Run and connect a C6D (B) cable from the DS1 connector panel slot on the switch cabinet to the connector on the "SYSTEM" end of the "Y" cable (Figure 6-35).
3. Run and connect a C6E (C) cable from the “CLOCK” end of the “Y” cable to the factory connectorized cross-connect module in the yellow field (Figure 6-35).
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 (see the following table) for the Simplex PBX.

TABLE 6-A. Cross-Connections Block Positions for Simplex 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
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 (see the following table) for the Duplex PBX.

TABLE 6-B. 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)			**Lead Designation**	**Lead Color**	**Connecting Block Terminal**
RREF2	W-O	3		V-O	43			
TREF2	O-W	4		O-V	44			
			To: TN780 Carrier A			**To: TN780 Carrie 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	EXSYN1R	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 (see the previous table).

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, 555-204-655* or *DEFINITY Communications® System Generic 3i—Implementation, 555-230-650.*

Installing the CallVisor™ Adjunct-Switch Application Interface (ASAI) Link

Requirements

The CallVisor ASAI is connected to a TN556 BRI circuit pack port.

Refer to the appropriate vendor's documentation for connecting the CallVisor ASAI to the TN556 circuit pack.

Note: The CallVisor ASAI cannot support multi-drop configurations, meaning CallVisor ASAI requires a dedicated BRI port and can accept only the one CallVisor ASAI link on that port.

CHAPTER 7. REFERENCES

The following is an abbreviated listing of Generic 1 and Generic 3i documents. Included is a brief description of each document in the list. User instructions are also available for all terminals used with the systems.

To order copies of any of these documents, refer to the address on the back of the title page.

Business Communications Systems Publications Catalog **555-000-010**

Provides a list of publications that support AT&T business communications systems. Also provides a brief description of each publication listed.

DEFINITY® Communications System and System 75 and System 85—Terminals and Adjuncts—Installation and Test **555-015-104**

Provides procedures for installing and removing voice terminals (including Business Communications Terminal built-in voice terminals) and adding modules and adjuncts to voice terminals. Also shows how to provide auxiliary power for voice terminals and associated modules and adjuncts. Provides references to other documents that contain step-by-step instructions for making cross-connections.

DEFINITY® Communications System and System 75 and System 85—Terminals and Adjuncts—Reference **555-015-201**

Provides concise physical and functional descriptions of the peripheral equipment that can be used with DEFINITY Generic 1, DEFINITY Generic 2, Generic 3i, System 75, and System 85. It is intended as an aid for both AT&T and customer personnel in selecting appropriate components for these systems and in training and management.

DEFINITY® Communications System and System 75 and System 85—DS1/DMI/ISDN-PRI—Reference **555-025-101**

Provides a broad but detailed description of the DS1 Tie Trunk Service, Digital Multiplexed Interface (DMI), and Integrated Services Digital Network-Primary Rate Interface (ISDN-PRI) features. Introduces and defines concepts and terminology unique to DS1, DMI, and ISDN-PRI. Also includes applications, engineering procedures and considerations, cabling and connection arrangements, administration requirements, restrictions and limitations, etc.

An Introduction to DEFINITY® Communications System Generic 1 **555-200-024**

Provides an overview of DEFINITY Generic 1. Major hardware components, such as the switch, terminals, and software applications, are described to provide an understanding of the system's functional areas. Also provides an overview of System Management and data features and functions available with DEFINITY Generic 1.

DEFINITY® Communications System Generic 1 Hospitality Services **555-200-026**

Provides an overview of DEFINlTY Generic 1 Hospitality Services. Major hardware components, such as the system cabinet, and terminals are described to provide an understanding of the system's functional areas. Also provides an overview of the hospitality features available with the system, as well as other voice, data, and System Management features.

DEFINlTY® Communications System Generic 1 and Generic 3i—Feature Description **555-230-201**

Provides a technical description of the G1 and G3i system features and parameters. For each feature, the following information is provided:

- Limitations/considerations
- Feature interactions
- Administration requirements
- Hardware and software requirements.

DEFINITY® Communications System System 75—Pocket Reference **555-200-202**

Provides the reader with a quick pocket-sized reference to the benefits, requirements, limitations, parameters, features, and circuit packs associated with the system.

DEFINITY® Communications System Generic 1 and System 75—Administration and Measurement Reports **555-200-500**

Describes the management of the system's administration and operation. Includes the guidelines for initialization, reconfiguration, backup procedures, monitoring system performance, and maintaining system security. Includes a description of the tasks that can be performed via the administration terminal and prerequisites for completion. Also included is a description of the Traffic Measurement Reports for the system.

DEFINITY® Communications System Generic 1 and System 75—Planning/Configuration **555-200-600**

Provides information used by the Account Team to determine the customer's requirements and to collect the information needed to estimate system hardware requirements.

DEFlNITY® Communications System Generic 1 and System 75—Console Operations **555-200-700**

Provides "how-to-operate" instructions for the attendant console. Serves as a reference when defining the console control keys and Incoming Call Identification requirements.

DEFINITY® Communications System Generic 1 and System 75—Voice Terminal Operations **555-200-701**

Describes all the voice features and provides the "how-to-operate" instructions for each voice terminal. Serves as a training guide for system users.

AT&T System 75—Automatic Call Distribution—Agent Instructions **555-200-722**

Provides information for use by agents after training is completed. The various ACD features are described and the procedures for using them are provided in this document. While directly supporting System 75 R1V3, these instructions apply to DEFINITY Communications System Generic 1 also.

DEFINITY® Communications System Generic 1 and System 75—User's Guide—Hospitality Operations **555-200-723**

Contains procedures for using the Hospitality Services of DEFINITY Generic 1 and System 75 R1V3. These services include a group of system-based features that support the lodging and health industries.

AT&T System 75—Automatic Call Distribution—Supervisor Instructions **555-200-724**

Provides information for use by supervisors after training is completed. The various ACD features are described and the procedures for using them are provided in this document. While directly supporting System 75 R1V3, these instructions apply to DEFINITY Communications System Generic 1 also.

DEFINITY® Communications System Generic 1 and Generic 3i—Installation and Test **555-230-104**

Provides the information necessary to perform the tasks of installing and testing the system's common equipment. Includes a description of the necessary tools and equipment.

DEFINITY® Communications System Generic 1 and Generic 3i—Maintenance **555-204-105**

Provides the information necessary for monitoring, testing, and maintaining DEFINITY Generic 1 and Generic 3i. It is intended to cover many of the faults and troubles that can occur in the system.

DEFINITY® Communications System Generic 1 and Generic 3i—Upgrades and Additions **555-204-106**

Provides procedures and information required to upgrade a System 75 V1, V2, or V3 to a DEFINITY Generic 1 system or a Generic 1 to a Generic 3i system and make additions to an operational system, after the initial switch installation.

DEFINITY® Communications System Generic 1 and Generic 3i—Wiring **555-204-111**

Provides an overview of the DEFINITY Generic 1 and Generic 3i wiring plan. Included are:

- General guidelines on hardware selection
- Descriptions of cross-connect hardware and installation procedures.
- Equipment room hardware and cabling instructions including the cross-connect field
- Instructions for station wiring and associated hardware installation, adjunct powering, and patch cord installation and administration.
- Miscellaneous wiring installation procedures.

DEFINITY® Communications System Generic 1 and Generic 3i—System Description **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 3i—Capabilities **555-204-497**

Provides a description of the new capabilities, features, and enhancements available on DEFINITY Generic 3i systems that were not available on DEFINITY Generic 1 systems.

DEFINITY® Communications System Generic 1—Enhancements **555-204-498**

Provides a description of the enhancements available on DEFINITY Generic 1.

DEFINITY® Communications System Generic 1—Capabilities **555-204-499**

Provides a description of the new capabilities, features, and enhancements available on DEFINITY Generic 1 systems that were not available on System 75 R1V3.

DEFINITY® Communications System Generic 1—Implementation **555-204-654**

Provides the procedures and associated forms for collecting system and terminal software information. This information is used to initialize the system using the DEFINITY Manager I Terminal.

DEFINITY® Communications System Generic 3i—Implementation **555-230-650/650B**

Provides the procedures and associated forms for collecting system and terminal software information for G3i systems. This information is used to initialize the system using the DEFINITY G3-MT. Customers automatically receive the Blank Forms Package (555-230-650B) with the implementation Manual. The Blank Forms Package may also be ordered separately.

DEFINITY® Communications System Generic 1 and Generic 3—Basic Call Management System Operations **555-230-703**

Describes all the features and provides the "how-to-operate" instructions for the Basic Call Management System (BCMS) feature.

DEFINITY® Communications System Generic 1 and System 75—Application Notes—Automatic Call Distribution **555-209-013**

Describes in detail the Automatic Call Distribution (ACD) feature of System 75 R1V3 and DEFINITY Generic 1 systems. Also describes the associated "embedded" features (such as Intraflow/Interflow, Queue Status Indications, Agent Call Handling, etc.) required for efficient operation and use of the ACD feature.

DEFINITY® Communications System Generic 1—Application Notes—Outbound Call Management **555-209-014**

Describes in detail the Outbound Call Management feature of DEFINITY Generic 1 and provides information about system capabilities and requirements for implementing and using the feature.

DEFINITY® Communications System Generic 1 and System 75—Application Notes—7400B Data Module **555-209-017**

Provides guidelines for administering the 7400B Data Module in System 75 R1V1 through R1V3 and DEFINITY Communications System Generic 1.

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

Describes G1 Manager I or G3-MT terminal types, function keys, and other Manager I 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**

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.

AT&T CallVisor ISDN Gateway Release 1 Version 2 Planning and Application Development **585-245-201**

Provides a description of the AT&T CallVisor ISDN Gateway and information on how to plan for it. It also contains information on CallVisor ISDN Gateway interfaces that can be used for software application development.

CHAPTER 8. ABBREVIATIONS AND ACRONYMS

AAR	Automatic Alternate Routing
AC	Alternating Current
ACA	Automatic Circuit Assurance
ACD	Automatic Call Distribution
ACU	Automatic Call Unit
ACW	After Call Work
AD	Abbreviated Dialing
ADU	Asynchronous Data Unit
AE	Access Endpoint
AIM	Asynchronous Interface Module
ALM-ACK	Alarm Acknowledge
AMW	Automatic Message Waiting
AN	Analog
ANI	Automatic Number Identification
AP	Applications Processor
APLT	Advanced Private Line Termination
ARS	Automatic Route Selection
ASAI	Adjunct Switch Applications Interface
ASCII	American Standard Code for Information Interchange
ATB	All Trunks Busy
ATD	Attention Dial
AUDIX	Audio Information Exchange
AVD	Alternate Voice Data
AWT	Average Work Time
BCC	Bearer Capability Class
BCMS	Basic Call Management System
BCT	Business Communications Terminal
BHCC	Busy Hour Calls Completions
BLF	Busy Lamp Field
BOS	Bit Oriented Signaling
BRI	Basic Rate Interface
BTU	British Thermal Unit
CACR	Cancellation of Authorization Code Request
CAG	Coverage Answer Group
CAMA	Centralized Automatic Message Accounting
CARR-POW	Carrier Port and Power Unit for AC Powered Systems
CA-TSC	Call Associated Temporary Signaling Connection
CAS	Centralized Attendant Service
CBC	Call-by-Call
CC	Country Code
CCIS	Common Channel Interoffice Signaling
CCITT	Consultative Committee for International Telephone and Telegraph
CCMS	Common Channel Message Set
CCS	Hundred Call Seconds
CCSA	Common Control Switching Arrangement

CDM	Channel Division Multiplexing
CDOS	Customer-Dialed and Operator Serviced
CDRR	Call Detail Recording and Reporting
CDRU	Call Detail Recording Utility
CEM	Channel Expansion Multiplex
CI	Clock Input
CMDR	Centralized Message Detail Recorder
CMS	Call Management System
CO	Central Office
COR	Class of Restriction
COS	Class of Service
CP	Circuit Pack
CPE	Customer Provided Equipment
CPN/BN	Calling Party Number/Billing Number
CPTR	Call Progress Tone Receiver
CRC	Cyclical Redundancy Checking
CSA	Canadian Safety Association
CSD	Customer Service Document
CSM	Centralized System Management
CSU	Channel Service Unit
CTS	Clear to Send
CWC	Call Work Codes
DAC	Direct Agent Calling
DC	Direct Current
DCE	Data Communications Equipment
DCP	Digital Communications Protocol
DCS	Distributed Communications System
DDC	Direct Department Calling
DDD	Direct Distance Dialed
DID	Direct Inward Dialed
DLC	Data Line Circuit
DLDM	Data Line Data Module
DMI	Digital Multiplexed Interface
DND	Do Not Disturb
DNIS	Dialed Number Identification Service
DOD	Direct Outward Dialed
DOSS	Delivery Operations Support System
DOT	Duplication Option Terminal
DS1	Data Services Level 1
DSI	Digital Service Interface
DSU	Data Service Unit
DTDM	Digital Terminal Data Module
DTE	Data Terminal Equipment
DTGS	Direct Trunk Group Select
DTMF	Dual Tone Multifrequency
DXS	Direct Extension Selection
E&M	Ear and Mouth (Receive and Transmit)
EBCDIC	Extended Binary Coded Decimal Interexchange Code

ECC	Error Correct Code
EI	Expansion Interface
EIA	Electronic Industries Association
EMI	Electro-Magnetic Interference
EPN	Expansion Port Network
EPROM	Erasable Programmable Read Only Memory
EPSCS	Enhanced Private Switched Communications Services
ESF	Extended Superframe Format
ETN	Electronic Tandem Network
FAC	Feature Access Code
FAS	Facility Associated Signaling
FAT	Facility Access Trunk Test
FCC	Federal Communications Commission
FEAC	Forced Entry of Account Codes
FIC	Facility Interface Codes
FNPA	Foreign Numbering Plan Area
FRL	Facility Restriction Level
FX	Foreign Exchange
GPTR	General Purpose Tone Receiver
GRS	Generalized Route Selection
HNPA	Home Numbering Plan Area Code
IAS	Inter-PBX Attendant Service
IC	Inter-Cabinet
ICC	Inter-Carrier Cable
ICDOS	International Customer Dialed Operator Serviced
ICHT	Incoming Call Handling Table
ICI	Incoming Call Identifier
ICM	Inbound Call Management
IDDD	International Direct Distance Dialing
IE	Information Element
INADS	Initialization and Administration System
INS	ISDN Network Service
INWATS	Inward Wide Area Telephone Service
ISDN	Integrated Services Digital Network
ISN	Information Systems Network
ITP	Installation Test Procedures
IXC	Inter-Exchange Carrier Code
KBPS	Kilo-Bits Per Second
LAN	Local Area Network
LAPD	Link Access Procedure Data
LATA	Local Access and Transport Area
LDN	Listed Directory Number
LDS	Long Distance Service
LED	Light-Emitting Diode

LSU	Local Storage Units
LWC	Leave Word Calling
MA-UUI	Message Associated User-to-User Signaling
M-Bus	Memory Bus
MBPS	Mega-Bits Per Second
MCC	Multi-Carrier Cabinet
MCS	Message Center Service
MDM	Modular Data Module
MDR	Message Detail Record
MET	Multibutton Electronic Telephone
MIM	Management Information Message
MIS	Management Information System
MISCID	Miscellaneous Identification
MMS	Material Management Services
MOS	Message Oriented Signaling
MS	Message Server
MSA	Message Servicing Adjunct
MPDM	Modular Processor Data Module
MTDM	Modular Trunk Data Module
MTP	Maintenance Tape Processor
MTT	Multi-Tasking Terminal
MWL	Message Waiting Lamp
NANP	North American Numbering Plan
NAU	Network Access Unit
NCA/TSC	Non-Call Associate/Temporary Signaling Connection
NCOSS	Network Control Operations Support Center
NCSO	National Customer Support Organization
NEC	National Engineering Center
NFAS	Non-Facility Associated Signaling
NID	Network Inward Dialing
NN	National Number
NPA	Numbering Plan Area
NPE	Network Processing Element
NQC	Number of Queued Calls
NSE	Night Service Extension
NSU	Network Sharing Unit
NXX	Public Network Office Code
OA	Operator Assisted
OCM	Outbound Call Management
OPS	Off-Premises Station
OQT	Oldest Queued Time
OSHA	Occupational Safety and Health Act
OSS	Operations Support System
OTQ	Outgoing Trunk Queuing
PBX	Private Branch Exchange
PC	Personal Computer

PCOL	Personal Central Office Line
PCOLG	Personal Central Office Line Group
PCM	Pulse Code Modulated
PCS	Permanent Switched Calls
PDM	Processor Data Module
PDS	Premises Distribution System
PE	Processing Element
PEC	Price Element Codes
PEI	Processor Element Interchange
PGN	Partitioned Group Number
PI	Processor Interface
PIB	Processor Interface Board
PL	Private Line
PMS	Property Management System
PN	Port Network
PPN	Processor Port Network
PRI	Primary Rate Interface
PSC	Premises Service Consultant
PSDN	Packet Switch Public Data Network
PT	Personal Terminal
RAM	Random Access Memory
RBS	Robbed-Bit Signaling
RCL	Restricted Call List
RHNPA	Remote Home Numbering Plan Area
RLT	Release Link Trunk
RNX	Private Network Office Code
RPN	Routing Plan Number
RSC	Regional Support Center
SABM	Set Asynchronous Balance Mode
SAKI	Sanity and Control Interface
SAT	System Access Terminal
SCC	Single Carrier Cabinet
SCI	Switch Communications Interface
SCO	System Control Office
SDN	Software Defined Network
SDDN	Software Defined Data Network
SID	Station Identification Number
SIT	Special Information Tones
SMDR	Station Message Detail Recording
SPE	Switch Processing Element
SPID	Service Profile Identifier
SSI	Standard Serial Interface
ST3	Stratum 3 Clock Board
STARLAN	Star-based Local Area Network
SVN	Security Violation Notification
SXS	Step-by-Step
TAAS	Trunk Answer From Any Station

TAC	Trunk Access Code
TC	Technical Consultant
TCM	Traveling Class Mark
TDM	Trunk Data Module
TDR	Time of Day Routing
TEG	Terminating Extension Group
TEI	Terminal Endpoint Identifier
TOD	Time of Day
TOP	Task Oriented Protocol
TSC	Technical Service Center
TTR	Touch Tone Receiver
TTT	Terminating Trunk Transmission
TTTN	Tandem Tie Trunk Network
TTY	Teletypewriter
UAP	Usage Allocation Plan
UCD	Uniform Call Distribution
UCL	Unrestricted Call List
UDP	Uniform Dial Plan
UL	Underwriter Laboratories
UNP	Uniform Numbering Plan
UPS	Uninterruptible Power Supply
USOP	User Service Order Profile
VDN	Vector Directory Number
VLSI	Very Large Scale Integration
VM	Voltmeter
WATS	Wide Area Telecommunications Service
WSA	Waiting Session Accept
ZCS	Zero Code Suppression

GLOSSARY

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.

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 EIA-232C equipment and the system digital switch.

Attendant

The operator of the console.

Applications Processor

A minicomputer used to support several user-controlled applications such as traffic analysis and electronic documentation.

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 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.

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.

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).

Bridge (Bridging)

The appearance of a voice terminal's extension at one or more other voice terminals.

Bridged Appearance

A call appearance on a voice terminal that matches a call appearance on another voice terminal for the duration of a call.

Buffer

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.

Bus, Time Division Multiplex

See Time Division Multiplex Bus.

Business Communications Terminal

An advanced series of semi-intelligent terminals.

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 inter-tandem 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.

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.

Callback Call

A call that is automatically returned to a voice terminal user who activated the Automatic Callback or Ringback Queuing feature.

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 (CO)

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 center 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 (FX)

A central office other than the one providing local access to the public telephone network.

Foreign Exchange Trunk

A telecommunications channel that directly connects the system to a central office other than its local central office.

Foreign Numbering Plan Area Code (FNPA)

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 (HNPA)

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.

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.

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.

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.)

Massage Center Agent

A member of the Message Center Hunt Group who takes and retrieves messages for voice terminal users.

Modular Processor Data Module (MPDM)

See Processor Data Module.

Modular Trunk Data Module (MTDM)

See Trunk Data Module.

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.

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.

Multiplexer

A device for simultaneous transmission of two or more signals over a common transmission medium.

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 zero or one 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 call, presses the Start button.

Standard Serial Interface (SSI)

A communications protocol developed by AT&T Teletype 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 (TTTN)

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 (TDM)

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 (UDP)

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.

8

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.

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