MAINTENANCE MANUAL

EDACS® COMPACT VERTICAL VOTER SYSTEM INSTALLATION AND SERVICE

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INTRODUCTION

This manual contains maintenance information for the **E**nhanced **D**igital **A**ccess **C**ommunication **S**ystem (**EDACS**®) Compact Vertical Voter (CV^2) system. The information presented covers Voter equipment used in Simulcast or Voted (Non-Simulcast) systems.

Included in this manual are the following sections:

- Installation Instructions
- Voter Configuration Procedures
- Card Configuration Guide
- System Alignment
- System Checkout
- Cable connection Lists
- Assembly Diagrams
- Interconnect Diagrams

RELATED PUBLICATIONS

It may be necessary to refer to one or more of the following maintenance manuals when installing and setting up the Voter system. These manuals provide additional information

LBI-38430 - MASTR IIe Station Maintenance Manual.

LBI-38676 - Analog Voter Maintenance Manual

LBI-38894 - GETC Trunking Card Maintenance Manual for 19D901868G3 and G4.

LBI-38988 - EDACS Station GETC Configuration Manual.

LBI-39038 - EDACS Redundant Power Supply System Maintenance Manual

LBI-39074 - MASTR III EDACS Installation Manual.

LBI-39075 - EDACS CV^2 Interface Panel Maintenance Manual

LBI-39090 - Simulcast Transmit Site Maintenance Manuals.

LBI-39112 - MASTR III Multiple Receiver Maintenance Manual

LBI-39142 - EDACS Voter Cross Connect Panel Maintenance Manual

LBI-39149 - EDACS Compact Vertical Voter (CV^2) Maintenance Manual

LBI-39150 - EDACS CV^2 Digital Voter Shelf Maintenance Manual

LBI-39151 - EDACS CV^2 Digital Receiver & Selector Maintenance Manual

LBI-39152 - EDACS CV^2 Rockwell Modem & RS-232 Intfc Card Maintenance Manual

LBI-39158 - EDACS Power Distribution Panel Maintenance Manual

LBI-39186 - Simulcast Control Point Maintenance Manuals

SRN-1007 - Release Notes for Voter Software

SRN-1060 - Release Notes for GETC 1e

TQ-3357 - Personality Programming Instructions

RECOMMENDED TEST EQUIPMENT AND ACCESSORIES

The following test equipment is required for alignment and testing of the Voter system. Items identified by an asterisk (*) indicate test equipment available in the Simulcast Test Equipment Rack.

1. *Digital Storage Oscilloscope, configured for rack mount - Tektronix 2232A or Tektronix TDS 410A
2. *Transmission Test Set - Convex C120
3. *Sweep Analyzer - Hewlett Packard HP 35670A
4. Digital Voltmeter with fine tip leads
5. Eye Pattern Generator - 19A149431P1
6. Inline Modular Adapter (not available from Ericsson)
   - Six Wire Modular Adapter - similar to Harris “Banjo-6” 10220-100
   - Eight Wire Modular Adapter - similar to Harris “Banjo-8” 10230-100
7. Communications Service Monitor FM/AM 1200S with Spectrum Analyzer - IFR Systems Inc.

NOTE

Alternate monitors that may be used include the IFR 1500 and HP8920A.

7. Test Module Kit, VPTS3X, includes:

- Digital Voter Extender Card (ROA 117 2249)
- Analog Voter Extender Card (19C317762G2)
- Analog Voter Test Assy Card (19D416003G1)
- Programming (Flash) Cable (19B804346P111)

INSTALLATION

SITE PREPARATION

Equipment Location

In a typical Voter system installation, the CV^2 system is co-located with the Simulcast Control Point or Main Site repeater (Non-simulcast system).

The Interface between the Voter (EDACS Interface Panel) and other system equipment, such as Satellite Receivers, IMC, and Main Site repeater, or Simulcast Control Point equipment is made via the Analog and Digital Voter Cross Connect panels. Refer to LBI-39142 for information regarding the cross connect panels.

The Voter system uses standard twenty-five (25) pair TELCO cables to route the audio and digital signals between the Voter Interface Panel and the Voter Cross Connect Panels. Table 1 provides the part number for Telco cables of various lengths.

Table 1 - Telco Cable Lengths

PART NUMBER	CABLE LENGTH
19D903880P120	5 feet (1.52 meters)
19D903880P121	15 feet (4.57 meters)
19D903880P122	7 feet (2.13 meters)
19D903880P123	10 feet (3.05 meters)
19D903880P124	20 feet (6.10 meters)
19D903880P125	25 feet (7.62 meters)
19D903880P126	30 feet (9.14 meters)
19D903880P127	35 feet (10.67 meters)
19D903880P128	40 feet (12.19 meters)
19D903880P129	50 feet (15.24 meters)

Equipment Room Grounding

Ensure all equipment and facilities meet the requirements for grounding and lightning protection.

Installation manual LBI-39067 – *Standard For Site Grounding And Protection* provides instructions for proper grounding of sites and radio equipment. These procedures should be observed in order to protect the equipment and service personnel from lightning and other sources of electrical surges. This manual is not included, but is available on request from Ericsson Inc.

Operating Environment

The equipment room where the Voter equipment is installed must meet the environmental conditions listed in the Specifications section of LBI-39149. Each Voter cabinet is equipped with an exhaust fan which draws cool air through the cabinet to dissipate heat.

Although the temperature requirements for individual pieces of equipment may be broader, when several units are assembled together in a cabinet more heat is generated. Because of this condition, the ambient room temperature outside the cabinet must be lowered to ensure the temperature inside the cabinet does not exceed the limits for the equipment.

Electrical Power

Each EDACS cabinet is equipped with its own AC power cord (except for DC options). Each of these power cords should be connected to a separate circuit breaker. The following circuit breakers are recommended.

- 115 Vac (60 Hz) - a 20-amp circuit breaker for each power cord.
- 230 Vac (50 Hz) - a 15-amp circuit breaker for each power cord.

Receptacles must be installed within reach of the power cords. This can be on the wall behind the cabinets, in the floor under the cabinets, on the cable ladders above the cabinets, or in the cabinet top cable ducts.

Telephone Service

The following paragraphs provide information on the characteristics of phone lines used in a voted system.

System Alignment Level

The System Alignment Level is the maximum level that can be put through the phone lines without limiting, i.e. there is sufficient headroom. The telephone company will specify the system alignment level. Typically, the system alignment level is 0 dBm for non-leased facilities. The System Level is the level at which signals should be set and is 10 dB below the system alignment level.

Phone Line Grades

Type 2000 Voice Grade Lines are sufficient for voice channels with the following exception. The 1950 Hz tone must arrive at the voter at a level not less than -30 dBm.

This can cause difficulties. For instance, if you order a voice grade line and don't specify the loss, you will typically get a line with 10 dB of loss at 1000 Hz. The 1950 Hz loss will normally be 8 dB more than at 1000 Hz. By adding the 4 dB long-term variation and the 3 dB short-term variation the worst case 1950 Hz loss would be 25 dB. It then follows that you cannot send any lower than -5 dBm. If the phone company will not allow you to send continuous tone as high as -5 dBm, then you will have to ask for a lower loss circuit or add conditioning.

When ordering voice lines for a voting system, ensure all lines are of the same type with similar characteristics. This will help prevent changes in pitch and intensity as a signal is voted between sites.

All phone lines carrying data must be *Type 3002 Data-Grade Telephone Lines* without additional conditioning (or equivalent). To ensure the proper data-grade circuit is obtained when leasing a telephone line, request a 4-Wire 3002 Data-Grade line from the local or regional telephone carrier. If using an equivalent line, it must meet the following specifications:

- Frequency response:

1000 Hz	Reference
500 - 2400 Hz	-1 to +3 dB
300 - 2700 Hz	-2 to +6 dB

- Maximum Frequency Error = ±5 Hz
- Maximum Net Loss = 16 dB
- Maximum Group Delay (800-2400 Hz) = 2000 µS
- Minimum S/N Ratio = 24 dB

UNPACKING EQUIPMENT

EDACS Voter equipment is generally packed in one of the following two ways:

- Bolted vertically to a mini pallet approximately 36" deep x 32" wide, with a corrugated cardboard cover held down with two plastic straps. This technique is generally used for domestic shipments of 83-inch cabinets. The mini pallet adds approximately three inches to the overall cabinet height. The weight varies according to the content, but generally runs from 300 pounds to 600 pounds.
- Crated vertically or horizontally. This technique is generally used for 86-inch open-racks and overseas shipments. Crates may contain one or several cabinets or racks, and the dimensions and weight will vary accordingly. If size and weight limits are required, contact the factory for special packing instructions.

Cabinets packed on mini pallets can be moved with a hand-truck, crates may need a fork lift or pallet jack, depending on the size. Wrenches will be needed to unbolt the cabinets from the mini pallets, and a crowbar and hammer will be useful in opening the crates. Do not leave packed or unpacked equipment where they can be rained on.

Upon receipt of the EDACS Voter equipment, carefully examine each carton. If any damage is detected, note the damage on the Bill of Lading.

Move the cartons as close as possible to their mounting location.

Unpack the equipment and carefully examine each item. If there is any damage to the equipment, contact the carrier immediately and have their representative verify the damage. If you fail to report the shipping damage immediately, you may forfeit any claim against the carrier.

When unpacking the equipment, check the contents against the packing list. Contact your Ericsson Inc. representative and the carrier if any discrepancies are noted.

VOTER CABINET RACK-UP

Each Voter system is unique and specific installation requirements will vary greatly depending on the number of channels per shelf and the number of sites supported. However, with the exception of the Voter Cross Connect Panels, all of the Voter equipment is housed in either 83-inch cabinets or 86-inch open racks and interconnected as Voter Units.

A Voter Unit consists of a Digital Voter Shelf, two (2) Analog Voter Shelves (three (3) for 13 to 17 site systems), and an EDACS Interface panel. The number of Voter units contained in a cabinet or rack ranges from two (2) units per rack, for 13 to 17 site systems using 83-inch cabinets (with or without power supplies) or 86-inch open racks (with power supplies) to four (4) units per rack, for 2 to 12 site systems using 86-inch open racks (without power supplies). Refer to the Assembly Diagram 193D1054 to determine the proper rack-up configuration for the system.

The EDACS Interface Panel mounts in the rear of the cabinet or rack and acts as the central cabling point between the individual Voter components (each Voter Unit) and the Voter Cross Connect panels (Analog and Digital) normally located in a separate Cross Connect rack.

POWER DISTRIBUTION

The Compact Vertical Voter system requires 5, 12, and 24 Vdc power inputs. This may be provided through the use of power supplies connected to commercial AC power or via external DC power supplied by the customer.

When the DC option is specified, the power supplies are omitted from the Voter cabinet. The external DC power is connected directly to the Power Distribution Panels as shown in the Interconnection Diagram 188D6802 sheet 5.

Voter installations are divided into cabinet groups with up to three cabinets per group. If the system uses power supplies as the power source, the power supplies are installed in the right most cabinet of each Voter cabinet group. These power supplies provide power to the cabinet group via the Power Distribution Panels in each cabinet. The power cord for each supply plugs into an AC Outlet strip mounted in the Voter cabinet. If the system requires more than three cabinets, another group of three cabinets is installed with additional power supplies.

The Voter Redundant Power Supplies (RPS) provide +5/±12 Vdc (350A1441P1 chassis and a 350A1441P3 +5/±12 Vdc Power Module) and 24 Vdc (350A1441P2 chassis and a 350A1441P5 +24 Vdc Power Module). Redundancy is introduced when additional power modules are added to the basic RPS. The +5/±12 Vdc RPS operates as an "N+1" system and the 24 Vdc RPS operates as a "2N" system.

In the CV^2, "N" power modules are necessary to meet the system's power requirements. In an "N+1" RPS configuration, one additional module is added in case one of the modules becomes defective. In a "2N" configuration, if one of the modules becomes defective, the other module is capable of meeting the load requirements.

The Power Distribution Panels (PDP) distribute DC power from the RPS to the individual units within the equipment cabinet. Each cabinet requires two PDPs for power distribution. One PDP distributes the +5 and ±12 Vdc and the other distributes the 24 Vdc.

When using power supplies, refer to the DC Power Distribution wiring diagrams and the Interconnection Diagram 188D6802, sheet 5 for wiring details. For information on the Power Distribution Panel (19C852636), refer to LBI-39158, and for information on the Redundant Power Supply (344A4414), refer to LBI-39038.

GETC CONFIGURATION

Control Point, Transmit (or Main) Site GETCs, and Satellite Site Receivers must be configured for voter operation. Detailed step by step configuration instructions are available in the GETC Configuration manuals, Software Release Notes, Station Installation manuals, or Simulcast Installation as applicable.

Configuration of the GETCs involves operations:

1. **Hardware Installation** - This procedure verifies the GETC's jumpers, DIP switch settings, and Rockwell modem or RS-232 setup.
2. **GETC Software Installation** - The GETC Software Installation procedure provides instructions for installing the GETC operating software.
3. **GETC Turbo Software Installation** - The Software Installation procedure provides instructions for installing the Turbo Board software.
4. **GETC Personality Programming** - This procedure provides instructions for programming and storing system configuration data in the GETC.

NOTE

For Digital Dispatch, Simulcast Voters are configured for Modem Data out and RS-232 Data in.

GETC PERSONALITY PROGRAMMING

The GETC Personality programming allows you to store system operating information into the GETCs and each Satellite Receiver.

Personality programming instructions are contained in LBI-38988 and TQ-3357.

❑ GETC Personality

1. Setup the GETC personality by using the PC programmer.
2. Each station GETC must have the "Voted" personality bit set. This may be found in the Site Data section of the Station personality screen. For voted systems set either Simulcast or Voted (Non-Simulcast) to "YES."
3. For Voted Digital Interconnect (VDI) systems, ensure the Control Point GETC's personality has the Digital Voter Interconnect option (GETC Personality Extended Options screen) set to "AVAIL."

COMPACT VERTICAL VOTER CONFIGURATION

The configuration of the CV^2 system depends on a number of variables including:

- Number of sites.
- Number of channels per shelf, either one or two.
- Type of system, Simulcast or Voted (Non-Simulcast).
- Voted Digital Interconnect Installed.
- Type of communication link (modem or RS-232).

These factors determine the installation configuration (slot placement) of the modules (Selectors, Digital Receivers, and Interface Cards).

The configuration procedures are also affected by the factors listed above. When installing new or replacement modules, it is necessary to identify these parameters prior to configuring the individual modules.

The configuration procedures are grouped by application, such as for Simulcast and Non-Simulcast systems. Within each group are the specific procedures for the following components:

1. **EDACS Digital Interface Panel Configuration** - This procedure provides instructions for configuring the EDACS Digital Interface panel jumpers.
2. **Backplane Configuration** - This procedure provides instructions for configuring the Backplane.
3. **Rockwell Modem Interface Card Configuration** This procedure provides instructions for configuring the RMIC Interface Cards.
4. **Digital Receiver Configuration** - This procedure provides instructions for installing Digital Receivers, setting DIP switches, installing the Configuration Plug, and installing Flash Loader PROM.
5. **Selector Configuration** - This procedure provides instructions for installing Selectors, setting DIP switches, installing the Configuration Plug, and installing Flash Loader PROM.
6. **Voter Software Installation** - This procedure provides instructions for flashing Voter software into the Digital Receivers and Selectors.

SIMULCAST SYSTEM CONFIGURATION

Use the following procedures to configure the CV^2 system for use in an EDACS Simulcast System.

Hardware Installation:

❑ **Verify Voter Equipment is Properly Installed:**

1. Refer to Installation Diagram 193D1054, sheets 1, 2 and 5, provided in this manual.
2. Cable equipment using the Cable Connection lists and Interconnect Diagrams 188D6802 provided in this manual.
3. Install plug-in Digital Voter modules using the Card Configuration Guide provided in this manual.
4. After installing and cabling the Voter equipment, perform the following steps to configure system for Voter operation.

STEP 1 - EDACS DIGITAL INTERFACE PANEL CONFIGURATION

One Channel Per Shelf

For Simulcast systems with up to 17 sites using **one channel per shelf**, configure jumpers J30, J40, and J41 on the EDACS Digital Interface Panel (ROA 117 2228). Refer to Tables 2 and 3 and install or remove jumpers on J30, J40, and J41 as required. Refer to Figure 1 and Installation Diagram 193D1054, sheet 4 for header locations and pinouts.

NOTE

The header pin configuration shown in Figure 1 is unique to EDACS Digital Interface Panel ROA 117 2228.

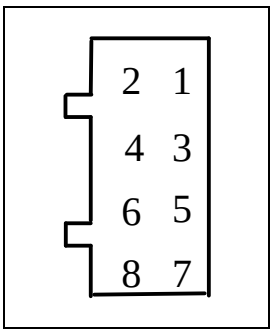


Figure 1 - ROA 117 2228 Header Pinouts

Table 2 - Simulcast 1-Channel/Shelf Interface Panel and Backplane Jumpers

JUMPER TABLE FOR J6, J7, J8, & J30				
VOTER SYSTEM		NON-VDI	VDI	
MAIN SITE CONNECTION		RS-232 OR MODEM	SIMULCAST	NON SIMULCAST
JUMPER LOCATION		JUMPER PINS:		
DIGITAL VOTER BACKPLANE BD	J6	1 TO 2 3 TO 4 5 TO 6	1 TO 2 3 TO 4 5 TO 6	1 TO 2 3 TO 4 5 TO 6
DIGITAL VOTER BACKPLANE BD	J7	1 TO 2 3 TO 4	1 TO 2	1 TO 2
	J8	NO JUMPERS	NO JUMPERS	NO JUMPERS
DIGITAL INTERFACE BOARD	J30	NO JUMPERS	1 TO 2 3 TO 4	5 TO 6 7 TO 8

Table 3 - Simulcast 1-Channel/Shelf Interface Panel Jumpers J40 and J41

JUMPER TABLE FOR J40 & J41				
IN DIGITAL VOTER SHELF CARD SLOT NUMBER:	4	16	18	20
RS-232 CARD OR DIGITAL RECEIVER INSTALLED	J40 & J41 PINS 1 TO 2	J40 & J41 PINS 3 TO 4	J40 & J41 PINS 5 TO 6	J40 & J41 PINS 7 TO 8
RMIC CARD INSTALLED	NO JUMPERS ON 1 TO 2	NO JUMPERS ON 3 TO 4	NO JUMPERS ON 5 TO 6	NO JUMPERS ON 7 TO 8

Table 4 - Simulcast 2-Channel/Shelf Interface Panel and Backplane Jumpers

JUMPER TABLE				
VOTER SYSTEM		NON-VDI	VDI	
MAIN SITE CONNECTION		RS-232 OR MODEM	SIMULCAST	NON SIMULCAST
JUMPER LOCATION		JUMPER CONNECTIONS:		
DIGITAL VOTER BACKPLANE BD	J6	NO JUMPERS	NO JUMPERS	NO JUMPERS
DIGITAL VOTER BACKPLANE BD	J7	1 TO 2 3 TO 4	1 TO 2	NO JUMPERS
	J8	1 TO 2 3 TO 4	1 TO 2	NO JUMPERS
DIGITAL INTERFACE BOARD	J30	NO JUMPERS	1 TO 2 3 TO 4	5 TO 6 7 TO 8
	J31	NO JUMPERS	1 TO 2 3 TO 4	5 TO 6 7 TO 8

- ❑ **Configure Jumpers on EDACS Panel J30.**
- ❑ **Configure Jumpers on EDACS Panel J40.**
- ❑ **Configure Jumpers on EDACS Panel J41.**

Two Channels Per Shelf

For Simulcast systems with up to 6 sites using **two channels per shelf**, configure jumpers J30 and J31 on the EDACS Digital Interface Panel (ROA 117 2227). Refer to Table 4 and install or remove jumpers on J30 and J31 as required. Refer to Figure 2 and Installation Diagram 193D1054, sheet 4 for header locations pinouts.

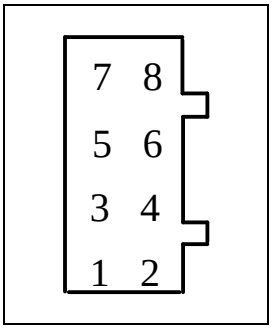


Figure 2 - ROA 117 2227 Header Pinouts

NOTE

The header pin configuration shown in Figure 2 is unique to EDACS Digital Interface Panel ROA 117 2227 **only**!

- ❑ **Configure Jumpers on EDACS Panel J30.**
- ❑ **Configure Jumpers on EDACS Panel J31.**

STEP 2 - BACKPLANE CONFIGURATION

One Channel Per Shelf

For Simulcast systems with up to 17 sites using **one channel per shelf**, configure jumpers on the Digital shelf's Backplane Panel (ROA 117 2222). Refer to Table 2 and install or remove jumpers on J6, J7, and J8 as required. Location of headers is shown in Figure 3 and on Installation Diagram 193D1054, sheet 2.

- ❑ **Configure Jumpers on Backplane J6.**
- ❑ **Configure Jumpers on Backplane J7.**
- ❑ **Remove Jumpers From Backplane J8.**

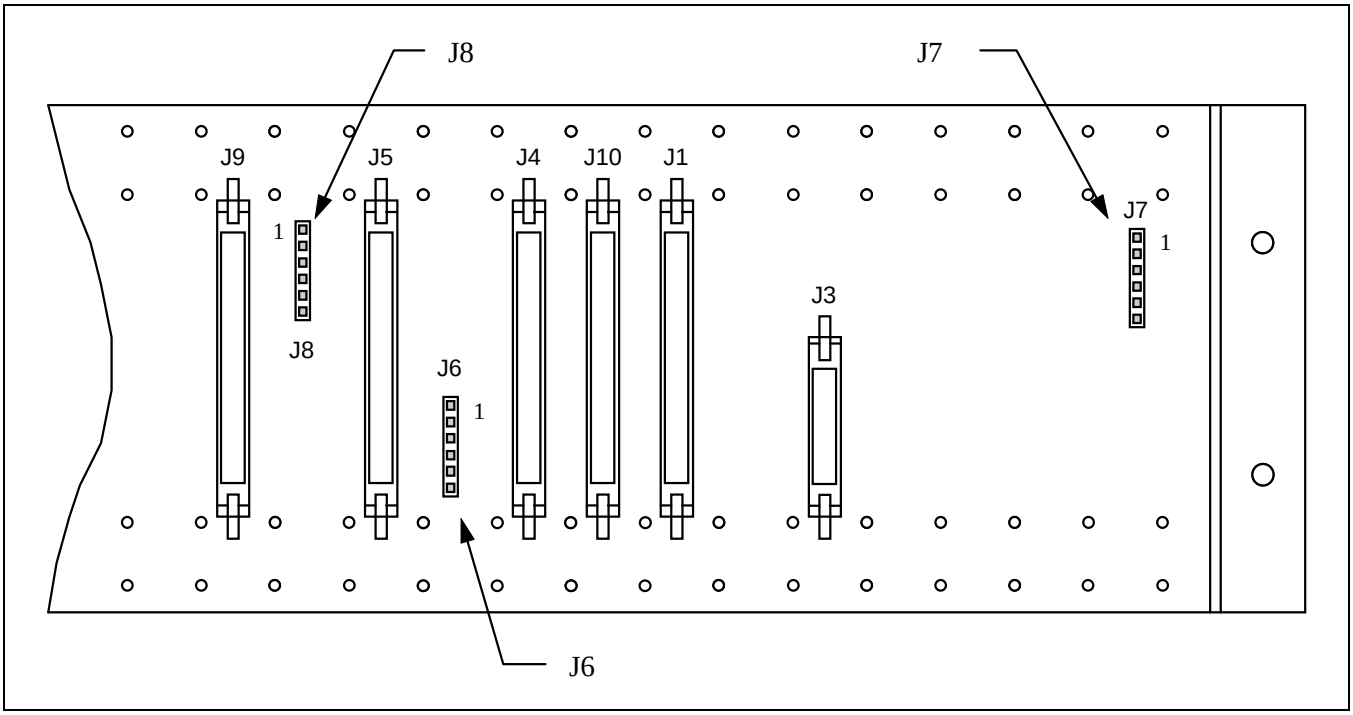


Figure 3 - Backplane Jumper Locations

Two Channels Per Shelf

For Simulcast systems with up to 6 sites using **two channels per shelf**, configure jumpers on the Digital shelf's Backplane Panel (ROA 117 2222). Refer to Table 4 and install or remove jumpers on J6, J7, and J8 as required. Location of headers is shown in Figure 3 and Installation Diagram 193D1054, sheet 2.

- ❑ **Remove Jumpers from Backplane J6.**
- ❑ **Configure Jumpers on Backplane J7.**
- ❑ **Configure Jumpers on Backplane J8.**

STEP 3 - ROCKWELL MODEM INTERFACE CARD CONFIGURATION

Configure the jumpers X6 and X7 on the RMIC according to the following criteria (refer to Figure 4 for connector locations):

- ❑ **Install jumper X6 on connector X4 pins 1 and 2.**

  This connects a 600 Ohm resistor across the Receive phone lines.

- ❑ **Install jumper X7 on connector X3 pins 2 and 3.**

  Modem sends the CTS signal to the microcomputer only after the microcomputer sends an RTS signal and the RM is ready.

NOTE

On RMIC ROA 117 2247/1 Rev. R1 runs are cut and additional jumpers are installed to allow the RMIC to transmit in the RM mode and receive RS-232 data. This configuration is only used in Simulcast systems with Digital Dispatch (i.e. there is an IMC and system uses DV, Aegis, or Digital Data).

The Modification Instructions 350A1692 detail the steps necessary to isolate T1 from the circuit and disconnect MRXD from the RX_DATA line. It also provides instructions for installing the zero ohm jumpers R43 and R44.

Refer to LBI-39152 for additional details.

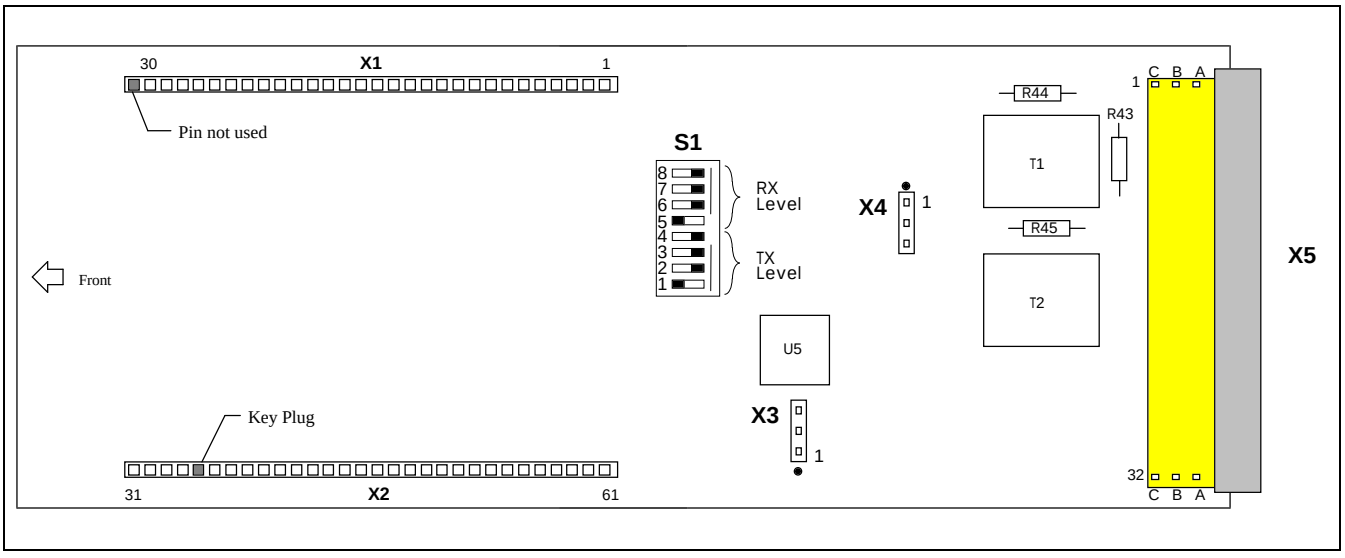


Figure 4 - RMIC Jumper Locations

STEP 4 - DIGITAL RECEIVER CONFIGURATION

Use the following procedure to configure each Voter Digital Receiver:

❑ **Set DIP Switches S1, S2, and S3:**

Each Digital Receiver in a Voter channel is identified as a Digital Receiver and is assigned a time slot number. The time slot number is used to control the sequencing of messages between the Digital Receivers and the Selector.

1. Set the Digital Receiver's DIP switches to the following positions, refer to Figure 5:

   - **SWITCH S1**

     Sections 1-6: Set the time slot number. Refer to Table 5 for the switch settings of each time slot number.

     Sections 7-8: Closed, not used.

   - **SWITCH S2**

     Sections 1-8: Closed, not used.

   - **SWITCH S3**

     Sections 1-6: Closed, not used.

     Section 7: Closed, placing the unit in the Digital Receiver mode.

     Section 8: Closed, not used.

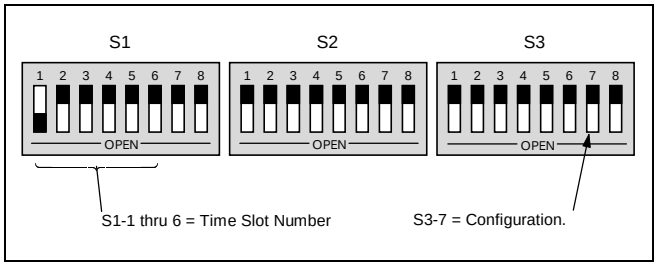


Figure 5 - DIP Switches S1 thru S3

❑ **Install Digital Receiver Configuration Plug**

1. Install the Digital Receiver Configuration Plug (ROA 117 2242) into connector X2 on the Digital Receiver card.
2. Ensure the configuration plug is properly oriented. The top of the plug will read "Digital Receiver".
3. Ensure pin 1 of the Configuration Plug (identified by square solder pad) plugs into X2 pin 1.

❑ **Install Flash Loader PROM**

1. Ensure the Flash Loader PROM (RON 107 756) is installed in socket XU26.

Table 5 - Digital Receiver Time Slot Settings

Slot #	DIP Switch 1 Section					
	1	2	3	4	5	6
1	O	C	C	C	C	C
2	C	O	C	C	C	C
3	O	O	C	C	C	C
4	C	C	O	C	C	C
5	O	C	O	C	C	C
6	C	O	O	C	C	C
7	O	O	O	C	C	C
8	C	C	C	O	C	C
9	O	C	C	O	C	C
10	C	O	C	O	C	C
11	O	O	C	O	C	C
12	C	C	O	O	C	C
13	O	C	O	O	C	C
14	C	O	O	O	C	C
15	O	O	O	O	C	C
16	C	C	C	C	O	C
17	O	C	C	C	O	C
18	C	O	C	C	O	C

The label on the top of the PROM indicates the PROM is programmed with the flash loading software "FLASHBURN" and the PROM revision. No revision indicates the original release.

❑ **Install Digital Receiver Into Digital Voter Shelf**

1. Insert the Digital Receiver into its designated slot. Refer to the Card Configuration Guide.

NOTE

Digital Receivers cards can be plugged and unplugged from the voter shelf at will with power applied. However care should be exercised when using the extender card since the long ground pins are only on the cards.

STEP 5 - SELECTOR CONFIGURATION

Use the following procedure to configure the Voter Selector, refer to Figure 5:

❑ **Set DIP Switches S1, S2, and S3:**

1. Set the Selector's DIP switches to the following positions:

   - **SWITCH S1**

     Sections 1-8: Closed, not used.

- **SWITCH S2**

  Sections 1-8: Closed, not used.

- **SWITCH S3**

  Sections 1-6: Closed, not used.

  Section 7: Open, placing the unit in the Selector mode.

  Sections 8: Closed, not used.

❑ **Install Configuration Plug**

1. Install the Selector Configuration Plug (ROA 117 2241) into connector X2 on the Selector's GPTC.
2. Ensure the configuration plug is properly oriented. The top of the plug will read "Selector".
3. Ensure pin 1 of the Configuration Plug (identified by square solder pad) plugs into X2 pin 1.

❑ **Install Flash Loader PROM**

1. Ensure the Flash Loader PROM (RON 107 756) is installed in socket XU26.

   The label on the top of the PROM indicates the PROM is programmed with the flash loading software "FLASHBURN" and the PROM revision. No revision indicates original release.

❑ **Install Selector Into Digital Voter Shelf**

1. Insert the Selector into its designated slot. Refer to the Card Configuration Table for the correct position.

NOTE

Selectors cards can be plugged and unplugged from the voter shelf at will with power applied. However care should be exercised when using the extender card since the long ground pins are only on the cards.

3. Reset the module by pressing S4.

STEP 6 - VOTER SOFTWARE INSTALLATION

This procedure provides instructions for downloading the Voter software. The Voter software is included in the Voter Media Kit, 350A1521G1. The installation process involves using an IBM compatible personal computer (PC), and interconnecting programming cable (19B804346P111) to download Voter software to the Digital Receivers and Selectors.

Equipment Required

- IBM PC/XT/AT or compatible with at least 640K memory, monitor and keyboard running MS-DOS version 3.0 or higher.
- Hard disk is recommended; but, not required.
- Serial Port configured as COM1.
- Programming Cable 19B804346P111.
- Software Media Kit 350A1521G1 (or later), refer to SRN for software compatibility.

NOTE

Refer to Software Release Notes to verify software requirements and hardware compatibility.

PC Setup

During first time use it may be necessary to setup the PC. The loadable Voter software must reside on the PC or floppy disk as an Intel Hex file. The "leafoff.exe" file is the executable program which loads the Voter hex file into the Digital Receiver or Selector. Both files should be in the same directory.

Prepare the PC for programming the Voter Digital Receiver and Selector GPTC boards by performing the following steps:

1. Using standard DOS commands or a software file manager, create a directory named "**VOTER**" on the PC's hard drive (directory name is user selectable). This step is only required for first time use. When upgrading, all existing files should be archived before copying the new files into the directory.
2. Make "**VOTER** " the current directory and copy the following files from the software distribution diskette into the "**VOTER** " directory:
   - leafoff.exe
   - *hexfile*.hex

Programming the Voter

1. Connect the 19B804346P111 programming cable from the PC's Comm Port 1 to the RJ-12 phone jack "**PROG**" on the front of the Digital Receiver or Selector.

NOTE

Power must be applied to the Digital Voter when programming the Digital Receiver or Selector.

2. From the "**VOTER**" directory, run the **leafoff.exe** program by entering the command:

   "**leafoff *hexfile*.hex-1**".

   Replace "*hexfile"* with the Voter software file name.

3. The program will reset the Digital Receiver or Selector and run the Flash Loader program. The program erases the existing Voter software residing in the Flash PROM U25 and writes the new Voter software into the Flash PROM.

   When the program is finished, the PC will display the message "Radio Programmed. Closing down port COM1." Wait a couple of seconds before disconnecting the programming cable from the "**PROG**" connector. This allows time for the PC to reset the Digital Receiver or Selector and initialize the Voter application program loaded in the Flash PROM.

4. Repeat Steps 2 and 3 to program additional Digital Receivers or Selectors.

NOTE

To save time, it is possible to set up a batch file to run the Flash loading program. The following is an example batch file.

Name the batch, for example, FL.BAT. Names in italics, such as *"voter"* is the name of the directory where the *hexfile* and *leafoff* reside. The file named *"hexfile"* is the file to be loaded and "*leafoff*" is the executable program. Enter the following batch program:

```
cd\voter
leafoff hexfile.hex-1
```

The batch file performs the operations outlined in Step 2. To run the program, type "FL" <enter> to program the Digital Receiver or Selector.

If any difficulty is encountered when loading the program, refer to the Troubleshooting section in this manual.

Check out the Digital Receiver and Selector operation. If any problems are encountered, refer to the troubleshooting procedures in this manual and LBI-39151.

POST CONFIGURATION CHECKS

1. Check Main Site GETC and Satellite Site Receivers for proper configuration.
2. Check Backplane for proper installation of jumpers on J6, J7 and J8.
3. Check EDACS Interface Panels for proper installation of the jumpers on J30, J31, J40 and J41.
4. Check all Digital Receivers and Selectors for the correct Configuration Plug and DIP switch settings.
5. Check all RMICs for proper installation of jumpers on X3 and X4 and line level switch settings.
6. If Simulcast Digital Dispatch, ensure modified RMIC(s) is installed in slot 2 and slot 12 (if 2-channel).
7. Ensure all modules are installed in their proper slots according to the Card Configuration Table.

CARD CONFIGURATION GUIDE (350A1612)

The Card Configuration Guide (350A1612) provides instructions for installing modules in the CV^2 Analog and Digital Voter Shelves.

NOTE

The coded information presented will help field service personnel determine the proper card configuration for their particular application.

These codes are generated by Ericsson's CAT (CATalog Orders Program) when initially configuring a customer's system. However, they are included for reference only and should not be used to requisition equipment.

The CAT provides three 15-digit code words to define the configuration. The first 3 digits identify the code word as VP1, VP2, and VP3. Remaining digits convey information as shown in Tables 6, 8, and 9. Characters A to Z indicate numerical values from 1 to 26 as shown in Table 7.

Racks, power supplies, shelves and harnesses are provided and assembled for the total number of sites and expansion sites. Plug-in cards are not provided for expansion sites.

NOTE

1. Voted (Non-Simulcast) systems cannot mix RM and RS-232 connected satellite sites. The Main Site can be RM or RS-232 no matter how satellite sites are connected.

2. If system is Simulcast with Digital Dispatch, the RM in slots 2 and 12 must be configured for RS-232 receive. For RMIC ROA 117 2247/1 (Rev. R1 and R2 only) the RMIC is modified according to the RMIC Modification Instructions 350A1692 (part of Mod Kit 350A1693). Refer to LBI-39152 for modification details.

3. All channels are identical.

4. If the system uses two channels per shelf and the number of channels (VP1-10) is odd, the right half of the last shelf is not populated.

USING THE SLOT CONFIGURATION TABLES

Use the following guidelines for Simulcast or Voted (Non-Simulcast) to determine which chart is applicable.

Simulcast Systems (VP1-5 = S)

1. Determine whether each Digital shelf is to be configured for 1 channel per shelf or 2 channels per shelf.
   - If the sum of VP1-6, VP1-7, VP1-8, and VP1-9 is greater than 6, configure for 1 channel per shelf.
   - If the sum of VP1-6, VP1-7, VP1-8, and VP1-9 is 6 or less, configure for 2 channels per shelf.
2. Determine the number of Auxiliary Sites (VP1-8).
3. Determine the number of sites (VP1-6).

Configure per the appropriate chart. Observe the notes for that chart.

Voted Systems (VP1-5 = V)

1. Determine whether each Digital shelf is to be configured for 1 channel per shelf or 2 channels per shelf.
   - If the sum of VP1-6, VP1-7, VP1-8, and VP1-9 is greater than 6, configure for 1 channel per shelf.
   - If the sum of VP1-6, VP1-7, VP1-8, and VP1-9 is 6 or less, configure for 2 channels per shelf.
2. Determine how Satellite Sites are connected.
   - If VP2-4, VP2-5, etc. is "R," connection is RS232.
   - If VP2-4, VP2-5, etc. is "M," connection is Rockwell Modem (RM).
   - All satellite sites should be connected the same way.

3. Determine the number of sites (VP1-6).

Configure per the appropriate table. Observe the notes for that table.

Table 6 - Information in VP1

DIGIT	VALUE	MEANING
4	G	GE label
	E	Ericsson label
	A	ETS label
5	S	Simulcast
	V	Voted (non-simulcast)
6	A-J	Number of sites.
7	A-J,0	Number of expansion sites.
8	A-P,0	Number of Auxiliary Receiver sites.
9	A-P,0	Number of expansion Auxiliary Receiver sites.
10	B-X	Number of Channels.
11	R	Main Site data is RS232 (no data to switch).
	M	Main Site & Switch data is RM (for Digital Dispatch).
12	R	Switch data is RM (for VDI). Main Site data is RS232 (from selector).
	M	Switch data is RM (for VDI). Main Site data is RM (from Selector).
	N	No VDI
13	8	Install in 83 inch cabinet
	R	Install in 86 inch open rack
14	1	Equip with 120V power supplies
	2	Equip with 240V power supplies
	D	DC, not equipped with standard supplies
15	A-L	Total number of cabinets or racks

Note: Digit 11 affects slot 2. Digit 12 affects slot 4.

Table 8 - Information in VP2

DIGIT	VALUE	MEANING
4	R	Aux Site 1 connected RS232
	M	Aux Site 1 connected RM
	N	Aux Site 1 not equipped
5	R	Aux Site 2 connected RS232
	M	Aux Site 2 connected RM
	N	Aux Site 2 not equipped
6	R	Aux Site 3 connected RS232
	M	Aux Site 3 connected RM
	N	Aux Site 3 not equipped
7	R	Aux Site 4 connected RS232
	M	Aux Site 4 connected RM
	N	Aux Site 4 not equipped
8	R	Aux Site 5 connected RS232
	M	Aux Site 5 connected RM
	N	Aux Site 5 not equipped
9	R	Aux Site 6 connected RS232
	M	Aux Site 6 connected RM
	N	Aux Site 6 not equipped
10	R	Aux Site 7 connected RS232
	M	Aux Site 7 connected RM
	N	Aux Site 7 not equipped
11	R	Aux Site 8 connected RS232
	M	Aux Site 8 connected RM
	N	Aux Site 8 not equipped
12	R	Aux Site 9 connected RS232
	N	Aux Site 9 not equipped
13	R	Aux Site 10 connected RS232
	N	Aux Site 10 not equipped
14	X	Not used
15	X	Not used

Table 7 - Number values for letters for VP1-6, 7, 8, 10, & 15

LETTER	NUMBER	LETTER	NUMBER	LETTER	NUMBER
A	1	J	10	S	19
B	2	K	11	T	20
C	3	L	12	U	21
D	4	M	13	V	22
E	5	N	14	W	23
F	6	O	15	X	24
G	7	P	16	Y	25
H	8	Q	17	Z	26
I	9	R	18	0 (zero)	0

Table 9 - Information in VP3

DIGIT	VALUE	MEANING
4	R N	Aux Site 11 connected RS232 Aux Site 11 not equipped
5	R N	Aux Site 12 connected RS232 Aux Site 12 not equipped
6	R N	Aux Site 13 connected RS232 Aux Site 13 not equipped
7	R N	Aux Site 14 connected RS232 Aux Site 14 not equipped
8	R N	Aux Site 15 connected RS232 Aux Site 15 not equipped
9	R N	Aux Site 16 connected RS232 Aux Site 16 not equipped
10	X	Not used
11	X	Not used
12	X	Not used
13	X	Not used
14	X	Not used
15	X	Not used

Note: Aux site refers to non-transmit sites in Simulcast and to satellite sites in Voted systems. Simulcast systems can have a maximum of 3 Rockwell Modem connected Aux sites in one channel per shelf configurations. Voted systems can have one RM connected main site and a maximum of 8 Rockwell Modem connected satellite sites or a maximum of 16 RS232 connected satellite sites.

CONFIGURATION TABLES

Digital Voter shelves are configured according to the following Configuration Tables.

- Table 10 - Digital Voter Configuration, Simulcast, 2 to 6 RS232 Sites, 2 Channels/Shelf, no RM Sites
- Table 11 - Analog Voter Configuration, Simulcast, 2 to 6 RS232 Sites, no RM Sites
- Table 12 - Digital Voter Configuration, Simulcast, 2 to 5 RS232 Sites, 2 channels/shelf, One RM Site
- Table 13 - Analog Voter Configuration, Simulcast, 2 to 5 RS232 Sites, One RM Site
- Table 14 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 2 to 12 RS232 Sites and no RM Sites
- Table 15 - Analog Voter Configuration, Simulcast, 2 to 12 RS232 Sites and no RM Sites
- Table 16 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 13 to 17 RS232 Sites and no RM Sites
- Table 17 - Analog Voter Configuration, Simulcast, 13 to 17 RS232 Sites and no RM Sites
- Table 18 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 2 to 11 RS232 Sites and One RM Site
- Table 19 - Analog Voter Configuration, Simulcast, 2 to 11 RS232 Sites and One RM Site
- Table 20 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 12 to 15 RS232 Sites and One RM Site
- Table 21 - Analog Voter Configuration, Simulcast, 12 to 15 RS232 Sites and One RM Site
- Table 22 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 2 to 10 RS232 Sites and Two RM Sites
- Table 23 - Analog Voter Configuration, Simulcast, 2 to 10 RS232 Sites and Two RM Sites
- Table 24 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 11 to 13 RS232 Sites and Two RM Sites
- Table 25 - Analog Voter Configuration, Simulcast, 11 to 13 RS232 Sites and Two RM Sites
- Table 26 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 2 to 9 RS232 Sites and Three RM Sites
- Table 27 - Analog Voter Configuration, Simulcast, 2 to 9 RS232 Sites and Three RM Sites
- Table 28 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 10 or 11 RS232 Sites and Three RM Sites
- Table 29 - Analog Voter Configuration, Simulcast, 10 or 11 RS232 Sites and Three RM Sites
- Table 30 - Voted, 2 Channel, RM Connected
- Table 31 - Voted, 1 Channel, RM Connected
- Table 32 - Voted, 2 Channel, RS232 Connected
- Table 33 - Voted, 1 Channel, RS232 Connected

Table 10 - Digital Voter Configuration, Simulcast, 2 to 6 RS232 Sites, 2 Channels/Shelf, no RM Sites

RS-232 sites	slot 1	slot 2	slot 3	slot 4	slot 5	slot 6	slot 7	slot 8	slot 9	slot 10	slot 11	slot 12	slot 13	slot 14	slot 15	slot 16	slot 17	slot 18	slot 19	slot 20
2	SEL	RM	DR1		DR2						SEL	RM	DR1		DR2					
3	SEL	RM	DR1		DR2	DR3					SEL	RM	DR1		DR2	DR3				
4	SEL	RM	DR1		DR2	DR3	DR4				SEL	RM	DR1		DR2	DR3	DR4			
5	SEL	RM	DR1		DR2	DR3	DR4	DR5			SEL	RM	DR1		DR2	DR3	DR4	DR5		
6	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	RS232	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	RS232
Slots 2 and 12 are RS232 if main site is connected RS232 (no switch or no Digital Dispatch).																				
If VDI, slots 4 and 14 are RS232.																				

Table 11 - Analog Voter Configuration, Simulcast, 2 to 6 RS232 Sites, no RM Sites

SHELF	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6	AUDIO SLOT	P.S. SLOT
TOP A.V.	R CH. SITE 1	R CH. SITE 2	R CH. SITE 3	R CH. SITE 4	R CH. SITE 5	R CH. SITE 6	AUDIO	P.S.
D.V.								
BOT A.V.	L CH. SITE 1	L CH. SITE 2	L CH. SITE 3	L CH. SITE 4	L CH. SITE 5	L CH. SITE 6	AUDIO	P.S.

Key:

RM Rockwell Modem Interface Card (RMIC) ROA 117 2247/1

DR1 Digital Receiver One ROA 117 2240/1

RS232 RS232 Interface Card ROA 117 2247/2

SEL Selector ROA 117 2240/2

Notes:

1 Digital Dispatch implies an IMC switch and Digital Voice or Data. A site may be connected RS232 even with IMC switch if system has no Digital Voice or Data.

2. Install a Receiver module (19D903175G1) in each Analog Voter slot which has a corresponding Digital Receiver called out in the Digital Voter shelf.

3. Install an Analog Voter Audio Module (19D413958G5) wherever AUDIO is called out in the Audio Slot.

4. Install a Power Supply Module (19D413917G4) in all Analog Voter shelves.

Table 12 - Digital Voter Configuration, Simulcast, 2 to 5 RS232 Sites, 2 channels/shelf, One RM Site

RS232 sites	slot 1	slot 2	slot 3	slot 4	slot 5	slot 6	slot 7	slot 8	slot 9	slot 10	slot 11	slot 12	slot 13	slot 14	slot 15	slot 16	slot 17	slot 18	slot 19	slot 20
2	SEL	RM	DR1		DR2				DR6	RM	SEL	RM	DR1		DR2				DR6	RM
3	SEL	RM	DR1		DR2	DR3			DR6	RM	SEL	RM	DR1		DR2	DR3			DR6	RM
4	SEL	RM	DR1		DR2	DR3	DR4		DR6	RM	SEL	RM	DR1		DR2	DR3	DR4		DR6	RM
5	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	RM	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	RM
Slots 2 and 12 are RS232 if main site is connected RS232 (no switch or no digital dispatch).																				
If VDI, slots 4 and 14 are RS232.																				

Table 13 - Analog Voter Configuration, Simulcast, 2 to 5 RS232 Sites, One RM Site

SHELF	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6	AUDIO SLOT	P.S. SLOT
TOP A.V.	R CH. SITE 1	R CH. SITE 2	R CH. SITE 3	R CH. SITE 4	R CH. SITE 5	R CH. SITE 6	AUDIO	P.S.
D.V.								
BOT A.V.	L CH. SITE 1	L CH. SITE 2	L CH. SITE 3	L CH. SITE 4	L CH. SITE 5	L CH. SITE 6	AUDIO	P.S.

Note:

In Simulcast systems with RM connected sites (usually Aux sites), some Analog Voter slots will be empty. Ex. If two RS232 sites and one RM site, only slots 1, 2, and 6 have Receiver Modules.

Table 14 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 2 to 12 RS232 Sites and no RM Sites

RS232 sites	slot 1	slot 2	slot 3	slot 4	slot 5	slot 6	slot 7	slot 8	slot 9	slot 10	slot 11	slot 12	slot 13	slot 14	slot 15	slot 16	slot 17	slot 18	slot 19	slot 20
2	SEL	RM	DR1		DR2															
3	SEL	RM	DR1		DR2	DR3														
4	SEL	RM	DR1		DR2	DR3	DR4													
5	SEL	RM	DR1		DR2	DR3	DR4	DR5												
6	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6											
7	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7										
8	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8									
9	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9								
10	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9			DR10					
11	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9			DR10		DR11			
12	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9			DR10		DR11		DR12	
Slot 2 is RS232 if main site is connected RS232 (no switch or no digital dispatch).																				
If VDI, slot 4 is RS232																				
Two to six site configuration occurs if expansion sites are specified.																				

Table 15 - Analog Voter Configuration, Simulcast, 2 to 12 RS232 Sites and no RM Sites

SHELF	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6	AUDIO SLOT	P.S. SLOT
TOP A.V.	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12	AUDIO	P.S.
D.V.								
BOT A.V.	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	BLANK	P.S.

Table 16 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 13 to 17 RS232 Sites and no RM Sites

RS232 sites	slot 1	slot 2	slot 3	slot 4	slot 5	slot 6	slot 7	slot 8	slot 9	slot 10	slot 11	slot 12	slot 13	slot 14	slot 15	slot 16	slot 17	slot 18	slot 19	slot 20
13	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	DR13				
14	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	DR13	DR14			
15	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	DR13	DR14	DR15		
16	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	DR13	DR14	DR15	DR16	
17	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	DR13	DR14	DR15	SR16	DR17
Slot 2 is RS232 if main site is connected RS232 (no switch or no digital dispatch).																				
If VDI, slot 4 is RS232																				
Two to six site configuration occurs if expansion sites are specified.																				

Table 17 - Analog Voter Configuration, Simulcast, 13 to 17 RS232 Sites and no RM Sites

SHELF	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6	AUDIO SLOT	P.S. SLOT
TOP A.V.	SITE 13	SITE 14	SITE 15	SITE 16	SITE 17	BLANK	AUDIO	P.S.
D.V.								
MID A.V.	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12	BLANK	P.S.
BOT A.V.	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	BLANK	P.S.

Table 18 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 2 to 11 RS232 Sites and One RM Site

RS232 sites	slot 1	slot 2	slot 3	slot 4	slot 5	slot 6	slot 7	slot 8	slot 9	slot 10	slot 11	slot 12	slot 13	slot 14	slot 15	slot 16	slot 17	slot 18	slot 19	slot 20
2	SEL	RM	DR1		DR2														DR12	RM
3	SEL	RM	DR1		DR2	DR3													DR12	RM
4	SEL	RM	DR1		DR2	DR3	DR4												DR12	RM
5	SEL	RM	DR1		DR2	DR3	DR4	DR5											DR12	RM
6	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6										DR12	RM
7	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7									DR12	RM
8	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8								DR12	RM
9	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9							DR12	RM
10	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9			DR10				DR12	RM
11	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9			DR10		DR11		DR12	RM
Slot 2 is RS232 if main site is connected RS232 (no switch or no digital dispatch).																				
If VDI, slot 4 is RS232.																				

Table 19 - Analog Voter Configuration, Simulcast, 2 to 11 RS232 Sites and One RM Site

SHELF	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6	AUDIO SLOT	P.S. SLOT
TOP A.V.	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12	AUDIO	P.S.
D.V.								
BOT A.V.	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	BLANK	P.S.

Table 20 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 12 to 15 RS232 Sites and One RM Site

RS232 sites	slot 1	slot 2	slot 3	slot 4	slot 5	slot 6	slot 7	slot 8	slot 9	slot 10	slot 11	slot 12	slot 13	slot 14	slot 15	slot 16	slot 17	slot 18	slot 19	slot 20
12	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12				DR16	RM
13	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	DR13			DR16	RM
14	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	DR13	DR14		DR16	RM
15	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	DR13	DR14	DR15	DR16	RM
Slot 2 is RS232 if main site is connected RS232 (no switch or no digital dispatch).																				
If VDI, slot 4 is RS232																				

Table 21 - Analog Voter Configuration, Simulcast, 12 to 15 RS232 Sites and One RM Site

SHELF	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6	AUDIO SLOT	P.S. SLOT
TOP A.V.	SITE 13	SITE 14	SITE 15	SITE 16	BLANK	BLANK	AUDIO	P.S.
D.V.								
MID A.V.	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12	BLANK	P.S.
BOT A.V.	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	BLANK	P.S.

Table 22 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 2 to 10 RS232 Sites and Two RM Sites

RS232 sites	slot 1	slot 2	slot 3	slot 4	slot 5	slot 6	slot 7	slot 8	slot 9	slot 10	slot 11	slot 12	slot 13	slot 14	slot 15	slot 16	slot 17	slot 18	slot 19	slot 20
2	SEL	RM	DR1		DR2												DR11	RM	DR12	RM
3	SEL	RM	DR1		DR2	DR3											DR11	RM	DR12	RM
4	SEL	RM	DR1		DR2	DR3	DR4										DR11	RM	DR12	RM
5	SEL	RM	DR1		DR2	DR3	DR4	DR5									DR11	RM	DR12	RM
6	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6								DR11	RM	DR12	RM
7	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7							DR11	RM	DR12	RM
8	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8						DR11	RM	DR12	RM
9	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9					DR11	RM	DR12	RM
10	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9			DR10		DR11	RM	DR12	RM
Slot 2 is RS232 if main site is connected RS232 (no switch or no digital dispatch).																				
If VDI, slot 4 is RS232.																				

Table 23 - Analog Voter Configuration, Simulcast, 2 to 10 RS232 Sites and Two RM Sites

SHELF	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6	AUDIO SLOT	P.S. SLOT
TOP A.V.	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12	AUDIO	P.S.
D.V.								
BOT A.V.	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	BLANK	P.S.

Table 24 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 11 to 13 RS232 Sites and Two RM Sites

RS232 sites	slot 1	slot 2	slot 3	slot 4	slot 5	slot 6	slot 7	slot 8	slot 9	slot 10	slot 11	slot 12	slot 13	slot 14	slot 15	slot 16	slot 17	slot 18	slot 19	slot 20
11	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11			DR14	RM	DR16	RM
12	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12		DR14	RM	DR16	RM
13	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	DR13	DR14	RM	DR16	RM
Slot 2 is RS232 if main site is connected RS232 (no switch or no digital dispatch).																				
If VDI, slot 4 is RS232																				

Table 25 - Analog Voter Configuration, Simulcast, 11 to 13 RS232 Sites and Two RM Sites

SHELF	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6	AUDIO SLOT	P.S. SLOT
TOP A.V.	SITE 13	SITE 14	BLANK	SITE 16	BLANK	BLANK	AUDIO	P.S.
D.V.								
MID A.V.	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12	BLANK	P.S.
BOT A.V.	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	BLANK	P.S.

Table 26 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 2 to 9 RS232 Sites and Three RM Sites

RS232 sites	slot 1	slot 2	slot 3	slot 4	slot 5	slot 6	slot 7	slot 8	slot 9	slot 10	slot 11	slot 12	slot 13	slot 14	slot 15	slot 16	slot 17	slot 18	slot 19	slot 20
2	SEL	RM	DR1		DR2										DR10	RM	DR11	RM	DR12	RM
3	SEL	RM	DR1		DR2	DR3									DR10	RM	DR11	RM	DR12	RM
4	SEL	RM	DR1		DR2	DR3	DR4								DR10	RM	DR11	RM	DR12	RM
5	SEL	RM	DR1		DR2	DR3	DR4	DR5							DR10	RM	DR11	RM	DR12	RM
6	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6						DR10	RM	DR11	RM	DR12	RM
7	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7					DR10	RM	DR11	RM	DR12	RM
8	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8				DR10	RM	DR11	RM	DR12	RM
9	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9			DR10	RM	DR11	RM	DR12	RM
Slot 2 is RS232 if main site is connected RS232 (no switch or no digital dispatch).																				
If VDI, slot 4 is RS232.																				

Table 27 - Analog Voter Configuration, Simulcast, 2 to 9 RS232 Sites and Three RM Sites

SHELF	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6	AUDIO SLOT	P.S. SLOT
TOP A.V.	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12	AUDIO	P.S.
D.V.								
BOT A.V.	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	BLANK	P.S.

Table 28 - Digital Voter Configuration, Simulcast, 1 channel/shelf, 10 or 11 RS232 Sites and Three RM Sites

RS232 sites	slot 1	slot 2	slot 3	slot 4	slot 5	slot 6	slot 7	slot 8	slot 9	slot 10	slot 11	slot 12	slot 13	slot 14	slot 15	slot 16	slot 17	slot 18	slot 19	slot 20
10	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10		DR12	RM	DR14	RM	DR16	RM
11	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	RM	DR14	RM	DR16	RM
Slot 2 is RS232 if main site is connected RS232 (no switch or no digital dispatch).																				
If VDI, slot 4 is RS232																				

Table 29 - Analog Voter Configuration, Simulcast, 10 or 11 RS232 Sites and Three RM Sites

SHELF	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6	AUDIO SLOT	P.S. SLOT
TOP A.V.	BLANK	SITE 14	BLANK	SITE 16	BLANK	BLANK	AUDIO	P.S.
D.V.								
MID A.V.	SITE 7	SITE 8	SITE 9	SITE 10	SITE 11	SITE 12	BLANK	P.S.
BOT A.V.	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	BLANK	P.S.

Table 30 - Voted, 2 Channel, RM Connected

sites	slot 1	slot 2	slot 3	slot 4	slot 5	slot 6	slot 7	slot 8	slot 9	slot 10	slot 11	slot 12	slot 13	slot 14	slot 15	slot 16	slot 17	slot 18	slot 19	slot 20
2	SEL	RM	DR1		DR2	RM					SEL	RM	DR1		DR2	RM				
3	SEL	RM	DR1		DR2	RM	DR3	RM			SEL	RM	DR1		DR2	RM	DR3	RM		
4	SEL	RM	DR1		DR2	RM	DR3	RM	DR4	RM	SEL	RM	DR1		DR2	RM	DR3	RM	DR4	RM
If VDI, slots 4 and 14 are RM																				

Table 31 - Voted, 1 Channel, RM Connected

sites	slot 1	slot 2	slot 3	slot 4	slot 5	slot 6	slot 7	slot 8	slot 9	slot 10	slot 11	slot 12	slot 13	slot 14	slot 15	slot 16	slot 17	slot 18	slot 19	slot 20
2	SEL	RM	DR1		DR2	RM														
3	SEL	RM	DR1		DR2	RM	DR3	RM												
4	SEL	RM	DR1		DR2	RM	DR3	RM	DR4	RM										
5	SEL	RM	DR1		DR2	RM	DR3	RM	DR4	RM	DR5	RM								
6	SEL	RM	DR1		DR2	RM	DR3	RM	DR4	RM	DR5	RM	DR6	RM						
7	SEL	RM	DR1		DR2	RM	DR3	RM	DR4	RM	DR5	RM	DR6	RM	DR7	RM				
8	SEL	RM	DR1		DR2	RM	DR3	RM	DR4	RM	DR5	RM	DR6	RM	DR7	RM	DR8	RM		
9	SEL	RM	DR1		DR2	RM	DR3	RM	DR4	RM	DR5	RM	DR6	RM	DR7	RM	DR8	RM	DR9	RM
Slots 2 and 12 are RS232 if no switch and Main Site connected RS232 (no switch or no digital dispatch).																				
If VDI, slots 4 and 14 are RM																				

Table 32 - Voted, 2 Channel, RS232 Connected

sites	slot 1	slot 2	slot 3	slot 4	slot 5	slot 6	slot 7	slot 8	slot 9	slot 10	slot 11	slot 12	slot 13	slot 14	slot 15	slot 16	slot 17	slot 18	slot 19	slot 20
2	SEL	RM	DR1		DR2						SEL	RM	DR1		DR2					
3	SEL	RM	DR1		DR2	DR3					SEL	RM	DR1		DR2	DR3				
4	SEL	RM	DR1		DR2	DR3	DR4				SEL	RM	DR1		DR2	DR3	DR4			
5	SEL	RM	DR1		DR2	DR3	DR4	DR5			SEL	RM	DR1		DR2	DR3	DR4	DR5		
6	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6		SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	
Slots 2 and 12 are RS232 if no switch and Main Site connected RS232 (no switch or no digital dispatch).																				
If VDI, slots 4 and 14 are RM																				

Table 33 - Voted, 1 Channel, RS232 Connected

sites	slot 1	slot 2	slot 3	slot 4	slot 5	slot 6	slot 7	slot 8	slot 9	slot 10	slot 11	slot 12	slot 13	slot 14	slot 15	slot 16	slot 17	slot 18	slot 19	slot 20
2	SEL	RM	DR1		DR2															
3	SEL	RM	DR1		DR2	DR3														
4	SEL	RM	DR1		DR2	DR3	DR4													
5	SEL	RM	DR1		DR2	DR3	DR4	DR5												
6	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6											
7	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7										
8	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8									
9	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9								
10	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10							
11	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11						
12	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12					
13	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	DR13				
14	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	DR13	DR14			
15	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	DR13	DR14	DR15		
16	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	DR13	DR14	DR15	DR16	
17	SEL	RM	DR1		DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	DR13	DR14	DR15	DR16	DR17
Slot 2 is RS232 if no switch and main site connected RS232 (no switch or no digital dispatch).																				
If VDI, slot 4 is RM																				

SYSTEM ALIGNMENT

SYSTEM SETUP LEVELS

Before setting up the Voter system, it is necessary to setup the Satellite Receivers and Station or Control Point GETCs.

The actual procedures for setting up the equipment may be found in the following manuals:

SIMULCAST SYSTEMS:

LBI-39090 - Simulcast Transmit Site Maintenance Manuals.

LBI-39186 - Simulcast Control Point Maintenance Manuals

VOTED (Non-Simulcast) SYSTEMS:

LBI-31782 - MASTR II Station Maintenance Manual.

LBI-38430 - MASTR IIe Station Maintenance Manual.

LBI-39074 - MASTR III EDACS Installation Manual.

LBI-38894 - GETC Trunking Card Maintenance Manual for 19D901868G3 and G4.

LBI-38988 - EDACS Station GETC Configuration Manual.

1. Set audio levels, Rockwell modem levels, 1950 Hz tone levels at Main Site channels and at Satellite Receivers per procedures in the applicable maintenance or installation manuals.

ANALOG VOTER ALIGNMENT PROCEDURE

Setup

Setup and align the Analog Voter audio input and output levels per procedures described in LBI-38676, Analog Voter Maintenance Manual.

CV^2 FIELD ALIGNMENT PROCEDURE

Setup

1. Be sure audio and data inputs to the voter from the Satellite Sites and from the Main Site are present and at usable levels.
2. Set the switches on each Digital Receiver and Selector and ensure the correct configuration plug is installed. Refer to the Configuration section.

RMIC Modem Levels

Set the modem output and receive levels for each RMIC using the following procedures. Refer to Figure 6.

NOTE

Modem levels are selectable to one of four levels. These settings are approximately 6 dB apart and range from 0 to -18 dBm on transmit and 0 to 18 dB attenuation on receive.

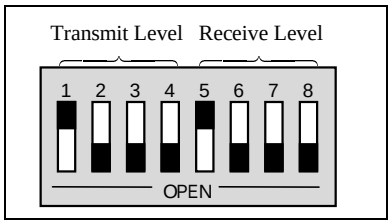


Figure 6 - RMIC DIP Switch S1

❑ **Output Level**

The Output level is set by S1 sections 1 thru 4.

1. Observe the output level across card connector X5 pins B28 and B29. Use extended card if necessary.
2. Set the RM output level as near to 0 dBm (0.77 Vrms), -12 dBm for Simulcast, as possible by closing one and only one of the sections of S1 sections 1 through 4.

NOTE

Use an average responding, RMS calibrated voltmeter, such as an HP-400 or Convex C120.

❑ **Receive Level**

The Receive level is set by S1 sections 5 thru 8.

1. Observe Receive level at X2 pin 33 (U4 pin 7).
2. Set Receive level as near to 300 mVpp as possible by closing one and only one of the sections of S1 sections 5 thru 8.

SYSTEM CHECKOUT

MAIN SITE GETC

Use the following steps and verify the operation of the Main/Control Site GETC.

1. Verify the correct LED indicators are lit when the Main Site/CP GETC is operating as an idle trunked channel as shown in Table 34.
2. Verify the pattern of illuminated indicators are as shown in Table 35 when the trunked channel is assigned.
3. With the system in Failsoft, verify the LED indicators on the Main Site/CP GETC are as shown in Tables 36 and 37.

Table 34 - LED Indicators for Trunked Idle Channels

LED Indicators	L1	L2	L3	L4	L5	L6	L7
Fully Trunked Idle WB Working Channel	❍	❍	❍	❍	❍	❍	●
Fully Trunked Idle NB Working Channel	❍	❍	●	❍	❍	❍	●
Fully Trunked WB Control Channel	❍	❍	❍	❍	❍	●	●
Fully Trunked NB Control Channel	❍	❍	●	❍	❍	●	●

Legend: ❍ = OFF ● = ON ❇ = FLASHING

Table 35 - LED Indicators for Trunked Assigned Channels

LED Indicators	L1	L2	L3	L4	L5	L6	L7
Fully Trunked Assigned WB Clear Call	❍	❍	❍	❍	❍	●	❍
Fully Trunked Assigned WB Digital Voice Call	❍	❍	❍	❍	❍	●	●
Fully Trunked Assigned NB Clear Call	❍	❍	●	❍	❍	●	❍

Legend: ❍ = OFF ● = ON ❇ = FLASHING

SATELLITE RECEIVER

Use the following steps and verify the operation of the Satellite Receiver. A list of indicators and their functions can be found in Table 38.

1. Verify the correct LED indicators are lit when the Satellite Receiver is idle on a trunked Working Channel as shown in Table 38.
2. Verify the pattern of illuminated indicators is correct when the Working Channel is assigned.
3. Verify the Satellite Receiver LED indicators are correct when the channel is assigned as the Control Channel.

Table 36 - LED Indicators for Failsoft Idle Channels

LED Indicators	L1	L2	L3	L4	L5	L6	L7
Failsoft Idle WB Working Channel	●	❍	❍	❍	❍	❍	●
Failsoft WB Control Channel	●	❍	❍	❍	❍	●	●
Failsoft Idle NB Working Channel	●	❍	●	❍	❍	❍	●
Failsoft NB Control Channel	●	❍	●	❍	❍	●	●

Legend: ❍ = OFF ● = ON ❇ = FLASHING

Table 37 - LED Indicators for Failsoft Assigned Channels

LED Indicators	L1	L2	L3	L4	L5	L6	L7
Failsoft Assigned WB Clear Call	●	❍	❍	❍	❍	●	❍
Failsoft Assigned WB Digital Voice Call	●	❍	❍	❍	❍	●	●
Failsoft Assigned NB Clear Call	●	❍	●	❍	❍	●	❍

Legend: ❍ = OFF ● = ON ❇ = FLASHING

Table 38 - LED Indicators for Satellite Site Receivers

LED Indicators	L1	L2	L3	L4	L5	L6	L7
WB Working Channel Satellite Site Idle	●	❍	❍	❍	❍	❍	●
WB Working Channel Satellite Site Assigned	●	❍	❍	❍	❍	●	●
WB Control Channel Satellite Site	●	●	❍	❍	❍	❍	●

Legend: ❍ = OFF ● = ON ❇ = FLASHING

SIMULCAST TX SITE

Use the following steps and verify the operation of the Simulcast TX Site GETC. A list of indicators and their functions can be found in Table 39.

1. Verify the correct LED indicators are lit when the Simulcast TX Site GETC is idle on a trunked Working Channel as shown in Table 39.
2. Verify the pattern of illuminated indicators is correct when the Working Channel is assigned.
3. Verify the Simulcast TX Site GETC LED indicators are correct when the channel is assigned as the Control Channel.

Table 39 - LED Indicators for Simulcast TX Site GETC

LED Indicators	L1	L2	L3	L4	L5	L6	L7
WB Working Channel Simulcast TX Site Idle	●	❍	❍	❍	❍	❍	●
WB Working Channel Simulcast TX Site Assigned	●	❍	❍	❍	❍	●	❍
WB Control Channel Simulcast TX Site	●	●	❍	❍	❍	❍	●

Legend: ❍ = OFF ● = ON ❇ = FLASHING

VOTER SYSTEM CHECKOUT

1. Check each channel for proper operation on clear and private calls. Verify proper LED activity.
2. Check that the console can override voted repeat audio and that both levels are equal. The voted audio should remain at the console speaker even during preempt.
3. Test each channel for 1950 Hz drop as follows. Key a radio on each channel, then turn the radio power off without unkeying. The voter channel should return to the idle state in about two seconds. Check each channel's operation as a control channel.
4. Verify the system can make the following calls using the procedures provided.

❑ Clear Voice Calls

1. Perform a single site radio-to-radio CV group or individual call.
2. Verify call occurs normally.
3. Verify call occurs correctly on the remote site if multi-sited and that a call to that group or individual can be made from the remote site to the voter site.
4. Disable received data on the Main Site Receiver GETC by grounding TP103 and removing J18, then assure the call occurs normally through the Satellite Site.
5. Repeat by disabling the Satellite Site Receiver and checking a call through the Main Site.

NOTE

Disabling the Main Site Receiver is done to assure the call is occurring via the voter not via local repeat, and also to assure that the voter operates properly on a call received only by the Main Site or only by the Satellite Site.

❑ Digital Voice Calls

1. Perform a single site radio-to-radio DV group or individual call.
2. Verify call occurs normally.
3. Verify the call occurs correctly on the Remote Site and that a call to that group or individual can be made from the Remote Site to the Voter Site.
4. Disable received data on the Main Site Receiver GETC by grounding TP103 and removing J18,

then assure that the call occurs normally through the Satellite Site.

5. Repeat by disabling the Satellite Site Receiver and checking a call through the Main Site.

❑ **Clear Voice Jessica Calls (If system has Jessica Interconnect)**

1. Perform CV phone to radio group calls, CV phone to radio individual calls, and radio to phone CV calls.
2. Observe that calls occur normally and audio is heard in both directions.

❑ **Digital Voice Jessica Calls (If system has VDI)**

1. Perform DV phone to radio group calls, DV phone to radio individual calls, and radio to phone DV calls.
2. Observe that calls occur normally and audio is heard in both directions.

❑ **RF Data Calls (If option is available)**

1. Perform host originated RF Data individual calls.
2. Verify correctness of received data.

❑ **Landline Data Calls**

1. Perform host (EDG) originated landline data individual calls
2. Verify correctness of received data.
3. Perform radio (non-host) originated landline data individual calls.
4. Verify correctness of received data.

❑ **CV Preempt**

1. Set up for CV multisite group calls.
2. Verify audio is heard in both local and multisite radios.
3. From a console, preempt the group call already in progress and verify console audio is heard on radios on both sites.

TROUBLESHOOTING

The hardware used in the CV^2 system is extremely reliable, making component failure the unlikely cause of most problems. Most problems are the result of programming errors or interconnect cabling.

Use the following guidelines when troubleshooting the Voter system:

1. Verify system operation by observing the front panel indicators while performing the System Checkout.
2. Verify all modules and cards are properly configured as describe in the Card Configuration Guide and SRN 1007.
3. Verify all system cables are properly installed and connected. Refer to the Interconnect Diagrams section.
4. Refer to the following troubleshooting guides for help in isolating the problem to a specific shelf, module, or card.
5. If a module or card is suspect, replace the unit with a known good properly configured unit. If the replacement unit resolves the problem, refer to defective unit's maintenance manual for detailed service instructions.

WARNING

The Analog Voter shelf must be powered down prior to removing or installing modules. However, Digital Voter Shelf cards may be removed and reinstalled with power applied.

If you are unable to resolve a problem to your satisfaction, contact the Ericsson Technical Assistance Center (TAC) at 1-800-528-7711 (outside USA, 804-528-7711)

GENERAL TROUBLESHOOTING	
SYMPTOM	**POSSIBLE CAUSE**
1. No relay pickup when console keys.	a. IMC not programmed to send E & M PTT signal. b. PTT line broken.
2. No console preempt	a. Check IMC programming or VDRB. b. PTT line broken.
3. No 1950 Hz drop.	Check connections from the Analog Voter to the Selector (RCVNG).
4. No audio to Voter.	a. Check phone line connections and Voter Cross Connect panels.
5. No data to voter.	a. Check phone line connections and Voter Cross Connect panels. b. Check for low modem data level.
6. RMIC fails to recover data.	Out of range receive level. Set to 300 mVpp at X2-33.
7. Control Channel indications differ between station and voter.	Check wiring.

GENERAL TROUBLESHOOTING	
SYMPTOM	**POSSIBLE CAUSE**
8. Analog Voter yellow (RCVNG) light is on when corresponding Digital Receiver is unplugged.	1950 Hz tone missing.
9. Occasional missed message or trouble with special call or telephone interconnect.	Check slot timing switch settings in Digital Receivers.
10. The **+12V** LED on RMICs is on but low brightness.	Check +12 volt fuse F2 on backplane.

SATELLITE RECEIVER	(Refer to LBI-38894 for detailed GETC Troubleshooting)
SYMPTOM	**POSSIBLE CAUSE**
1. No control channel indication on any Satellite Receiver.	a. Control Channel not programmed correctly. b. Check Control Channel mobile, mobile buffer board, and multicoupler.
2. MAJOR ALARM light on at mobile buffer board.	Not receiving data from Control Channel mobile.
3. Wrong receiver is Control Channel.	Incorrect switch settings.
4. All GETCs reset momentarily.	Control Channel mobile has lost data.
5. All GETC lights off.	a. Check GETC power. b. Check position of GETC DIP switch S1-8.

SELECTOR TROUBLESHOOTING	(Refer to LBI-39151 for detailed troubleshooting on Selector.)
SYMPTOM	**POSSIBLE CAUSE**
1. **RDY** LED not ON.	a. No power to CV^2 shelf. Check cables and 5 volt power supply. b. Check Flash programming.
2. **SEL/F** LED flashing erratically or at a 2 Hz rate.	Backup Serial Link (BSL) failure. Check operation of Digital Receivers.
3. **SEL/F** LED flashing erratically or at a 1 Hz rate.	Phone line failure. a. Check phone lines and RMIC modem line level settings.

SELECTOR TROUBLESHOOTING	(Refer to LBI-39151 for detailed troubleshooting on Selector.)
SYMPTOM	**POSSIBLE CAUSE**
	b. Check RMIC (if present) or RS-232 Interface card (if present). c. In Simulcast systems, check the data path from the Control Point to the Selector.

DIGITAL RECEIVER TROUBLESHOOTING	(Refer to LBI-39151 for detailed troubleshooting on DR.)
SYMPTOM	**POSSIBLE CAUSE**
1. **RDY** LED not ON.	a. No power to CV^2 shelf. Check power cables and 5 volt power supply. b Check Flash programming.
2. **DR/F** LED flashing erratically or at a 2 Hz rate.	Backup Serial Link (BSL) failure. Check operation of Selector.
3. **DR/F** LED flashing erratically or at a 1 Hz rate.	Phone line failure. a. Check phone lines and RMIC modem line level settings. b. Check RMIC (if present) or RS-232 Interface card if RMIC c. Ensure cards are installed in the correct slots.

POWER DISTRIBUTION TROUBLESHOOTING (Refer to LBI-39038 for Power Supply troubleshooting information)

SYMPTOM	POSSIBLE CAUSE
1. RMIC +5V, +12V, or -12V LEDs OFF. Power Supply STATUS LED - green TEMP LED - green	a. Check Backplane fuses F1, F2, or F3. b Power Supply System cables not correctly installed, removed or improperly connected.
2. RMIC +12V or -12V LEDs dim. Power Supply STATUS LED - green TEMP LED - green	a. Check Backplane fuses F2 and F3.
3. No power at Analog Voter	a. Check 24V Power Supply. b. Check 24V power distribution cables.

CABLE CONNECTION LISTS CONNECTION LIST 350A1711, 2 TO 12 SITE CV^2 SYSTEM (1 CHANNEL PER SHELF)

Table 40 - 2 To 12 Site CV^2 System (1 Channel Per Shelf) Cable Connection List
(See Interconnection Diagram 188D6802, sheet 2)

FUNCTION	FROM		TO		CABLE NO.
	ASSEMBLY	CONNECTION	ASSEMBLY	CONNECTION	
ANALOG VOTED AUDIO	DIGITAL INTERFACE BD	J100	ANALOG VOTER 2 (Top)	TB8 - 7 (BL OR G - W) TB7 - 1 (Y OR BL - W) TB7 - 8 (G OR W - BL) TB7 - 6 (O OR O - W) TB8 - 10 (W OR W - G)	19B804346P21
CONSOLE KEY	VDRB	J1	AUDIO EDACS BD	J1	19B804346P31
IMC AUDIO	VDRB	J2	AUDIO EDACS BD.	J2	19B804346P31
SITE 1 & 2 AUDIO	AUDIO EDACS BD.	J3	ANALOG VOTER 1 (Bottom)	TB9 - 20 (Y OR BL - W) TB9 - 17 (G OR W - BL) TB9 - 15 (O OR O - W) TB9 - 12 (BK OR W - O)	19B804346P51
SITE 3 & 4 AUDIO	AUDIO EDACS BD.	J4	ANALOG VOTER 1 (Bottom)	TB9 - 10 (Y OR BL - W) TB9 - 7 (G OR W - BL) TB9 - 5 (O OR O - W) TB9 - 2 (BK OR W - O)	19B804346P51
SITE 5 & 6 AUDIO	AUDIO EDACS BD.	J5	ANALOG VOTER 1 (Bottom)	TB8 - 20 (Y OR BL - W) TB8 - 17 (G OR W - BL) TB8 - 15 (O OR O - W) TB8 - 12 (BK OR W - O)	19B804346P51
SITE 7 & 8 AUDIO	AUDIO EDACS BD.	J6	ANALOG VOTER 2 (Top)	TB9 - 20 (Y OR BL - W) TB9 - 17 (G OR W - BL) TB9 - 15 (O OR O - W) TB9 - 12 (BK OR W - O)	19B804346P51
SITE 9 & 10 AUDIO	AUDIO EDACS BD.	J7	ANALOG VOTER 2 (Top)	TB9 - 10 (Y OR BL - W) TB9 - 7 (G OR W - BL) TB9 - 5 (O OR O - W) TB9 - 2 (BK OR W - O)	19B804346P51
SITE 11 & 12 AUDIO	AUDIO EDACS BD.	J8	ANALOG VOTER 2 (Top)	TB8 - 20 (Y OR BL - W) TB8 - 17 (G OR W - BL) TB8 - 15 (O OR O - W) TB8 - 12 (BK OR W - O)	19B804346P51
E & M SQUELCH	DIGITAL INTERFACE BD	J7	ANALOG VOTER 1 (Bottom)	TB1 - 5 (BL OR G - W) TB2 - 5 (Y OR BL - W) TB3 - 5 (G OR W - BL) TB4 - 5 (R OR O - W) TB5 - 5 (BK OR W - O) TB6 - 5 (W OR W - G)	19B804346P71

Table 40 - 2 To 12 Site CV^2 System (1 Channel Per Shelf) Cable Connection List
(See Interconnection Diagram 188D6802, sheet 2)

FUNCTION	FROM		TO		CABLE NO.
	ASSEMBLY	CONNECTION	ASSEMBLY	CONNECTION	
E & M SQUELCH	DIGITAL INTERFACE BD	J8	ANALOG VOTER 2 (Top)	TB1 - 5 (BL OR G - W) TB2 - 5 (Y OR BL - W) TB3 - 5 (G OR W - BL) TB4 - 5 (R OR O - W) N/C (BK OR W - O) N/C (W OR W - G)	19B804346P71
E & M SQUELCH	DIGITAL INTERFACE BD	J18	ANALOG VOTER 2 (Top)	TB5 - 5 (BK OR W - O) TB6 - 5 (W OR W - G) N/C (BL OR G - W) N/C (Y OR BL - W) N/C (G OR W - BL) N/C (R OR O - W)	19B804346P71
ANALOG VOTER PARALLEL CONNECTOR	ANALOG VOTER 1 (Bottom)	TB7-1 BK TB7-4 BL TB7-5 Y TB7-6 G TB7-7 R TB7-10 BR TB7-11 O	ANALOG VOTER 2 (Top)	TB7-1 BK TB7-4 BL TB7-5 Y TB7-6 G TB7-7 R TB7-10 BR TB7-11 O	19B804346P101
VOTED OUTPUTS	DIGITAL INTERFACE BD	J3	DIGITAL VOTER BACKPLANE	J3	19B804346P91
RS-232 INPUTS	DIGITAL INTERFACE BD	J1	DIGITAL VOTER BACKPLANE	J1	19B804346P81
E & M SQUELCH	DIGITAL INTERFACE BD	J5	DIGITAL VOTER BACKPLANE	J5	19B804346P81
MODEM INPUTS	DIGITAL INTERFACE BD	J2	DIGITAL VOTER BACKPLANE	J2	19B804346P81
FOR RS-232 SYSTEMS (RS-232 Card in Digital Voter Shelf Slot 2.) (Voter Output connection to Main Site is RS-232.)					
VOTED OUTPUT TO SITE	VDRB	J3	DIGITAL INTFC BD.	J9	19B804346P11

Table 40 - 2 To 12 Site CV^2 System (1 Channel Per Shelf) Cable Connection List
(See Interconnection Diagram 188D6802, sheet 2)

FUNCTION	FROM		TO		CABLE NO.
	ASSEMBLY	CONNECTION	ASSEMBLY	CONNECTION	
FOR ROCKWELL MODEM SYSTEMS (Modem Card in Digital Voter Shelf Slot 2.) (Voter Output connection to Main Site is Modem.)					
VOTED OUTPUT TO SITE	VDRB	J3	DIGITAL INTFC BD.	J10	19B804346P11

CONNECTION LIST 350A1712, 2 TO 17 SITE CV^2 SYSTEM (1 CHANNEL PER SHELF)

Table 41 - 2 To 17 Site CV^2 System (1 Channel Per Shelf) Cable Connection List
(See Interconnection Diagram 188D6802, sheet 3)

FUNCTION	FROM		TO		CABLE NO.
	ASSEMBLY	CONNECTION	ASSEMBLY	CONNECTION	
ANALOG VOTED AUDIO	DIGITAL INTERFACE BD	J100	ANALOG VOTER (Top) SITES 13-17	TB8 - 7 (BL OR G - W) TB7 - 1 (Y OR BL - W) TB7 - 8 (G OR W - BL) TB7 - 6 (O OR O - W) TB8 - 10 (W OR W - G)	19B804346P21
CONSOLE KEY	VDRB	J1	AUDIO EDACS BD	J1	19B804346P31
IMC AUDIO	VDRB	J2	AUDIO EDACS BD.	J2	19B804346P31
SITE 1 & 2 AUDIO	AUDIO EDACS BD.	J3	ANALOG VOTER (Bottom) SITES 1-6	TB9 - 20 (Y OR BL - W) TB9 - 17 (G OR W - BL) TB9 - 15 (O OR O - W) TB9 - 12 (BK OR W - O)	19B804346P41
SITE 3 & 4 AUDIO	AUDIO EDACS BD.	J4	ANALOG VOTER (Bottom) SITES 1-6	TB9 - 10 (Y OR BL - W) TB9 - 7 (G OR W - BL) TB9 - 5 (O OR O - W) TB9 - 2 (BK OR W - O)	19B804346P41
SITE 5 & 6 AUDIO	AUDIO EDACS BD.	J5	ANALOG VOTER (Bottom) SITES 1-6	TB8 - 20 (Y OR BL - W) TB8 - 17 (G OR W - BL) TB8 - 15 (O OR O - W) TB8 - 12 (BK OR W - O)	19B804346P41
SITE 7 & 8 AUDIO	AUDIO EDACS BD.	J6	ANALOG VOTER (Mid) SITES 7-12	TB9 - 20 (Y OR BL - W) TB9 - 17 (G OR W - BL) TB9 - 15 (O OR O - W) TB9 - 12 (BK OR W - O)	19B804346P51
SITE 9 & 10	AUDIO EDACS BD.	J7	ANALOG VOTER	TB9 - 10 (Y OR BL - W) TB9 - 7 (G OR W - BL)	19B804346P51

Table 41 - 2 To 17 Site CV^2 System (1 Channel Per Shelf) Cable Connection List
(See Interconnection Diagram 188D6802, sheet 3)

FUNCTION	FROM		TO		CABLE NO.
	ASSEMBLY	CONNECTION	ASSEMBLY	CONNECTION	
AUDIO			(Mid) SITES 7-12	TB9 - 5 (O OR O - W) TB9 - 2 (BK OR W - O)	
SITE 11 & 12 AUDIO	AUDIO EDACS BD.	J8	ANALOG VOTER (Mid) SITES 7-12	TB8 - 20 (Y OR BL - W) TB8 - 17 (G OR W - BL) TB8 - 15 (O OR O - W) TB8 - 12 (BK OR W - O)	19B804346P51
SITE 13 & 14 AUDIO	AUDIO EDACS BD.	J9	ANALOG VOTER (Top) SITES 13-17	TB9 - 20 (Y OR BL - W) TB9 - 17 (G OR W - BL) TB9 - 15 (O OR O - W) TB9 - 12 (BK OR W - O)	19B804346P51
SITE 15 & 16 AUDIO	AUDIO EDACS BD.	J10	ANALOG VOTER (Top) SITES 13-17	TB9 - 10 (Y OR BL - W) TB9 - 7 (G OR W - BL) TB9 - 5 (O OR O - W) TB9 - 2 (BK OR W - O)	19B804346P51
SITE 17 AUDIO	AUDIO EDACS BD.	J11	ANALOG VOTER (Top) SITES 13-17	TB8 - 20 (Y OR BL - W) TB8 - 17 (G OR W - BL) TB8 - 15 (O OR O - W) TB8 - 12 (BK OR W - O)	19B804346P51
E & M SQUELCH	DIGITAL INTERFACE BD	J7	ANALOG VOTER (Top) SITES 13-17	TB1 - 5 (BL OR G - W) TB2 - 5 (Y OR BL - W) TB3 - 5 (G OR W - BL) TB4 - 5 (R OR O - W) TB5 - 5 (BK OR W - O) TB6 - 5 (W OR W - G)	19B804346P71
E & M SQUELCH	DIGITAL INTERFACE BD	J8	ANALOG VOTER (Mid) SITES 7-12	TB1 - 5 (BL OR G - W) TB2 - 5 (Y OR BL - W) TB3 - 5 (G OR W - BL) TB4 - 5 (R OR O - W) TB5 - 5 (BK OR W - O) TB6 - 5 (W OR W - G)	19B804346P71
E & M SQUELCH	DIGITAL INTERFACE BD	J18	ANALOG VOTER (Bottom) SITES 1-6	TB1 - 5 (BL OR G - W) TB2 - 5 (Y OR BL - W) TB3 - 5 (G OR W - BL) TB4 - 5 (R OR O - W) TB5 - 5 (BK OR W - O) TB6 - 5 (W OR W - G)	19B804346P71

Table 41 - 2 To 17 Site CV^2 System (1 Channel Per Shelf) Cable Connection List
(See Interconnection Diagram 188D6802, sheet 3)

FUNCTION	FROM		TO		CABLE NO.
	ASSEMBLY	CONNECTION	ASSEMBLY	CONNECTION	
ANALOG VOTER PARALLEL CONNECTOR	ANALOG VOTER (Bottom) SITES 1-6	TB7-1 BK TB7-4 BL TB7-5 Y TB7-6 G TB7-7 R TB7-10 BR TB7-11 O	ANALOG VOTER (Mid) SITES 7-12	TB7-1 BK TB7-4 BL TB7-5 Y TB7-6 G TB7-7 R TB7-10 BR TB7-11 O	19B804346P101
ANALOG VOTER PARALLEL CONNECTOR	ANALOG VOTER (Mid) SITES 7-12	TB7-1 BK TB7-4 BL TB7-5 Y TB7-6 G TB7-7 R TB7-10 BR TB7-11 O	ANALOG VOTER (Top) SITES 13-17	TB7-1 BK TB7-4 BL TB7-5 Y TB7-6 G TB7-7 R TB7-10 BR TB7-11 O	19B804346P101
VOTED OUTPUTS	DIGITAL INTERFACE BD	J3	DIGITAL VOTER BACKPLANE	J3	19B804346P91
RS-232 INPUTS	DIGITAL INTERFACE BD	J1	DIGITAL VOTER BACKPLANE	J1	19B804346P81
E & M SQUELCH	DIGITAL INTERFACE BD	J5	DIGITAL VOTER BACKPLANE	J5	19B804346P81
MODEM INPUTS	DIGITAL INTERFACE BD	J2	DIGITAL VOTER BACKPLANE	J2	19B804346P81
FOR RS-232 SYSTEMS (RS-232 Card in Digital Voter Shelf Slot 2.) (Voter Output connection to Main Site is RS-232.)					
VOTED OUTPUT TO SITE	VDRB	J3	DIGITAL INTFC BD.	J9	19B804346P11
FOR ROCKWELL MODEM SYSTEMS (Modem Card in Digital Voter Shelf Slot 2.) (Voter Output connection to Main Site is Modem.)					
VOTED OUTPUT TO SITE	VDRB	J3	DIGITAL INTFC BD.	J10	19B804346P11

CONNECTION LIST 350A1710, 2 TO 6 SITE CV^2 SYSTEM (2 CHANNEL PER SHELF)

(See Interconnection Diagram 188D6802, sheet 1)

Table 42 - 2 To 6 Site CV^2 System (2 Channel Per Shelf) Cable Connection List

FUNCTION	FROM		TO		CABLE NO.
	ASSEMBLY	CONNECTION	ASSEMBLY	CONNECTION	
ANALOG VOTED AUDIO	DIGITAL INTERFACE BD	J100	ANALOG VOTER LEFT CHANNEL (Bottom)	TB8 - 7 (BL OR G - W) TB7 - 1 (Y OR BL - W) TB7 - 8 (G OR W - BL) TB7 - 6 (O OR O - W) TB8 - 10 (W OR W - G)	19B804346P21
ANALOG VOTED AUDIO	DIGITAL INTERFACE BD	J200	ANALOG VOTER RIGHT CHANNEL (Top)	TB8 - 7 (BL OR G - W) TB7 - 1 (Y OR BL - W) TB7 - 8 (G OR W - BL) TB7 - 6 (O OR O - W) TB8 - 10 (W OR W - G)	19B804346P21
CONSOLE KEY	VDRB LEFT CHANNEL	J1	AUDIO EDACS BD	J1	19B804346P31
IMC AUDIO	VDRB LEFT CHANNEL	J2	AUDIO EDACS BD.	J2	19B804346P31
CONSOLE KEY	VDRB RIGHT CHANNEL	J1	AUDIO EDACS BD	J6	19B804346P31
IMC AUDIO	VDRB RIGHT CHANNEL	J2	AUDIO EDACS BD.	J7	19B804346P31
SITE 1 & 2 AUDIO	AUDIO EDACS BD.	J3	ANALOG VOTER LEFT CHANNEL (Bottom)	TB9 - 20 (Y OR BL - W) TB9 - 17 (G OR W - BL) TB9 - 15 (O OR O - W) TB9 - 12 (BK OR W - O)	19B804346P51
SITE 3 & 4 AUDIO	AUDIO EDACS BD.	J4	ANALOG VOTER LEFT CHANNEL (Bottom)	TB9 - 10 (Y OR BL - W) TB9 - 7 (G OR W - BL) TB9 - 5 (O OR O - W) TB9 - 2 (BK OR W - O)	19B804346P51
SITE 5 & 6 AUDIO	AUDIO EDACS BD.	J5	ANALOG VOTER LEFT CHANNEL (Bottom)	TB8 - 20 (Y OR BL - W) TB8 - 17 (G OR W - BL) TB8 - 15 (O OR O - W) TB8 - 12 (BK OR W - O)	19B804346P51
SITE 1 & 2 AUDIO	AUDIO EDACS BD.	J8	ANALOG VOTER RIGHT CHANNEL (Top)	TB9 - 20 (Y OR BL - W) TB9 - 17 (G OR W - BL) TB9 - 15 (O OR O - W) TB9 - 12 (BK OR W - O)	19B804346P51
SITE 3 & 4 AUDIO	AUDIO EDACS BD.	J9	ANALOG VOTER RIGHT CHANNEL (Top)	TB9 - 10 (Y OR BL - W) TB9 - 7 (G OR W - BL) TB9 - 5 (O OR O - W) TB9 - 2 (BK OR W - O)	19B804346P51

Table 42 - 2 To 6 Site CV^2 System (2 Channel Per Shelf) Cable Connection List

FUNCTION	FROM		TO		CABLE NO.
	ASSEMBLY	CONNECTION	ASSEMBLY	CONNECTION	
SITE 5 & 6 AUDIO	AUDIO EDACS BD.	J10	ANALOG VOTER RIGHT CHANNEL (Top)	TB8 - 20 (Y OR BL - W) TB8 - 17 (G OR W - BL) TB8 - 15 (O OR O - W) TB8 - 12 (BK OR W - O)	19B804346P51
E & M SQUELCH	DIGITAL INTERFACE BD	J7	ANALOG VOTER LEFT CHANNEL (Bottom)	TB1 - 5 (BL OR G - W) TB2 - 5 (Y OR BL - W) TB3 - 5 (G OR W - BL) TB4 - 5 (R OR O - W) TB5 - 5 (BK OR W - O) TB6 - 5 (W OR W - G)	19B804346P71
E & M SQUELCH	DIGITAL INTERFACE BD	J8	ANALOG VOTER RIGHT CHANNEL (Top)	TB1 - 5 (BL OR G - W) TB2 - 5 (Y OR BL - W) TB3 - 5 (G OR W - BL) TB4 - 5 (R OR O - W) TB5 - 5 (BK OR W - O) TB6 - 5 (W OR W - G)	19B804346P71
RS-232 INPUTS	DIGITAL INTERFACE BD	J1	DIGITAL VOTER BACKPLANE	J1	19B804346P81
MODEM INPUTS	DIGITAL INTERFACE BD	J2	DIGITAL VOTER BACKPLANE	J2	19B804346P81
VOTED OUTPUTS	DIGITAL INTERFACE BD	J3	DIGITAL VOTER BACKPLANE	J3	19B804346P91
E & M SQUELCH	DIGITAL INTERFACE BD	J5	DIGITAL VOTER BACKPLANE	J5	19B804346P81
FOR RS-232 SYSTEMS (RS-232 Card in Digital Voter Shelf Slot 2 and 12.) (Voter Output connection to Main Site is RS-232.)					
VOTED OUTPUT TO CONTROL POINT/IMC	VDRB LEFT CHANNEL	J3	DIGITAL INTFC BD.	J9	19B804346P11
VOTED OUTPUT TO SITES/IMC	VDRB RIGHT CHANNEL	J3	DIGITAL INTFC BD.	J12	19B804346P12

Table 42 - 2 To 6 Site CV^2 System (2 Channel Per Shelf) Cable Connection List					
FUNCTION	**FROM**		**TO**		**CABLE NO.**
	ASSEMBLY	**CONNECTION**	**ASSEMBLY**	**CONNECTION**	
FOR ROCKWELL MODEM SYSTEMS (Modem Card in Digital Voter Shelf Slot 2 and 12.) (Voter Output connection to Main Site is Modem.)					
VOTED OUTPUT TO CONTROL POINT/IMC	VDRB LEFT CHANNEL	J3	DIGITAL INTFC BD.	J10	19B804346P11
VOTED OUTPUT TO SITES/IMC	VDRB RIGHT CHANNEL	J3	DIGITAL INTFC BD.	J13	19B804346P12

DC POWER DISTRIBUTION CABLE LISTS, 350A1713

(For System Interconnection see diagram 188D6802, sheets 4 & 5)
(VU = Voter Unit consists of 1 Digital Voter Shelf and 2 (3 for 17 sites) Analog Voter Shelves)

Main Cabinet Power Source

(CABINETS 1, 4, & 7)

Table 43 - Main Cabinet Power Source

FROM		TO		CABLE
24 Vdc Supply	J03	24 V PDP	J01	19B804346P174
5/12 Vdc Main Supply	J03	5/12 V PDP	J01	19B804346P172
5/12 Vdc Exp Supply	J03	5/12 V PDP	J02	19B804346P172
5/12 Vdc PDP	J10	5/12 Vdc Main Supply & 5/12 Vdc Exp Supply	J04 J04	19B804346P201 ("Y" Cable)
5/12 Vdc PDP	J09	VU3 Digital Voter	P01	19B804346P202

Expansion Cabinet Power Source

(CABINETS 2, 3, 5, 6, & 8)

Table 44 - Expansion Cabinet Power Source

FROM		TO		CABLE
5/12 V PDP	+5 V Stud	5/12 Vdc Main Supply	+5 V Stud	19B804346P121
5/12 V PDP	GND Stud	5/12 VDC MAIN SUPPLY	GND Stud	19B804346P122
5/12 V PDP	J08	5/12 V MAIN PDP	J03 or J08	19B804346P171
24 V PDP	J01	24 V MAIN PDP	J02 or J03	19B804346P181

DC Power Distribution to Voter Units

Table 45 - 24 Vdc Power Distribution

24VDC POWER DISTRIBUTION		CONFIGURATION			
		2-12 SITES		2-17 SITES	
		CABLE - 19B804727		CABLE - 19B804728	
FROM	**TO**	**W / PS**	**WO / PS**	**W / PS**	**WO / PS**
24V PDP J2	VOTER UNIT 4 *		PART 3		
24V PDP J3	VOTER UNIT 3 *	PART 3	PART 2		PART 3
24V PDP J4	VOTER UNIT 2 *	PART 2	PART 1	PART 2	PART 2
24V PDP J5	VOTER UNIT 1 *	PART 1	PART 1	PART 2	PART 2

* Connect red wires to Analog Voters TB7-2
and black wires to Analog Voters TB7-1

Table 46 - 5/12 Vdc Power Distribution

5/12VDC POWER DISTRIBUTION			CONFIGURATION			
			2-12 SITES		2-17 SITES	
			CABLE - 19B804346			
FROM	**TO**	**TO**	**W / PS**	**WO / PS**	**W / PS**	**WO / PS**
5/12V PDP J7	VU4	VDRB-J4		PART 134		
5/12V PDP J6	VU3	VDRB-J4	PART 133	PART 133		PART 134
5/12V PDP J5	VU2	VDRB-J4	PART 132	PART 132	PART 133	PART 133
5/12V PDP J4	VU1	VDRB-J4	PART 132	PART 132	PART 132	PART 132

Table 47 - 12 Vdc Power Distribution for 2 Channel per Shelf Systems Only

FROM	TO	CABLE
VU4 - VDRB RIGHT CH-J5	VU4 - VDRB LEFT CH-J4	19B804346P161
VU3 - VDRB RIGHT CH-J5	VU3 - VDRB LEFT CH-J4	19B804346P161
VU2 - VDRB RIGHT CH-J5	VU2 - VDRB LEFT CH-J4	19B804346P161
VU1 - VDRB RIGHT CH-J5	VU1 - VDRB LEFT CH-J4	19B804346P161

ANALOG AND DIGITAL VOTER CROSS-CONNECT PANEL CONNECTION LIST

The following are typical interface connections between the EDACS Interface Panel's Digital and Audio boards (J14) and the Voter Cross-Connect panels (see LBI-39142). The interface cables are 25-pair TELCO cables of various lengths.

Analog Connections

Table 48 - Analog Connections For a Two Channel/Shelf Voter, 2-6 Sites

J14 PINS (+/-)	RJ CONN	CHAN	SIGNAL
1/26	J1-2&3	L	Voted Audio to Site
2/27	J1-4&5	L	PTT from Switch
3/28	J2-2&3	L	Analog/Digital Input from Switch
4/29	J2-4&5	L	Analog/Digital Output to Switch
5/30	J3-2&3	L	Site 1 Audio
6/31	J3-4&5	L	Site 2 Audio
7/32	J4-2&3	L	Site 3 Audio
8/33	J4-4&5	L	Site 4 Audio
9/34	J5-2&3	L	Site 5 Audio
10/35	J5-4&5	L	Site 6 Audio
11/36	J6-2&3	R	Voted Audio to Site
12/37	J6-4&5	R	PTT from Switch
13/38	J7-2&3	R	Analog/Digital Input from Switch
14/39	J7-4&5	R	Analog/Digital Output to Switch
15/40	J8-2&3	R	Site 1 Audio
16/41	J8-4&5	R	Site 2 Audio
17/42	J9-2&3	R	Site 3 Audio
18/43	J9-4&5	R	Site 4 Audio
19/44	J10-2&3	R	Site 5 Audio
20/45	J10-4&5	R	Site 6 Audio
21/46	J11-2&3		Not used
22/47	J11-4&5		Not used
23/48	J12-2&3		Not used
24/49	J12-4&5		Not used

Table 49 - Analog Connections For a One Channel/Shelf Voter, 2-12 Sites

J14 PINS (+/-)	RJ CONN	SIGNAL
1/26	J1-2&3	Voted Audio to Site
2/27	J1-4&5	PTT from Switch
3/28	J2-2&3	Analog/Digital Input from Switch
4/29	J2-4&5	Analog/Digital Output to Switch
5/30	J3-2&3	Site 1 Audio
6/31	J3-4&5	Site 2 Audio
7/32	J4-2&3	Site 3 Audio
8/33	J4-4&5	Site 4 Audio
9/34	J5-2&3	Site 5 Audio
10/35	J5-4&5	Site 6 Audio
11/36	J6-2&3	Site 7 Audio
12/37	J6-4&5	Site 8 Audio
13/38	J7-2&3	Site 9 Audio
14/39	J7-4&5	Site 10 Audio
15/40	J8-2&3	Site 11 Audio
16/41	J8-4&5	Site 12 Audio

Table 50 - Analog Connections For a One Channel/Shelf Voter, 2-17 Sites

J14 PINS (+/-)	RJ CONN	SIGNAL
1/26	J1-2&3	Voted Audio to Site
2/27	J1-4&5	PTT from Switch
3/28	J2-2&3	Analog/Digital Input from Switch
4/29	J2-4&5	Analog/Digital Output to Switch
5/30	J3-2&3	Site 1 Audio
6/31	J3-4&5	Site 2 Audio
7/32	J4-2&3	Site 3 Audio
8/33	J4-4&5	Site 4 Audio
9/34	J5-2&3	Site 5 Audio
10/35	J5-4&5	Site 6 Audio
11/36	J6-2&3	Site 7 Audio
12/37	J6-4&5	Site 8 Audio
13/38	J7-2&3	Site 9 Audio
14/39	J7-4&5	Site 10 Audio
15/40	J8-2&3	Site 11 Audio
16/41	J8-4&5	Site 12 Audio
17/42	J9-2&3	Site 13 Audio
18/43	J9-4&5	Site 14 Audio
19/44	J10-2&3	Site 15 Audio
20/45	J10-4&5	Site 16 Audio
21/46	J11-2&3	Site 17 Audio

Digital Connections, Simulcast

Table 51 - Digital Connections, Two Channels/Shelf, Simulcast or Voted, RS-232 Connected, 2-6 Sites

J14 PINS (+/-)	CHAN	SIGNAL
1/26	L	Voter output to Site
3/28	L	Site 1 in
4/29	L	VDI Output to site
5/30	L	VDI/DR1 Input
6/31	L	Site 2 Input (RS-232 only)
7/32	L	Site 3 Input (RS-232 only)
8/33	L	Site 4 Input (RS-232 only)
9/34	L	Site 5 Input (RS-232 only)
10/35	L	Site 6 Input (RM or RS-232)
11/36	R	Voter output to Site
13/38	R	Site 1 Input
14/39	R	VDI Output to site
15/40	R	VDI/DR1 Input
16/41	R	Site 2 Input (RS-232 only)
17/42	R	Site 3 Input (RS-232 only)
18/43	R	Site 4 Input (RS-232 only)
19/44	R	Site 5 Input (RS-232 only)
20/45	R	Site 6 Input (RM or RS-232)

Table 52 - Digital Connections, One Channel/Shelf, Simulcast or Voted, RS-232 Connected, 2-12 Sites

J14 PINS (+/-)	SIGNAL
1/26	Voter output to Site
3/28	Site 1 Input
4/29	VDI Output to site
5/30	VDI/DR1 Input
6/31	Site 2 Input (RS-232 only)
7/32	Site 3 Input (RS-232 only)
8/33	Site 4 Input (RS-232 only)
9/34	Site 5 Input (RS-232 only)
10/35	Site 6 Input (RS-232 only)
11/36	Site 7 Input (RS-232 only)
12/37	Site 8 Input (RS-232 only)
13/38	Site 9 Input (RS-232 only)
16/41	Site 10 Input (RM or RS-232)
18/43	Site 11 Input (RM or RS-232)
20/45	Site 12 Input (RM or RS-232)

Table 53 - Digital Connections, One Channel/Shelf, Simulcast or Voted, RS-232 Connected, 2-17 Sites

J14 PINS (+/-)	SIGNAL
1/26	Voter output to Site
3/28	Site 1 Input
4/29	VDI Output to site
5/30	VDI/DR1 Input
6/31	Site 2 Input (RS-232 only)
7/32	Site 3 Input (RS-232 only)
8/33	Site 4 Input (RS-232 only)
9/34	Site 5 Input (RS-232 only)
10/35	Site 6 Input (RS-232 only)
11/36	Site 7 Input (RS-232 only)
12/37	Site 8 Input (RS-232 only)
13/38	Site 9 Input (RS-232 only)
14/39	Site 10 Input (RS-232 only)
15/40	Site 11 Input (RS-232 only)
16/41	Site 12 Input (RM or RS-232)
17/42	Site 13 Input (RS-232 only)
18/43	Site 14 Input (RM or RS-232)
19/44	Site 15 Input (RS-232 only)
20/45	Site 16 Input (RM or RS-232)
21/46	Site 17 Input (RS-232 only)

Digital Connections, Voted

Table 54 - Digital Connections, Two Channels/Shelf, Voted, Rockwell Modem Connected, 2-4 Sites

J14 PINS (+/-)	CHAN	SIGNAL
1/26	1	Voter output to Site
2/27		Unused
3/28	1	Sel and/or Site 1 Input
4/29	1	VDI Output to site
5/30	1	VDI/DR1 Input
6/31	1	Site 2 Modem Input
7/32	1	Site 3 Modem Input
8/33	1	Site 4 Modem Input
9/34		Unused
10/35		Unused
11/36	2	Voter output to Site
12/37		Unused
13/38	2	Sel and/or Site 1 Input
14/39	2	VDI Output to site
15/40	2	VDI/DR1 Input
16/41	2	Site 2 Modem Input
17/42	2	Site 3 Modem Input
18/43	2	Site 4 Modem Input

Table 55 - Digital Connections, One Channel/Shelf, Voted, Rockwell Modem Connected, 2-9 Sites

J14 PINS (+/-)	SIGNAL
1/26	Voter output to Site
2/27	Unused
3/28	Sel and/or Site 1 Input
4/29	VDI Output to site
5/30	VDI/DR1 Input
6/31	Site 2 Modem Input
7/32	Site 3 Modem Input
8/33	Site 4 Modem Input
9/34	Unused
10/35	Unused
11/36	Unused
12/37	Unused
13/38	Site 5 Modem Input
14/39	Unused
15/40	Site 6 Modem Input
16/41	Site 7 Modem Input
17/42	Site 8 Modem Input
18/43	Site 9 Modem Input

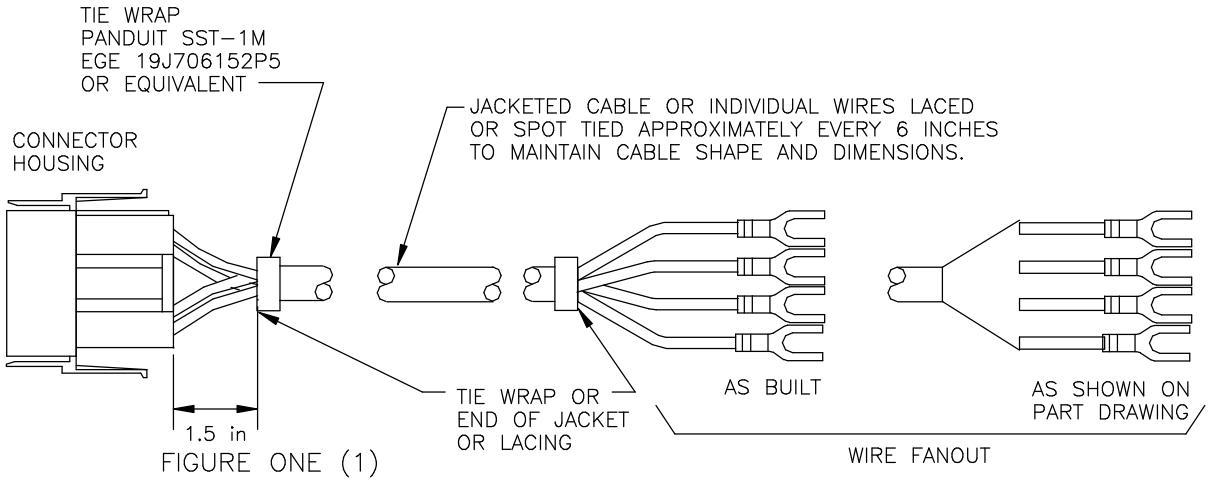
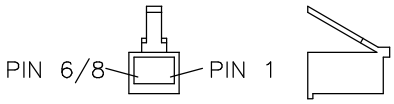


FIGURE ONE (1)

6/8 POSITION MODULAR CONNECTOR



WIRING SIDE SHOWN

FIGURE TWO (2)

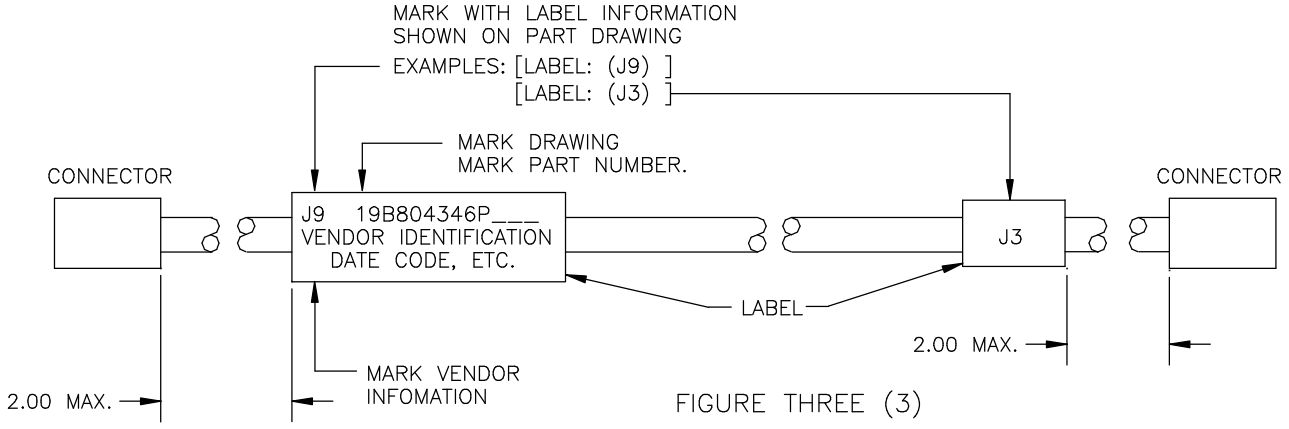
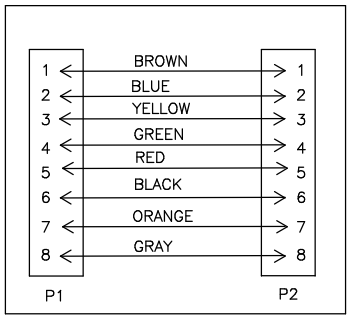


FIGURE THREE (3)

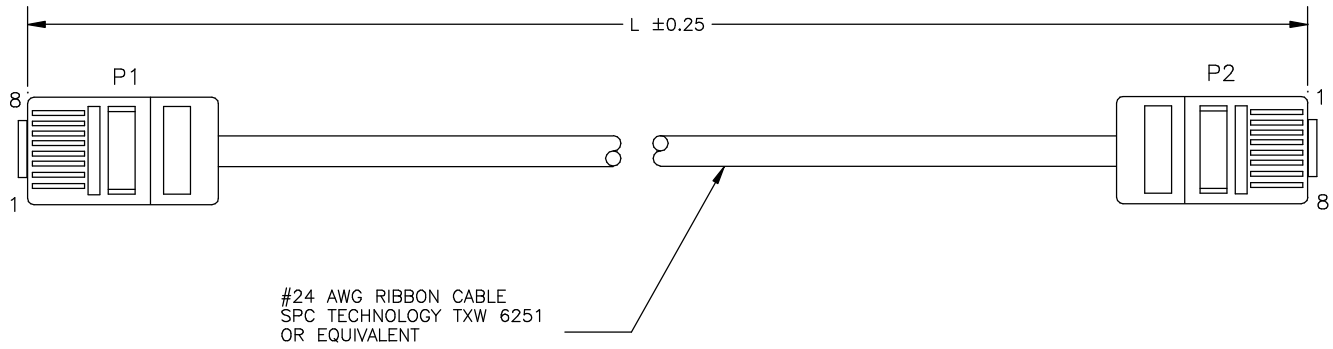
CONNECTION DIAGRAM



PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1		AMP 5-554720-3	8 POSITION MODULAR PLUG	1
P2		AMP 5-554720-3	8 POSITION MODULAR PLUG	1

PART	LENGTH "L"
11	15.00
12	10.00



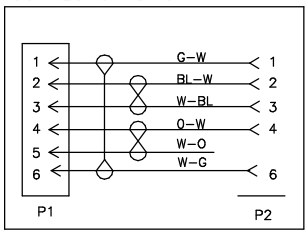
VDRB TO DIGITAL VOTER

19B804346P11, P12

(19B804346, Sh. 11, Rev. 2)

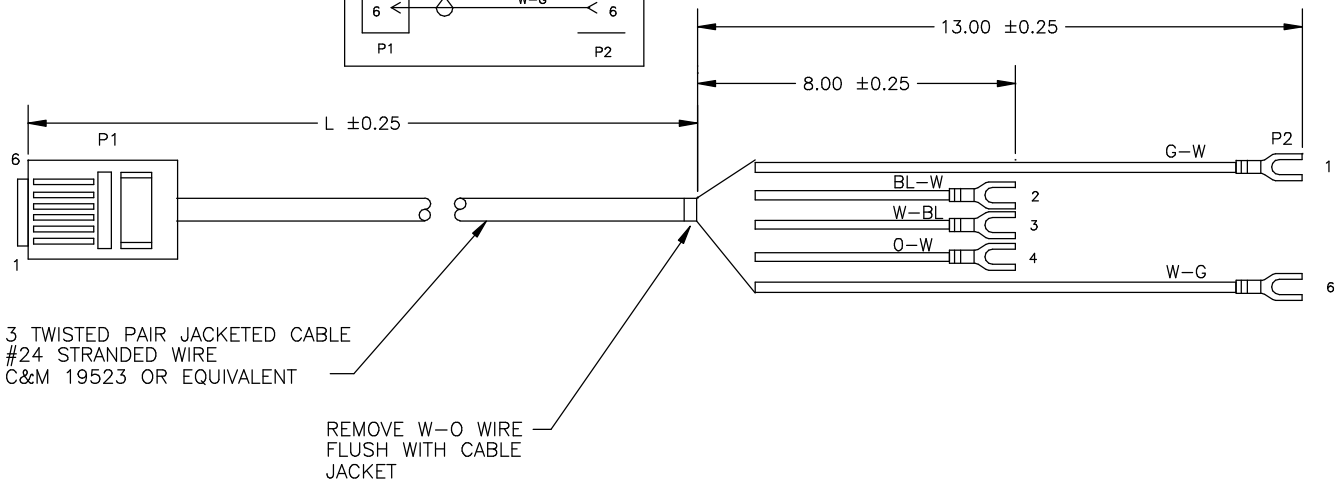
PART	LENGTH "L"
21	42.00
22	35.00

CONNECTION DIAGRAM



PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1		AMP 5–555042–3	6 POSITION MODULAR PLUG	1
P2	19A209260P108	AMP 323127	SPADE TONGUE TERMINAL	5



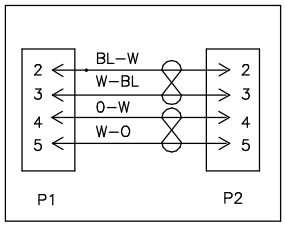
ANALOG VOTER TO DIGITAL VOTER

19B804346P21, P22

(19B804346, Sh. 21, Rev. 2)

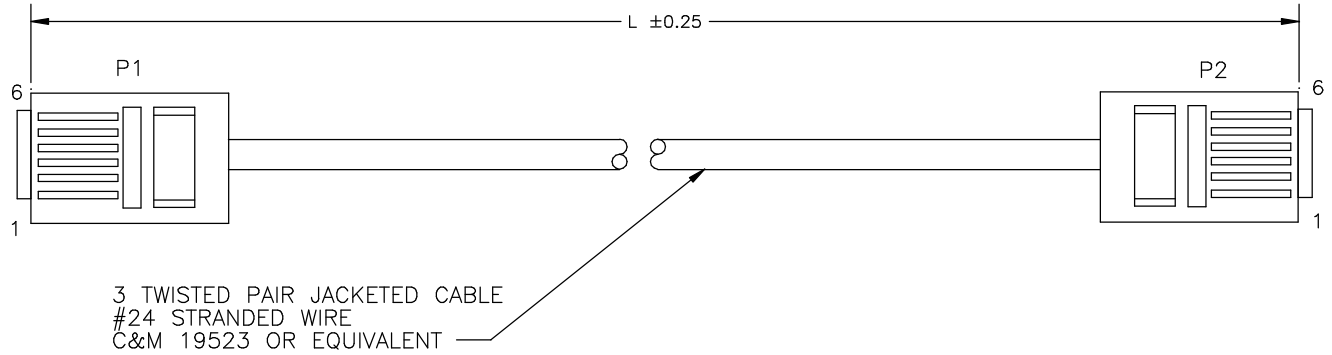
PART	LENGTH "L"	REMARKS
31	24.00	
32	24.00	OBSOLETE PART
33	24.00	REPLACED BY PART 31
34	24.00	

CONNECTION DIAGRAM



PARTS LIST

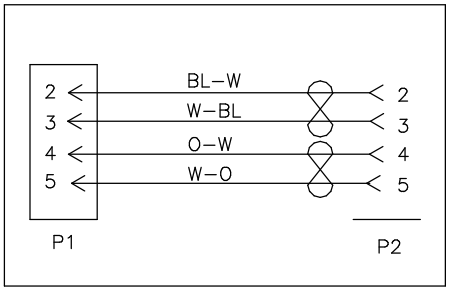
ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1		AMP 5–555042–3	6 POSITION MODULAR PLUG	1
P2		AMP 5–555042–3	6 POSITION MODULAR PLUG	1



SELECTED AUDIO FROM VDRB (P31 AND P33)
SELECTED AUDIO TO/FROM IMC (P32 AND P34)
19B804346P31
(19B804346, Sh. 31 Rev. 2)

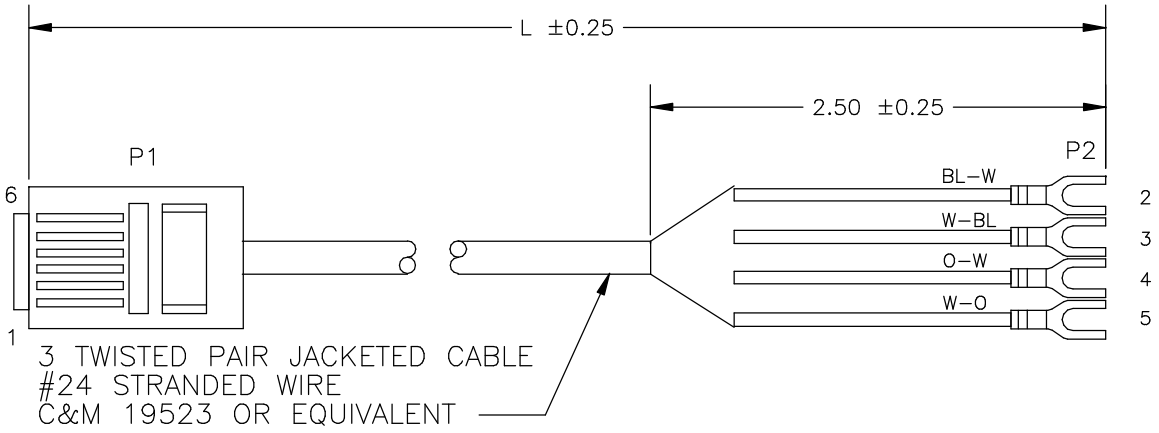
PART	LENGTH "L"	REMARKS
41	53.00	
42	53.00	OBSOLETE PART
43	53.00	REPLACED BY PART 41
51	47.00	
52	47.00	
53	47.00	OBSOLETE PART
54	47.00	REPLACED BY PART 51
55	47.00	
56	47.00	

CONNECTION DIAGRAM



PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1		AMP 5–555042–3	6 POSITION MODULAR PLUG	1
P2	19A209260P108	AMP 323127	SPADE TONGUE TERMINAL	4



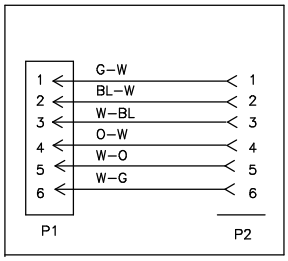
SITE AUDIO TO ANALOG VOTER

19B804346P41-P43, P51-P56

(19B804346, Sh. 41, Rev. 2)

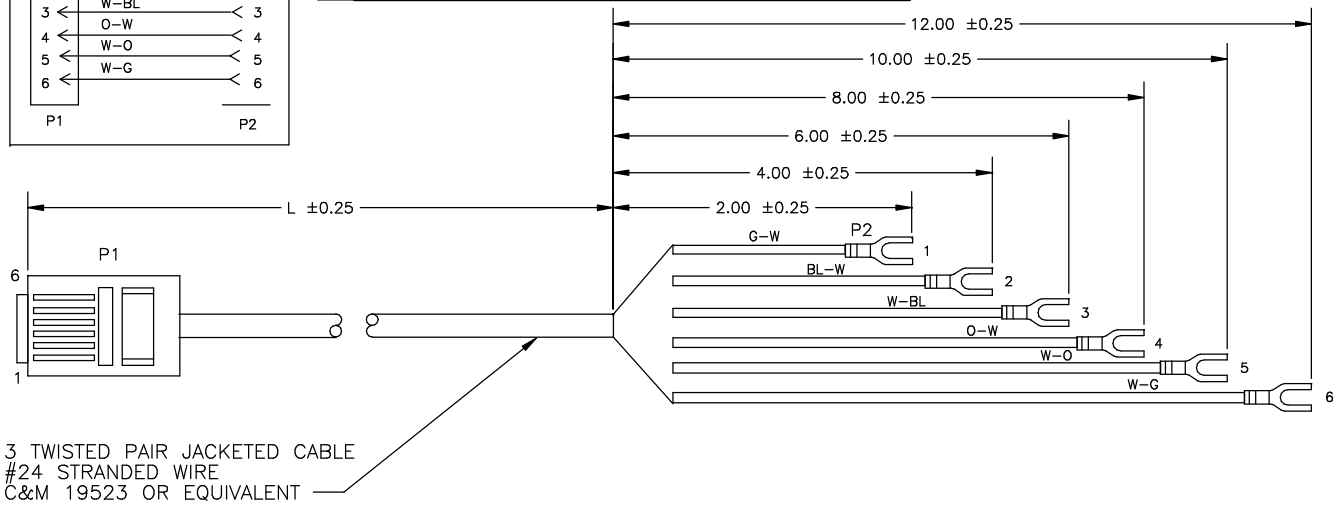
PART	LENGTH "L"	REMARKS
61	42.00	
71	36.00	
72	36.00	OBSOLETE PART REPLACED BY PART 71

CONNECTION DIAGRAM



PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1		AMP 5–555042–3	6 POSITION MODULAR PLUG	1
P2	19A209260P108	AMP 323127	SPADE TONGUE TERMINAL	6



3 TWISTED PAIR JACKETED CABLE
#24 STRANDED WIRE
C&M 19523 OR EQUIVALENT

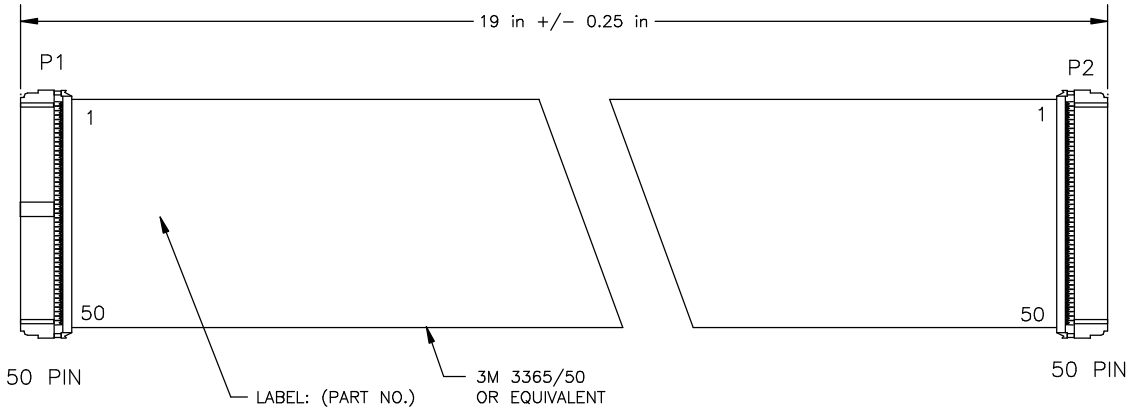
STATION AUDIO CABLE

19B804346P61, P71-P72

(19B804346, Sh. 61, Rev. 2)

PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1		AMP 1-746288-0	50 PIN MILITARY & CENTER POLARIZED CONN	1
		AMP 499252-4	STRAIN RELIEF	1
P2		AMP 1-746288-0	50 PIN MILITARY & CENTER POLARIZED CONN	1
		AMP 499252-4	STRAIN RELIEF	1



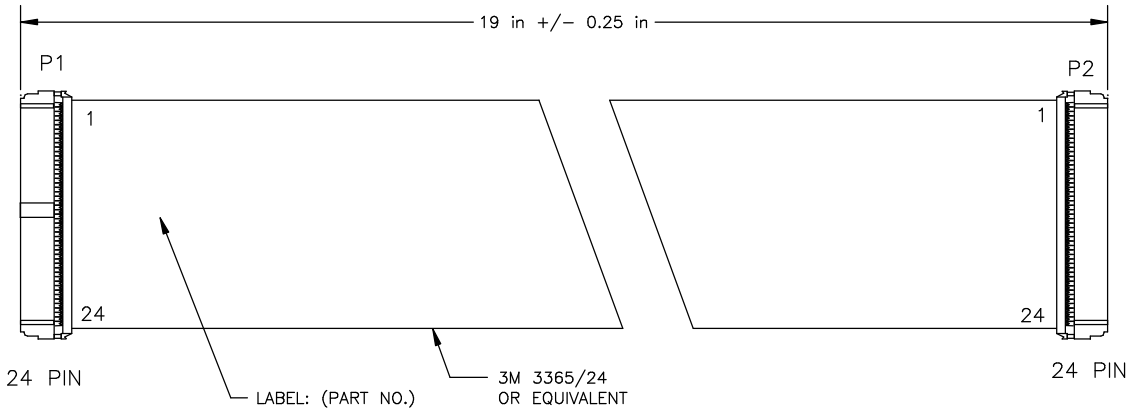
DIGITAL EDACS TO DIGITAL VOTER BACKPLANE RIBBON CABLE (50 PIN)

19B804346P81

(19B804346, Sh. 81 Rev. 2)

PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1		AMP 1-746288-5	50 PIN MILITARY & CENTER POLARIZED CONN	1
		AMP 499252	STRAIN RELIEF	1
P2		AMP 1-746288-5	50 PIN MILITARY & CENTER POLARIZED CONN	1
		AMP 499252	STRAIN RELIEF	1

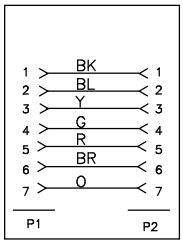


DIGITAL EDACS TO DIGITAL VOTER BACKPLANE RIBBON CABLE (24 PIN)

19B804346P91

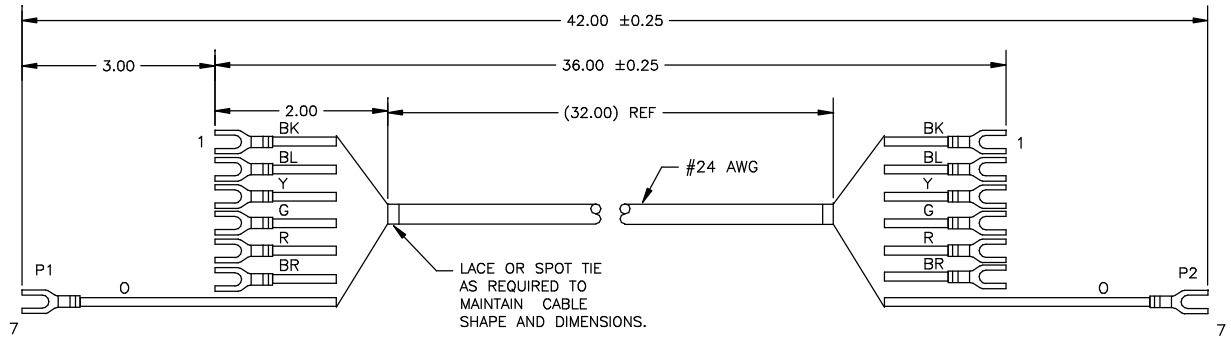
(19B804346, Sh. 91, Rev. 2)

CONNECTION DIAGRAM



PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1	19A209260P108	AMP 323127	SPADE TONGUE TERMINAL	7
P2	19A209260P108	AMP 323127	SPADE TONGUE TERMINAL	7

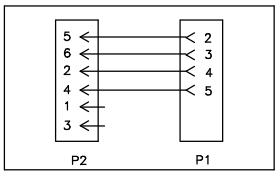


ANALOG VOTER PARALLEL CABLE

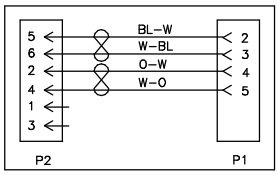
19B804346P101

(19B804346, Sh. 101, Rev. 2)

CONNECTION DIAGRAM FOR FOUR CONDUCTOR CABLE

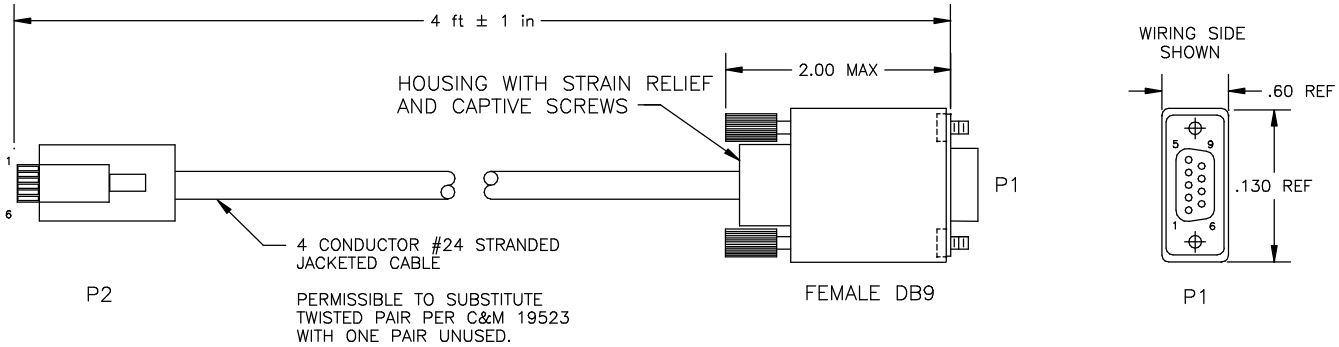


CONNECTION DIAGRAM FOR C&M 19523 OR EQUIVALENT



PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1	19B209727P18	AMP 205203–1	DB9 FEMALE CONN HOUSING	1
	19B209727P20	AMP 1–66505–0	FEMALE CONTACT (28–24 AWG)	4
			PVC MOLDED COVER	1
	19B209727P9	AMP 205980–1	#4–40 CAPTIVE SCREW KIT	1
P2		AMP 5–555426–3	6 COND MODULAR PLUG	1



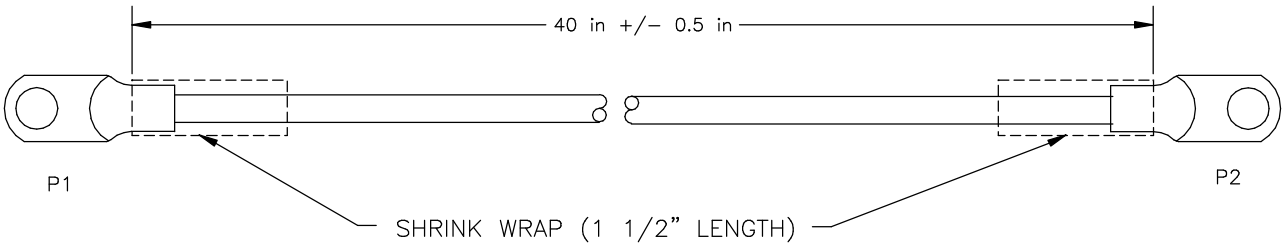
PROGRAMMING CABLE

19B804346P111

(19B804346, Sh. 111, Rev. 2)

PARTS LIST (BOTH CABLES)

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1		HOFFMAN PRODUCTS 1/0-9R1	3/8" RING TERMINAL	1
P2		HOFFMAN PRODUCTS 1/0-9R1	3/8" RING TERMINAL	1



P121 - WIRE IS 1/0 STRANDED CU WITH RED INSULATION

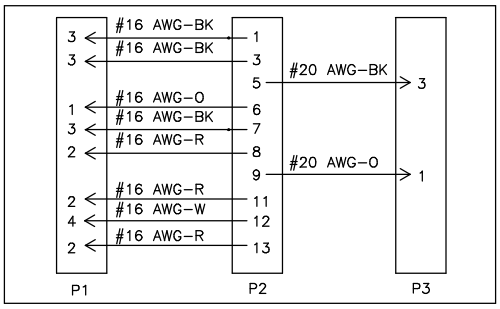
P122 - WIRE IS 1/0 STRANDED CU WITH BLACK INSULATION

INTER-CABINET HIGH CURRENT

19B804346P121, P122

(19B804346, Sh. 121 , Rev. 2)

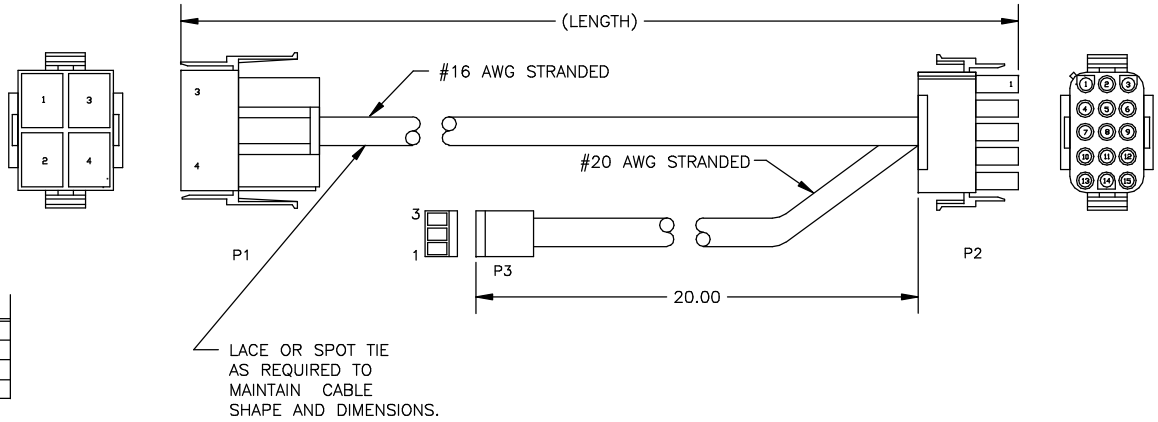
CONNECTION DIAGRAM



PARTS LIST (ALL PARTS)

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1	344A3804P1	AMP 643267-1	4 CIRCUIT HIGH CURRENT CAP	1
	344A3805	AMP 350650-1	HERMAPHRODITIC CONTACTS	4
P2	19B801802P42	AMP 350736-1	15 CIRCUIT CAP HOUSING	1
	19B801802P6	AMP 360619-1	SOCKET CONTACTS	10
P3	19A116659P14	MOLEX 09-50-3031	3 CAVITY CONN	1
	19A116781P3	MOLEX 08-52-0072	SPRING CONTACTS	2

FOR REF ONLY
OPTIONAL STRAIN RELIEF:
P1 AMP 643266-1
P2 AMP 350812-1



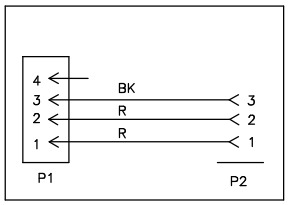
PART	LENGTH
131	23.00
132	33.00
133	57.00
134	72.00

5/12 VDC (PDP) TO DIGITAL VOTER

19B804346P131 - P134

(19B804346, Sh. 131, Rev. 2)

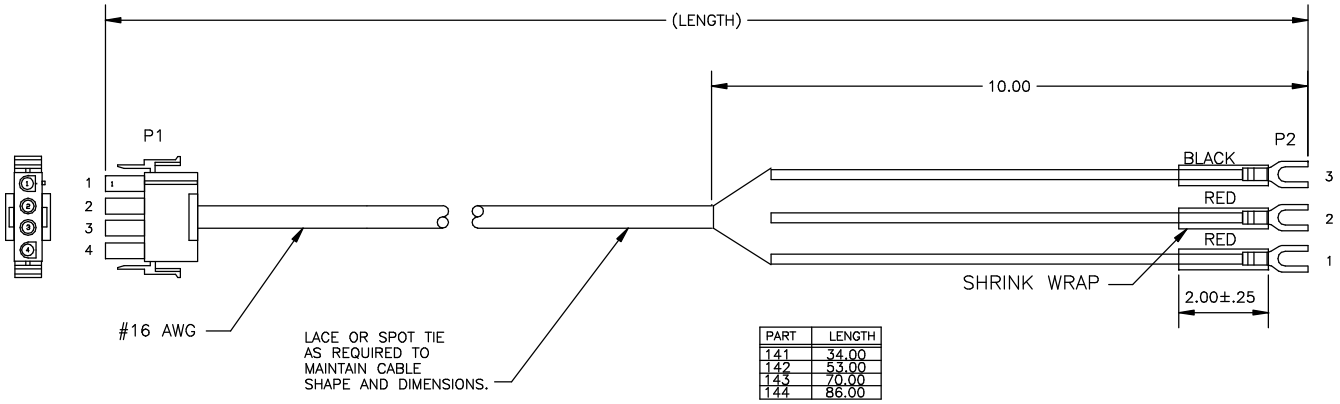
CONNECTION DIAGRAM



PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1		AMP 350780-1	4 CIRCUIT PLUG HOUSING	1
	19B801802P15	AMP 60620-1	PIN CONNECTOR	3
P2		AMP 350779-1	SPADE TONGUE TERMINAL	3

FOR REF ONLY
OPTIONAL STRAIN RELIEF FOR P1: AMP 350811-1



PART	LENGTH
141	34.00
142	53.00
143	70.00
144	86.00

24 VDC (PDP) TO ANALOG VOTER

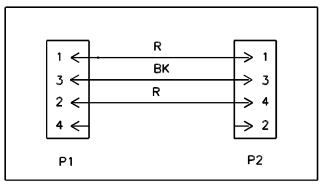
19B804346P141 - P144

(19B804346, Sh. 141, Rev. 2)

PART (151) 24VDC SUPPLY TO PDP L=28

(152) 24VDC INTER-CABINET L=40

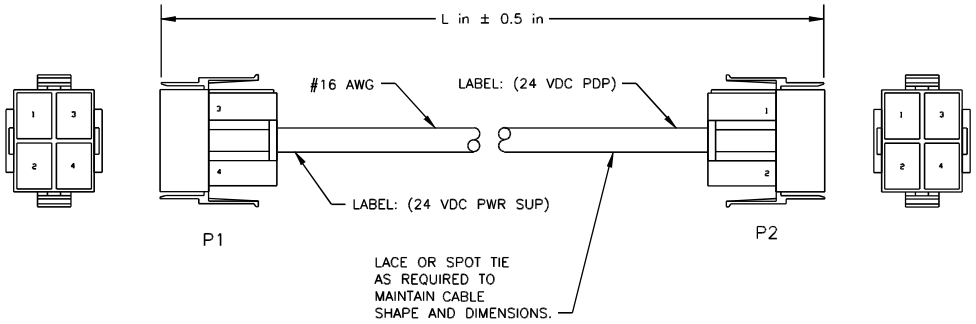
CONNECTION DIAGRAM



PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1	344A3804P1	AMP 643267-1	4 CIRCUIT HIGH CURRENT CAP	1
	344A3805	AMP 350650-1	HERMAPHRODITIC CONNECTOR	3
P2	344A3804P1	AMP 643267-1	4 CIRCUIT HIGH CURRENT CAP	1
	344A3805	AMP 350650-1	HERMAPHRODITIC CONNECTOR	3

OPTIONAL STRAIN RELIEF: P1&P2 AMP 643266-1

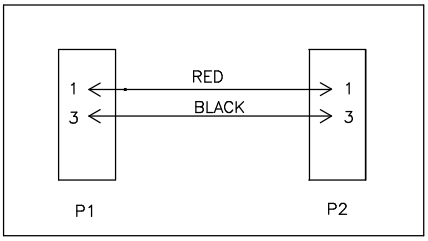


24 VDC SUPPLY TO PDP, 24 VDC INTER-CABINET

19B804346P151, P152

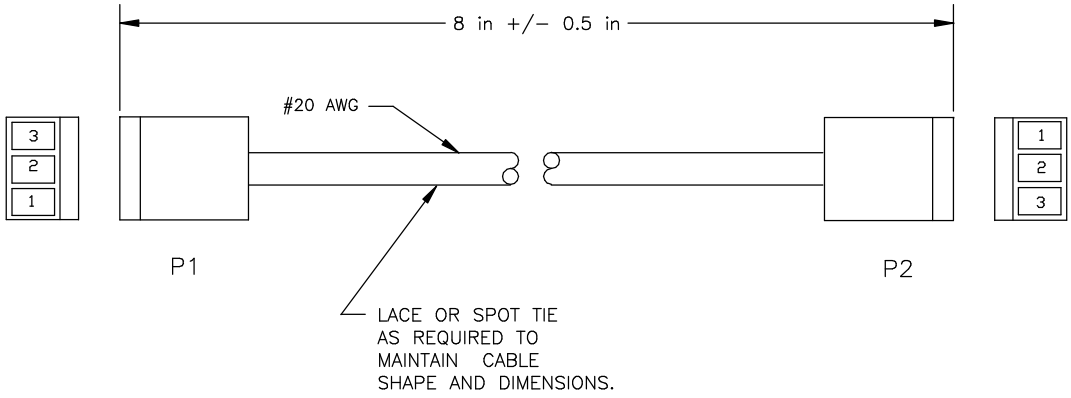
(19B804346, Sh. 151, Rev. 2)

CONNECTION DIAGRAM



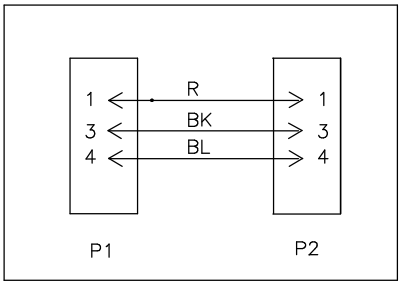
PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1	19A116659P14	MOLEX 09-50-3031	3 CIRCUIT PWB CONNECTOR	1
	19A116781P3	MOLEX 08-52-0072	SPRING CONTACTS	3
P2	19A116659P14	MOLEX 09-50-3031	3 CIRCUIT PWB CONNECTOR	1
	19A116781P3	MOLEX 08-52-0072	SPRING CONTACTS	3

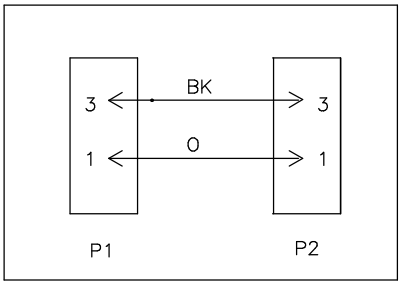


PART	LENGTH "L"	MKG 1	WIRE PER
171	40.00	12VDC	CONNECTION DIAGRAM 1
172	28.00	12VDC	
173	64.00	24VDC	CONNECTION DIAGRAM 2
174	40.00	24VDC	
175	28.00	24VDC	

CONNECTION DIAGRAM 1



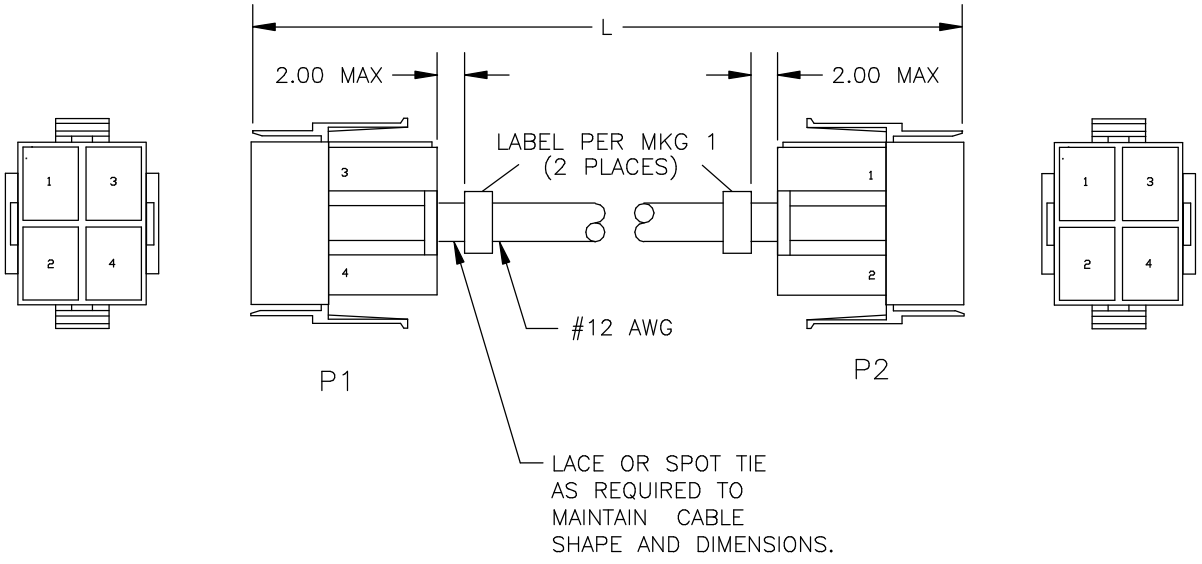
CONNECTION DIAGRAM 2



PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1	344A3804P1	AMP 643267-1	4 CIRCUIT HIGH CURRENT CAP	1
	344A3805	AMP 350650-1	HERMAPHRODITIC CONNECTOR	3
P2	344A3804P1	AMP 643267-1	4 CIRCUIT HIGH CURRENT CAP	1
	344A3805	AMP 350650-1	HERMAPHRODITIC CONNECTOR	3

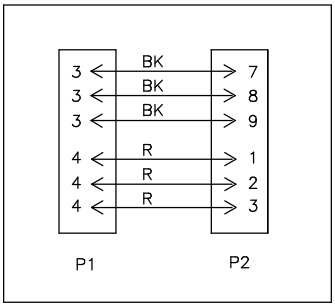
OPTIONAL STRAIN RELIEF FOR P1&P2: AMP 643266-1



±12V & 24V POWER CABLE
19B804346P171 - P175
(19B804346, Sh. 171, Rev. 2)

12 VDC CH1 VDRB TO CH2 VDRB
19B804346P161
(19B804346, Sh. 161 , Rev. 2)

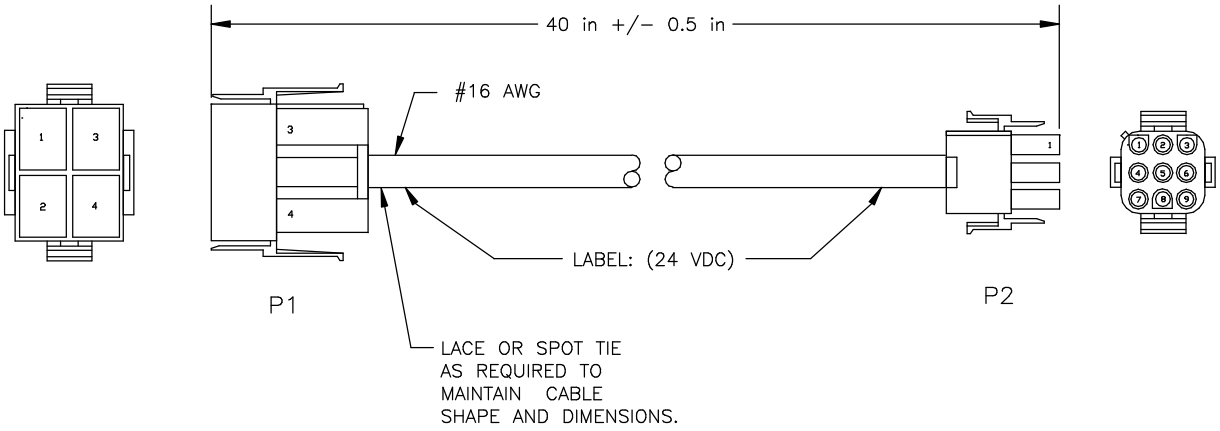
CONNECTION DIAGRAM



PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1	344A3804P1	AMP 643267-1	4 CIRCUIT HIGH CURRENT CAP	1
	344A3805	AMP 350650-1	HERMAPHRODITIC CONNECTOR	2
P2		AMP 350720-1	9 CIRCUIT PLUG HOUSING	1
		AMP 60620-1	PIN CONNECTOR	6

OPTIONAL STRAIN RELIEF:
P1 AMP 643266-1
P2 AMP 350812-1



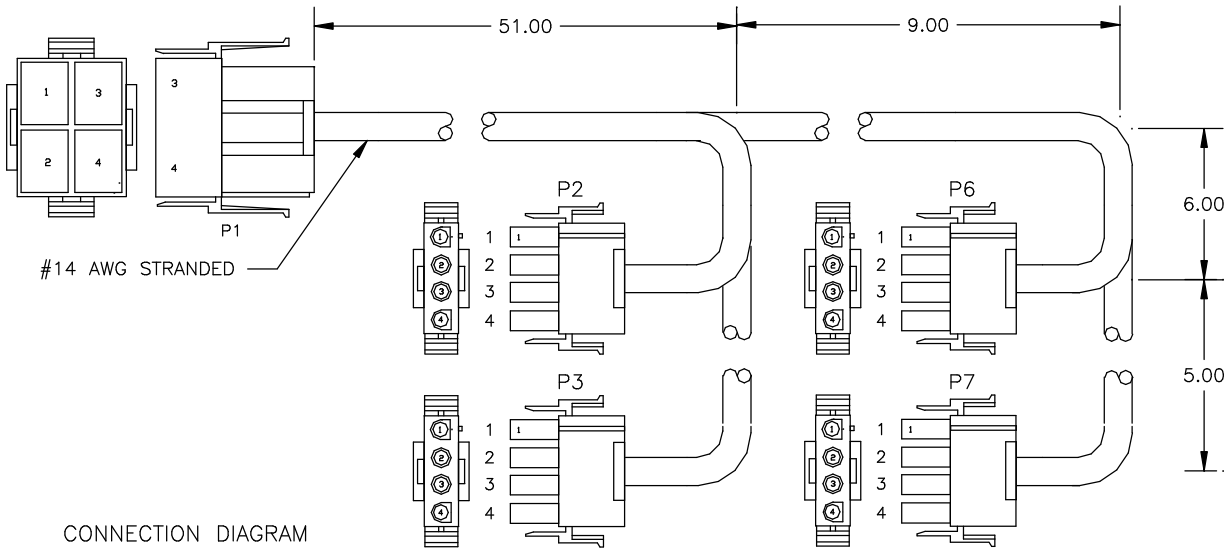
24 VDC INTER-CABINET

19B804346P181

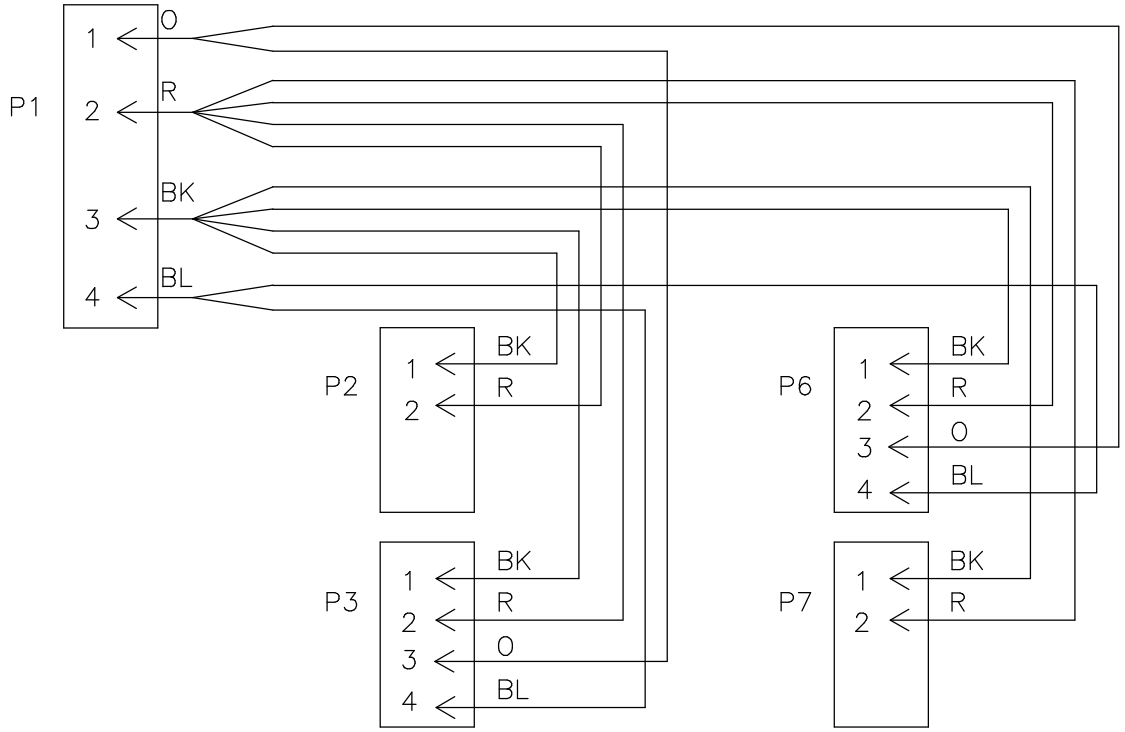
(19B804346, Sh. 181, Rev. 2)

PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1	344A3804P1	AMP 643267-1	4 CIRCUIT HIGH CURRENT CAP	1
	344A3805	AMP 350650-1	HERMAPHRODITIC CONTACTS	4
P2, P3, P6, P7		AMP 1-480702-0	HOUSING	4
		AMP 350536-1	INSULATION, STRIP SOCKETS	12
		AMP 350550-1	INSULATION, LOOSE SOCKETS	12



CONNECTION DIAGRAM



CEC/IMC POWER CABLE

19B804346P191

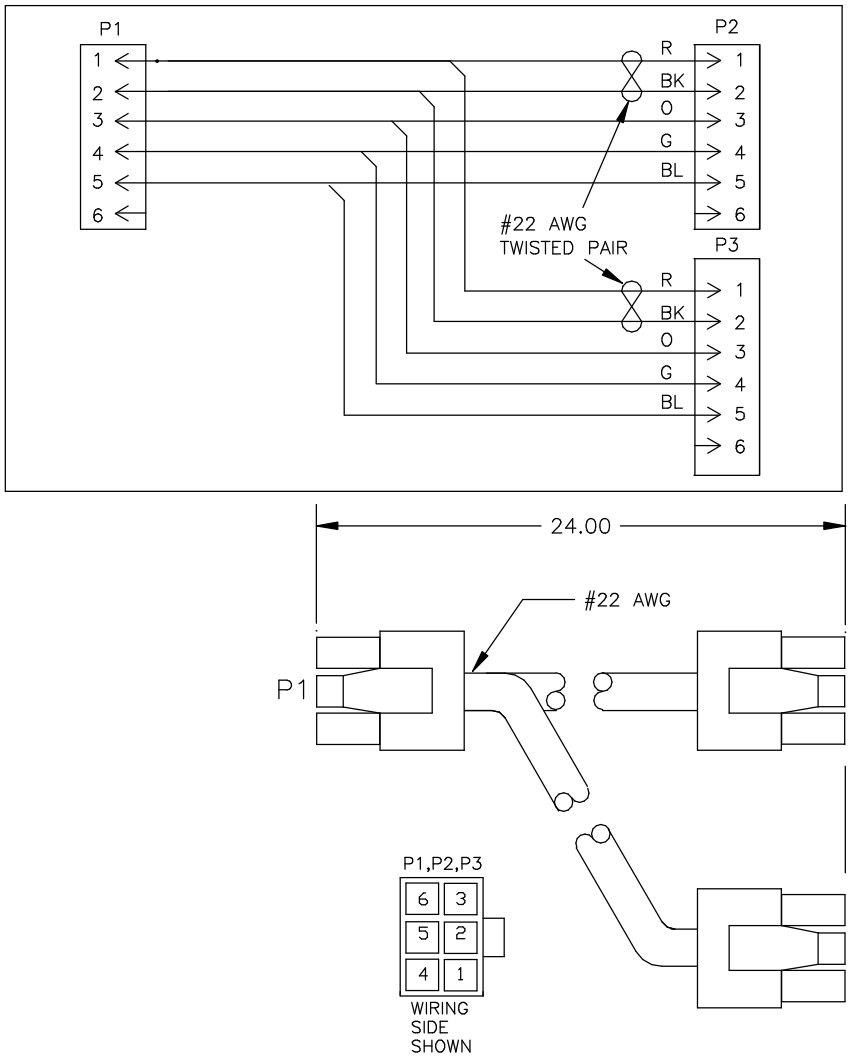
(19B804346, Sh. 191 , Rev. 2)

MINIMUM WIRE INSULATION VOLTAGE RATING IS 300 VRMS AT 60 HZ.

PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1		AMP 172168-1	6 CIRCUIT PWB CONNECTOR	1
		AMP 170364-3	SPRING CONTACTS	5
P2		AMP 172168-1	6 CIRCUIT PWB CONNECTOR	1
		AMP 170364-3	SPRING CONTACTS	5
P3		AMP 172168-1	6 CIRCUIT PWB CONNECTOR	1
		AMP 170364-3	SPRING CONTACTS	5

CONNECTION DIAGRAM

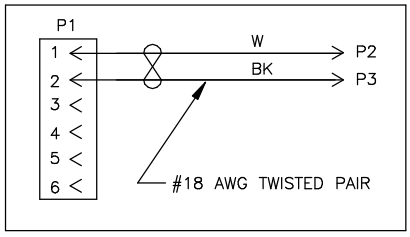


POWER SUPPLY SENSE/SYNC

19B804346P201

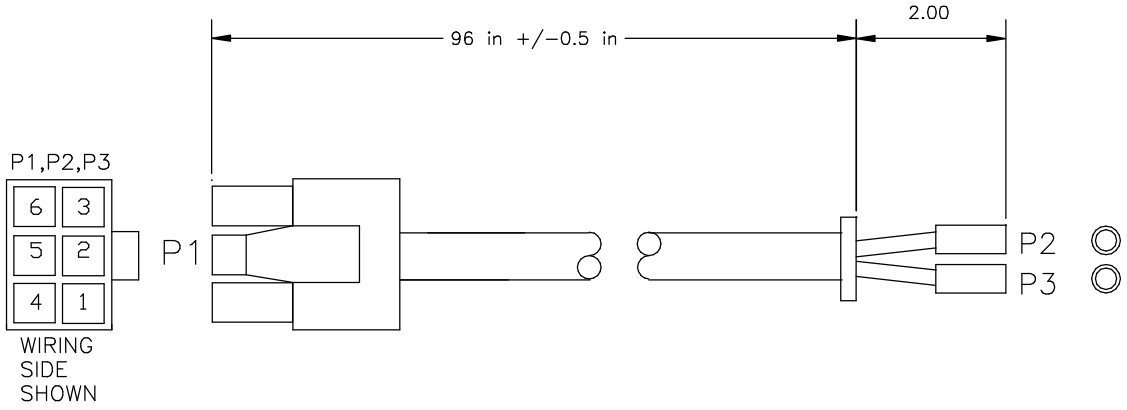
(19B804346, Sh. 201, Rev. 2)

CONNECTION DIAGRAM



PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1		AMP 172168-1	6 CIRCUIT PWB CONNECTOR	1
		AMP 170364-3	PINS FOR P1	2
P2		AMP 360619-1	SOCKET CONTACT	1
P3		AMP 360619-1	SOCKET CONTACT	1

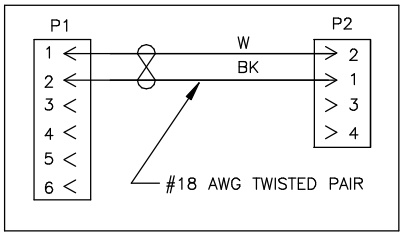


CEC/IMC SHELF +5 VDC SENSE CABLE

19B804346P202

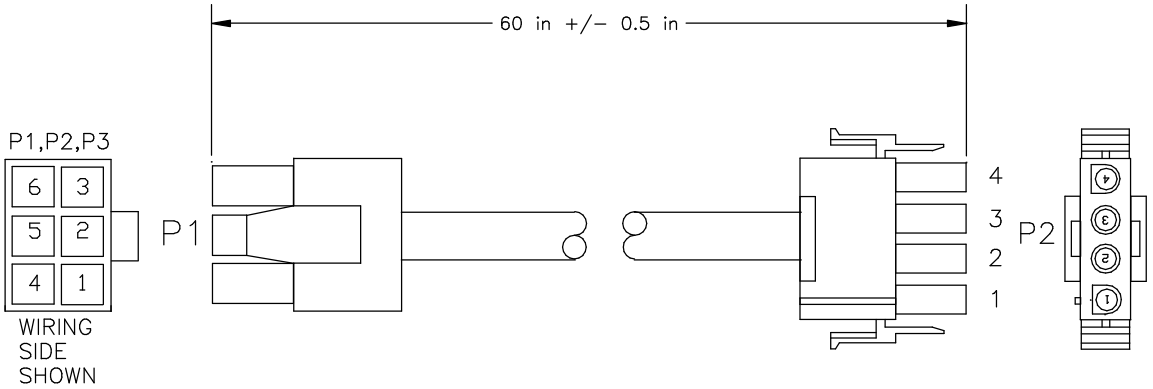
(19B804346, Sh. 202, Rev. 2)

CONNECTION DIAGRAM



PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1		AMP 172168-1	6 CIRCUIT PWB CONNECTOR	1
		AMP 170364-3	PINS FOR P1	2
P2		AMP 1-480702-0	4 CIRCUIT PLUG HOUSING	1
		AMP 350536-1 OR	CONTACT SOCKET STRIP OR	2
		AMP 350550-1	CONTACT SOCKET LOOSE	



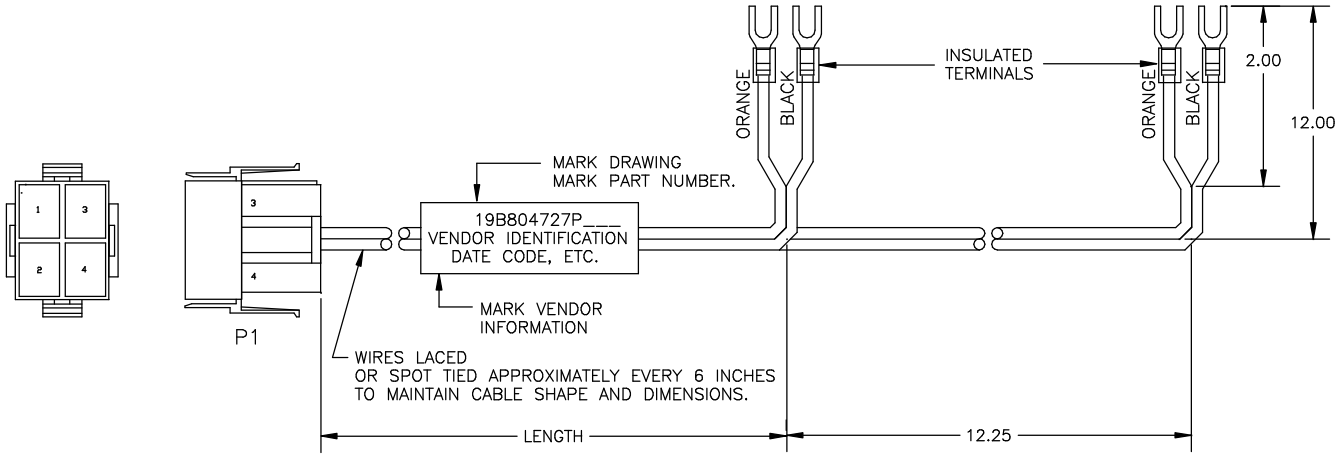
CEC/IMC SHELF +5VDC SENSE CABLE

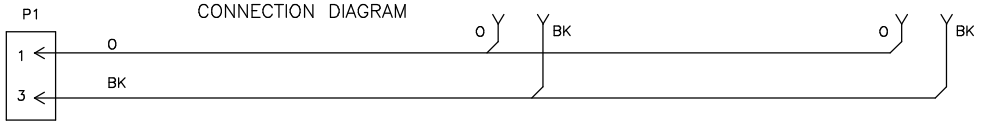
19B804346P203

(19B804346, Sh. 203, Rev. 2)

PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1	344A3804P1	AMP 643267-1	4 CIRCUIT HIGH CURRENT CAP	1
	344A3805	AMP 350650-1	HERMAPHRODITIC CONNECTOR	2
		AMP 40763	SPADE TONGUE TERMINAL	4





REQUIREMENTS FOR ALL CABLES

1. ALL WIRE SHALL BE #16 AWG STRANDED INSULATED COPPER
2. MINIMUM WIRE INSULATION VOLTAGE RATING IS 600 VRMS AT 60 HZ.
3. CABLE ASSEMBLY OPERATING TEMPERATURE RANGE -20 TO +75 DEG C.
4. UNLESS OTHERWISE SPECIFIED TOLERANCE ON ALL DIMINSIONS IS ±0.50 INCH.
5. CABLE ASSEMBLY SHALL BE WIRED PER CONNECTION DIAGRAM AND 100% INSPECTED.
6. ALL CONNECTORS/CONTACTS/TERMINALS SHALL PROVIDE INSULATION SUPPORT.

PART	LENGTH
1	30.00
2	50.00
3	70.00

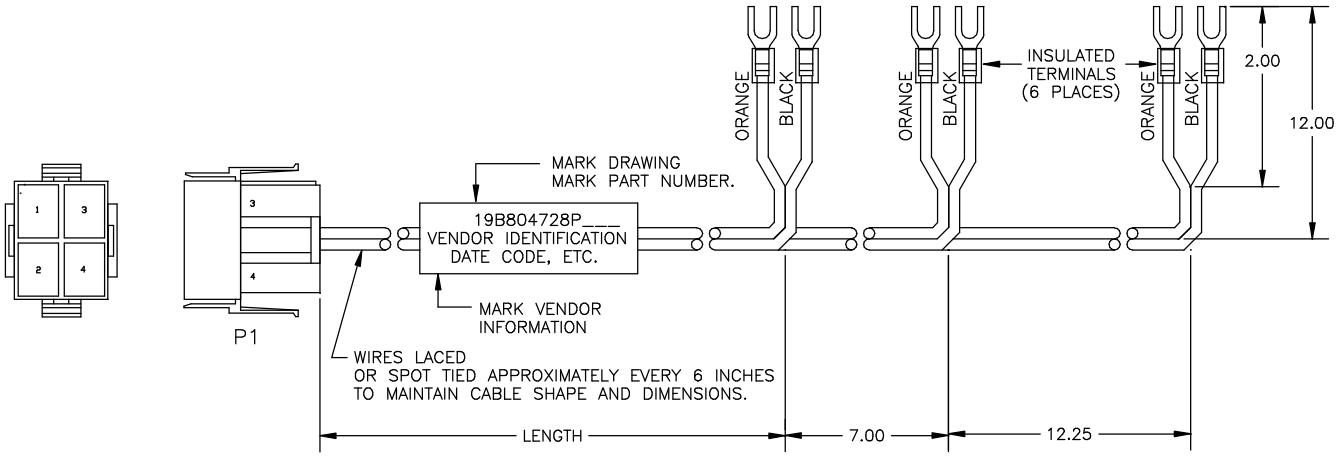
24V POWER DISTRIBUTION TO ANALOG VOTER WHEN 2 AV/VOTER UNIT

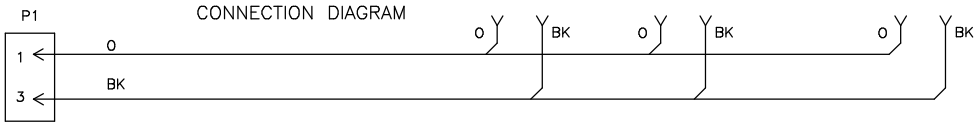
19B804727P1 - P3

(19B804727, Sh. 1, Rev. 1)

PARTS LIST

ITEM	EGE PART #	VENDOR PART # OR EQUIV	DESCRIPTION	QTY
P1	344A3804P1	AMP 643267-1	4 CIRCUIT HIGH CURRENT CAP	1
	344A3805	AMP 350650-1	HERMAPHRODITIC CONNECTOR	2
		AMP 40763	SPADE TONGUE TERMINAL	6





REQUIREMENTS FOR ALL CABLES

1. ALL WIRE SHALL BE #16 AWG STRANDED INSULATED COPPER
2. MINIMUM WIRE INSULATION VOLTAGE RATING IS 600 VRMS AT 60 HZ.
3. CABLE ASSEMBLY OPERATING TEMPERATURE RANGE -20 TO +75 DEG C.
4. UNLESS OTHERWISE SPECIFIED TOLERANCE ON ALL DIMINSIONS IS ±0.50 INCH.
5. CABLE ASSEMBLY SHALL BE WIRED PER CONNECTION DIAGRAM AND 100% INSPECTED.
6. ALL CONNECTORS/CONTACTS/TERMINALS SHALL PROVIDE INSULATION SUPPORT.

PART	LENGTH
1	30.00
2	57.00
3	84.00

24V POWER DISTRIBUTION TO ANALOG VOTER WHEN 3 AV/VOTER UNIT

19B804728P1 - P3

(19B804728, Sh. 1, Rev. 1)

83-INCH VERTICAL CABINET, EXTRA DEEP

XXCA1T

SYMBOL	PART NUMBER	DESCRIPTION
1	19D904909P1	83" Cabinet, extra deep.
2	19D417623G2	Grill, GE Label.
3	19B209539P1	Lock, Rim.
4	19B209539P2	Lock, Rim.
5	19B209539P3	Key, Lock Rim.
6	19A130031G12	Hardware Kit.
7	19B801477P1	Cover.
8	19B226318P2	Plate.
9	19A115594P2	Crommet, Plastic.
10	19B226209G1	Vertical AC Power Strip.

86-INCH OPEN RACK, EXTRA DEEP

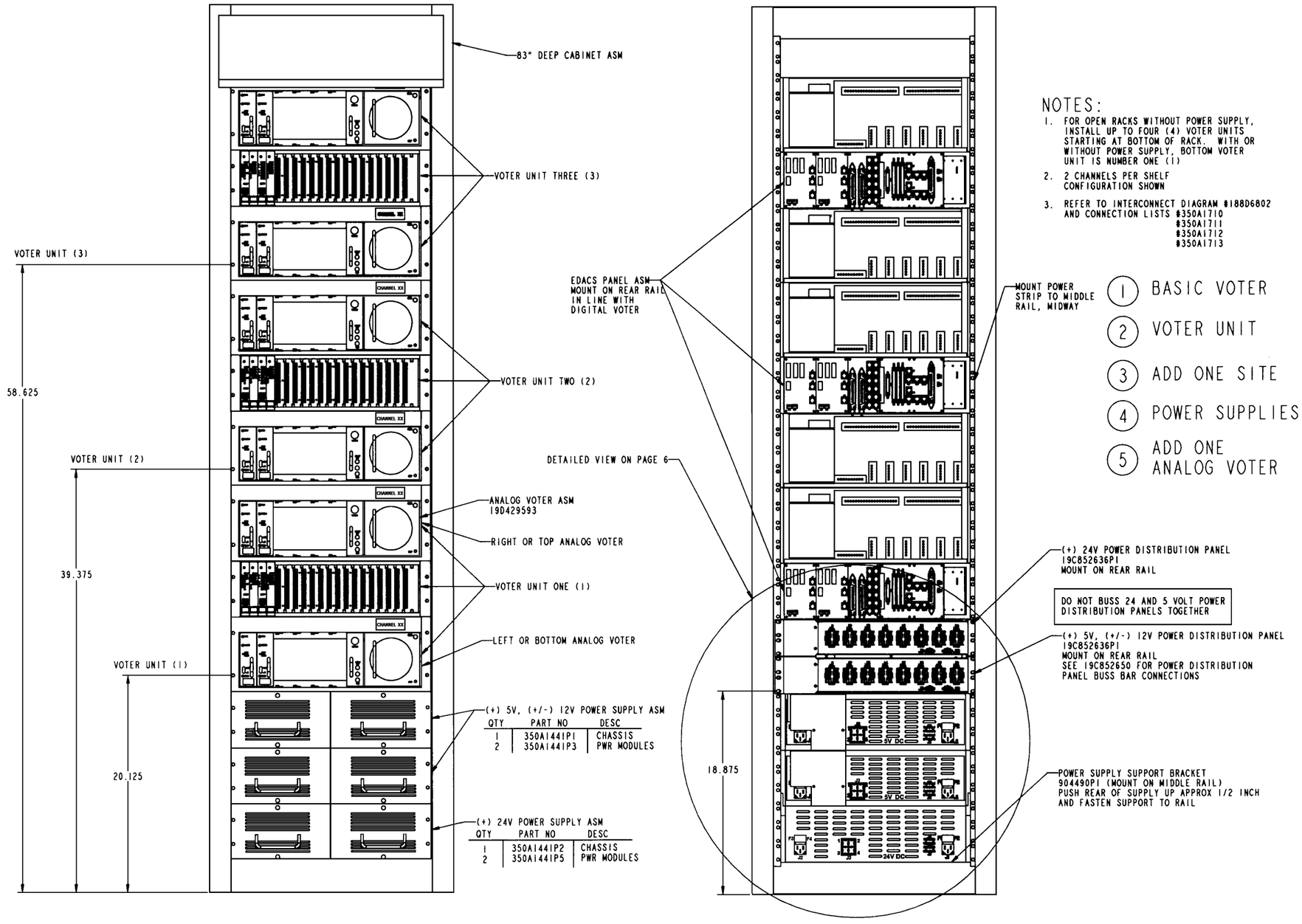
XXMR1G

SYMBOL	PART NUMBER	DESCRIPTION
1	19A149981G2	Hardware Kit, 86" Open Rack.
2	19C337003P5	Rail, Mounting.
3	19C337452G3	Rack Assembly.
4	19A130031G44	Hardware Kit, 86” Open Rack.

VERTICAL VOTER EQUIPMENT

SYMBOL	PART NUMBER	DESCRIPTION
		ANALOG VOTER SHELF (Refer to LBI-38676)
1	19E500936G2	Shelf, Analog Voter.
2	19D413917G4	EDACS Voter Power Module.
3	19D413958G5	Audio Module.
4	19D903175G1	Receiver Module.
		DIGITAL VOTER SHELF
1	188D6544P1	Digital Voter Shelf, Refer to LBI-39150.
2	ROA 117 2240/2	Digital Selector Module, Refer to LBI-39151.
3	ROA 117 2240/1	Digital Receiver Module, Refer to LBI-39151.
4	ROA 117 2247/1	Rockwell Modem Interface Card, Refer to LBI-39152.
5	ROA 117 2247/2	RS-232 Interface Card, Refer to LBI-39152.
		VOTER INTERFACE PANEL (Refer to LBI-39075)
1	19D904009G23	EDACS Interface Panel.
2	19C852204G1	Audio Interface Board.
3	188D6495G1	Voter Digital Relay Board.
4	ROA 117 2227	Digital Cross Connect Panel; 2 Ch., 6-site.
5	ROA 117 2228	Digital Cross Connect Panel; 1 Ch., 12-site.
		VOTER CROSS CONNECT PANELS INTERFACE PANEL (Refer to LBI-39142)
1	19D904667G1	Voter Cross Connect Interface Panel.
		EDACS REDUNDANT POWER SUPPLY SYSTEM (Refer to LBI-39038)
1	350A1441P1	Power Module Chassis; for 350A1441P3 Power modules.
2	350A1441P2	Power Module Chassis; for 350A1441P5 Power modules.
3	350A1441P3	Power Module, +5 Vdc and ±12 Vdc.
4	350A1441P5	Power Module, 24 Vdc.
5	350A1441P6	Blank Panel, Power module.
		POWER DISTRIBUTION PANEL
1	19C852636P1	Power Distribution Panel (Refer to LBI-39158).
2	19D904180G5	Power Distribution Panel (Refer to LBI-39045).

SYMBOL	PART NUMBER	DESCRIPTION
		VOTER HARDWARE KIT 350A1611G1
1	19A702381P506	S crew, Pan Head, thread formaing.
2	19A706152P5	Strap, Retaining.
3	19A706152P4	Strap, Retaining.
4	19A702104P2	Connector, 2-pin Jumper.



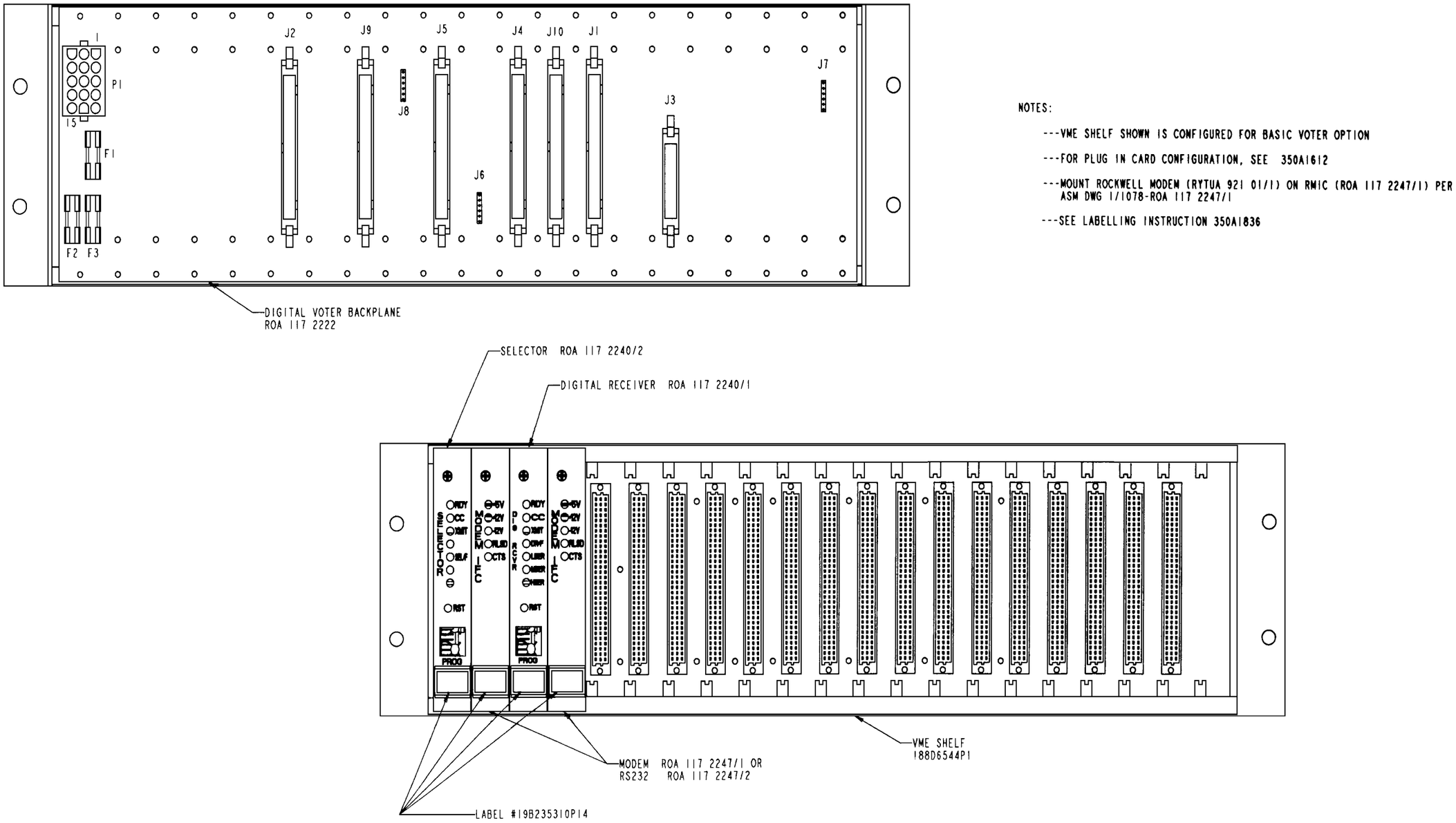
NOTES:

1. FOR OPEN RACKS WITHOUT POWER SUPPLY, INSTALL UP TO FOUR (4) VOTER UNITS STARTING AT BOTTOM OF RACK. WITH OR WITHOUT POWER SUPPLY, BOTTOM VOTER UNIT IS NUMBER ONE (1)
2. 2 CHANNELS PER SHELF CONFIGURATION SHOWN
3. REFER TO INTERCONNECT DIAGRAM #188D6802 AND CONNECTION LISTS #350A1710 #350A1711 #350A1712 #350A1713

(1) BASIC VOTER
(2) VOTER UNIT
(3) ADD ONE SITE
(4) POWER SUPPLIES
(5) ADD ONE ANALOG VOTER

VOTER ASSEMBLY DIAGRAM

(193D1054, Sh. 1, Rev. 1C)



NOTES:

---VME SHELF SHOWN IS CONFIGURED FOR BASIC VOTER OPTION

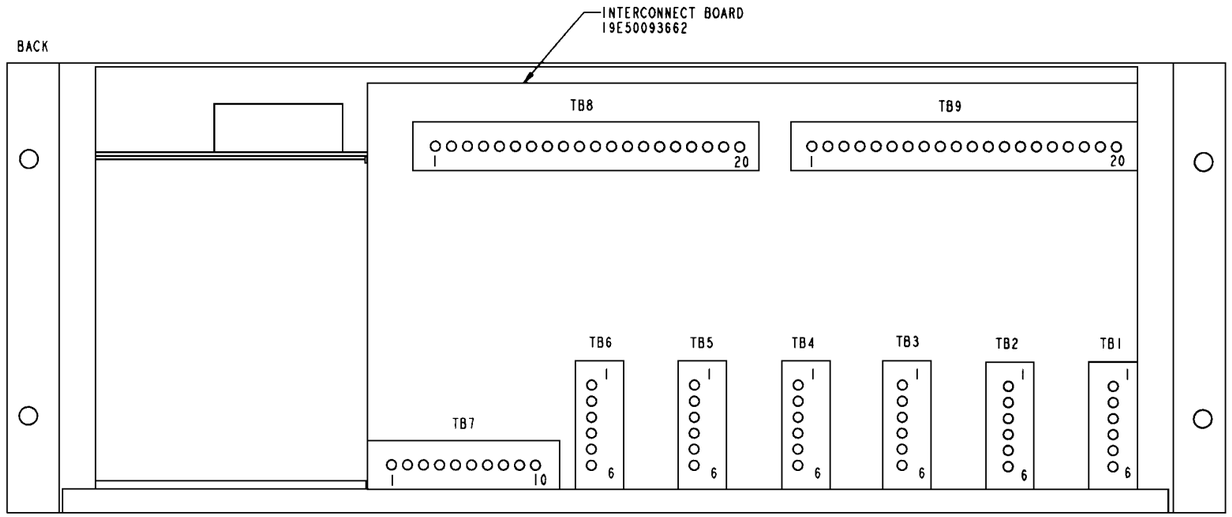
---FOR PLUG IN CARD CONFIGURATION, SEE 350A1612

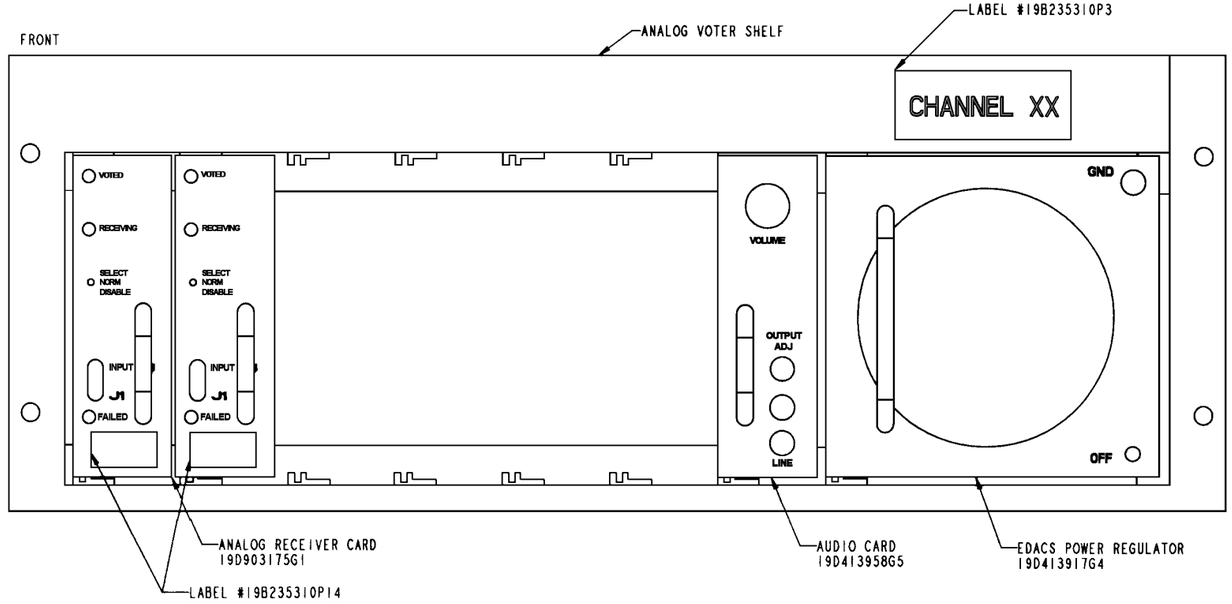
---MOUNT ROCKWELL MODEM (RYTUA 921 01/1) ON RMIC (ROA 117 2247/1) PER ASM DWG 1/1078-ROA 117 2247/1

---SEE LABELLING INSTRUCTION 350A1836

VOTER ASSEMBLY DIAGRAM

(193D1054, Sh. 2, Rev. 1C)

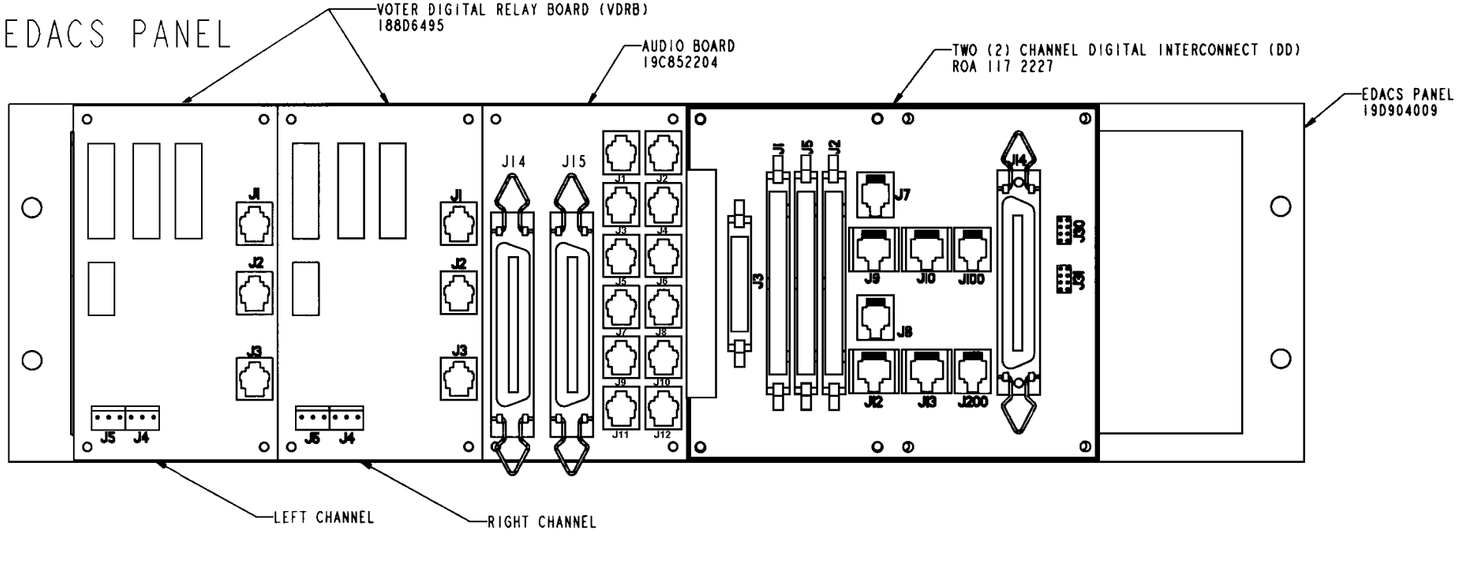




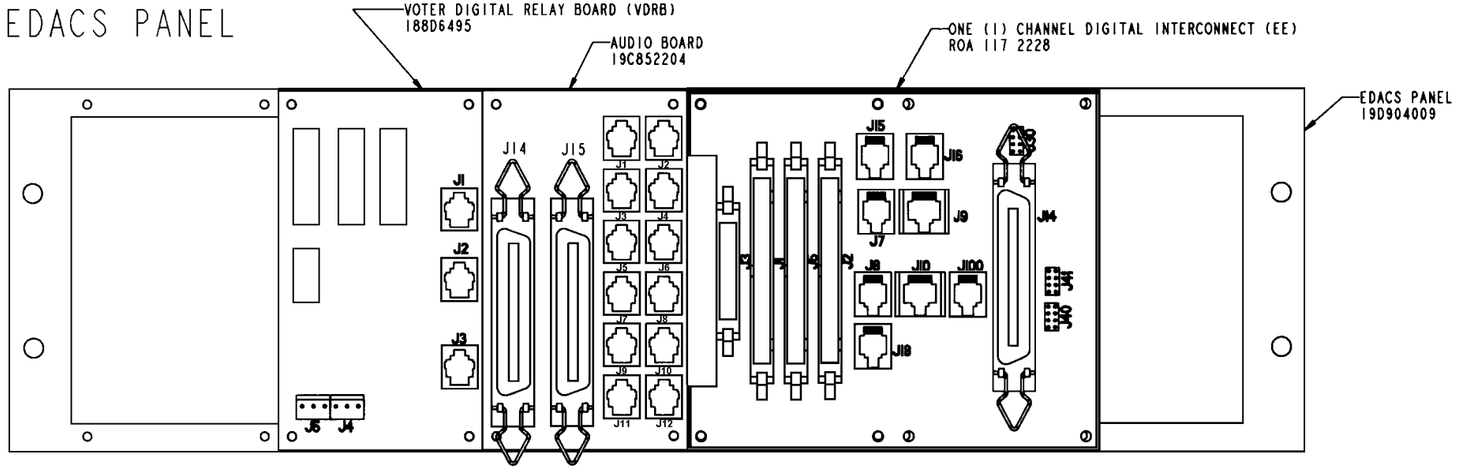
VOTER ASSEMBLY DIAGRAM

(193D1054, Sh. 3, Rev. 1C)

TWO (2) CHANNEL EDACS PANEL



ONE (1) CHANNEL EDACS PANEL



NOTES:

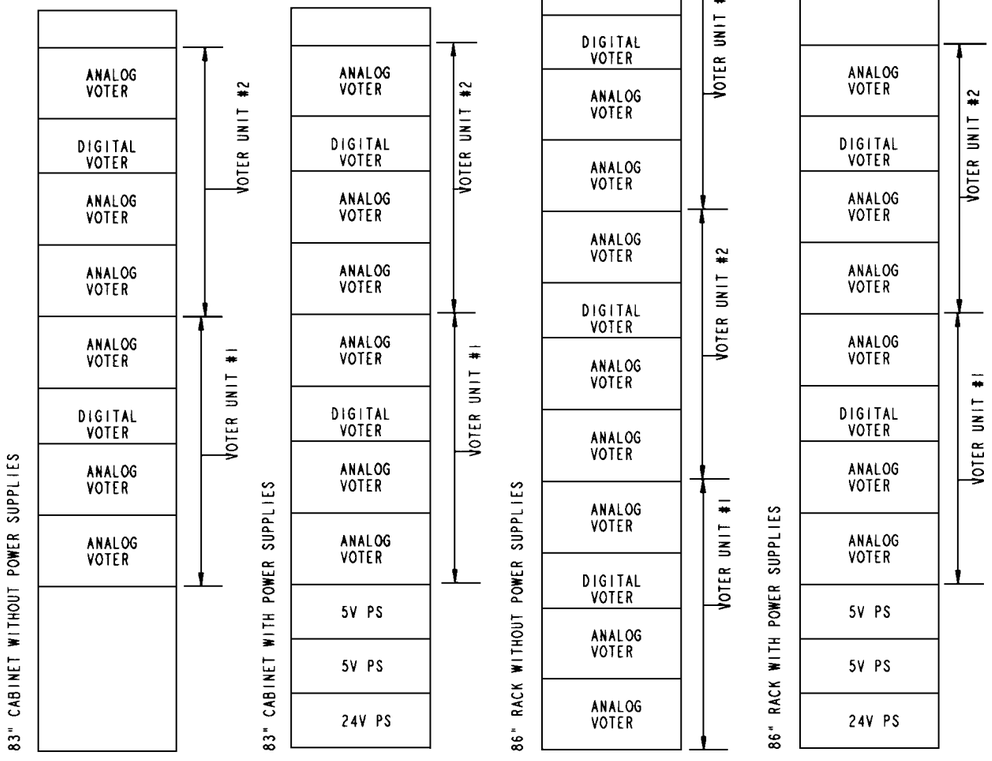
MOVE 19C852204 TO POSITION SHOWN

MOUNTING HARDWARE, JUMPERS AND WIRE TIES ARE IN HARDWARE KIT 350A1611

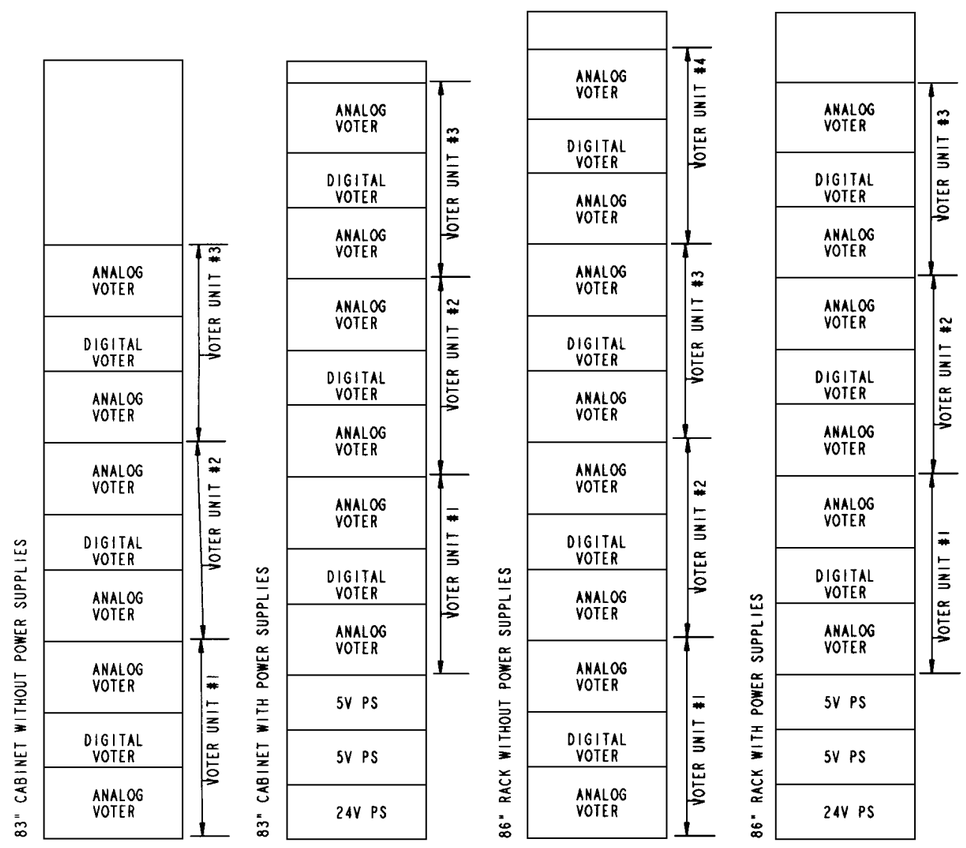
VOTER ASSEMBLY DIAGRAM

(193D1054, Sh. 4, Rev. 1C)

13 - 17 SITE RACKUPS

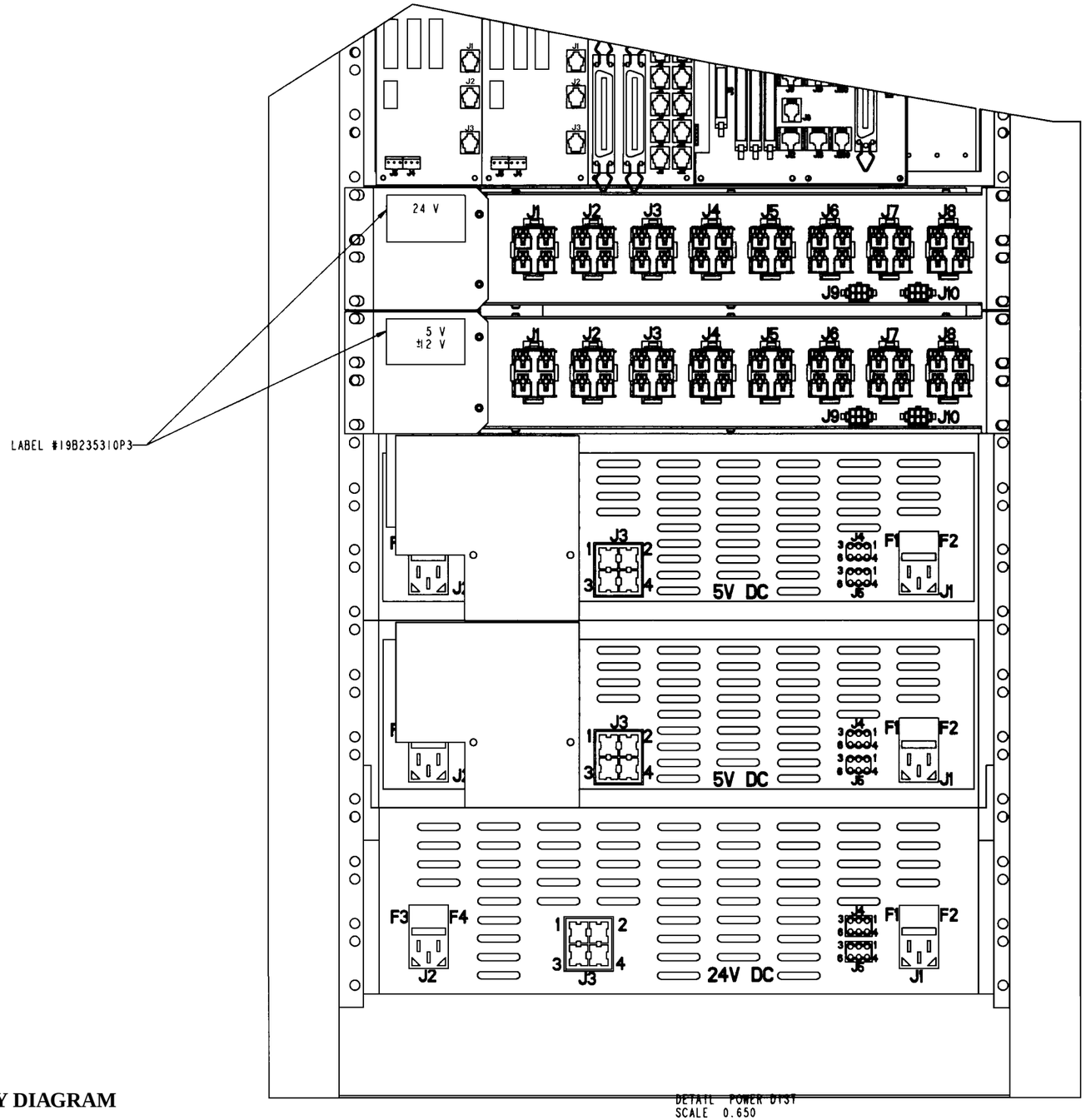


2 - 12 SITE RACKUPS



VOTER ASSEMBLY DIAGRAM

(193D1054, Sh. 5, Rev. 1C)

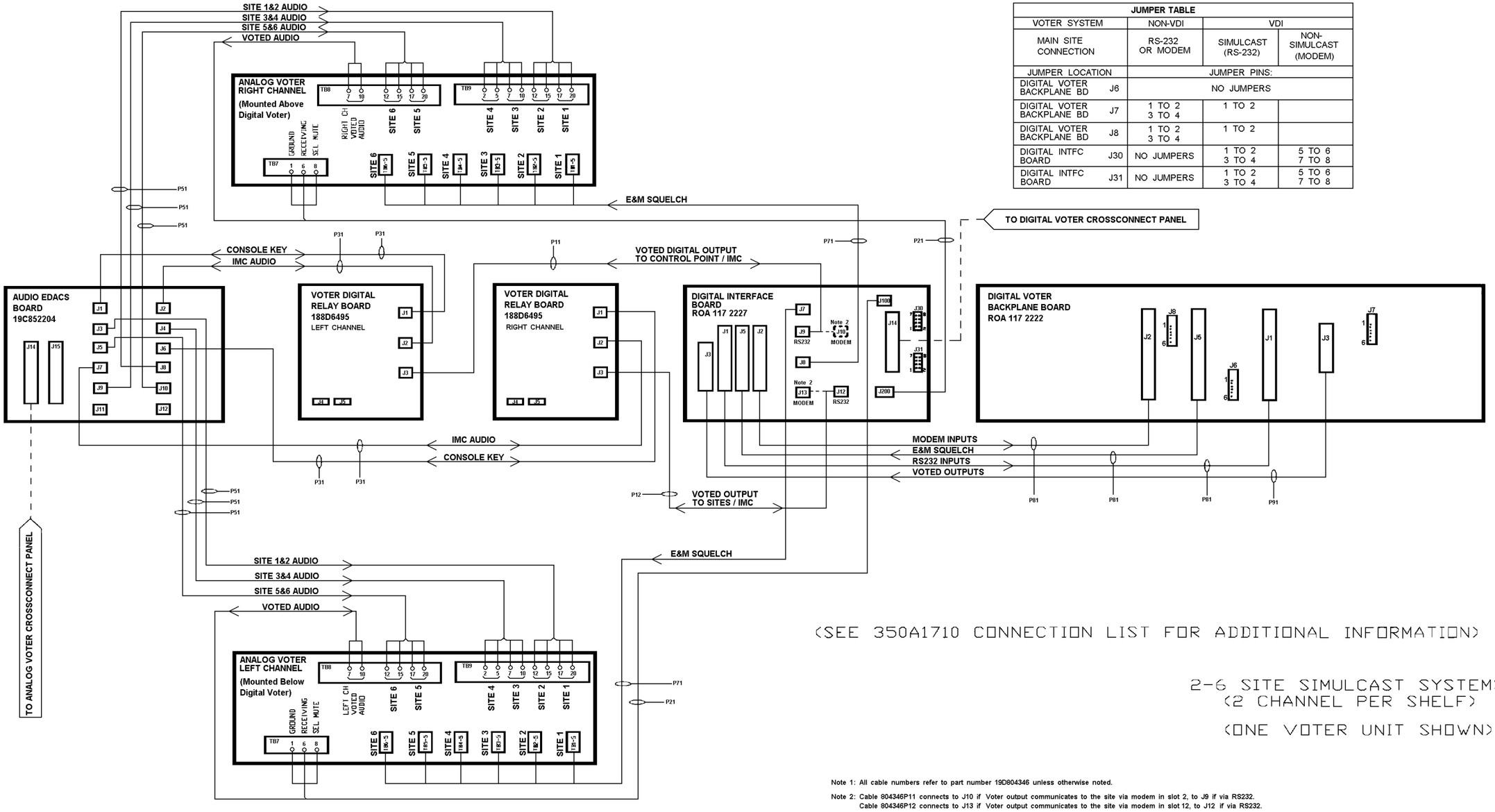


POWER SUPPLY AND
POWER DISTRIBUTION
PANEL JACK DETAIL

VOTER ASSEMBLY DIAGRAM

(193D1054, Sh. 6, Rev. 1C)

JUMPER TABLE				
VOTER SYSTEM		NON-VDI	VDI	
MAIN SITE CONNECTION		RS-232 OR MODEM	SIMULCAST (RS-232)	NON-SIMULCAST (MODEM)
JUMPER LOCATION		JUMPER PINS:		
DIGITAL VOTER BACKPLANE BD	J6	NO JUMPERS		
DIGITAL VOTER BACKPLANE BD	J7	1 TO 2 3 TO 4	1 TO 2	
DIGITAL VOTER BACKPLANE BD	J8	1 TO 2 3 TO 4	1 TO 2	
DIGITAL INTFC BOARD	J30	NO JUMPERS	1 TO 2 3 TO 4	5 TO 6 7 TO 8
DIGITAL INTFC BOARD	J31	NO JUMPERS	1 TO 2 3 TO 4	5 TO 6 7 TO 8



(SEE 350A1710 CONNECTION LIST FOR ADDITIONAL INFORMATION)

2-6 SITE SIMULCAST SYSTEMS
(2 CHANNEL PER SHELF)

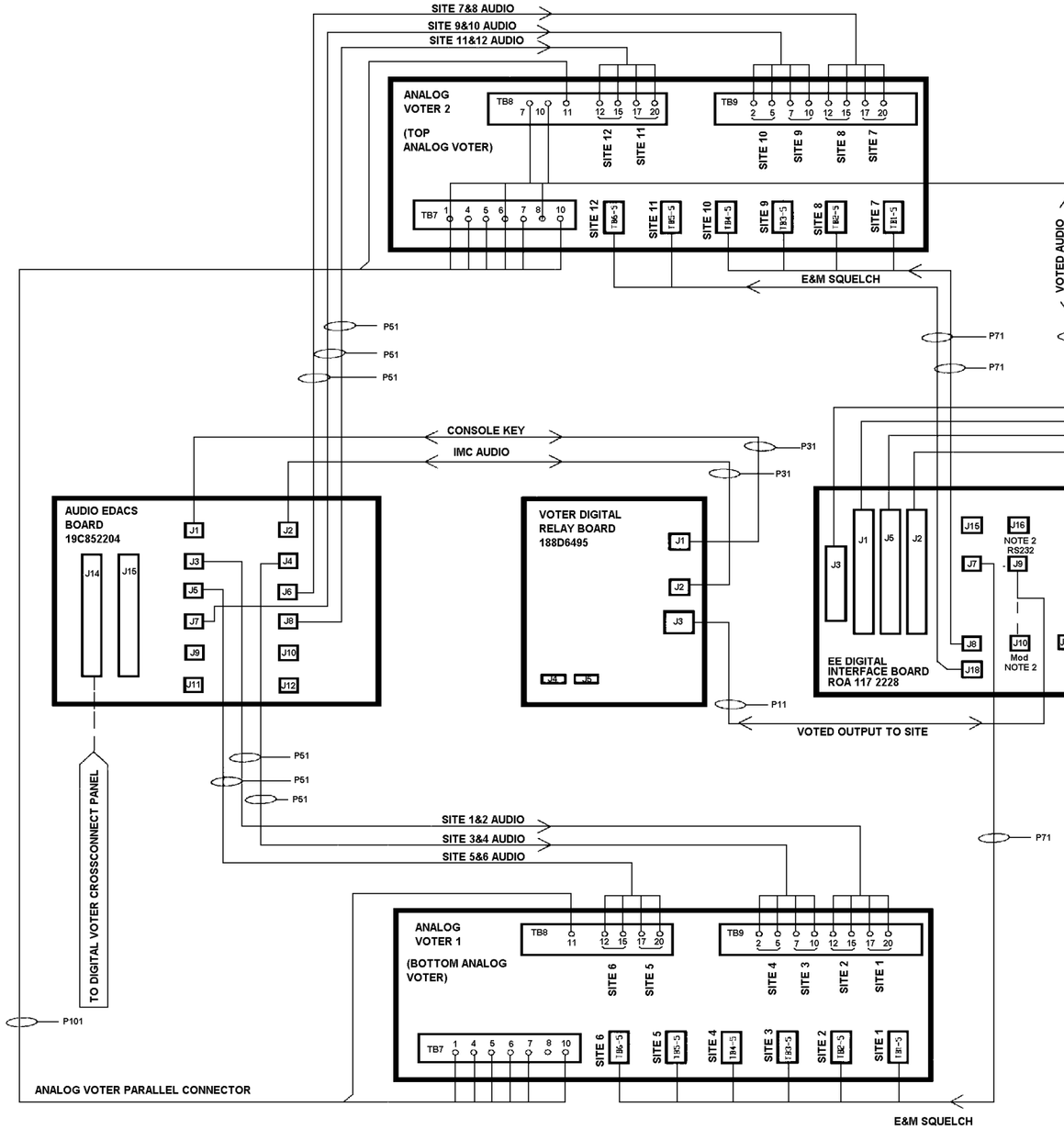
(ONE VOTER UNIT SHOWN)

Note 1: All cable numbers refer to part number 19D804346 unless otherwise noted.

Note 2: Cable 804346P11 connects to J10 if Voter output communicates to the site via modem in slot 2, to J9 if via RS232.
Cable 804346P12 connects to J13 if Voter output communicates to the site via modem in slot 12, to J12 if via RS232.

CV^2 2-6 SIMULCAST SYSTEM

(188D6802, Sh. 1, Rev. 2A)



JUMPER TABLE FOR J6, J7, J8 & J30				
VOTER SYSTEM		NON-VDI	VDI	
MAIN SITE CONNECTION		RS-232 OR MODEM	SIMULCAST (RS-232)	NON-SIMULCAST (MODEM)
JUMPER LOCATION		JUMPER PINS:		
DIGITAL VOTER BACKPLANE BD	J6	1 TO 2 3 TO 4 5 TO 6	1 TO 2 3 TO 4 5 TO 6	1 TO 2 3 TO 4 5 TO 6
DIGITAL VOTER BACKPLANE BD	J7	1 TO 2 3 TO 4	1 TO 2	1 TO 2
DIGITAL VOTER BACKPLANE BD	J8	NO JUMPERS		
DIGITAL INTFC BOARD	J30	NO JUMPERS	1 TO 2 3 TO 4	5 TO 6 7 TO 8

JUMPER TABLE FOR J40 & J41				
DIGITAL VOTER SHELF CARD SLOT NUMBER	4	16	18	20
RS - 232 CARD OR DIGITAL RECEIVER INSTALLED	1 TO 2	ON 3 TO 4	5 TO 6	7 TO 8
RMIC CARD INSTALLED	NO JUMPER ON 1 TO 2	NO JUMPER ON 3 TO 4	NO JUMPER ON 5 TO 6	NO JUMPER ON 7 TO 8

Note 1: All cable numbers refer to part number 19D804346 unless otherwise noted.

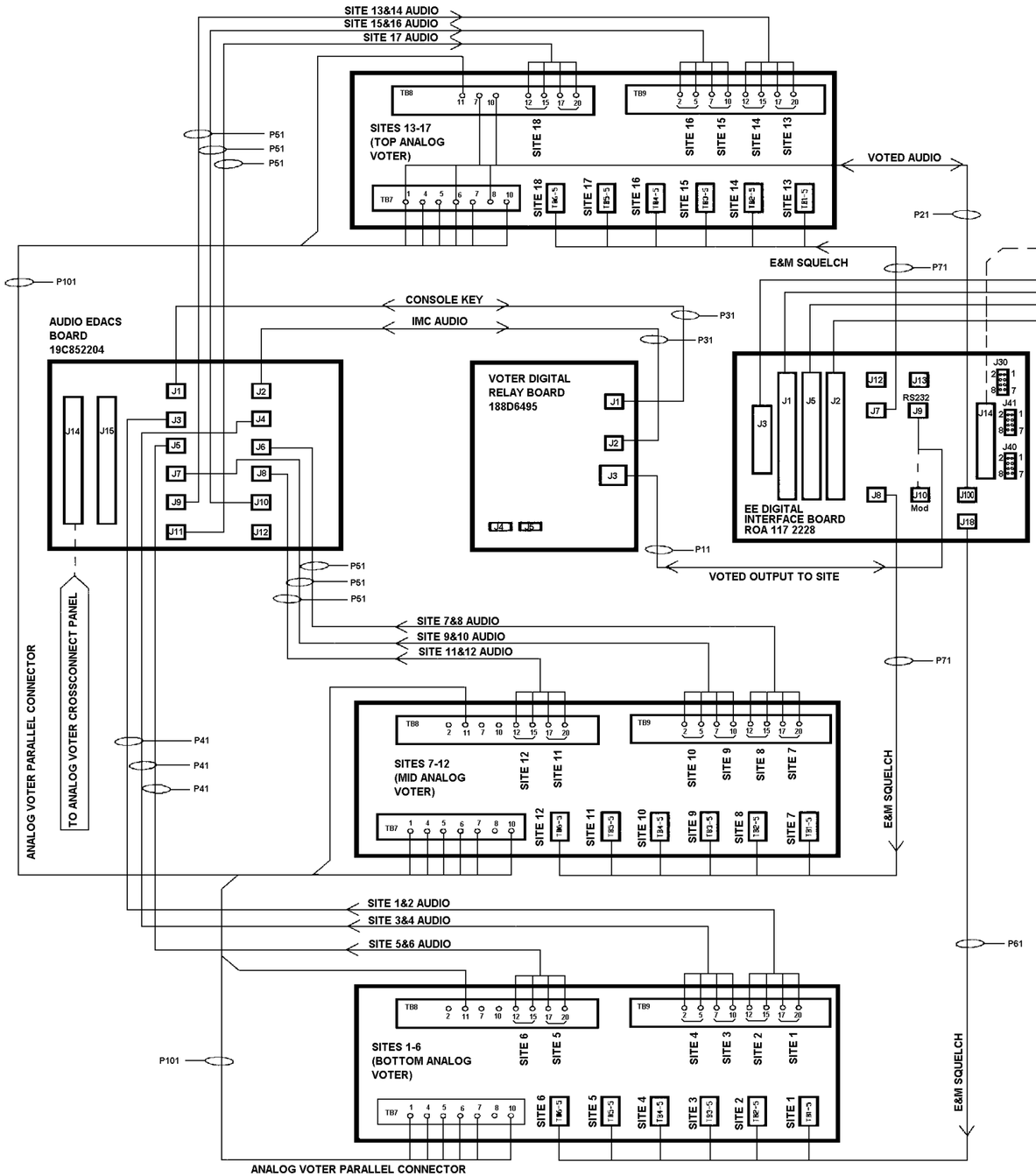
Note 2: Cable 804346P11 connects to J10 if Voter output communicates to the site via modem in slot 2, to J9 if via RS232.

2-12 SITE SIMULCAST SYSTEM
(1 CHANNEL PER SHELF)
(ONE VOTER UNIT SHOWN)

CV^2 2-12 SIMULCAST SYSTEM

(188D6802, Sh. 2, Rev. 2A)

See Cable Connection List 350A1711 for additional information



JUMPER TABLE FOR J40 & J41				
DIGITAL VOTER SHELF CARD SLOT NUMBER	4	16	18	20
RS - 232 CARD OR DIGITAL RECEIVER INSTALLED	1 TO 2	ON 3 TO 4	5 TO 6	7 TO 8
RMIC CARD INSTALLED	NO JUMPER ON 1 TO 2	NO JUMPER ON 3 TO 4	NO JUMPER ON 5 TO 6	NO JUMPER ON 7 TO 8

Note 1: All cable numbers refer to part number 19D804346 unless otherwise noted.

Note 2: Cable 804346P11 connects to J10 if Voter output communicates to the site via modem in slot 2, to J9 if via RS232.

JUMPER TABLE FOR J6, J7, J8 & J30				
VOTER SYSTEM		NON-VDI	VDI	
MAIN SITE CONNECTION		RS-232 OR MODEM	SIMULCAST (RS-232)	NON-SIMULCAST (MODEM)
JUMPER LOCATION		JUMPER PINS:		
DIGITAL VOTER BACKPLANE BD	J6	1 TO 2 3 TO 4 5 TO 6	1 TO 2 3 TO 4 5 TO 6	1 TO 2 3 TO 4 5 TO 6
DIGITAL VOTER BACKPLANE BD	J7	1 TO 2 3 TO 4	1 TO 2	1 TO 2
DIGITAL VOTER BACKPLANE BD	J8	NO JUMPERS		
DIGITAL INTFC BOARD	J30	NO JUMPERS	1 TO 2 3 TO 4	5 TO 6 7 TO 8

See Cable Connection List 350A1712 for additional information

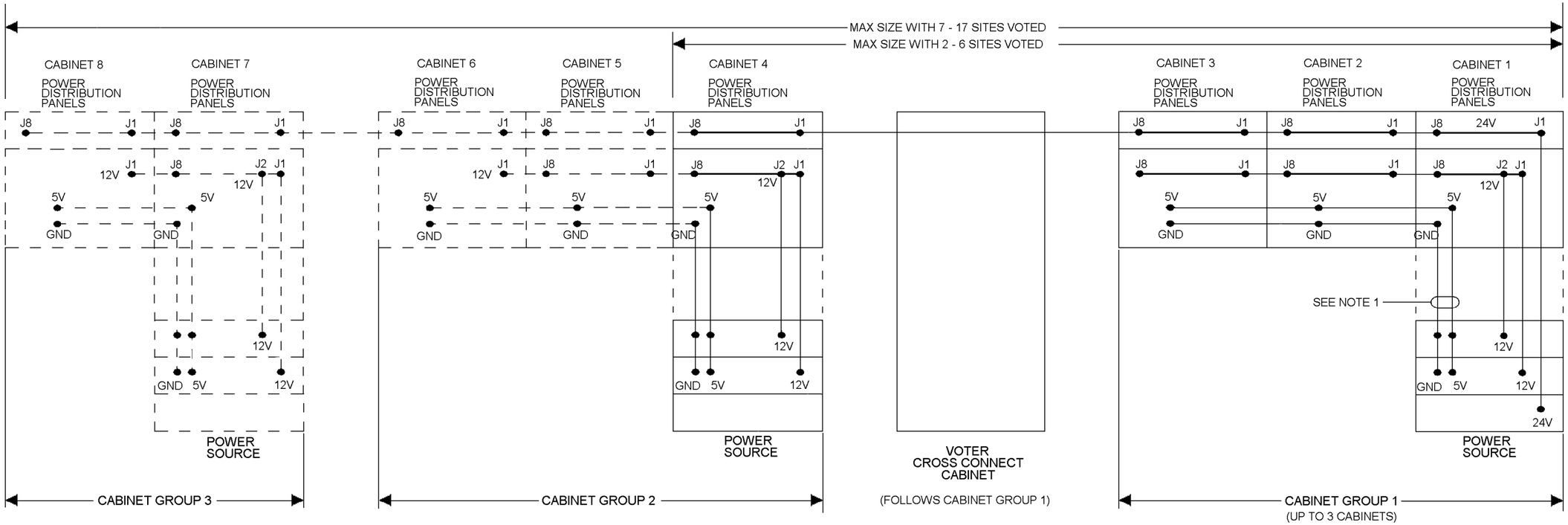
2-17 SITE SIMULCAST SYSTEM
(1 CHANNEL PER SHELF)
(ONE VOTER UNIT SHOWN)

CV^2 2-17 SIMULCAST SYSTEM

(188D6802, Sh. 3, Rev. 2A)

SYSTEM POWER DISTRIBUTION

(VIEWED FROM REAR OF CABINETS)



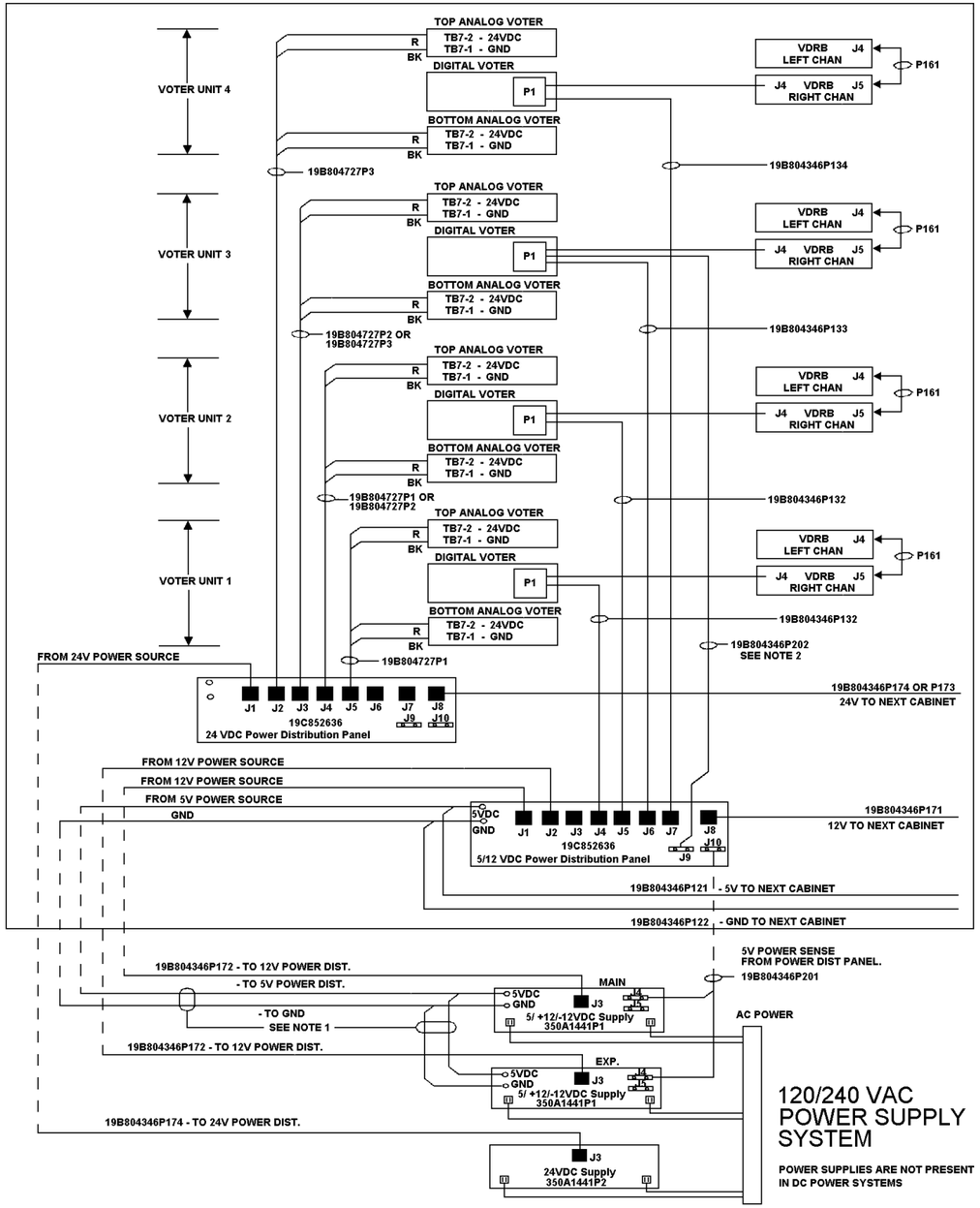
NOTES:
1. **The power Distribution Panel (PDP) is connected to the 5VDC source on the power supplies by the bus bar, 19C852647P2. Multiple power supplies are connected by the bus bar, 19C852647P1.**

See Cable Connection List 350A1713 for additional information

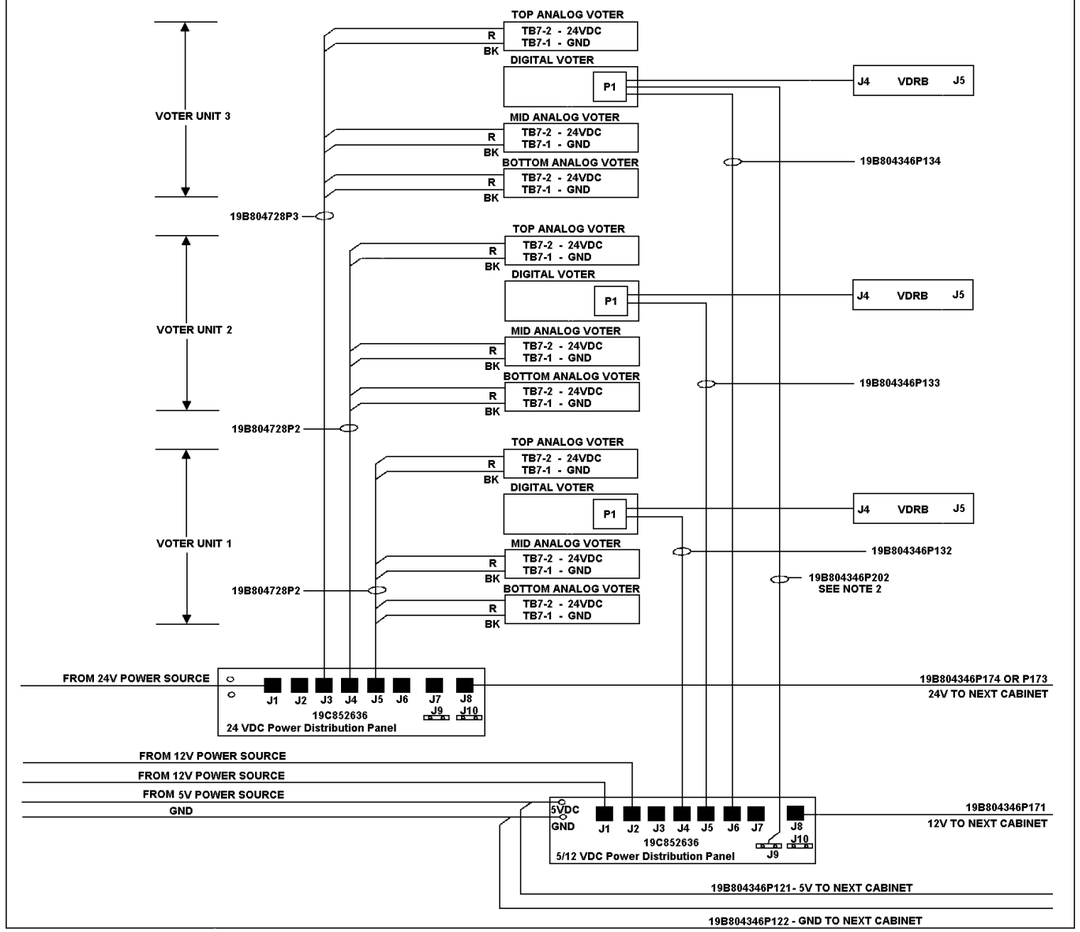
CV^2 POWER DISTRIBUTION

(188D6802, Sh. 4, Rev. 2A)

CABINET / RACK POWER CONNECTIONS
2 - 12 SITE SYSTEMS



CABINET / RACK POWER CONNECTIONS
2 - 17 SITE SYSTEMS



NOTES:

1. **The power Distribution Panel (PDP) is connected to the 5VDC source on the power supplies by the bus bar, 19C852647P2. Multiple power supplies are connected by the bus bar, 19C852647P1.**
2. **The power sense cable P202 is plugged into P1 of the top Digital Voter Shelf in the cabinets/racks containing the power supplies. The +5V wire shall be connected at P1-10 while the GND shall be connected at P1-2. Not present for DC option.**

CV^2 POWER DISTRIBUTION

(188D6802, Sh. 5, Rev. 2A)

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