Lucent Technologies
Bell Labs Innovations

SLC® Series 5 Carrier System

J1C182BC-1 Remote Terminal Ring Shelf

User Manual

363-205-121
Issue 1
March 2000

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Title: *SLC* Series 5 Carrier System, J1C182BC-1 Remote Terminal Ring Shelf, User Manual

Identification No.: 363-205-121 Issue No.: 1 Date: March 2000

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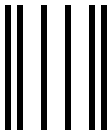

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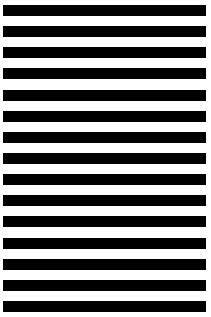

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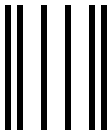

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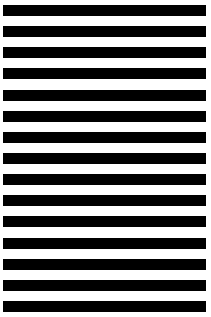

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Contents

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About This Document

Overview

Purpose

This document provides instructions for installing, cabling, turning up, and maintaining a J1C182BC-1 remote terminal ring shelf.

Intended Audiences

The document is intended for access system customers who install, cable, turn up, and maintain equipment.

How To Use This Document

This document is organized as follows:

- "About This Document"

  This section defines the purpose and intended audience for this document; provides introductory and support information on this document; and provides information on how to obtain technical support.

- Chapter 1, "General Description"

  This chapter describes the J1C182BC-1 remote terminal ring shelf. It provides an illustration of the shelf that shows the location of the circuit packs.

- Chapter 2, "Shelf Installation"

  This chapter provides installation procedures for the J1C182BC-1 remote terminal ring shelf.

- Chapter 3, "Cabling"

  This chapter provides cabling procedures for the J1C182BC-1 remote terminal ring shelf.

- Chapter 4, “Turn up Procedures”

  This chapter provides turn up procedures for the J1C182BC-1 remote terminal ring shelf.

- Chapter 5, “Maintenance and Trouble Clearing”

  This chapter provides the maintenance and trouble clearing procedures for the J1C182BC-1 remote terminal ring shelf.

Safety Instructions

Product Safety

This section provides the product safety information relevant to this document.

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

Safety Labels

This document may contain Safety labels as DANGERS, WARNINGS, and CAUTIONS. These safety labels have the following definitions.

DANGER:
Danger indicates the presence of a hazard that will cause death or severe personal injury if the hazard is not avoided.

WARNING:
Warning indicates the presence of a hazard that can cause death or severe personal injury if the hazard is not avoided.

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

The safety alert symbol is used on product labels and in this document it is used to alert the user to important operating and maintenance instructions.

Electrostatic Discharge Considerations

CAUTION:
Industry experience has shown that all integrated circuit packs can be damaged by static electricity that builds up on work surfaces and personnel. The static charges are produced by various charging effects of movement and contact with other objects. Dry air allows greater static charges to accumulate. Higher potentials are measured in areas with low

relative humidity, but potentials high enough to cause damage can occur anywhere.

The following list of precautions should be observed when handling circuit packs to prevent damage by electrostatic discharge (ESD):

- Assume all circuit packs contain solid state electronic components that can be damaged by ESD.
- When handling circuit packs (storing, inserting, removing, etc.) or when working on the backplane, always wear a grounded wrist strap or wear a heel strap and stand on a grounded, static-dissipating floor mat. If a static-dissipating floor mat is used, be sure that it is clean to ensure a good discharge path.
- Handle all circuit packs by the faceplate or latch and by the top and bottom outermost edges. Never touch the components, conductors, or connector pins.
- Observe warning labels on bags and cartons. Whenever possible, do not remove circuit packs from antistatic packaging until ready to insert them into slots.
- If possible, open all circuit packs at a static-safe work position, using properly grounded wrist straps and static-dissipating table mats. If a static-dissipating table mat is used, be sure that it is clean to ensure a good discharge path.
- Always store and transport circuit packs in static-safe packaging. Shielding is not required unless specified.
- Keep all static-generating materials such as food wrappers, plastics, and foam packaging away from all circuit packs. On removal from the bay, immediately put circuit packs into static-safe packages.
- Whenever possible, maintain relative humidity above 20 percent.

To reduce the possibility of ESD damage, shelves are equipped with grounding jacks to enable personnel to ground themselves using wrist straps (Figure 1) with a minimum resistance of 250 k-ohms while handling circuit packs or working on a shelf/shelves. When grounding jacks are not provided, an alligator clip adapter enables connection to bay frame ground.

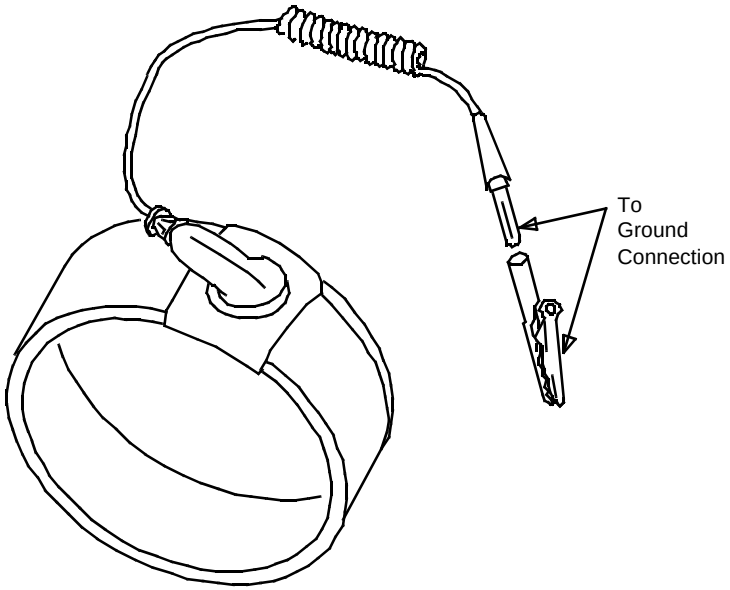

Figure 1. Static Control Wrist Strap

Power Distribution Panel Warnings and Explanations

This section provides power distribution panel warnings and explanations relevant to this document.

CAUTION:
Hazardous voltage/energy inside. Risk of injury. This unit should be accessed only by qualified personnel.

This unit must be installed, serviced, and operated only by skilled and qualified personnel that have the necessary knowledge and practical experience with electrical equipment, and understand the hazards that can arise when working on this type of equipment.

CAUTION:
Inserting fuses into live plant will cause arcing and sparks. Risk of eye injury. Always wear safety glasses. Fuses can produce sparks.

For situations where fuses are used and the loads are capacitive, arcing will occur and sparks will exit from the back of the fuse holder and may even exit out the front when the fuse disconnect head is inserted into the fuse holder base while power is still applied to the circuit. Arcing may be more severe at times due to the discharge state of any downstream capacitors and the amount of charged capacitance in parallel with the circuit. Therefore, follow all appropriate safety precautions when you insert fuses (for example: wear safety glasses). Make

sure other personnel are clear from the front and back of the unit. Do not stand directly in front of the holder when inserting fuses. Try to insert fuse into the fuse holder base quickly to reduce the amount of arcing.

CAUTION:
Battery voltage present. Risk of injury due to high current. Avoid contacting conductors with non-insulated metal objects. Follow Safety Precautions.

Batteries can be connected in parallel with rectifiers. If you turn off rectifiers, it does not necessarily remove power from the bus. Ensure that the battery power is also disconnected. Follow the safety procedures while you work on any equipment that contains hazardous energy or voltage.

CAUTION:
100 volts AC present on fuses.

The ringer circuits contain hazardous secondary AC voltages at 100 V. This potential is present on internal connectors, printed wiring boards (PWBs), and on the fuses. Do not touch exposed fuse indicator terminal while the fuse is inserted in holder.

Related Documents

The following documents provide additional information about the J1C182BC-1 remote terminal ring shelf circuit packs.

363-005-226	*3C1 Ringing Generator - 5SCB644XXX, Data Sheet*
363-005-242	*AUG3 Ring Control Unit - 5SCBM00GXX, Data Sheet*

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Lucent Technologies provides customer assistance on the J1C182BC-1 remote terminal ring shelf, including, but not limited to, troubleshooting assistance, technical consultation, operational problem consultation, procedural advice, and emergency recovery assistance from a qualified system support professional from the Regional Technical Assistance Center (RTAC).

Service is provided from the RTAC at **1-800-CAL-RTAC** (1-800-225-7822). This telephone number is monitored 24 hours a day, 7 days a week. During regular business hours your call will be answered by your local regional RTAC representative. Outside normal business hours, all calls will be answered at a centralized technical assistance center where service-affecting problems will be dispatched immediately to your local RTAC. All other problems will be referred to your local RTAC on the next regular business day.

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Products Organization
Documentation Services
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General Description

1

Contents

Overview

Shelf Description

The J1C182BC-1 remote terminal ring shelf (Figures 1-1 and 1-2) is used to supply ringing voltage to a *SLC* Series 5, *SLC*-2000 Access System, or to an *AnyMedia* access system. The ring shelf has two ringing voltage supplies (GROUPs 1 and 2), each of which contains two ringing generators (3C1 circuit packs) and one ring control unit (AUG3 circuit pack). The ring shelf can be mounted in a standard 23-inch bay or in various cabinets.

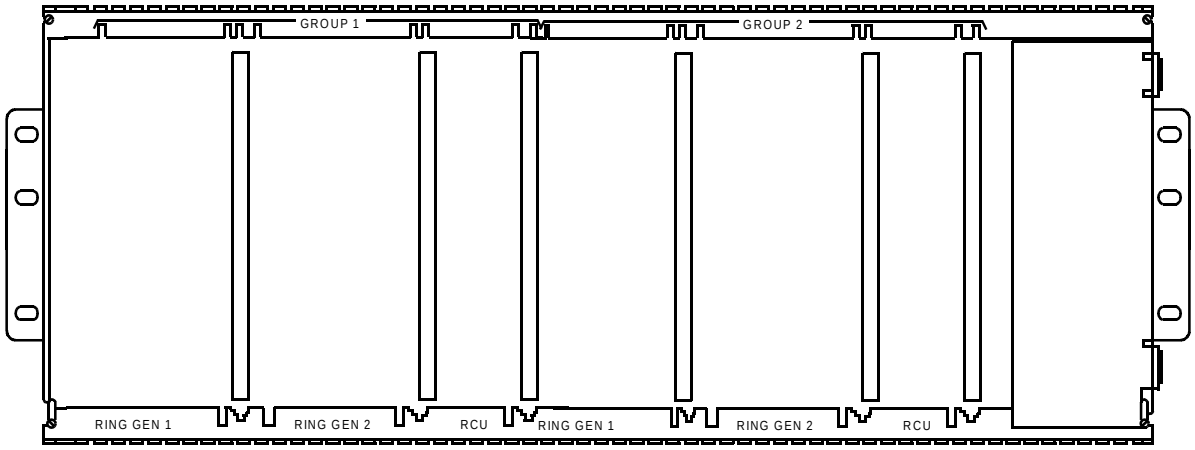


Figure 1-1. Unequipped J1C182BC-1 Remote Terminal Ring Shelf

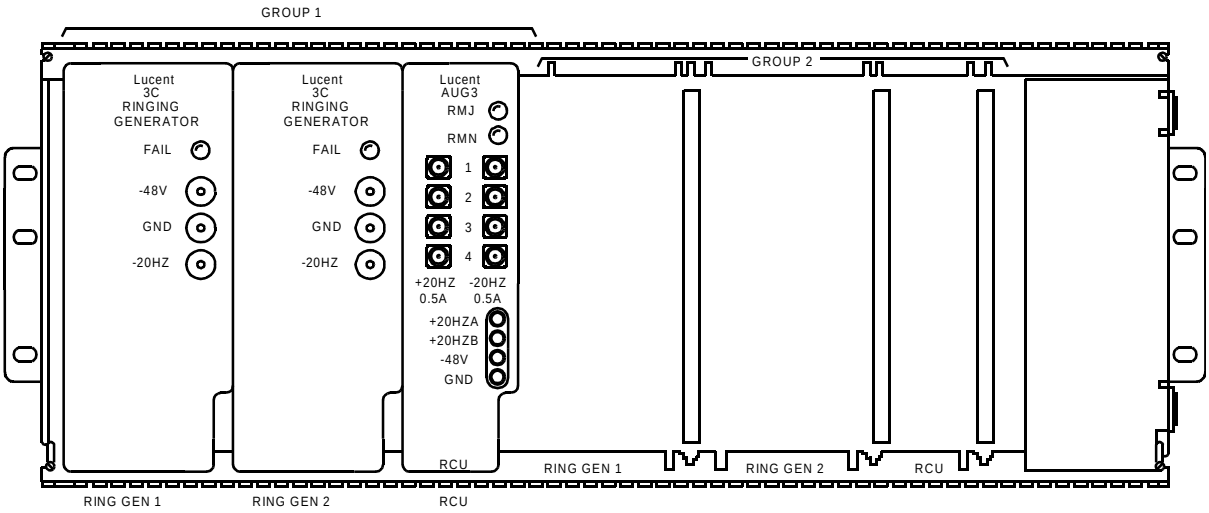


Figure 1-2. Partially Equipped J1C182BC-1 Remote Terminal Ring Shelf

3C1 Ringing Generator

The 3C1 ringing generator provides a 20-Hz negative-superimposed ringing current to satisfy ringing requirements.

DANGER:
The ringing generator contains hazardous voltage when inserted into its slot.

The 3C1 ringing generator contains a DC-DC converter that converts nominal -48 volts into those DC voltages needed for internal operations. The -48 V input fuse is located in the 3C1 ringing generator. A 20-Hz reference circuit controls a power bridge arrangement to generate the 20-Hz ringing signal. Low-pass filtering is provided at the output of the power bridge to remove switching transients.

The 3C1 ringing generator can simultaneously ring 50 telephones. The 3C1 ringing generator supplies 20-Hz, 100 V rms (up to 400 mA rms) ringing superimposed on approximately -55 V DC (up to 180 mA). The output is current limited to one ampere under short circuit conditions. Control circuitry is provided to allow remote shutdown and delayed start-up. Output signaling is provided to control a protection switch or other ringing generator. An alarm lead signals failure to an external monitor.

FAIL (Red LED): This LED lights to indicate an alarm when the 20-Hz ringing voltage drops below approximately 60 volts for more than 5 seconds.

-48V, **GND**, **-20HZ**: Test jacks are provided on the faceplate – one for -48V DC, one for ground, and one for 20-Hz ringing.

The ringing generator in the left-hand position of the group is the main ringing generator. The other ringing generator provides protection if the main ringing generator fails. When the main ringing generator is restored, service automatically switches back to the main ringing generator.

AUG3 Ring Control Unit

The AUG3 ring control unit (RCU) provides input and output fusing protection, alarm indications, and alarm outputs. In addition, the AUG3 RCU performs the following functions:

- Controls the output of the ringing generators to feed two separate loads
- Connects both ringing loads to the working ringing generator and transmits a minor alarm if a ringing generator fails.

The RCU contains two positive ringing supplies used for multi-party service to four or more parties. These supplies feed the two separate loads. The RCU also provides backup for the positive ringing supply; if one fails, both loads are connected to the other supply.

Fuses are 80G type, 0.5 amps, and provide output protection. These fuses are accessible from the faceplate for replacement. An RMN (ringing minor alarm) indicator (yellow) lights when an internal failure has caused a switch of the output load to the protection source. An RMJ (ringing major alarm) indicator lights when

one or more ringing outputs have failed (could be caused by dual circuit failures or a blown output fuse). The faceplate jack provides convenient test access to the 20-Hz ringing sources.

Shelf Installation

2

Contents

Shelf Installation

Overview

The J1C182BC-1 remote terminal ring shelf can be mounted in any standard 23-inch wide bay or in various cabinets. The ring shelf requires -48 V DC to operate. Figures 2-1 and 2-2 are examples that show typical bay arrangements (before and after) for installing a J1C182BC-1 remote terminal ring shelf in a *SLC*-2000 Access System or a *SLC* Series 5 System. Explanations of ***Warnings*** found on the Power Distribution Panels are provided in the "About This Document" section of this manual.

NOTE:
If a baffle is not going to be installed above the ring shelf, you must leave 3 inches of free space above and below the ring shelf.

Figures 2-3, 2-4, and 2-5 show the ring shelf installed in an *AnyMedia* Access system lineup.

Figure 2-1. Typical *SLC*-2000 (or *SLC* Series 5) System Bay Arrangement Before Installing the Ring Shelf

NOTE:
If a baffle is not going to be installed above the ring shelf, you must leave 3 inches of free space above and below the ring shelf.

Figure 2-2. Typical *SLC*-2000 (or *SLC* Series 5) System Bay Arrangement After Installing the Ring Shelf

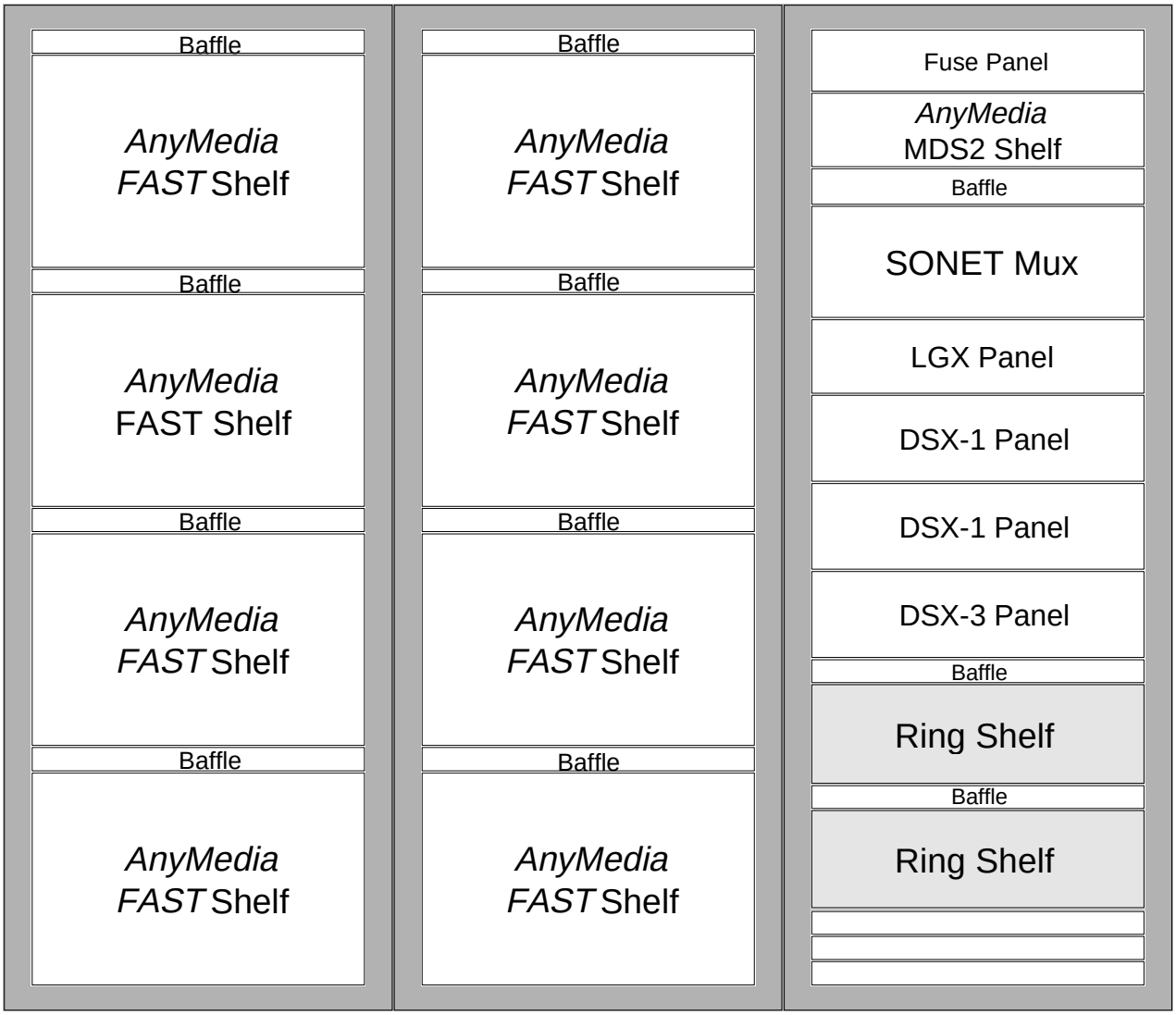


Figure 2-3. Ring Shelf Location for *AnyMedia* 3-Bay Configuration

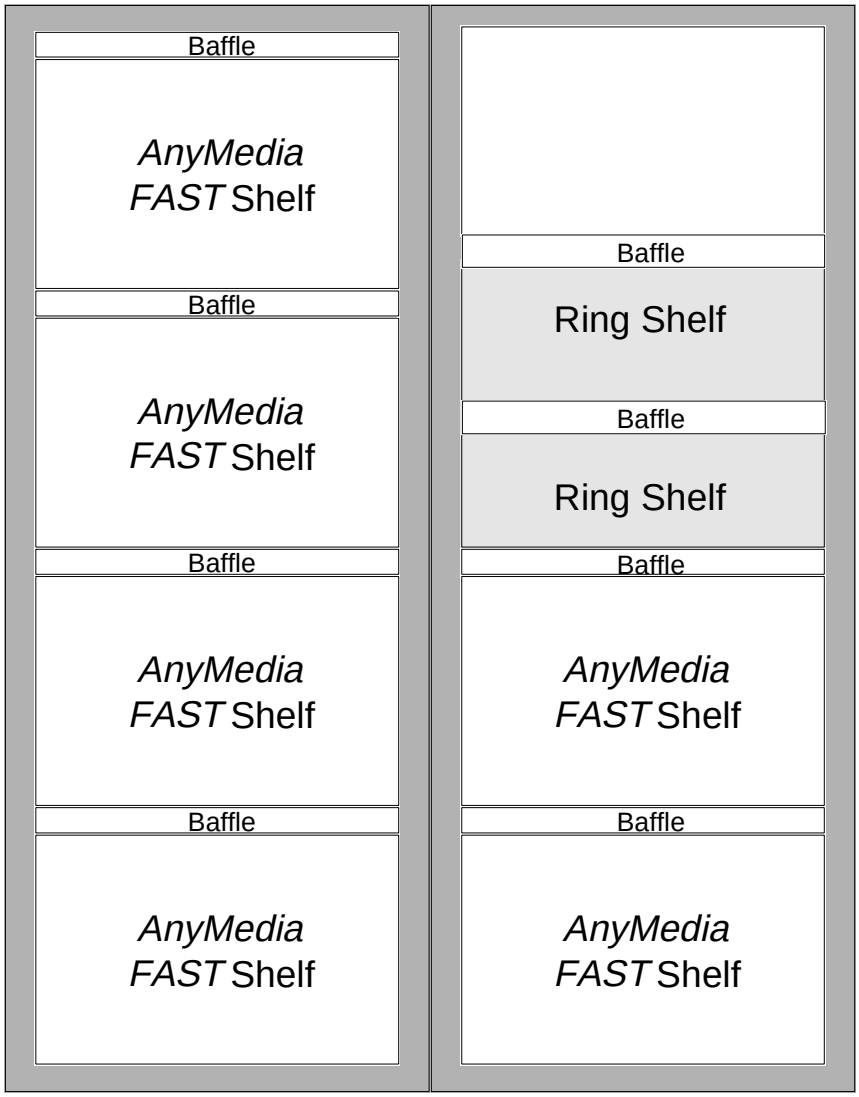


Figure 2-4. Ring Shelf Location for *AnyMedia* 2-Bay Configuration

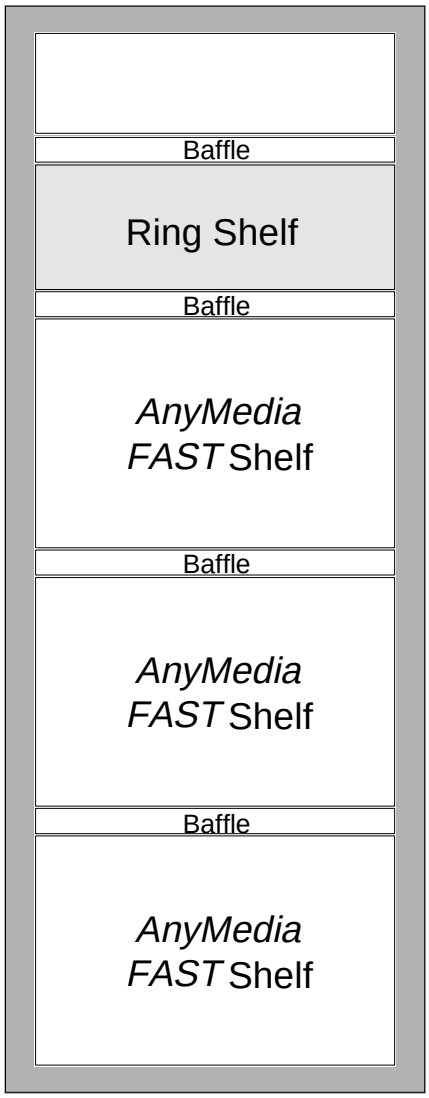


Figure 2-5. Ring Shelf Location for *AnyMedia* 1-Bay Configuration

Procedure

1. Obtain the following tools and materials:
   - Slotted screwdriver (3/8-inch tip)
   - Pliers (rear-mounted List 3 shelf only).
2. Insert the alignment pins into the appropriate bay frame holes to ease putting the shelf into the rack.

NOTE:
If a baffle is not going to be installed above the ring shelf, you must leave 3 inches of free space above and below the ring shelf.

3. Locate the ID LABEL on the left side of the ring shelf. Refer to Figures 2-6 and 2-7.
4. Which ring shelf are you installing?

   If **List 2**, go to Step 14.
   If **List 3**, go to Step 5.

5. Is this a rear-mounted ring shelf installation?

   If **Yes**, go to Step 6.
   If **No**, go to Step 10.

6. Remove the existing mounting brackets from the sideplates.
7. Remove cable grommet from sideplate (using pliers) and push the cables through the provided slot.
8. Move the cable grommet and cable to the grommet hole located nearest the rear of the ring shelf. See Figure 2-8.
9. Rotate each mounting brackets 180 degrees and place them over the rear mounting bracket holes (Figure 2-9). Secure with mounting bracket screws.
10. Slide the shelf into position over the alignment pins and use the screws included with the J1C182BC-1 remote terminal ring shelf to secure the shelf on the bay frame.
11. Remove the alignment pins.
12. Locate the ground strap attached to the left side of the ring shelf (Figure 2-6) and connect it to the bay frame at an unpainted spot or with a thread-cutting screw. Scratch the paint on the rack if necessary.

NOTE:
Before attaching the shelf's ground wire to the bay frame, apply an anti-oxidant such as NO OX-ID "A" to the mounting screw.

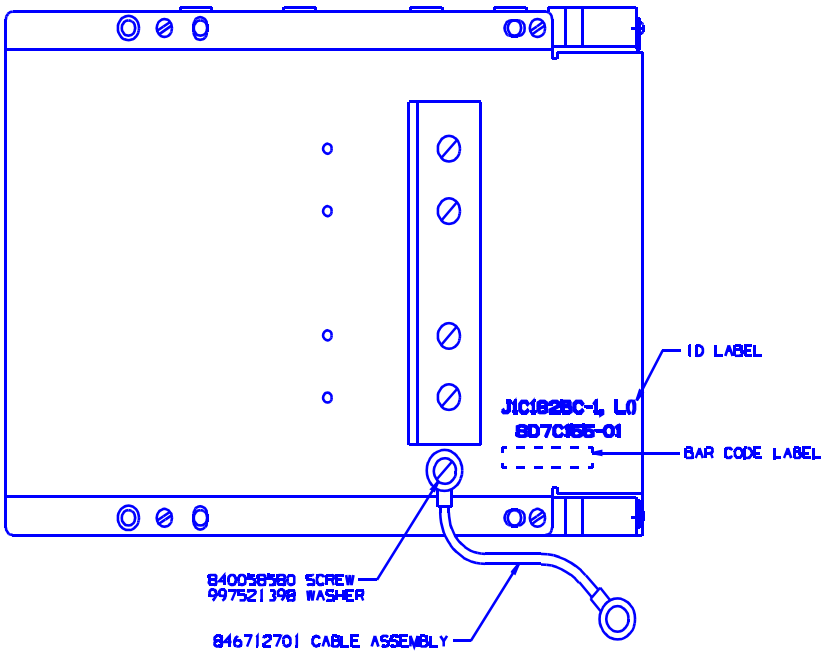


Figure 2-6. Left Side of the J1C182BC-1, List 3 Remote Terminal Ring Shelf

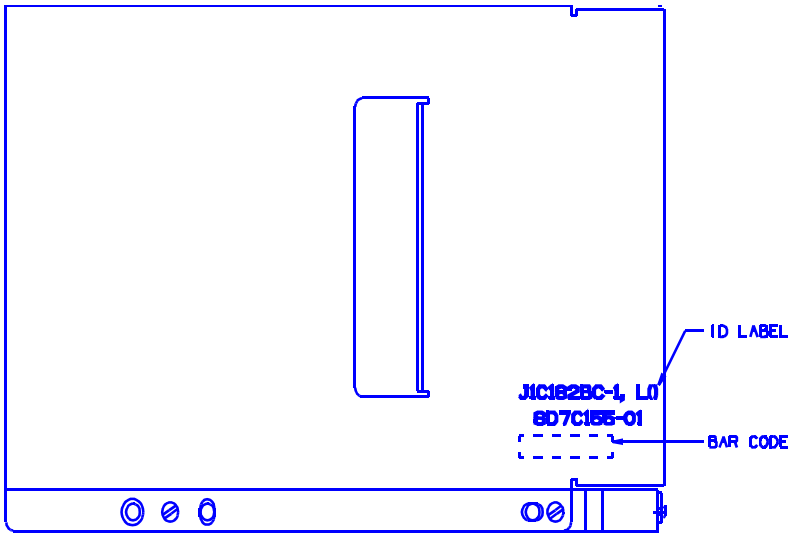


Figure 2-7. Left Side of the J1C182BC-1, List 2 Remote Terminal Ring Shelf

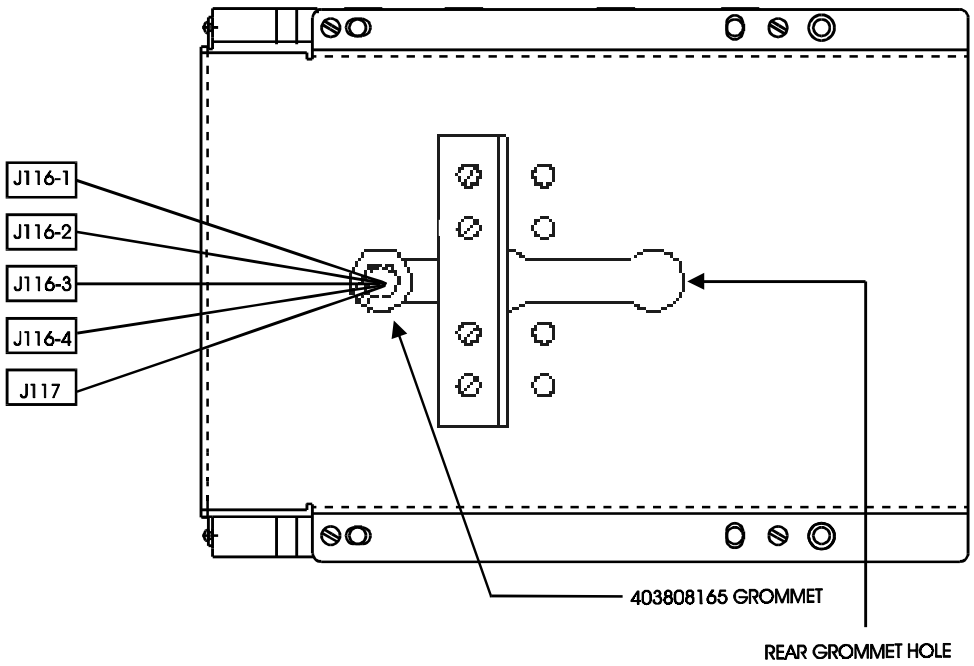


Figure 2-8. Right Side of the J1C182BC-1, List 3 Remote Terminal Ring Shelf

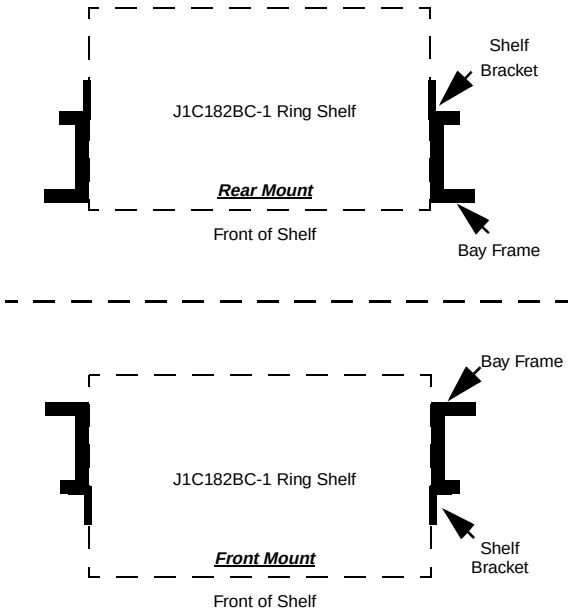


Figure 2-9. J1C182BC-1, List 3 Remote Terminal Ring Shelf Bracket Mounting Positions (Top View)

13. Go to Step 16.

14. Slide the shelf into position over the alignment pins and use the screws included with the J1C182BC-1 remote terminal ring shelf to secure the shelf on the bay frame.

15. Remove the alignment pins.

16. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Cabling

3

Contents

Overview

General

This section provides information on the installation of the J1C182BC-1 remote terminal ring shelf. The remote terminal ring shelf can be mounted miscellaneously or can be provided as part of the cabinet arrangements for use with *AnyMedia*, *SLC*-2000, and *SLC* Series 5 Access Systems. The J1C182BC-1 remote terminal ring shelf, equipped with 3C ringing generator(s) and AUG3 ringing control unit(s), was developed as part of the *SLC* Series 5 Access System and is sometimes provided miscellaneously to furnish the 20-Hz ringing voltage to *AnyMedia* and *SLC*-2000 Access System remote terminals.

The following ringing generator equipment (Table 3-1) is required for the J1C182BC-1 remote terminal ring shelf.

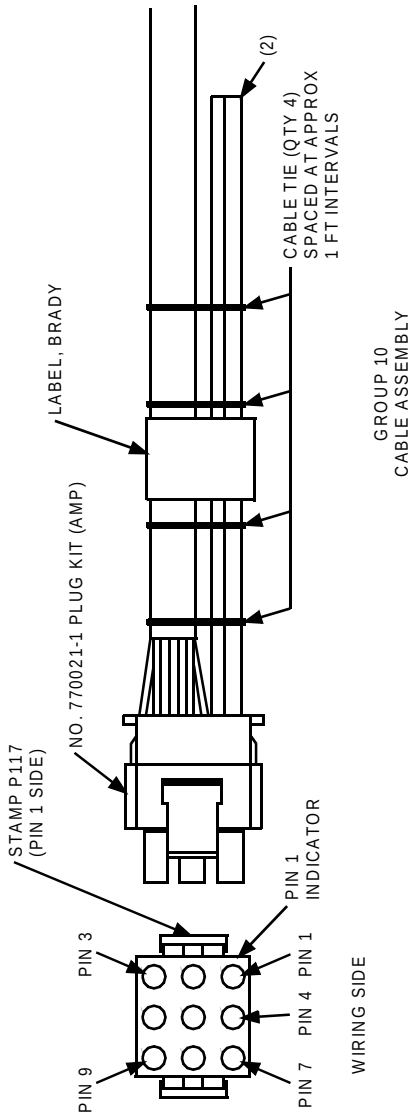
Table 3-1. J1C182BC-1 Remote Terminal Ring Shelf Equipment

Quantity	Code	Description
1	J1C182BC-1	Ring Shelf
2 or 4	3C1	Ringing Generator (1 Amp)
1 or 2	AUG3	Ringing Control Unit

AnyMedia Access System

Cable Assemblies

The ED-7C723-35, Group 10 cable assembly (Figure 3-1) provides -48V and -48V RTN to the J1C182BC-1 remote terminal ring shelf. The ED-7C818-32, Group 19( ) cable assembly (Figure 3-2) connects 20Hz ringing voltage from the ring shelf to the *AnyMedia FAST* and MDS2 shelves. Ringing voltage can also be provided by splicing an ED-7C723-35, Group 9 cable assembly (Figure 3-3) and an ED-7C818-32, Group 6( ) cable assembly (Figure 3-4) together.



CONNECTING TABLE		
P117	DESIGNATION	COLOR
1	MJ1	W-BL
2	MN1	BL-W
3	MJ2	W-O
4	MN2	O-W
5	-	-
6	FRQ	W-G
7	-	-
8	-48V	R
9	-48V RTN	S

Figure 3-1. ED-7C723-35, Group 10 Cable Assembly

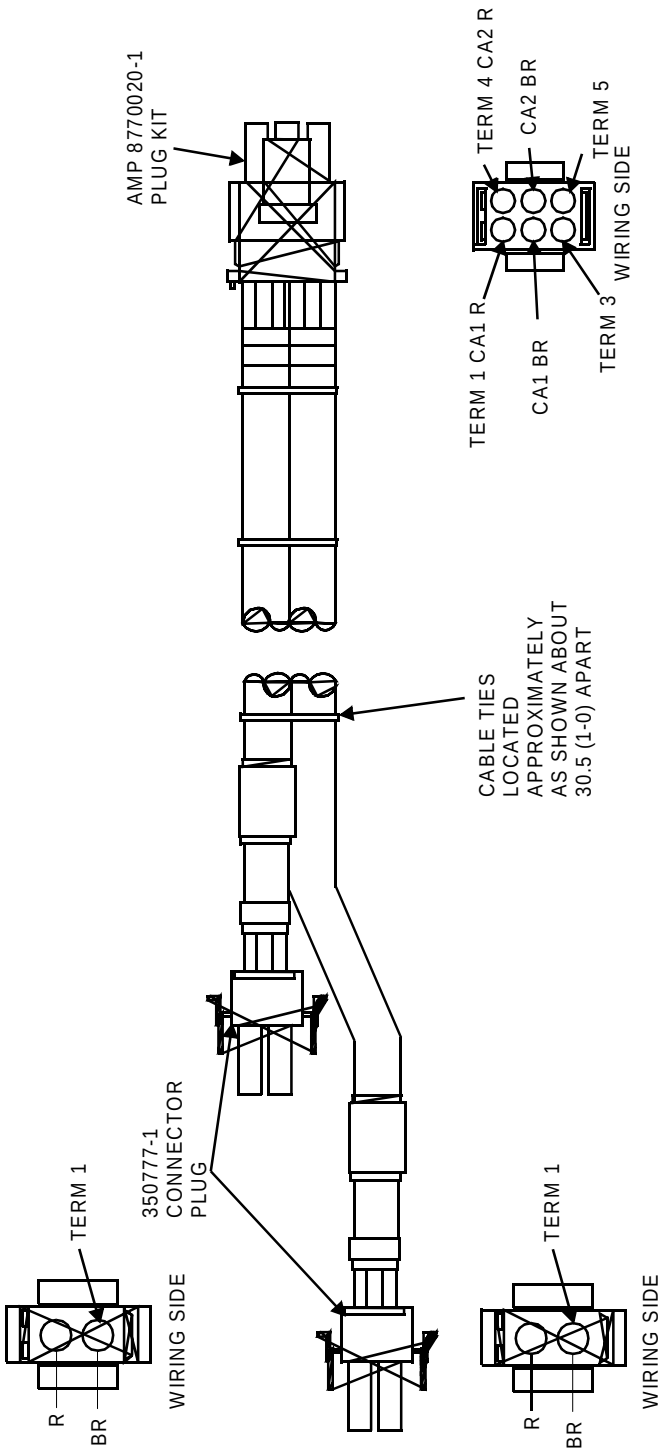


Figure 3-2. ED-7C818-32, Group 19 Cable Assembly

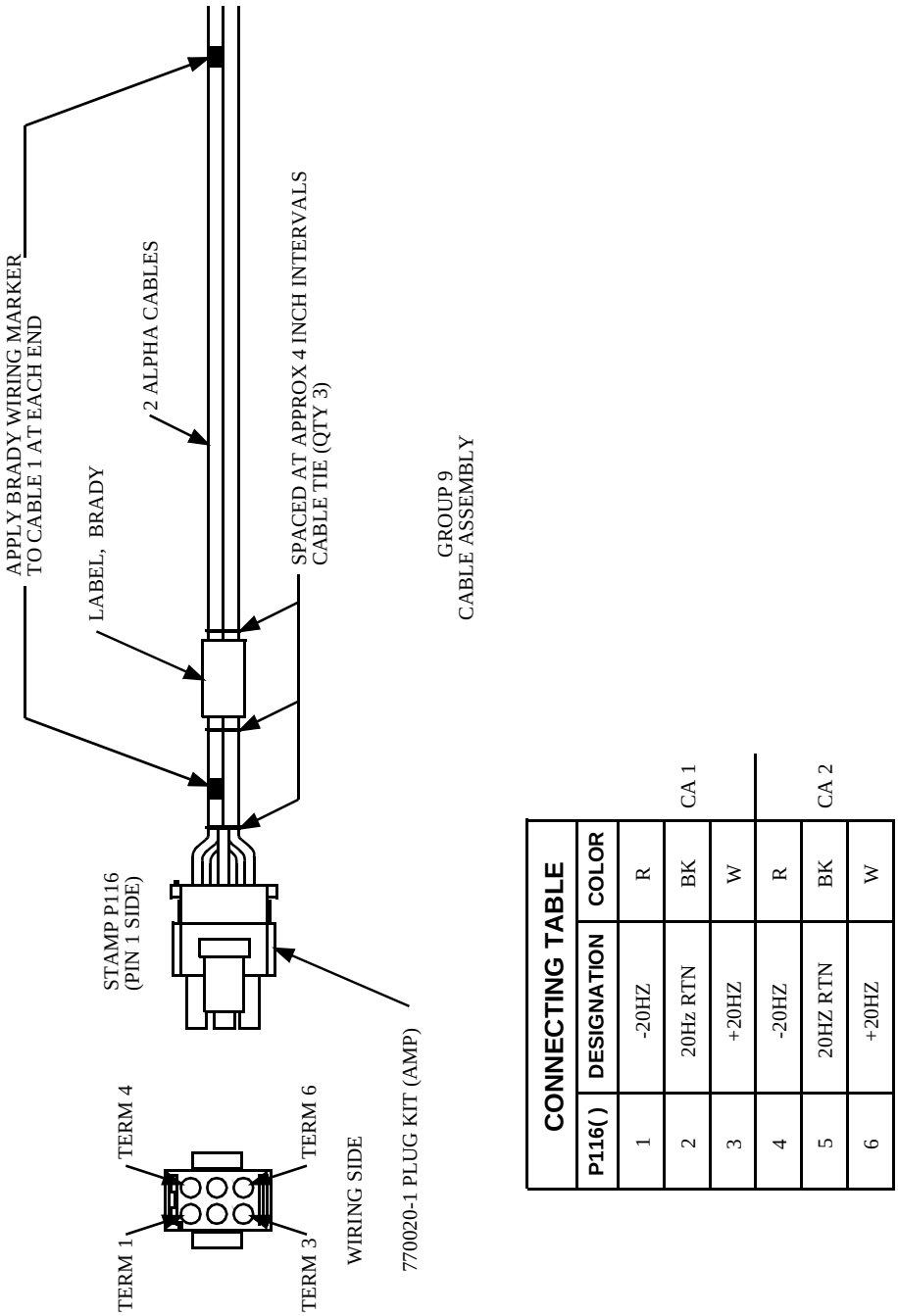


Figure 3-3. ED-7C723-35, Group 9 Cable Assembly

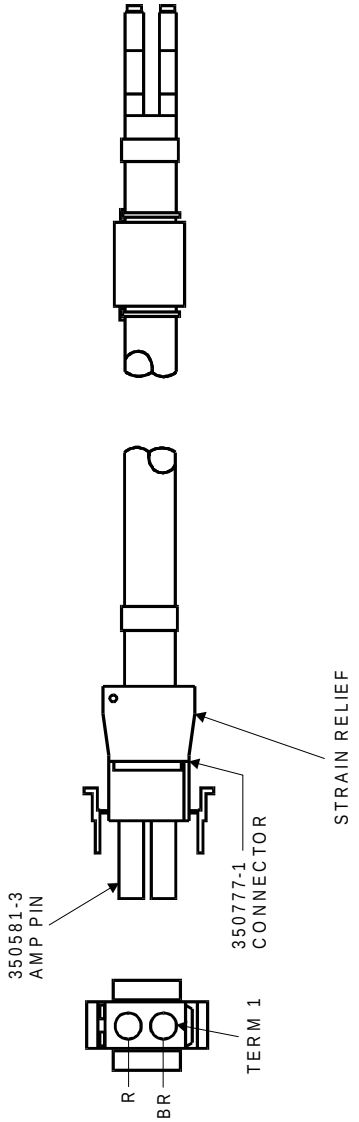


Figure 3-4. ED-7C818-32, Group 6 Cable Assembly

Procedure

1. Locate the following:
   - ED-7C723-35, Group 10 cable assembly (Figure 3-4)
   - ED-7C818-32, Group 19( ) cable assembly ***or*** ED-7C723-35, Group 9 and ED-7C818-32, Group 6( ) cable assemblies.
2. If fuses are installed on the *AnyMedia FAST* (or MDS2) shelves to be connected, remove the -20 HZ fuse.

3. Which ringing supply cable assemblies do you have?

   If **ED-7C818-32, Group 19( ) cable assembly,** go to Step 4.
   If **ED-7C723-35, Group 9 and ED-7C818-32, Group 6( ) cable assemblies**, go to Step 8.

4. Connect the P116 connector end of the ED-7C818-32, Group 19( ) cable assembly to the J116-( ) connector on the ring shelf specified in the Work Order. Refer to Figures 3-5, 3-6, and 3-7 for shelf connector location information. The J1C182BC-1, List 3 shelf connectors are dangling cables. Ring shelf connectors J116-1 and J116-2 are connected to the GROUP 1 ringing supply voltage, while connectors J116-3 and J116-4 are connected to the GROUP 2 ringing supply voltage.

5. Connect one P2 connector at the other end of the ED-7C818-32, Group 19( ) cable assembly to the J2 connector located on top left side of the *AnyMedia FAST* shelf (J1C282AA-1) specified in the Work Order. See Note and Figure 3-7.

NOTE:
For the J1C282AB-1 and J1C282AC-1 *AnyMedia FAST* shelves, the J2 connectors are mating dangler cable connectors dressed out of the left side of the fused circuit module (FCM) of the *AnyMedia FAST* shelf.

6. Connect the other P2 connector to either the J2 connector on another *AnyMedia FAST* shelf or to the J2 connector on an MDS2 shelf. Refer to the Work Order and Figure 3-7.

7. Go to Step 15.

8. Connect the P116 connector end of the ED-7C723-35, Group 9 cable assembly to the J116-( ) connector on the ring shelf specified in the Work Order. Refer to Figures 3-5, 3-6, and 3-8 for shelf connector location information. The J1C182BC-1, List 3 shelf connectors are dangling cables.

9. Connect one of the P2 connectors of the ED-7C818-32 Group 6( ) ringing cable to the J2 connector on the top left side of the *AnyMedia FAST* shelf (J1C282AA-1) specified in the Work Order.

NOTE:
For the J1C282AB-1 and J1C282AC-1 *AnyMedia FAST* shelves, the J2 connectors are mating dangler cable connectors dressed out of the left side of the fused circuit module (FCM) of the *AnyMedia FAST* shelf.

10. Route the cable to the left side of the *AnyMedia FAST* shelf as viewed from the front.

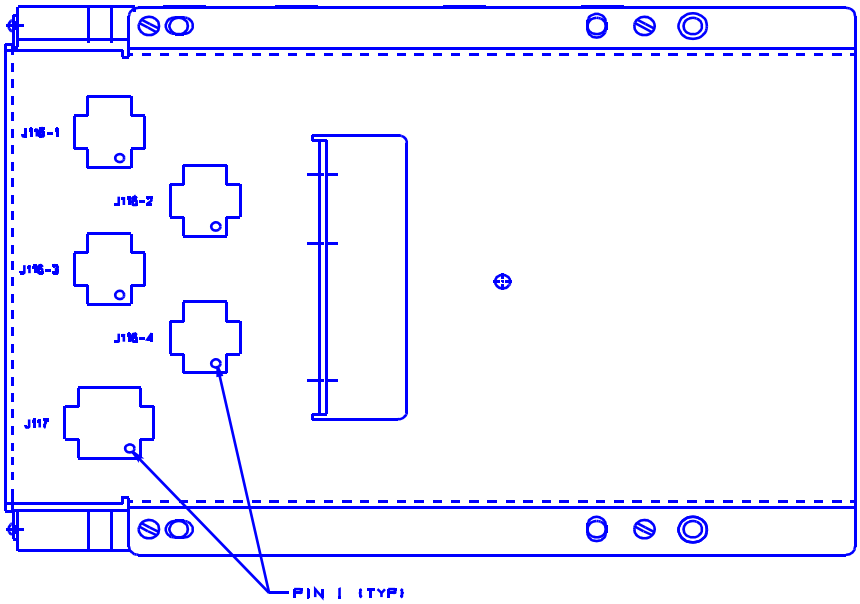


Figure 3-5. Right Side of the J1C182BC-1, List 2 Remote Terminal Ring Shelf

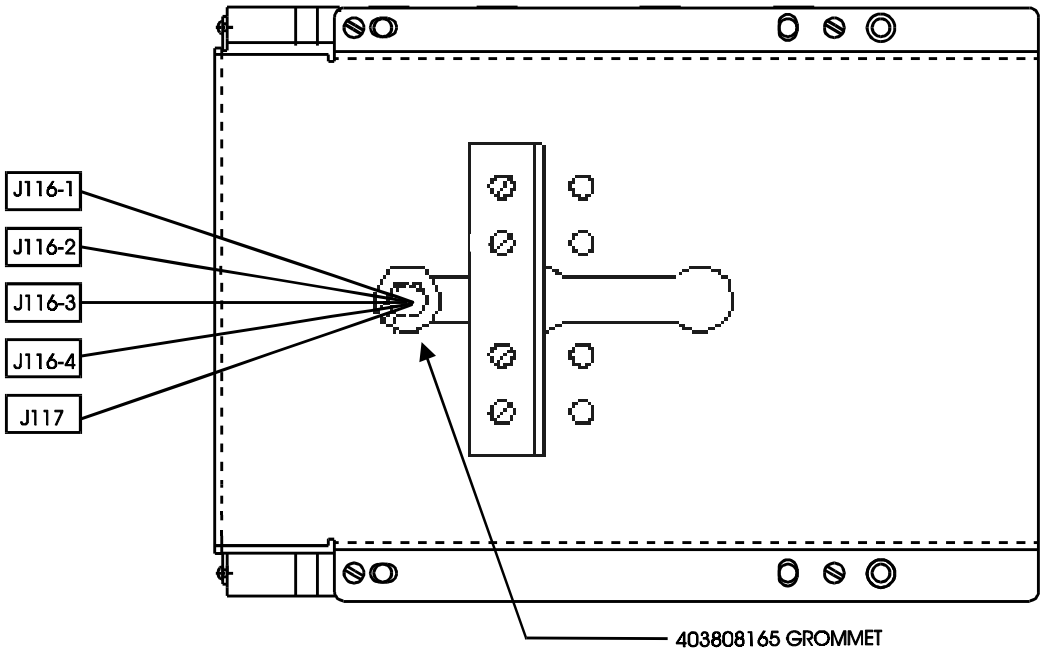
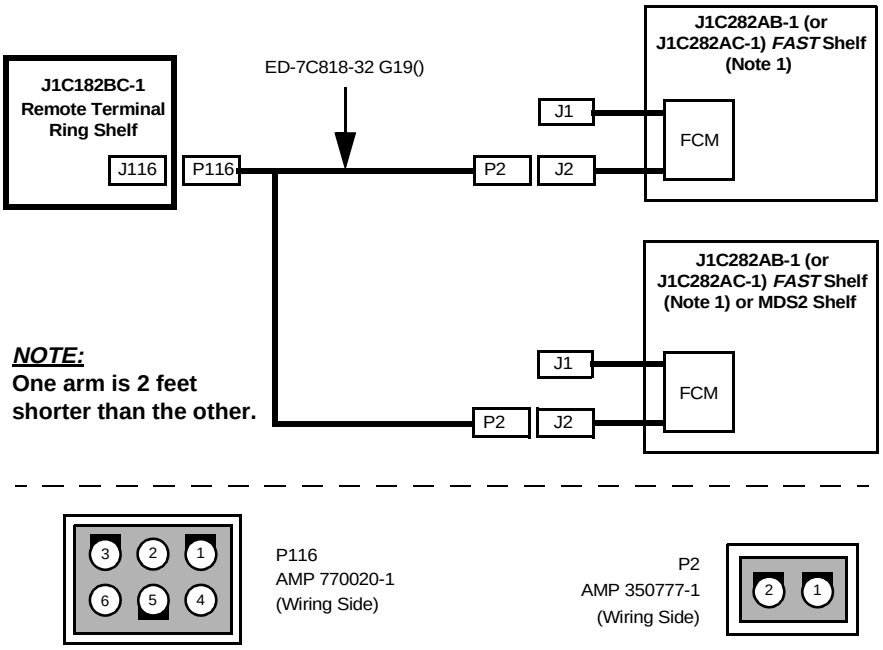


Figure 3-6. Right Side of the J1C182BC-1, List 3 Remote Terminal Ring Shelf

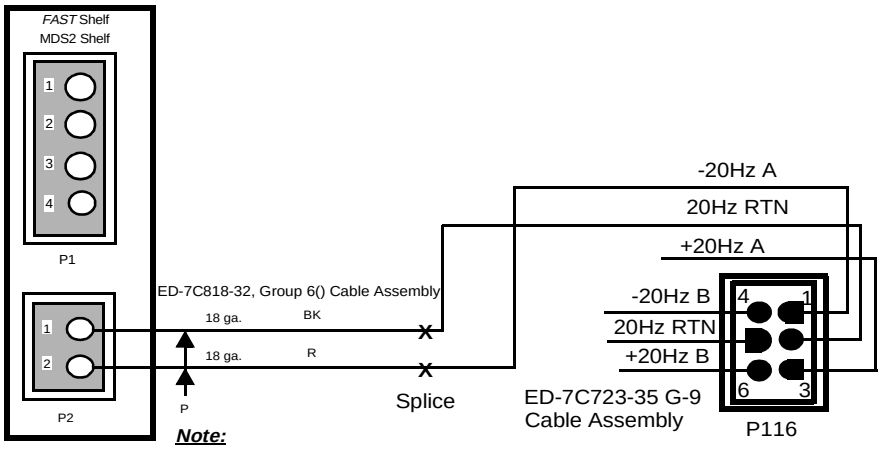


Note 1: The J2 connector is an integral part of the FCM on a J1C282AA-1 *FAST* shelf.

Note 2: The ringing connections to all *FAST* and MDS2 shelves are identical.

Note 3: The two arms of the ED-7C818-32, Group 19() Cable Assembly are approximately 2 feet different in length.

Figure 3-7. ED-7C818-32 G19 Ringing Supply Shelf Cables



Note:

The power connections to the *FAST* and MDS2 shelves are identical.

Figure 3-8. J1C182BC-1 Remote Terminal Ring Shelf Ringing Cabling (ED-7C723-35, Group 9 and ED-7C818-32, Group 6 Cables)

11. Connect the other P2 connector from the ED-7C818-32 Group 6( ) ringing cable to the J2 connector of the other *AnyMedia FAST* (or MDS2) shelf specified in the Work Order.

12. Route the ringing voltage pair of the ED-7C818-32 Group 6( ) ringing cable to the J1C182BC-1 remote terminal ring shelf.

13. Ensure that you leave enough slack in the ED-7C818-32, Group 6( ) and ED-7C723-35, Group 9 cable assemblies to dress and splice the cables.

14. Splice the ringing voltage pair of the ED-7C818-32, Group 6( ) cable assembly to the ringing voltage pair of ED-7C723-35, Group 9 cable assemblies by using a suitable splicing tool. See Figure 3-8.

15. Dress and tie the ringing voltage cables.

16. Connect the P117 connector of the ED-7C723-35, Group 10 cable assembly to the J117 connector on the J1C182BC-1 remote terminal ring shelf. See Figures 3-5 and 3-6 for J117 connector location. The J1C182BC-1, List 3 shelf connectors are dangling cables. Figure 3-9 contains pin connector information for the J1C182BC-1 power cable (ED-7C723-35, Group 10 cable assembly).

17. Connect the power leads (pins 8 and 9) of the ED-7C723-35, Group 10 cable assembly to a -48 V fuse panel or to the BDFB. See Figure 3-9 and Table 3-2.

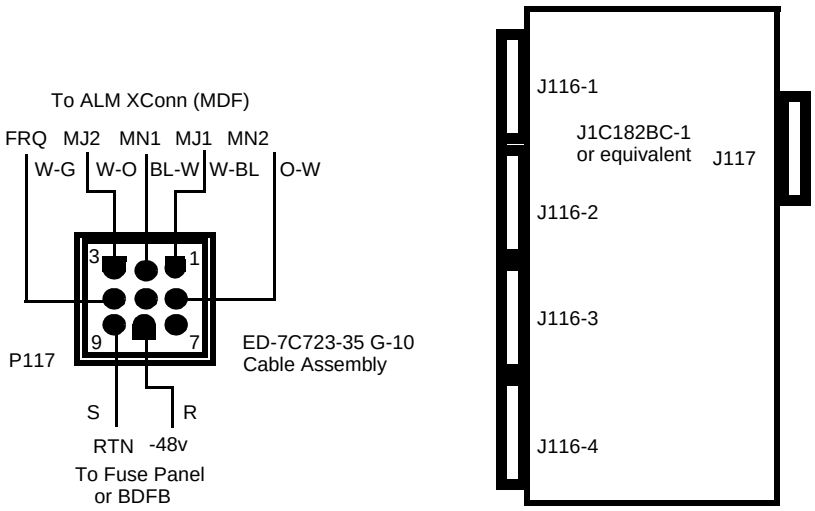


Figure 3-9. J1C182BC-1 Power Cabling

Table 3-2. ED-7C723-35, Group 10 Cable Assembly Connecting Table

P117	Designation	Color
1	MJ1	W-BL
2	MN1	BL-W
3	MJ2	W-O
4	MN2	O-W
5	-	-
6	FRQ	W-B
7	-	-
8	-48V	R
9	-48V RTN	S

18. Route the alarm leads of the ED-7C723-35, Group 10 cable assembly to the miscellaneous alarm pair panel. See Figure 3-9 and Table 3-2. Cross-connect as required.

19. Dress and tie the ED-7C723-35, Group 10 ringing supply power cable.

20. Restore all **-20 HZ** fuses to their proper locations.

21. **STOP. YOU HAVE COMPLETED THIS PROCEDURE**.

SLC-2000 Access System

Procedure

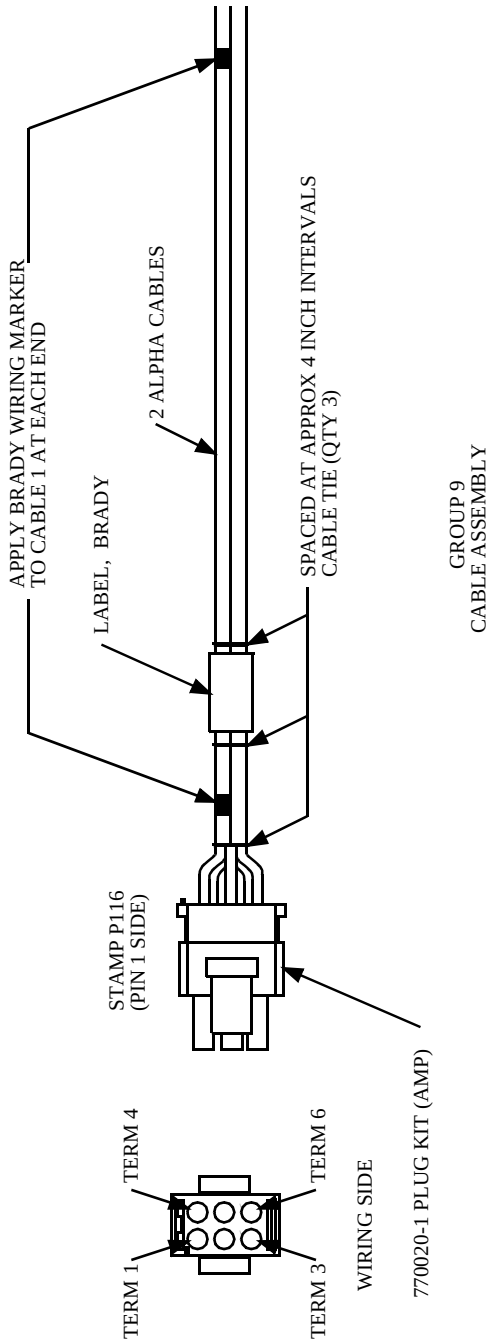
1. Locate the following:
   - ED-7C723-35, Group 9 cable assembly (Figure 3-10)
   - ED-7C723-35, Group 10 cable assembly (Figure 3-11).
2. Connect the first ED-7C723-35, Group 9 cable assembly to the J116-1 connector on the right side of the J1C182BC-1 remote terminal ring shelf per the Work Order. See Figures 3-12 and 3-13 for location of J116-( ) connectors.
3. Repeat Step 2 for each ED-7C723-35, Group 9 cable assembly you want to connect to the J1C182BC-1 remote terminal ring shelf. Refer to the Work Order.
4. Dress the cables. Run each cable above the *SLC*-2000 *Access System* being connected and then down on the right side of the *SLC*-2000 ARM shelf. There is a Power Interface Unit (PIU) on the right side of the ARM shelf. The PIU is a metal box on a hinge. Loosen the screw on the top to open the box. When the box is open, a terminal block is exposed. This is where power and ringing are fed to the *SLC*-2000 *Access System*. See Figure 3-14 and Table 3-3 for details.

CAUTION:
Do not touch metal to any adjacent terminals currently in use.

5. Dress, strip, and skin the wires at the other end of each ED-7C723-35, Group 9 cable assembly to prepare for termination through the grommets on the bottom of the PIUs.

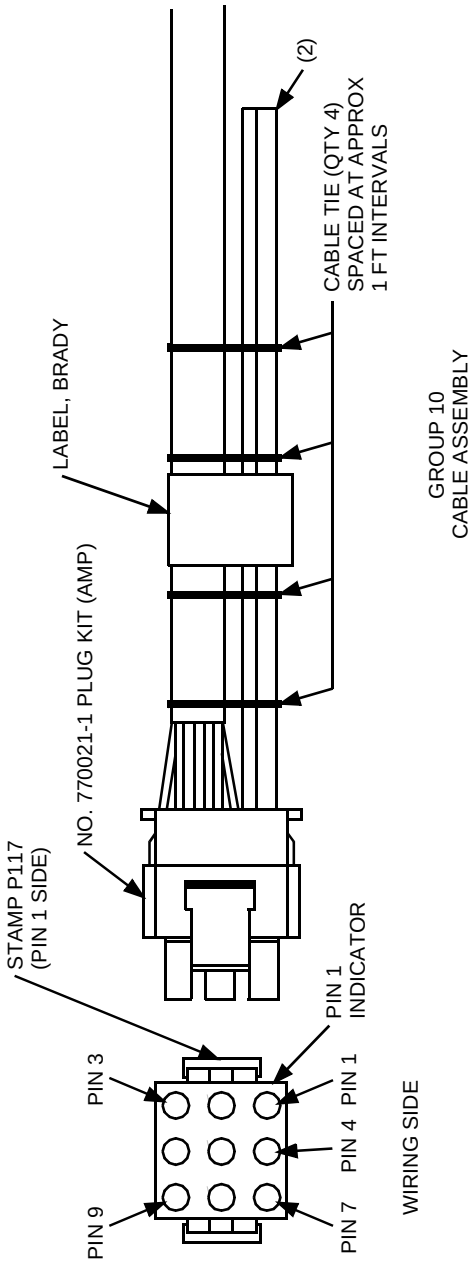
NOTE:
Two cable bundles are located at the other end of each ED-7C723-35, Group 9 cable assembly; one for A and the other for B. Each cable bundle has a red, black, and a white wire.

6. Open the PIU of the first *SLC*-2000 ARM shelf to be connected so that you can reach the terminal block inside.
7. Verify that there is no AC voltage on the TB1 -20Hz and -20HzRTN for both A and B (terminals 5, 6, 7, 8, 9, and 10 inside the PIU). See Figures 3-14 and 3-15, and Table 3-3.
8. Terminate the red, black, and white wires of the ED-7C723-35, Group 9 cable assembly to the PIU terminal block of the *SLC*-2000 ARM shelf being connected by using the scheme shown in Figure 3-15 and Table 3-3.



CONNECTING TABLE			
P116( )	DESIGNATION	COLOR	
1	-20HZ	R	CA 1
2	20Hz RTN	BK	
3	+20HZ	W	
4	-20HZ	R	CA 2
5	20HZ RTN	BK	
6	+20HZ	W	

Figure 3-10. ED-7C723-35, Group 9 Cable Assembly



CONNECTING TABLE		
P117	DESIGNATION	COLOR
1	MJ1	W-BL
2	MN1	BL-W
3	MJ2	W-O
4	MN2	O-W
5	-	-
6	FRQ	W-G
7	-	-
8	-48V	R
9	-48V RTN	S

Figure 3-11. ED-7C723-35, Group 10 Cable and Pin Out

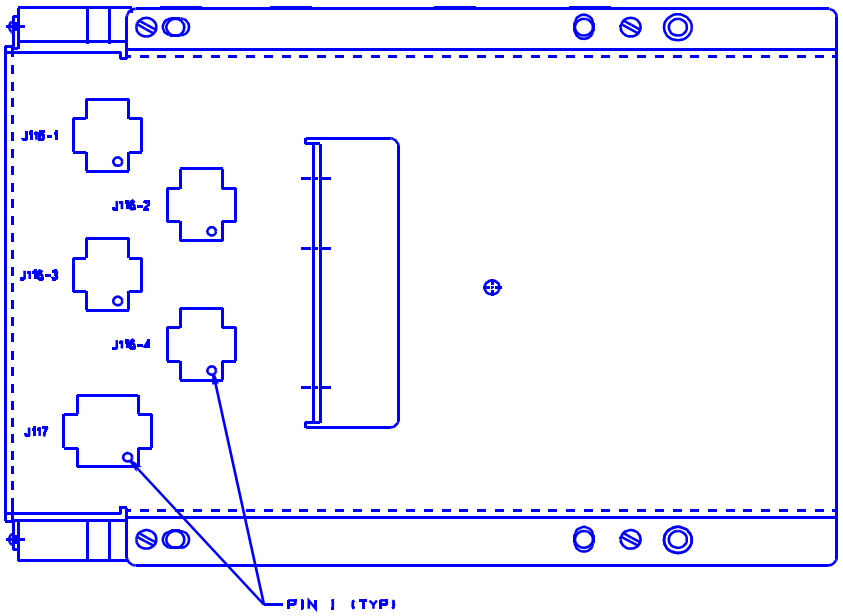


Figure 3-12. Right Side of the J1C182BC-1, List 2 Remote Terminal Ring Shelf

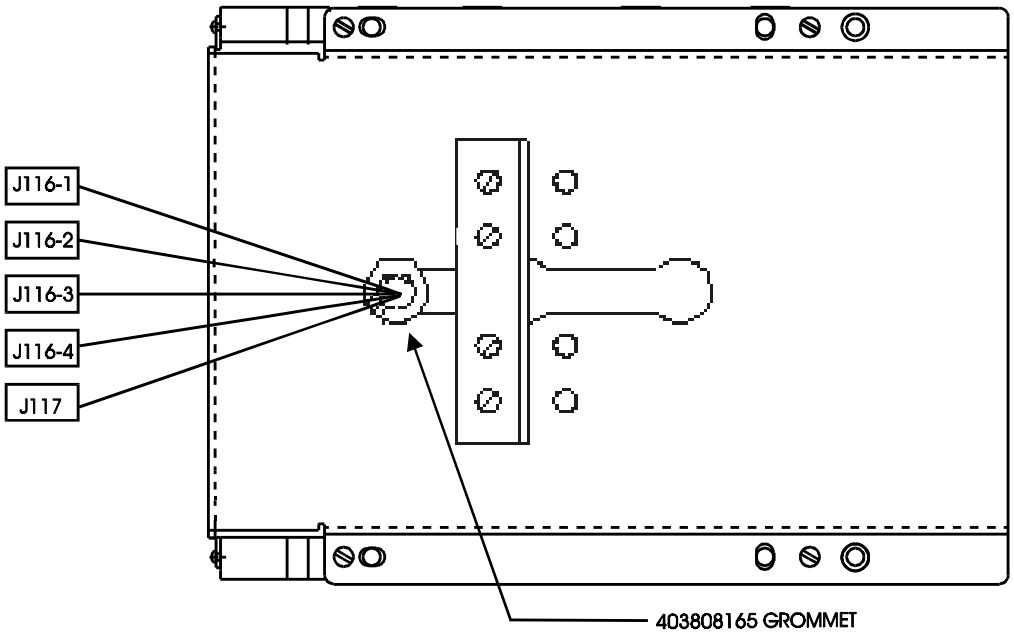


Figure 3-13. Right Side of the J1C182BC-1, List 3 Remote Terminal Ring Shelf

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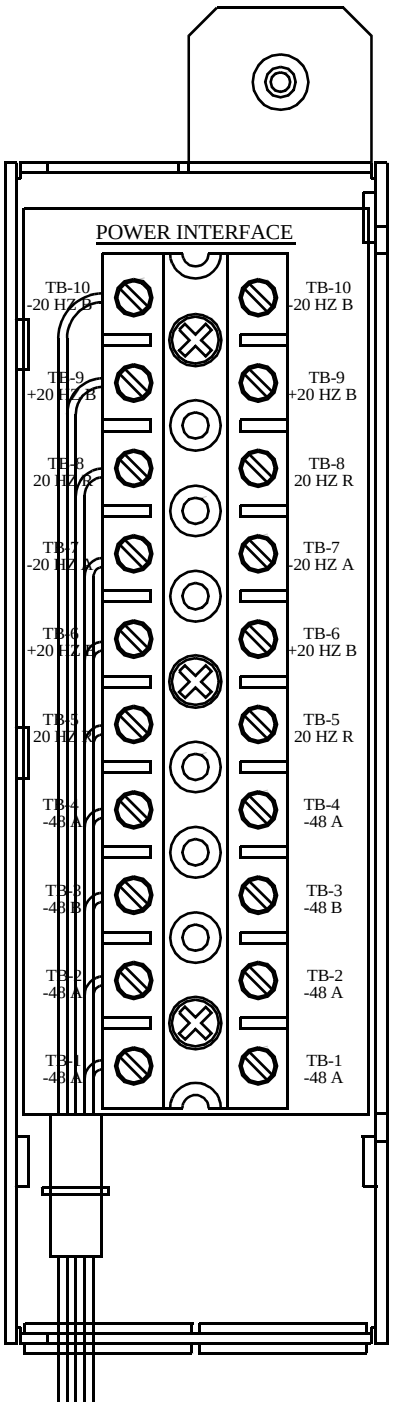


Figure 3-14. *SLC*-2000 Power Interface Unit (PIU) Terminal Block

Table 3-3. *SLC*-2000 PIU Terminal Block Description

Terminal Block Number	Designation	Color
10	-20 Hz B	Red
9	+20 Hz B	White
8	20 Hz R	Black
7	-20 Hz A	Red
6	+20 Hz A	White
5	20 Hz R	Black

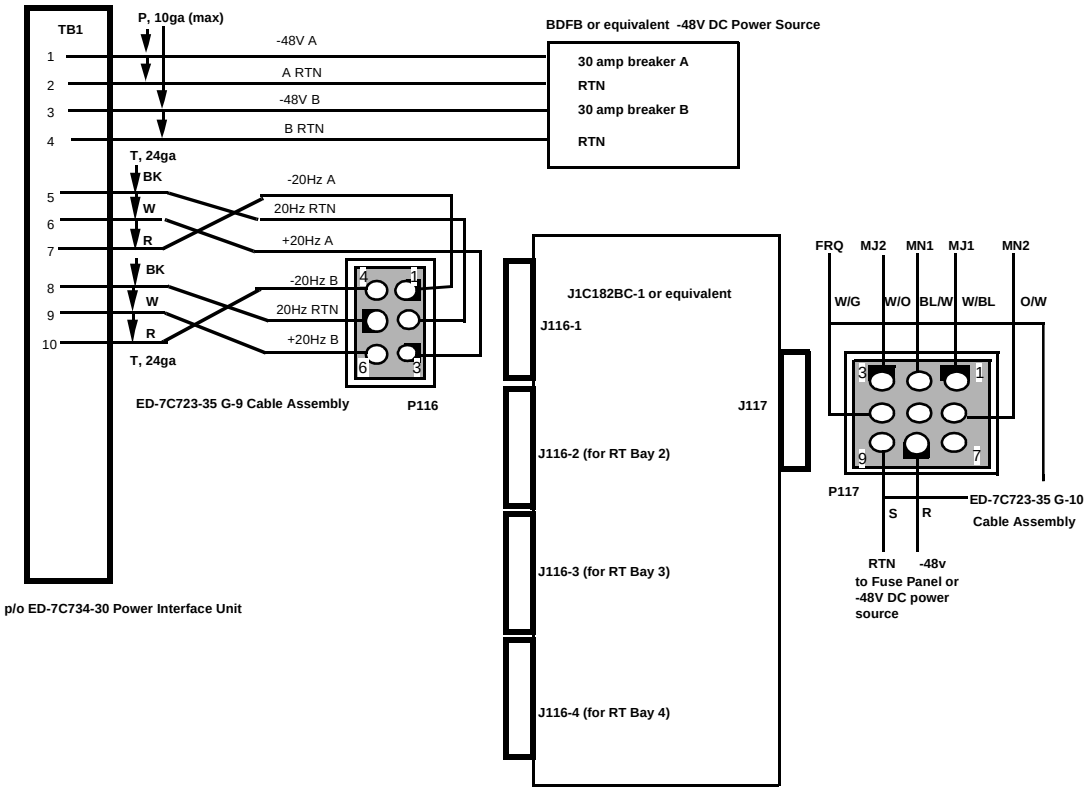


Figure 3-15. *SLC*-2000 Power and Ringing Cabling (J1C182BC-1 Remote Terminal Ring Shelf)

NOTE:
Assign the wires coming out of the CA1 bundle of the ED-7C723-35, Group 9 cable assembly as the “A” ring feed. The CA2 bundle can be used as the “B” ring feed.

9. Close the PIU.

10. Dress and tie down the ED-7C723-35, Group 9 cable assembly.

11. Repeat Steps 6 through 10 for each remaining *SLC*-2000 ARM shelf to be connected to the J1C182BC-1 remote terminal ring shelf.

12. Connect the ED-7C723-35, Group 10 cable to J117 on the right side of the J1C182BC-1 remote terminal ring shelf per the Work Order. See Figures 3-12 and 3-13 for the location of J117.

13. Dress the cable above the rack above the power distribution panel.

CAUTION:
Do not allow the Group 10 cable to run parallel to the existing power cable. Do not allow any of the wires to touch the power distribution shelf at this time.

14. Connect the remaining alarm wires from the ED-7C723-35, Group 10 cable assembly (Pins 1, 2, 3, and 4) to the miscellaneous alarm pair panel per the Work Order. Figure 3-11 and Table 3-4 contain pin connecting information for the ED-7C723-35, Group 10 cable assembly. See Notes.

Table 3-4. ED-7C723-35, Group 10 Cable Assembly Connecting Table

P117	Designation	Color
1	MJ1	W-BL
2	MN1	BL-W
3	MJ2	W-O
4	MN2	O-W
5	-	-
6	FRQ	W-B
7	-	-
8	-48V	R
9	-48V RTN	S

NOTE:
Pins 8 and 9 bring power from the power distribution panel into the J1C182BC-1 remote terminal ring shelf. This procedure is in Step 19.

NOTE:
MJ1 and MN1 correspond to the circuit packs inserted into the left side of the ring shelf. If you are equipping only the left side, only Pins 1 and 2 will actually be wired into the *SLC*-2000 ARM shelf as RTMJ and RTMN alarms.

15. Locate the ED-7C723-35, Group 8 or 8A cable assembly and connector P304 on the *SLC*-2000 ARM shelf. See Figures 3-16 and 3-17 and Tables 3-5 and 3-6.

16. Ensure that the ED-7C723-35, Group 8 (or 8A) cable connected to connector P304 on the *SLC*-2000 ARM shelf terminates on the miscellaneous alarm pair panel.

NOTE:
If a cable is not connected to the P304 connector on the *SLC*-2000 ARM shelf, then you must provide one (and connected) or the P304 connector must be connected (spliced) to the Group 10 cable using local procedures. Refer to Table 3-4 and Figures 3-16 and 3-17.

17. Strap Pin 1 (**MJ1**) of Group 10 cable to Pin 1 (**RTMJ**) of Group 8 or 8A cable on the miscellaneous alarm pair panel.

18. Strap Pin 2 **MN1** of Group 10 cable to Pin 2 **RTMN** of Group 8 (or 8A) cable on the miscellaneous alarm pair panel.

NOTE:
Perform the following steps to provide power to the J1C182BC-1 remote terminal ring shelf.

19. Terminate the red (-48V Return) and slate (-48V Load) wires (pins 8 and 9) on the ED-7C723 Group 10 cable attached to the J117 connector on the J1C182BC-1 shelf to a fused -48V DC source. See Figure 3-15 and Note.

NOTE:
Be sure to use NO OX-ID on the ground bar for -48V Return.

20. **STOP**. **YOU HAVE COMPLETED THIS PROCEDURE**.

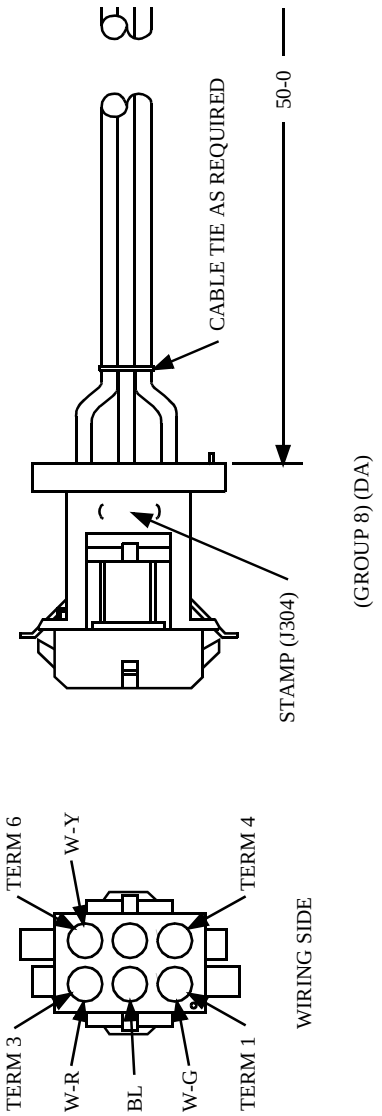


Figure 3-16. ED-7C723-35 Group 8 Cable Assembly

Table 3-5. ED-7C723-35 Group 8 Cable and Pin Outs

Terminal	Alarm	Color Code
1	RTMJ	W-G
2	RTMN	BL
3	RTPMN	W-R

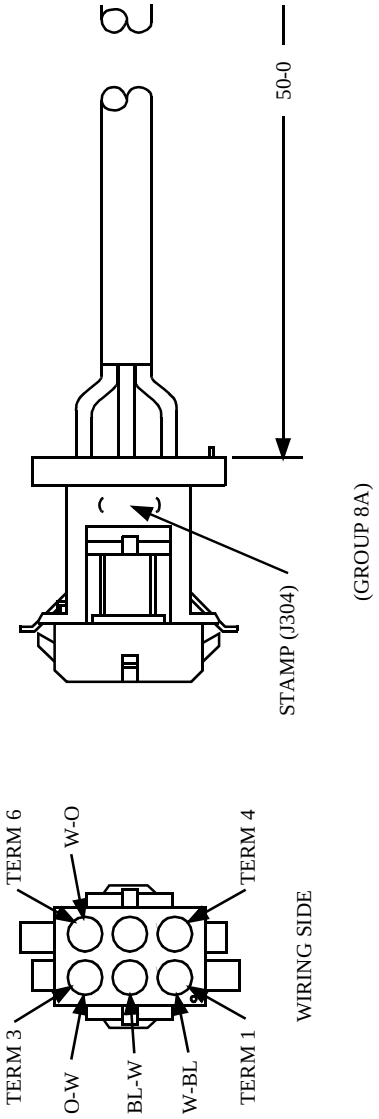


Figure 3-17. ED-7C723-35 Group 8A Cable Assembly

Table 3-6. ED-7C723-35 Group 8A Cable and Pin Outs

Terminal	Alarm	Color Code
1	RTMJ	W-BL
2	RTMN	BL-W
3	RTPMN	O-W

SLC Series 5 Access System

Procedure

1. Locate the following:
   - ED-7C723-35, Group 9 cable assembly (Figure 3-18)
   - ED-7C723-35, Group 10 cable assembly (Figure 3-19)
   - 12-pin male AMP, Inc. *Mate-N-Lok II*™ connector for each *SLC* Series 5 access system to be connected to the ring shelf.
2. Connect the first ED-7C723-35, Group 9 cable assembly to the J116-1 connector on the right side of the J1C182BC-1 remote terminal ring shelf per the Work Order. See Figures 3-20 and 3-21 for location of J116-( ) connectors.
3. Repeat Step 2 for each ED-7C723-35, Group 9 cable assembly to be connected to the J1C182BC-1 remote terminal ring shelf. Refer to the Work Order.
4. Dress the cables. Run each cable above the *SLC* Series 5 Access System being connected and then down on the right side of the *SLC* Series 5 shelf.

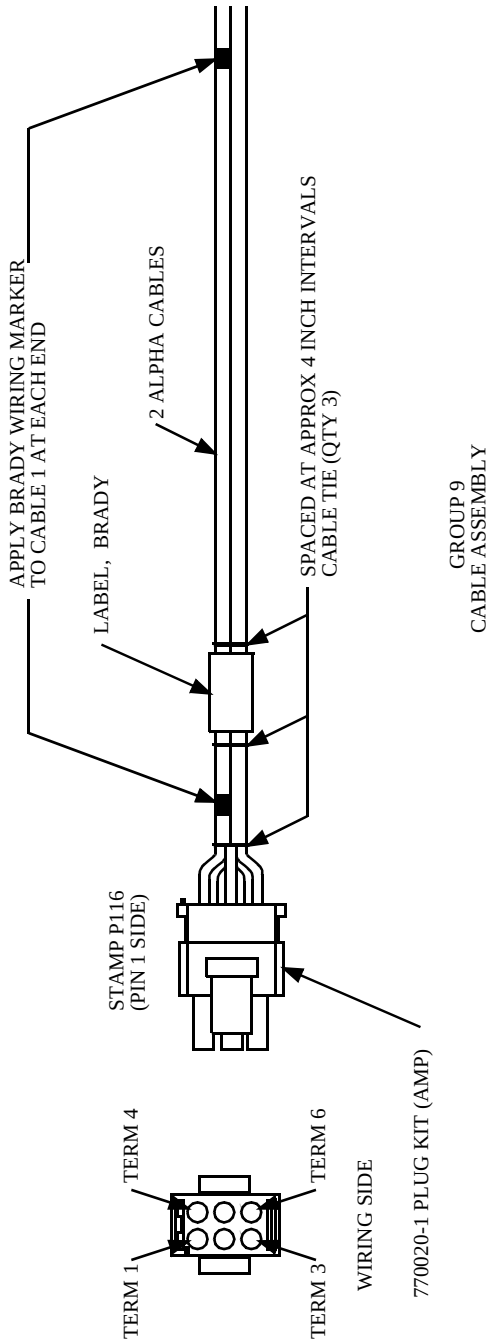
CAUTION:
Do not touch metal to any adjacent terminals currently in use.

5. Dress, strip, and skin the wires at the other end of each ED-7C723-35, Group 9 cable assembly to prepare for termination to the P108B-1 plug (dangler) on the *SLC* Series 5 shelf.

NOTE:
If a male *Mate-N-Lok II* connector is not available, use local procedures to splice the red and black leads from the ED-7C723-35, Group 9 cable assembly to the dangler cable connector containing the P108B plug.

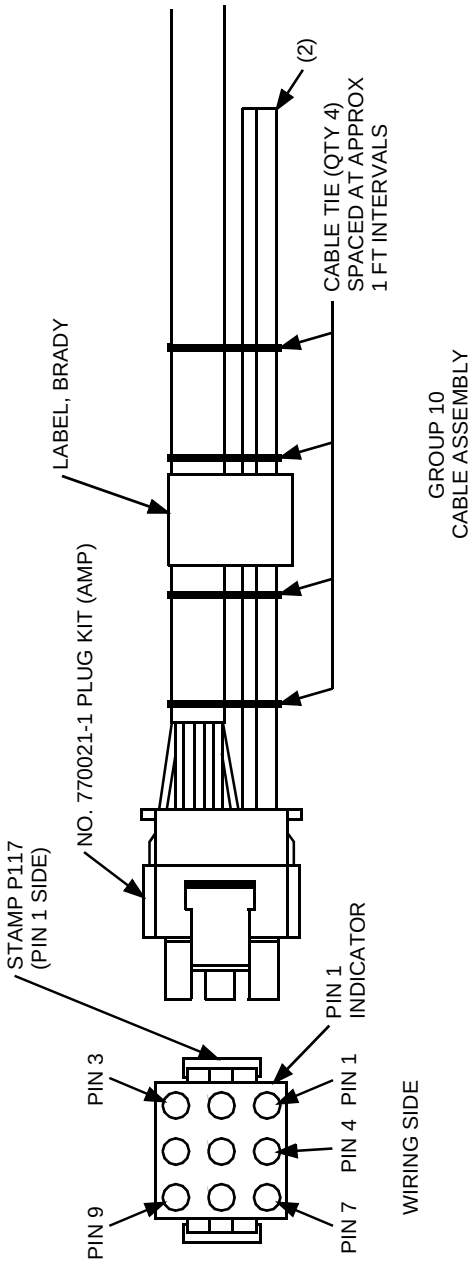
6. Terminate the red and black wires from the first ED-7C723-35, Group 9 cable assembly to the 12-pin male Mate-N-Lok connector as shown in Table 3-7. The white leads (+20HZ) are not used.

NOTE:
Assign the wires coming out of CA1 bundle of the ED-7C723-35, Group 9 cable assembly as the “A” ring feed. CA2 bundle can be used as the “B” ring feed.



CONNECTING TABLE			
P116( )	DESIGNATION	COLOR	
1	-20HZ	R	CA 1
2	20Hz RTN	BK	
3	+20HZ	W	
4	-20HZ	R	CA 2
5	20HZ RTN	BK	
6	+20HZ	W	

Figure 3-18. ED-7C723-35, Group 9 Cable Assembly



CONNECTING TABLE		
P117	DESIGNATION	COLOR
1	MJ1	W-BL
2	MN1	BL-W
3	MJ2	W-O
4	MN2	O-W
5	-	-
6	FRQ	W-G
7	-	-
8	-48V	R
9	-48V RTN	S

Figure 3-19. ED-7C723-35, Group 10 Cable and Pin Out

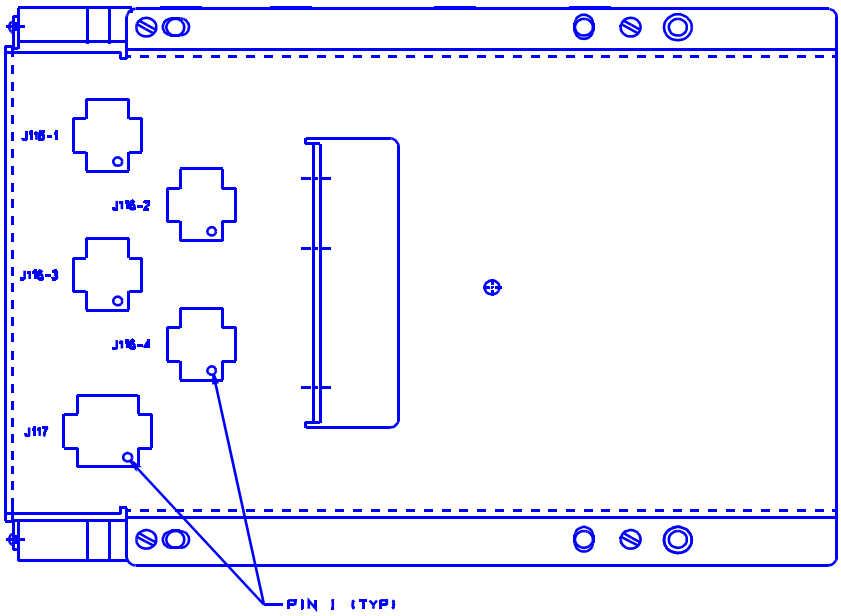


Figure 3-20. Right Side of the J1C182BC-1, List 2 Remote Terminal Ring Shelf

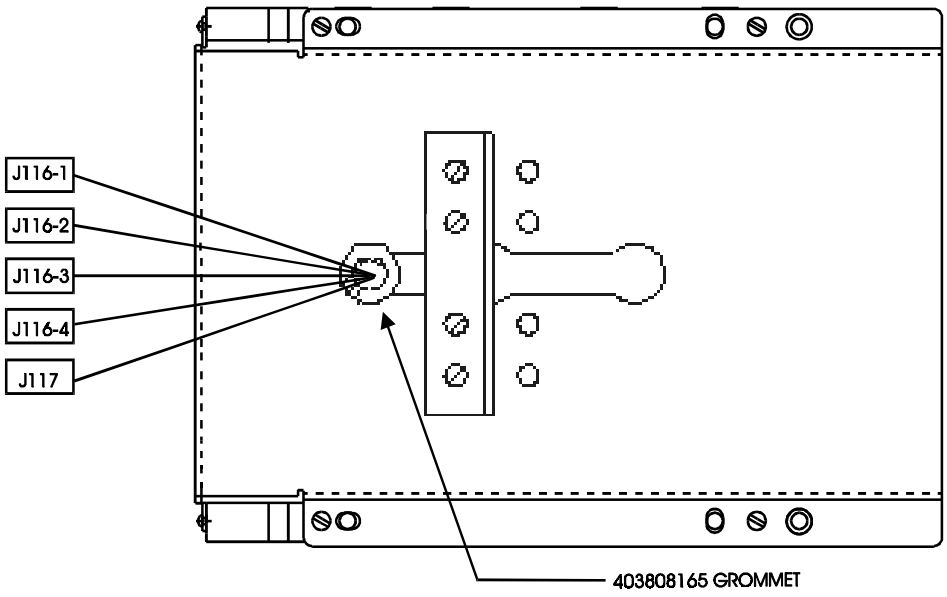


Figure 3-21. Right Side of the J1C182BC-1, List 3 Remote Terminal Ring Shelf

Table 3-7. ED-7C723-35, Group 9 Cable Assembly to J108B-1 Connector Connections

ED-7C723-35, Group 9 CA		12-Pin *Mate-N-Lok II* Connector Pins
CA1	R	1
	BK	2
CA2	R	7
	BK	8

7. Dress and tie down the ED-7C723-35, Group 9 cable assembly.

8. Repeat Steps 6 and 7 for each ED-7C723-35, Group 9 cable assembly shown in the Work Order.

9. Connect the assembly containing the ED-7C723-35, Group 9 cable and the male *Mate-N-Lok II* connector to the P108B dangler plug of each *SLC* Series 5 shelf being connected to the ring shelf.

10. Connect the ED-7C723-35, Group 10 cable to J117 on the right side of the J1C182BC-1 remote terminal ring shelf per the Work Order. See Figures 3-20 and 3-21 for the location of J117.

11. Dress and tie the cable above the rack above the power distribution panel.

CAUTION:
Do not allow the Group 10 cable to run parallel to the existing power cable. Do not allow any of the wires to touch the power distribution shelf at this time.

12. Bring the rest of the alarm wires from the ED-7C723-35, Group 10 cable assembly (Pins 1, 2, 3, and 4) out for connection to the miscellaneous alarm pair panel per the Work Order. Figure 3-19 and Table 3-8 contain pin connecting information for the ED-7C723-35, Group 10 cable assembly. See Notes.

NOTE:
Pins 8 and 9 bring power from the power distribution panel into the J1C182BC-1 remote terminal ring shelf. This procedure is in Step 14.

NOTE:
MJ1 and MN1 correspond to the circuit packs inserted into the left side of the ring shelf. If you are equipping only the left side, then only Pins 1 and 2 will be wired.

Table 3-8. ED-7C723-35, Group 10 Cable Assembly Connecting Table

P117	Designation	Color
1	MJ1	W-BL
2	MN1	BL-W
3	MJ2	W-O
4	MN2	O-W
5	-	-
6	FRQ	W-B
7	-	-
8	-48V	R
9	-48V RTN	S

13. Connect the alarm leads from the ED-7C723-35, Group 10 cable assembly to the office alarm system per the Work Order. Refer to Table 3-8 and Figure 3-22.

NOTE:
Perform the following steps to provide power to the J1C182BC-1 remote terminal ring shelf.

14. Terminate the red (-48V Return) and slate (-48V Load) wires (pins 8 and 9) on the ED-7C723 Group 10 cable attached to the J117 connector on the J1C182BC-1 shelf to a fused -48V DC source. See Figure 3-22 and Note.

NOTE:
Be sure to use NO OX-ID on the ground bar for -48V Return.

15. **STOP**. **YOU HAVE COMPLETED THIS PROCEDURE**.

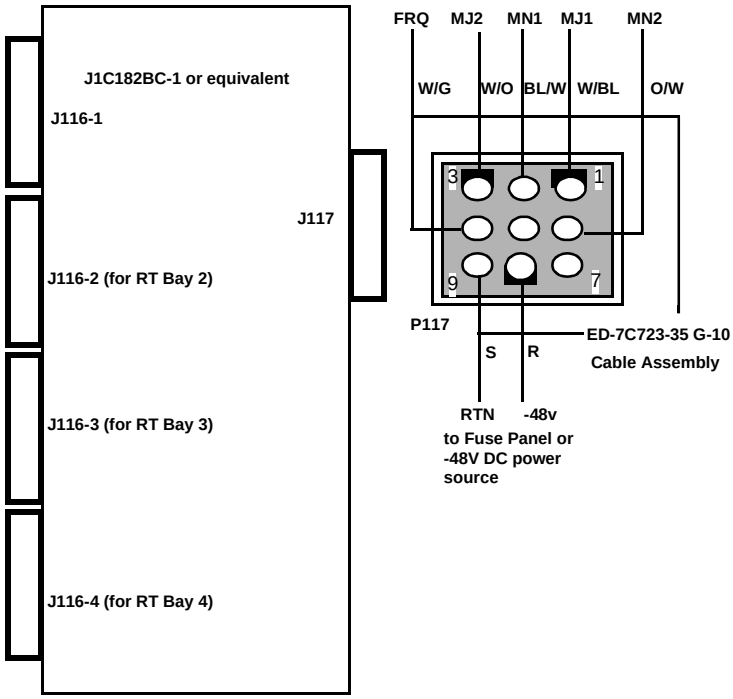


Figure 3-22. *SLC* Series 5 Power Cabling (J1C182BC-1 Shelf)

Turn Up Procedures

4

Contents

Install 3C( ) Ringing Generators in Ring Shelf

Overview

This section contains the procedure for installing **3C( ) RINGING GENERATOR**(s) in the J1C182BC-1 remote terminal ring shelf. The following is a summary of the procedure:

Install **3C( ) RINGING GENERATOR** into **GROUP 1** side - **RING GEN1** slot in ring shelf. Verify **FAIL** indicator is off. Measure –43 to –56 V DC at –**48V**/**GND**, and 90 to 110 V AC and –50 to –60 V DC at –**20HZ**/**GND**. Install **RING GEN2** and repeat. For full shelf operation (BELLCORE mode), move **P116B** and install and test ringing generators in **GROUP 2** side of shelf.

Procedure

1. Obtain the following equipment:
   - Digital multi-meter with an accuracy of 0.02 percent
   - ESD wrist strap
   - Slotted screwdriver (3/8-inch tip).
2. On control and distribution panel, verify that the circuit breaker is on.
3. Is -48V and RTN available on pins P8 and P9, respectively, of the P117 connector of the ED7C723-35, Group 10 cable assembly that is connected to the J117 connector on the J1C182BC-1 ringing supply shelf?

   If **YES,** then continue with Step 5**.**
   If **NO,** then proceed to Step 4.
4. Escalate the problem to the next level of support.
5. Obtain two **3C( ) RINGING GENERATOR**s and inspect them for possible physical damage. Be sure to remove the connector guard.
6. Install one **3C( ) RINGING GENERATOR** into **GROUP 1** side - **RING GEN1** slot in ring shelf (Figure 4-1).
7. Did **FAIL** LED on **3C( ) RINGING GENERATOR** light momentarily?

   If **YES,** then continue with Step 11**.**
   If **NO,** then proceed to Step 8**.**
8. Replace **3C( ) RINGING GENERATOR**.
9. Did **FAIL** LED on **3C( ) RINGING GENERATOR** light momentarily?

   If **YES,** then continue with Step 11**.**
   If **NO,** then proceed to Step 10**.**
10. Escalate the problem to the next level of support.

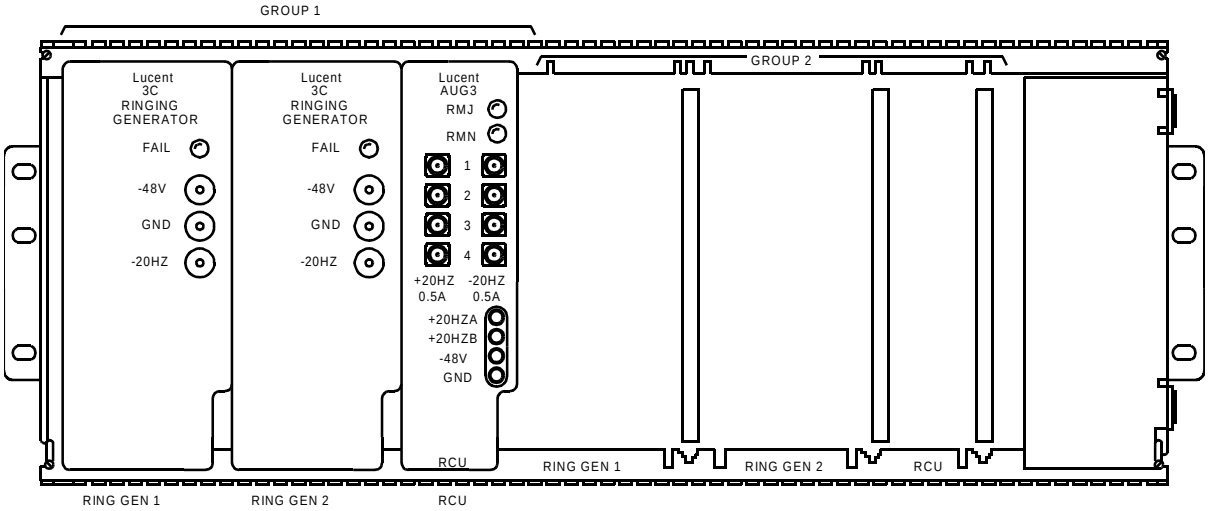


Figure 4-1. Partially Equipped J1C182BC-1 Remote Terminal Ring Shelf

11. Condition DMM to measure DC volts.

12. On **RING GEN1**, connect DMM test leads to –**48V** jack and **GND** jack (Figure 4-1).

13. Does DMM indicate between –43 and –56 V DC?

    If **YES,** then proceed to Step 18**.**
    If **NO,** then continue with Step 14**.**

14. Replace **RINGING GENERATOR**.

15. On **RING GEN1**, connect DMM test leads to –**48V** jack and **GND** jack (Figure 4-1).

16. Does DMM indicate between –43 and –56 V DC?

    If **YES,** then proceed to Step 18**.**
    If **NO,** then continue with Step 17**.**

17. Escalate the problem to the next level of support.

18. On **RING GEN1** at –**20HZ** jack and **GND** jack (Figure 4-1), measure DC negative ringing.

    Requirement: Meter indicates between –50 and –60 V DC.

19. Condition DMM to measure AC volts. Measure AC negative ringing at same jacks (–**20HZ** and **GND**).

    Requirement: Meter indicates between 90 and 110 V AC RMS.

20. Did meter indicate as required in Step 18 and Step 19?

    If **YES,** then proceed to Step 22**.**
    If **NO,** then continue with Step 21**.**

21. Replace **RINGING GENERATOR** and repeat Steps 6 through 20**.**

NOTE:
If replacing the **3( ) RINGING GENERATOR** does not clear the problem, then escalate the problem to the next level of support.

22. Has **RING GEN2** been installed and tested?

    If **YES,** then proceed to Step 24**.**
    If **NO,** then continue with Step 23**.**

23. Install second **RINGING GENERATOR** in **GROUP 1** side - **RING GEN2** slot in ring shelf and repeat from Step 6 for **RING GEN2.**

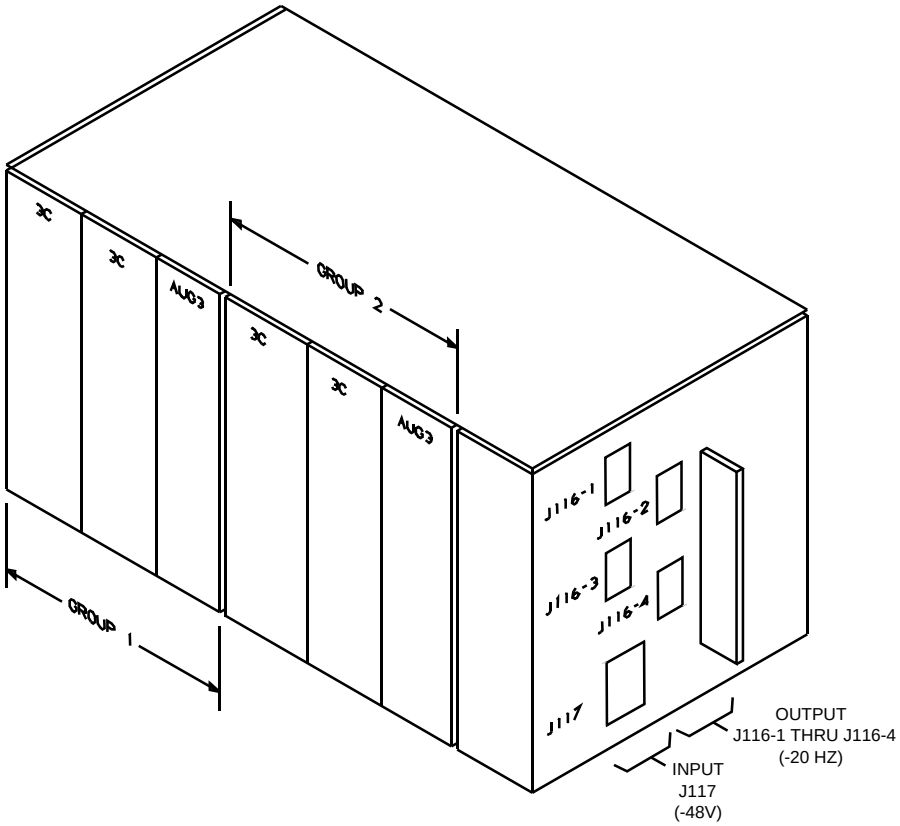
24. Is the group 2 side of shelf being equipped at this time (full shelf operation)?

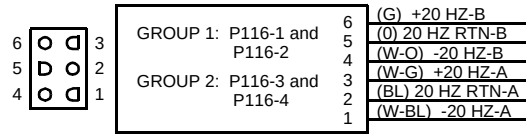
    If **YES,** then continue with Step 25**.**
    If **NO,** then **STOP. YOU HAVE COMPLETED THIS PROCEDURE**

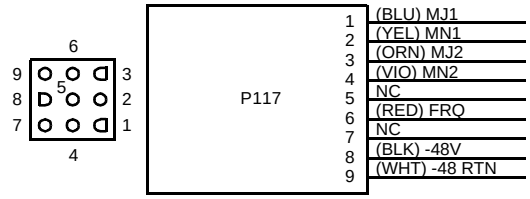
25. At ring shelf, disconnect **P116B** connector from **J116-2** and reconnect it to **J116-3** (Figure 4-2).

26. Repeat from Step 5 for the **GROUP** 2 side of shelf.

27. STOP. YOU HAVE COMPLETED THIS PROCEDURE







NOTE:
The J1C182BC-1, List 3 remote terminal ring shelf connectors (J116 and J117) are dangling cables.

Figure 4-2. Connections to J1C182BC-1 Remote Terminal Ring Shelf (List 2)

Install AUG3 Ring Control Unit in Ring Shelf

Overview

This section contains the procedure for installing the AUG3 ring control unit (RCU) in the J1C182BC-1 remote terminal ring shelf. The following is a summary of the procedure:

Install **RCU** into ring shelf. Verify that there are no fuses blown and no indicators lighted on **RCU**. Measure voltage at –**48V** and **GND** to verify requirement of –43 to –56 V DC. Measure voltage at **+20HZA** and **GND** to verify requirements of 50 to 60 V DC and 90 to 110 V AC. Measure voltage at **+20HZB** and **GND** to verify requirements of 50 to 60 V DC and 90 to 110 V AC. Repeat as required for **RCU** in **GROUP 2**.

Procedure

1. Get one **AUG3 RCU** (Figure 4-3) and inspect for possible physical damage. Be sure to remove the connector guard.

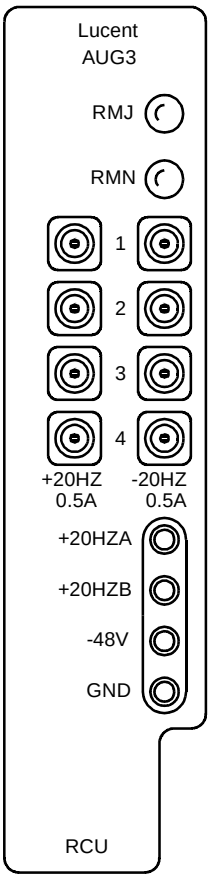


Figure 4-3. Ring Control Unit (AUG3) Faceplate

2. Verify that each fuse holder on **RCU** faceplate contains an 80G (0.5A) fuse and that no fuses are blown. (The fuse bead will pop out when the fuse is blown.)

3. Are any fuses blown?

   If **YES,** then continue with Step 4**.**
   If **NO,** then proceed to Step 6**.**

4. Remove blown fuses.

5. Install good 80G (0.5A) fuse in each empty fuse holder.

6. Verify that both 3C ringing generators are installed in **GROUP 1** side - **RING GEN 1** and **RING GEN 2** slots.

7. On **GROUP 1** side, install **RCU** into **RCU** slot in ring shelf.

NOTE:
The **RMJ** and **RMN** LEDs light momentarily.

8. Do any fuses blow on **RCU**?

   If **YES,** then continue with Step 9**.**
   If **NO,** then proceed to Step 15**.**

9. Replace **RCU**. Do any fuses blow on **RCU**?

   If **YES,** then continue with Step 10**.**
   If f **NO,** then proceed to Step 15**.**

10. On the ring shelf on the right-hand side, disconnect P116 ringing output connectors, and then replace blown fuses on **RCU**.

11. Do any fuses blow on **RCU**?

    If **YES,** then proceed to Step 13**.**
    If **NO,** then continue with Step 12**.**

12. Refer to the appropriate schematic drawings to check connectors at the power source and correct wiring problem. Repeat from Step 8**.**

13. Use SD-7C155-01 to correct wiring problem in ring shelf.

14. Reconnect J116 connectors and replace blown fuses on **RCU**. Repeat from Step 8**.**

15. Is any indicator lighted on the **RCU**?

    If **YES,** then continue with Step 16**.**
    If **NO,** then proceed to Step 17**.**

16. Replacethe **RCU** and repeat from Step 8**.**

17. Get the DMM and condition it to measure DC volts.

18. Connect DMM test leads to the –**48V** jack and to the **GND** jack on the **RCU**.

19. Does the meter indicate –43 to –56 V DC?

    If **YES,** then proceed to Step 21**.**
    If **NO,** then continue with Step 20**.**

20. Replace the **RCU** and repeat Steps 8 through 19**.**

21. On the **RCU** at **+20HZA** jack and **GND** jack (Figure 4-3), measure DC positive ringing.

    Requirement: The meter indicates between 50 and 60 V DC.

22. Condition the DMM to measure AC volts. Measure AC positive ringing at the same jacks (**+20HZA** and **GND**).

    Requirement: The meter indicates between 90 and 110 V AC.

23. Did the meter indicate a reading as required in Step 21 and Step 22?

    If **YES,** then proceed to Step 25**.**
    If **NO,** then continue with Step 24**.**

24. Replace the **RCU** and repeat Steps 8 through 23**.**

25. Have both **+20HZA** and **+20HZB** jacks been tested?

    If **YES,** then proceed to Step 27**.**
    If **NO,** then continue with Step 26**.**

26. Condition the DMM to measure DC volts and repeat Steps 21 through 25 for **+20HZB** jack.

27. Is group 2 being equipped at this time (full shelf operation)?

    If **YES,** then repeat Steps 1 through 27 for **GROUP 2** side of shelf.
    If **NO,** then continue with Step 28.

28. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Maintenance and Trouble Clearing

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Contents

Overview

General

3C1 Ringing Generator

The ringing generator in the left-hand position of the group is the main ringing generator. The other ringing generator provides protection if the main ringing generator fails. When the main ringing generator is restored, service automatically reverts to the main ringing generator.

FAIL (Red LED): This LED lights to indicate an alarm when the 20-Hz ringing voltage drops below approximately 60 volts for more than 5 seconds.

-48V, **GND**, **-20HZ**: Test jacks are provided on the faceplate — one for -48V DC, one for ground, and one for -20-Hz ringing.

AUG3 Ring Control Unit

The AUG3 RCU contains two dc-to-dc power converters (DC1 and DC2). Each converter provides 110V DC. The 110V DC from DC1 and DC2 are added in series with the output of the ringing generators to supply dual positive ringing signals. A failure in either power converter will cause its output load to be switched by the detector and relay circuits to the other power converter.

The AUG3 provides input and output fusing protection (F1 through F11), alarm LED indicators, and alarm output signals. Fuses F1 through F8 are 80G type, 0.5 amps, and provide output protection. These fuses are accessible from the faceplate and can be replaced in the field. Fuses F9 through F11 provide input protection and are not accessible for replacement in the field.

RMN (yellow LED): When lighted, this LED indicates that an internal failure has caused a protective switch of an output load to another source. A MINOR alarm signal is transmitted to alarm monitoring circuitry.

RMJ (red LED): When lighted, this LED indicates that one or more ringing outputs have failed. The failure could be caused by dual circuit failures or the failure of an output fuse. A MAJOR alarm signal is transmitted to alarm monitoring circuitry.

The faceplate of the AUG3 pack provides convenient test access to +20HZ ringing sources (**+20HZA** and **+20HZB** jacks), -48V dc input (**-48V**), and ground (**GND**).

DANGER:
The RCU has hazardous voltages present on the printed circuit and component sides of the board. Be careful when inserting and removing the circuit pack.

Procedure

1. Are there any blown fuses on the **RCU** circuit pack?

   If **YES**, then continue with Step 2.
   If **NO**, then proceed to Step 4.

2. Replace blown fuse(s).

3. Does replacing the blown fuse(s) clear the trouble?

   If **YES**, then continue with Step 12.
   If **NO**, then proceed to Step 4.

4. Is the **FAIL** LED on any of the **3C( ) RINGING GENERATOR**(s) lighted?

   If **YES**, then continue with Step 5.
   If **NO**, then proceed to Step 8.

5. Replace **3C( ) RINGING GENERATOR**(s) with lighted **FAIL** LED.

6. If necessary, replace any blown fuse(s) on the **RCU**.

7. Does replacing the **3C( ) RINGING GENERATOR**(s) clear the trouble?

   If **YES**, then continue with Step 12.
   If **NO**, then proceed to Step 8.

8. Replace the RCU.

9. Ensure that all of the fuses are installed on the replacement **RCU**. Fuses F1 through F8 are 80G type, 0.5 amps.

10. Does replacing the **RCU** clear the trouble?

    If **YES**, then continue with Step 12.
    If **NO**, then proceed to Step 11.

11. Escalate the problem to the next level of support. **STOP**.

12. **STOP**. **YOU HAVE COMPLETED THIS PROCEDURE**.

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