



SLC[®]-2000 Access System

Customer Assembly Manual
for COT Frames

Copyright © 1997 Lucent Technologies
All Rights Reserved
Printed in U.S.A.

Notice

Every effort was made to ensure that the information in this document was complete and accurate at the time of creation. However, information is subject to change.

Mandatory Customer Information

Federal Communications Commission (FCC) Notification and Repair Information

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

Security Statement

In rare instances, unauthorized individuals make connections to the telecommunications network through the use of remote access features. In such event, applicable tariffs require that the customer pay all network charges for traffic. Lucent Technologies cannot be responsible for such charges, and will not make allowance or give any credit for charges that result from unauthorized access.

Trademarks

SLC, ST, and LGX are registered trademarks of Lucent Technologies.
Bantam Plus is a trademark of Lucent Technologies.
TY-RAP and T&B are registered trademarks of Thomas and Betts, Corp.
AMP and Mate-N-Lok II are trademarks of AMP Inc.
NO-OX-ID is a registered trademark of Sanchem, Inc.
Loxin is a trademark of Star Expansion Co.
Find-R-Scope is a registered trademark of FJW Optical Systems, Inc.
UL is a registered trademark of Underwriters Laboratory, Inc.
NMA is a registered trademark of Bell Communications Research, Inc.

Documentation Ordering Information

The ordering number for this document is Lucent Technologies 363-208-011. To order this document, call 1-800-432-6600 or 1-317-322-6557. RBOC/BOC customers should process document orders or standing order requests through their Company Documentation Coordinator. For more ordering information, refer to How to Order Documents in the section About This Manual.

Customer Assistance and Technical Support

The Lucent Technologies Regional Technical Assistance Center (RTAC) provides a technical assistance telephone number that is monitored 24 hours a day. For technical assistance, simply call 1-800-CAL-RTAC (225-7822).

Developed by Lucent Technologies Merrimack Valley Works Access Products Customer Technical Support Organization (CTSO).

Lucent Technologies's Transmission Systems Business Unit received ISO 9001 certification for its Merrimack Valley Works and Oklahoma City Works manufacturing facilities and associated development organizations on September 15, 1992. Merrimack Valley and Oklahoma City manufacture systems for transporting data, voice, and images over public and private telecommunications networks. Major product lines consist of digital loop carrier systems, digital access and cross connect systems, network multiplex systems, and lightwave systems.

ISO 9001 is an international quality standard recognized by more than 50 countries. ISO 9001 is the most comprehensive standard in the ISO 9000 series, requiring well documented and implemented controls for design development, production, delivery, installation, and servicing. Its purpose is to ensure manufacturers produce products with consistently high levels of quality and services.

This page is blank.

We'd Like Your Opinion

Lucent Technologies welcomes your feedback on this document. Your comments can be of great value in helping us improve our documentation.

SLC[®]-2000 Access System Customer Assembly Manual for COT Frames

Lucent Technologies 363-208-011 Issue 4 February 1997

1. Please rate the effectiveness of this document in the following areas:

| | Excellent | Good | Fair | Poor |
|-----------------------------|-----------|------|------|------|
| Ease of Finding Information | | | | |
| Clarity | | | | |
| Completeness | | | | |
| Accuracy | | | | |
| Organization | | | | |
| Appearance | | | | |
| Examples | | | | |
| Illustrations | | | | |
| Overall Satisfaction | | | | |

2. Please check the ways you feel we could improve this document:

- | | |
|--|---|
| <input type="checkbox"/> Improve the overview/introduction | <input type="checkbox"/> Make it more concise |
| <input type="checkbox"/> Improve the table of contents | <input type="checkbox"/> Add more step-by-step procedures/tutorials |
| <input type="checkbox"/> Improve the organization | <input type="checkbox"/> Add more troubleshooting information |
| <input type="checkbox"/> Include more figures | <input type="checkbox"/> Make it less technical |
| <input type="checkbox"/> Add more examples | <input type="checkbox"/> Add more/better quick reference aids |
| <input type="checkbox"/> Add more detail | <input type="checkbox"/> Add more descriptive material |

Please add details about your major concern. _____

3. What did you like most about this document. _____

4. Feel free to write any comments below or on an attached sheet. _____

If we may contact you concerning your comments, please complete the following:

Name: _____ Telephone Number : _____

Company/Organization: _____ Date: _____

Address: _____

City: _____ State: _____ ZIP: _____

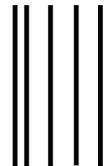
When you have completed this form, please fold, tape, and return to address on back. Or if you wish, you may fax it to (508) 960-3052. Thank you.

BUSINESS REPLY MAIL

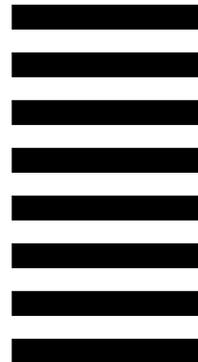
FIRST CLASS MAIL PERMIT NO. 33 LAWRENCE, MA

POSTAGE WILL BE PAID BY ADDRESSEE

LUCENT TECHNOLOGIES
JC09120D0
BUILDING 20 ROOM 3-G2
1600 OSGOOD ST
NORTH ANDOVER MA 01845-9985



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



Contents

About This Manual

| | |
|-----------------------------------|-------|
| ■ Purpose | xiii |
| ■ Scope | xiii |
| ■ Intended Audiences | xiii |
| ■ Reason for Reissue | xiv |
| ■ How to Use This Manual | xiv |
| ■ Safety Instructions | xv |
| ■ Related Documents | xvi |
| ■ AT&T Contacts | xvii |
| ■ How to Order Documents | xvii |
| ■ How to Comment on This Document | xviii |

1 General Information

| | |
|-----------------------------------|-----|
| ■ General Information | 1-1 |
| ■ General Precautions | 1-2 |
| ■ General Safety Admonishments | 1-5 |
| ■ Electrical Wiring Admonishments | 1-6 |

2 Installation Procedures

| | |
|---------------------------|------|
| ■ Handling and Uncrating | 2-1 |
| ■ Inspection | 2-2 |
| ■ Erecting and Placement | 2-2 |
| ■ Grounding Connections | 2-9 |
| ■ Mounting System Shelves | 2-11 |

Contents

| | | |
|----------|--|------|
| 3 | Cabling, Wiring, and Assembly | |
| | ■ Cable Assembly Descriptions | 3-1 |
| | ■ Installer Cabling Operations | 3-8 |
| | ■ Power and Ringing Local Interfaces | 3-16 |
| | ■ PCM Connections | 3-22 |
| | ■ Test Access Path (TAP) Interface | 3-25 |
| | ■ 1A Alarm Test Unit Cables | 3-28 |
| | ■ Customer Interface Cable Connections | 3-32 |
| | ■ Miscellaneous Discrete Environment Alarms and Controls | 3-36 |
| | ■ DS1 Connections | 3-39 |
| | ■ VF Connections | 3-46 |
| | ■ E&M Connections | 3-60 |
| | ■ ARM Shelf Fiber Optic Cables | 3-84 |

| | | |
|----------|--|-----|
| 4 | Parts Lists and Kits | |
| | ■ General Information | 4-1 |
| | ■ Basic <i>SLC</i> [®] -2000 Hardware | 4-2 |
| | ■ Ancillary Equipment | 4-6 |

| | | |
|----------|--------------------------|-----|
| 5 | Parts Description | |
| | ■ General Information | 5-1 |
| | ■ Frame Hardware | 5-1 |
| | ■ Shelf Equipment | 5-2 |
| | ■ Cable Assemblies | 5-5 |

Contents

| | | |
|----------|---|------|
| A | Applications | |
| | ■ Introduction | A-1 |
| | ■ Peripheral Equipment Interconnections | A-2 |
| | ■ Application Schematic | A-26 |

| | | |
|----------|----------------------------------|--|
| S | Supplementary Information | |
|----------|----------------------------------|--|

Figures

2

Installation Procedures

| | | |
|-------|--|------|
| 2-1A. | Bay Frame Views (Front Flush Mount Shelf Arrangement) | 2-4 |
| 2-1B. | Bay Frame Views (Front Extended Mount Shelf Arrangement) | 2-5 |
| 2-2. | Floor Drilling | 2-7 |
| 2-3. | Top of Bay Superstructure | 2-8 |
| 2-4. | Grounding Connections | 2-10 |
| 2-5A. | 7-foot COT Bay (J1C265B-1) Equipment Mounting Locations | 2-12 |
| 2-5B. | 7-foot COT Bay (J1C265C-1) Equipment Mounting Locations | 2-13 |
| 2-6. | PIU Mounting Details | 2-16 |
| 2-7. | TS1 Terminal Block Location | 2-18 |

3

Cabling, Wiring, and Assembly

| | | |
|-------|--|------|
| 3-1. | CINCH Type Connectors | 3-4 |
| 3-2. | D Type Connectors | 3-5 |
| 3-3. | AMP Mate-N-Lok II Connectors | 3-6 |
| 3-4. | AMP Mate-N-Lok II Assembly | 3-7 |
| 3-5. | SLC [®] -2000 COT Bay Typical Cable Routing | 3-9 |
| 3-6. | COT Bay Cable Assemblies | 3-10 |
| 3-7. | ARM Shelf Cable Assemblies | 3-12 |
| 3-8. | MDS Shelf Cable Assemblies | 3-13 |
| 3-9. | ATU Shelf Cable Assemblies | 3-13 |
| 3-10. | COT Bay Intershelf Connections | 3-15 |
| 3-11. | Power Interface Location | 3-18 |
| 3-12. | Intershelf Power and Ring Connections | 3-19 |
| 3-13. | MDS Power Cabling | 3-20 |
| 3-14. | Power Connections | 3-21 |
| 3-15. | PCM Bay Cables | 3-23 |
| 3-16. | PCM J500-() Connections | 3-24 |
| 3-17. | TAP Connections | 3-26 |

Figures

| | | |
|--------|--|------|
| 3-18. | TAP Bay Connections | 3-27 |
| 3-19. | ATU Power Connections | 3-28 |
| 3-20A. | ATU/TS1 Wiring Interconnections | 3-30 |
| 3-20B. | P1A, P184 Wiring | 3-31 |
| 3-21. | Customer Interface Cables | 3-33 |
| 3-22. | J171/ARM Shelf Connection | 3-37 |
| 3-23. | Discrete Alarm Connections J171 | 3-38 |
| 3-24. | DS1 Distribution and Feeder Cables Routing | 3-41 |
| 3-25. | DS1 IN (1-16) Connections | 3-42 |
| 3-26. | DS1 IN (17-28) Connections | 3-43 |
| 3-27. | DS1 OUT (1-16) Connections | 3-44 |
| 3-28. | DS1 OUT (17 - 28) Connections | 3-45 |
| 3-29. | MDS VF Cable Routing J101-J104 | 3-48 |
| 3-30. | J101-J104 Bay Cabling | 3-49 |
| 3-31. | J101 Wiring | 3-50 |
| 3-32. | J102 Wiring | 3-51 |
| 3-33. | J103 Wiring | 3-52 |
| 3-34. | J104 Wiring | 3-53 |
| 3-35. | MDS VF Cable Routing J201-J204 | 3-54 |
| 3-36. | J201-J204 Bay Cabling | 3-55 |
| 3-37. | J201 Wiring | 3-56 |
| 3-38. | J202 Wiring | 3-57 |
| 3-39. | J203 Wiring | 3-58 |
| 3-40. | J204 Wiring | 3-59 |
| 3-41. | MDS E&M Cable Routing | 3-62 |
| 3-42. | J105-106, J205-206 Bay Cabling | 3-63 |
| 3-43. | J105 Wiring | 3-64 |
| 3-44. | J106 Wiring | 3-65 |
| 3-45. | J205 Wiring | 3-66 |
| 3-46. | J206 Wiring | 3-67 |
| 3-47. | TS1 Block CO Alarms Connections | 3-68 |
| 3-48. | Parallel Telemetry Connections | 3-73 |
| 3-49. | PGTC Interconnections | 3-75 |
| 3-50. | By-Pass Pair Connections | 3-77 |

Figures

| | | |
|-------|---|------|
| 3-51. | TS1 Block Composite Clock Connections | 3-78 |
| 3-52. | Connections to DS1 and BITS Clocks | 3-79 |
| 3-53. | ARM Shelf Cable Routing for ED8C724-20 Clock Cable Assemblies | 3-79 |
| 3-54. | ARM Shelf Cable Routing for ED8C724-20 OS Cable Assemblies | 3-81 |
| 3-55. | TL1 X.25 Connections | 3-82 |
| 3-56. | TBOS Connections | 3-83 |
| 3-57. | CIT/Modem RS232 Connections | 3-84 |
| 3-58. | Optical Fiber Routing | 3-86 |

5 Parts Description

| | | |
|------|---|------|
| 5-1. | Cable Assembly ED7C723-30 Group 7 | 5-6 |
| 5-2. | Cable Assembly ED7C723-30 Groups 9A to 12A | 5-7 |
| 5-3. | Cable Assembly ED7C723-32 Groups 10 and 11A | 5-8 |
| 5-4. | Cable Assembly ED7C723-34 Group 1 | 5-9 |
| 5-5. | Cable Assembly ED7C723-36 Group 3 | 5-10 |
| 5-6. | Cable Assembly ED7C723-36 Group 4 | 5-11 |
| 5-7. | Cable Assembly ED7C723-36 Group 5 | 5-12 |

A Applications

| | | |
|-------|--|------|
| A-1. | COT Bay Peripheral Equipment Interconnections | A-3 |
| A-2. | MDS Assembly VF Cabling | A-5 |
| A-3. | MDS Assembly E&M Cabling | A-7 |
| A-4A. | DS1 Feeder Cabling | A-9 |
| A-4B. | DS1 Distribution Cabling | A-10 |
| A-5. | LTG Cabling OLIU | A-11 |
| A-6. | Typical Miscellaneous Discrete Environmental Alarms and Controls | A-13 |
| A-7. | COT Alarms Cabling and Cross Connections | A-15 |
| A-8. | Power and Ringing Cabling | A-17 |
| A-9A. | Typical DC Test Pair Arrangement | A-19 |

Figures

| | | |
|-------|--|------|
| A-9B. | Typical Test Access Pair Cabling | A-19 |
| A-9C. | PGTC/ <i>SLC</i> -2000 Lead Designations | A-20 |
| A-9D. | PGTC/ <i>SLC</i> Systems Interconnections | A-21 |
| A-10. | Typical Network Synchronization Interconnections | A-23 |
| A-11. | Operations Systems Interfaces | A-25 |

Tables

2 Installation Procedures

| | | |
|------|---------------------------|-----|
| 2-1. | Dimensions for Figure 2-2 | 2-7 |
|------|---------------------------|-----|

3 Cabling, Wiring, and Assembly

| | | |
|------|--|------|
| 3-1. | Cable Verification for ARM and MDS Shelves | 3-11 |
| 3-2. | VF Connections | 3-47 |
| 3-3. | VF Channel Number Identification | 3-47 |
| 3-4. | E&M Connections | 3-61 |
| 3-5. | E&M Channel Number Identification | 3-61 |
| 3-6. | COT Parallel Telemetry Alarm and Status Points | 3-70 |

4 Parts Lists and Kits

| | | |
|-------|-----------------------------|-----|
| 4-1A. | Peripheral Cable Assemblies | 4-4 |
| 4-1B. | Peripheral Cable Assemblies | 4-5 |

A Applications

| | | |
|------|--|-----|
| A-1. | OSP Cable Pair/MDS Channel Numbering | A-4 |
| A-2. | OSP Cable Pair/MDS E&M Channel Numbering | A-6 |

About This Manual

Purpose

This manual provides installation instructions for the SLC[®]-2000 Access System Central Office Terminal (COT) Frame for end users responsible for their own equipment assembly, mounting, assembly, and connections of the COT System. It can also be used as a troubleshooting guide for installation wiring problems. Refer to Lucent Technologies 363-208-001 *SLC-2000 Access System User/Service Manual* for any activity involving system turn-up, circuit turn-up, maintenance, or trouble analysis.

Scope

This document is intended to enable installation personnel to install the COT Frame equipment without the use or reference to any documents other than job drawings and specifications. Only the SLC-2000 COT Frame Assembly installation instructions are covered herein. Refer to other appropriate Lucent Technologies Practices for installation instructions of RT frames or cabinets.

Intended Audiences

This installation manual is for SLC-2000 Access System customers, who maintain their own installation organization, to install equipment.

This manual is intended ONLY for the installation of the 7-foot COT Frame in central office environments; and for preliminary tests performed prior to turnover tests by central office terminal testing personnel.

Reason for Reissue

This manual covers activities relating to installation of the COT Frame and equipment included in Release 3.2. The contents of this manual is based on information from the Application Schematic issue which is included herein:

SD7C180-01, Issue 2 *SLC-2000 Central Office Terminal Application Schematic*

This manual has been reissued (Issue 3) to add the changes on issue 2 of the application schematic drawing, to correct typographical errors, and to add AT&T Practice 065-215-250 after the Supplementary Information tab.

This manual has been reissued (Issue 4) to change from AT&T to Lucent Technologies. A number of cable assemblies have been changed and more detail has been added for the synchronization cable assemblies.

How to Use This Manual

This manual is organized as follows:

- **About This Manual**

This chapter defines the purpose, scope, and intended audience for this document, provides introductory and support information on this document, includes the bibliography (references), lists training courses, and tells how to obtain technical support on the system.
- **Chapter 1, General Information**

This chapter contains descriptions of the frame structure, channel shelf modularity, and growth patterns. Also included are general circuit pack handling precautions and specific warnings relating to lightwave safety and ESD considerations.
- **Chapter 2, Installation Procedures**

This chapter includes instructions for field assembly of frames and shelves including details and precautions for handling, inspection, placement, and mounting the equipment.
- **Chapter 3, Cabling, Wiring, and Assembly**

This chapter contains information for installing cable assemblies and related equipment including the inter-shelf (factory preassembled) and external wiring (field fabricated) connections to ancillary equipment.
- **Chapter 4, Parts Lists and Kits**

This chapter lists the assemblies, kits, parts, and tools required for the initial installation or subsequent growth. Also included are tools and replacement parts for field repairs.

- Chapter 5, Parts Description

This chapter describes the requirements and construction of connectors, cables, and assemblies.

- Applications

This chapter includes interconnect figures for troubleshooting and comprehensive overview relating to system interconnections. The application schematic drawing is also included.

- Supplementary Information

This chapter (AT&T Practice 065-215-250) includes detailed framework information and floor layout and drilling procedures which may be used as a reference to supplement local practices.

Safety Instructions

Admonishments

This manual may contain admonishments in the form of DANGERS, WARNINGS, and CAUTIONS. These admonishments, listed in order of priority, have the following definitions:

- **Danger** indicates the presence of a hazard that will cause death or severe personal injury if the hazard is not avoided.
- **Warning** indicates the presence of a hazard that can cause death or severe personal injury if the hazard is not avoided.
- **Caution** indicates the presence of a hazard that will or can cause minor personal injury or property damage if the hazard is not avoided. Caution is also used for property-damage-only accidents. This includes equipment damage, loss of software, or service interruption.

Related Documents

The following documents provide additional information about the *SLC*-2000 Access System.

- Lucent Technologies 363-208-000 *SLC*[®]-2000 Access System Applications, Planning and Ordering Guide

Contents: Benefits and features; applications, configurations; services; product description; cabinet and bay arrangements; operations, administration and maintenance; planning and engineering; product support; technical specifications and ordering.

Ordering configurations for COT, RT frame and cabinet arrangements are provided in customer assembly manuals.

- Lucent Technologies 363-208-001 *SLC*[®]-2000 Access System, User/Service Manual

Contents: System overview, product description, user interface, operations and maintenance procedures (including acceptance testing, provisioning, turn-up, application support, maintenance, alarming, trouble clearing, inventory, and performance monitoring), and maintenance support information (alarm tables, etc.).

- Lucent Technologies 363-208-003, *SLC*[®]-2000 Access System, Command and Message Manual

Contents: User interfaces, system administration (including software upgrades, establishing passwords and logins, and security), entity addressing, user interface procedures, command/message syntax, system command manual pages, and system report manual pages.

- Lucent Technologies 363-208-010, *SLC*[®]-2000 Access System. Customer Assembly Manual for RT Frames

Contents: Configuration drawings and detailed instructions for assembling and connecting the equipment in an RT frame arrangement. This document includes installation procedures, cabling and wiring diagrams, the Application SDs, a parts list and supporting information.

- Lucent Technologies 363-208-012, *SLC*[®]-2000 Access System. Installation Manual

Contents: Detailed instructions for assembling and connecting the peripheral equipment for the COT and RT. This document includes installation procedures for power and ringing voltage equipment.

Lucent Technologies Contacts

| Topic | Contact Location | Telephone |
|----------------------|--------------------------------------|--|
| Technical Assistance | Regional Technical Assistance Center | 1-800-CAL-RTAC 1-800-225-7822 (Staffed 24 hours a day) |

How to Order Documents

To order additional copies of this document, send or call in an order as follows:

| Customer | Mail Order | Telephone Order (Monday through Friday) |
|------------------------|---|--|
| Commercial Customers** | Lucent Technologies Customer Information Center Attention: Order Entry Section 2855 N. Franklin Road P.O. Box 19901 Indianapolis, IN 46219 | Within USA: 1-800-432-6600 7:30 a.m. to 6:30 p.m. EST FAX: 1-317-322-6484 From Canada: 1-800-255-1242 Worldwide: Toll: 1-317-322-6557 FAX: 1-317-322-6699 |
| RBOC/BOC | Process through your Company Documentation Coordinator | |
| Federal Government | Lucent Technologies P. O. Box 20046 Greensboro, NC 27420 | 1-919-279-7424 |

** For commercial customers, a check, money order, purchase order number, or charge card number is required with all orders. Make checks payable to Lucent Technologies.

Lucent Technologies entities should use Form IND 1-80.80 FA, available through the Customer Information Center.

One-time orders include a binder (if applicable) and the document contents for the current issue in effect at the time of order. After placing a one-time order, you may request placement on the standing order list for all later reissues of the document. The standing order list for each document provides automatic distribution for all reissues of the document. Normally, these reissues contain only the unbound document packaged in shrink-wrap material for shipment.

How to Comment on This Document

Feedback forms are located immediately after the title page of this document. Please fill out the form, tear it out, and return it to the address on the form.

If the feedback form is missing, send comments on this document to:

Manager, Technical Support Engineering, Access Systems
Lucent Technologies, Dept. JC09120D0, Room 20-3G2
1600 Osgood Street
North Andover, MA 01845

General Information

1

Contents

| | |
|---|-----|
| General Information | 1-1 |
| ■ Installation Activity and Test Sequence | 1-1 |
| ■ Central Office Terminal | 1-1 |
| ■ Remote Terminal Compatibility | 1-1 |
| ■ Wiring Operations | 1-2 |
| ■ Floor Space Preparation | 1-2 |
| ■ Tests | 1-2 |
| General Precautions | 1-2 |
| ■ ESD Consequences | 1-2 |
| ■ Electrostatic Discharge Protection Requirements | 1-3 |
| ■ Lightwave Safety | 1-4 |
| ■ Product Safety | 1-5 |
| General Safety Admonishments | 1-5 |
| ■ Important General Safety Instructions | 1-5 |
| Electrical Wiring Admonishments | 1-6 |
| ■ Important Installation Safety Instructions | 1-6 |

General Information

1

General Information

Installation Activity and Test Sequence

Installation and test operations for *SLC*[®]-2000 Central Office Terminal (COT) Frames are outlined in this text as sequential procedures. For ease of operation, it is recommended that the format and sequence listed herein be followed. Common mechanical-type instructions and information are outlined in Chapter 2, Installation Procedures.

The installation sequence for a *SLC*-2000 route may begin either at the central office, remote locations, or simultaneously at any combination of offices, depending upon the availability and deployment of personnel. The installation operation is considered complete when all bays are interconnected with the cable or fiber line facilities, and with the power, ringing and alarm systems

Central Office Terminal

Installation of the COT consists of the assembly, functional wiring, peripheral cabling, and powering of the 7-foot *SLC*-2000 COT bays.

Remote Terminal Compatibility

The *SLC*-2000 COT bay will not work with *SLC*-2000 RT Release 2.0 bays. RT Bays must have Release 3.1 and higher software. Installation of the remote terminal consists of the assembly, functional wiring, peripheral cabling, and peripheral powering of the 7-foot *SLC*-2000 RT bays. Also included are the peripheral equipment, such as the ringing supplies and their associated interconnections. Refer to Lucent Technologies Practice 363-208--010.

Wiring Operations

Preparation of the cable assemblies (VF, T1 lines, and telemetry) involves wiring the customer's connectorized cables to the MDF, DSX-1, and other peripheral equipment interfaces. These connectorized cables mate with the *SLC-2000* Access System equipment shelf connectors. Other wiring operations which do not utilize connectorized cables require preparation for connections to the dc power, office alarm, and clock interfaces.

Floor Space Preparation

Installation work can begin before the arrival of the *SLC-2000* COT Frames. The floors can be predrilled using a template derived from footprint figures in Chapter 2, Installation Procedures. Completion of other advance work before the arrival of the equipment (extensions for the cable rack, aisle lighting, and appliance outlets) would further reduce the installation interval.

Tests

The test procedure in this manual consists of voltage readings and wiring continuity checks only. The turn-up and acceptance tests are covered in the Lucent Technologies Practice 363-208-001, *SLC-2000 User/Service Manual*.

The turn-up tests may be performed when all activities covered in this installation manual are completed.

General Precautions

ESD Consequences

Semiconductor devices and circuit packs, in general, are sensitive to static charges. Most circuit pack integrated circuit (IC) damage can be attributed to a discharge of static electricity.

For a person to feel the discharge of static electricity, a minimum level of 3500 volts must exist. A person walking across a floor can generate electrostatic voltages in excess of 5000 volts. Tests have shown that IC's can be damaged by discharges of less than 100 volts. Since ESD's contain little or no current, there is no employee safety hazard.

In addition to ESD resulting from an ungrounded person touching a circuit pack, static discharges may result from other sources. If a piece of plastic is placed near one end of a circuit pack lying on an insulated table top, it can direct its charge into the circuit pack.

Identifying ESD damage can be difficult because in most cases, physical damage cannot be seen. A circuit pack which has been exposed to an ESD may:

- Not be affected, i.e., work perfectly with normal life expectancy
- Function normally, but with reduced life expectancy
- Function erratically at times
- Stop functioning altogether

Electrostatic Discharge Protection Requirements

To reduce the possibility of ESD damage, assemblies are equipped with grounding jacks to enable personnel to ground themselves using wrist straps while handling circuit packs or working on an assembly. The jacks for connection of wrist straps are located at each assembly and are labeled. When grounding jacks are not provided, an alligator clip adapter enables connection to bay frame ground.

All circuit packs shall be stored and transported in original factory packing materials whenever possible. Storage in frames or approved antistatic packaging is acceptable when factory packaging is unavailable.

Whenever a circuit pack with IC's is removed from, or inserted into, the frame or from its container, an antistatic wrist strap must be used.

The antistatic wrist strap must be inspected once a day for damages or when it is suspected that the wrist strap has been stressed.

Before using the antistatic wrist strap, verify with a volt-ohmmeter that approximately 1 megohm resistance is present between the wrist strap frame connector and the wrist harness.

The clip or plug connector of the wrist strap must be connected to a ground which is common with the circuit pack ground. Use the equipment bay or shelf ESD ground jack.

In an emergency, when a properly functioning wrist strap is not available at the job site, the following "touch-ground" procedure shall be used for handling circuit packs containing electronic components.

- Always touch ground (exposed) metal before handling a circuit pack in any way (i.e., inserting, removing, or storing). This must be done just prior to touching the circuit pack. Moving around will necessitate repeating this procedure. Note that painted surfaces are not good ground points.
- Handle circuit packs only by the faceplate or latch and by the top and bottom outermost edges. Never touch the components, leads, or connector pins.
- Put the circuit pack into an antistatic bag or carton immediately upon removing it from a frame.

A grounded person must never hand an unprotected circuit pack to a person who is ungrounded. A static discharge from the ungrounded person through the circuit pack to the grounded person could cause an ESD induced failure. All persons and equipment at a work location must be at common ground potential to be static-safe.

Do not rub or wipe circuit packs containing IC's to clean them or their gold fingers unless both the individual and the circuit pack are the same ground potential.

Work areas must be kept clear of common plastics, a major source of static electricity. When rubbed or handled, these plastics produce a static charge that will not readily dissipate when grounded. These plastics must not make direct contact with IC's or circuit packs. Common plastic materials in this classification include polystyrene packing containers, clear plastic bags, plastic drinking cups, food wrappers, notebooks, and nonconductive plastic solder suckers. (The plastic insulation on small hand tools does not represent a static hazard.)

Put the circuit pack into an antistatic bag or carton immediately after removing it from a frame. Keep adhesive tape (i.e., transparent or masking) away from the circuit packs.

Never place circuit packs on ungrounded metal shelving or on ungrounded portable carts without insulated surfaces.

Lightwave Safety

An Lucent Technologies lightwave digital transmission system and associated optical test sets use semiconductor laser transmitters. The lasers emit lightwaves, at or near infrared wavelengths, into lightguide cables. This light is at the red end of the visible spectrum.

Although, at present, the transmitter power levels are below those known to cause injury to the eye (for example, from a direct inadvertent exposure to the end of an energized fiber), direct exposure at close distances should be avoided.



CAUTION:

Never view any unterminated optical connector with optical instruments other than indirect image-converting devices such as the FIND-R-SCOPE^{}, since viewing optics tend to collimate the energy from an optical connector and, hence, increase the potential risk for injury. Personnel performing these procedures must be trained in laser safety*

* Registered trademark of FJW Optical Systems, Inc.

Product Safety



CAUTION:

Only trained service personnel should perform the procedures in this document. These procedures allow exposure to high electrical energy and/or current that may result in electric shock and/or injury to untrained personnel during servicing, maintenance, and installation of this system.

General Safety Admonishments

Important General Safety Instructions

1. Read and understand all instructions
2. Follow all warnings and instructions marked on the product.
3. Do not place the shelves on an unstable cart, stand, or table. The product may fall causing serious damage to the equipment.
4. Slots and openings in these shelves are provided for ventilation. To protect it from overheating, these openings must not be blocked or covered. This equipment should not be placed in a built-in installation unless proper ventilation is provided.
5. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electrical shock. Never spill liquid of any kind on the product.
6. For information on proper mounting instructions consult the appropriate section in this installation manual.

Electrical Wiring Admonishments

Important Installation Safety Instructions

1. Read and understand all instructions and warning labels.
2. Installation and maintenance procedures must be followed and performed by trained personnel only. Do not allow non-service personnel to access electrical wiring.
3. All VF, DS1, STS-1E, and DS3 interfaces should not leave the building premises unless connected to telecommunication devices providing primary or secondary protection, as applicable.
4. Never install telecommunication wiring during a lightning storm.
5. Never install telecommunication connections in wet locations.
6. Never touch uninsulated telecommunication wires or terminals unless the telecommunication line has been disconnected at the VF, DS1, STS-1E, or DS3 interface.
7. Never touch uninsulated wiring or terminals carrying direct current or ringing current or leave this wiring exposed. Protect and tape those wires and terminals to avoid risk of fire, electrical shock, and injury to service personnel.
8. Use caution when installing or modifying telecommunication lines.
9. This product should be operated only from the type of power source indicated on the marking label. For information on proper electrical distribution and power requirements, refer to the Application Schematic contained in the APPLICATIONS chapter of this manual.
10. To reduce the risk of electrical shock, do not disassemble this product. Service should be performed by trained personnel only. Opening or removing covers and/or circuit packs may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electrical shock when the unit is subsequently used.
11. Use only Lucent Technologies manufactured *UL*^{*} recognized circuit packs in this system.

* Registered trademark of Underwriters Laboratory, Inc.

Contents

| | |
|--|------|
| Handling and Uncrating | 2-1 |
| ■ Handling Considerations | 2-1 |
| ■ Uncrating Procedure | 2-1 |
| Inspection | 2-2 |
| ■ Inspection and Physical Verification | 2-2 |
| Erecting and Placement | 2-2 |
| ■ Floor Layout Bay Footprint | 2-2 |
| ■ Bay Frame Mounting | 2-6 |
| Grounding Connections | 2-9 |
| ■ Grounding - General | 2-9 |
| ■ Connections | 2-9 |
| Mounting System Shelves | 2-11 |
| ■ MDS Assembly Installation | 2-14 |
| J1C265AE-1 MDS Assembly Mounting Procedure | 2-14 |
| ■ ARM Shelf Installation | 2-15 |
| ED7C734-30 PIU Mounting Procedure | 2-15 |
| J1C265AD-1 ARM Shelf Mounting Procedure | 2-16 |
| 404A User Interface Panel (UIP) | 2-17 |
| ■ TS1 Terminal Block Installation | 2-17 |
| ■ 1A Alarm and Test Unit Installation | 2-18 |
| Mounting Procedure | 2-18 |

Figures

| | |
|--|------|
| 2-1A. Bay Frame Views (Front Flush Mount Shelf Arrangement) | 2-4 |
| 2-1B. Bay Frame Views (Front Extended Mount Shelf Arrangement) | 2-5 |
| 2-2. Floor Drilling | 2-7 |
| 2-3. Top of Bay Superstructure | 2-8 |
| 2-4. Grounding Connections | 2-10 |
| 2-5A. 7-foot COT Bay (J1C265B-1) Equipment Mounting Locations | 2-12 |
| 2-5B. 7-foot COT Bay (J1C265C-1) Equipment Mounting Locations | 2-13 |
| 2-6. PIU Mounting Details | 2-16 |
| 2-7. TS1 Terminal Block Location | 2-18 |

Tables

2-1. Dimensions for Figure 2-2

2-7

Installation Procedures

2

Handling and Uncrating

Handling Considerations

- ⇒ **NOTE:**
The shipping container is designed to lay lengthwise on the floor. Do not transport or store the containers in a standing position.

- ⇒ **NOTE:**
When transporting crates or holding in warehouse, *do not stack more than two bays high.*

- ⇒ **NOTE:**
When removing containers from the shipping van, place them on a dolly truck in their horizontal shipping positions. Verify that the containers have not been damaged. It is important that all containers be handled with care and precautions be taken not to drop the units.

Uncrating Procedure

- Step 1:* Uncrate all material in quarters separate from the equipment room in order to keep to an absolute minimum dust, lint, and other undesirable particles which could create maintenance problems.

- Step 2:* All bays are shipped in a dust-protective antistatic plastic bag and placed in a wooden container. The bay is laid in the container with the front or equipment side up and is so marked. Uncrating should be done in its shipping position.

Step 3: The tools required for uncrating bays are standard pinch bar and claw-type hammer. Care should be exercised when uncrating bays so that damage to equipment does not occur. Only use the pinch bar and/or hammer in areas that have been nailed. Remove top cover first so that an inspection of the contents of the shipping container can be made. Remove side and end plates. The bottom plate that the bay is resting on may remain until the bay is brought to the bay location for mounting. Remove the plastic bay and all foreign material.



CAUTION:

Some bays may be equipped with side covers running from top to bottom. Do not use these covers as a handling point when lifting or moving the bay into position. Use the bay's framework for this purpose.

Inspection

Inspection and Physical Verification

If bay frames are equipped with shelves perform the following steps:

Step 1: Verify that no plug-in units are installed.

Step 2: Verify that no loose parts are at the bottom of the bay.

Step 3: Verify that no damage is visible and that each shelf, if factory equipped, is tightly secured to the bay.

Step 4: Verify that all cables are free of broken, bent, or misaligned connectors.

Step 5: Verify that all factory wiring is secure and tied into forms.

Step 6: Verify that all material is accounted for. Refer to the job specification and PARTS LISTS chapter.

Erecting and Placement

Floor Layout Bay Footprint

Step 1: Mark the frame name and number on the floor in the space where the frame is to be located. This will help later in locating frame positions when the bays arrive. Cover the markings with a clear shellac if a period of time is expected before the arrival of the bays so that markings do not rub off the floor.

Step 2: Refer to Figure 2-1 for bay framework dimensions.



NOTE:

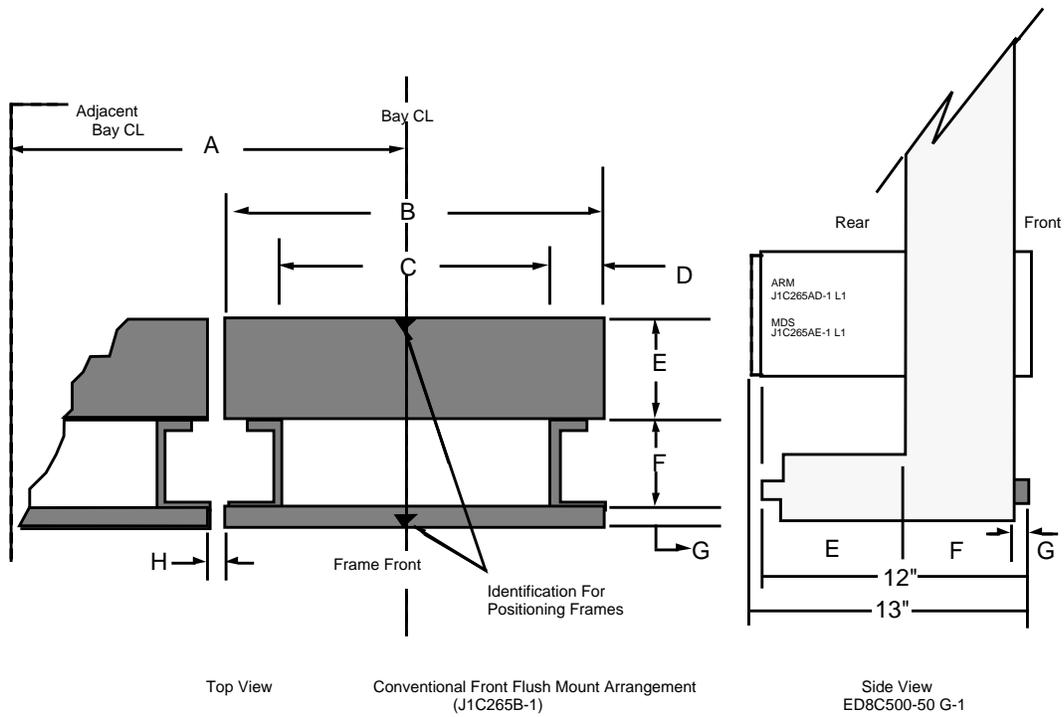
Refer to the SUPPLEMENTARY INFORMATION section for alternative framework information

Step 3: Refer to Figure 2-1 for floor marking. Mark the floor 26 inches wide for each bay, and use the center of each bay as the reference line. This means that the 25.875 inch wide bay is placed into the 26 inch wide space allowed for each bay.



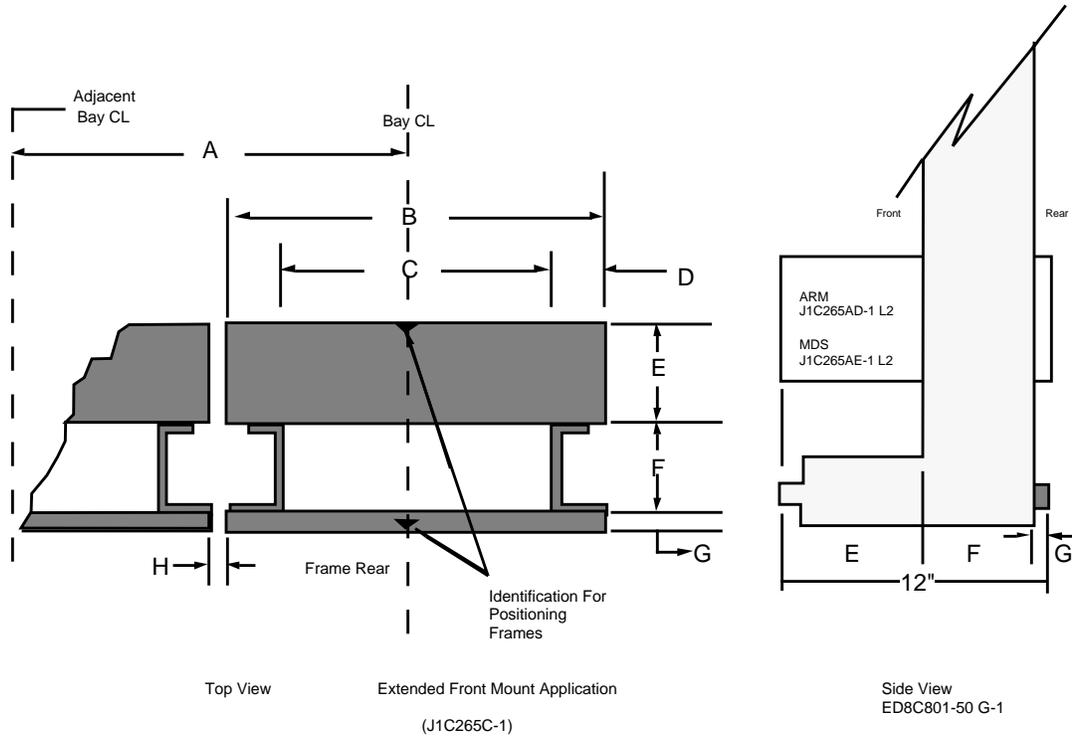
NOTE:

The network bay frameworks have a center line marking on the front and rear base of the framework which should be lined up with the center line marked on the floor when the bays are positioned.



| Dimensions | | |
|------------|---------------|-------------|
| | English (in.) | Metric (mm) |
| A | 26.00 | 660.40 |
| B | 25.875 | 657.225 |
| C | 21.5 | 546.10 |
| D | 2.1875 | 55.5625 |
| E | 6.00 | 152.40 |
| F | 5.00 | 127.00 |
| G | 1.00 | 25.4 |
| H | 0.125 | 3.175 |

Figure 2-1A. Bay Frame Views (Front Flush Mount Shelf Arrangement)



| Dimensions | | |
|------------|---------------|-------------|
| | English (in.) | Metric (mm) |
| A | 26.00 | 660.40 |
| B | 25.875 | 657.225 |
| C | 21.5 | 546.10 |
| D | 2.1875 | 55.5625 |
| E | 5.00 | 127.00 |
| F | 5.00 | 127.00 |
| G | 2.00 | 50.8 |
| H | 0.125 | 3.175 |

Figure 2-1B. Bay Frame Views (Front Extended Mount Shelf Arrangement)

Bay Frame Mounting

- Step 1:* Move the bay to its proper floor location. Exercise care when moving the bay, avoiding sudden shock or strain to equipment shelves, if equipped. Do not handle or support the frame by the side covers.
- Step 2:* The bay can be erected into position by using two or more people. For added safety, located at the very top of the bay are three 5/8- inch threaded holes. These holes are for lifting. When required, attach the eye bolt into these holes, and tie off with rope temporarily to some solid structure overhead (refer to Figure 2-3).
- Step 3:* Lift the bay and place into the proper location in the lineup. Visually inspect for obvious damage.
- Step 4:* Before the bay is secured to the floor, verify that it is level so that alignment of adjacent bays via junction plates can be achieved.
- Step 5:* Use the job specification information for positioning the bay frame to its assigned lineup location.
- Step 6:* Use Figure 2-2 as a drilling template which specifies the hole locations in the framework base. Use location 1 first; then location 2 if an obstruction in the concrete is hit; then 3 and 4, if necessary. The number of drillings is dependent upon the earthquake zones and local building practices.
- Step 7:* Follow local practices for securing the frame to the floor otherwise refer to the detailed information pertaining to floor layout and placement methods in the SUPPLEMENTARY INFORMATION chapter of this manual.
- Step 8:* Secure the frame to the overhead superstructure using the furnished hardware specified in Figure 2-3.

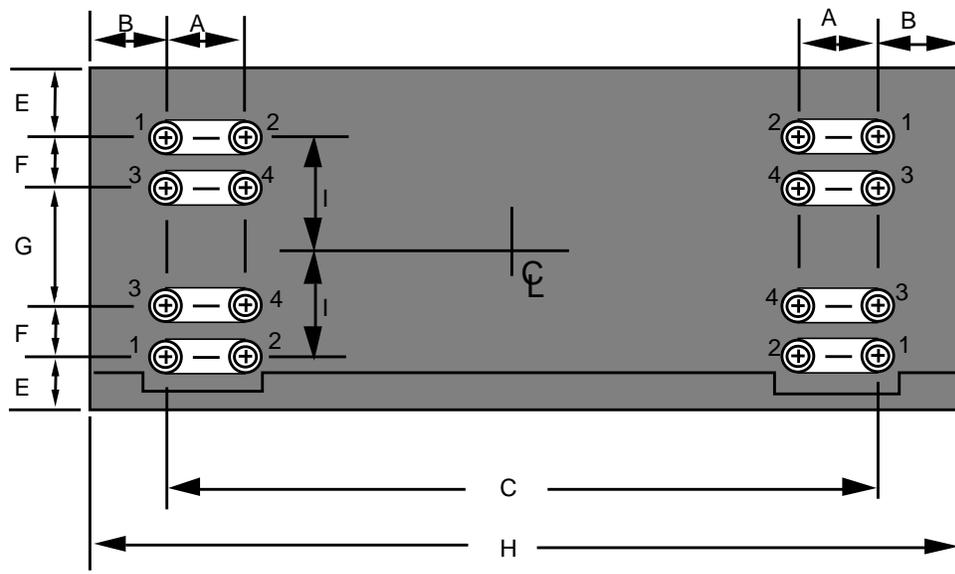


Figure 2-2. Floor Drilling

Table 2-1. Dimensions for Figure 2-2

| Symbol | English (in.) | Metric (mm) |
|--------|---------------|-------------|
| A | 02.00 | 050.800 |
| B | 03.94 | 100.076 |
| C | 18.00 | 457.200 |
| D | 07.25 | 184.150 |
| E | 01.17 | 029.718 |
| F | 02.00 | 050.800 |
| G | 03.25 | 082.550 |
| H | 25.87 | 657.098 |
| I | 03.63 | 092.075 |

Grounding Connections

Grounding - General



NOTE:

The frame ground (ground ring) connection provided for each framework serves two purposes:

- a. A direct earth ground connection for lightning protection
- b. A common ground potential for electrostatic discharge (ESD) protection

Therefore, it should be the first common wiring connection established once the bay frame has been bolted in place.



NOTE:

All ground connections to the frame shall be made in such a manner as to ensure a low-resistance contact with the metal framework. Remove any paint if necessary. Note that the bay frame has a ground wire attached which can be removed and repositioned or replaced to conform with local grounding codes. Whenever this ground strap is repositioned the frame's paint must be removed as much as necessary to ensure a low-resistance ground and apply an oxidation preventative such as NO-OX-ID* "A".

Connections

Step 1: All individual frames are provided with grounding wires. It will be necessary to terminate or crimp this bay ground wire to the ground wire (or ground ring) in the cable rack as shown in Figure 2-4.



NOTE:

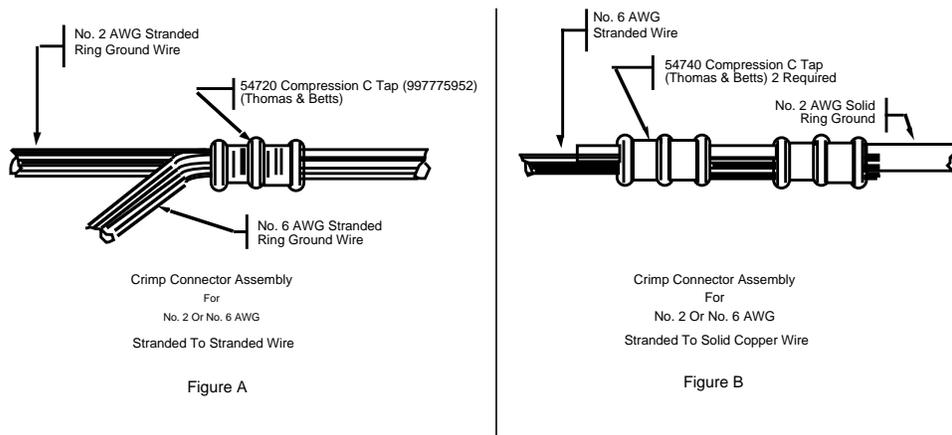
In locations where a building ground wire is not apparent, the bay ground wire should be extended to the MDF framework near the cable entrance. In all cases conform to local grounding practices.

Step 2: In stations where there is more than one frame in a lineup, each frame shall be connected to the ground wire.

* Registered trademark of Sanchem, Inc.

Step 3: Each equipment shelf is equipped with a ground wire which must be bonded to the bay framework. Refer to the section Mounting System Shelves for details.

Step 4: The ARM shelf has also one ESD ground wire which must be bonded to the bay framework. Refer to the section Mounting System Shelves for details.



NOTE 1: The "C" Type Tap Shall Always Turn In The Direction Of The Closest Ring Bus Bond.

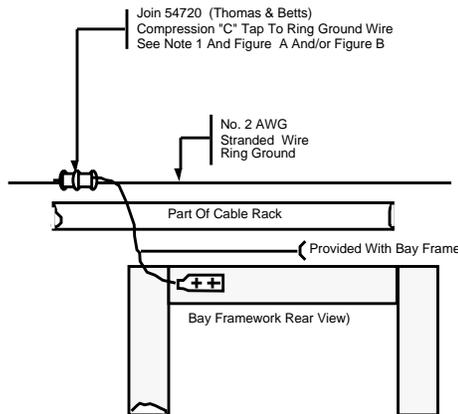


Figure C

Figure 2-4. Grounding Connections

Mounting System Shelves



NOTE:

These procedures shall be followed when separate shelves must be mounted, when increasing system capacity, or when equipment shelves must be replaced. Refer to the Figure 2-5 for equipment shelf locations.



NOTE:

COT Frames may have been preassembled at an Lucent Technologies Service Center with a complement of shelves in accordance with an engineered order or may have only a minimum complement of shelves equipped. In either case the customer's order should be checked for the correct configuration of shelves. COT frames coded J1C265B-1 (flush mount) and J1C265C-1 (extended mount) may have been ordered from the supplier as a complete complement of shelves factory mounted and interconnected.



NOTE:

All shelves are mounted from the rear and must be assembled only in accordance with the Mounting Hole Locations Figure 2-5. To mount the shelves otherwise would destroy the integrity of the system airflow, the local cable connections and the growth pattern.



NOTE:

The ATU shelf has side mounting flanges which can be repositioned to allow the shelf to be mounted flush with the front of the frame or extend outwards. This arrangement allows for conformity with other frames and shelves in the central office environment.

The ARM (J1C265AD-1) and MDS (J1C265AE-1) shelf can be ordered as List 1 or List 3, flush mounting (Figure 2-1A, Side View) type or as List 2 or List 4 extended mounting (Figure 2-1B, Side View) type.



NOTE:

Before attaching the shelf's ground wire to the bay frame, remove as much of the frame's paint as necessary to ensure a low-resistance ground and apply an oxidation preventative such as *NO OX-ID "A"*.



NOTE:

For rear mounted, flush mounted shelves, remove all ARM and MDS shelf doors prior to installing the shelves onto the bay frame.

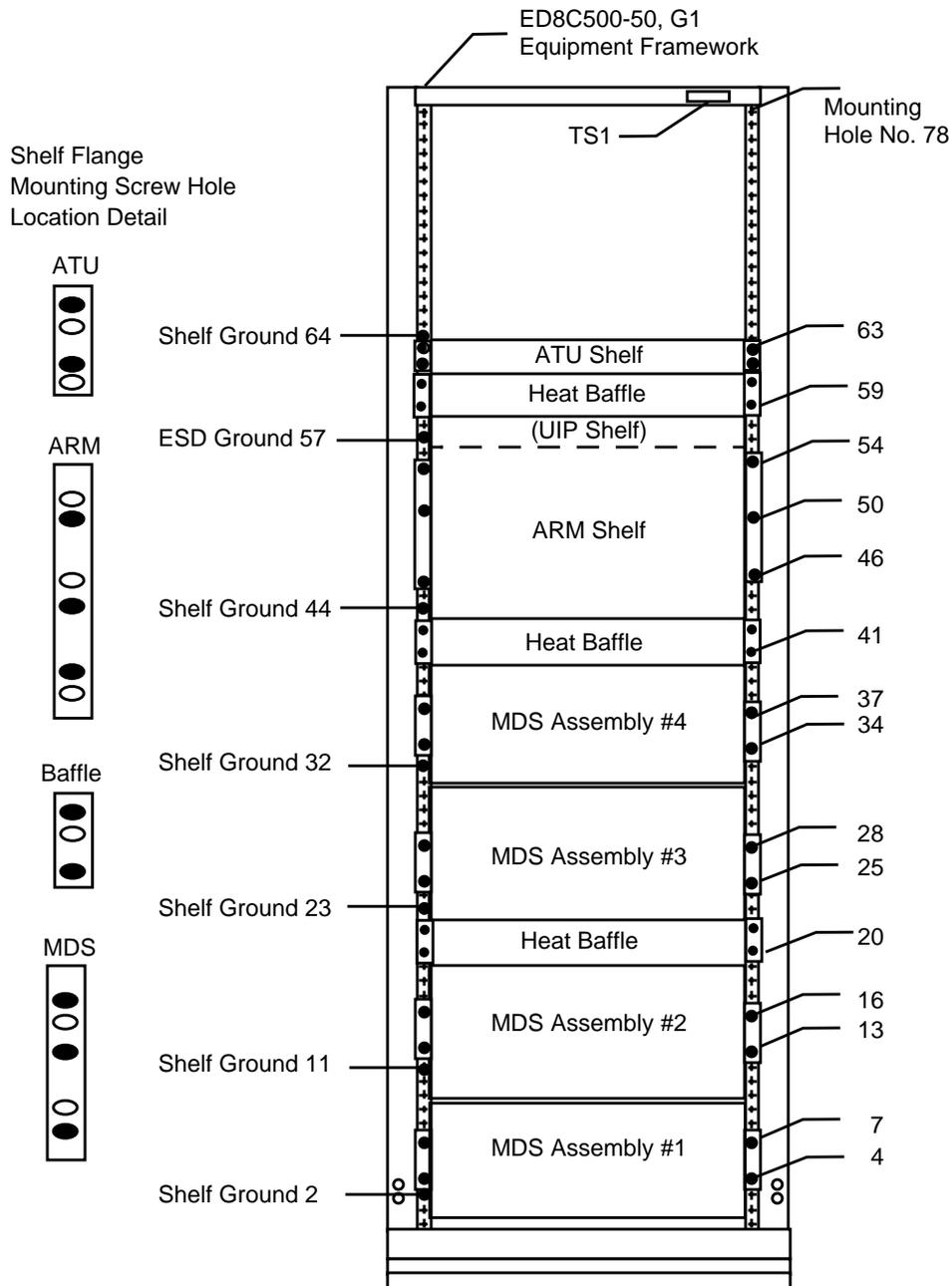


Figure 2-5A. 7-foot COT Bay (J1C265B-1) Equipment Mounting Locations

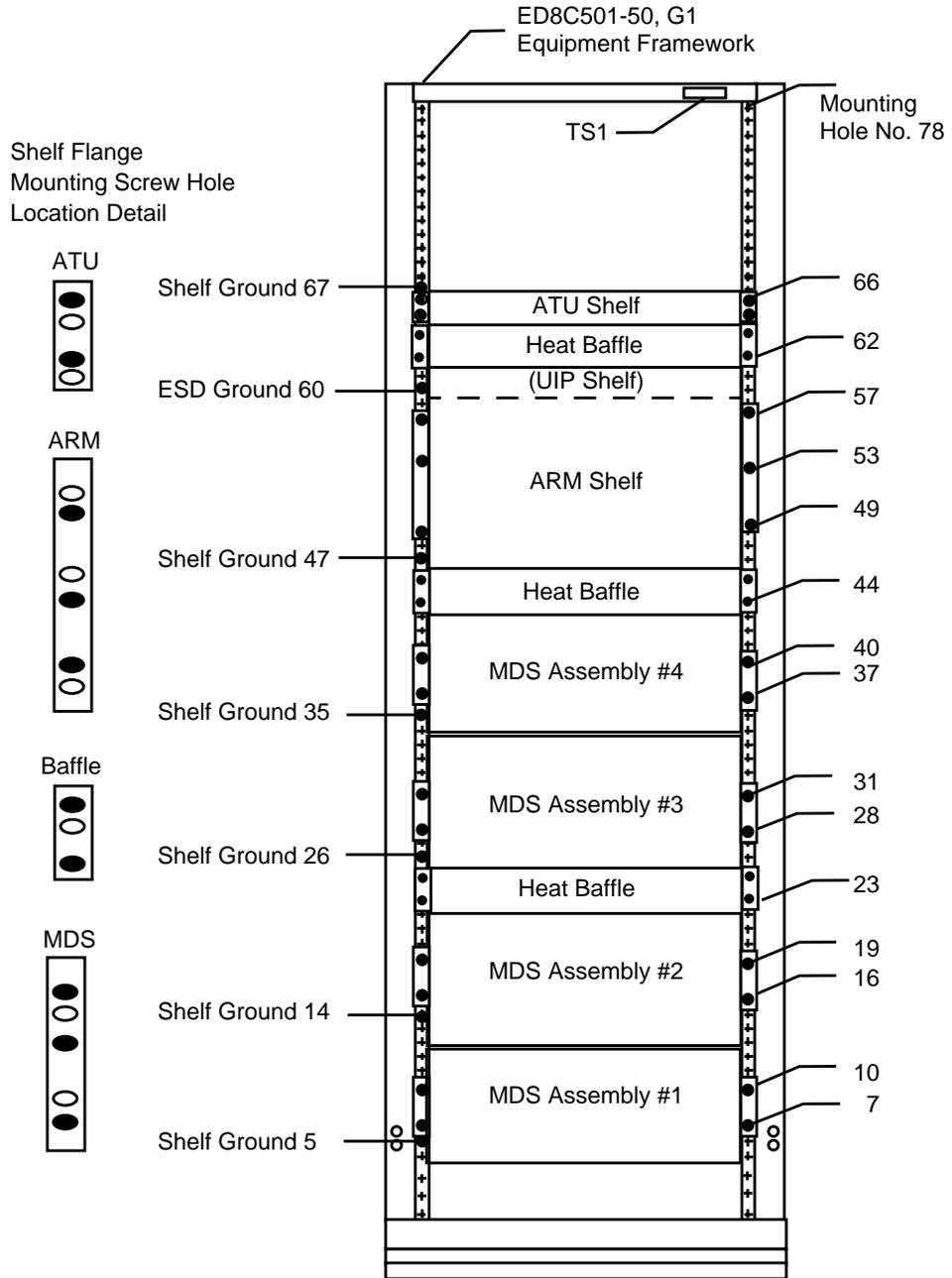


Figure 2-5B. 7-foot COT Bay (J1C265C-1) Equipment Mounting Locations

MDS Assembly Installation

⇒ **NOTE:**
The maximum number of MDS assemblies which can be installed in the COT Bay is four. The first shelf must be located at the bottom of the bay even if it is the only shelf provided.

⇒ **NOTE:**
The growth pattern for the MDS shelves is from the bottom up. Do not leave any vacant spaces between or below the shelves. Only the first MDS assembly will have a small space below its bay position. The baffle panel is mounted between the second and third MDS and above the fourth MDS.

J1C265AE-1 MDS Assembly Mounting Procedure

- Step 1:* Open the carton and inspect the shelf and all its connectors and cable assemblies for damage or misalignment.
- Step 2:* Mount the assembly and the required baffle panel, using its attached hardware, to its designated bay position. Use the alignment pins (slotted studs) to position the assembly.
- Step 3:* Locate the ground strap attached to each assembly and connect it to the bay frame as indicated in the Figure 2-5.

⇒ **NOTE:**
Remove any paint as necessary on the bay frame to ensure a low-resistance contact.

- Step 4:* Move the attached shelf cable assemblies forward so that they drape into the bay frame's cable duct areas. Leave the connectors in place at this time for future connection to the Intrabay and Customer Interface cable assemblies.

⇒ **NOTE:**
The following connectors on the shelf dangle cables should be visible in their respective ducts as viewed from the rear:

| Left Duct | Right Duct |
|-----------|------------|
| J302 | P301 |
| P500 | |

ARM Shelf Installation



NOTE:

Only one ARM shelf can be installed in the COT Bay. The shelf must be located at the specific location depicted in the figure even if only one MDS shelf is provided.

For ease of assembly the Power Interface Unit (PIU) should be mounted on the ARM shelf before the shelf is mounted to its bay position.

ED7C734-30 PIU Mounting Procedure

- Step 1:* Open the cartons to the ARM shelf and the PIU and inspect the contents especially the connectors and cable assemblies for damage or misalignment.
- Step 2:* Refer to Figure 2-6 and mount the PIU to the ARM shelf as follows:
- a. Remove the three screws attached to the PIU's hinge captive nuts (this is the RT version of the PIU).
 - b. Using two of the three screws provided, through the other screw holes in the hinge, fasten the PIU hinge to the rear side of the ARM shelf from the outside of the shelf.
 - c. Temporarily close the hinged door by finger-tightening the attached knurled screw head into the ARM shelf's captive nut.
 - d. Verify that the attached cables drape to the left (rear) and are not entangled.

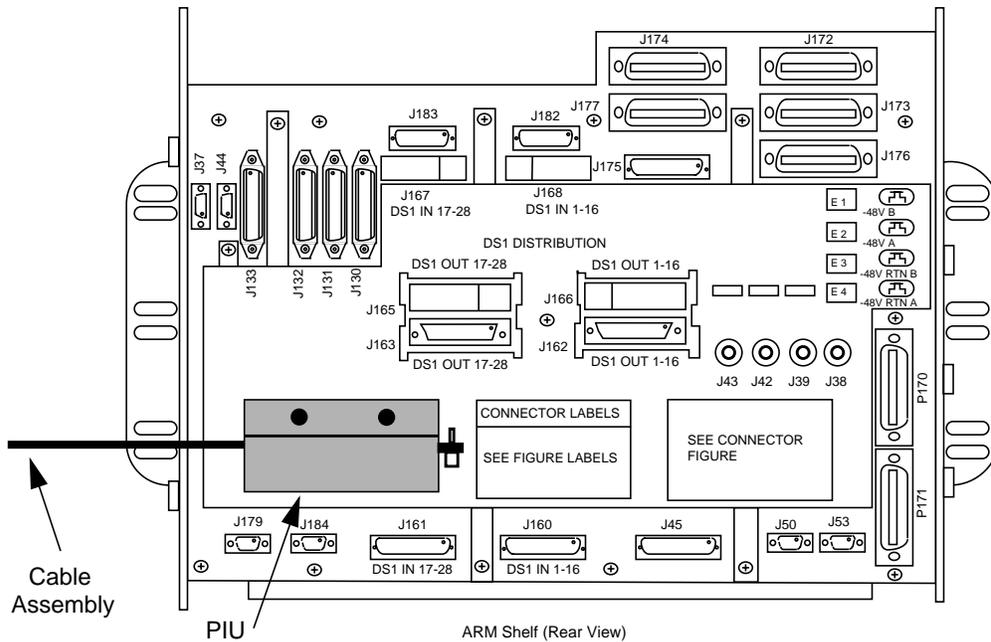


Figure 2-6. PIU Mounting Details

J1C265AD-1 ARM Shelf Mounting Procedure

- Step 1:* Mount the shelf and its associated baffle panel, using their attached hardware, to their designated bay positions.
- Step 2:* Locate the ground strap attached to the ARM shelf and connect it to the bay frame as indicated in Figure 2-5.
- Step 3:* Locate the ground strap attached to the UIP ESD jack and connect it to the bay frame as indicated in Figure 2-5.



NOTE:

Remove any paint as necessary on the bay frame to ensure a low-resistance contact.

- Step 4:* Move the attached shelf cable assemblies forward so that they drape into the bay frame's cable duct areas. Leave the connectors in place at this time for future connection to the Intrabay and Customer Interface cable assemblies.



NOTE:

The following connectors on the shelf dangler cables should be visible in their respective (rear view) ducts:

| Left Duct | Right Duct |
|-----------|------------|
| J500-1 | P275 |
| J500-2 | |
| J500-3 | |
| J500-4 | |
| J303 | |

404A User Interface Panel (UIP)



NOTE:

This unit is considered a plug-in and shall be installed in accordance with the instructions detailed in the User Service Manual, Lucent Technologies 363-208-001 DLP518.

TS1 Terminal Block Installation

Step 1: Mount the TS1 (353A) block on the top right side of the rear of the bay framework in the frame's predrilled holes. Orient the block so that the numbering runs from the lower left (1) to upper right (50).

Step 2: Use the hardware detailed in Figure 2-7 to mount the terminal block and the cable support rod.



NOTE:

Note that the additional solder-less wrap terminal (Comcode 841595184) on the left side of the 353A block must make contact with the frame, through the screws, for balanced pair shielded wires to be attached in the Central Office Clock Connections section of Chapter 3.



NOTE:

If this COT bay will have connections to the Central Office Clock (refer to the APPLICATIONS section) then it will be advantageous to wire the required resistors and bay cable (refer to Chapter 3) before mounting.

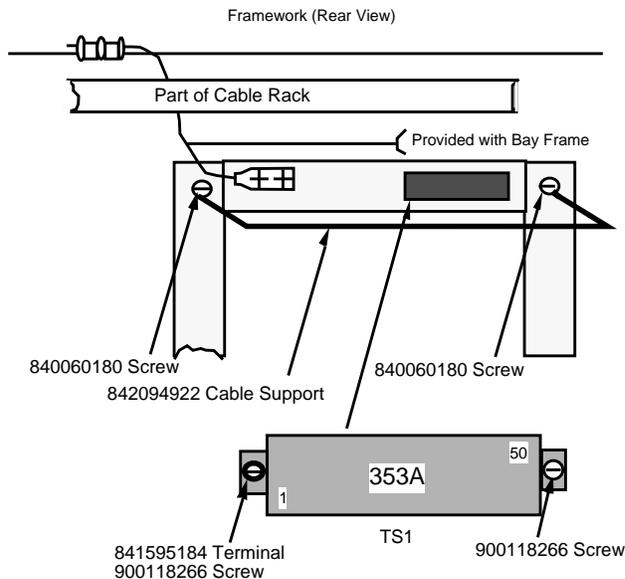


Figure 2-7. TS1 Terminal Block Location

1A Alarm and Test Unit Installation

⇒ **NOTE:**
Only one 1A ATU Shelf is required for the COT Bay. The shelf must be located at the specific location depicted in Figure 2-5.

⇒ **NOTE:**
For a front extended mount application the shelf's flanges must be removed and relocated to line up with the adjacent shelves.

Mounting Procedure

- Step 1:* Open the carton and inspect the shelf and all its connectors and cable assemblies for damage or misalignment.
- Step 2:* Mount the shelf using its attached hardware to its designated bay position.
- Step 3:* Locate the ground strap attached to the ATU shelf and connect it to the bay frame as indicated in Figure 2-5.



NOTE:

Remove any paint as necessary on the bay frame to ensure a low-resistance contact.

Step 4: Move the attached shelf cable assemblies forward so that they drape into the bay frame's cable duct areas. Leave the connectors in place at this time for future connection to the Intrabay and Customer Interface cable assemblies.



NOTE:

The following connectors on the shelf dangler cables should be visible in their respective (rear view) ducts:

| Left Duct | Right Duct |
|------------------|-------------------|
| P114 | J173 |
| P115 | P183 |
| J115 | |
| P184 | |

Contents

| | |
|--|------|
| Cable Assembly Descriptions | 3-1 |
| ■ Cable Description | 3-1 |
| Factory Assemblies | 3-1 |
| Customer Interface Cable Assemblies | 3-1 |
| Factory Cable Assembly Wire Color Coding Sequence | 3-2 |
| Connector Description | 3-4 |
| Cinch Connectors | 3-4 |
| D Type Connectors | 3-5 |
| AMP Mate-N-Lok II Connectors | 3-6 |
| Installer Cabling Operations | 3-8 |
| ■ General | 3-8 |
| ■ Shelf Cables Verification | 3-11 |
| ■ Bay Local Cable Connections | 3-14 |
| Power and Ringing Local Interfaces | 3-16 |
| ■ Power Interface Unit/Standard Bay Cable Connections | 3-16 |
| ■ Power and Ringing Bay Cable Assembly ED7C723-34 Group 2 | 3-17 |
| PCM Connections | 3-22 |
| ■ Connecting Procedure for Cable Assemblies ED7C723-30 Groups 9A to 12A | 3-22 |
| Connections | 3-22 |
| Test Access Path (TAP) Interface | 3-25 |
| ■ TAP Bay Cable Assembly ED7C723-34 Group 1 | 3-25 |

Contents

| | |
|--|------|
| 1A Alarm Test Unit Cables | 3-28 |
| ■ General | 3-28 |
| ■ ED7C723-36 Group 1 Connections | 3-28 |
| ■ ED7C723-36 Groups 3 and 4 | 3-29 |
| ■ ED7C723-36 Group 5 | 3-29 |
| ■ ED7C723-36 Group 6 | 3-29 |
| Customer Interface Cable Connections | 3-32 |
| ■ Customer's DC Power and Ringing Supply Connections | 3-34 |
| General | 3-34 |
| DC Power Connections | 3-34 |
| Ringing Connections | 3-35 |
| Tests | 3-35 |
| Miscellaneous Discrete Environment Alarms and Controls | 3-36 |
| ■ General | 3-36 |
| ■ Connections ED7C723-37 Group 16, 17, or 18 | 3-36 |
| DS1 Connections | 3-39 |
| ■ General | 3-39 |
| ■ Installation Procedure for Cable Assemblies ED7C723-37 Groups 1, 2, or 3 | 3-40 |
| Connections | 3-40 |
| VF Connections | 3-46 |
| ■ Installation Procedure for Cable Assemblies ED7C723-37 Groups 4 to 9 | 3-46 |
| Connections | 3-47 |
| E&M Connections | 3-60 |
| ■ Installation Procedure for Cable Assemblies ED7C723-37 Groups 10 to 15 | 3-60 |
| Connections | 3-61 |
| ■ Central Office Alarms | 3-68 |
| ■ Parallel Telemetry Connections | 3-69 |

Contents

| | |
|---|-------------|
| ■ PGTC Interconnections | 3-74 |
| Adjacent bay connections | 3-74 |
| Non-adjacent bay connections | 3-74 |
| Direct PGTC connections | 3-74 |
| ■ By-Pass Test Pair Connections | 3-76 |
| ■ Central Office Clock Connections | 3-78 |
| Composite Clock | 3-78 |
| DS1 SONET Clock | 3-78 |
| ■ Operational Systems Interfaces | 3-80 |
| X.25 (Q3) Interface | 3-80 |
| TBOS Serial Telemetry | 3-80 |
| CIT/Modem | 3-80 |
| ARM Shelf Fiber Optic Cables | 3-84 |
| ■ General | 3-84 |
| ■ Installation Procedure for Installing Fiber Optic Cables to the ARM Shelf | 3-84 |

Figures

| | | |
|--------|--|------|
| 3-1. | Cinch Type Connectors | 3-4 |
| 3-2. | D Type Connectors | 3-5 |
| 3-3. | AMP Mate-N-Lok II Connector | 3-6 |
| 3-4. | AMP Mate-N-Lok II Assembly | 3-7 |
| 3-5. | SLC-2000 COT Bay Typical Cable Routing | 3-9 |
| 3-6. | COT Bay Cable Assemblies | 3-10 |
| 3-7. | ARM Shelf Cable Assemblies | 3-12 |
| 3-8. | MDS Shelf Cable Assemblies | 3-13 |
| 3-9. | ATU Shelf Cable Assemblies | 3-13 |
| 3-10. | COT Bay Intershelf Connections | 3-15 |
| 3-11. | Power Interface Location | 3-18 |
| 3-12. | Intershelf Power and Ringing Connections | 3-19 |
| 3-13. | MDS Power Cabling | 3-20 |
| 3-14. | Power Connections | 3-21 |
| 3-15. | PCM Bay Cables | 3-23 |
| 3-16. | PCM J500() Connections | 3-24 |
| 3-17. | TAP Connection | 3-26 |
| 3-18. | TAP Bay Connections | 3-27 |
| 3-19. | ATU Power Connections | 3-28 |
| 3-20A. | ATU/TS1 Wiring Interconnections | 3-30 |
| 3-20B. | P1A, P184 Wiring | 3-31 |
| 3-21. | Customer Interface Cables | 3-33 |
| 3-22. | J171/ARM Shelf Connection | 3-37 |
| 3-23. | Discrete Alarm Connections J171 | 3-38 |
| 3-24. | DS1 Distribution or Feeder Cable Routing | 3-41 |
| 3-25. | DS1 IN (1 - 16) Connections | 3-42 |
| 3-26. | DS1 IN (17 - 28) Connections | 3-43 |
| 3-27. | DS1 OUT (1 - 16) Connections | 3-44 |
| 3-28. | DS1 OUT (17 - 28) Connections | 3-45 |
| 3-29. | MDS VF Cable Routing J101 - J104 | 3-48 |
| 3-30. | J101 - J104 Bay Cabling | 3-49 |
| 3-31. | J101 Wiring (Channel Unit Slots 1 - 7) | 3-50 |
| 3-32. | J102 Wiring (Channel Unit Slots 7 - 13) | 3-51 |
| 3-33. | J103 Wiring (Channel Unit Slots 13 - 19) | 3-52 |
| 3-34. | J104 Wiring (Channel Unit Slots 19 - 24) | 3-53 |

Figures

| | | |
|-------|--|------|
| 3-35. | MDS VF Cable Routing J201 - J204 | 3-54 |
| 3-36. | J201 - J204 Bay Cabling | 3-55 |
| 3-37. | J201 Wiring (Channel Unit Slots 1 - 7) | 3-56 |
| 3-38. | J202 Wiring (Channel Unit Slots 7 - 13) | 3-57 |
| 3-39. | J203 Wiring (Channel Unit Slots 13 - 19) | 3-58 |
| 3-40. | J204 Wiring (Channel Unit Slots 19 - 24) | 3-59 |
| 3-41. | MDS E&M Cable Routing (J105 & J106, J205 & J206) | 3-62 |
| 3-42. | J105 & J106, J205 & J206 Bay Cabling | 3-63 |
| 3-43. | J105 Wiring (Channel Unit Slots 1 - 13) | 3-64 |
| 3-44. | J106 Wiring (Channel Unit Slots 13 - 24) | 3-65 |
| 3-45. | J205 Wiring (Channel Unit Slots 1 - 13) | 3-66 |
| 3-46. | J206 Wiring (Channel Unit Slots 13 - 24) | 3-67 |
| 3-47. | TS1 Block CO Alarms Connections | 3-68 |
| 3-48. | Parallel Telemetry Connections | 3-73 |
| 3-49. | PGTC Interconnections (ED3C861-20 Cable Assemblies) | 3-75 |
| 3-50. | By-Pass Pair Connections | 3-77 |
| 3-51. | TS1 Block Connections to Composite Clock | 3-78 |
| 3-52. | Connections to DS1 and BITS Clocks | 3-79 |
| 3-53. | ARM Shelf Cable Routing for ED8C724-20, G339 - 341 Cables | 3-79 |
| 3-54. | ARM Shelf Cable Routing for ED8C724-20 OS Cables | 3-81 |
| 3-55. | TL1 X.25 Connections | 3-82 |
| 3-56. | TBOS Connections | 3-83 |
| 3-57. | CIT/Modem RS232 Connections | 3-84 |
| 3-58. | Optical Fiber Routing | 3-86 |

Tables

| | | |
|------|--|------|
| 3-1. | Cable Verification for ARM and MDS Shelves | 3-11 |
| 3-2. | VF Connections | 3-47 |
| 3-3. | VF Channel Number Identification | 3-47 |
| 3-4. | E&M Connections | 3-61 |
| 3-5. | E&M Channel Number Identification | 3-61 |
| 3-6. | COT Parallel Telemetry Alarm and Status Points | 3-70 |

Cabling, Wiring, and Assembly

3

Cable Assembly Descriptions

Cable Description

Factory Assemblies

Two types of cabling operations are required for connecting factory assemblies. The first is the connecting of Shelf Dangler Cables to other shelf dangler cables. The second is the placement and connecting of intershelf cable assemblies that are common to each shelf (i.e. power, ringing and test functions). These Standard Bay Cable Assemblies are preconnectorized at the factory, and installation consists of putting the right connectors together when mounting new shelves or if cables had been disconnected for packing purposes. Factory assemblies utilize connectors of the Insulation Displacement Connection (IDC) type with low-profile hood assemblies.

Some bays may be shipped preassembled from the factory with shelves and cables. For those bays, only the Customer Interface cabling operation is necessary, and the associated section for installation of the factory cables is used for verification procedures.

Customer Interface Cable Assemblies

These assemblies consist of external cables that interconnect the SLC[®]-2000 COT Bay to various other systems and ancillary equipment such as the following:

- a. VF customer lines for cross connections at a MDF block.
- b. DS1 line connections for cross connections at the DSX.
- c. Optical fiber jumpers for cross connections at the LGX for lightwave systems.
- d. Alarm connections for COT inputs.
- e. DC Test Pair connections for subscriber testing facilities.

- f. Discrete alarm connections for environment status and controls.
- g. Power connections from the -48 volt battery plant.
- h. Ringing connections from the customer's positive and/or negative ringing supplies.
- i. Synchronization inputs from the office clocks supplies.
- j. Operational System (OS) inputs from remote maintenance centers.

These external cables must be engineered for the complete installation of the SLC-2000 COT Frame.

⇒ NOTE:

All cables are not required for each installation. See Notes 201 and 202 on Sheet D1 of SD7C180-01 for information about the orderable customer interface cables for central office applications. Refer to the engineering specifications for a particular office application.

Factory Cable Assembly Wire Color Coding Sequence

Standard wire color coding for the factory assembled cables is shown in the following table. This coding sequence is followed on VF, DS1 and other cables used as dangles and as Customer Interface connections. Use of the color coding will facilitate both terminating operations at the customer's cross-connecting points and troubleshooting routines.

| Conductor Identification | |
|--------------------------|---------------------------|
| Pair No. | Colors (Tip/Ring) |
| 1 | white-blue/blue-white |
| 2 | white-orange/orange-white |
| 3 | white-green/green-white |
| 4 | white-brown/brown-white |
| 5 | white-slate/slate-white |
| 6 | red-blue/blue-red |
| 7 | red-orange/orange-red |
| 8 | red-green/green-red |
| 9 | red-brown/brown-red |
| 10 | red-slate/slate-red |
| 11 | black-blue/blue-black |

| Conductor Identification | |
|---------------------------------|-----------------------------|
| Pair No. | Colors (Tip/Ring) |
| 12 | black-orange/orange-black |
| 13 | black-green/green-black |
| 14 | black-brown/brown-black |
| 15 | black-slate/slate-black |
| 16 | yellow-blue/blue-yellow |
| 17 | yellow-orange/orange-yellow |
| 18 | yellow-green/green-yellow |
| 19 | yellow-brown/brown-yellow |
| 20 | yellow-slate/slate-yellow |
| 21 | violet-blue/blue-violet |
| 22 | violet-orange/orange-violet |
| 23 | violet-green/green-violet |
| 24 | violet-brown/brown-violet |
| 25 | violet-slate/slate-violet |

Connector Description

The connectors employed in the system are generally of the following types:

- a. Cinch 50 pin connectors used for transmission, alarms, and miscellaneous system interface connections.
- b. AMP 6 and 15 pin connectors used for dc power connectors.
- c. D Subminiature (DB9, DB25, DB37 pin arrangements) connectors used for digital signal transmission and telemetry interconnections.

Cinch Connectors

Cinch connectors as furnished on factory equipment (shelves and intershell cable assemblies) are the insulation displacement (ID) type. The connectors furnished for use by installers are also ID type requiring the use of special tools for wire insertion or replacement.

Each plug/jack connector combination has an associated covering (hood) which must be installed over the connector to complete the assembly.

Each plug and jack connector has terminal numbers embossed on the pin and wiring sides of the assembly.

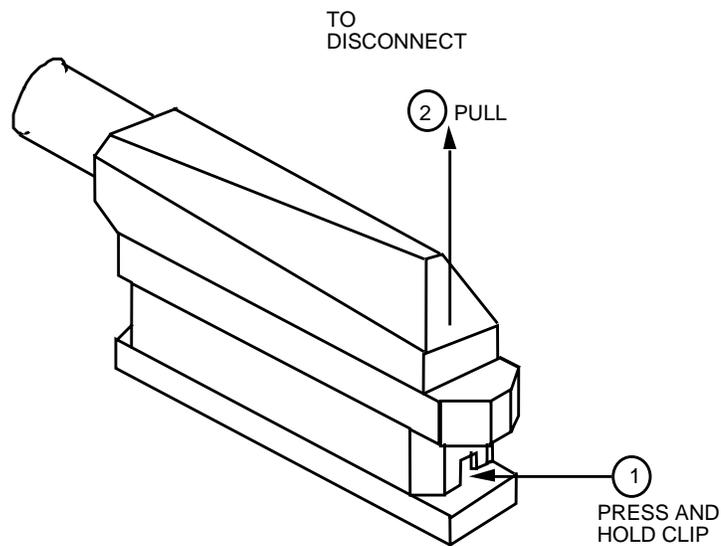


Figure 3-1. Cinch Type Connectors

D Type Connectors

D type connectors are provided in the system as DB9, DB25, DB37 pin arrangements.

Connectors as furnished on factory equipment (shelves and intershelf cable assemblies) are the insulation displacement (ID) type. The D type connectors furnished for use by installers are also ID type requiring the use of special tools for wire insertion or replacement.

Each D type plug/jack connector combination has an associated covering (hood) which must be installed over the connector to complete the assembly. Figure 3-2 depicts the D type connectors and the hood/hardware assemblies for mating the connectors together.

Terminal numbers are embossed on the pin side of the assembly.

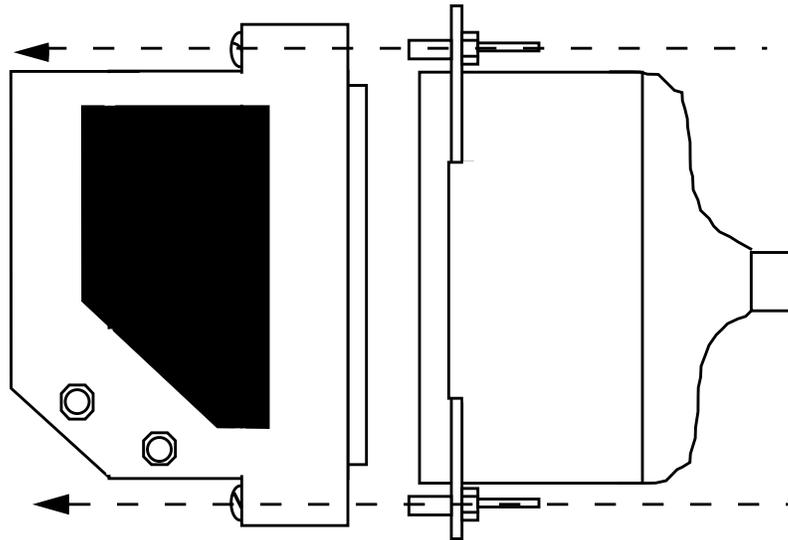


Figure 3-2. D Type Connectors

AMP Mate-N-Lok II* Connectors

AMP Mate-N-Lok II connectors are provided in various housings which accept a variety of pin sizes dependent upon the gauge of wires used. These pins are the crimp and solder type requiring only standard crimping and soldering tools. Each AMP Mate-N-Lok II connector is keyed to fit with its mating connector. Pin positions are identified by embossed numbers on the flat-sided surface areas of some positions. Consult Figure 3-3 for connector engagement and Figure 3-4 for pin replacement procedures.

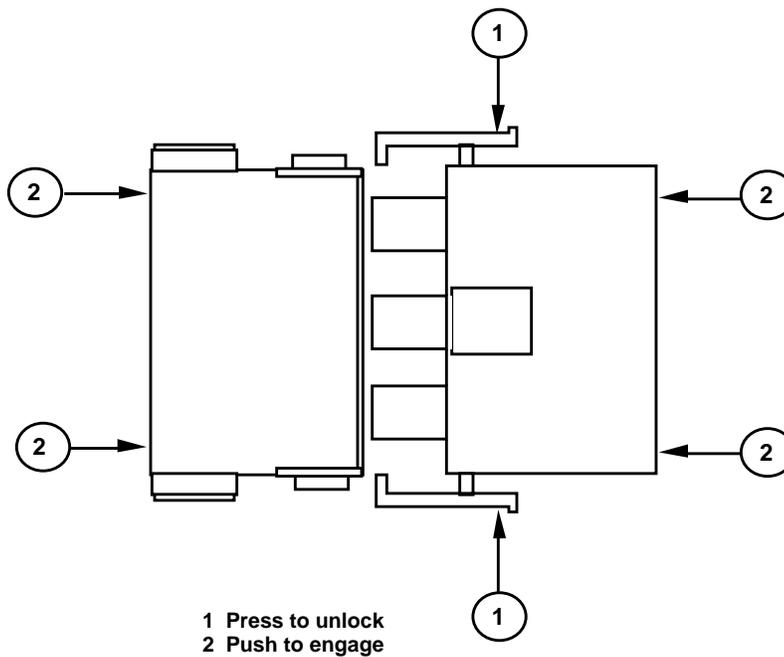


Figure 3-3. AMP Mate-N-Lok II Connector

* Registered trademark of AMP, Inc.

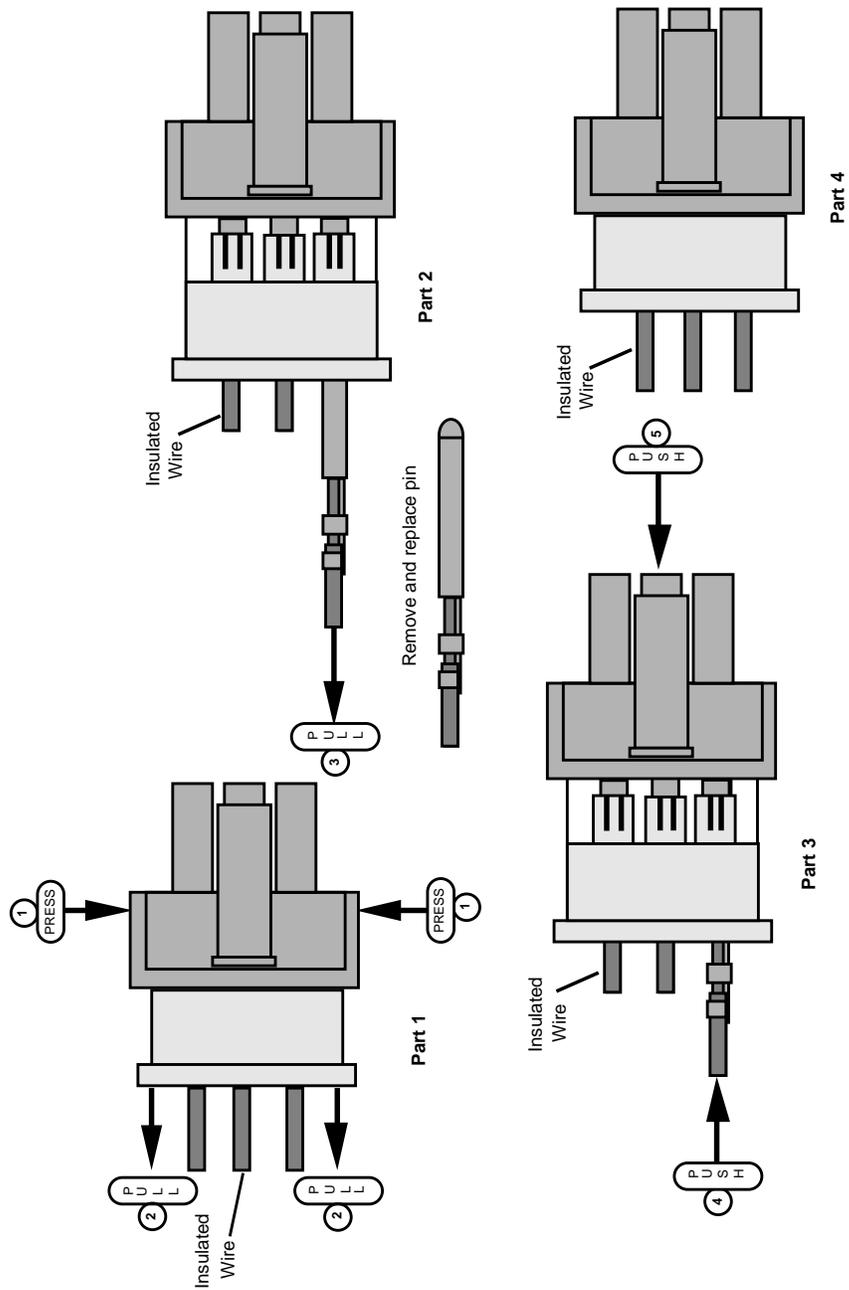


Figure 3-4. AMP Mate-N-Lok II Assembly

Installer Cabling Operations

General

The following sections detail all installer cables which can be connected to a *SLC-2000* 7-foot COT System. Customer Interface cables are those which interconnect to the office peripherals and ancillary equipment. Intrabay assemblies are the shelf dangler cables and the separate Standard Bay Cable Assemblies.

⇒ NOTE:

Not every interface connection is required. The engineering specification or installation order must specify which cables are required. Refer to the APPLICATIONS section for the connections and cable assemblies necessary for a complete *SLC-2000* COT Bay installation.

All connectors for terminating at the *SLC-2000* bay are provided by the manufacturer with the equipment. These connectors are part of factory assembled shelf dangler cable assemblies which can be accessed in the frame's duct. Installers must mate the customer cables to these connectors for the connections to the customer's facilities. Refer to Figure 3-5 for the bay cabling routing.

There are also direct connections to the shelves' connectors or back-planes. Some Customer Interface cables (ED7C723-37) are complete cable assemblies equipped with connectors at one end by the manufacturer (refer to the PARTS LISTS chapter). These cable assemblies can be identified for their use by noting the jack or plug designation number. Refer to Figure 3-6 to determine the mating connection. Other customer cable assemblies must have both ends prepared by the installer. To facilitate these operations associated pin/wire color coding has been provided.

All cable connectors must be accessed at the rear of the frame. Cable assemblies must be dressed and oriented with their hood coverings so that all cables exit across the rear of each shelf. The mating connectors must be oriented so that the cables exit upwards in the cable duct towards the overhead cable rack. Prepare this routing carefully to minimize congestion in the duct especially when two adjacent bays share the duct space. Refer to the appropriate figures for each shelf in the following paragraphs

The MDS rear cover has the cable routing direction paths designated as arrow path lines for the VF and E& M transmission cables to aid in the cable routing.

Each shelf has cable tie points at the rear and sides to support the associated cables. Refer to the associated figures for details.

The bay frame duct is equipped with “dog bones” to support the cables within the duct to the top of the frame.

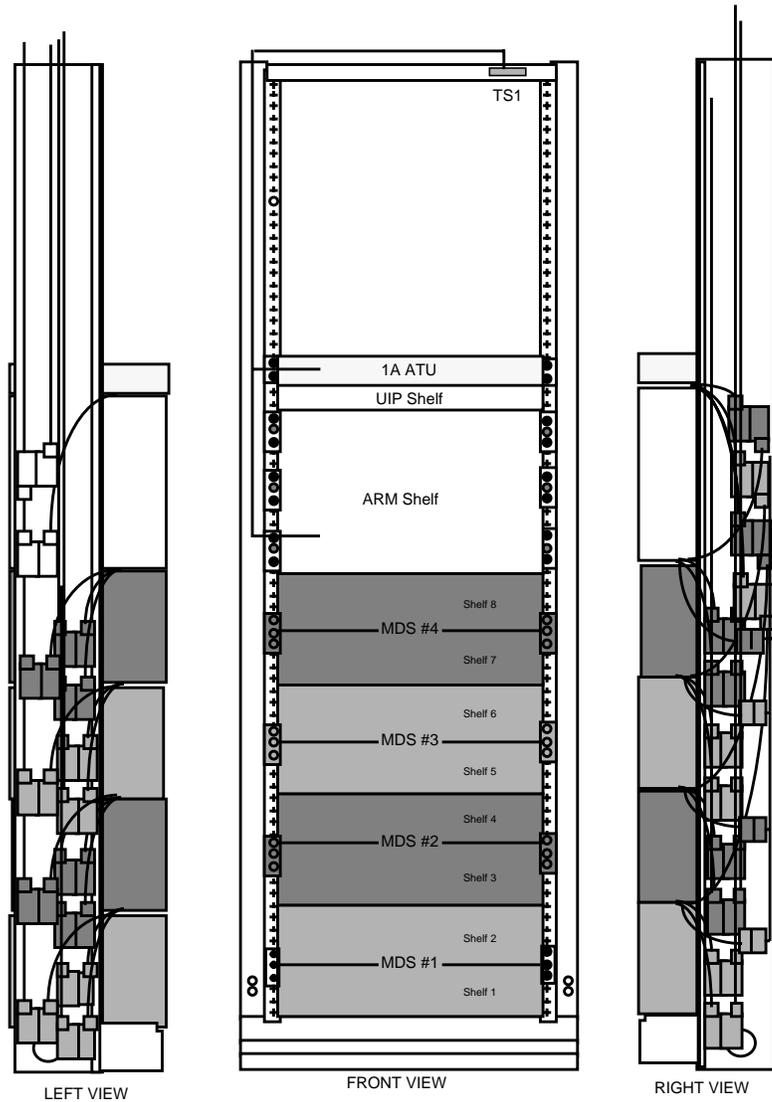


Figure 3-5. SLC-2000 COT Bay Typical Cable Routing

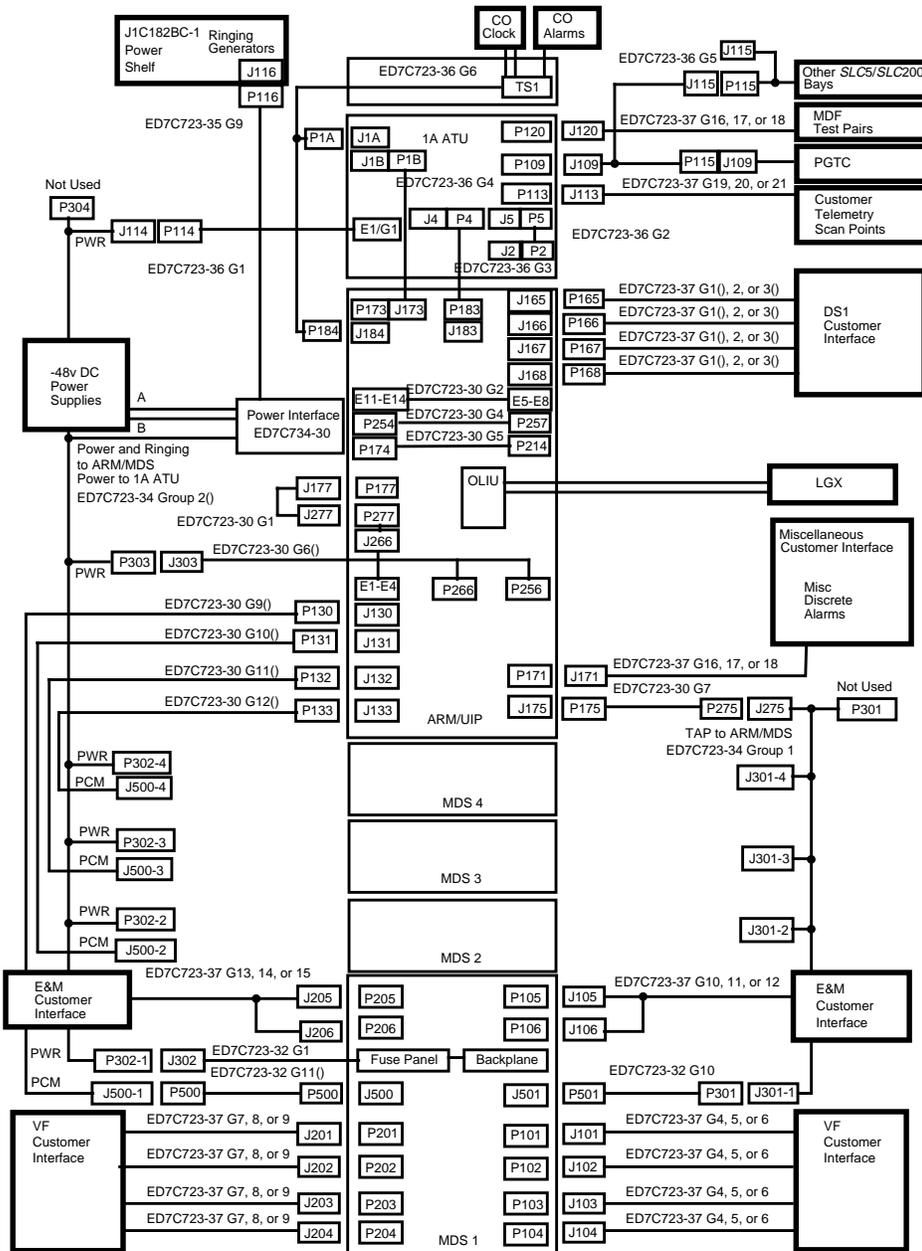


Figure 3-6. COT Bay Cable Assemblies

Shelf Cables Verification

Step 1: Verify that each shelf has been provided with its standard and optional cable assemblies and that the connectors have been routed to the appropriate cable duct (right or left). Refer to the following table and Figures 3-7 and 3-8.

Table 3-1. Cable Verification for ARM and MDS Shelves

| Shelf | Cable Assembly | Left Duct* | Right Duct* |
|-------|--------------------|------------|-------------|
| ARM | ED7C723-30, G6 | J303 | |
| | ED7C723-30, G7 | | P275 |
| | ED7C723-30, G9()** | J500-1 | |
| | ED7C723-30, G10() | J500-2 | |
| | ED7C723-30, G11() | J500-3 | |
| | ED7C723-30, G12() | J500-4 | |
| MDS | ED7C723-32, G1 | J302 | |
| | ED7C723-32, G10 | | P301 |
| | ED7C723-32, G11() | P500 | |
| ATU | ED7C723-36, G1() | P114 | |
| | ED7C723-36, G3() | | P183 |
| | ED7C723-36, G4 | | J173 |
| | ED7C723-36, G5 | J115/P115 | |
| | ED7C723-36, G6 | | P184 |

* As viewed from the rear of the bay

** The parenthesis after the group number of the cable assembly means that there may be an alpha character after the numeric character, e.g., Group 2 or Group 2A or Group 2B.

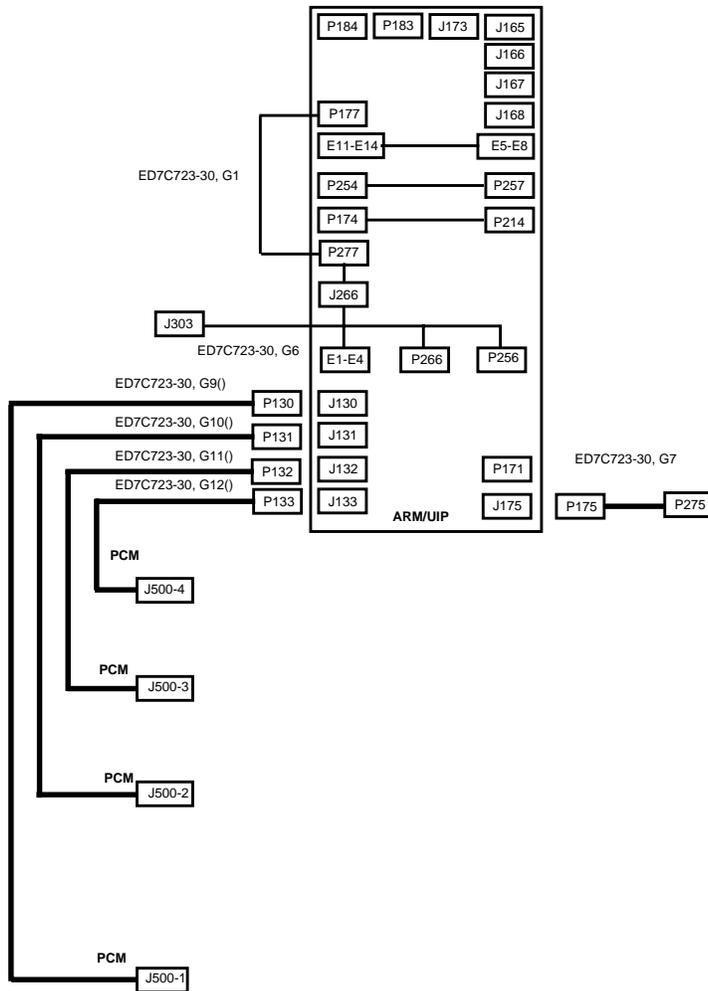


Figure 3-7. ARM Shelf Cable Assemblies

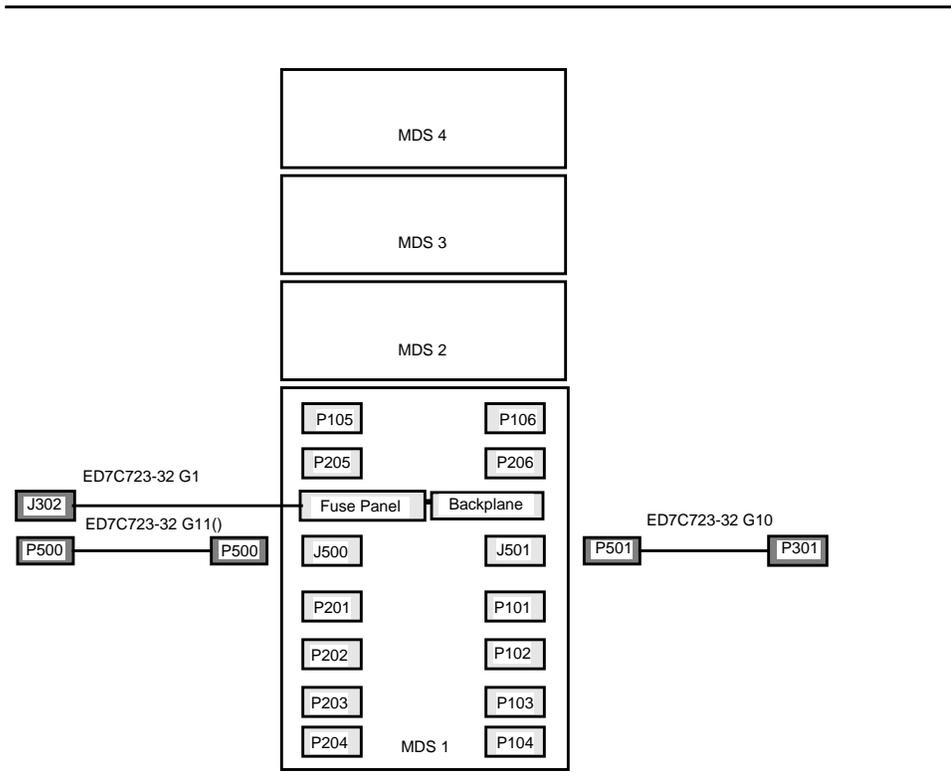


Figure 3-8. MDS Shelf Cable Assemblies

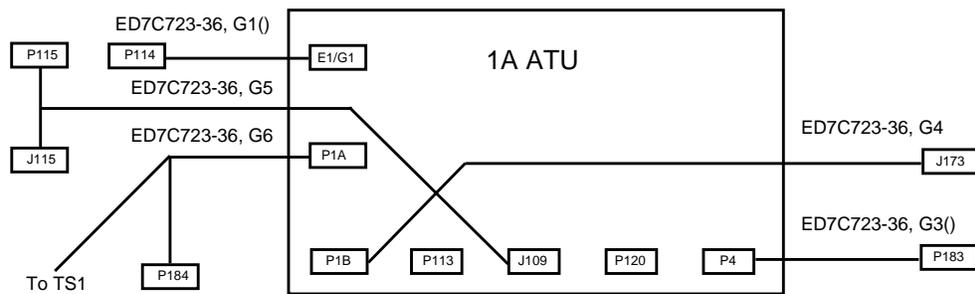


Figure 3-9. ATU Shelf Cable Assemblies

Bay Local Cable Connections

The following sections detail each installer operation necessary to interconnect the Standard Bay Cables and the Shelf Dangler Cables. For ease of installation and to alleviate cable duct congestion these procedures should be followed in the sequence presented. Details of these procedures are outlined in the respective sections.



NOTE:

If the bay has been factory assembled (J1C265B-1 or J1C265C-1) then the following operations are verification items only.

| Sections | Description of Operations |
|---------------------------|---|
| Power & Ringing Interface | Install the Power Interface Unit (ED7C734-30) and its cable assembly. Mate the cable assembly's connectors to their associated shelf dangler cable connectors. |
| PCM | Mate the PCM Intrabay Cable Assemblies [ED7C723-30 Groups 9() to 12()] connectors to their associated MDS shelf connectors. |
| Test Access | Install the TAP Standard Bay Cable Assembly (ED7C723-34 Group 1) and mate its Test Access Path (TAP) connectors to the associated shelf dangler cable connectors. |
| Alarms and Telemetry | Install TS1 block and ATU interface cables [ED7C723-36 Groups 1(), 3(), 4, 5, and 6]. |

Power and Ringing Local Interfaces

⇒ NOTE:
Verify that no *SLC -2000* Circuit Packs are inserted.

⇒ NOTE:
If the Power Interface Unit (ED7C734-30) and the Standard Bay Cable Assembly [ED7C723-34 Group 2()] have been shipped as two separate items then it would be more efficient to mate the two pieces before installing in the frame duct. Refer to the *INSTALLATION PROCEDURES* chapter.

Power Interface Unit/Standard Bay Cable Connections

Step 1: Open the Power Interface Unit and connect/verify the Bay Cable Assembly as follows:

| Unit Terminal | Cable Color Code |
|----------------------|-------------------------|
| 1 | R (2 wires) |
| 2 | BK (2 wires) |
| 3 | R and R-BK |
| 4 | BK and BK-R |
| 5 | BL-BK (2 wires) |
| 6 | W-BL (2 wires) |
| 7 | Y-BL (2 wires) |
| 8 | O-BK (3 wires) |
| 9 | W-O (3 wires) |
| 10 | Y-O (3 wires) |

Power and Ringing Bay Cable Assembly ED7C723-34 Group 2)*

Step 1: Refer to the Figure 3-10 and connect the Power Interface dangler cable assembly as follows in the rear left side cable duct:

| Dangler Connector | Mating Connector | Comment |
|--------------------------|-------------------------|-------------------------------|
| P304 | ----- | to be connected later |
| J114 | P114 ATU | to be connected later |
| P303 | J303 ARM | consult Figures 3-10 and 3-12 |
| P302-4 | J302 MDS 4 | consult Figures 3-10 and 3-12 |
| P302-3 | J302 MDS 3 | consult Figures 3-10 and 3-12 |
| P302-2 | J302 MDS 2 | consult Figures 3-10 and 3-12 |
| P302-1 | J302 MDS 1 | consult Figures 3-10 to 3-12 |

* The parenthesis after the group number of the cable assembly means that there may be an alpha character after the numeric character, e.g., Group 2 or Group 2A or Group 2B.

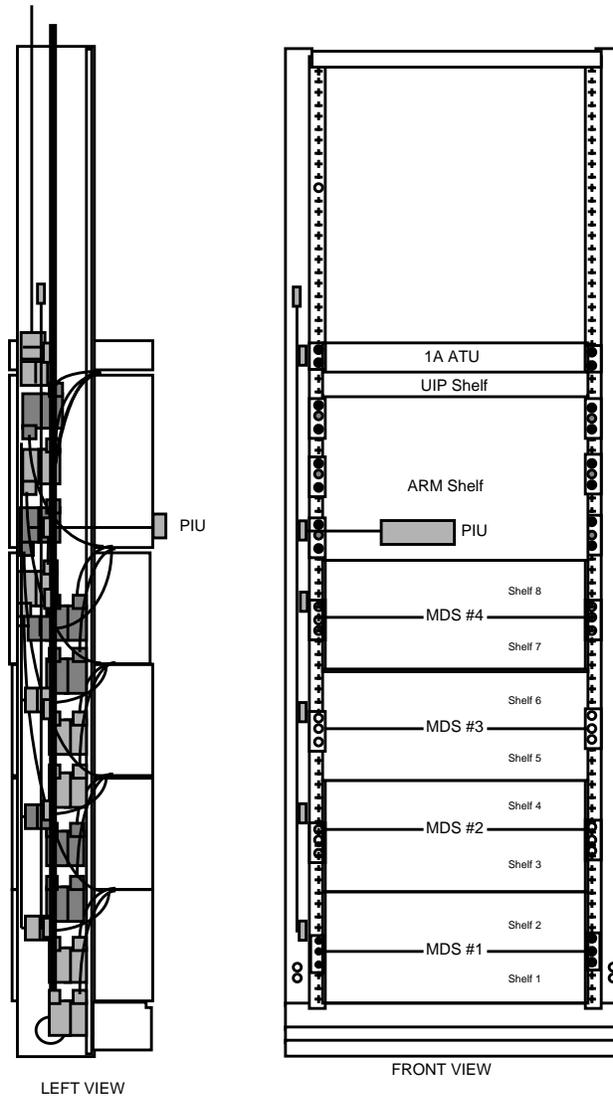


Figure 3-11. Power Interface Location

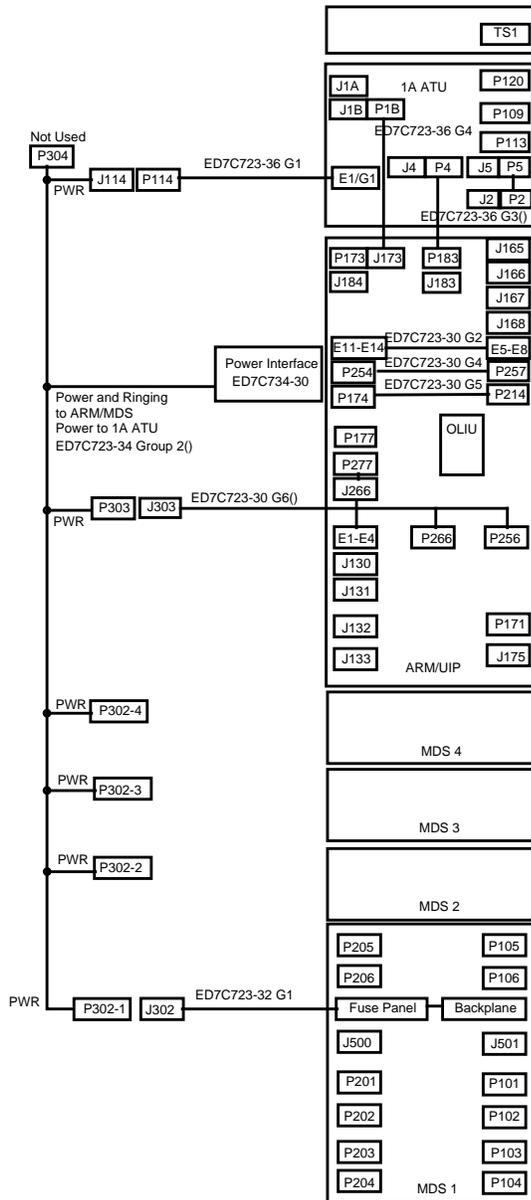


Figure 3-12. Intershelf Power and Ringing Connections

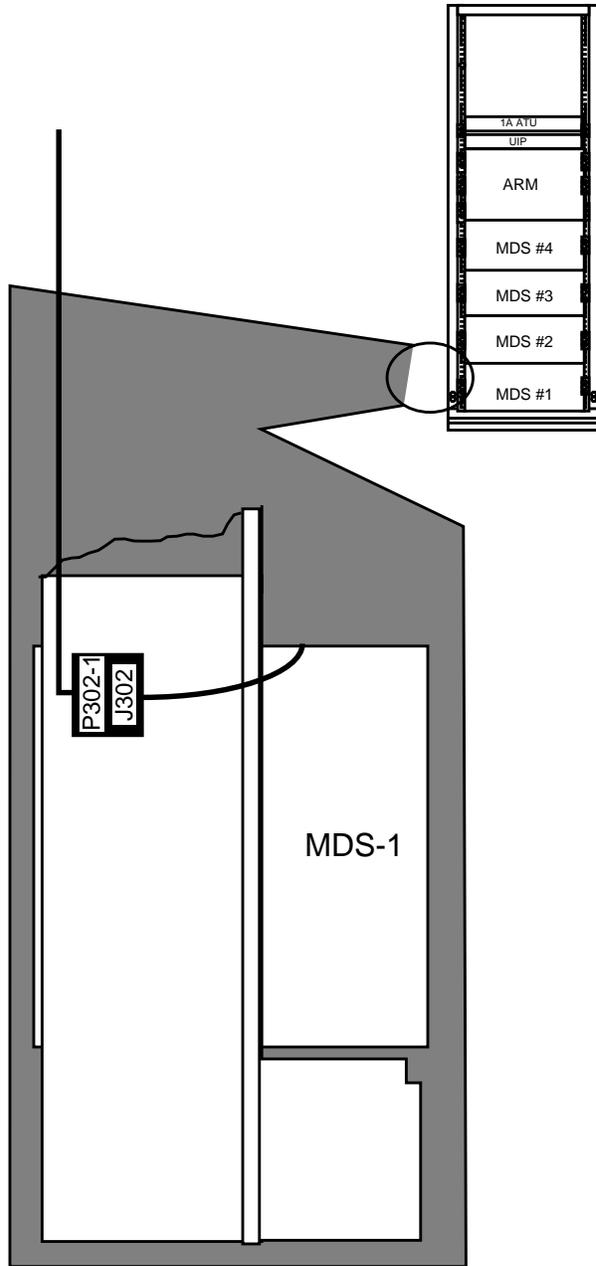


Figure 3-13. MDS Power Cabling

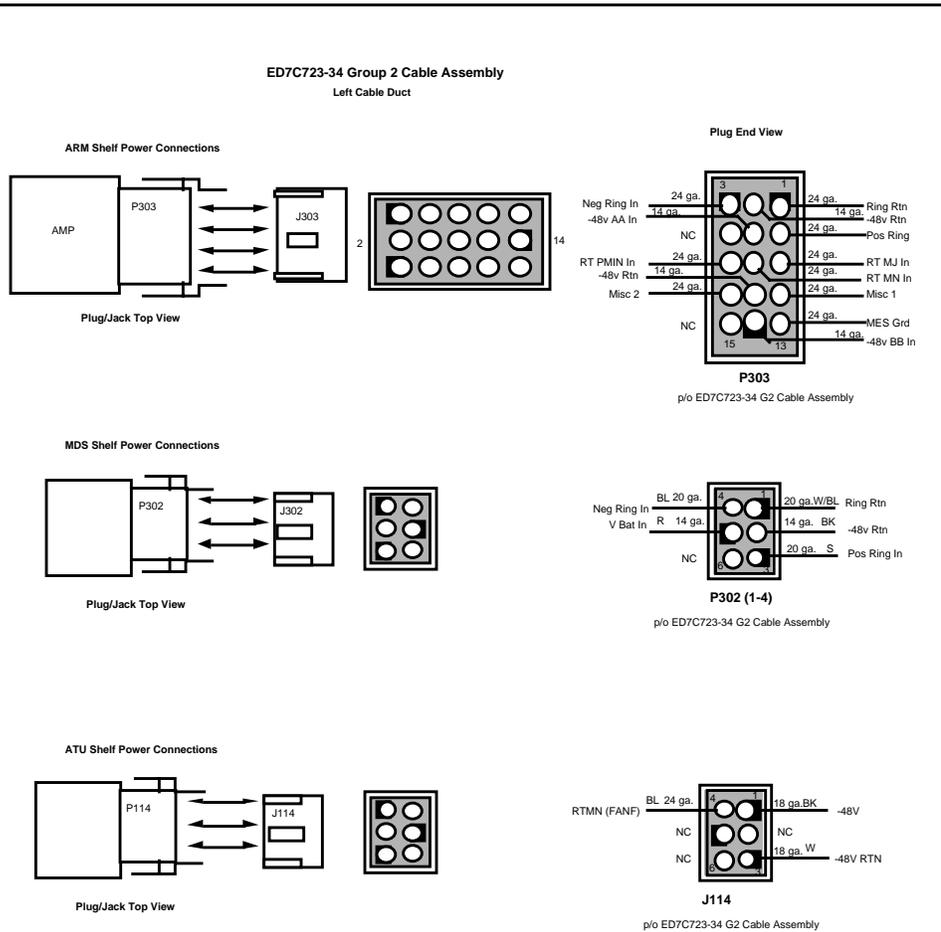


Figure 3-14. Power Connections

PCM Connections

Connecting Procedure for Cable Assemblies ED7C723-30 Groups 9() to 12()



NOTE:

This procedure consists of mating the ARM Shelf PCM Dangler Cable Assemblies (ED7C723-30 Groups 9() to 12()), Figure 3-32) to each MDS

Shelf Dangler Cable Assembly [ED7C723-32 Group 11()] which has been furnished as part of the MDS assembly.

⇒ NOTE:
Verify that unassigned connectors (for unfurnished MDS assemblies) have their protective caps installed.

Connections

Step 1: Mate the ARM Shelf PCM dangler Cable Assembly connector J500 () in the left duct with its MDS shelf P500 counterpart in accordance with the following assignment:

| ARM Shelf Connector | MDS |
|---------------------|-----|
| J500-1 | 1 |
| J500-2 | 2 |
| J500-3 | 3 |
| J500-4 | 4 |

Step 2: Position the cables in the left side duct in accordance with Figure 3-16.

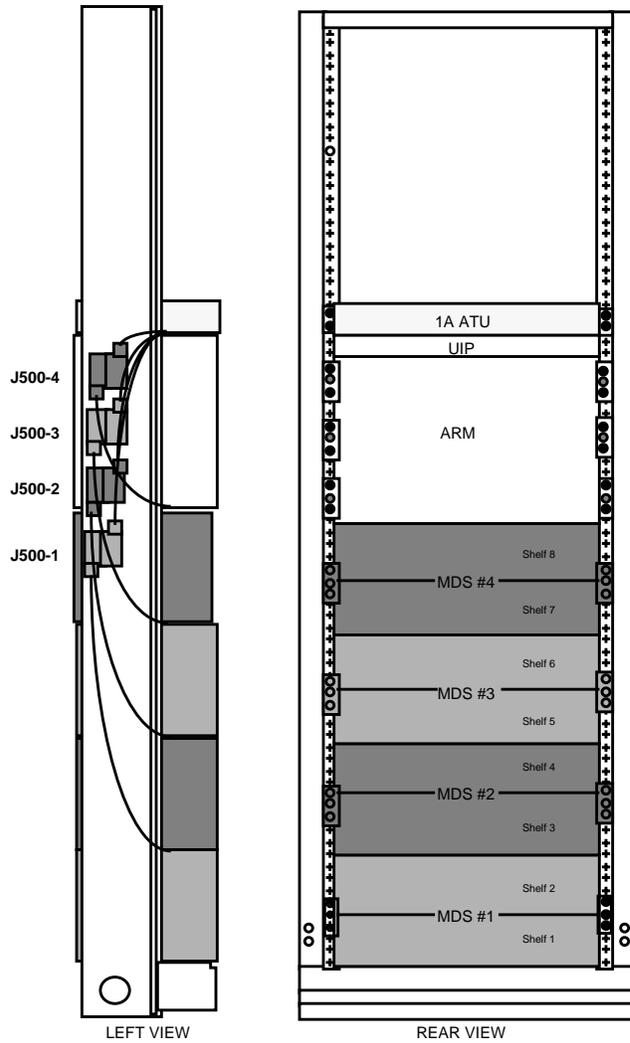


Figure 3-16. PCM J5000 Connections

Test Access Path (TAP) Interface

TAP Bay Cable Assembly ED7C723-34 Group 1

Step 1: Refer to Figures 3-17 and 3-18 and connect the TAP Interface cable assembly as follows in the right side cable duct:

| TAP Connector | Mating Connector |
|----------------------|-------------------------|
| P301 | to be connected later |
| J275 | P275 ARM Shelf |
| J301-4 | P301 MDS 4 |
| J301-3 | P301 MDS 3 |
| J301-2 | P301 MDS 2 |
| J301-1 | P301 MDS 1 |

Step 2: Position the unused/unassigned connectors so that future access for additional growth shelves is possible. After the connections have been made tie the cable assembly down towards the rear of the right duct.

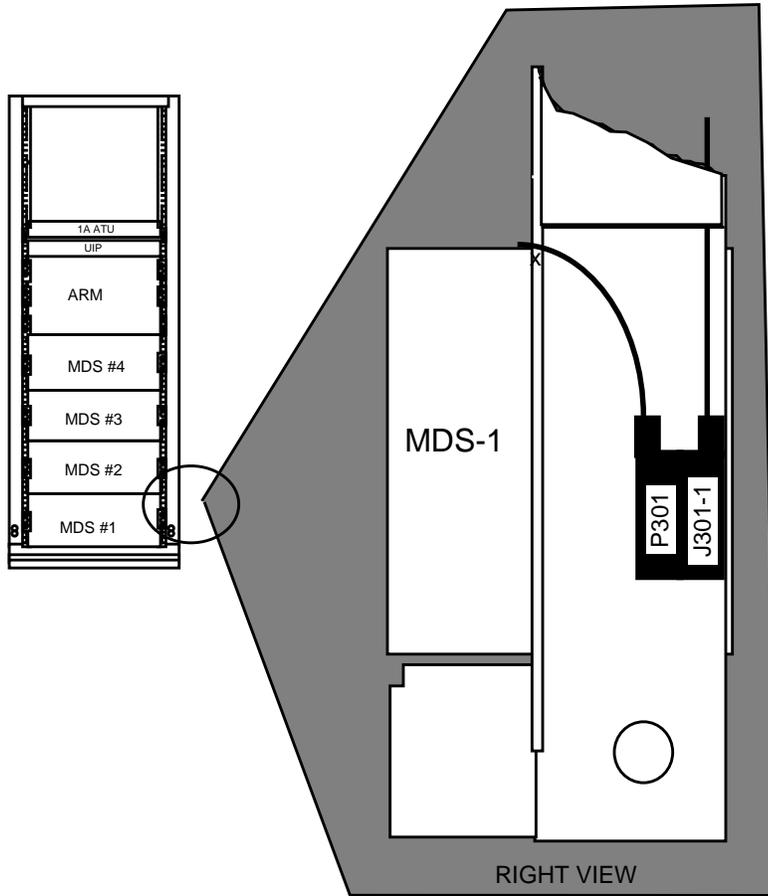


Figure 3-17. TAP Connection

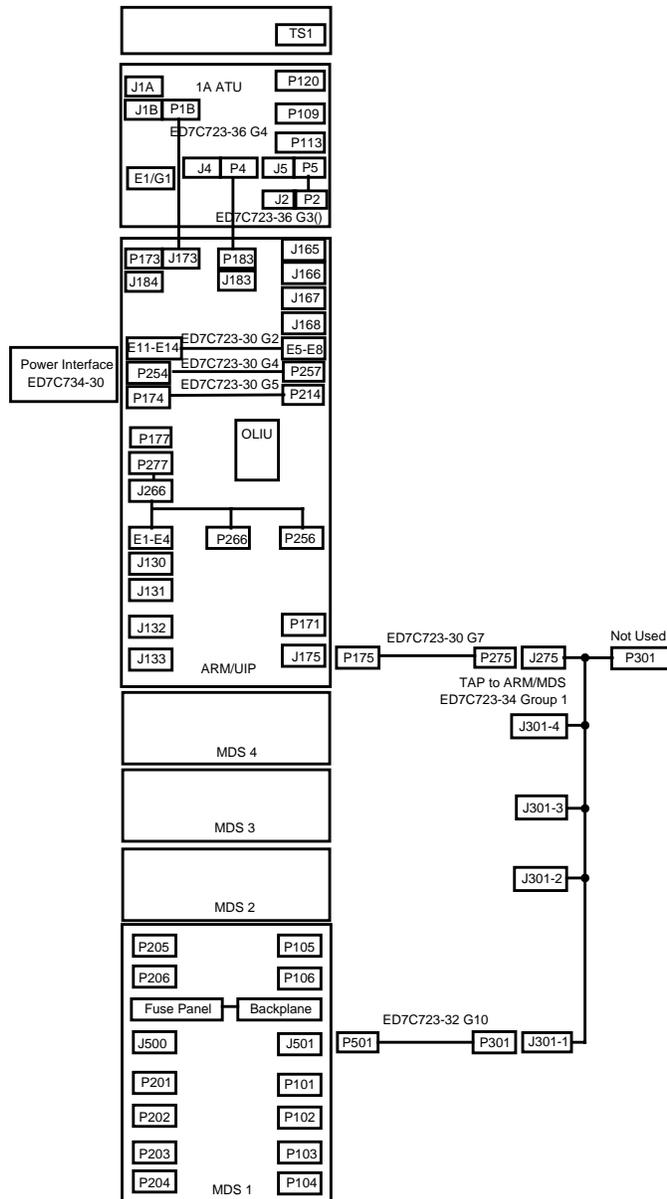


Figure 3-18. TAP Bay Connections

1A Alarm Test Unit Cables

General

⇒ **NOTE:**
The 1A ATU shelf is equipped with several cable assemblies, ED7C723-36 G1(), 3()-6, which interface with other equipment within the COT bay. The following procedures detail those connections.

ED7C723-36 Group 1 Connections

⇒ **NOTE:**
This procedure consists of mating the ATU Shelf connector to the cable assembly of the PIU [ED7C723-34 Group ()] which had been installed earlier.

⇒ **NOTE:**
Pin 2 is not assigned. Fan Fail (FANF) lead pin 4 is also not assigned (see Figure 3-19).

Step 1: Route the ATU's cable to the left cable duct.

Step 2: Mate the P114 connector to the J114 connector of the Power Interface Cable Assembly [ED7C723-34 Group ()] previously installed.

Step 3: Tie the cable to the ARM Shelf cables in the left cable ducts.

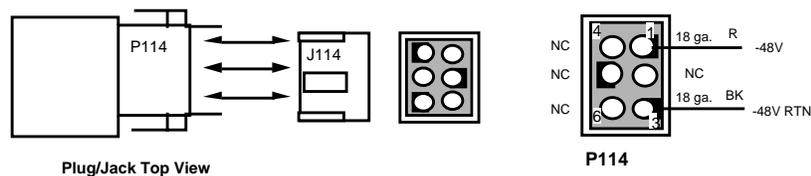


Figure 3-19. ATU Power Connections

ED7C723-36 Groups 3() and 4

⇒ NOTE:

This procedure consists of mating the ATU Shelf connectors to the ARM shelf backplane connectors.

Step 1: Connect the Group 3() P183 connector to the ARM shelf J183 connector.

Step 2: Connect the Group 4 J173 connector to the ARM shelf P173 connector.

ED7C723-36 Group 5

⇒ NOTE:

This procedure consists of mating the ATU Shelf connector to the PGTC connector or to other *SLC* systems utilizing the PGTC.

⇒ NOTE:

Refer to the APPLICATIONS section of this manual for a PGTC/*SLC* interconnection diagram.

Step 1: Connect the cable assembly's J109 connector the ATU P109 connector.

Step 2: Route the cable assembly up the left duct and across the tie bar located at the top of the frame over the TS1 block. Secure the cable assembly to this tie bar leaving enough slack for the J115 and P115 connectors to engage with an adjacent bay's similar cable assembly.

Step 3: Connect the other end of the cable assembly's J115 connector to an adjacent *SLC* bays's P115 connector.

3.1. If this bay is the first system utilizing PGTC then connect the cable assembly's P115 connector to the PGTC's J109 /J115 connector.

3.2. If the PGTC is not utilized store the J115 and P115 connectors in the duct above the frame.

Step 4: Refer to PGTC Interconnections in this section for further detailed cabling arrangements and details.

ED7C723-36 Group 6

⇒ NOTE:

This procedure consists of mating the ATU Shelf connector to the ARM shelf and to the TS1 terminal block.

Step 1: Connect the cable assembly's P184 connector to the ARM shelf back-plane connector J184.

Step 2: The prepared end of the cable assembly shall be wire wrapped to the TS1 terminal block in accordance with Figure 3-20a.

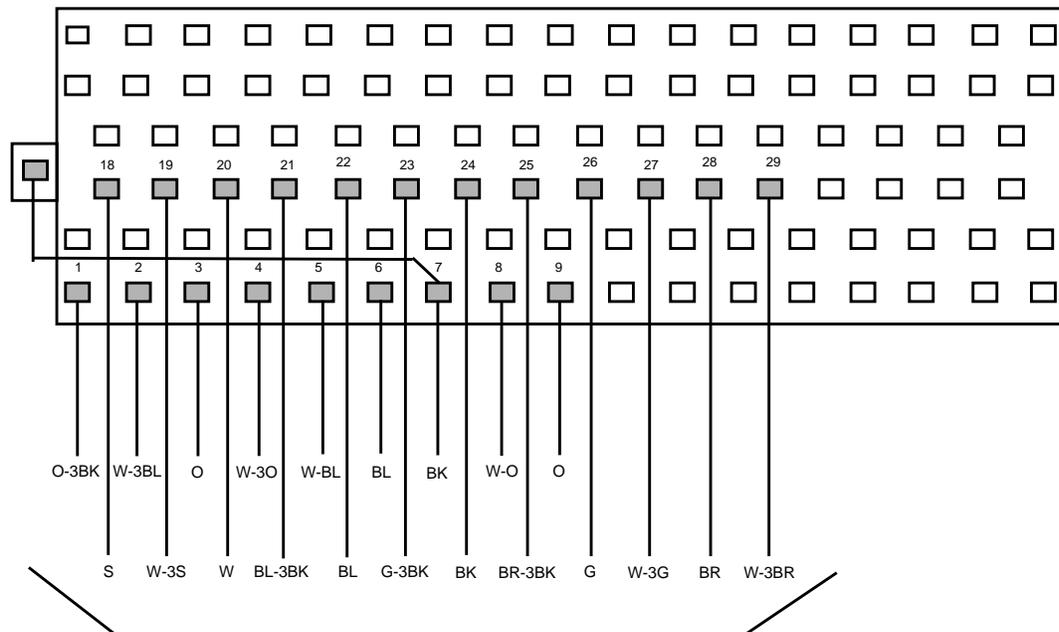
⇒ NOTE:

There are two black wires to be connected to the TS1 block (terminals 7 and 24). The black wire to terminal 7 is the grounded shield from the two shielded pairs of P184. The black wire to terminal 24 is from P1A.

Step 3: Add an additional black wire from terminal 7 to the ground lug terminal on the left mounting screw.

⇒ NOTE:

Clock termination resistors and wiring connections to the TS1 block from the CO Clock and the CO Alarms will be made in subsequent operations. Refer to those sections for details.



Refer to Figure 3-20B

Figure 3-20A. ATU/TS1 Wiring Interconnections

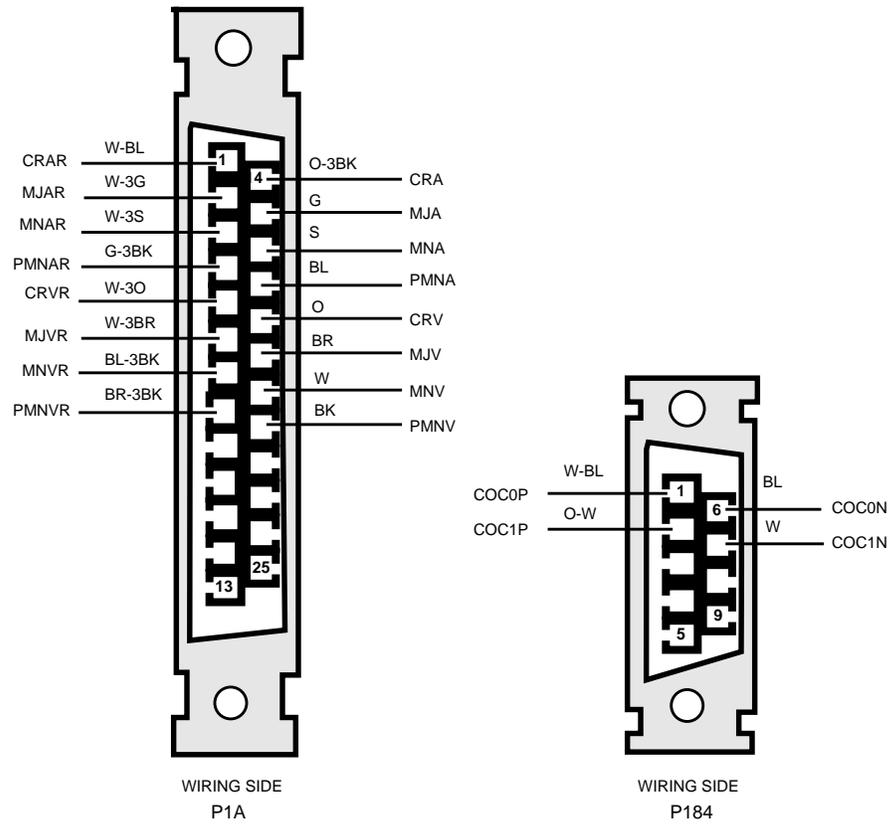


Figure 3-20B. P1A, P184 Wiring

Customer Interface Cable Connections

The following sections detail each installer operation necessary to interconnect the Customer Interface Cables. For ease of installation and to alleviate cable duct congestion these procedures should be followed in the sequence presented. Details of these procedures are outlined in the respective sections.

| Sections | Description of Operations |
|-------------------------------|--|
| Customer's Power and Ringing | Connect customer's DC power and Ringing Supplies to the Power Interface Unit. |
| Miscellaneous Discrete Alarms | Install Miscellaneous Discrete Alarm Customer Interface Cable (ED7C723-37 Group 16 or 17 or 18). |
| DS1 | Install Optional DS1 Distribution or DS1 Feeder Cables (ED7C723-37 Group 1 or 2 or 3). |
| VF | Install VF Customer Interface Cable (ED7C723-37 Groups 4 to 9). |
| E&M | Install E&M Customer Interface Cables (ED7C723-37 Groups 10 to 15). |
| Alarms and Telemetry | Connect CO alarms to TS1 block. Install Telemetry Customer Interface Cable (ED7C723-37 Group 19 or 20 or 21). |
| PGTC | Install PGTC Customer Interface cable (ED7C723-36 Group 5) and connect to PGTC connector or multiple to other <i>SLC</i> -2000 or <i>SLC</i> Series 5 bays. |
| MDF Bypass | Install MDF Bypass Pairs Customer Interface Cable (ED7C723-37 Group 16 or 17 or 18). |
| Synchronization | Connect customer's Composite Clock cables to ATU. Install DS1 SONET synchronization cables (ED8C724-20 Groups 339-341, 374) or (ED7C723-37, Group 27, 28, or 29). |
| OS Interface | Install X.25 cable (ED8C724-20 Group 342 or 343); TBOS cable (ED8C724-20 Group 348, 349, or 395, 396); and CIT/Modem RS232 cable (ED8C724-20 Group 350). |
| Fiber | Install fiber optic cables to the ARM shelf. |

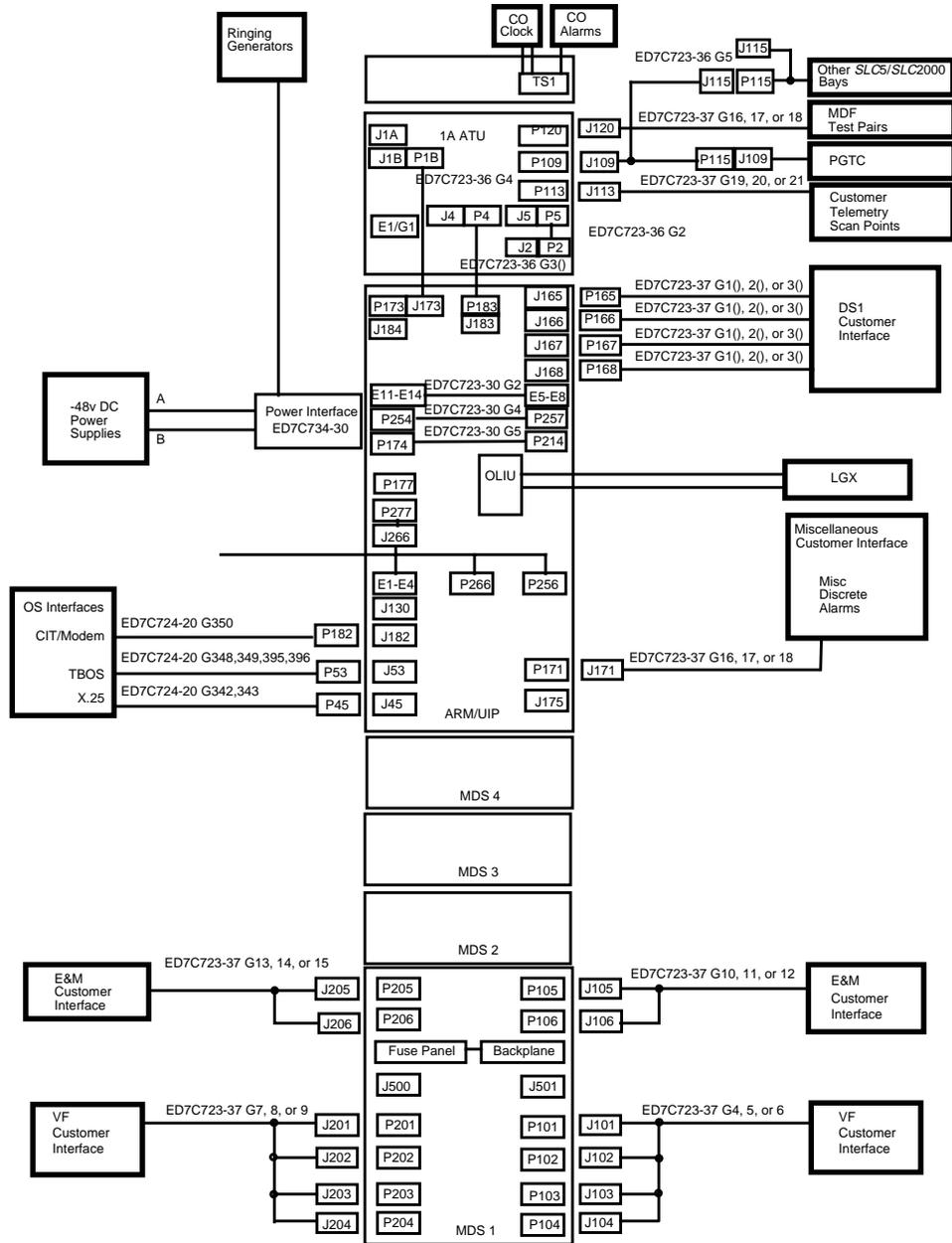


Figure 3-21. Customer Interface Cables

Customer's DC Power and Ringing Supply Connections

General

- ⇒ **NOTE:**
External DC power and ringing connections from the customer's supplies must be made to the *SLC-2000* COT Bay Power Interface Unit (ED7C723-30). Power and ringing are not provided within the COT Bay.
- ⇒ **NOTE:**
Each power input (separate A and B feeders) lead and its associated return must not exceed the maximum wire size of 10 gauge at the PIU. Each -48 volt feeder should be protected with a 30 amp circuit breaker.
- ⇒ **NOTE:**
A ringing supply must be provided for connections to the COT Bay. Both positive and negative 20 Hz ringing current generators should be equipped. The interconnecting cable should be a twisted triple (20-24 gauge) for each of the two ringing generators furnished. When interconnecting with the J1C182BC shelf the ED7C723-35 Group 9 Cable Assembly should be utilized.
- ⇒ **NOTE:**
The Power Interface Unit employs screw down terminals for connecting the ancillary cables. Do not attempt to connect wires larger than the capacity (10 gauge) of these terminals. Remove the unit's side panel for easier access.
- ⇒ **NOTE:**
Ensure that no *SLC-2000* circuit packs are in place.

DC Power Connections

Step 1: Connect the office battery -48v and return leads as follows:

| | |
|------------|------|
| -48v A | TB 1 |
| -48v A RTN | TB 2 |
| -48v B | TB 3 |
| -48v B RTN | TB 4 |

Ringling Connections

Step 2: Connect the office ringing supplies to the PIU TS1 terminals as follows

| | |
|-------------|-------|
| 20 Hz A RTN | TB 5 |
| +20 Hz A | TB 6 |
| - 20 Hz A | TB 7 |
| 20 Hz B RTN | TB 8 |
| +20 Hz B | TB 9 |
| -20 Hz B | TB 10 |

Tests

Step 3: Verify continuity of all installed connections to the customer's power plant and ringing supply.

Step 4: Verify absence of any shorts between the RTN terminals and the -48v or 20 Hz terminals of the Power Interface Unit.

Step 5: Turn on BDFB circuit breakers and install or power up the associate ringing supplies temporarily.

Step 6: Verify the presence of -48v dc and ringing voltage at the PIU.

Requirement: -42 to -56 volts dc
approx. 105 volts ac

Step 7: Verify the presence of -48v dc at the ARM/UIP -48v (A)/-48v RTN and -48v (B)/-48v RTN jacks.

Requirement: -42 to -56 volts dc

Step 8: Turn off the BDFB breakers and disconnect the two ringing supply sources.

Miscellaneous Discrete Environment Alarms and Controls

General

- ⇒ **NOTE:**
This procedure consists of installing the Miscellaneous Discrete Alarm Customer Interface Cable Assembly (ED7C723-37 Group 16, 17, or 18) and mating its connector to the ARM Shelf connector.
- ⇒ **NOTE:**
Some pins on this 50 pin connector are not assigned. The rest are brought out to MDF for cross-connections to miscellaneous alarms and telemetry systems.
- ⇒ **NOTE:**
Fourteen miscellaneous discrete inputs requiring active closures to ground can be used to detect and report various environmental alarm conditions such as open door, high humidity, low fuel, etc. Four control points are provided to control equipment (pumps, generators, etc.). When activated the control points provide a contact closure between the control point output and ground (output common - TLMOC). The TLMO leads must be grounded even if the control outputs are not used. Refer to the APPLICATIONS chapter for details.
- ⇒ **NOTE:**
This cable is available in varying lengths (Group 16, 17, or 18), however any excess may be cut off to relieve cable rack congestion.

Connections ED7C723-37 Group 16, 17, or 18

- Step 1:* Install the appropriate Group Interface Cable Assembly in the left duct and mate its J171 connector with the P171 connector of the ARM shelf. (See Figure 3-22.)
- Step 2:* Terminate the pairs at the MDF and label the leads in accordance with Figure 3-21.
- Step 3:* Terminate the TLMO C leads (pins 25 and 50) to ground even if the control outputs (TLMO 1-4) are not used.

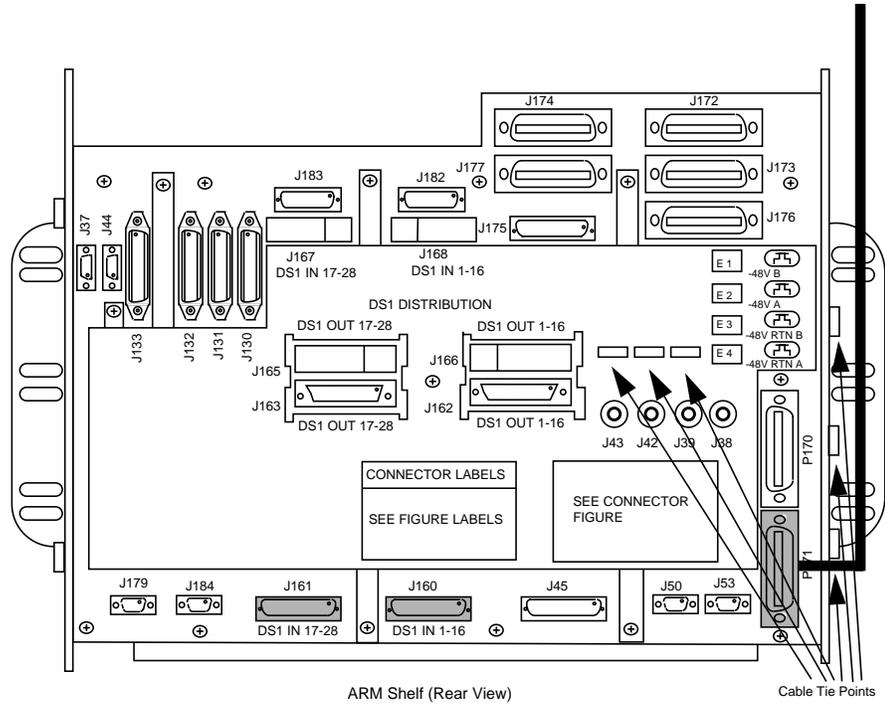


Figure 3-22. J171/ARM Shelf Connection

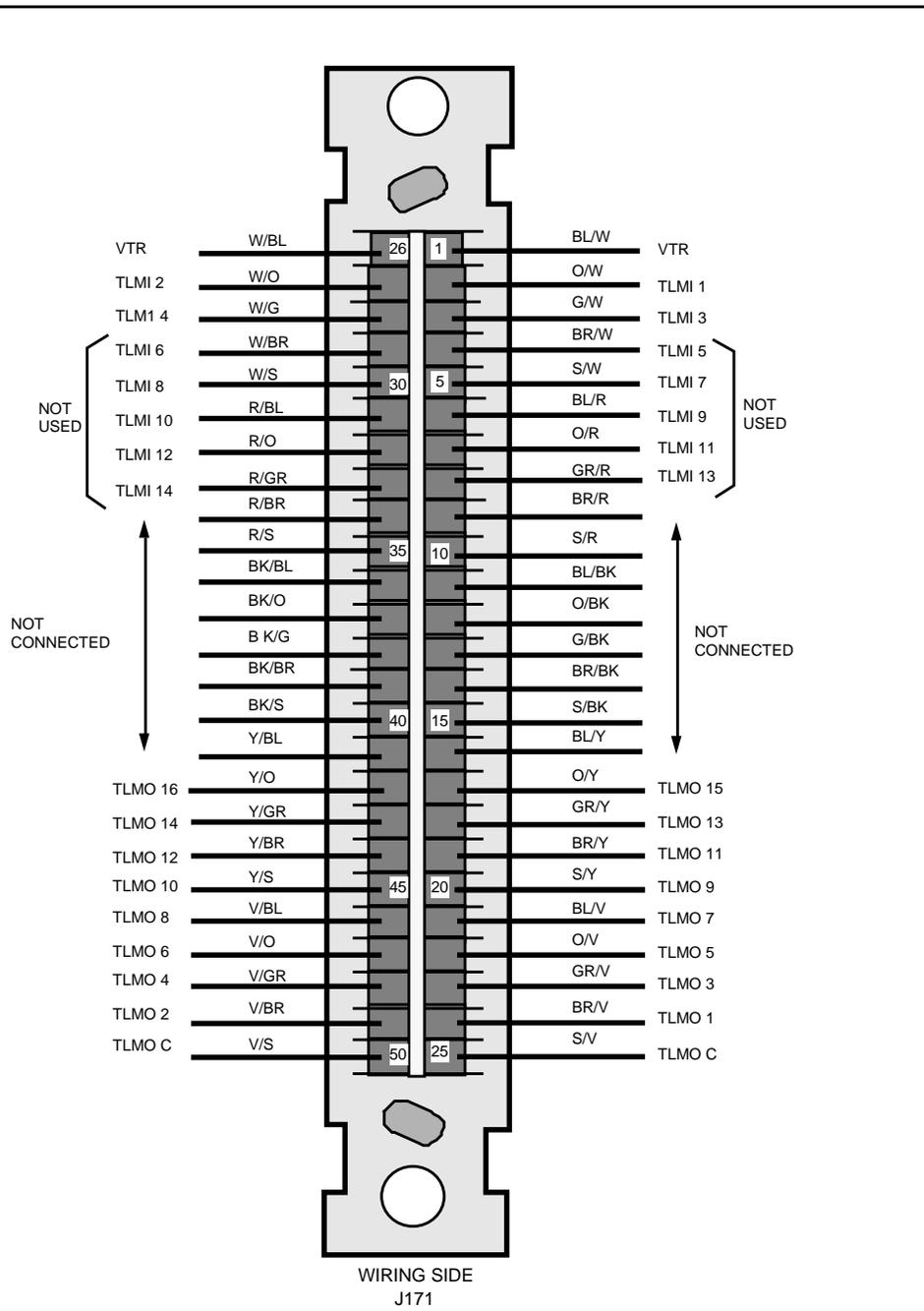


Figure 3-23. Discrete Alarm Connections J171

DS1 Connections

General

- ⇒ **NOTE:**
Up to 28 optional DS1 connections can be made from the ARM shelf to the office DSX for cross connections to customer DS1s.

- ⇒ **NOTE:**
To meet FCC EMC requirements it is required that there be a minimum of 30 feet of cable between the DSX and the *SLC-2000* ARM shelf DS1 output.

- ⇒ **NOTE:**
The maximum cable length to the DSX is 450 feet using 26 gauge wire [ED7C723-37 Groups 1() to 3()] and 655 feet using 24 gauge wire.

- ⇒ **NOTE:**
Transmit (OUT) and Receive (IN) directions are run in separate cables to the DSX. The cable shields shall not be grounded at the DSX and the Transmit and Receive cables shall not be mixed on the same cross-connect block.

- ⇒ **NOTE:**
DS1 Distribution (connectors J165-J168 on the ARM shelf backplane) is associated with the "C" SONET multiplexer group and the DS1 (LS-C) circuit pack slots.

- ⇒ **NOTE:**
DS1 Feeder interface (connectors J160-J163 on the ARM shelf backplane) is associated with the "A" SONET multiplexer group and the LIU (LS-A) circuit pack slots.

- ⇒ **NOTE:**
The *SLC-2000* System supports either DS1 Distribution or DS1 Feeder, but not both simultaneously. The same cable assemblies [ED7C723-37 Groups 1() to 3()] are utilized for either the A or C SONET multiplexer function group and can be moved to the associated connectors on the ARM backplane for their appropriate application.

Installation Procedure for Cable Assemblies ED7C723-37 Groups 1(), 2(), or 3()

- ⇒ NOTE:**
This procedure consists of installing the DS1 Customer Interface Cable Assemblies [ED7C723-37 Group 1() or 2() or 3()] and mating their connectors to the ARM Shelf backplane connectors.
- ⇒ NOTE:**
Some pins on this 37 pin connector are not assigned. The rest are brought out to DSX for cross connections to customer DS1s.
- ⇒ NOTE:**
This cable is available in varying lengths [Group 1(), 2() and 3()], however any excess may be cut off to relieve cable rack congestion, but the minimum length must be at least 30 feet.
- ⇒ NOTE:**
The cable shields are grounded at the ARM shelf through the cable connector hoods. The cable connector hoods must be screwed down to the mating ARM shelf connectors with the hood captive screws. Do not ground the shields at the DSX.

Connections

- Step 1:* Install the DS1 Interface Cable Assemblies in the right duct and mate their connectors (P160 to P163 for DS1 Feeder application or P165 to P168 for DS1 Distribution application) with their associated ARM shelf connectors. (See Figure 3-24.)
- Step 2:* Terminate the receive pairs (DS1 IN) at the DSX and label the leads in accordance with Figures 3-25 and 3-26.
- Step 3:* Terminate the transmit pairs (DS1 OUT) at the DSX and label the leads in accordance with Figures 3-27 and 3-28.
- Step 4:* Stamp the connectors with their associated P160-P163 or P165-P168 designations.

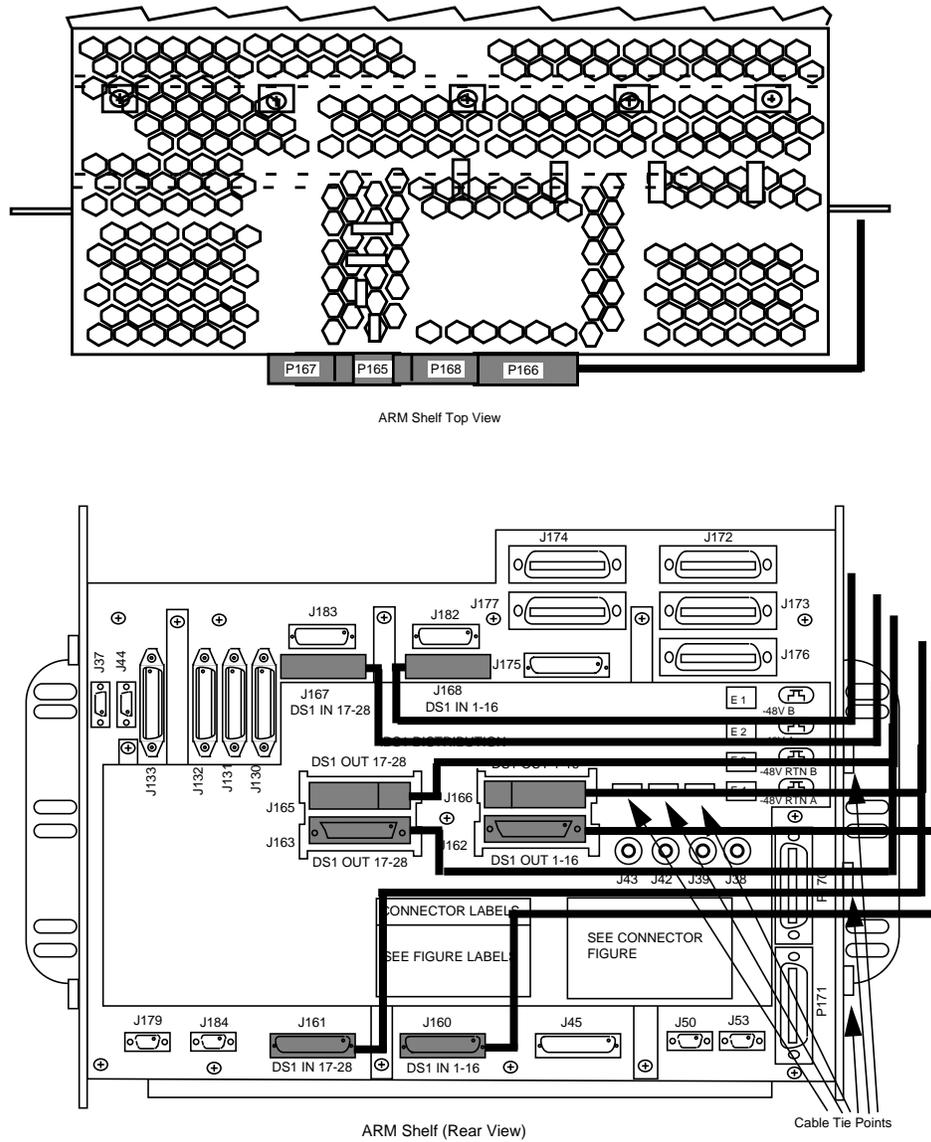


Figure 3-24. DS1 Distribution or Feeder Cable Routing

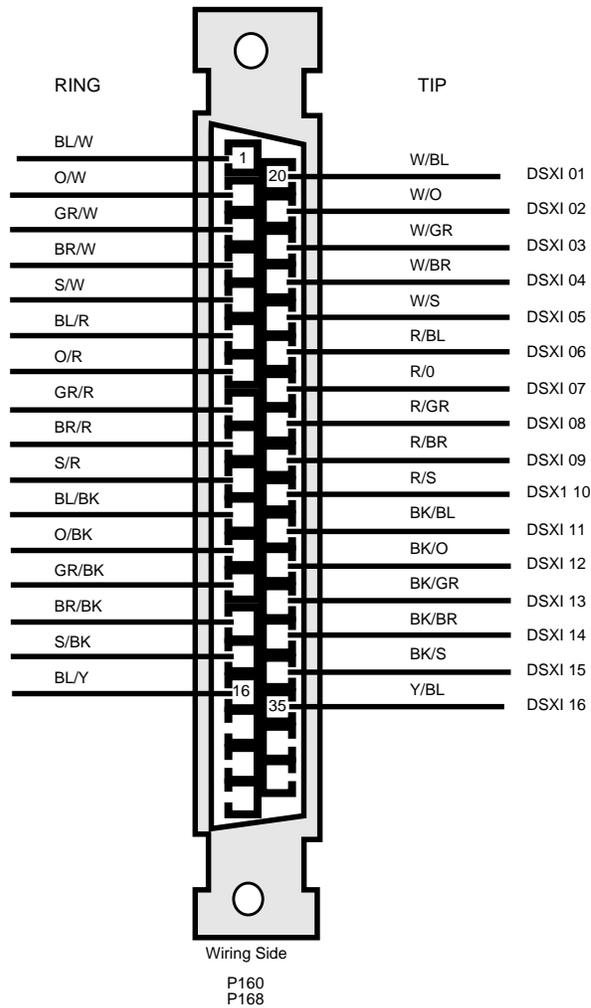


Figure 3-25. DS1 IN (1 - 16) Connections

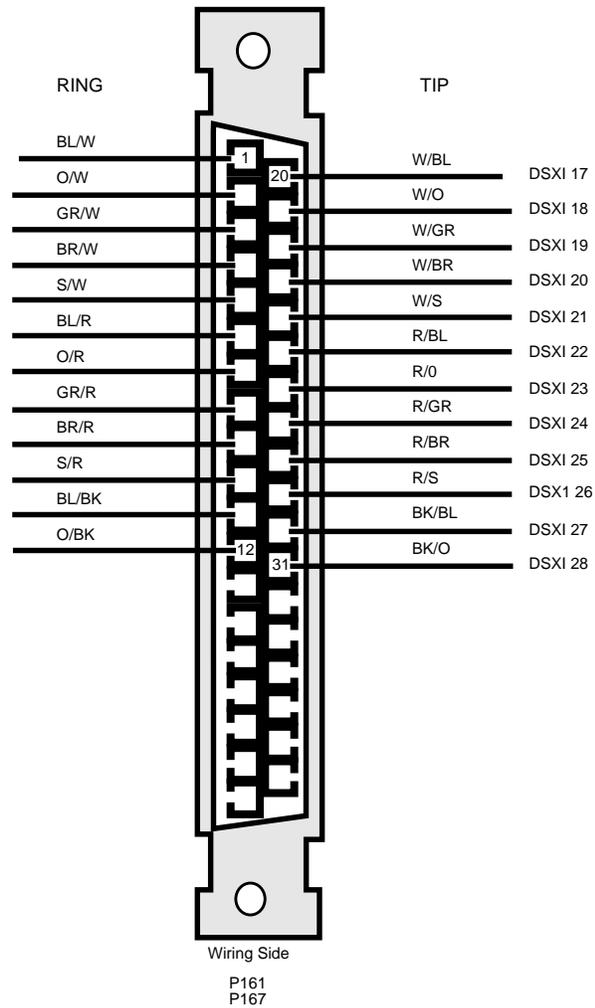


Figure 3-26. DS1 IN (17 - 28) Connections

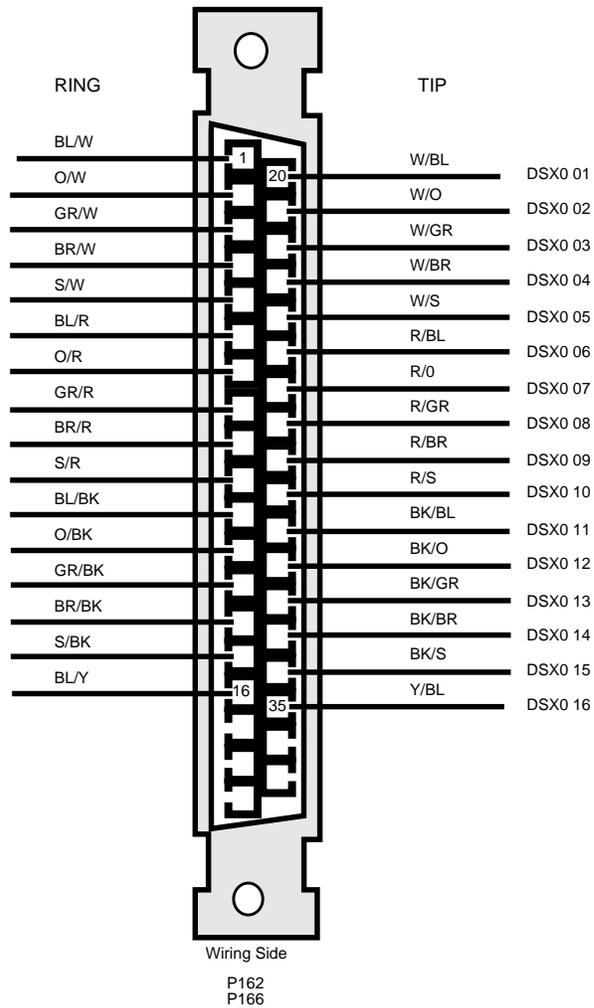


Figure 3-27. DS1 OUT (1 - 16) Connections

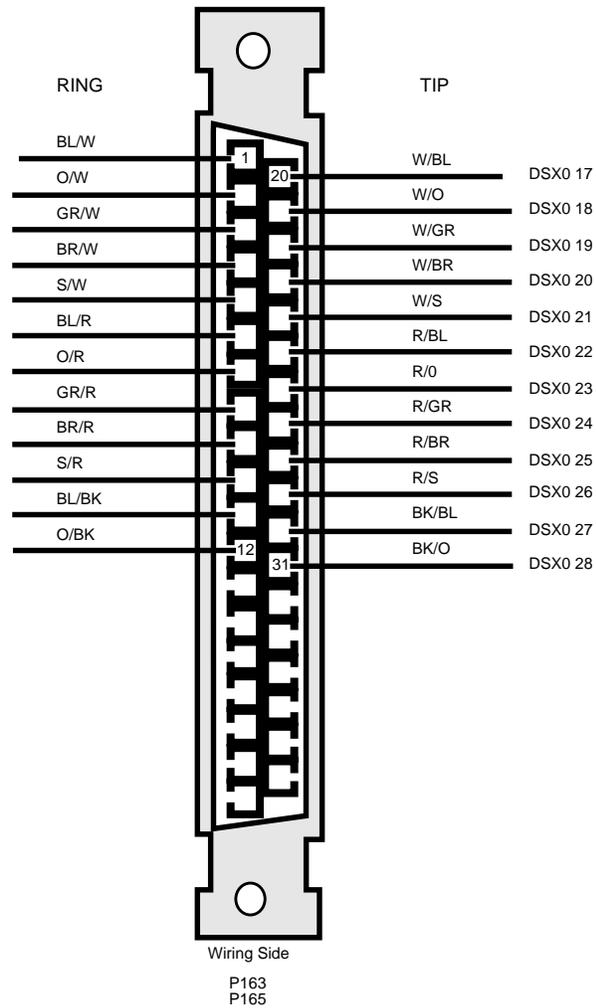


Figure 3-28. DS1 OUT (17 - 28) Connections

VF Connections

Installation Procedure for Cable Assemblies ED7C723-37 Groups 4 to 9

- ⇒ NOTE:**
This procedure consists of installing the VF Customer Interface Cable Assemblies (ED7C723-37 Groups 4 to 9) and mating their connectors to the MDS Shelf.

- ⇒ NOTE:**
Some pins on this 50 pin connector are not assigned. The rest are brought out to the MDF for cross connections to subscriber derived pairs.

- ⇒ NOTE:**
This cable is available in varying lengths (Group 4, 5, and 6 or 7, 8, and 9), however any excess may be cut off to relieve cable rack congestion.

- ⇒ NOTE:**
VF channel numbering is from 1 to 96 for each MDS shelf. There are two shelves per MDS Assembly (J1C265AE-1) with a total of eight shelves (4 assemblies) per 7 foot RT Bay (maximum of 768 quad channels). Each shelf supports 96 channels. Channel Unit circuit pack slot positions are designated as CU1 to CU24.

- ⇒ NOTE:**
System ID labels (furnished with the MDS Assembly) shall be filled out by the customer in accordance with the route/system numbering scheme. The MDF circuit labeling should follow this numbering pattern. Refer to the APPLICATIONS chapter for typical cross-connect block numbering.

- ⇒ NOTE:**
Follow the MDS backplane routing diagram for each connector and use the appropriate cables Group 4, 5, or 6 (for right duct entry) and Group 7, 8, or 9 (for left duct entry).

Connections

Step 1: Install the VF Interface Cable Assemblies in the appropriate duct and mate their connectors with the connectors of the MDS shelf in accordance with the associated figures in the tables below:

Table 3-2. VF Connections

| Left Cable Duct | Figure | Right Cable Duct | Figure |
|-----------------|---------------------|------------------|------------------------------------|
| J201 to P201 | 3-35 and 3-36 | J101 to P101 | 3-29 and 3-30 and 3-34 |
| J202 to P202 | | J102 to P102 | |
| J203 to P203 | | J103 to P103 | |
| J204 to P204 | | J104 to P104 | |



NOTE:

Stamp each connector (J101 to J204) before mating to its associated connector.

Step 2: Terminate the VF pairs at the MDF and label the cables, connectors, and the conductors in accordance with the figures for the J101 to J104 and J201 to J204 connectors. Note the wire color coding sequence of the factory prepared cable assemblies to facilitate the terminations.

Table 3-3. VF Channel Number Identification

| Left Cable Duct | Figure | Right Cable Duct | Figure |
|-----------------|--------|------------------|--------|
| J201 | 3-37 | J101 | 3-31 |
| J202 | 3-38 | J102 | 3-32 |
| J203 | 3-39 | J103 | 3-33 |
| J204 | 3-40 | J104 | 3-35 |

Step 3: Orient the mating cable connectors so that the customer cables exit upwards towards the cable racks. Refer to Figures 3-30 and 3-36.

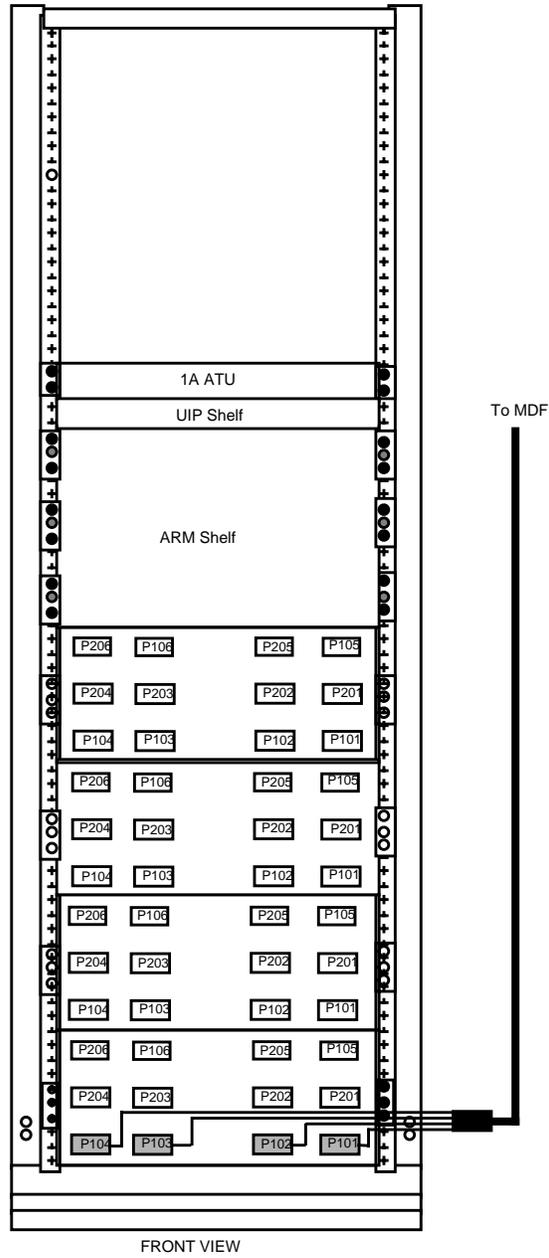


Figure 3-30. J101 - J104 Bay Cabling

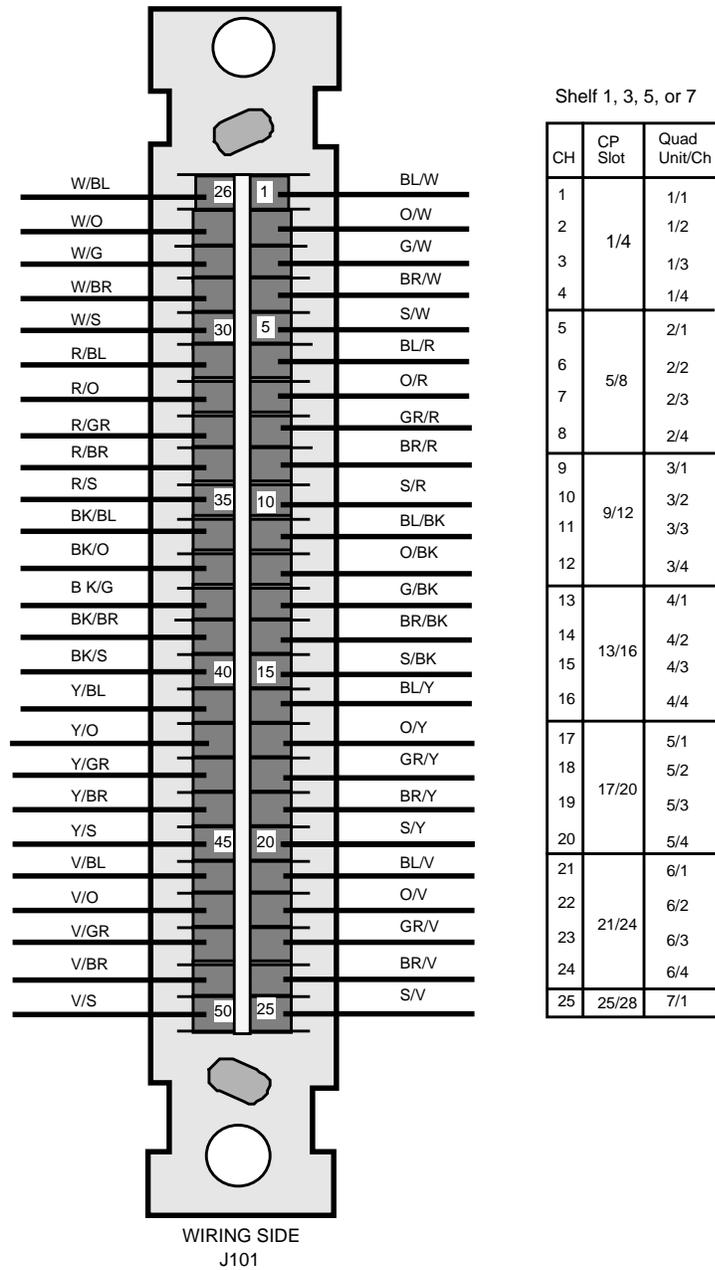


Figure 3-31. J101 Wiring (Channel Unit Slots 1 - 7)

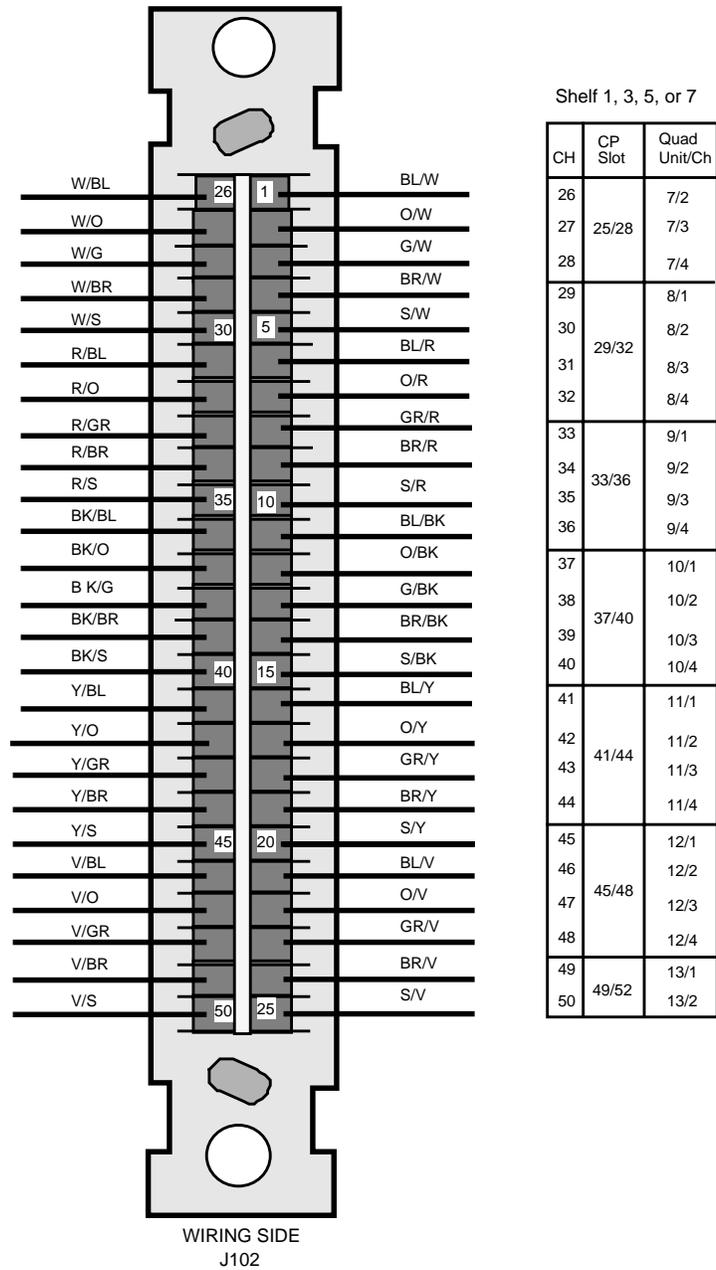


Figure 3-32. J102 Wiring (Channel Unit Slots 7 - 13)

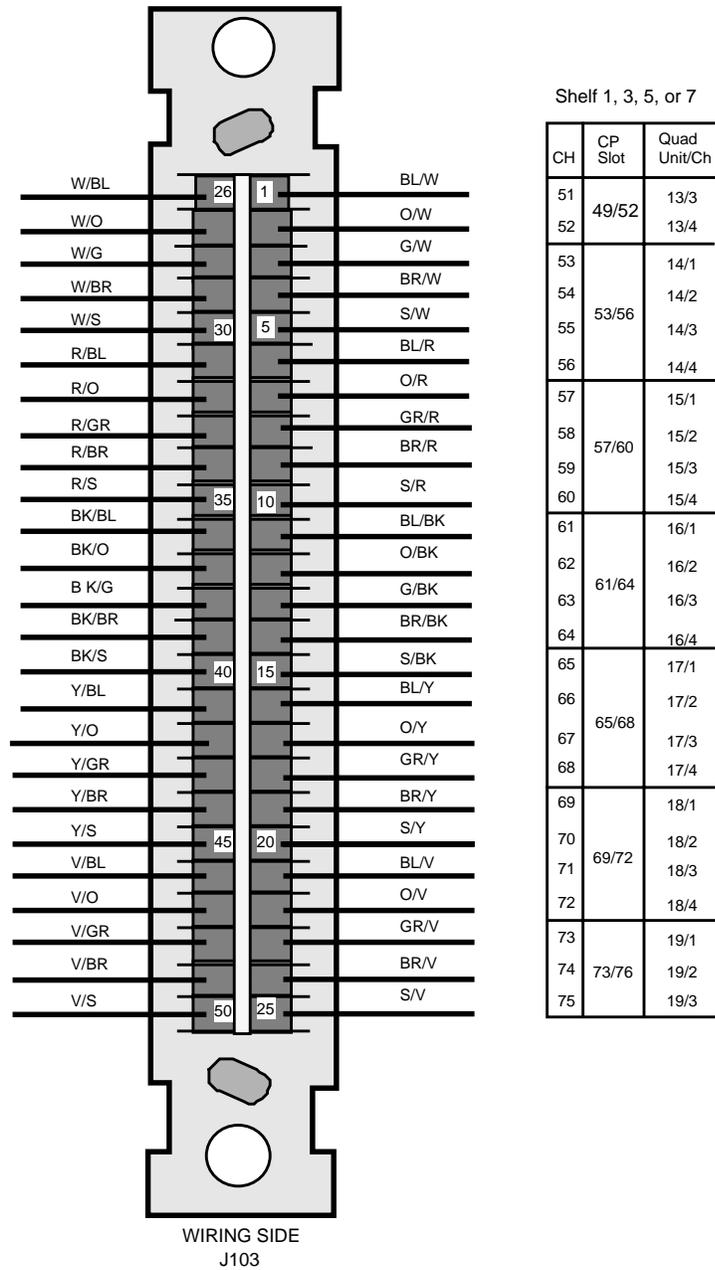


Figure 3-33. J103 Wiring (Channel Unit Slots 13 - 19)

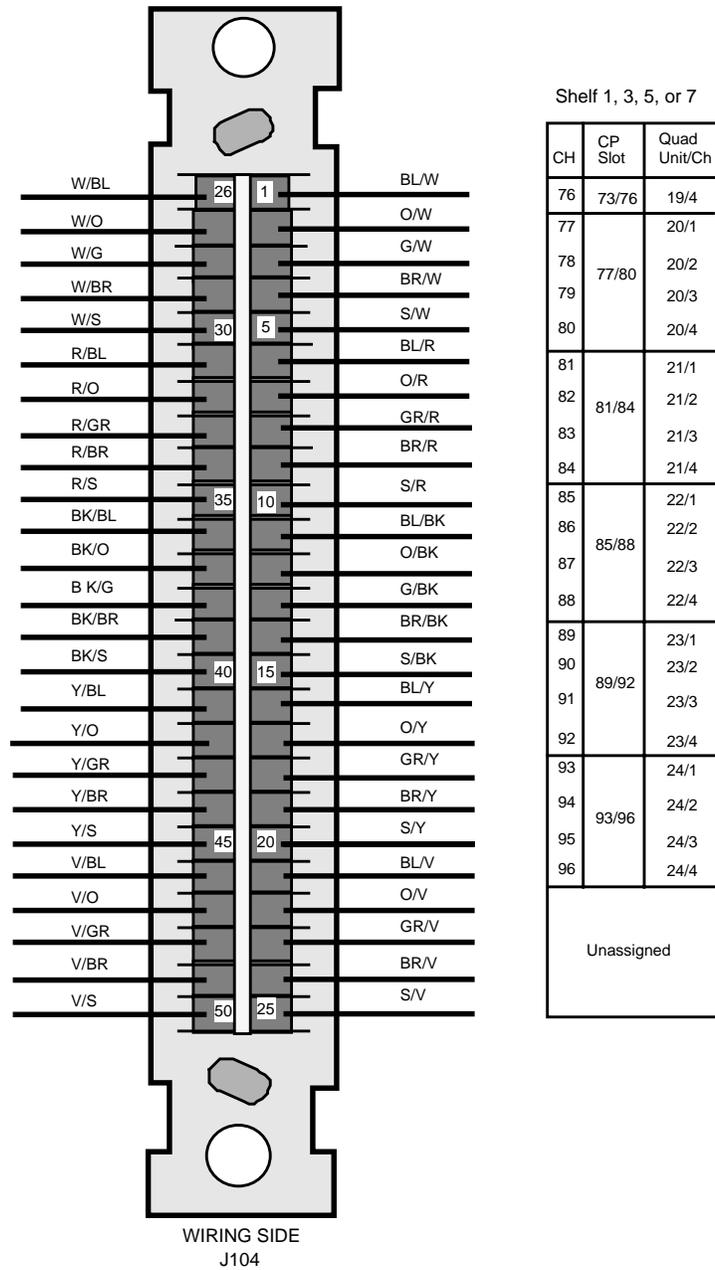


Figure 3-34. J104 Wiring (Channel Unit Slots 19 - 24)

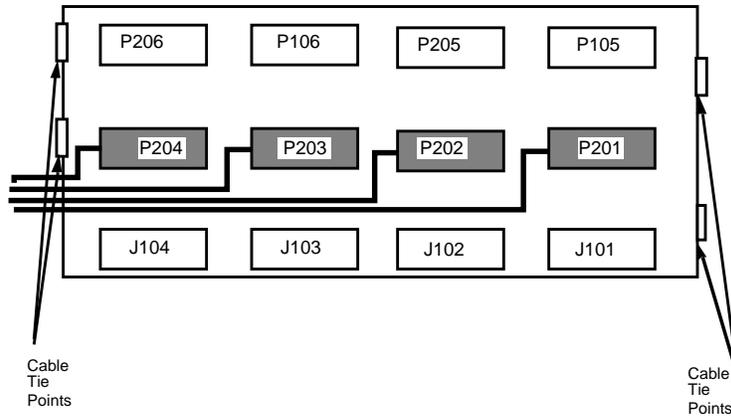


Figure 3-35. MDS VF Cable Routing J201 - J204

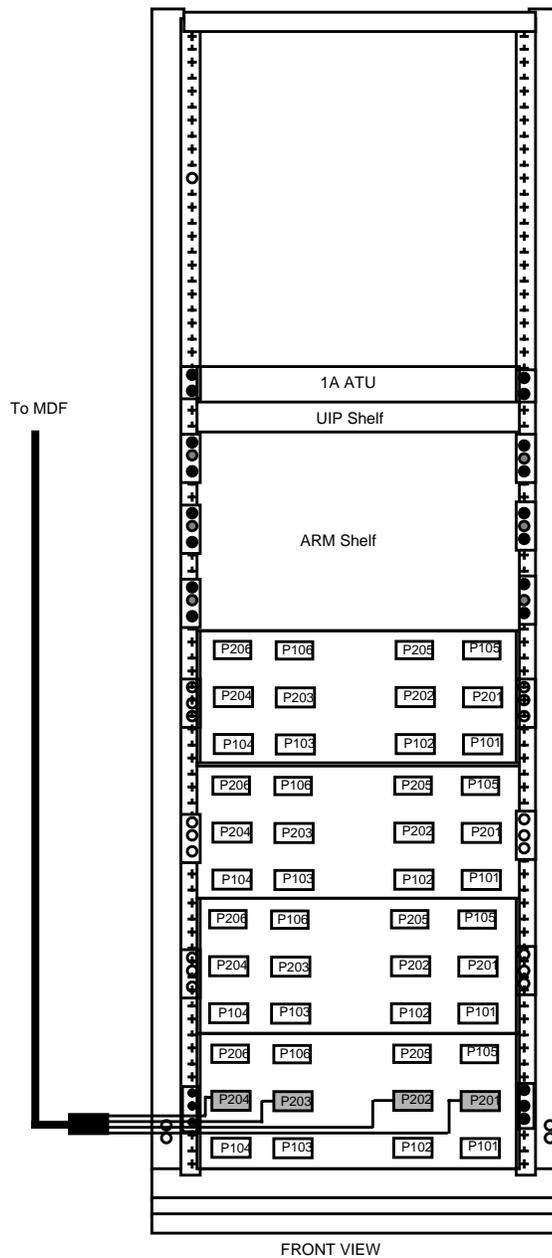


Figure 3-36. J201 - J204 Bay Cabling

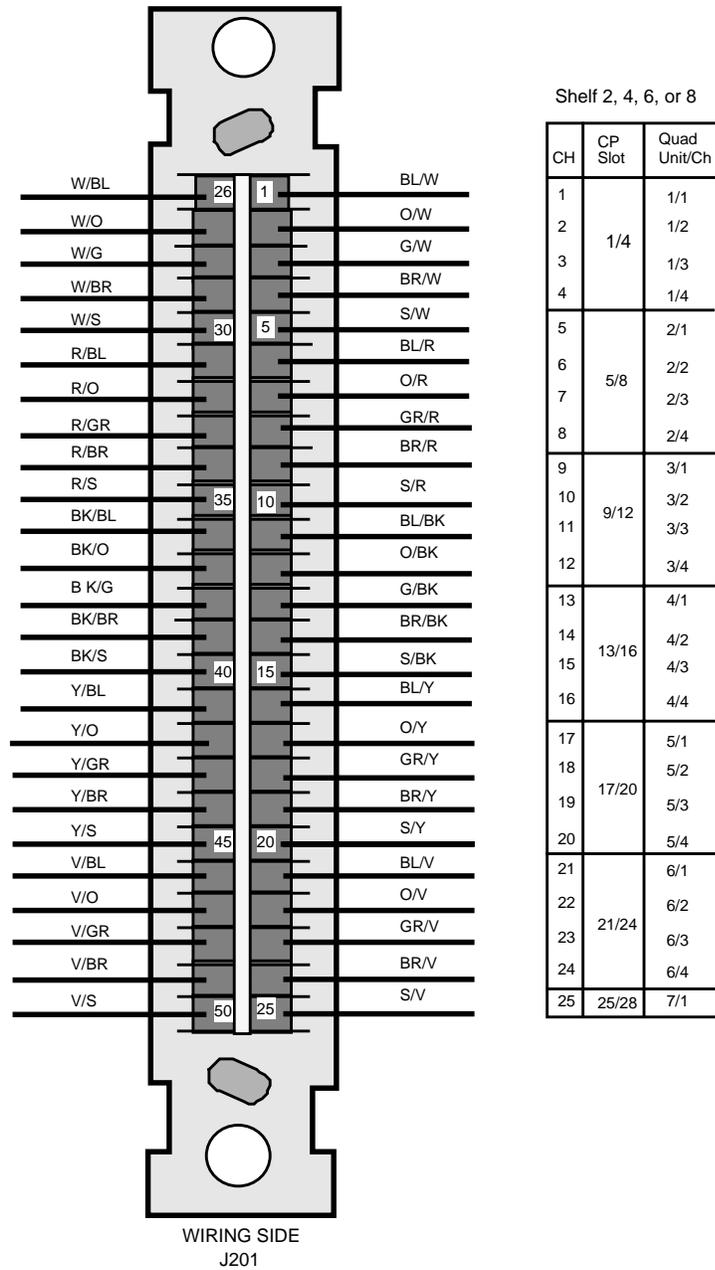


Figure 3-37. J201 Wiring (Channel Unit Slots 1 - 7)

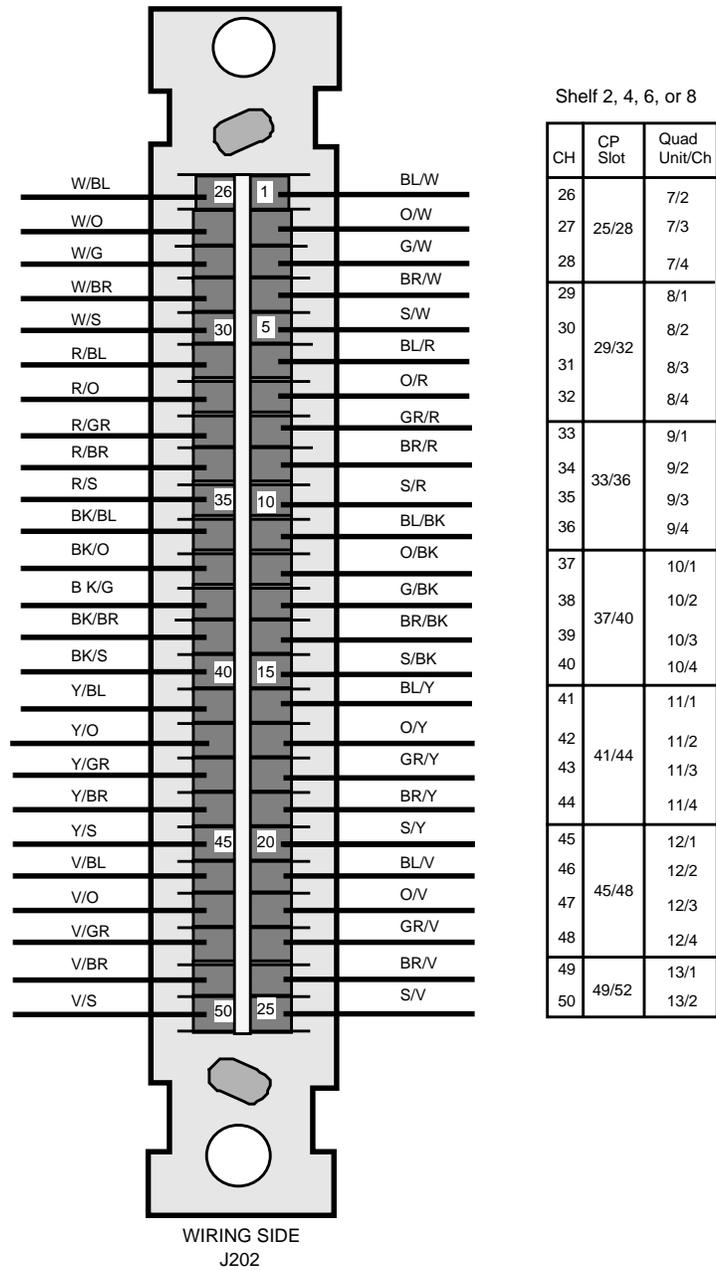


Figure 3-38. J202 Wiring (Channel Unit Slots 7 - 13)

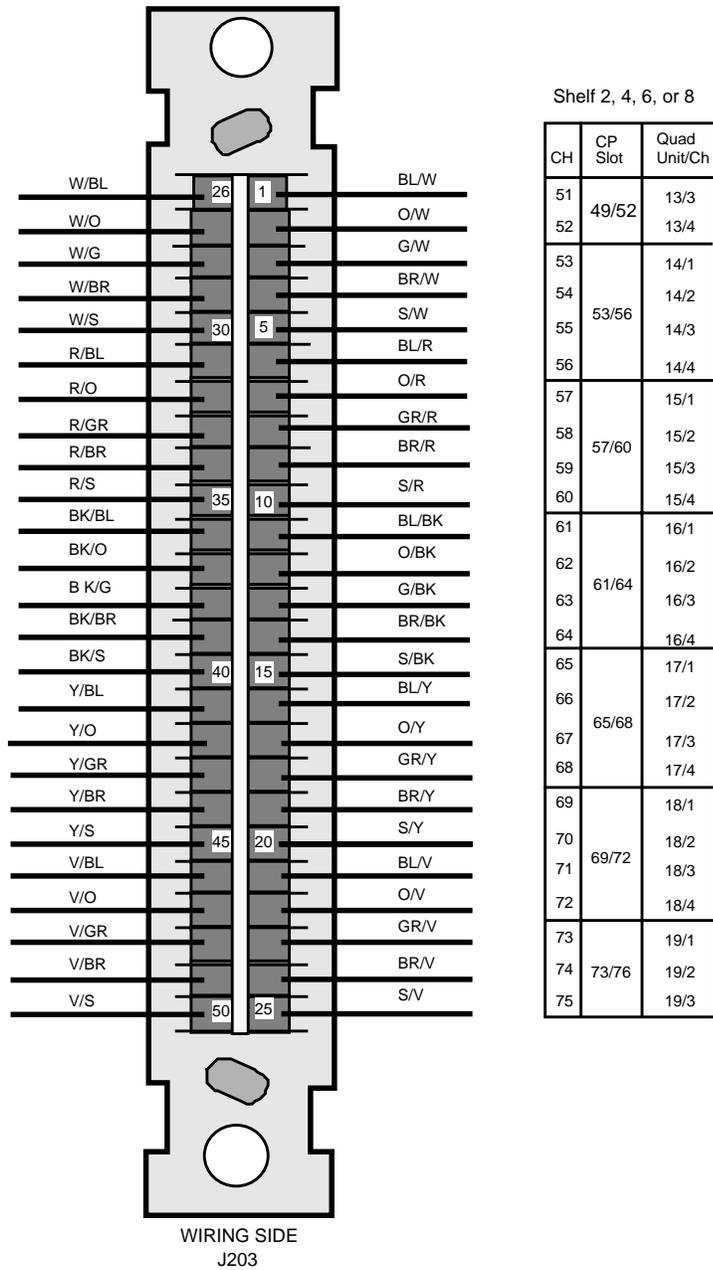


Figure 3-39. J203 Wiring (Channel Unit Slots 13 - 19)

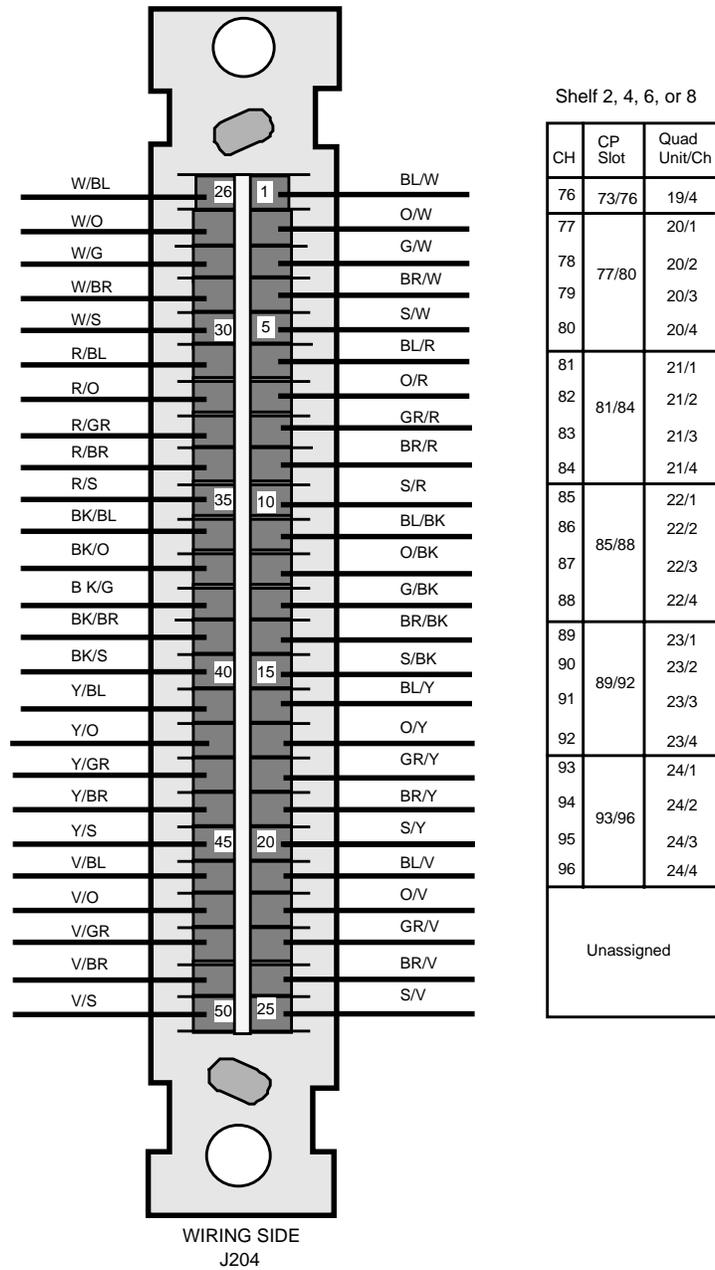


Figure 3-40. J204 Wiring (Channel Unit Slots 19 - 24)

E&M Connections

Installation Procedure for Cable Assemblies ED7C723-37 Groups 10 to 15

- ⇒ NOTE:**
This procedure consists of installing the E&M Customer Interface Cable Assemblies (ED7C723-37 Groups 10 to 15) and mating their connectors to the MDS Shelf backplane connectors.

- ⇒ NOTE:**
Some pins on this 50 pin connector are not assigned. The rest are brought out to the MDF for cross connections.

- ⇒ NOTE:**
These cable are available in varying lengths, however any excess may be cut off to relieve cable rack congestion.

- ⇒ NOTE:**
VF channel numbering is from 1 to 96 for each MDS shelf. There are two shelves per MDS Assembly (J1C265AE-1) with a total of eight shelves (4 assemblies) per 7 foot RT Bay (maximum of 768 quad channels). Each shelf supports 96 channels.

- ⇒ NOTE:**
System ID labels (furnished with the MDS Assembly) shall be filled out by the customer in accordance with the route/system numbering scheme. The MDF circuit labeling should follow this numbering pattern. Refer to the APPLICATIONS chapter for typical cross-connect block numbering.

Connections

Step 1: Install the E&M Interface Cable Assemblies in the appropriate duct and mate their connectors with the connectors of the MDS shelf in accordance with the associated figures in the tables below:

Table 3-4. E&M Connections

| Left Cable Duct | Figure | Right Cable Duct | Figure |
|-----------------|---------------------|------------------|---------------------|
| J205 to P205 | 3-41 and 3-42 | J105 to P105 | 3-41 and 3-42 |
| J206 to P206 | | J106 to P106 | |



NOTE:

Stamp each connector (J105 to J206) before mating to its associated connector.

Step 2: Terminate the E&M pairs at the MDF and label the cables, connectors, and the conductors in accordance with the figures for the J105 and J106 and J205 and J206 connectors. Note the wire color coding sequence of the factory prepared cable assemblies to facilitate the terminations.

Table 3-5. E&M Channel Number Identification

| Left Cable Duct | Figure | Right Cable Duct | Figure |
|-----------------|--------|------------------|--------|
| J205 | 3-45 | J105 | 3-43 |
| J206 | 3-46 | J106 | 3-44 |

Step 3: Orient the mating cable connectors so that the customer cables exit upwards towards the cable racks. Refer to Figures 3-41 and 3-42.

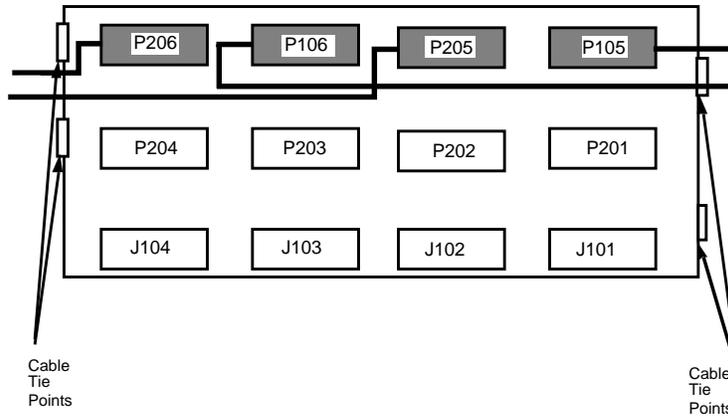


Figure 3-41. MDS E&M Cable Routing (J105 & J106, J205 & J206)

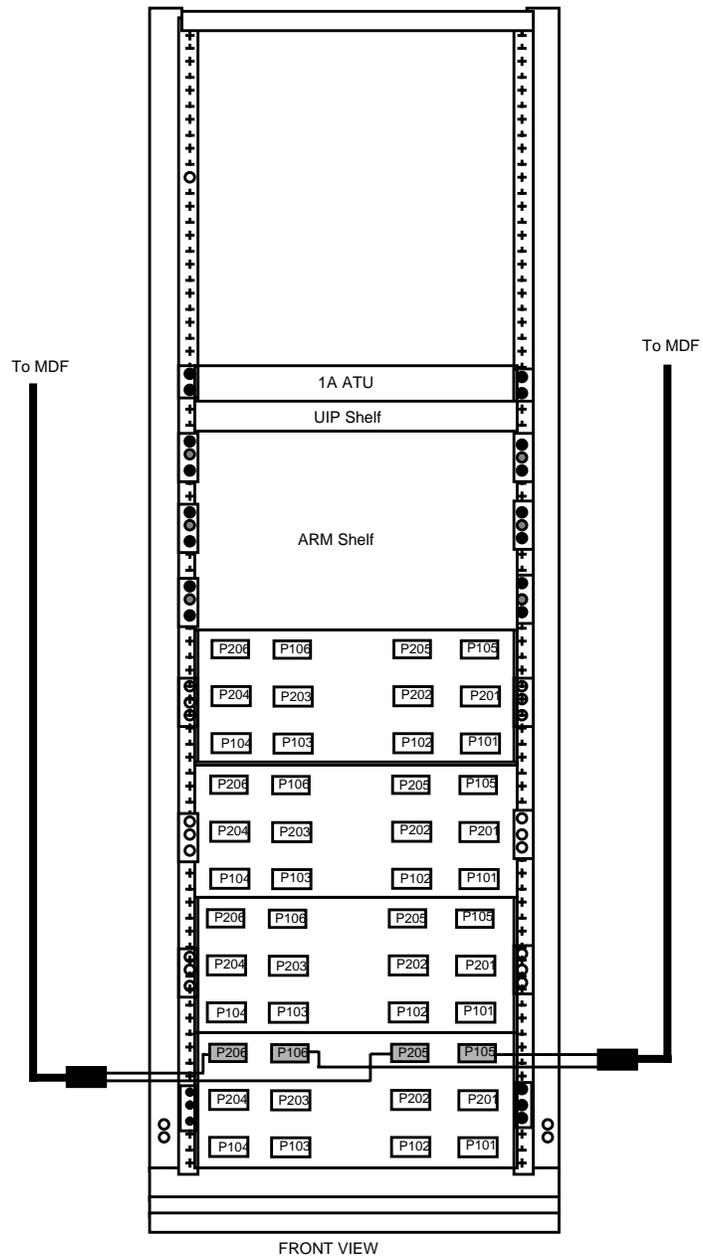


Figure 3-42. J105 & J106, J205 & J206 Bay Cabling

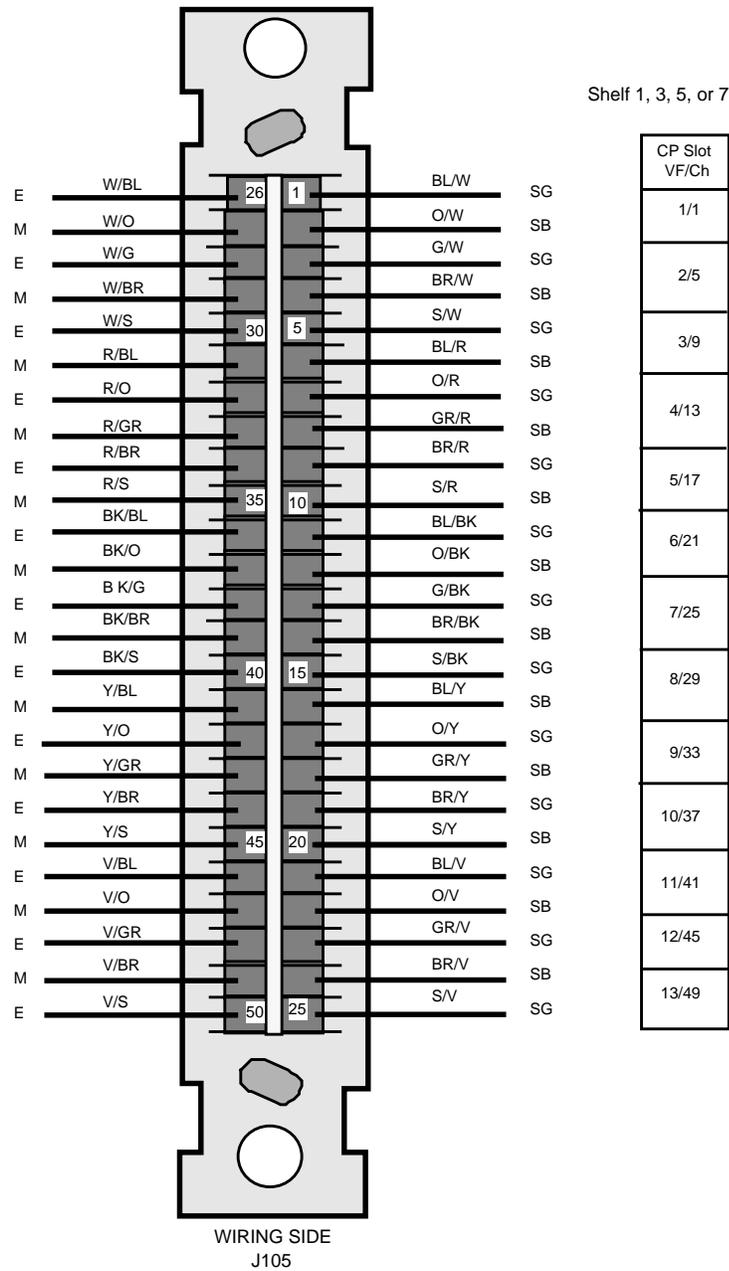


Figure 3-43. J105 Wiring (Channel Unit Slots 1 - 13)

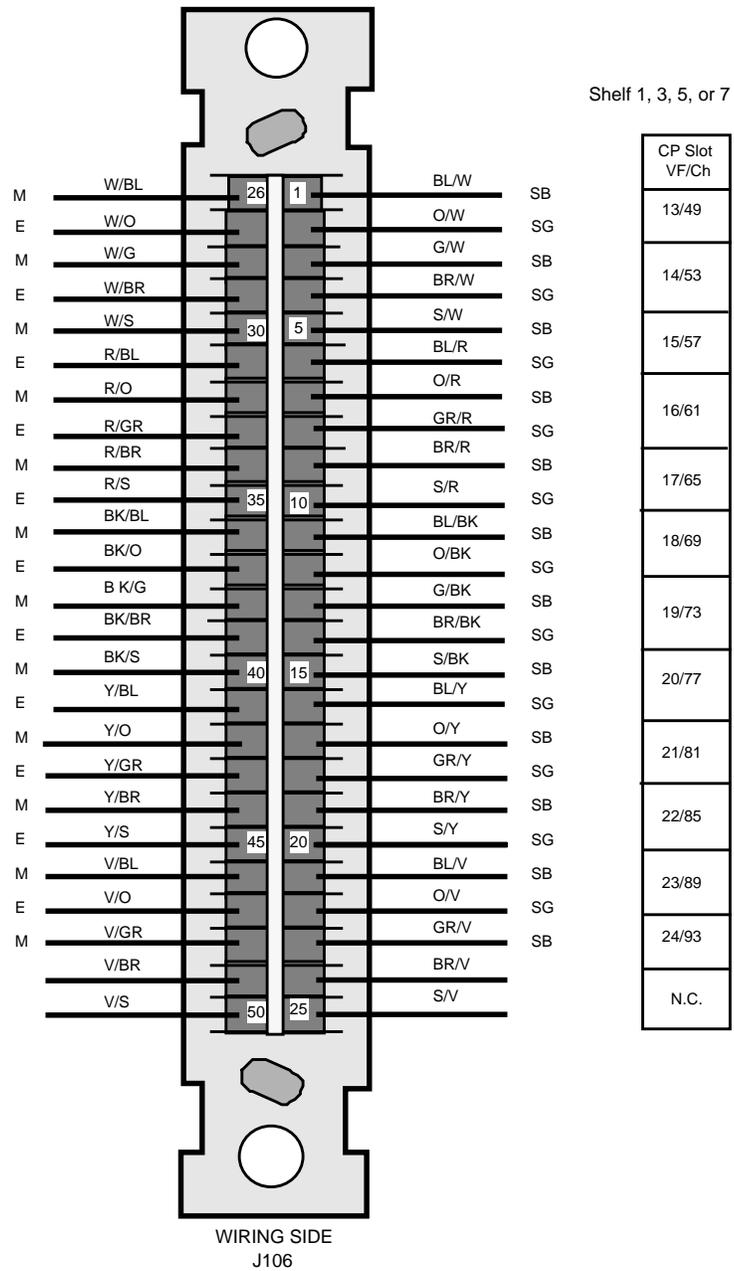


Figure 3-44. J106 Wiring (Channel Unit Slots 13 - 24)

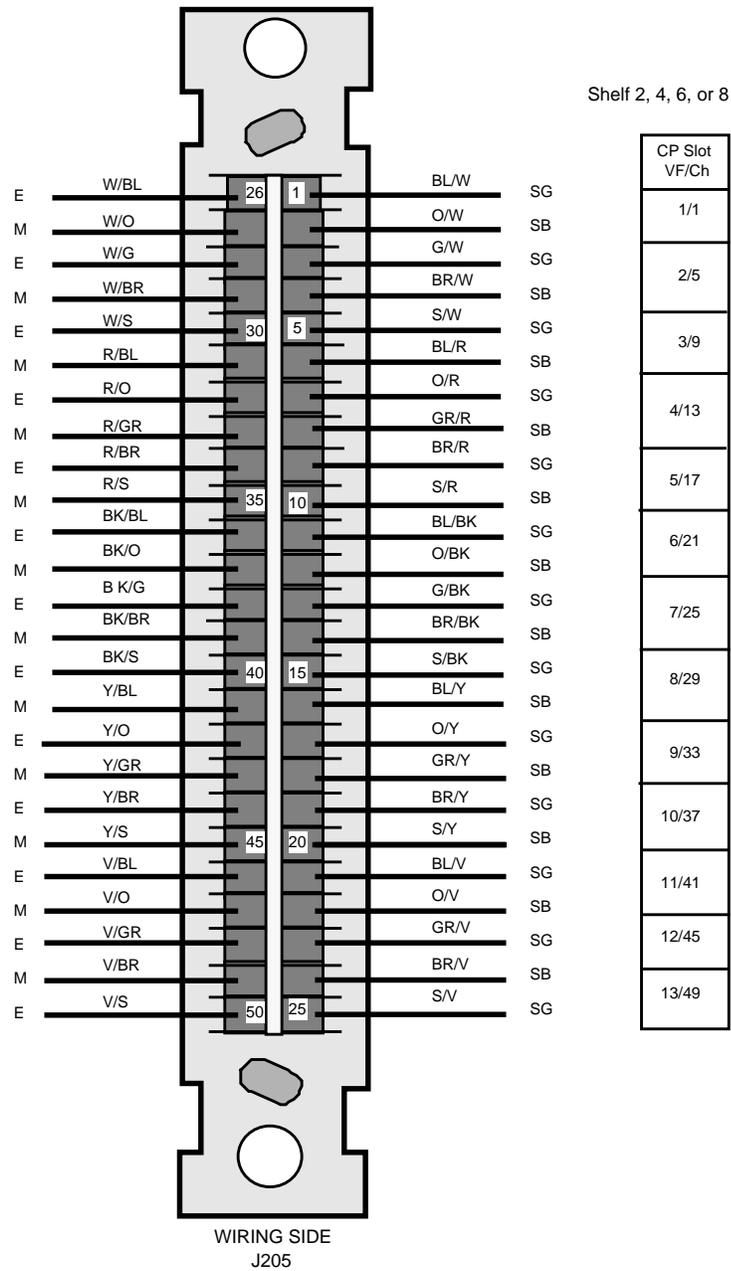


Figure 3-45. J205 Wiring (Channel Unit Slots 1 - 13)

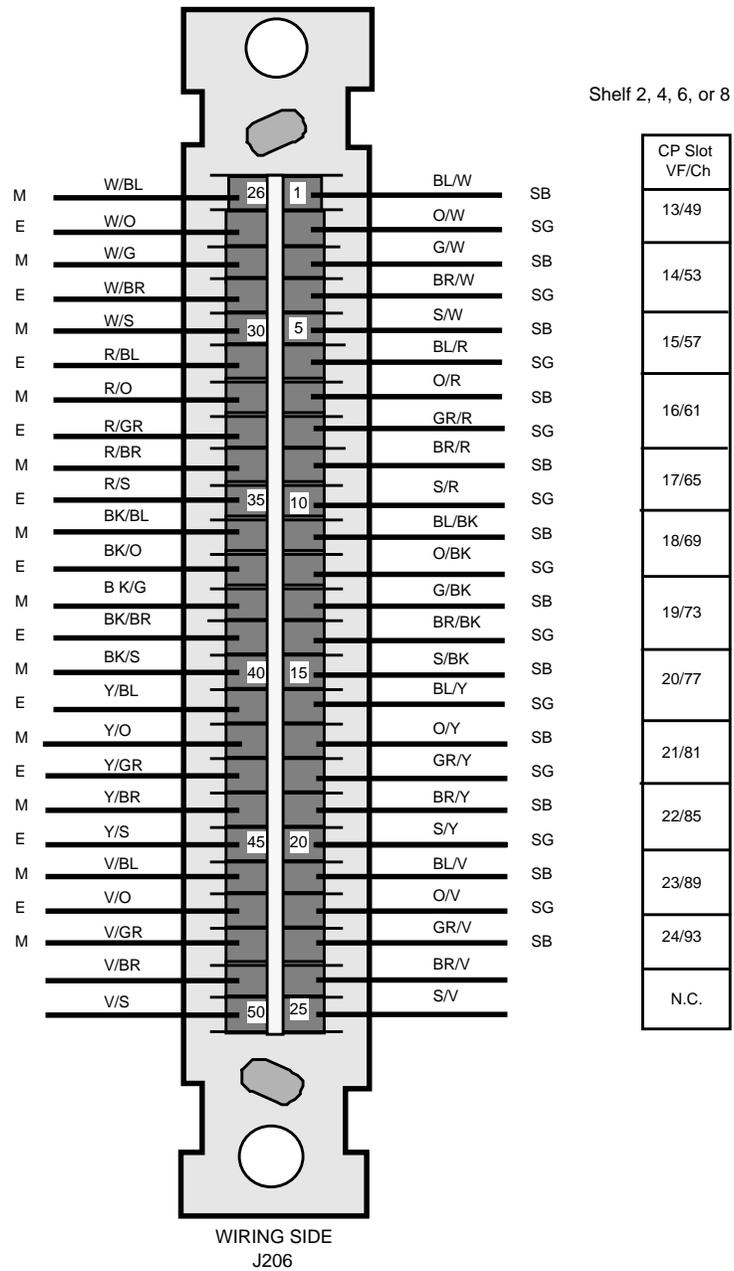


Figure 3-46. J206 Wiring (Channel Unit Slots 13 - 24)

Central Office Alarms

All COT alarms are brought to the TS1 block for connections to the central office audible and visual alarm systems. These alarms are critical, major, minor, and power minor.

Each audible and visual alarm is cabled at the customer's discretion via wire wrapped 22 or 24 gauge paired wires in accordance with the TS1 terminal block assignment depicted by Figure 3-47.

The same terminals from other *SLC-2000* bays can be multiplexed together at the TS1 block if desired to share the same office alarm system.

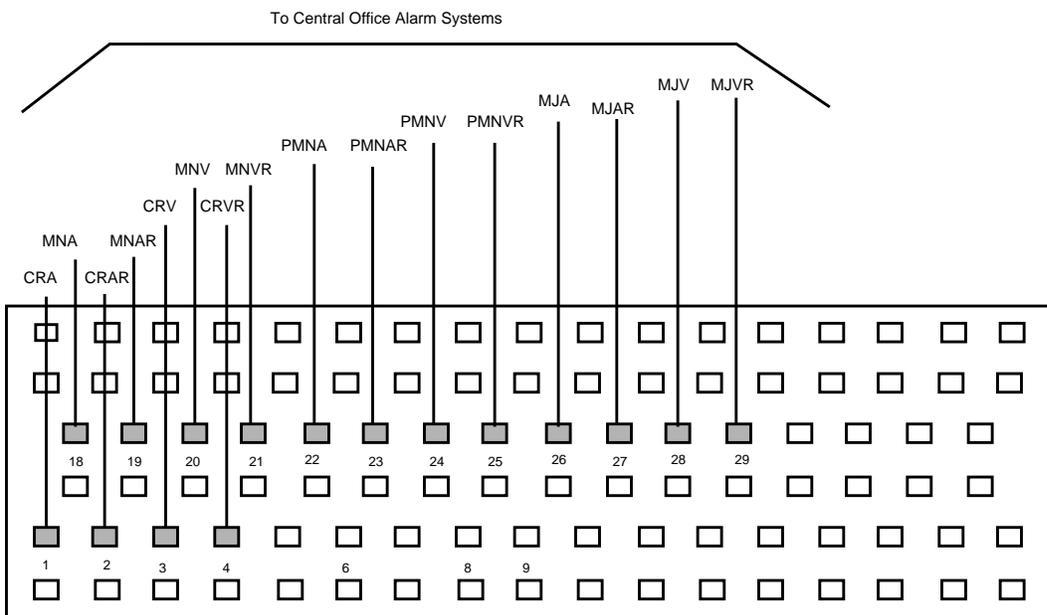


Figure 3-47. TS1 Block CO Alarms Connections

Parallel Telemetry Connections

The parallel telemetry interfaces an optional connection to remote a subset of alarms and status information to an operations center. The parallel alarm connections reflect the office alarms as individual closures for critical, major, minor, and power minor alarm conditions. Status contact closures such as near end, far end, system identification, ACO output and customer assigned pairs are also available.

All 50 connections of the ED7C723-37 Group 19-21 cable assembly shall be made to the customer's alarm block for further cross connections to the operations center. Refer to Figure 3-48 and the APPLICATIONS section for the designated pairs and available customer assigned pairs

Table 3-6. COT Parallel Telemetry Alarm and Status Points

| Pin # | Wire ID | Type | Description |
|--------------|----------------|-------------|---------------------------------|
| 1 | TELR | - | Telemetry Return (Common) |
| 2 | CRT | SA | Critical Alarm |
| 3 | MNT | NSA | Minor Alarm |
| 4 | NE | Status | Near End (Site of COT) |
| 5 | SID | Status | System ID |
| 6 | CL4 | SA | Major Alarm |
| 7 | CL5 | NSA | Power Minor Alarm |
| 8 | CL6 | Status | Incoming LS Signal Failure |
| 9 | CL7 | Status | Incoming SONET Failure |
| 10 | CL8 | Status | Far End ID #1 (RT Failure Site) |
| 11 | CL9 | Status | Far End ID #2 (RT Failure Site) |
| 12 | CL10 | Status | Far End ID #3 (RT Failure Site) |
| 13 | CL11 | Status | Far End ID #4 (RT Failure Site) |
| 14 | CL12 | Status | Far End ID #5 (RT Failure Site) |
| 15 | CL13 | Status | Far End ID #6 (RT Failure Site) |
| NC | CL14-CL19 | NC | No Connections |
| 16 | CL20 | Status | RACO verification |
| NC | CL21-CL26 | NC | No Connections |
| 17 | CL27 | Status | Far End DLC Alarm |
| 18 | CL28 | Status | Far End ID #7 (RT Failure Site) |
| 19 | CL29 | Status | Far End ID #8 (RT Failure Site) |
| 20 | CL30 | Status | VRT ID #1 (VTU Alarm) |
| 21 | CL31 | Status | VRT ID #2 (VTU Alarm) |
| 22 | CL32 | Status | VRT ID #3 (VTU Alarm) |
| 23 | CL33 | Status | VRT ID #4 (VTU Alarm) |
| 24 | CL34 | Status | VRT ID #5 (VTU Alarm) |
| 25 | CL35 | Status | VRT ID #6 (VTU Alarm) |

| Pin # | Wire ID | Type | Description |
|--------------|----------------|-------------|----------------------------|
| 26 | CL36 | Status | VRT ID #7 (VTU Alarm) |
| 27 | CL37 | Status | VRT ID #8 (VTU Alarm) |
| 28 | CL38 | Status | Digroup A |
| 29 | CL39 | Status | Digroup B |
| 30 | CL40 | Status | Digroup C |
| 31 | CL41 | Status | Digroup D |
| 32 | CL42 | Status | DLC CLF (DS1 Feeder or DT) |
| 33 | CL43 | Status | Abnormal Condition |
| 34 | CL44 | Status | Misc 1 |
| 35 | CL45 | Status | Misc 2 |
| 36 | CL46 | Status | Misc 3 |
| 37 | CL47 | Status | Misc 4 |
| 38 | CL48 | Status | Misc 5 |
| 39 | CL49 | Status | Misc 6 |
| 40 | CL50 | Status | Misc 7 |
| 41 | CL51 | NA | Future Assignment |
| 42 | CL52 | NA | Future Assignment |
| 43 | CL53 | NA | Future Assignment |
| 44 | CL54 | NA | Future Assignment |
| 45 | CL55 | NA | Future Assignment |
| 46 | CL56 | NA | Future Assignment |
| 47 | CL57 | NA | Future Assignment |
| 48 | CL58 | NA | Future Assignment |
| 49 | CL59 | NA | Future Assignment |
| 50 | RACO | Control | Remote ACO |

Legend of Type Column

| | |
|---------|----------------------------------|
| SA | Service Affecting Alarm |
| NSA | Non Service Affecting Alarm |
| Status | Condition Report |
| Control | Operation Point |
| NC | Wires Not Assigned or Connected |
| NA | Wires Not Assigned but Connected |

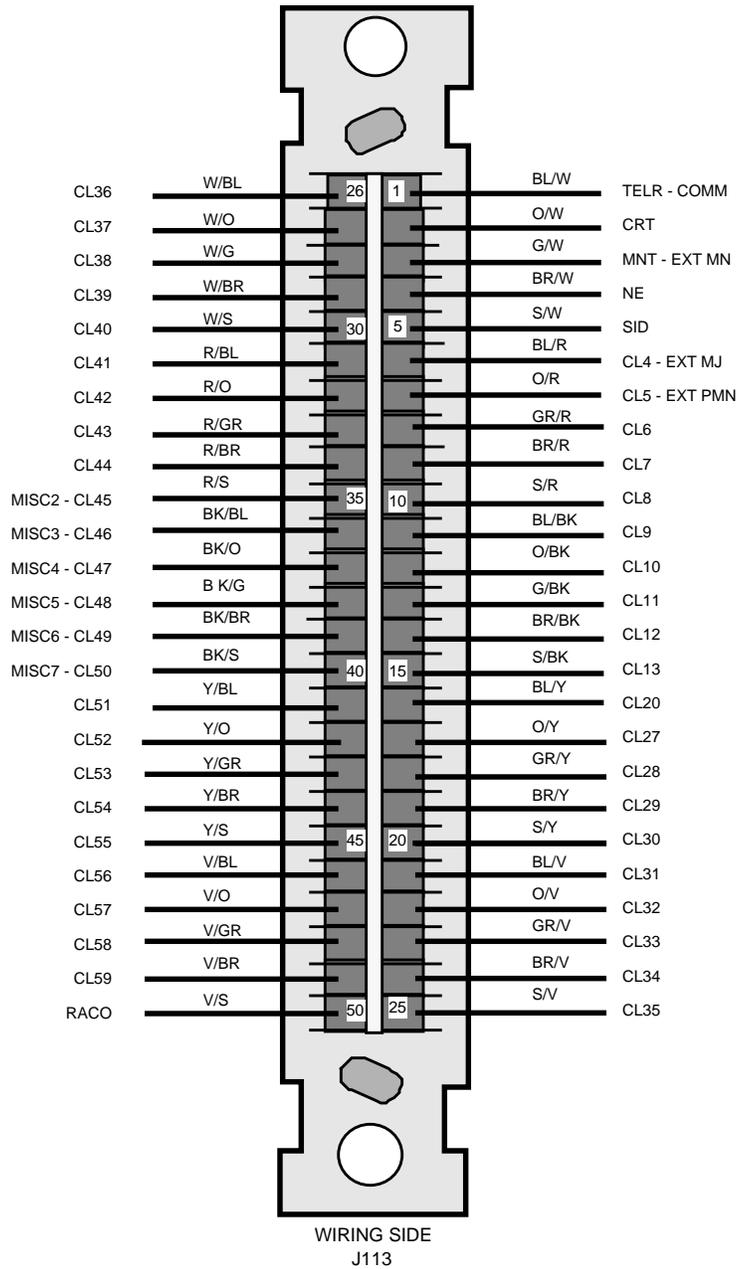


Figure 3-48. Parallel Telemetry Connections

PGTC Interconnections

Refer to the APPLICATIONS section for the overall PGTC/*SLC* interconnection arrangement.

Adjacent bay connections

The ED7C723-36 Group 5 cable assembly was connected to the ATU shelf's P109 connector in a previous paragraph (1A Alarm Test Unit Cables) of this section. This cable assembly's J115 connector will mate with the adjacent *SLC*-2000 bay's P115 connector of that adjacent bay's Group 5 cable assembly. Refer to the PARTS DESCRIPTION chapter of this manual for the Group 5 cable assembly details.

Non-adjacent bay connection

When the two bays to be interconnected are not adjacent, then use the ED3C861-20 Group 24 cable assembly which must be field formed, depending upon the length required, with 254A cable and with a J115 and a P115 connector at each end (refer to Figure 3-49).

Direct PGTC connections

Refer to Figure 3-49 and J109/J115 when initially connecting directly to the PGTC or to an available cross connection point to the PGTC utilizing the ED3C861-20 Group 19-23 or 29 cable assembly.

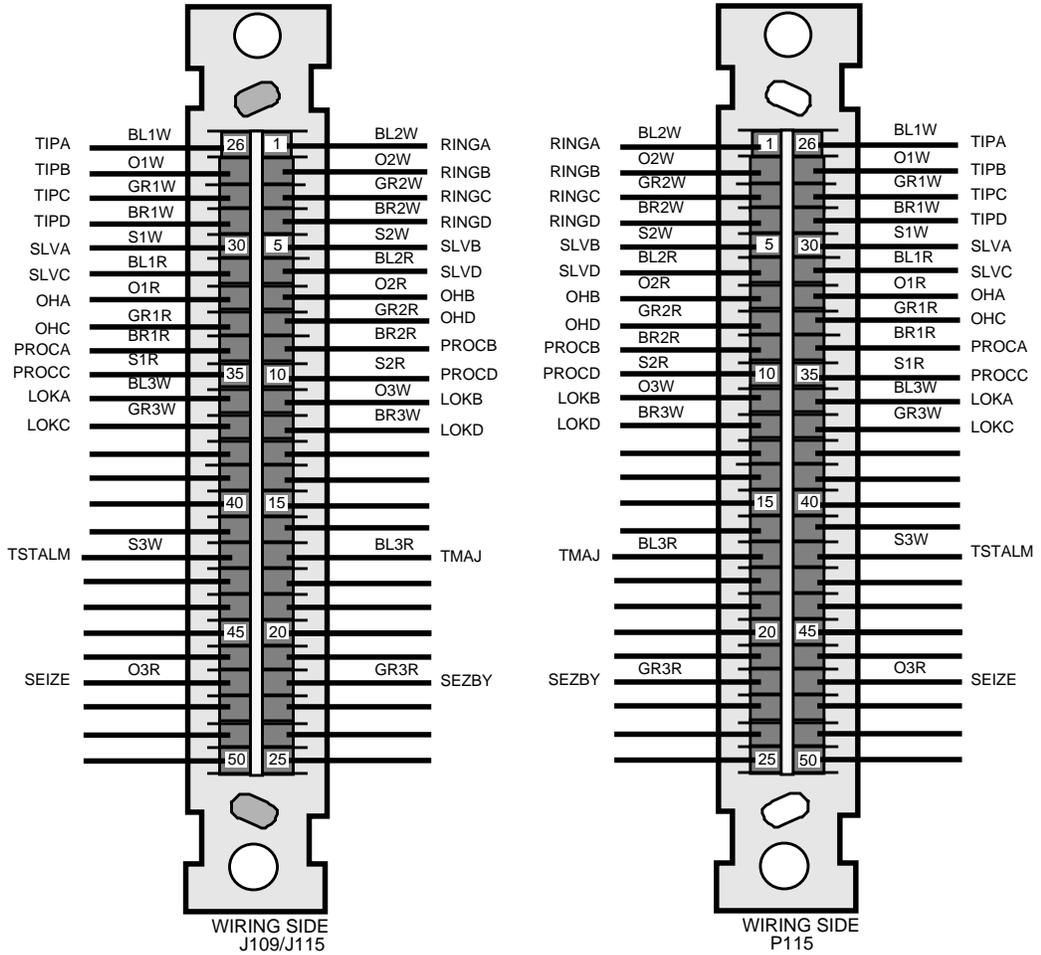


Figure 3-49. PGTC Interconnections (ED3C861-20 Cable Assemblies)

By-Pass Test Pair Connections

Refer to the APPLICATIONS section for the overall PGTC/*SLC* interconnection arrangement.

All test pairs and inhibit leads represented in Figure 3-50 should be run to the horizontal side of the MDF for further cross connections to outside plant protectors and cables at the vertical MDF. Up to eight different RT sites can be supported. Test pairs which are common to an individual RT site are multiplied at the HMDF but all inhibit leads are multiplied together.

Designate all leads at the HMDF in accordance with Figure 3-50. Do not terminate the leads that are designated NC.

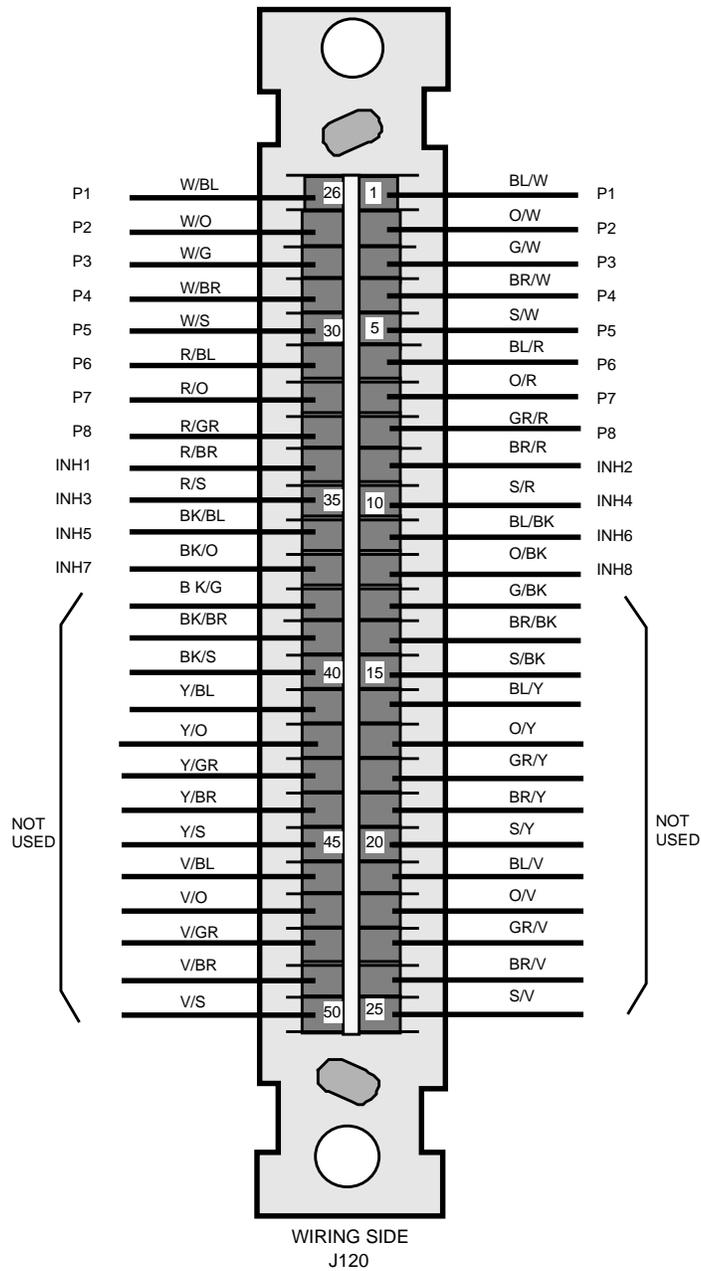


Figure 3-50. By-Pass Pair Connections

Central Office Clock Connections

Composite Clock

Two shielded pairs are required at each COT for connections to the central office composite (8/64 kHz) clock for channel units of the following type: Dataport, DDS, ISDN, etc. The primary and secondary pairs (COC0 and COC1) are terminated at the TS1 block with 68.1 ohm resistors as indicated in the figure below (Figure 3-51). If Lucent Technologies cables are utilized then refer to the wire colors as indicated. The cable shields are grounded only at the TS1 block as indicated.

DS1 SONET Clock

Connections to the DS1 clock are made at the ARM shelf P37 and/or P44 connectors (see Figure 3-52) using the appropriate ED7C723-37 or ED8C724-20 cable assemblies (refer to the PARTS LISTS section). The first COT is cabled to the DS1 Stratum 3 (or higher) clock via the P37 cable connector and subsequent COT's are multiplexed via the P44/P37 cable assembly (see Figure 3-53). The first COT may be multiplexed to a DDM-2000 system instead provided that system is connected to the Stratum 3 (or higher) clock. Refer to the APPLICATIONS section for details.

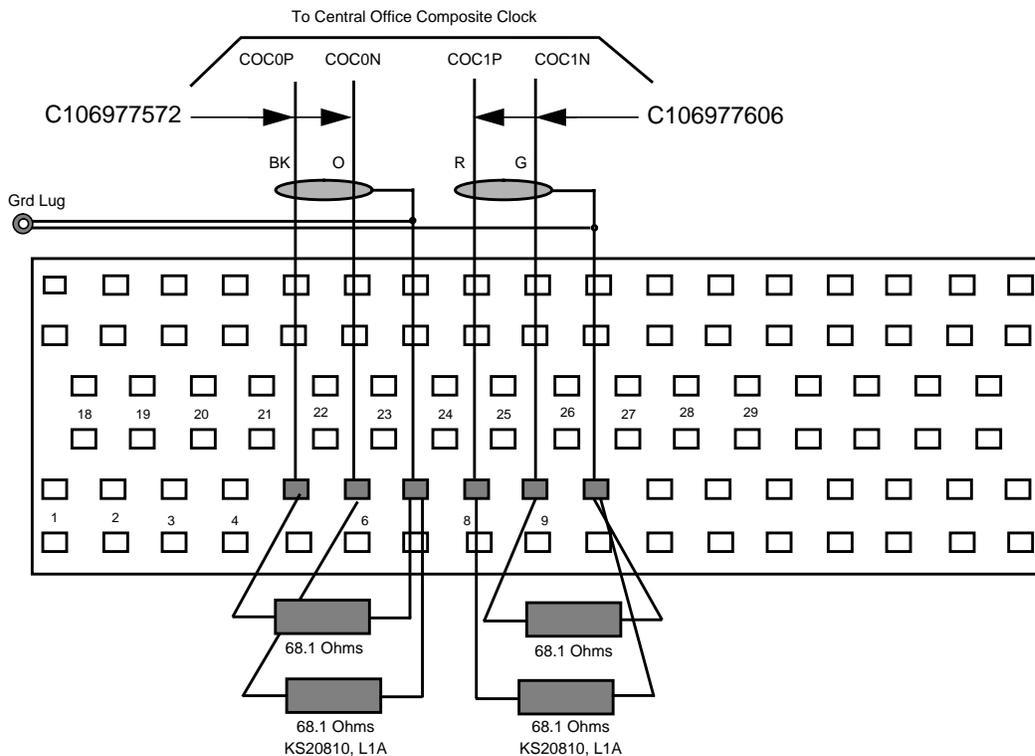


Figure 3-51. TS1 Block Connections to Composite Clock

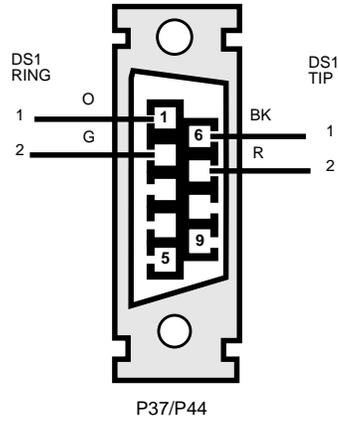


Figure 3-52. Connections to DS1 and BITS Clocks (ED7C723-37, Group 27, 28, or 29)

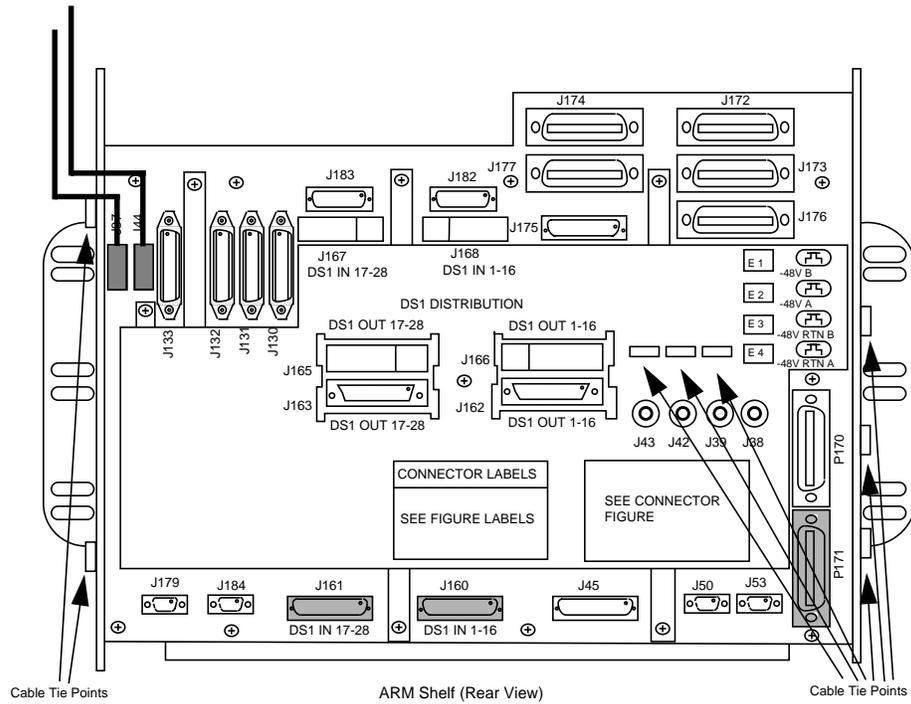


Figure 3-53. ARM Shelf Cable Routing for ED8C724-20, G339 - 341 Cables

Operational Systems Interfaces



NOTE:

The CIT and X.25 interfaces used by the SLC-2000 system is defined by the EIA standard RS232D which recommends cable lengths less than 50 feet for data rates up to 19200 baud. If longer cable lengths are required it is suggested that the baud rate be reduced.

X.25 (Q3) Interface

Connections at the ARM shelf J45 connector are standard RS232D terminations (Figure 3-55). Terminate the appropriate cable at the customers cross-connect point for these communications lines. Refer to the APPLICATIONS section.

TBOS Serial Telemetry

The appropriate cable assemblies shall be connected to J53 of the ARM shelf in accordance with the associated figure (see Figure 3-54) and OS type as follows: Refer to the APPLICATIONS sections for details.

ACORN Systems require cable assemblies devoid of built-in resistor terminations (ED8C724-20 G-348 or 349).

GTP Systems require cable assemblies equipped with built-in 511 ohm resistor terminations (ED8C724-20 G-395 or 396). Older cable versions utilized the ACORN cables with an additional adapter cable assembly (G-352) which contained the resistor terminations.

CIT/Modem

Connections at the ARM shelf J182 connector are standard RS232D terminations (Figure 3-57), however the mating cable assembly utilizes only 5 leads. Terminate the appropriate cable at the customers cross-connect point for these communications lines. Refer to the APPLICATIONS section for all CIT connections.

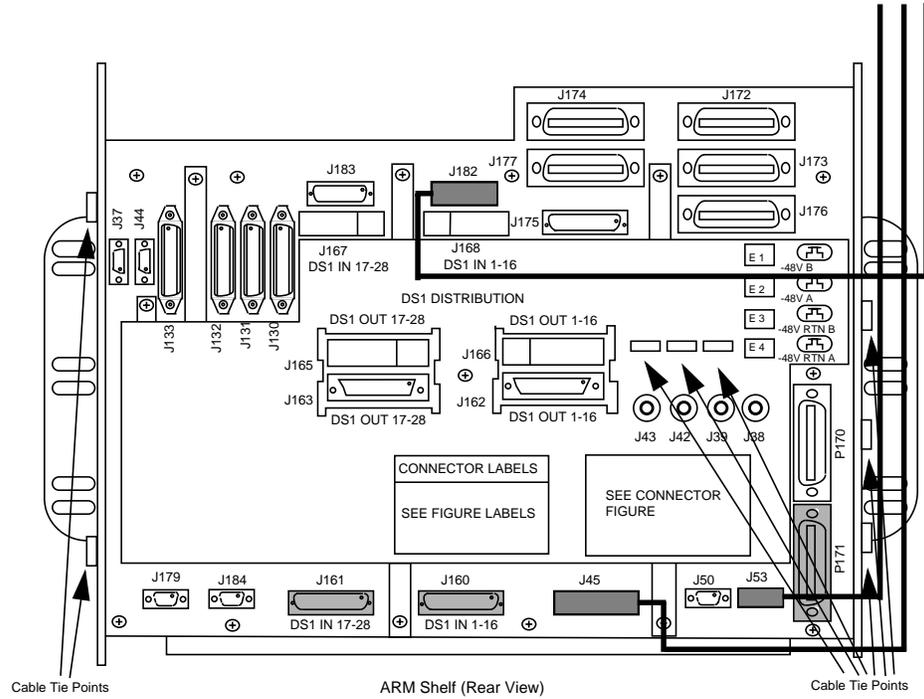


Figure 3-54. ARM Shelf Cable Routing for ED8C724-20 OS Cables

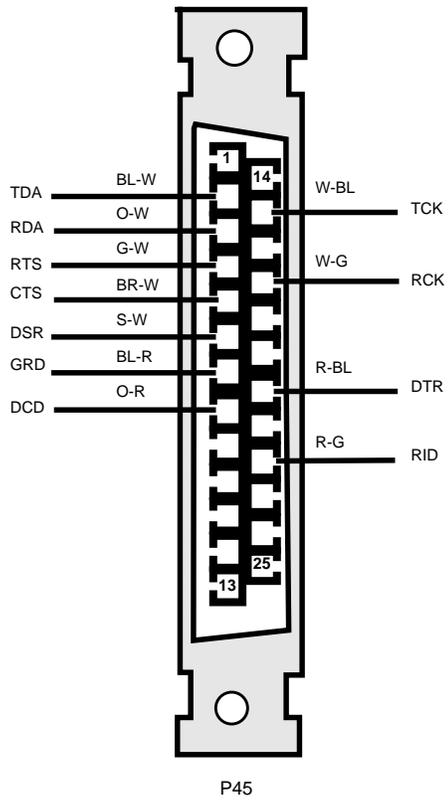


Figure 3-55. TL1 X.25 Connections

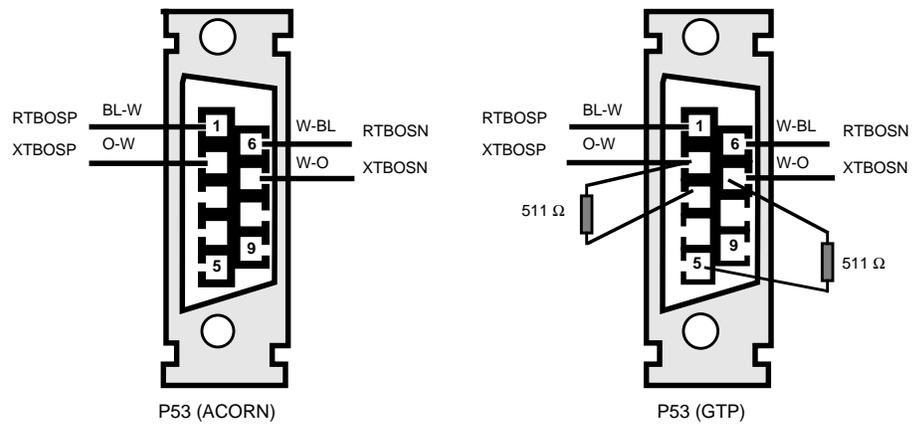


Figure 3-56. TBOS Connections

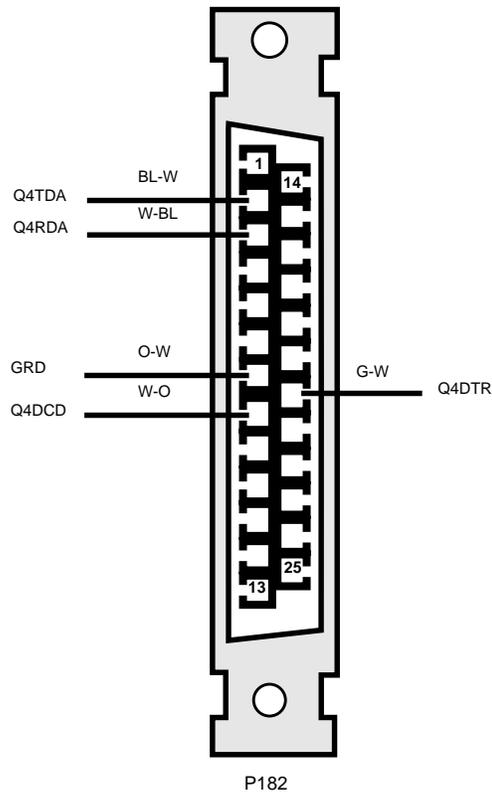


Figure 3-57. CIT/Modem RS232 Connections

ARM Shelf Fiber Optic Cables

General

Fiber jumpers must be single mode with ST[®] type connectors at the SLC-2000 OLIU end. The other end's connector must match the connector of the vendor's fiber cross-connect panel.

Use care when routing the fiber cable in order not to pinch or severely bend the cable especially when routing through the wire slots in the ARM shelf trough.



NOTE:

The minimum bending radius of the fiber cable is two inches (four inches diameter).

Fiber cables should be run apart from other cables in a separate protected duct.

Installation Procedure for Installing Fiber Optic Cables to the ARM Shelf

- Step 1:* Label both ends of the fiber cables in accordance with their associated OLIU, i.e. Main 1 IN, Main 1 OUT, etc. (see Figure 3-58).
- Step 2:* Route the fiber in accordance with Figure 3-56. Note the entry is from the left side of the front of the bay through the wire slots in the ARM shelf front trough under the associated OLIU. The OLIU's will not be in place at this time so enough slack must be left to reach the terminating points on the units when they are installed.

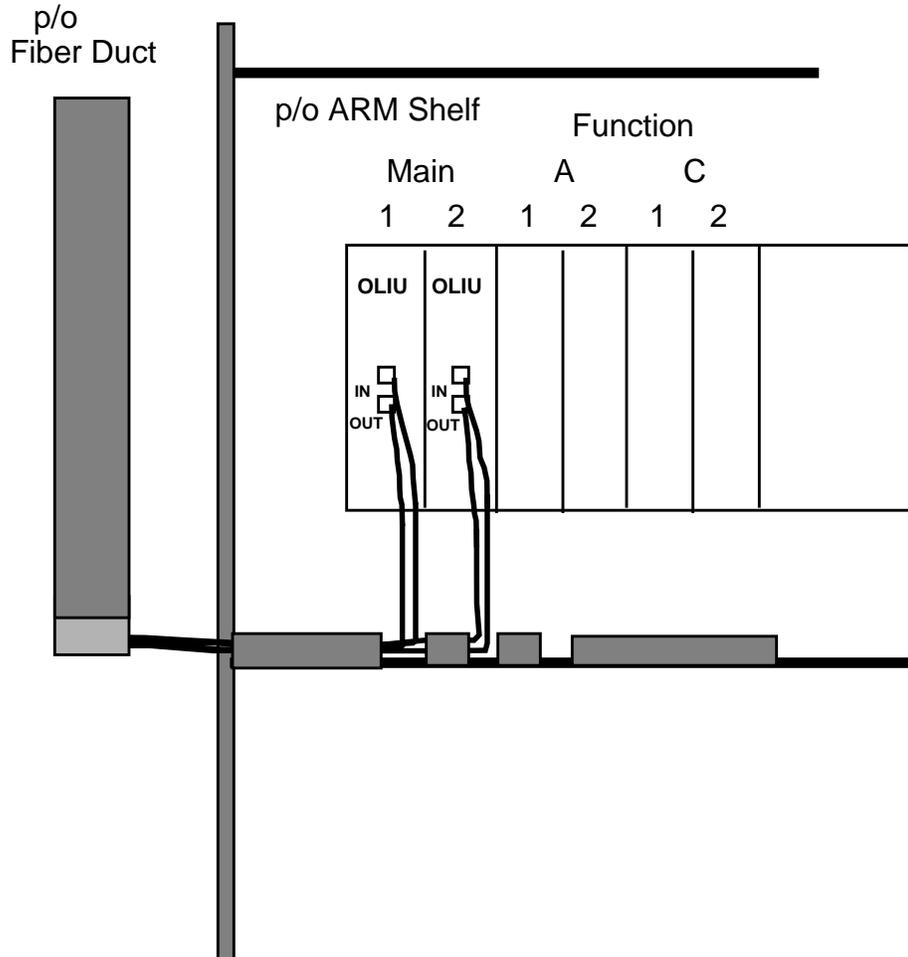


Figure 3-58. Optical Fiber Routing

Contents

| | |
|--|-----|
| General Information | 4-1 |
| Basic <i>SLC</i>[®]-2000 Hardware | 4-2 |
| ■ Factory Assembled COT Bays | 4-2 |
| ■ Frame Mounting Material (1 per COT Frame) | 4-2 |
| ■ Heat Baffles (as required) | 4-2 |
| ■ Access Resource Manager Shelf (1 per COT Frame) | 4-3 |
| ■ Metallic Distribution Shelf Assembly (as required) | 4-3 |
| ■ Alarm Test Unit (1 per COT Frame) | 4-3 |
| ■ Power Interface Unit (1 per COT Frame) | 4-3 |
| ■ Bay Common Cables (1 per COT Frame) | 4-3 |
| ■ Frame Terminal Block | 4-3 |
| ■ Peripheral Cables (as required) | 4-4 |
| Ancillary Equipment | 4-6 |
| ■ Ringing Supplies | 4-6 |
| ■ DC Power Supply | 4-6 |
| ■ Cross-connect Blocks | 4-6 |
| ■ Miscellaneous Cables | 4-6 |
| ■ Tools | 4-7 |

Tables

| | |
|-----------------------------------|-----|
| 4-1A. Peripheral Cable Assemblies | 4-4 |
| 4-1B. Peripheral Cable Assemblies | 4-5 |

Parts Lists and Kits

4

General Information

This section provides general information to be used for checking the basic material and hardware necessary for the complete assembly and installation of the SLC[®]-2000 Central Office Terminal. This material includes the basic SLC-2000 hardware and the required ancillary equipment. Circuit packs, software, and test equipment necessary for the turn-up, test and maintenance of the system are listed in those associated documents and are not included here. Complete ordering information can be found in the Engineering and Ordering Guide and the PC-based Configurator, Planning and Ordering Tool.

Basic SLC-2000 Hardware - Supplier Furnished

| | |
|---------------|-----------------------------|
| J1C265B-1/C-1 | 7-foot frame |
| J1C265AD-1 | ARM Shelf Assembly |
| J1C265AE-1 | MDS Shelf Assembly |
| 1A | Alarm Test Unit |
| ED7C734-30 | Power Interface Unit |
| ED7C723-34 | Common Cable Assemblies |
| ED7C723-37 | Peripheral Cable Assemblies |
| 845448307 | Heat Baffles |
| 353A | Terminal Block |

Ancillary Equipment - Customer Furnished

Ringin Supplies

-48 Volt DC Bulk Power Supply

VF Cross Connect Blocks

Optic Fiber Cross Connect Blocks

Optic Fiber Jumper Cables

Bulk Power and Ringin Cables

DS1 Cross Connect Blocks - optional

Tools and Test Equipment

Basic SLC-2000 Hardware

Factory Assembled COT Bays

- J1C265B-1 Front Flush Mounted Shelf Arrangement
- J1C265C-1 Front Extended Mount Shelf Arrangement

Frame Mounting Material (1 per COT Frame)

Frame mounting material consists of the basic bay framework, anchoring material, and miscellaneous hardware to enclose and protect the equipment and cabling within the bay. The following listings can be used as an ordering guide or as an installation checklist for material previously ordered. The material that is indicated as optional is used to enhance the general appearance of the bay or is relevant to its particular environment.

Refer to the SUPPLEMENTARY INFORMATION chapter of this manual for detailed information.

Heat Baffles (as required)

- 845448307- Heat Baffle (1 minimum, 3 maximum)

Access Resource Manager Shelf (1 per COT Frame)

- J1C265AD-1 List 1 or 3 ARM Assembly
- J1C265AD-1 List 2 or 4 ARM Assembly (extended mount)

Metallic Distribution Shelf Assembly (as required)

- J1C265AE-1 List 1 or 3 MDS Assembly (0 minimum, 4 maximum)
- J1C265AE-1 List 2 or 4 MDS Assembly, extended mount (0 minimum, 4 maximum)

Alarm Test Unit (1 per COT Frame)

- 1A Alarm Test Unit

Power Interface Unit (1 per COT Frame)

- ED7C734-30 Group 2 Power Interface Unit equipped with
 - ED7C723-34 Group 2(*) Power, Ringing and Alarm Cable Assembly

Bay Common Cables (1 per COT Frame)

- ED7C723-34 Group 1 Intershelf TAP Cable Assembly

Frame Terminal Block

- Comcode 102436250 353A Terminal Block equipped with
 - (4) Comcode 401185970 68.1 Ohm Resistors (KS 20810, L1A)

* The parenthesis after the group number of the cable assembly means that there may be an alpha character after the numeric character, e.g., Group 2 or Group 2A or Group 2B.

Peripheral Cables (as required)

Table 4-1A. Peripheral Cable Assemblies

| Quantity | Cable Assembly | Function | Channels/Shelf* | |
|-----------|-------------------------------|------------------|-----------------|-------|
| | | | | |
| 1 per COT | ED7C723-37, G1(), 2(), or 3() | DS1 IN | 1 - 16 | ARM |
| 1 per COT | ED7C723-37, G1(), 2(), or 3() | DS1 IN | 17 - 28 | ARM |
| 1 per COT | ED7C723-37, G1(), 2(), or 3() | DS1 OUT | 1 - 16 | ARM |
| 1 per COT | ED7C723-37, G1(), 2(), or 3() | DS1 OUT | 17 - 28 | ARM |
| 1 per MDS | ED7C723-37, G4, 5, or 6 | VF | 1 - 96 | MDS/L |
| 1 per MDS | ED7C723-37, G7, 8, or 9 | VF | 1 - 96 | MDS/U |
| 1 per MDS | ED7C723-37, G10, 11, or 12 | E&M | 1 - 93 | MDS/L |
| 1 per MDS | ED7C723-37, G13, 14, or 15 | E&M | 1 - 93 | MDS/U |
| 1 per COT | ED7C723-37, G16, 17, or 18 | Misc. Disc. Alms | ARM | |
| 1 per COT | ED7C723-37, G16, 17, or 18 | Bypass Test | ATU | |
| 1 per COT | ED7C723-37, G19, 20, or 21 | Telemetry | ATU | |
| 1 per COT | ED7C723-37, G27, 28, or 29 | DS1 Timing | ARM | |

* L is lower half of MDS Assembly; U is upper half.

⇒ NOTE:

| ED7C723-37 | |
|---|---------------------------|
| Groups 1(), 4, 7, 10, 13, 16, 19, 27 | 75-foot cable assemblies |
| Groups 2(), 5, 8, 11, 14, 17, 20, 28 | 150-foot cable assemblies |
| Groups 3(), 6, 9, 12, 15, 18, 21, 29 | specified lengths |
| Groups 1(), 2(), or 3() are used for DS1 Feeder or DS1 Distribution applications. | |

Table 4-1B. Peripheral Cable Assemblies

| Quantity | Cable Assembly | Function | Shelf/Connector | |
|-----------|----------------------------|------------------|-----------------|-------------|
| 1 per COT | ED8C724-20, G339, 340, 341 | DS1 Timing | ARM | J37 |
| 1 per COT | ED8C724-20, G342, 343 | X.25 | ARM | J45 |
| 1 per COT | ED8C724-20, G348, 349 | TBOS (ACORN) | ARM | J53 |
| 1 per COT | ED8C724-20, G319, 350 | CIT Modem | ARM | J182 |
| 1 per COT | ED8C724-20, G352 | ACORN to GTP | ARM | J53 Adaptor |
| 1 per COT | ED8C724-20, G374 | DS1 Timing Mult. | ARM | J44 |
| 1 per COT | ED8C724-20, G394 | DS1 Timing | ARM | J37 |
| 1 per COT | ED8C724-20, G395, 396 | TBOS (GTP) | ARM | J53 |
| 1 per COT | ED3C861-20, G19 - 23, 29 | PGTC | ATU | P115 |
| 1 per COT | ED3C861-20, G24 | PGTC Test Mult. | ATU | P115 |

⇒ NOTE:

ED8C724-20

| | |
|--|---------------------------|
| Groups 319 | 75-foot cable assemblies |
| Groups 339 | 100-foot cable assemblies |
| Groups 342, 348, 396 | 150-foot cable assemblies |
| Groups 340 | 300-foot cable assemblies |
| Groups 341, 343, 349, 350, 374, 394, 395 | specified lengths |

ED3C861-20

| | |
|-------------------|---------------------------|
| Groups 19 | 50-foot cable assemblies |
| Groups 20 | 100-foot cable assemblies |
| Groups 21 | 150-foot cable assemblies |
| Groups 22 | 225-foot cable assemblies |
| Groups 23, 24, 29 | specified lengths |

Ancillary Equipment

Ringling Supplies

Ringling Supply shelf equipped with two +20 Hz/-20 Hz, 100 Vac Ringling Supplies (Lucent Technologies J1C182BC or equivalent)

DC Power Supply

Two sources of -48 Vdc each protected by 30 amp circuit breaker

Cross-connect Blocks

| | |
|-------------|---|
| VF | 100 pair blocks (2 required per MDS Assembly) |
| DS1 | Optional blocks to terminate 28 shielded pairs each, transmit and receive |
| Fiber Optic | Block to terminate up to 8 single-mode fibers |

Miscellaneous Cables

| | | |
|-----------------|--|---|
| Power | <30 feet: | two 10-gauge pairs |
| | >30 feet: | two pairs gauged to limit dc drop to 1.5v maximum at 25 amps spliced down to 10 gauge before connecting to ARM shelf Power Interface Unit |
| Ground | No. 2 AWG ground wire or equivalent to meet local building standards | |
| Fiber Optic | one pair, single-mode fiber cables per SLC-2000 OLIU circuit pack | |
| Ringling | two 22-gauge twisted triples | |
| Composite Clock | 22 gauge shielded pair (primary) Comcode 106977572 22 gauge shielded pair (secondary) Comcode 106977606 | |

Tools

| | |
|----------------|--|
| Basic | Hand tool kit (screwdrivers, wrenches, pliers, etc.) |
| | Large tool kit (hammers, claw bar, level, etc.) |
| | Floor drilling equipment (roto-hammer, masonry bits) drop-in anchors may be furnished by supplier |
| | Lifting equipment (hoists, dolly trucks, straps, etc.) |
| Special | Wire wrap tools (gun, bits for 22, 24, and 26 gauges) |
| | Cable crimpers (battery and ground lugs) |
| | Soldering iron (various tips) |
| | TY-RAP* tool |
| Test Equipment | Digital volt/ohmmeter |

* Registered trademark of Thomas & Betts, Corp.

Parts Description

5

Contents

| | |
|---|-----|
| General Information | 5-1 |
| Frame Hardware | 5-1 |
| ■ Frame Details and Installation Material | 5-1 |
| Shelf Equipment | 5-2 |
| ■ ARM Shelf Parts | 5-2 |
| ■ MDS Assembly Parts | 5-3 |
| ■ Power Interface Unit Parts | 5-4 |
| ■ Alarm Test Unit Parts | 5-4 |
| Cable Assemblies | 5-5 |

Figures

| | |
|---|------|
| 5-1. Cable Assembly ED7C723-30, Group 7 | 5-6 |
| 5-2. Cable Assembly ED7C723-30, Groups 9() through 12() | 5-7 |
| 5-3. Cable Assembly ED7C723-32, Groups 10 and 11() | 5-8 |
| 5-4. Cable Assembly ED7C723-34, Group 1 | 5-9 |
| 5-5. Cable Assembly ED7C723-36, Group 3() | 5-10 |
| 5-6. Cable Assembly ED7C723-36, Group 4 | 5-11 |
| 5-7. Cable Assembly ED7C723-36, Group 5 | 5-12 |

Parts Description

5

General Information

This section details the major components of the various shelves and assemblies. Specific information is provided for the structure of each assembly describing which components are factory equipped and which are shipped separately. This information on the following assemblies can be used as a checklist and for ordering missing hardware and sub-units necessary for the complete assembly and installation of the SLC[®]-2000 Central Office Terminal.

- Frame details
- Installation material
- ARM shelf parts
- MDS assembly parts
- Cable assemblies

Frame Hardware

Frame Details and Installation Material

Refer to the SUPPLEMENTARY INFORMATION chapter of this manual for detailed information.

Shelf Equipment

ARM Shelf Parts

The ARM shelf is provided by the manufacturer with the following individual cable assemblies and hardware. The following listings can be used as an ordering guide or as an installation checklist for material previously ordered. The material that is indicated as optional is required for specific purposes. All pieces are shipped with the shelf, but some parts (*) may be loosely attached or shipped in separate containers.

J1C265AD-1 List 1 or 2 ARM Shelf Assembly

| equipped with | | |
|---------------|-----------------------|-------------------------------|
| | ED7C723-30 Group 1 | Cable Assembly |
| | ED7C723-30 Group 2 | Cable Assembly |
| | ED7C723-30 Group 3 | Cable Assembly |
| | ED7C723-30 Group 4 | Cable Assembly |
| | ED7C723-30 Group 5 | Cable Assembly |
| | ED7C723-30 Group 6() | Cable Assembly |
| | ED7C723-30 Group 7 | Cable Assembly |
| | ED7C723-30 Group 9() | Cable Assembly |
| | ED7C723-30 Group 10() | Cable Assembly |
| | ED7C723-30 Group 11() | Cable Assembly |
| | ED7C723-30 Group 12() | Cable Assembly |
| 6 | 801486341* | screws, special round head |
| 2 | 402444491* | studs, slotted |
| 2 | 846944411* | labels, system identification |
| 1 | 406203182* | fuse, 0.5 amp |
| 1 | 406421032* | fuse, 2.0 amp |
| 2 | 406203190* | fuses, 10 amp |



NOTE:

The parenthesis after the group number of the cable assembly means that there may be an alpha character after the numeric character, e.g., Group 2 or Group 2A or Group 2B.

MDS Assembly Parts

The MDS assembly is provided by the manufacturer with the following individual cable assemblies and hardware. The following listing can be used as an ordering guide or as an installation checklist for material previously ordered. The material that is indicated as optional is required for specific purposes. All pieces are shipped with the shelf, but some parts (*) may be loosely attached or shipped in separate containers.

J1C265AE-1 List 1 or 2 MDS Assembly

| equipped with | | |
|---------------|-----------------------|-------------------------------|
| | ED7C723-32 Group 1 | Cable Assembly |
| | ED7C723-32 Group 10 | Cable Assembly |
| | ED7C723-32 Group 11() | Cable Assembly |
| 6 | 801486341* | screws, special round head |
| 2 | 402444491* | studs, slotted |
| 2 | 846944411* | labels, system identification |
| 2 | 406203182* | fuses, 0.5 amp |
| 4 | 406203976* | fuses, 5.0 amp |

Power Interface Unit Parts

The Power Interface Unit is provided by the manufacturer with the following cable assembly and hardware. The following listing can be used as an ordering guide or as an installation checklist for material previously ordered. All pieces are shipped with the unit but some parts (*) may be loosely attached or shipped in separate packages.

ED7C734-30 Group 2 Power Interface Unit

| | |
|----------------------|----------------|
| equipped with | |
| ED7C723-34 Group 2() | Cable Assembly |

Alarm Test Unit Parts

The Alarm Test Unit is provided by the manufacturer with the following cable assembly and hardware. The following listing can be used as an ordering guide or as an installation checklist for material previously ordered. All pieces are shipped with the unit but some parts (*) may be loosely attached or shipped in separate packages.

1A Alarm Test Unit

| | |
|---------------------------|------------------|
| equipped with | |
| ED7C723-36 Group 1() to 6 | Cable Assemblies |

Cable Assemblies

The major cable assemblies furnished as dangler cables on the ARM, ATU, and MDS are attached to those shelves by the manufacturer. The following cable assemblies which interface with the customer's cables and are not detailed in the CABLING, WIRING, AND ASSEMBLY section are detailed here for installation troubleshooting purposes.

Refer to the following figures for wiring details. All pieces are shipped with the shelves, but some parts (*) may be loosely attached or shipped in separate containers.

| | |
|---------------------------|---|
| ED7C723-30 Group 7 | TAP to ARM backplane interface |
| ED7C723-30 Group 9()-12() | PCM Distribution to MDS dangler cable |
| ED7C723-32 Group 10 | TAP to MDS backplane interface |
| ED7C723-32 Group 11() | PCM Distribution to MDS backplane interface |
| ED7C723-34 Group 1 | TAP to ARM/MDS dangler |
| ED7C723-36 Group 3() | ATU to ARM |
| ED7C723-36 Group 4 | ATU to ARM |
| ED7C723-36 Group 5 | ATU to PGTC interface |

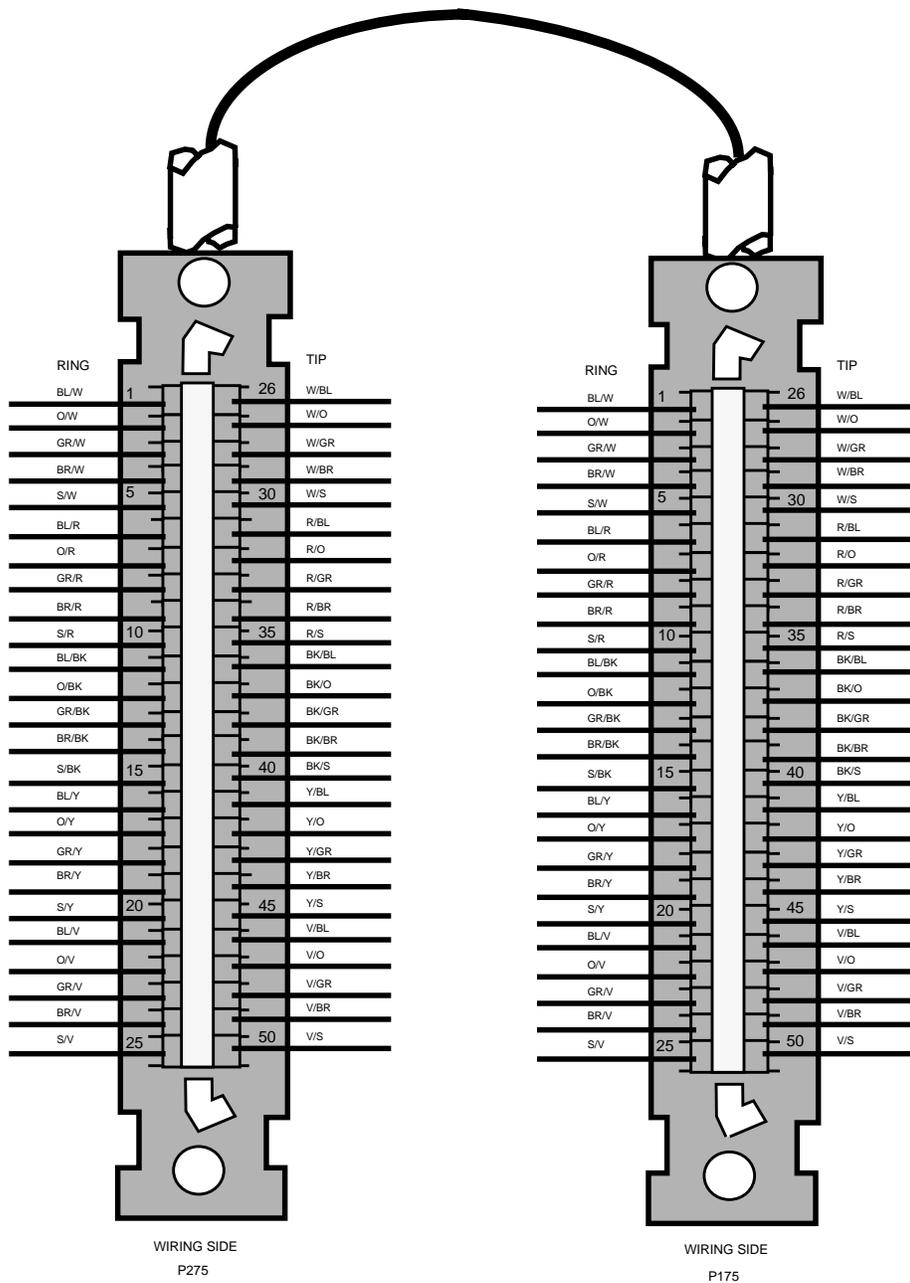


Figure 5-1. Cable Assembly ED7C723-30, Group 7

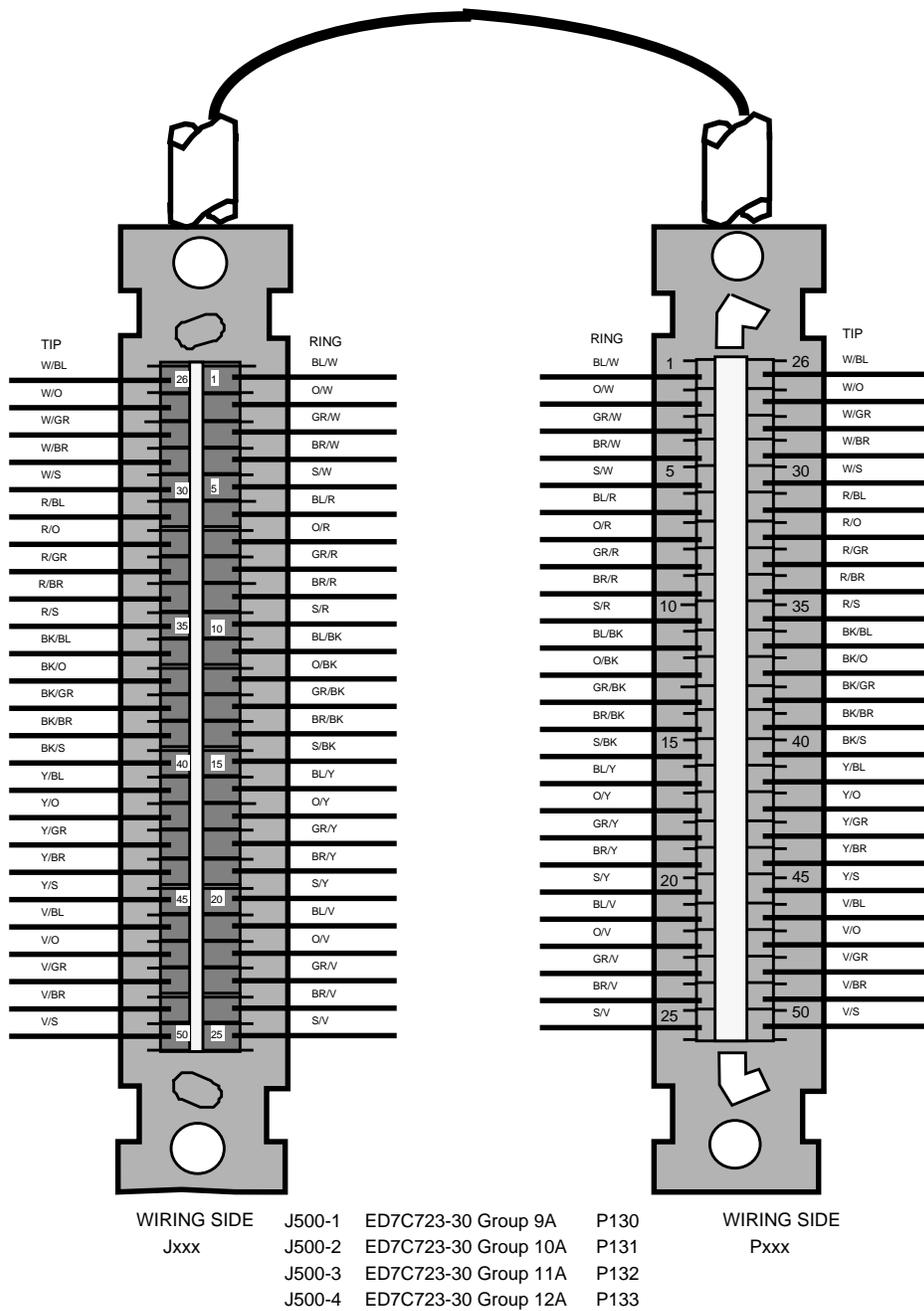


Figure 5-2. Cable Assembly ED7C723-30, Groups 90 through 120

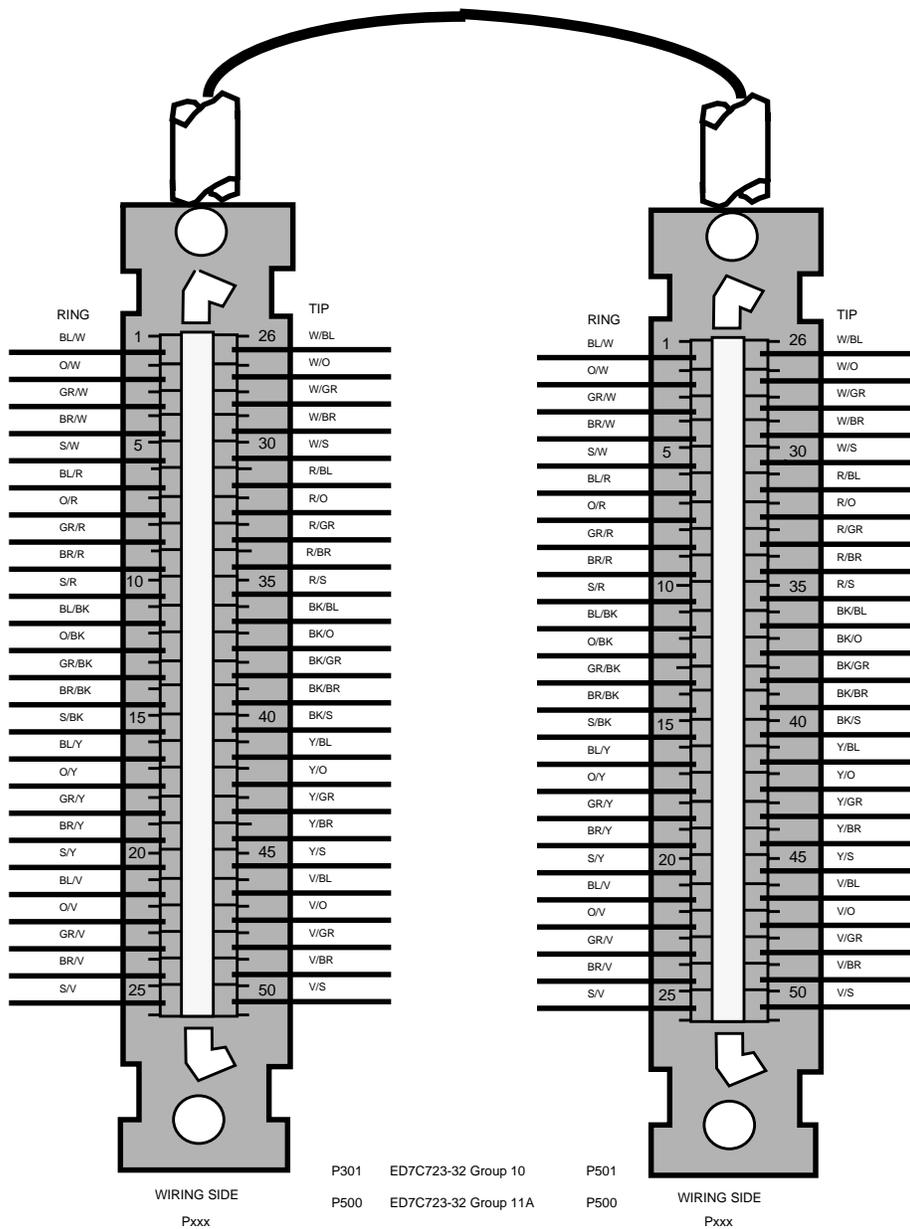


Figure 5-3. Cable Assembly ED7C723-32, Groups 10 and 110

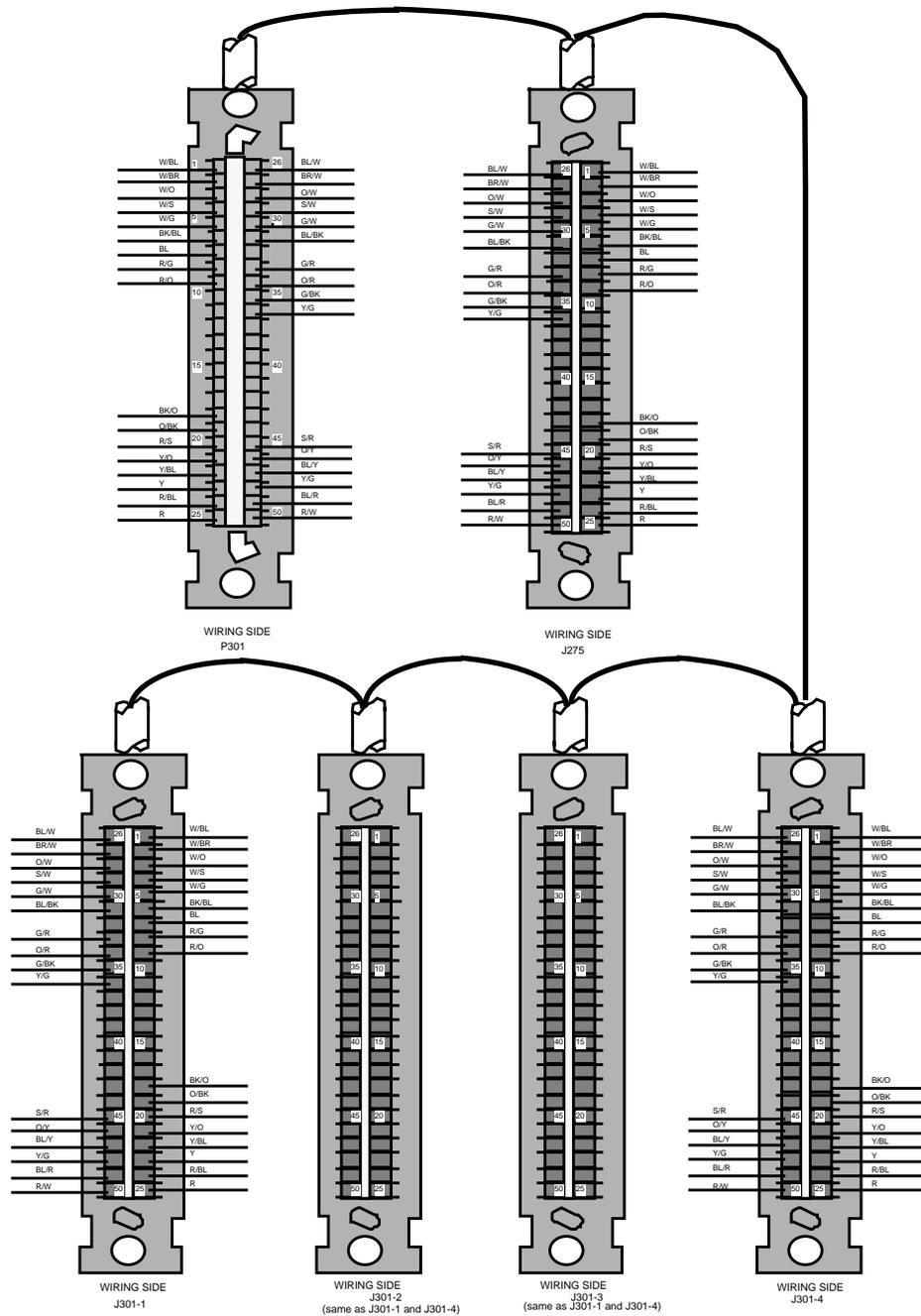


Figure 5-4. Cable Assembly ED7C723-34, Group 1

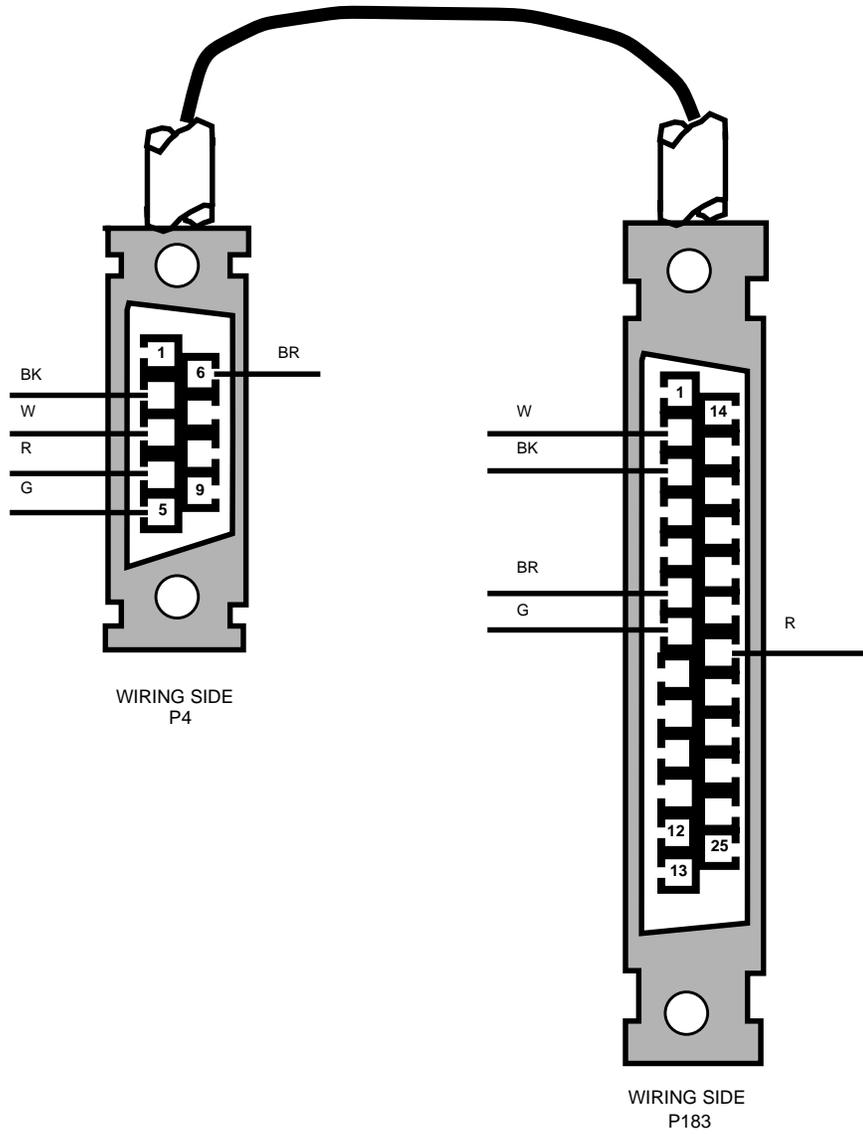


Figure 5-5. Cable Assembly ED7C723-36, Group 30)

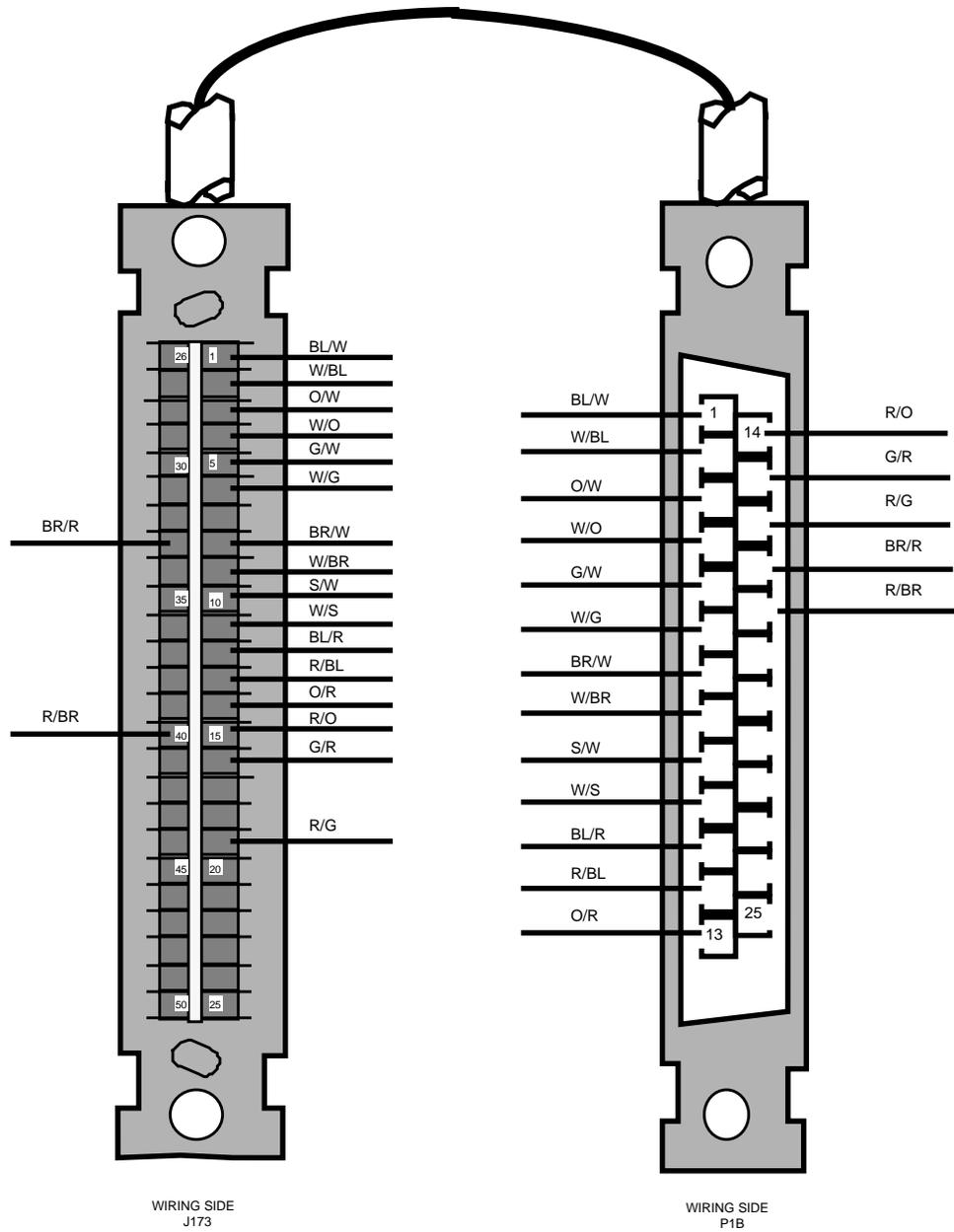


Figure 5-6. Cable Assembly ED7C723-36, Group 4

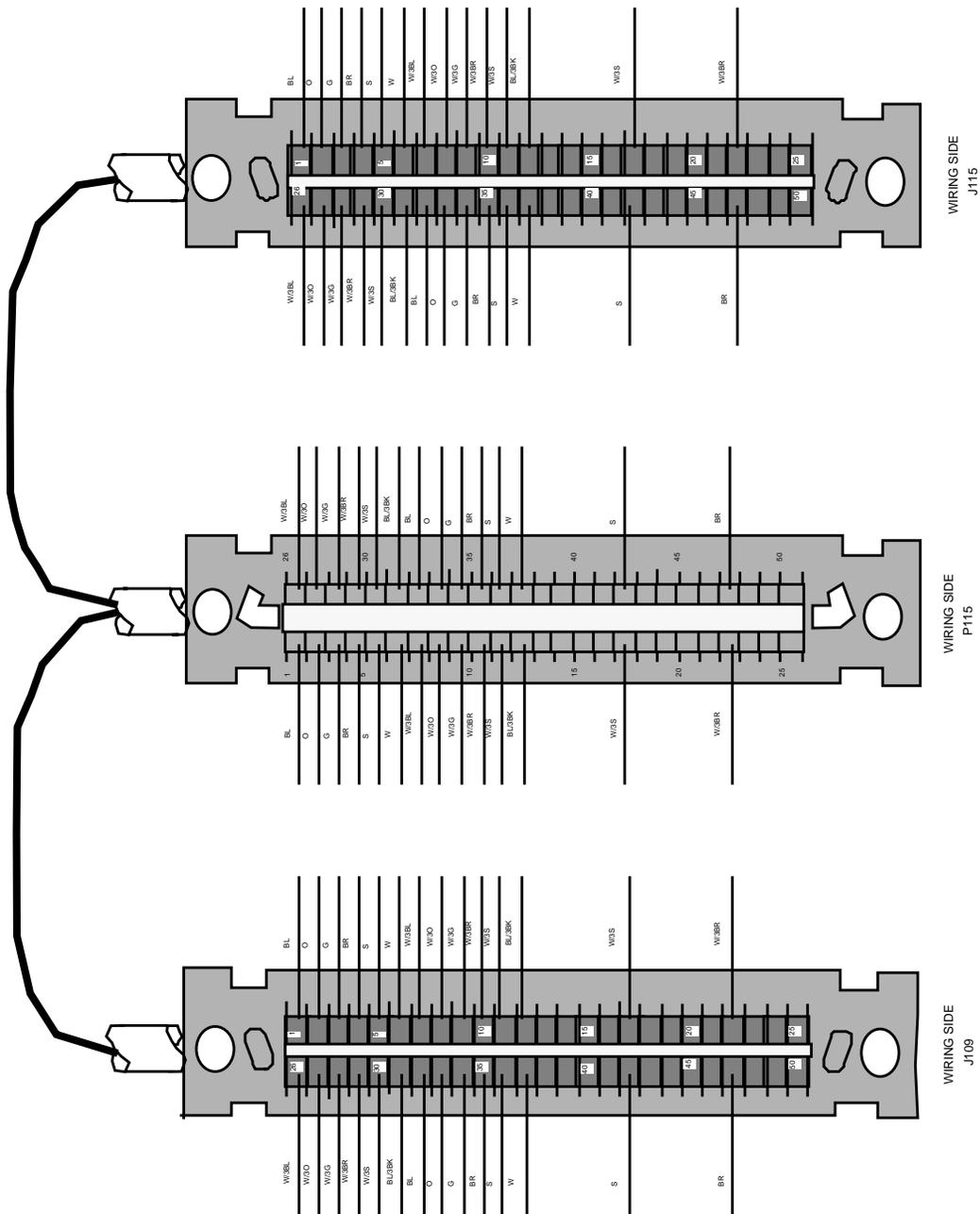
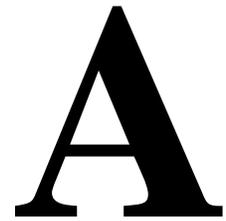


Figure 5-7. Cable Assembly ED7C723-36, Group 5

Applications



Contents

| | |
|---|------|
| Introduction | A-1 |
| ■ Application Figures | A-1 |
| Peripheral Equipment Interconnections | A-2 |
| ■ VF Interconnections | A-4 |
| Circuit Numbering | A-4 |
| Protector Blocks | A-4 |
| ■ E&M Signaling Interconnections | A-6 |
| Circuit Numbering | A-6 |
| Protector Blocks | A-6 |
| ■ DS1 Interconnections | A-8 |
| DS1 Feeders | A-8 |
| DS1 Distribution | A-8 |
| DS1 Pipes | A-8 |
| DS1 Extensions | A-8 |
| ■ Optical Fiber Interconnections | A-11 |
| SONET Interface (ARM Shelf OLIU) | A-11 |
| ■ Miscellaneous Discrete/Environmental Alarm and Control Applications | A-12 |
| Inputs | A-12 |
| Outputs | A-12 |
| ■ COT Alarms and Parallel Telemetry | A-14 |
| Office Alarms | A-14 |
| Parallel Telemetry | A-14 |
| Alarms | A-14 |
| Statuses | A-15 |

Contents

| | |
|--------------------------------------|-------------|
| ■ Power and Ringing Interconnections | A-17 |
| Power | A-17 |
| Ringing | A-17 |
| ■ DC Test Access Application | A-19 |
| ■ Network Synchronization | A-24 |
| DS1 Timing | A-24 |
| Composite Clock | A-24 |
| ■ Operations Systems Interfaces | A-26 |
| Application Schematics | A-28 |

Figures

| | |
|--|------|
| A-1. COT Bay Peripheral Equipment Interconnections | A-3 |
| A-2. MDS Assembly VF Cabling to VF Cross-connect Frame | A-5 |
| A-3. MDS Assembly E&M Cabling to VF Cross-connect Frame | A-7 |
| A-4A. DS1 Feeder Cabling | A-9 |
| A-4B. DS1 Distribution Cabling | A-10 |
| A-5. LTG Cabling OLIU 0, 1 | A-11 |
| A-6. Typical Miscellaneous Discrete Environmental Alarms and Controls | A-13 |
| A-7. COT Alarms Cabling and Typical Cross-connections | A-16 |
| A-8. Power and Ringing Cabling | A-18 |
| A-9A. Typical Test Pair Arrangements | A-20 |
| A-9B. Typical Test Access Pair Cabling | A-21 |
| A-9C. PGTC/ <i>SLC</i> -2000 Lead Designations | A-22 |
| A-9D. PGTC/ <i>SLC</i> Systems Interconnections | A-23 |
| A-10. Typical Network Synchronization Interconnections | A-25 |
| A-11. Operations Systems Interfaces | A-27 |

Tables

| | | |
|------|--|-----|
| A-1. | OSP Cable Pair/MDS Channel Numbering | A-4 |
| A-2. | OSP Cable Pair/MDS E&M Channel Numbering | A-6 |

Applications



Introduction

This section of the manual contains Application Figures and the standard Application Schematic. These drawings facilitate the installation process and are a means of tracing and troubleshooting installation wiring and interconnect problems. They offer the installer both a comprehensive overview and detailed requirements relating to all interconnections in the SLC[®]-2000 COT Frame System.

Application Figures

These general figures are meant to guide the installer in the installation of the Customer Interconnect Cable Assemblies and the cross-connections to the ancillary equipment. Separate cross-connect blocks are indicated for each type of alarm and test application (Miscellaneous, Discrete, COT, DC Test Pair, etc.) but may be economically combined at the customer's discretion. The figures show specific equipment (cable assemblies, cross-connect blocks, ringing supplies, etc.) but are meant to be typical examples. Other vendor products may be substituted but they must meet the requirements outlined by the Application Schematic drawing, SD7C180-01.

| Figures | Description |
|----------------|--|
| Figure A-1 | COT Bay Peripheral Equipment Interconnections |
| Figure A-2 | MDS Assembly VF Cabling Channels 1-96 |
| Figure A-3 | MDS Assembly E&M Cabling Channels 1-96 |
| Figure A-4 | DS1 Distribution 1-28 |
| Figure A-5 | Lightguide Interconnect |
| Figure A-6 | Miscellaneous Discrete Environmental Alarms and Controls |

| Figures | Description |
|-------------|--|
| Figure A-7 | COT Alarms |
| Figure A-8 | Power and Ringing Interconnect |
| Figure A-9 | PGTC and DC Access Test Pairs |
| Figure A-10 | Network Synchronization Interconnections |
| Figure A-11 | Operations Systems Interfaces |

Peripheral Equipment Interconnections

Figure A-1 represents the major peripheral equipment connections from the *SLC-2000* COT as well as all inter-shelf installation cables. Refer also to Figure A-9 for detailed PGTC/*SLC* interconnections; Figure A-10 for Synchronization interfaces, and Figure A-11 for OS interfaces. Cable assemblies are represented by the following legend:

| | |
|---|--|
|  | Bay Cable Assemblies |
|  | Standard Shelf Dangler Cables |
|  | Optional Shelf Dangler Cables |
|  | Backplane or Intrashelf Connections |
|  | Customer/Peripheral Equipment Interfaces |

| | |
|------------------------|--|
| Bay cable assemblies | Local inter-shelf cables shipped separately with the COT bay equipment but not associated with a particular shelf. |
| Standard shelf dangler | Cables shipped as part of the associated shelf. |
| Optional shelf dangler | Cables shipped with the shelf for a particular application. |
| Backplane connection | Associated shelf connectors for cable connections. |
| Customer interfaces | Cable assemblies for connecting peripheral equipment |

VF Interconnections

Circuit Numbering

VF channel numbering is from 1 to 96 at each of the eight MDS shelves (4 MDS Assemblies). Derived pair numbering for the outside plant (OSP) cables at the MDF is in blocks of 100 pairs with the following association for the possible 768 channels. Observe the binder color coding for each 100 pair cable.

Table A-1. OSP Cable Pair/MDS Channel Numbering

| OSP Cable Pair | MDS | | |
|-------------------|-------|---------|-------------|
| | Shelf | Channel | Connector |
| 001 - 096 | 1 | 1 - 96 | J101 - J104 |
| 101 - 196 | 2 | 1 - 96 | J201 - J204 |
| 201 - 296 | 3 | 1 - 96 | J101 - J104 |
| 301 - 396 | 4 | 1 - 96 | J201 - J204 |
| 401 - 496 | 5 | 1 - 96 | J101 - J104 |
| 501 - 596 | 6 | 1 - 96 | J201 - J204 |
| 601 - 696 | 7 | 1 - 96 | J101 - J104 |
| 701 - 796 | 8 | 1 - 96 | J201 - J204 |

Protector Blocks

UL[®] approved installations require a protected wire system which consists of Lucent Technologies Protectors on all outside plant telecommunications circuits. Lucent Technologies standard circuit 4C1E-W (black) or special circuit 4C3E-W (red) protectors and building entrance cable shall be located as specified in Article 800-2 of the National Electric Code, ANSI/MFPA number 70-87.

* Registered trademark of Underwriters Laboratory, Inc.

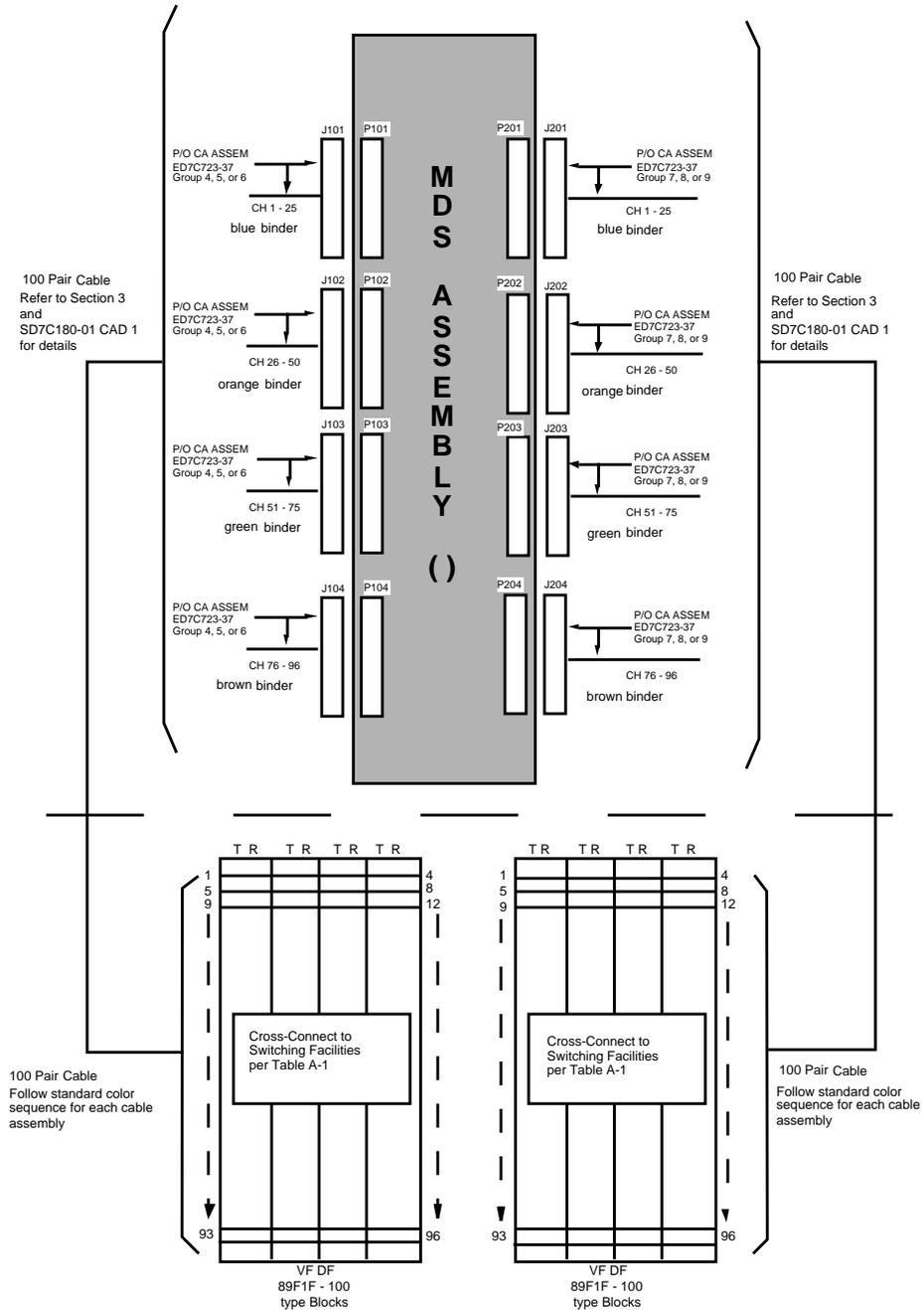


Figure A-2. MDS Assembly VF Cabling to VF Cross-connect Frame

E&M Signaling Interconnections

Circuit Numbering

VF channel numbering is from 1 to 96 at each of the eight MDS shelves (4 MDS Assemblies). Signaling leads, E, M, SB, SG are associated with the channel slots, 1 to 24 on each MDS shelf. Figure A-2 depicts a typical cross-connect block, indicating the first channel number for each slot. Observe the binder color coding for each 50 pair cable.

Derived pair numbering for the outside plant (OSP) cables at the MDF is in blocks of 100 pairs with the following association for the possible 768 channels.

Table A-2. OSP Cable Pair/MDS E&M Channel Numbering

| OSP Cable Pair | MDS | | |
|-------------------|-------|---------|-------------|
| | Shelf | Channel | Connector |
| 001 - 096 | 1 | 1 - 96 | J105 & J106 |
| 101 - 196 | 2 | 1 - 96 | J205 & J206 |
| 201 - 296 | 3 | 1 - 96 | J105 & J106 |
| 301 - 396 | 4 | 1 - 96 | J205 & J206 |
| 401 - 496 | 5 | 1 - 96 | J105 & J106 |
| 501 - 596 | 6 | 1 - 96 | J205 & J206 |
| 601 - 696 | 7 | 1 - 96 | J105 & J106 |
| 701 - 796 | 8 | 1 - 96 | J205 & J206 |

Protector Blocks

UL approved installations require a protected wire system which consists of Lucent Technologies Protectors on all outside plant telecommunications circuits. Lucent Technologies standard circuit 4C1E-W (black) or special circuit 4C3E-W (red) protectors and building entrance cable shall be located as specified in Article 800-2 of the National Electric Code, ANSI/MFPA number 70-87.

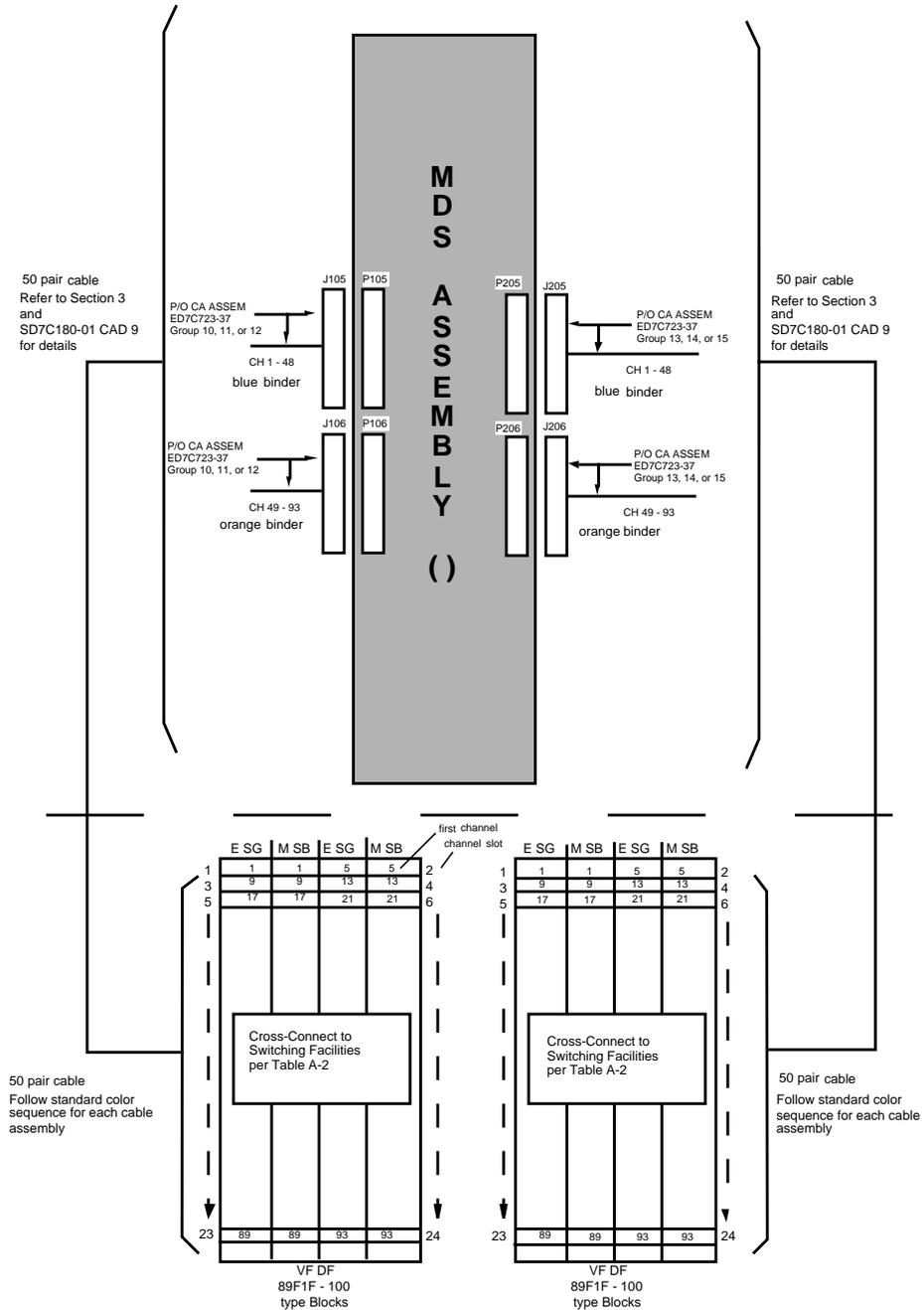


Figure A-3. MDS Assembly E&M Cabling to VF Cross-connect Frame

DS1 Interconnections

The *SLC-2000* System supports either DS1 Distribution or DS1 Feeders, but not both simultaneously. The same cables may be used to connect to the DSX-1 but they must be connected at the ARM shelf to the appropriate connectors for their intended application as follows:

| | |
|------|-------------------------------|
| J160 | DS1 Feeder Input 1-16 |
| J161 | DS1 Feeder Input 17-28 |
| J162 | DS1 Feeder Output 1-16 |
| J163 | DS1 Feeder Output 17-28 |
| J165 | DS1 Distribution Output 17-28 |
| J166 | DS1 Distribution Output 1-16 |
| J167 | DS1 Distribution Input 17-28 |
| J168 | DS1 Distribution Input 1-16 |

DS1 Feeders

The *SLC-2000* NAS provides a DS1 metallic feeder capability as a start-up system without using the SONET feeder circuit packs except for the controllers. This system, which is not compatible with other network elements in a SONET network, utilizes quad LIUs interfacing with the DSX-1.

DS1 Distribution

DS1 Pipes

The *SLC-2000* NAS can be configured to support up to 28 DS1 pipes without using an external multiplexer. In a DS1 only configuration no MDS are provided and the DS1 pipes can be used to support DS1 service or DS1 interfaces for collocated *SLC* Series 5 or *SLC* 96 systems. This configuration is used for those applications that initially require up to 28 DS1's and anticipate future DS0 services. Whenever DS0 services are needed MDS assemblies can be added.

DS1 Extensions

The DDM-Plus system provides both metallic and optical DS1 extensions. For metallic applications the DDM-Plus can be used as a repeater shelf for T1 extensions. For optical applications the DDM-Plus provides multiplexed optical transport of four DS1 pipes on multimode or single mode fiber.

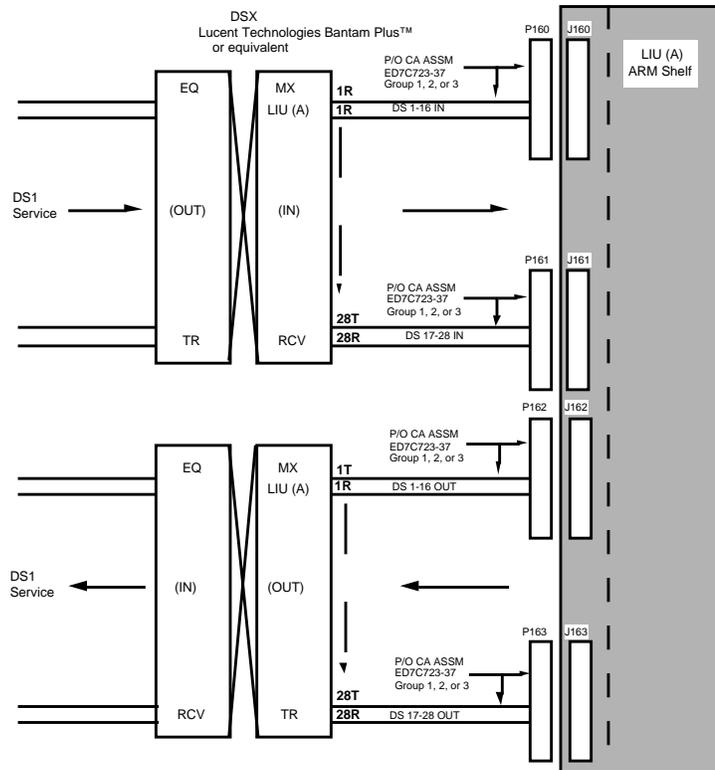


Figure A-4A. DS1 Feeder Cabling

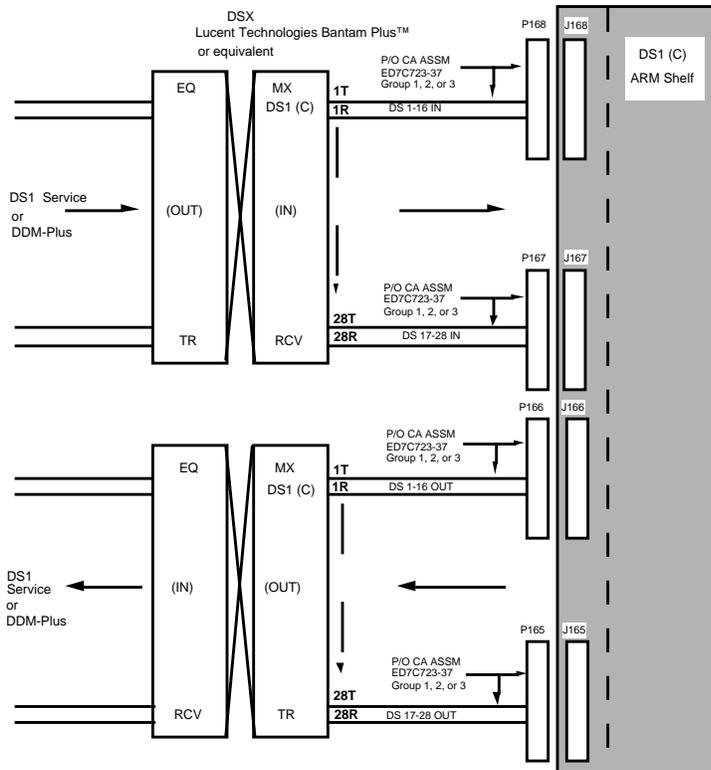


Figure A-4B. DS1 Distribution Cabling

Optical Fiber Interconnections

All lightguide interconnect cables should be brought out to the LGX[®] lightguide cross connect panel or other vendor's customer cross connect point. Appropriate designations should be added at this frame to identify the function from the SLC-2000 end.



NOTE:

The minimum bending radius for fiber jumper cables is two inches (four inches diameter).

SONET Interface (ARM Shelf OLIU)

Up to two OLIUs designated Main and Protection (or Main 1, Main 2) can be provided at the COT Bay. Fiber pairs (transmit and receive), equipped with ST[®] connectors, are connected at the OLIU faceplate connectors designated IN and OUT. Cross connections at the LGX are made to the optical line system to the far-end SLC-2000 RT.

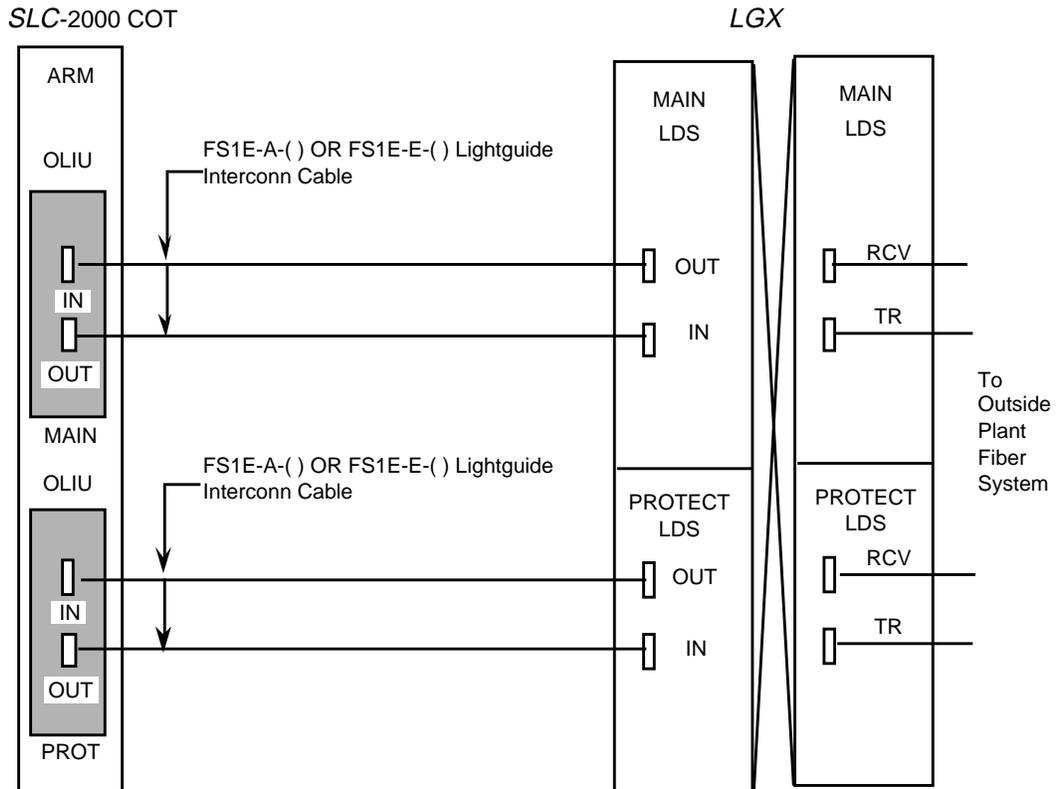


Figure A-5. LTG Cabling OLIU 0, 1

Miscellaneous Discrete/Environmental Alarm and Control Applications

⇒ NOTE:

Miscellaneous discrete environmental *status* points operate independently of the parallel telemetry and status points. Example: an environmental status condition that turns on a miscellaneous discrete environmental status point *will not* turn on a parallel telemetry ID or far end ID status point.

Miscellaneous discrete environmental *alarm* points are coordinated with the parallel telemetry alarm and status points. Example: an environmental alarm condition that turns on a miscellaneous discrete environmental alarm point *will* turn on the appropriate parallel telemetry alarm point and system ID and far end ID status point.

Inputs

Fourteen miscellaneous alarm or environmental inputs are available at the COT site for monitoring local environmental conditions such as open door, high temperature, low fuel, etc. The inputs can also be used to remote alarms from collocated equipment such as the DDM-Plus system. These inputs (TLMI 1-14) are activated by contact closures to ground which provide -48v nominal (-60v maximum) open circuit voltage and source 2 ma. maximum current when activated.

Outputs

Four environmental control outputs are available at the COT site for controlling external equipment such as generators, pumps, etc. These outputs (TLMO 1-4) tolerate -60v maximum open circuit voltage and source 35 ma maximum current when activated. Transient voltages up to 135v are tolerated for up to 1 ms. Outputs TLMO 5-16 are not used at the COT site.

⇒ NOTE:

The output common leads, TLMO C must be grounded for all applications, even when the control outputs TLMO 1-4, are not used. They can derive ground from the internally grounded VTR leads.

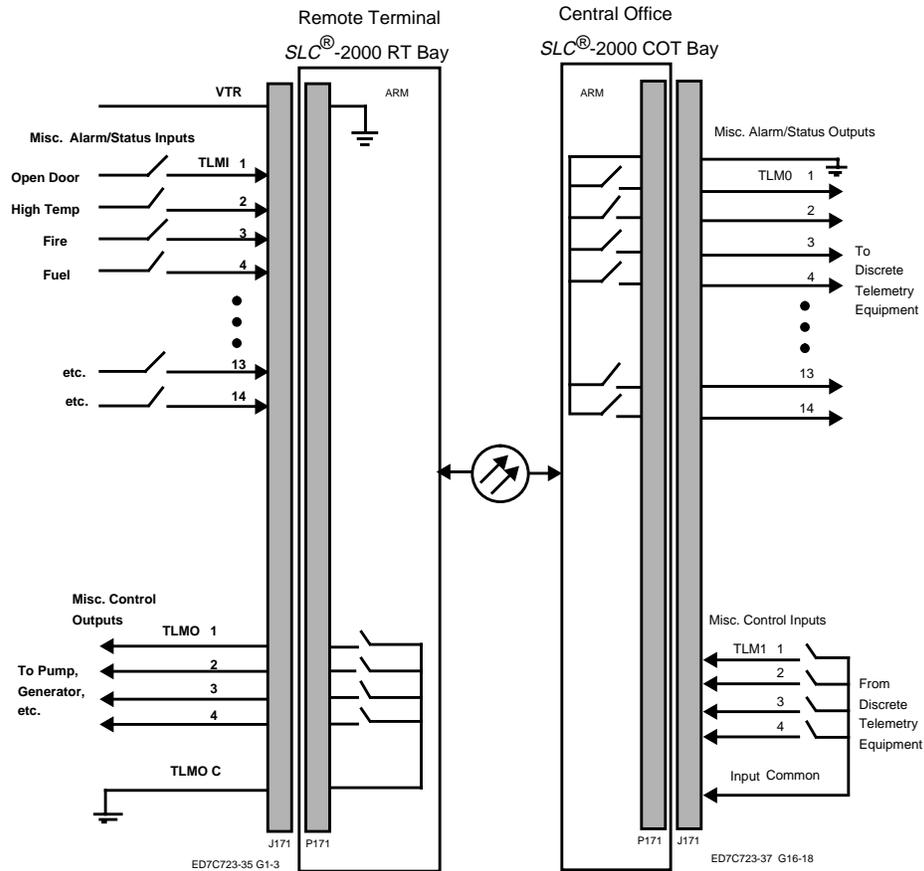


Figure A-6. Typical Miscellaneous Discrete Environmental Alarms and Controls

COT Alarms and Parallel Telemetry

Office Alarms

COT alarms are system defined as critical, major, minor, and power minor. Each is brought out to the MDF/IDF cross connect frame for connections to the office audible and visual alarm systems. Their connections to the SLC-2000 system are through the TS1 block interfacing with the ATU which contains relays for each alarm condition. The critical alarms are fail safe against power failures and are activated even if the ATU loses power.

| | |
|-------------------|--|
| Power Minor Alarm | This alarm is used to detect the loss of commercial ac power at the RT and is not considered service affecting when the RT power system has battery back-up. |
| Minor Alarms | Minor alarms are classified as not service affecting and are used to detect the failure of a single rectifier in the power system, a single ringing generator in a protected ringing system, or a fan failure. Minor alarms also apply to service affecting failures affecting less than 23 customers or the failure of any protected synchronization or transmission equipment. |
| Major Alarms | An example of a service affecting external major alarm is the loss of the entire ringing supply to the RT system. Major alarms also apply to service affecting failures affecting more than 23 but less than 128 customers or four DS1s, or loss of both DS1 synchronization references. Major alarms also include non service affecting failures that could mask other service affecting failures, such as, the failure of the DCC. |
| Critical Alarms | Critical alarms are defined as failures which put out of service a group of 128 or more customers, or more than four DS1s or any unprotected synchronization equipment failure. |

Parallel Telemetry

The parallel telemetry system provides relay closures for alarm and status conditions to an operations center.

Alarms

Individual closures for critical and minor alarms reflect the office alarms and are activated when an alarm condition is detected.

Statues

The system provides status contact closures to transmit maintenance information.

| | |
|-----------------------------|--|
| Near End (NE) | This closure identifies the site which is reporting the alarm condition. |
| System Identification (SID) | This closure identifies the system which is raising the alarms. |
| Rack Alarm Cut Off (RACO) | Indicates that the ACO function has been activated. |
| CL4-CL59 | Refer to Chapter 3 for CL4-CL59 assignments |

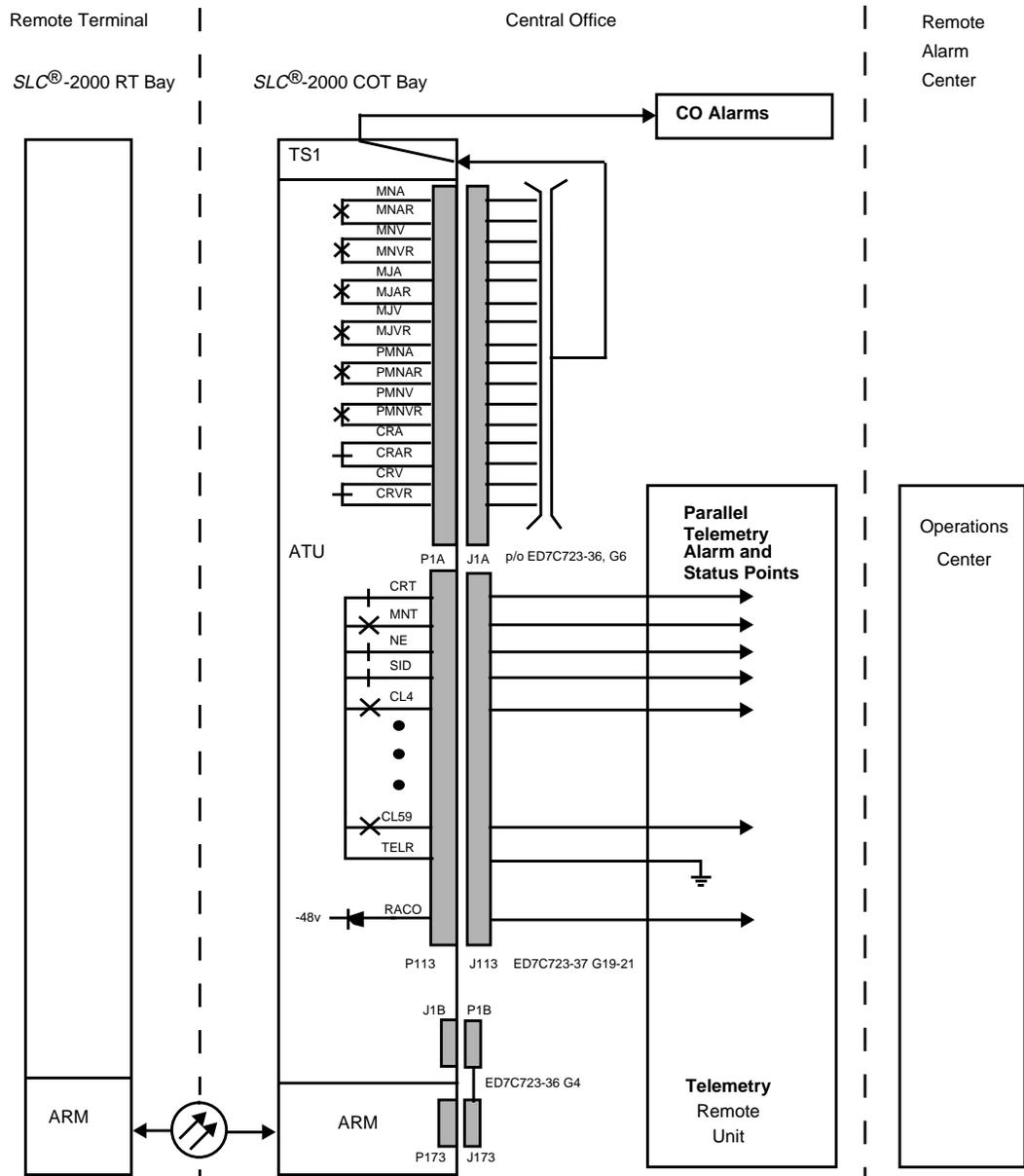


Figure A-7. COT Alarms Cabling and Typical Cross-connections

Power and Ringing Interconnections

External sources are required to provide dc power and ringing voltages to the COT Bay. Typical examples are the Lineage[®] Power Plant, the Cabinet Power System, and the J1C182BC Ringing Shelf.

Power

Two dc power feeder pairs, each protected with a 30 amp circuit breaker are required from the -48 voltage source. Wire gauge requirements are dependent on the length of the feeders as follows:

| | |
|-------------------|--|
| less than 30 feet | 10 gauge |
| more than 30 feet | gauge wire to limit dc drop to 1.5v max. at 25 amps, splicing down to 10 gauge before connecting at TB1. |

Ringing

At least two external ringing supplies in a protected system should be provided, each supplying -20Hz and +20Hz ringing current to the COT Bay. Figure A-6 represents a typical arrangement utilizing the J1C182BC-1 Ringing Shelf equipped with 3C type Ringing Supplies with the capability of supplying four COT Bays. Note that using this arrangement employs also the factory assembled cables ED7C723-35 Group 9 and Group 10. Using the central office main ringing supply or other vendors' ringing supplies would require another cable arrangement requiring field assembly.

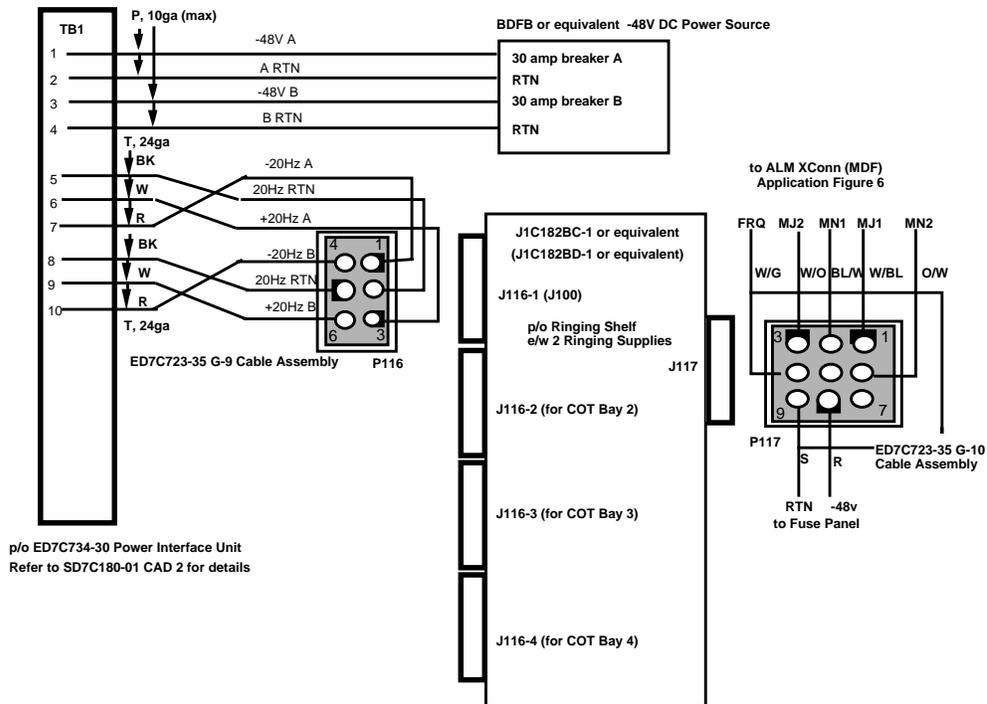


Figure A-8. Power and Ringing Cabling

DC Test Access Application

Drop or loop testing is provided via the *SLC-2000* Integral Test Head (ITH), or a Remote Measuring Unit (RMU), or a DC test pair. The *SLC* Access System is compatible with the Pair Gain Test Controller (PGTC) or Extended Test Controller (XTC), operating in the PGTC mode, for demand loop testing of universal systems.

Refer to Figure A-9A for a typical overall testing arrangement utilizing the DC Test Pair.

Only one test pair is needed to any remote site for a maximum of 1,000 lines by multiplying the TTR and TTT leads at the distributing frame. Any number of *SLC-2000* COT systems assigned to the same RT location can share the same DC Test pairs (TTT, TTR). The inhibit leads (INH) of the shared system must also be strapped together provided the 1,000 line maximum restriction is observed or as traffic dictates.

Figure A-9B represents a typical Test Access (DC Test) Pair cabling arrangement with one *SLC-2000* COT serving two remote sites each with four *SLC-2000* RT bays. Note that all inhibit leads from the one COT frame that are associated with the same DC Test pair are multiplied (strapped) together at the MDF. A separate metallic test pair is run to each remote site.



NOTE:

Cross connections to the DC Test Pair must utilize protectors at the MDF and FDI.

The metallic pair tip and ring leads are multiplied to their respective DC Test Pair tip and ring leads at the MDF and FDI.

Figure A-9C details the lead designations of the PGTC/*SLC-2000* COT interfaces and can be used for troubleshooting those cable paths.

Figure A-9D shows the interconnecting cables required when an existing PGTC/*SLC 96* or Series 5 system is extended to the newer *SLC-2000* COTs.

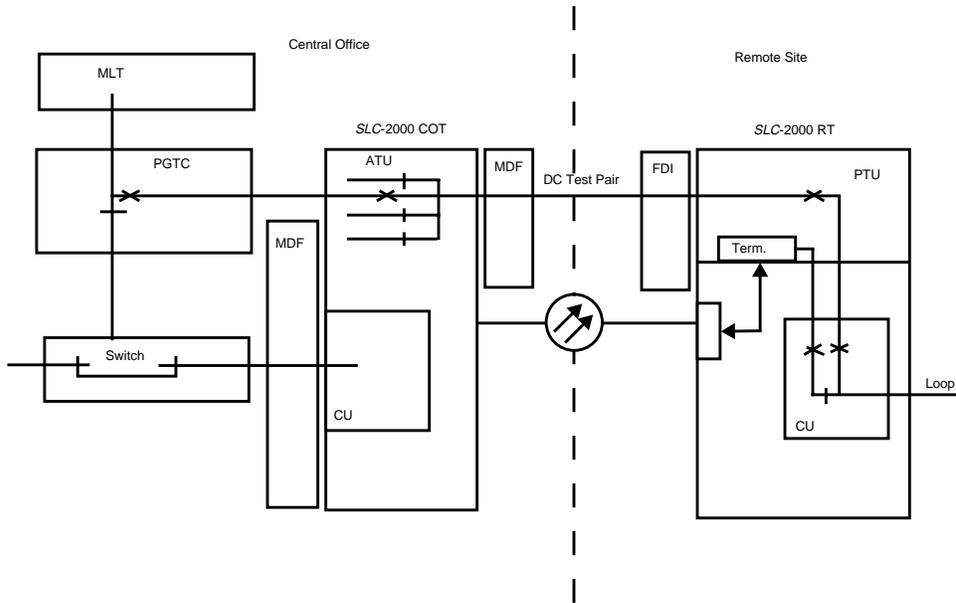


Figure A-9A. Typical Test Pair Arrangements

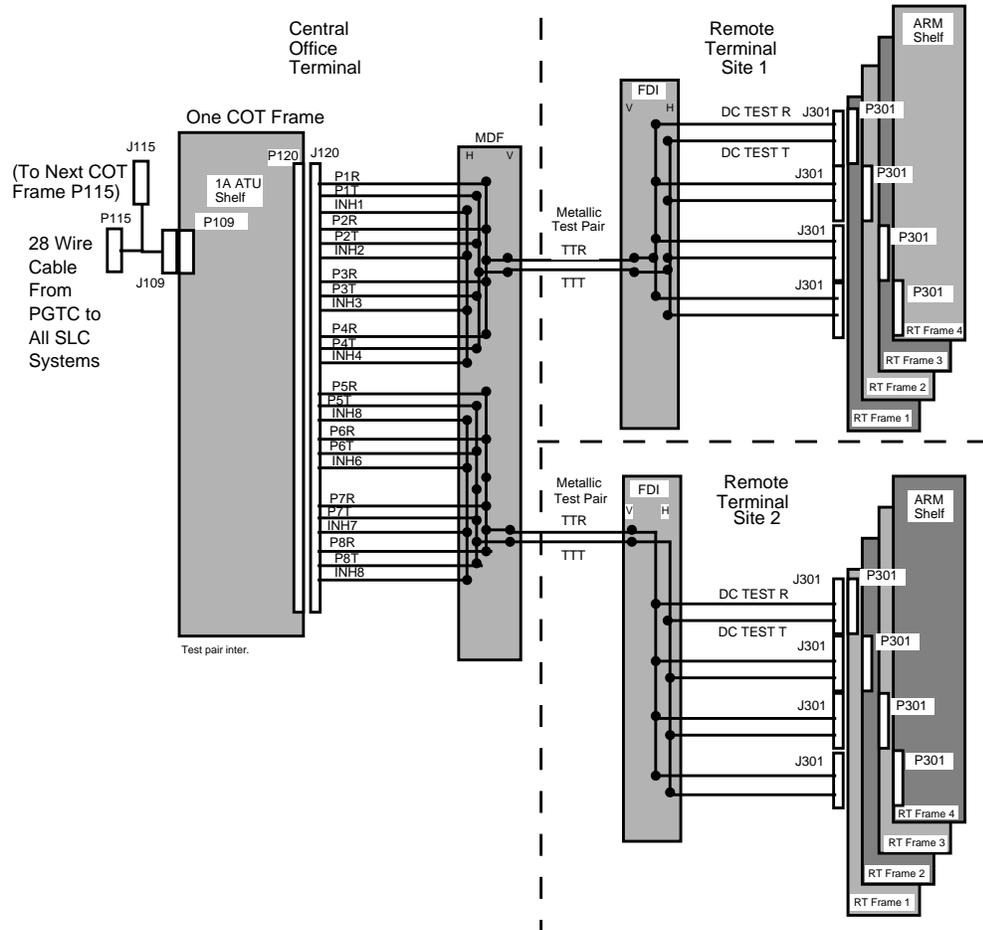


Figure A-9B. Typical Test Access Pair Cabling

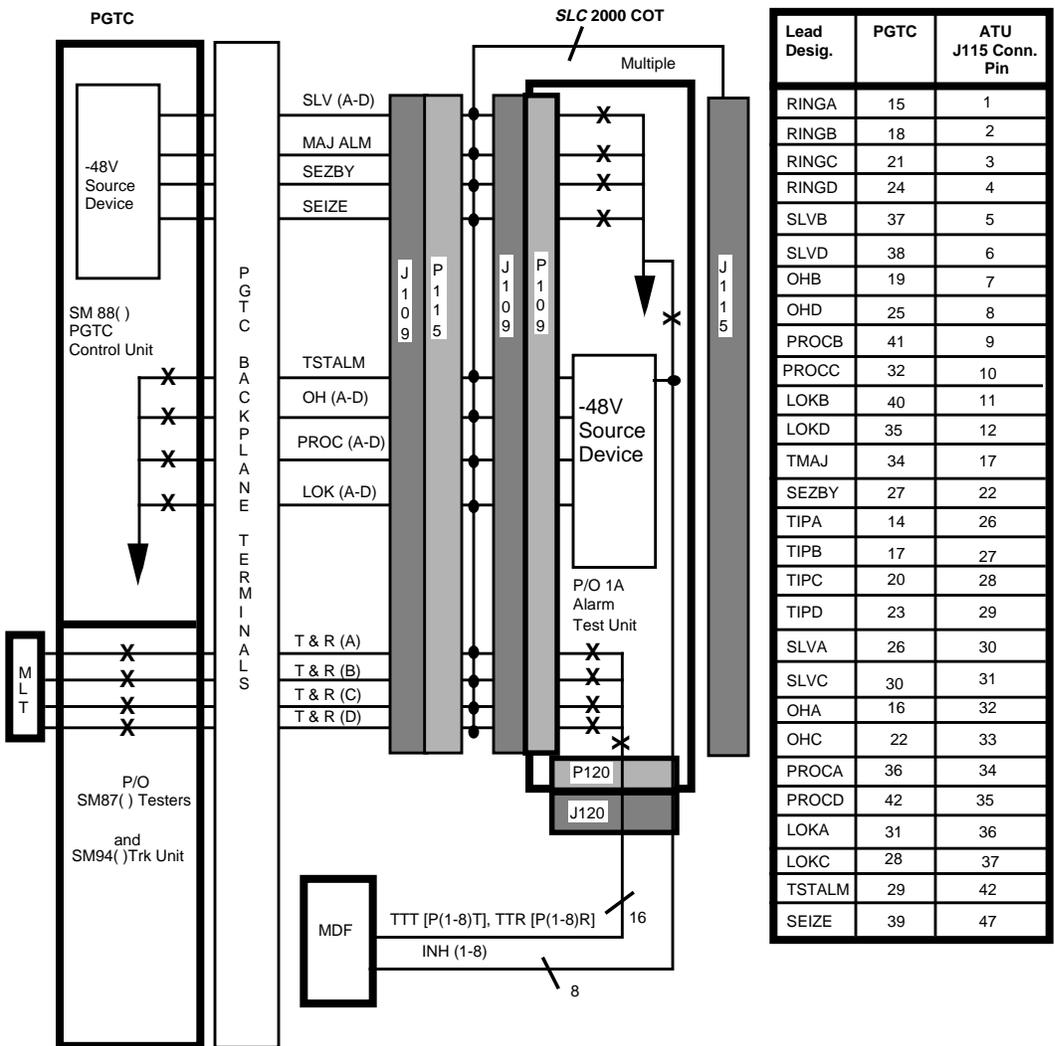


Figure A-9C. PGTC/SLC-2000 Lead Designations

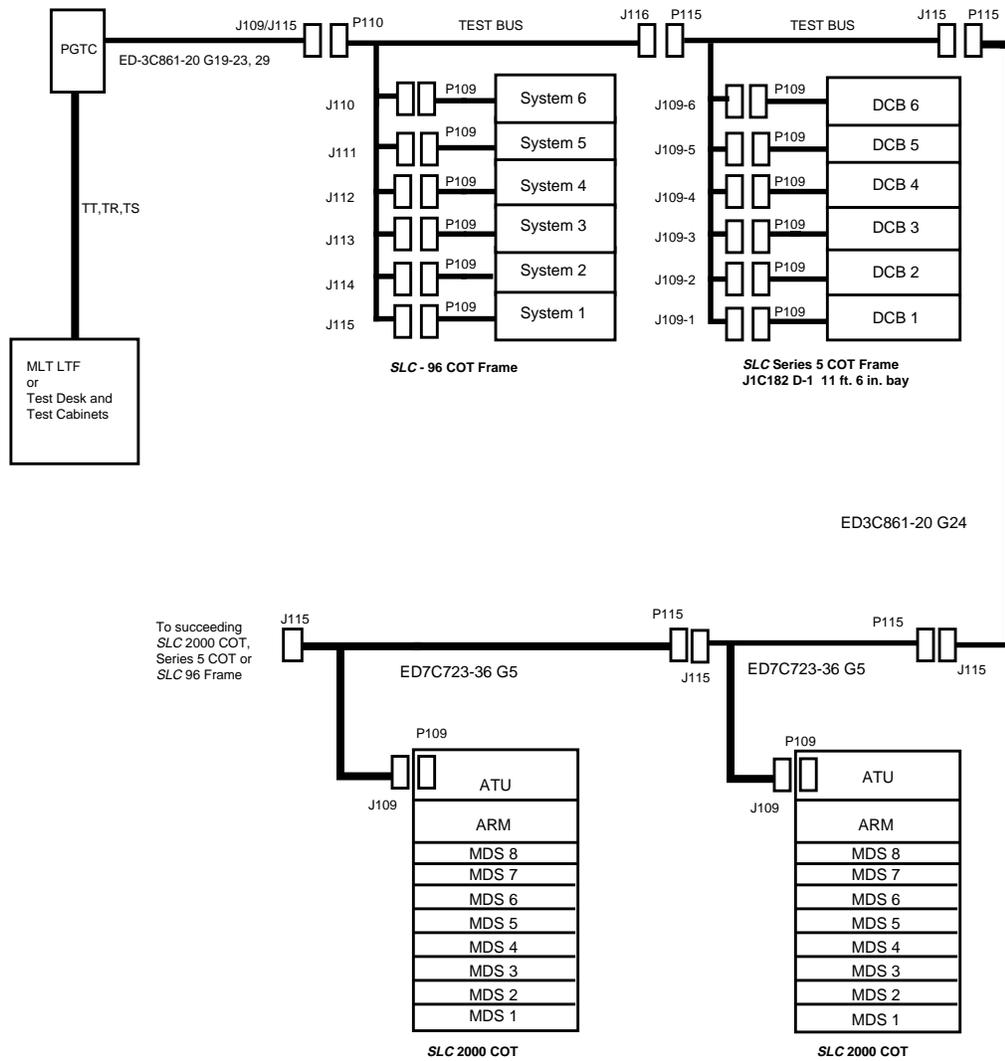


Figure A-9D. PGTC/SLC Systems Interconnections

Network Synchronization

DS1 Timing

The SONET standard requires that the *SLC-2000* system be integrated into the digital synchronization network. The network will be synchronized to a local central office clock via DS1 external synchronization references. The *SLC-2000* COT accepts two external DS1 synchronization references (one primary and one secondary from the local clock which must be Stratum 3 or better, with timing traceable to a Primary Reference Supply).

For Remote Site 2 the example depicted in Figure A-10 shows the far-end RT terminal recovering the timing signal from the incoming OC-3 line (loop-timed).

Remote Site 1 is configured to provide a sync output for the Building Integrated Timing Supply (BITS) clock and the TGS circuit packs are externally timed to the DS1 reference. This arrangement must utilize the special ED8C724-20 G-394 Sync Input Timing Cable in series with the incoming Reference Timing Cable ED7C723-37, G27-29 or ED8C724-20 G339-341. This special cable prevents a timing loop when the TGS pack supplying a DS1 timing output is removed.

Figure A-10 also shows the cabling for multiple bays within the Central Office site.

Composite Clock

The DLC section of the *SLC-2000* system requires 8/64 kHz composite clock connections for Dataport, ISDN, etc. service. The composite clock source can be the Synchronization Distribution Expander (SDE) which takes the DS1 timing reference from a Stratum 3 or better source. The SDE must be traceable to the same Primary Reference Source (PRS).

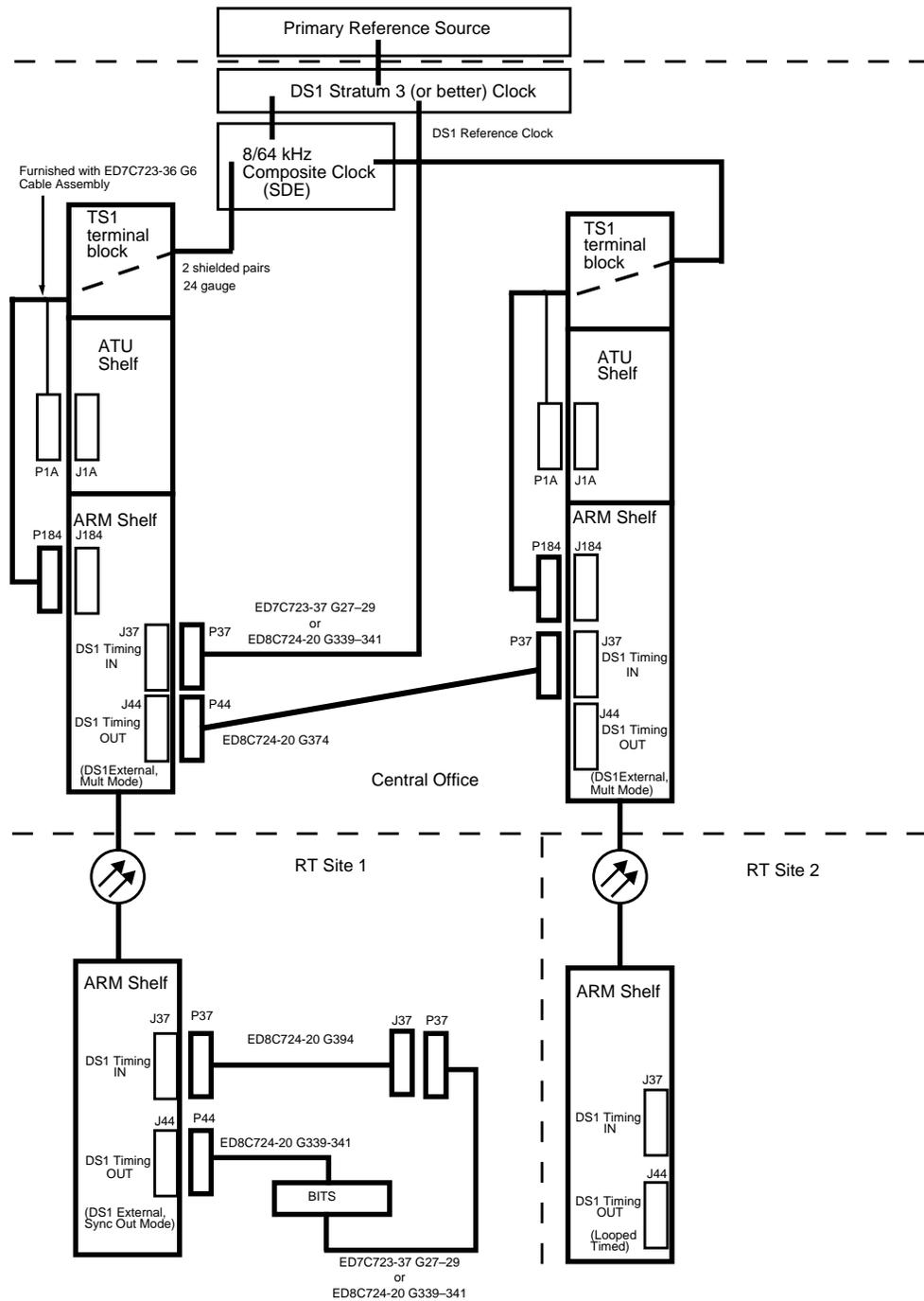


Figure A-10. Typical Network Synchronization Interconnections

Operations Systems Interfaces

The *SLC-2000* System supports office alarms, parallel telemetry, user-selectable miscellaneous discrete telemetry, serial telemetry, and a message-based operations system interface (X.25 protocol).

The office alarms interface is a set of discrete relays that control office audible and visual alarms. Separate relays handle critical, major, minor, and power minor alarms. The critical and major alarms can be wired together and the minor and power minor, likewise, if requested.

Parallel telemetry brings a large set of alarm and status information to an operations center using contact closures. Fifty nine relay closures show alarms, status and site IDs.

The miscellaneous discrete interface allows the *SLC-2000* system to control and monitor collocated equipment. There are 16 alarm/status inputs and 4 control outputs that can monitor conditions like open doors, high temperature, low fuel, etc. and four control outputs that can control equipments like fans, generators, pumps, etc. These miscellaneous discrete scan and control points can be reported on demand through the customer interface terminal (CIT).

Serial telemetry is provided using the telemetry byte-oriented serial (TBOS) protocol. The TBOS telemetry transfers alarm, status, control and performance monitoring information to and from a remote maintenance center via a 2400-baud RS-422 port.

The X.25 message-based interface supports Transaction Language 1 (TL1) which has more flexibility and provides more detailed alarm, status and control capabilities than parallel and serial telemetry interfaces. TL1, TBOS, and parallel telemetry interfaces communicate alarm, status, performance monitoring, and control information to/from alarm surveillance Operations Systems (OS's). In Regional Bell Operating Company (RBOC) applications, the alarm surveillance OS is typically Network Monitoring and Analysis* (NMA[®]).

SLC-2000 COT uses parallel and discrete telemetry to communicate with a telemetry remote unit and the telemetry remote unit communicates with the OS. The TL1 and TBOS interfaces communicate directly with the OS.

* Registered trade mark of Bell Communication Research, Inc.

Application Schematics

The *SLC-2000* Central Office Terminal Application Schematic Drawing SD7C180-01 conveys the design intent and contains detailed information pertaining to system interconnect requirements. This information is presented as follows:

| | |
|-------------------|---|
| BD Figures | Block Diagrams for bay cables |
| FS Figures | Functional Schematics for each interconnection |
| APP Figures | Apparatus Figures for cable and shelf equipment codes |
| Circuit Notes | Transmission, voltage, current, and other electrical requirements |
| Equipment Notes | Cable, equipment, mechanical/physical requirements |
| Information Notes | Circuit nomenclature conventions, features/options tables |
| CAD Figures | Cable Assembly Details |

NJ00675A-2 Dual Power Feed Unit Installation Procedure

1

General

Scope

This appendix to the Customer Assembly Manual for COT Frames provides the installation and test information to install the NJ00675A-2 Dual Power feed Unit (DPFU) on the J1C265B-1 or C-1 Central Office Terminal Bay.

Overview

Many systems utilize dual power feeds (-48VDC) from a Battery Distribution Fuse Board (BDFB) or other source, usually designated "A" and "B", to provide redundant battery feeds. In practice, if one feeder goes down, many systems, including SLC[®]-2000 Access System, are designed to lose partial, but not total, functionality. An example would be a SLC-2000 system, where the failure of one of the feeders would remove power from four (4) of the eight (8) Metallic Distribution Shelves, thereby causing a potential lost of service on up to 384 circuits (and more under certain conditions). The DPFU is designed for applications where a partial loss of functionality is unacceptable. The unit is designed to monitor the dual primary feeds from the BDFB and will, if it senses a primary feeder failure, automatically switch both secondary feeders to the remaining primary feeder, thereby keeping the system fully operational. The unit also provides independent discreet alarm indications and closures relating to the status of both primary feeders.

Reason for Reissue

Original issue.

Support

If any of the steps specified in this procedure cannot be completed as indicated, call the next level of support or the Lucent Technologies Regional Technical Assistance Center (RTAC) by the following phone number for assistance.

RTAC: 1-800-CAL RTAC (225-7822)

Training

No specific training is required.

Time Estimates

- a. Overall time to perform this procedure is estimated to be one hour.
- b. There will be no time out-of-service during this procedure.
- c. One installer or craftsperson is recommended for this procedure.

Risk Assessment

Procedural Risk Assessment (DPFU added out of service)

Rating:

LOW Since the DPFU is to be installed prior to service turn-up this procedure has a **LOW** procedural risk rating, since there is **NO** potential for a service interruption to the end customer, if any procedural deviations or procedure specific equipment failures occur during the procedure.

Procedural Risk Assessment (replacing or “hot swapping” a defective DPFU)

Rating:

LOW Since the DPFU cabling is designed to facilitate this procedure on an in-service system this procedure has a **LOW** procedural risk rating, since there is **low** potential for a service interruption to the end customer, if any procedural deviations or procedure specific equipment failures occur

during the procedure. Nonetheless this procedure should be scheduled during a low usage maintenance period.

Procedural Risk Assessment (DPFU added to an in-service system)

Rating:

MEDIUM Installing the DPFU in an in-service system constitutes a **MEDIUM** procedural risk rating, since there is a potential for a service interruption to the end customer, if any procedural deviations or procedure specific equipment failures occur during the procedure. This procedure should be scheduled during a low usage maintenance period.

Equipment

Equipment List

The following equipment, apparatus, and tools are required to perform this Modification Implementation Procedure.

| Code | Comcode | Qty | Note | Description |
|----------------|----------------|------------|-------------|--------------------------------|
| NJ00675A-2, L1 | 601869118 | 1 | | Dual Power Feed Unit |
| NE00675-31, G1 | | 1 | R | Cable Assembly (on DPFU) |
| NE00675-31, G2 | | 1 | R | Cable Assembly (PIU to DPFU) |
| NE00675-31, G3 | | 1 | R | Cable Assembly (DPFU to GRD) |
| | | 4 | R | Mounting Screws |
| | | 4 | R | 6 Gauge Crimp Terminals |
| | | 1 | R | MIP 363-208-501 (Instructions) |
| | | 1 | I | Volt-Ohmmeter |
| | | 1 | I | Crimping Tool (6 Gauge) |

NOTES:

- I = This item may be ordered from Lucent Technologies-IMDARC by the installer.
- R = This item is required for installation of and is packaged with the DPFU.

Reference Documents

Reference Document List

| Document Number | Description |
|-----------------|---------------------------------------|
| NJ00675A-2 | Dual Power Feed Unit (specification) |
| NS00675-02 | Dual Power Feed Unit (circuit) |
| NT-00675-31 | Dual Power Feed Unit (wiring diagram) |

Engineering Information

Engineering Notes

- The unit is 2.0" high, 8.0" deep and mounts in a 23" frame. The mounting brackets are removable and mount in two different positions to accommodate various mounting arrangements. For rear mounted, rear cabled COT arrangement the brackets would be mounted in the rear mounting holes (with bracket leg parallel to the side of the DPFU facing forward).
- The unit is convection cooled and consequently no heat baffles or external cooling is required.
- The DPFU should be mounted at the top of the SLC-2000 frame for the Central Office Terminals (J1C265B-1 and C-1). In addition, it is recommended that for possible future change outs of the DPFU (hot swap) a space of 2" be reserved directly below the unit. Connecting cables have been designed to facilitate this eventuality.
- The normal operation of the DPFU is to protect the A and B primaries feeding the DPFU from the BDFB. That is, if one primary fails the other will assume the full load and cause no failure of either secondary, each of which powers a portion of the SLC-2000 frame. In a situation with a primary failed the **Alarms** LED representing that primary (A or B) will light and remain lighted until the fault is corrected. On the other hand, if an abnormal fault occurred, for example, such as a diode failure or a control board malfunction and an **Alarm** LED lighted with all primary and secondary voltages

normal, it would be necessary to change out the DPFU in service (hot swap) based on the possibility that the unit would not respond correctly to a future primary failure.

- Circuit breakers **CBA** and **CBB** are rated at 30 Amps. and protect the 10 gauge secondary wiring between the DPFU and the Power Interface Unit (PIU) on the SLC-2000 equipment.
- Fuses **A** and **B (-48VDC & RTN)**, accessible at front panel, are associated with the internally located monitoring circuit.
- Fuses **A** and **B** are GMT type fuses and are rated at 1/2 Amp., 60 Volts.
- The green **Power** LED will light when one or more input feeders is providing -48VDC.
- Red **Alarms** LED (**A**) is associated with input A and will light if input A is not present. When LED (**A**) is lit, a loop closure can be sent to associated SLC-2000 System or elsewhere via terminals **1** and **2** of the **Alarms** terminal block, located on the DPFU faceplate.
- Red **Alarms** LED (**B**) is associated with input B and will light if input B is not present. When LED (**B**) is lit, a loop closure can be sent to associated SLC-2000 System or elsewhere via terminals **3** and **4** of the **Alarms** terminal block, located on the DPFU faceplate.
- If alarm signals are sent to the SLC-2000 use J171 connector, used for miscellaneous discrete environmental alarms. See Section 3 for details.
- Normal operation of the unit is as follows:
 - Green **Power** LED lit
 - Both red **Alarms** LED's **A** and **B** extinguished
 - Both alarm outputs **A** and **B** are open
 - Both power outputs are active
- In order for the DPFU to provide power on both outputs from a single input, the circuit breakers or fuses feeding the inputs must be sized at 45 or 50 Amps and the input wiring must be 6 gauge. In addition, the output wiring from the DPFU to the SLC-2000 System must be 10 gauge.

Installation Procedure

Description

The following procedures are divided into three distinct areas depending on whether you are (1) adding a DPFU at the time of the initial SLC-2000 installation, (2) changing out a DPFU that has failed or (3) adding a DPFU to an in-service system. Select the procedure that meets your situation.

DPFU Added Out-of-Service (New Installation)

Description

This procedure involves the adding of a DPFU, on an out-of-service basis, to operate with a SLC-2000 Remote Terminal Bay (RT) or a SLC-2000 Central Office Terminal Bay (COT) both of which utilize dual power feeds.

Shelf Installation

Step 1: This unit is provided with removable mounting brackets that can be positioned in one of two positions on each side of the shelf depending on the type of framework used. For rear access, rear mounting applications (COT) the brackets would be in the rear position for a flush mount arrangement. Adjust brackets as required.

Step 2: For a COT mount the DPFU from the rear of the bay (flush mounting), with the hardware provided (.12-24 X 1/4"), at the top of the bay using mounting holes #77 and #78 respectively.

Step 3: Locate the NE00675-31, G3 green/yellow ground strap shipped with the DPFU. Connect one double lug securely to the rear of the DPFU with the lug to the left, as viewed from the rear. The other lug will be attached to the top of the frame using the same holes used for the bay ground cable. Remove the two 12-24 thread forming screws holding the bay ground cable in order to refasten the same and the DPFU ground lug. Lugs should be positioned in an overlapping manner with wires going in opposite directions.

Power Wiring



CAUTION:

This instruction assumes that the DPFU is being installed, with the equipment it will work with, at the time of initial installation. Consequently, there will be no voltage appearing at the DPFU or the equipment unless specifically requested via these instructions.

Step 4: Remove plastic cover over terminal strip (TB1).

Step 5: Remove all four (4) SAN-0 1/2 amp fuses from the front panel fuseholders.

Step 6: Locate the NE00675-31 G1 cable. This cable is approximately 18" long and terminates in connector J117 on one end and in four 10 gauge lugs on the other. Connect these lugs, using the cable identification provided on the leads to the four screw terminals on the barrier terminal strip (TB1) designated **OUT** for **-48A, Rtn A, -48B** and **Rtn B**. Verify that the terminal strip screws are tightly fastened.

Step 7: .For a COT J117 must past through the grommeted, oval hole to reach the left duct, as viewed from the rear.

Step 8: Locate NE00675-31 G2 cable. This cable consists of two connectors on one end (P117A and P117B) and four 10 gauge unterminated leads at the other designated **-48A, Rtn A, -48B** and **Rtn B**. It will be used between the SLC-2000 Power Interface Unit (PIU) and the J117 connector referenced in Steps 6 and 7 above.

Step 9: Locate the PIU. For a COT the PIU is located on the rear of the ARM shelf.

Step 10: Connect the four pigtails to the PIU while matching the lead designations to the PIU designations. These leads must be dressed through the grommeted hole at the bottom of the PIU.

Step 11: For a COT dress the cable assembly up the left duct, as viewed from the rear, and connect P117A to J117. P117B will be left unconnected and should be located in such a manner as to allow it to reach a NE00675-31 G1 cable attached to a second DPFU mounted directly under the first. Secure the cable in the duct.

Step 12: Using two 6 gauge pairs, with 6 gauge crimp lugs (provided with the DPFU) attached at the DPFU end, attach the lugs to TB1 terminal strip using the four terminals designated **IN**, with the leads marked and specifically attached to terminals designated **-48A, Rtn A, -48B** and **Rtn B**. The other end of the 6 gauge primary pairs should terminate on the BDFB and should be connected to 45 or 50 Amp. breakers, which will be set to open. Dress the leads through the oval grommeted hole on the right of the DPFU (as viewed from the front) for a COT.

Step 13: From the **Alarms** terminal strip run a 22 gauge pair from the **1** and **2** terminals to the MDF or other location, as required for an alarm indication (loop closure) of loss of A feed.

Step 14: From the Alarms terminal strip run a 22 gauge pair from the **3** and **4** terminals to the MDF or other location, as required for an alarm indication (loop closure) of loss of B feed.

Turn-up and Test

Step 15: Using a VOM check TB1 (main terminal strip) terminals **-48A(Out)**, **-48B(Out)**, **-48A(In)** and **-48B(In)** for the absence of ground.

Requirement: -42 to -56VDC

Step 16: Turn on the 45 or 50 amp. circuit breakers on the BDFB or elsewhere.

Step 17: With the VOM measure voltage on **-48A** and **-48B Out** terminals. While checking these voltages open and close **CBA** and **CBB** to verify that the circuit breakers are protecting the secondary feeds. Leave breakers in the on position.

Requirement: -42 to -56VDC

Step 18: Engage all four (4) GMT type 0.5 Amp fuses.

Step 19: Verify that the green **Power** LED lights on the front panel.

Step 20: Verify on P2 (Alarms) terminal strip that there is no continuity (using VOM as ohmmeter) between terminals **1** and **2** and **3** and **4** respectively.

Step 21: Open 45 or 50 Amp. circuit breaker A on the BDFB. Green **Power** LED should remain lighted. Verify **A Alarms** LED lights and that continuity exists between P2 (Alarms) terminals **1** and **2 (A)**.

Step 22: Restore circuit breaker A then open 45 or 50 Amp. circuit breaker B on the BDFB. Green **Power** LED should remain lighted. Verify **B Alarms** LED lights and that continuity exists between P2 (Alarms) terminals **3** and **4 (B)**. Reverify that both outputs **-48A** and **-48B** are present.

Step 23: Restore circuit breaker B.

Step 24: Replace plastic cover on DPFU faceplate.

Step 25: Procedure complete.

DPFU In-Service Change Out (Hot Swap)

Description

Design provisions have been established to allow the replacement of a DPFU, under certain conditions, with a replacement unit without a service interruption. The conditions are such that a A or B alarm is declared indicating a problem with internal diode modules and/or the control board, while both primary voltages and, at least one secondary voltage remain normal. In this case it is clear that the unit must be replaced since the anticipated protection inherent to the unit may not be viable. Under these, or similar conditions, use the following "hot swap" procedure. Note that in a situation where both secondaries are down the initial DPFU should simply be changed outright, as a service interruption is already in progress.

Step 1: Mount the replacement DPFU directly under the DPFU to be replaced.

Step 2: Locate the NE00675-31 G1 cable. This cable is approximately 18" long and terminates in connector J117 on one end and in four 10 gauge lugs on the other. For the new DPFU, connect these lugs, using the cable identification provided on the leads to the four screw terminals on the barrier terminal strip (TB1) designated **OUT** for **-48A, Rtn A, -48B** and **Rtn B**. Verify that the terminal strip screws are tightly fastened.

Step 3: For a COT J117 must past through the grommeted, oval hole to reach the duct on the rear of the frame.

Step 4: Remove the plastic faceplate covers (TB1) from both units.

Step 5: On the defective DPFU, after verifying that both primaries are active from the BDFB, disconnect, after opening the 45 or 50 Amp. breaker, from the TB1 **IN** terminals the primary matching the **Alarms** LED (**A** or **B**) that is lit. Reconnect that feed to the same terminals on the replacing unit. Turn on the 45 or 50 Amp. breaker.

Step 6: With a VOM verify that -48VDC is present on both secondaries (**-48A** and **-48B OUT**) of the replacement unit. Also verify that the green **Power** LED is lit.

Step 7: Locate the unattached J117 connector from the replacing DPFU and engage it to the unused P117B connector, after first removing its plastic cover, (p/o NE00675-31, G2). At this point the replacing DPFUs output is in parallel with the defective unit.

Step 8: On the defective DPFU remove the other primary (**IN**) and reconnect to the In terminals of the replacing DPFU. Turn on the 45 or 50 Amp. breaker.

Step 9: Disconnect the J117 connector from the P117A connector on the NE00675-31, G2 cable assembly. Attach plastic connector insulator, removed above from P117B, to P117A and dress this unused connector back into the frame.

Step 10: Remove the alarm leads from the **Alarms** terminal strip on the defective unit and reconnect to the replacing unit.

Step 11: Remove the NE00675-31, G3 cable assembly (ground strap) from the rear of the defective unit and reconnect it to the replacing unit.

Step 12: Verify that no connections are associated with the defective DPFU and, if so, remove the unit from the frame.

Step 13: Temporarily remove the mounting hardware from the replacing DPFU in order to reposition it to the top of the frame. Refasten and reattach the plastic protective cover over TB1.

Step 14: Procedure complete.

Addition of a DPFU to a In-Service System

Description

The addition of a DPFU to an existing in-service system can be performed in two ways. The first method will cause two partial service interruptions while method two, not supported but possible will, if performed correctly, result in no service interruption.

Method 1

Step 1: Complete all Steps from 1 to 25 with the following modification of Step 10. Tape the four secondary 10 gauge wires and do not connect them to the PIU.

Step 2: When the above is complete, notify the appropriate alarm monitoring facility that service will be interrupted during this procedure. Note that the existing feeds distribute power in the following manner:

- Feeder A powers MDS shelves 1 to 4 as well as the ARM (co-fed)
 - Feeder B powers MDS shelves 5 to 8 as well as the ARM (co-fed)
-

Step 3: Select either feed and open the 30 Amp. breaker at the BDFB. Remove this feed from the PIU and then connect the same feeders, previously taped, from the NE00675-31, G2 cable in their place. Service will be restored on those shelves.

Step 4: Repeat the above step for the other feeder.

Step 5: Tape and/or remove the feeders disconnected from the BDFB.

Method 2

Step 1: Complete all Steps from 1 to 25 with the following modification of Step 10. Tape the four secondary 10 gauge wires and do not connect them to the PIU.

Step 2: Match the four secondary 10 gauge feeds of the NE00675-31, G2 cable to the four 10 gauge leads presently running from the BDFB to the PIU. Note that all leads are hot.

Step 3: Using the appropriate 10 gauge parallel tap connectors, connect the matching leads to each other. Cut the wires (hot) going back to the 30 Amp. breakers on the BDFB. Tape the connectors and dress all cables in the vertical duct.

Step 4: Procedure complete.

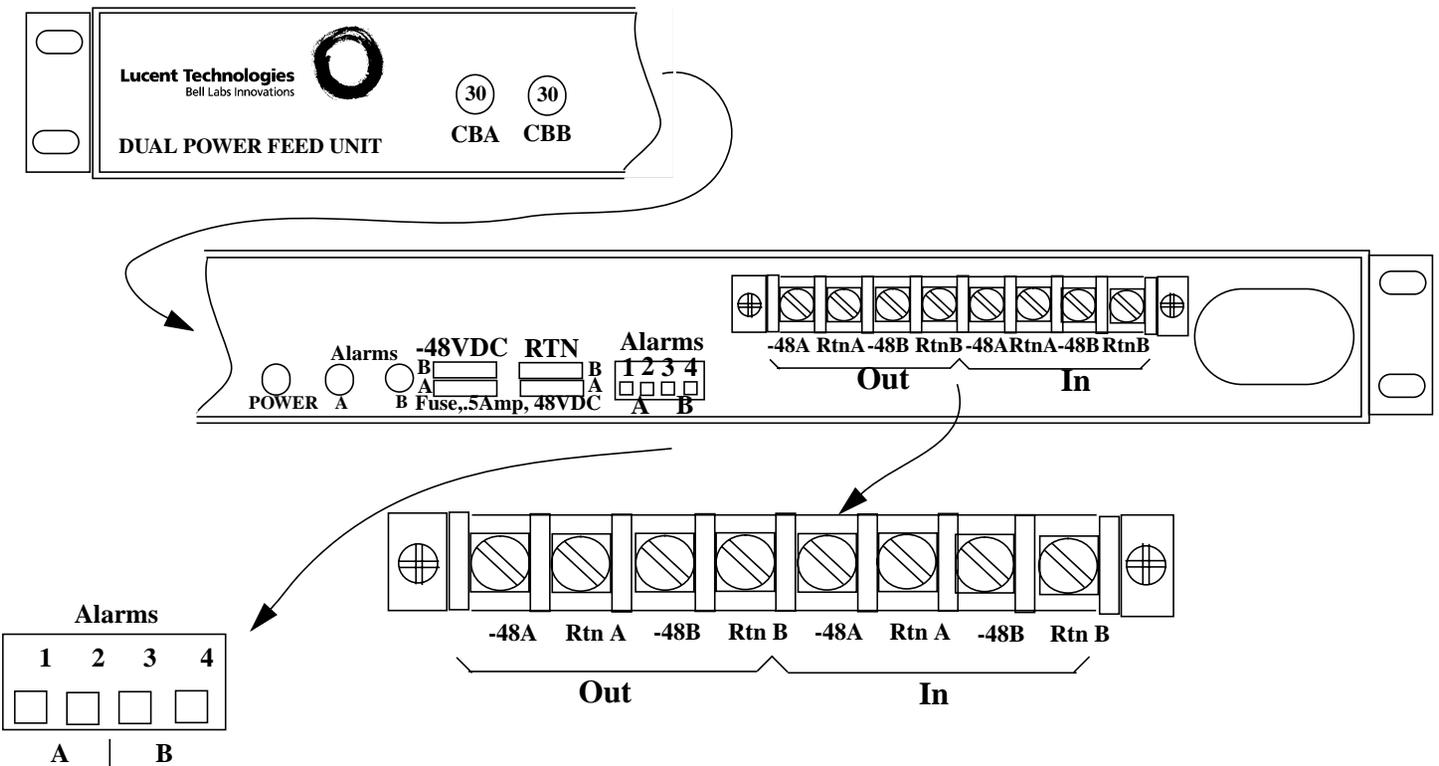


Figure 1. Front Panel of DPFU

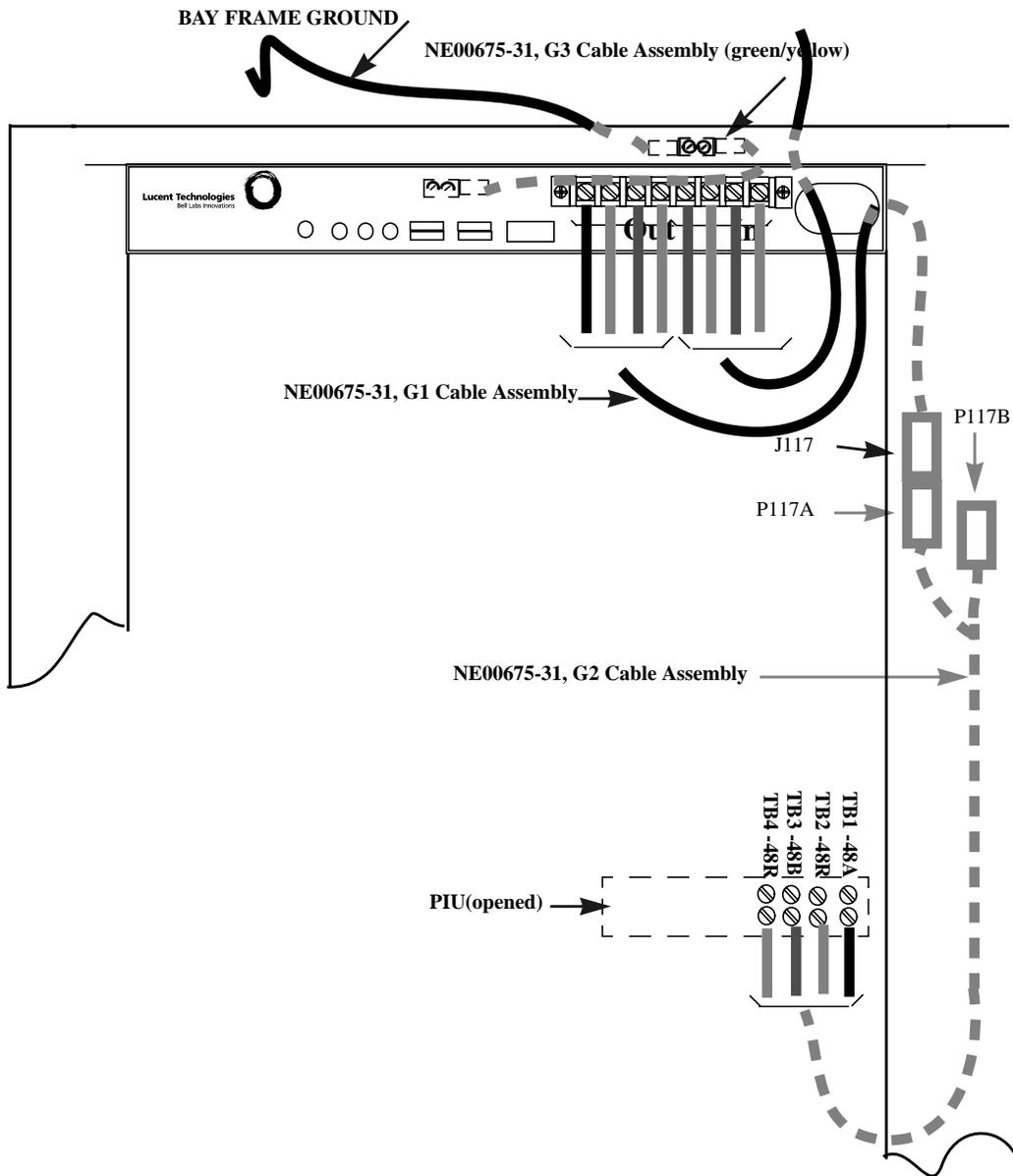


Figure 2. COT Mounting and Cable Paths

NE00676-70 Local Alarm Relay Unit Installation Procedure

2

General

Scope

This appendix to the *Customer Assembly Manual for COT Frames* provides the procedures to install the Lucent Technologies NE00676-70 Local Alarm Relay Unit for use with the SLC[®]-2000 Access System.

Overview

The SLC-2000[®] J1C265A-1 Remote Terminal (RT) Bay or J1C265B-1 (or C-1) Central Office Terminal (COT) Bay, (when configured as a RT) have no provision to provide local discrete alarm outputs to the customers alarm system. The Local Alarm Relay Unit (LARU), when used in conjunction with a 404B User Interface Panel (UIP), will now provide this capability for customers who require alarm indications independent of the imbedded DLC alarms (carried over the DS1 data link for TR-08 or the EOC channel for TR-303).

Reason for Reissue

Original issue.

Support

If any of the steps specified in this procedure cannot be completed as indicated, call the next level of support or the Lucent Technologies Regional Technical Assistance Center (RTAC) by the following phone number for assistance.

RTAC: 1-800-CAL RTAC (225-7822)

Training

No specific training is required.

Time Estimates

If LARU only is being installed:

- a. Overall time to perform this procedure is estimated to be one half hour.
- b. There will be no time out-of-service during this procedure.
- c. One installer or craftsperson is recommended for this procedure.

If LARU and 404B UIP is being installed:

- a. Overall time to perform this procedure is estimated to be one hour.
- b. There will be no time out-of-service during this procedure.
- c. Two installers or craftspersons are recommended for this procedure.

Risk Assessment

Procedural Risk Assessment

Rating (LARU only):

LOW Since the installation of the LARU does not impact transmission this procedure has a **LOW** procedural risk rating, since there is **NO** potential for a service interruption to the end customer, if any procedural deviations or procedure specific equipment failures occur during the procedure.

Rating (LARU and UIP):

MEDIUM Since the installation of the UIP may impact transmission this procedure has a **MEDIUM** procedural risk rating, since there is a potential for a service interruption to the end customer, if any procedural deviations or procedure specific equipment failures occur during the procedure.

Equipment

Equipment List

The following equipment, apparatus, and tools are required to perform this Modification Implementation Procedure.

| Code | Qty | Note | Description |
|----------------|-----|------|--|
| 6018691341 | 1 | | Local Alarm Relay Unit Kit |
| NE00676-70, G1 | 1 | R | Local Alarm Relay Unit |
| 848137972 | 1 | R | Mounting Plate e/ w 6-32 nuts and lockwashers (3 each) |
| NE00676-30 G1 | 1 | R | Cable Assembly, Power |
| NE00676-30 G2 | 1 | R | Cable Assembly, Alarm |
| | 1 | R | AMP Header (P253/J253) |
| | 1 | R | MIP 363-208-500 (Instructions) |
| | 1 | I | Volt-Ohmmeter |

NOTES:

I = This item may be ordered from Lucent Technologies-IMDARC by the installer.

R = This item is required for installation of and is packaged with the DPFU.

Reference Documents

Reference Document List

| Document Number | Description |
|-----------------|--|
| NE00676-70 | Local Alarm Relay Unit (specification) |
| NS00676-01 | Local Alarm Relay Unit (schematic) |

Engineering Information

Engineering Notes

- The LARU pwb is internally fused at 1/2 amp to protect the on-board DC/DC Converter. The converter is also diode protected to guard against improper polarity application of power.
- The green power LED will light whenever correct polarity -48VDC is present at power plug P305. Also the NP (No Power) relay is a normally powered relay and is operated whenever input power is present.
- P253 is a 9 pin D-sub plug (male) which receives its alarm information from the SLC-2000 UIP as follows:

| TERM. # | NAME |
|---------|-------------------|
| 1 | CRITICAL (CR) |
| 2 | MAJOR (MJ) |
| 3 | MINOR (MN) |
| 4 | POWER MINOR (PMN) |
| 5 | GROUND RETURN |

- The conditions at P253 will either be +5VDC or +3VDC. Any voltage below 4.7VDC appearing at P253 will be interpreted by the LARU as an alarm. All voltages are referenced to "CP RTN" on term 5.

Installation Procedure

Description

This procedure involves the adding of a LARU to operate with a SLC-2000 Remote Terminal Bay (RT) or a SLC-2000 Central Office Terminal Bay (COT) configured as a RT.

Physical Installation

- Step 1:* The LARU comes equipped with an adhesive backed bracket equipped with three threaded studs. If installing the LARU on a J1C265A-1 Remote Terminal the LARU bracket should be mounted on the right forward corner of the fan unit, located directly over the User Interface Panel (UIP). with the long dimension, with two studs, parallel to the front of the unit. If you are mounting the LARU on a J1C265B-1 or C-1 COT the bracket should be mounted, in a similar manner, to the heat baffle above the UIP. See Figures 1 and 2.
-

- Step 2:* Locate LARU and position it on the bracket studs. Using 6-32 nuts provided, lock down the unit. Note that connectors and LED face the rear of the bay.
-

Power Wiring

- Step 3:* Locate the ED00676-30 G1 Power Cable. Engage the connector J305 (on this cable) to P305 on the LARU. See Figure 3.
 - Step 4:* In the right vertical duct of the bay (RT or COT), as viewed from the front, locate a J114 connector which will be unconnected on a COT and connected to P114 from the fan unit on a RT. For the COT connect P114 on the LARU cable to J114 located above. J114 on the LARU cable will not be used in this case. For the RT disconnect P114 (from the fan) from J114 in the duct. Connect J114 and P114 on the LARU cable between these two (i.e.-J114 LARU to P114 fan and P114 LARU to J114 duct).
-

- Step 5:* Verify that green LED on LARU lights.
-

Alarm Wiring

- Step 6:* Locate the ED00676-30 G2 Alarm Cable. Engage the connector J253(on this cable) to P253 on the LARU.
-

- Step 7:* Dress the P253 connector end of the cable over the rear of the fan unit or heat baffle so that it is positioned near the rear of the UIP.
-

- Step 8:* Verify that the UIP is a 404B. A label, visible from the front of the bay, located on the top surface of the unit, above the alpha-numeric display, will identify the unit. If the unit is a 404A continue with the next step. If a 404B go to step 23.
-

Craft Interface Unit Replacement

- Step 9:* Since this procedure has the potential to drop in- service calls the customer may wish to schedule this work for a maintenance period.
-

- Step 10:* Note all alarms and faults on the UIP display. Press the **Escape** button to gain access to the Main Display Menu and press the **Scroll** buttons to find the Alarms and Faults Menu.
-

- Step 11:* Remove the ESD strap from the jack on the UIP. Relocate it to another convenient ground and wear the wrist strap from this point on.
-

Step 12: The plastic housing of the 404A UIP you are about to remove is held in place by three integral plastic clips (either end plus top) and a plastic button on the bottom. The clips and button engage the metal housing that is part of the ARM shelf.

Step 13: Disengage all clips, using an insulated spud or similar tool, and pull UIP forward and down until free of chassis (but with cables still connected).

Step 14: Carefully pull out the lug end of the previously disconnected ground lead.

Step 15: At this point the UIP is still operating and is connected to the system by three cables plugged into the UIP. The connectors associated with these cables are designated J254 (left side as viewed from the front, looking down on the top of the unit), J256 (right side upper connector) and J214 (right side lower connector).

Step 16: At this point, if the connectors are removed and reconnected to the replacing 404B, and the process takes more than 55 seconds, the system will perform an internal audit and drop service (existing and new) for a period of approximately three minutes. To negate this from happening the following instructions should be rigidly followed.

Step 17: Locate the 404B UIP and have another installer, also wearing an ESD strap, hold the 404B directly alongside the 404A, in order that the three referenced connectors may be quickly disconnected from the 404A and immediately connected to the 404B. The J256 and J214 connectors require the same orientation and thusly only go in one way. The J254 connector (power) is a 3-pin connector and is not keyed. The pins are carrying -48VDC, ground and -48VDC respectively so that it is imperative that the connector be properly aligned prior to engagement, since being off one pin will connect -48VDC to ground.

- Step 18:* Quickly and carefully disengage the connectors from the 404A and reconnect them to the 404B.

- Step 19:* If you exceeded the time and service is dropped, no further action is required and the system will recover automatically within 3 minutes.

- Step 20:* Tape the lug on the black ground lead (p/o the 404B) and pass it through the chassis on the right side. Untape lug and refasten to frame ground.

- Step 21:* Locate the J253 connector, part of a cable coming out of the center rear of the 404B, and pass it through the center opening in the chassis, and dress it toward the rear of the unit.

- Step 22:* Align the 404B with the chassis and carefully snap in place while making sure that the cables are dressed properly.

- Step 23:* Locate P253 connector (p/o NE00676-30 G2 cable previously attached to the LARU) and connect it to J253 from the 404B. It may be necessary to temporarily remove the fan unit or baffle to accomplish this.

- Step 24:* Recheck all faults and alarms as instructed in Step 10. There should be no new alarms.

External Alarm Connections

- Step 25:* The external alarm connections are taken from P306 connector on the LARU with a 25 pin D-sub female connector (J306) and cable, both provided by the customer. It is recommended that 26 gauge twisted pair wire be used between J306 and the customer's alarm system or distributing frame.

 *Step 26:* The connections and functions are shown in the following table:

| J306/P306 TERMINATIONS | | | | |
|-------------------------------|------------|------------|-----------------|---------------------|
| Function | Pin | Pin | Function | Title |
| OACRA | 1 | 14 | OACRAR | CRITICAL AUDIBLE |
| OACRV | 2 | 15 | OACRVR | CRITICAL VISUAL |
| OAMJA | 3 | 16 | OAMJAR | MAJOR AUDIBLE |
| OAMJV | 4 | 17 | OAMJVR | MAJOR VISUAL |
| OAMNA | 5 | 18 | OAMNAR | MINOR AUDIBLE |
| OAMNV | 6 | 19 | OAMNVR | MINOR VISUAL |
| OAMSA | 7 | 20 | OAMSAR | POWER MINOR AUDIBLE |
| OAMSV | 8 | 21 | OAMSVR | POWER MINOR VISUAL |
| OANPA | 9 | 22 | OANPAR | NO POWER AUDIBLE |
| OANPV | 10 | 23 | OANPVR | NO POWER VISUAL |

 *Step 27:* Procedure complete.

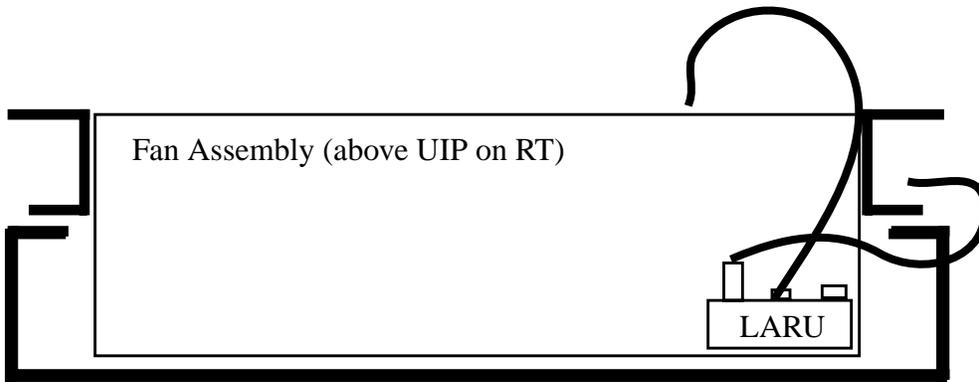
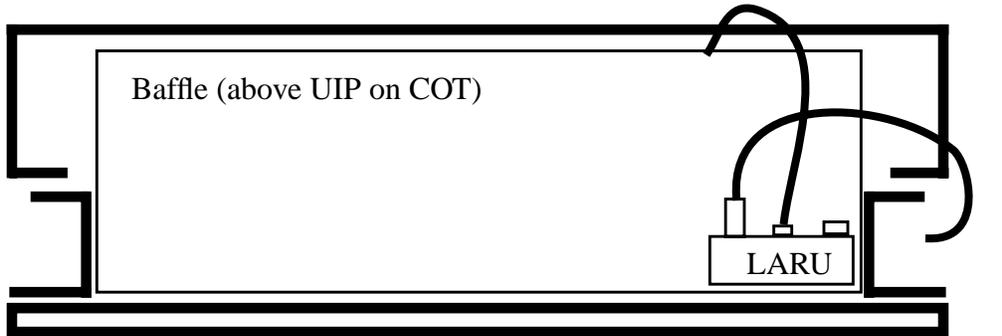


Figure 1. Mounting Positions for LARU on COT or RT

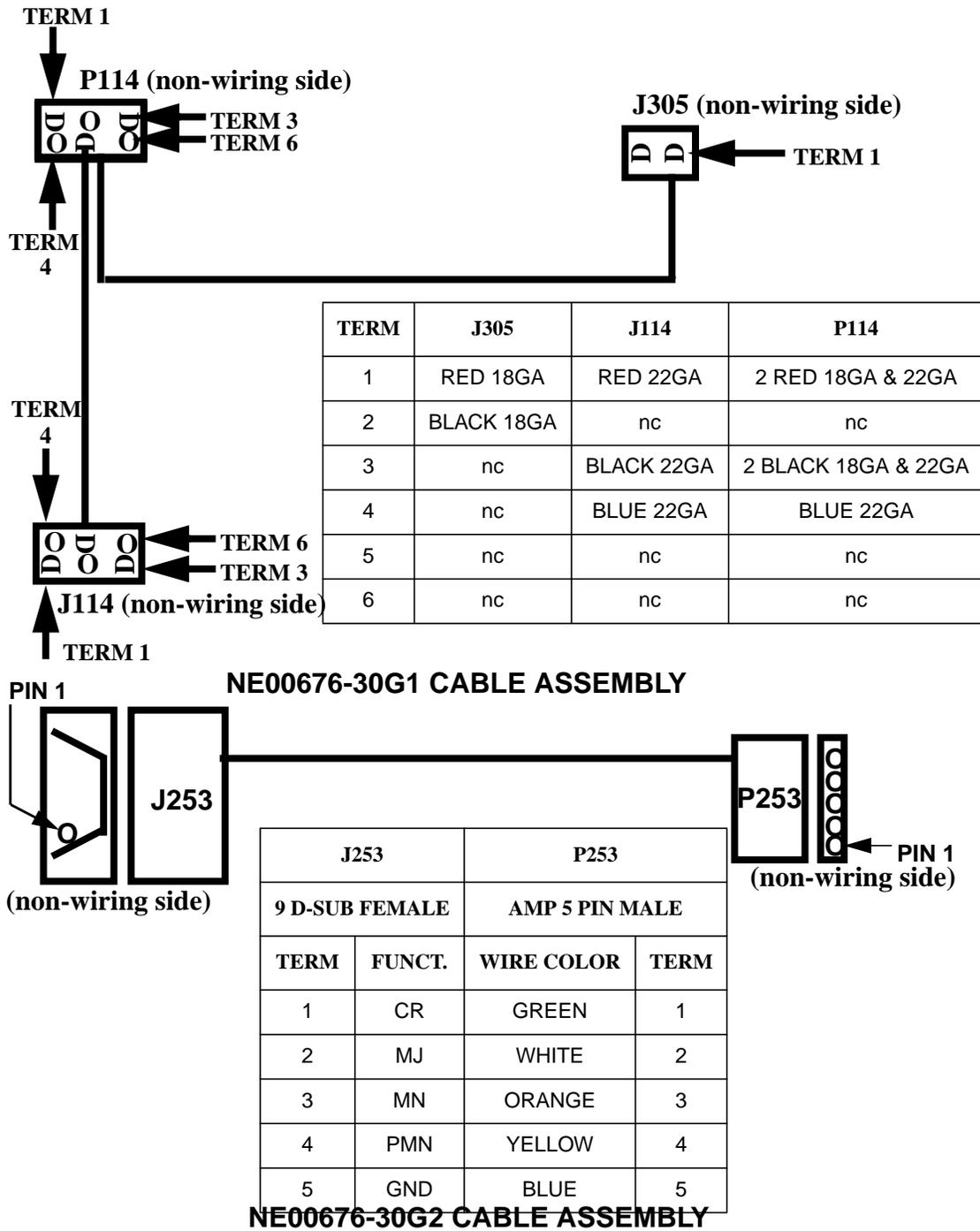


Figure 2. LARU CABLE ASSEMBLIES

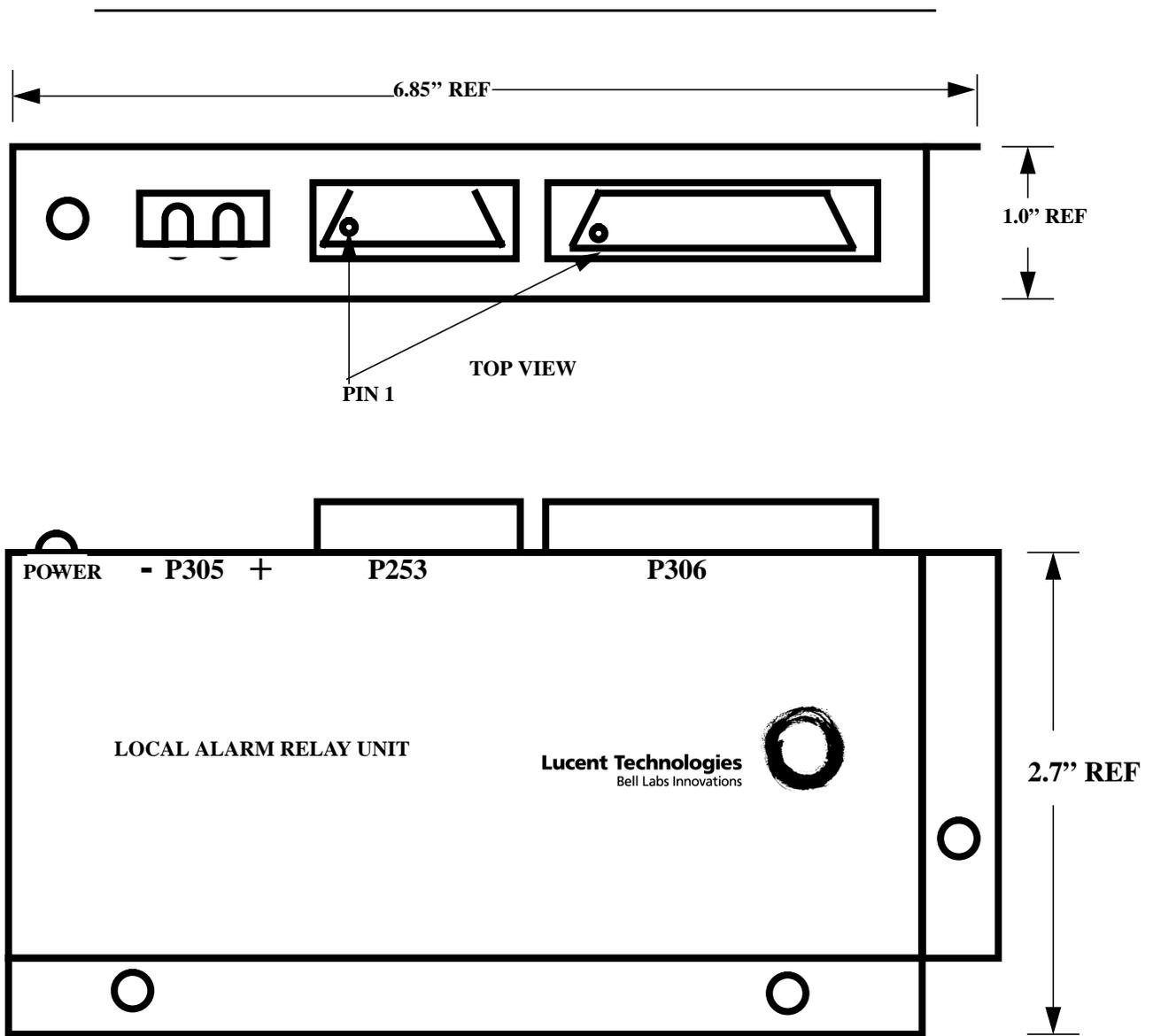


Figure 3. LARU External Views

Test Head Installation

3

Remote Test Head Mounting

General

This appendix to the *Customer Assembly Manual for COT Frames* provides the procedures to install the Lucent Technologies RTH-7000 or General Signal Networks Tau-tron 7000 *ngRTH** remote test head for use with the *SLC*[®]-2000 Access System.

⇒ **NOTE:**
These test heads are not compatible with the Line Test Fanout (LTF).

⇒ **NOTE:**
Refer to the Lucent Technologies RTH-7000 or the General Signal Networks Tau-tron *Installation and Maintenance Guide* for detailed installation and troubleshooting instructions for their test head panels.

Test Head Inspection

The test head is shipped with an assortment of associated apparatus.

Step 1: Unpack the test head from its shipping cartons.

Step 2: Verify that the mounting brackets, screws, ground cable, fuse, and *Installation and Maintenance Guide* are included.

Step 3: Verify that test head cables are available. The job specification will provide the list of required cables. See Table 1-1 for the listing of test head cables.

* *ngRTH* is a trademark of General Signal Corporation



NOTE:

The Tau-tron cables in Table 1-1 are required for the Lucent Technologies RTH-7000 or the General Signal Networks Tau-tron *ngRTH* test head. The cable assemblies with part numbers with the prefix of 955- are obtained from Tau-tron.

Table 1-1. **Tau-tron *ngRTH* Test Head Cables**

| Tau-tron Number | Qty | Note | Test Head Jack | Description |
|-----------------|-----|------|----------------|---|
| 955-7000xxx037 | 1 | 1, 4 | J12 | Power Voltage |
| 955-7000xxx038 | 1 | 1, 4 | J15 | Ringling Voltage |
| 955-7000107 | 1 | | J13 | MTAU Control (Digital) |
| 955-7000xxx035 | | 2, 4 | J13 | Optional MTAU Control (Digital) |
| 955-700079 | 1 | | J14 | Test Pairs (Analog) |
| 955-7000xxx036 | | 3, 4 | J14 | Optional Test Pairs (Analog) |
| 955-7000003046 | | 5 | J14 | Optional Test Pairs (Analog) |
| 955-7000108 | 1 | | | MTAU Control to <i>SLC</i> [®] -2000 ARM Shelf |
| 955-7000xxx126 | 2 | 4, 6 | | VF Pairs (Analog) |

Notes:

1. These cables are required to obtain the battery and ringing voltages from a miscellaneous fuse panel or battery and ringing voltage supplies.
2. This cable replaces 955-7000107 cable if a longer cable is required.
3. This cable replaces 955-7000079 cable if a longer cable is required.
4. The xxx in the Tau-tron part number indicates the cable length in feet (e.g., 010 = 10 feet).
5. The 955-7000003046 cable may be used between J14 of the test head and the 955-700079 cable to provide front access.
6. The two 955-7000xxx126 cables are used to connect the 955-700079 or the 955-7000xxx036 cable to the miscellaneous distributing frame.

Step 4: Verify that there are circuit packs for the test head. Do not unpack the individual circuit packs until directed to do so. The job specification will provide the list of required circuit packs. See Table 1-2 for the listing of test head circuit packs.



NOTE:

Table 1-2 shows the usage of the test head circuit packs. POTS (plain old telephone service) testing assumes MLT (Mechanized Loop Testing) and special services testing assumes SARTS (Switched Access Remote Test System) or its equivalent.

Table 1-2. Test Head Circuit Pack Usage

| Card | Description | POTS Testing | Special Services Testing |
|-------------|-------------------------------|---------------------|---------------------------------|
| MPM | Main Power Module | X | X |
| TCM | Test Controller Module | X | X |
| WDM | Wideband Digital Module | | X |
| WTM | Wideband Transmission Module | | X |
| ATM | Access and Termination Module | | X |
| VTM | Voiceband Transmission Module | X | |
| VAM | Voiceband Amplifier Module | X | X |
| AMM | Analog Multimeter Module | X | X |

Step 5: Verify whether the ED7C723-37, Group 30 cable assembly is required.



NOTE:

The Lucent Technologies cable assembly in Table 1-3 will be required if the test head is connected to a SLC-2000 Access System Central Office Terminal (COT) and several COTs are interconnected to share access to SONET/DS1 timing. The ED7C723-37, Group 30 cable assembly is required between J44 of the ARM shelf and P44 of the interbay cabling to provide access to the test head.

Table 1-3. Lucent Technologies Cable Assembly

| Lucent Number | Note | Description |
|----------------------|-------------|------------------------------------|
| ED7C723-37, G30 | | MTAU Control to SLC-2000 ARM Shelf |

Test Head Installation

- Step 1:* Install two alignment pins (C 402444491) to the miscellaneous frame where the test head is to be installed.
- Step 2:* Attach the appropriate mounting brackets on the test head.
- Step 3:* Mount the test head to the frame with the four screws that came with the unit.
- Step 4:* Connect the ground wire between the lug on the rear of the test head and the frame. Scrape the paint from around the hole on the frame that will be used for the ground strap.

Remote Test Head Interconnections

General

These procedures install the interconnect cables between the Lucent Technologies RTH-7000 or the General Signal Networks Tau-tron *ngRTH* Remote test head and the associated power supplies and between the test head and the *SLC-2000* Access System Central Office Terminal interfaces. Refer to Figure 1-1 for the overall system interconnections.

Test Head Interconnections

General

The test head is powered (via J12) from -48v dc supplied by a battery supply or miscellaneous fuse panel provided by the customer. A separate ringing supply, or the fuse panel, supplies 20Hz ringing to the test head via the J15 connector.

The physical interface from the test head J13 connector to the *SLC-2000* system is via the ARM shelf's DS1 TIMING OUT/RT RMU LINK connector J44. This is a DB9 connector with a RS-232 interface.

The analog connections to the voice frequency pairs and to the test access path (TAP) are via J14.



NOTE:

The cable assemblies with part numbers with the prefix of 955- are obtained from Tau-tron.

Power and Ringing Cables

The following steps are performed when the 955-7000xxx037 and the 955-7000xxx038 cables are provided to obtain battery and ringing voltages from the miscellaneous power supplies.

These cables provide the -48V/-48VRTN and the +20Hz/-20Hz ringing connections to the power supplies. See Figure 1-1.

- Step 1:* Locate the test head's 955-7000xxx037 and 955-7000xxx038 dangler cables.
- Step 2:* Mate the P12 connector of the 955-7000xxx037 cable with J12 on the test head and route it to the battery power supply.
- Step 3:* Connect the leads in accordance with the associated figures for the P12 connector of the 955-7000xxx037 cable (See Figure 1-2) at the battery supply or an assigned fuse position for the test head.
- Step 4:* Mate the P15 connector of the 955-7000xxx038 cable with J15 on the test head and route it to the ringing power supply.
- Step 5:* Connect the leads in accordance with the associated figures for the P15 connector of the 955-7000xxx038 cable (See Figure 1-3) at the ringing supply or an assigned fuse position for the test head.
- Step 6:* Use tie-wraps to secure the cables.
- Step 7:* If connected to a fuse panel, equip the test head battery fuse position with a 5 amp fuse.
- Step 8:* If connected to a fuse panel, equip the test head ringing fuse positions with a 1/2 amp fuse each for the positive and negative ringers.

Control Link Cables

NOTE:

If there is a cable connected to J44 of the ARM shelf that has been selected to provide control signals to the test head, the ED7C723-37, Group 30 cable assembly is required.

The following steps are performed when the 955-7000xxx035 or the 955-7000107 cable is provided to obtain control signals from the SLC-2000 Access System ARM shelf.

These cables are the control link with the test head. See Figure 1-1 for the cabling and Figure 1-4 for the signals on J44 of the ARM shelf.

NOTE:

The lead designations for J44 of the SLC-2000 Access System ARM shelf and the test head are shown in Figure 1-4 to indicate that the connector is used for more than one purpose and that signals may appear on the connector that may not be required for a specific application.

- Step 1:* Locate the test head's 955-7000107 or 955-7000xxx035 dangler cable (RS232/MTAU).
- Step 2:* Mate the P13 connector with J13 on the test head. See Figure 1-5.
- Step 3:* Mate the 955-7000010108 cable's MTAU connector to the MTAU connector of the dangler cable 955-7000107 installed in Steps 1 and 2
- Step 4:* If the J44 on the COT ARM shelf is vacant, proceed to Step 7.
- Step 5:* If J44 is not vacant, remove the connector of the existing cable assembly from J44 on the COT ARM shelf. Mate the P44 of the ED7C723-37, Group 30 cable assembly to J44 of the ARM shelf and mate J37 of the ED7C723-37, Group 30 cable assembly to connector of the existing cable assembly that supplies timing to additional COT ARM shelves.
- Step 6:* Mate the 955-7000010108 cable's P44 connector to the J44 connector of the ED7C723-37, Group 30 cable assembly that was installed in Step 5. Go to Step 8.
- Step 7:* Mate the 955-7000010108 cable's P44 connector to the J44 connector of the ARM shelf.
- Step 8:* Connect the TL1 DB25 connector to the circuit for communications to special services test operations system, such as, SARTS, as determined by the customer.
- Step 9:* Connect the Alarms DB15 connector to the SLC-2000 miscellaneous alarms as determined by the customer.

Communications Cable

This cable assembly, containing the test access pairs, is connected to the Miscellaneous Pairs Cross-connect block. See Figure 1-1 for the cabling and Figure 1-6 for the signals on J14 of the test head.

- Step 1:* Locate the test head's 955-70079 or 955-7000xxx036 and 955-7000000046 dangler cable (optional) and the two 955-7000xxx126 cables.
- Step 2:* If the 955-7000003046 cable is used, go to Step 3. Otherwise go to Step 5.
- Step 3:* Mate the P14 connector of the 955-7000003046 cable with J14 on the test head.
- Step 4:* Mate the 955-70079 or 955-7000xxx036 cable's P14 connector with J14 on the 955-7000003046 cable. Go to Step 6.
- Step 5:* Mate the 955-70079 or 955-7000xxx036 cable's P14 connector with J14 on the test head.
- Step 6:* Mate the 955-70079 or 955-7000xxx036 cable's J301 connector with the P301 connector of the ED7C723-34, Group 1 TAP bay cable.

- Step 7:* Mate the MLT Control RJ11 connector to the first 955-7000xxx126 cable.
- Step 8:* Mate the Monitor/Talk RJ11 connector to the second 955-7000xxx126 cable.
- Step 9:* Connect the first 955-7000xxx126 cable MLT Control RJ11 connector to the POTS VF circuit as determined by the customer.
- Step 10:* Connect the second 955-7000xxx126 cable Monitor/Talk RJ11 connector to the POTS VF circuit as determined by the customer.

Remote Test Head Turn-Up

General

These procedures install the circuit packs in the Lucent Technologies RTH-7000 or the General Signal Networks Tau-tron *ngRTH* test head.



NOTE:

Refer to the Lucent Technologies RTH-7000 or the General Signal Networks Tau-tron related documents for detailed installation and troubleshooting instructions for their test head panels.

Circuit Pack Installation

- Step 1:* Unpack the test head circuit packs from their shipping carton(s).
- Step 2:* Install the Main Power Module (MPM) in the left-most slot of the test head.
- Step 3:* Install the fuse and fuse receptacle in the MPM. Push on the receptacle and turn clockwise approximately one-quarter turn.

Requirement: Yellow **ALARM** LED extinguishes.

- Step 4:* Install the remainder of the circuit packs, as required, in the order shown below and wait for the **FAULT** LED to extinguish before inserting the next pack. The slots progress from left to right in the shelf.

Test Controller Module (TCM)
Wideband Digital Module (WDM) *
Wideband Transmission Module (WTM) *
Access and Termination Module (ATM) *
Voiceband Transmission Module (VTM) *
Voiceband Amplifier Module (VAM)
Analog Multimeter Module (AMM)
* If listed on the job specification.



NOTE:

Refer to customer provided information to determine which circuit packs are to be installed in the test head. See the note and Table 1-2 on Page 3 for more information.

Requirement: The LED on the inserted circuit pack illuminates. Red **FAULT** LED on MPM extinguishes in approximately 10 seconds after the insertion of each circuit pack.

Step 5: Repeat Step 4 until all of the provided circuit packs are installed.

Step 6: Verify that the **FAULT** and **ALARM** LEDs on the MPM are extinguished.

SLC-2000 Access System Circuit Packs

General

These procedures verify that the software and the circuit packs in the *SLC-2000* Access System shelves that are required for the operation of the Lucent Technologies RTH-7000 or the General Signal Networks Tau-tron *ngRTH* test head are present. See Table 1-4 for the circuit packs that must be present in the *SLC-2000* Access System for the operation of the test head.

Table 1-4. ***SLC-2000 Access System Circuit Packs***

| Pack | Location | Description |
|-------------|-----------------|-------------------------------------|
| SMU | ARM Shelf | System Memory Unit |
| LAN | ARM Shelf | Link to Alarms and Networks |
| PDC | ARM Shelf | Provisioning and Display Controller |
| MDC | MDS | Metallic Distribution Controller |
| T8U * | MDS | TR-08 Unit |
| PTU | MDS | Power and Test Unit |

* The T8U is required for TR-08 operation only.

Circuit Pack Verification

Step 1: Verify that the SMU, LAN, and PDC are in the ARM shelf.

Step 2: Verify that the MDC, T8U, and PTU are in the MDS shelf(ves) of the subscriber circuits or drops to be tested.



NOTE:

The T8U is required for TR-08 operation only.

Step 3: Verify that the DLC software is as follows:

COT: R 3.03.01 (or later)

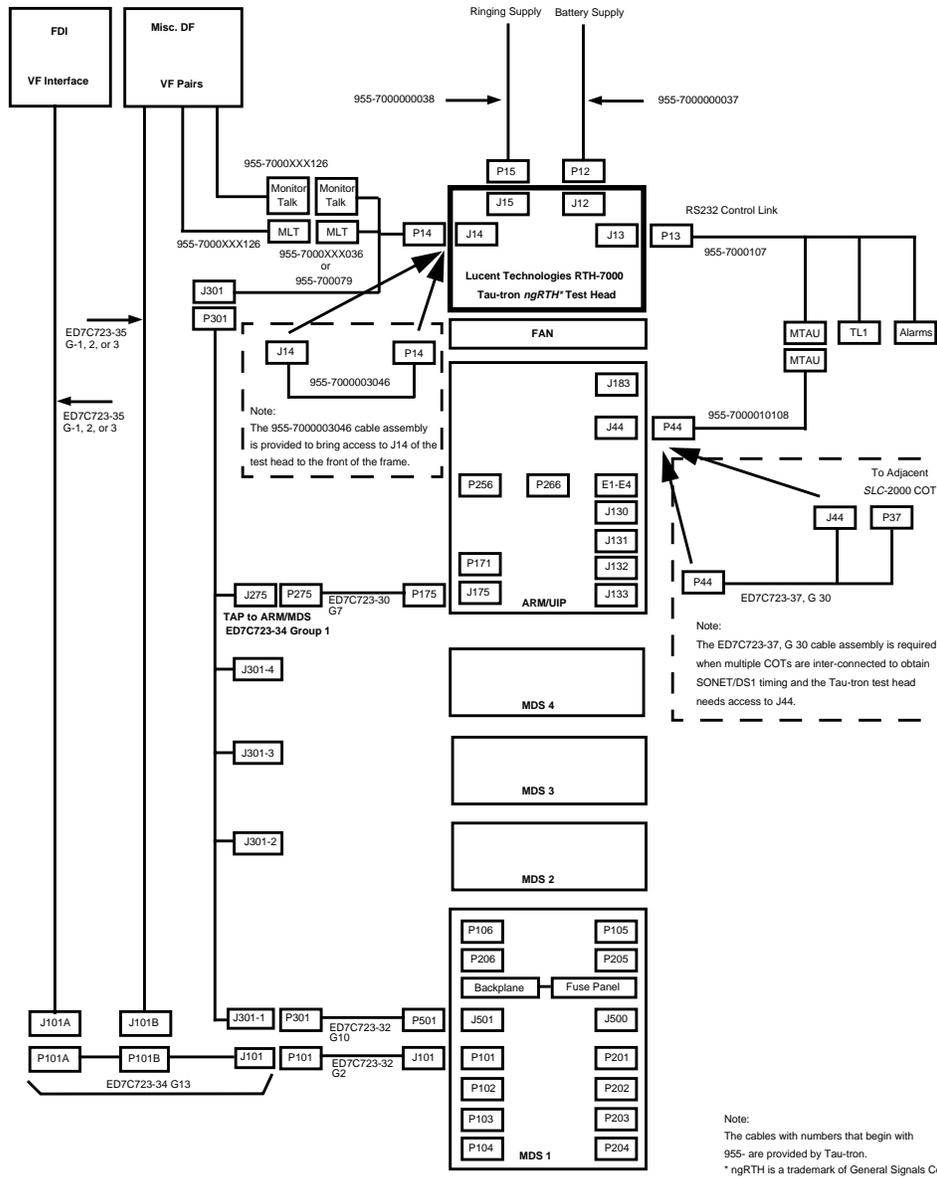


Figure 1-1. Test Head System Interconnections

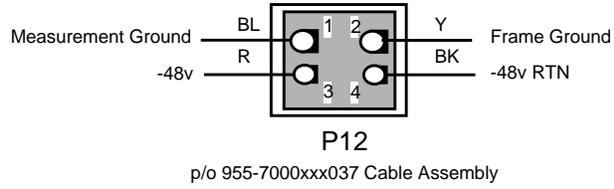


Figure 1-2. Test Head Power Wiring P12

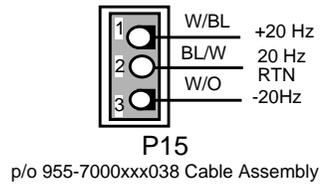


Figure 1-3. Test Head Ringing Wiring P15

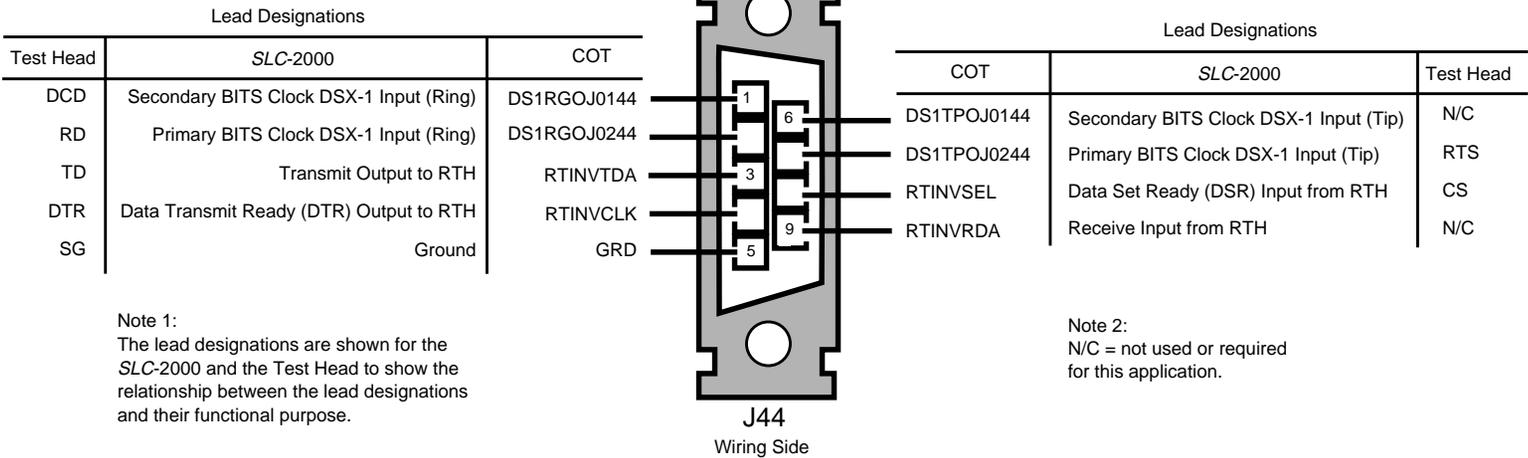


Figure 1-4. ARM Shelf DS1 Out/RT RMU Link J44

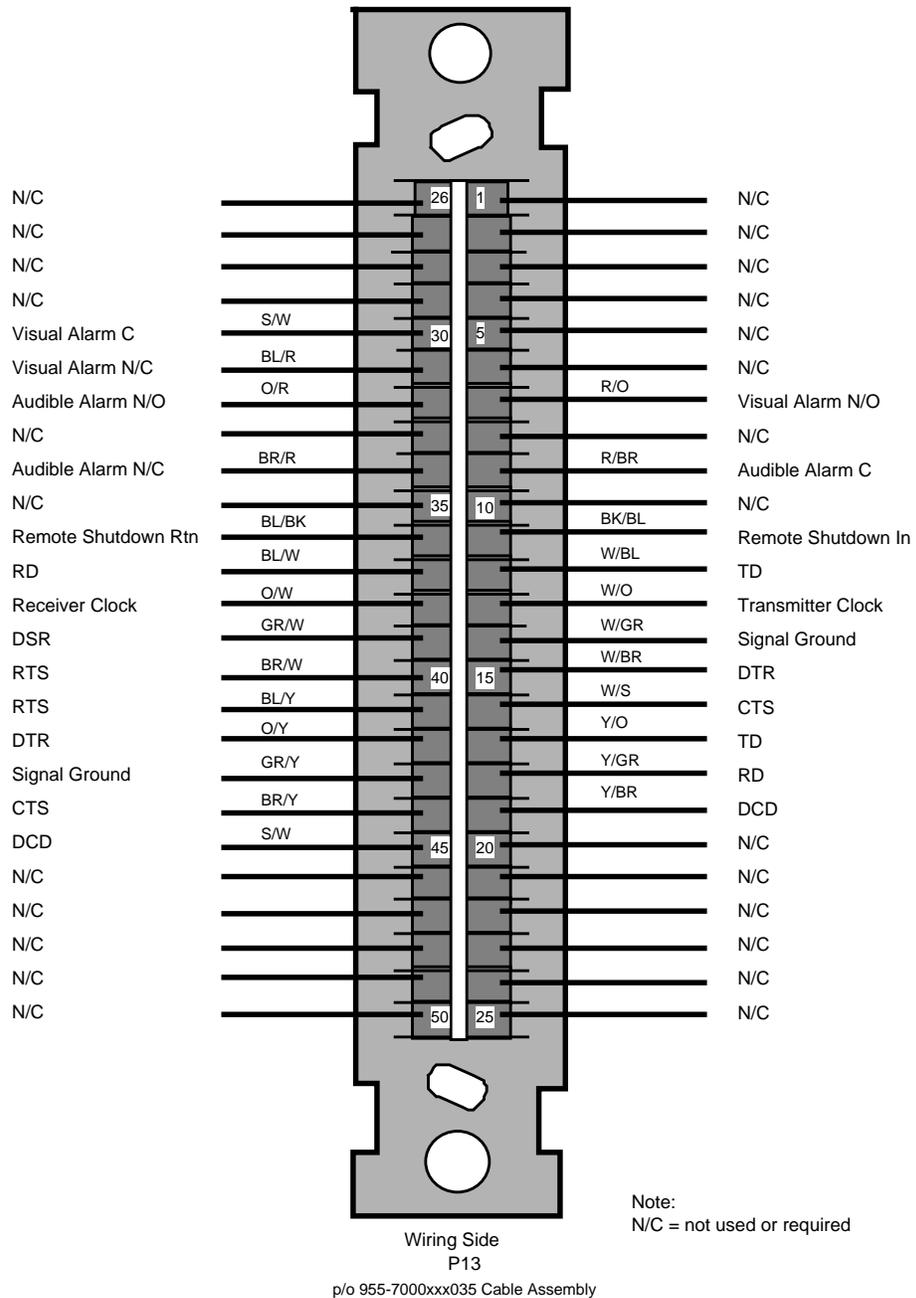


Figure 1-5. Test Head Digital Wiring P13

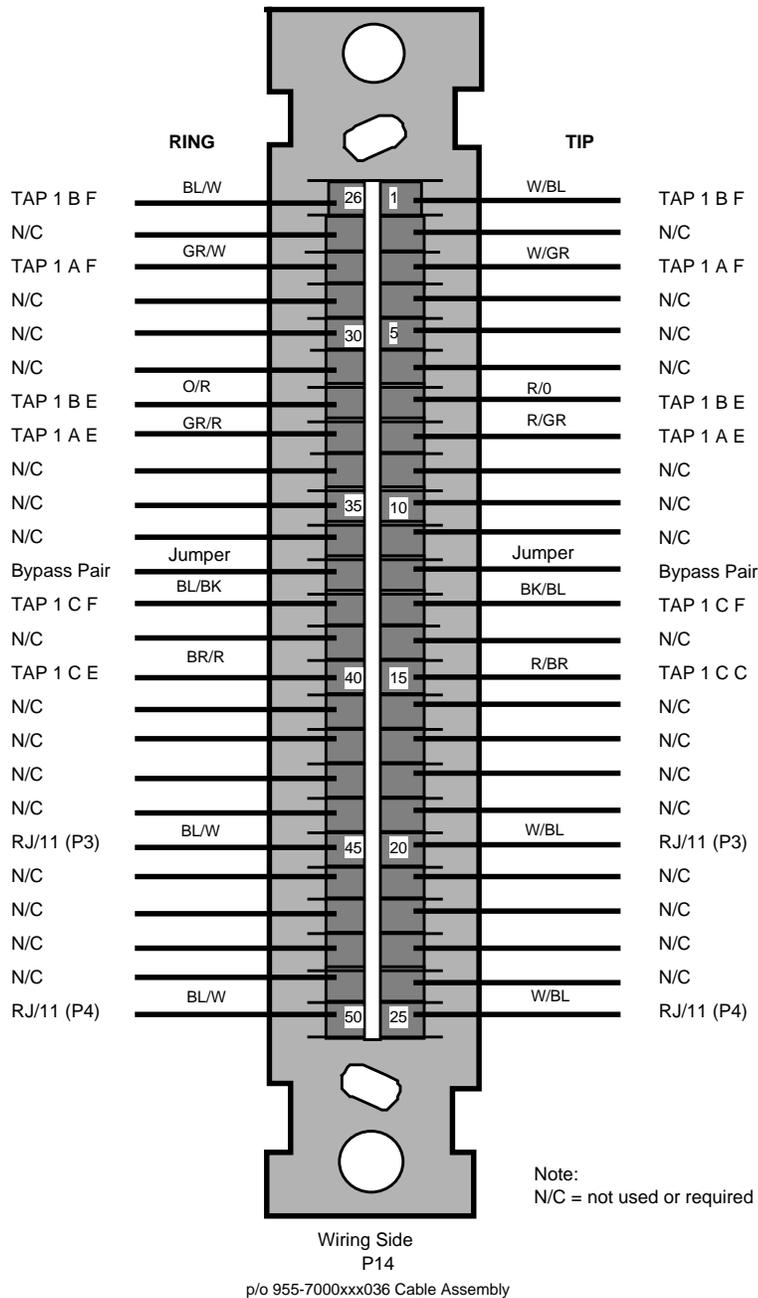


Figure 1-6. Test Head Analog Wiring P14