



# EDACS VOTER DIGITAL RECEIVER & SELECTOR GETC CONFIGURATION MANUAL

## TABLE OF CONTENTS

	<u>Page</u>
SCOPE . . . . .	1
INTRODUCTION . . . . .	1
SOFTWARE REQUIREMENTS . . . . .	1
INSTALLATION AND CHECKOUT . . . . .	1
Operation . . . . .	3
Digital Voting . . . . .	3
Digital Receiver . . . . .	3
Rockwell Modem . . . . .	3
Voter Interface Board . . . . .	3
Selector . . . . .	3
Voter Digital Relay Board . . . . .	4
BSL Synchronizing . . . . .	4
Simulcast . . . . .	4
LED INDICATORS . . . . .	4
Digital Receiver . . . . .	4
Selector . . . . .	5
FIGURES	
Block Diagram . . . . .	1
Jumper Locations . . . . .	2
Receive Level Adjustment . . . . .	2
Simulcast Data Path . . . . .	4
TABLES	
LED Indications . . . . .	5
Jumpers . . . . .	5
Digital Receiver Switch Settings, 0-32 . . . . .	6
Digital Receiver Switch Settings, 32-63 . . . . .	6
Selector Dip Switch Settings . . . . .	7
Parts List . . . . .	7
DRAWINGS	
SHELF ASSEMBLY . . . . .	7
VOTER INTERCONNECTION . . . . .	8
DIGITAL RECEIVER INTERCONNECTION . . . . .	9
SELECTOR INTERCONNECTION . . . . .	9



**Ericsson GE Mobile Communications Inc.**  
Mountain View Road • Lynchburg, Virginia 24502

### SCOPE

The Digital Receiver and Selector comprise the main components of the EDACS Voter. This manual explains the configuration, installation, and basic operation of the GETC (19D904266) used in the Voter's Digital Receiver and Selector configurations.

### INTRODUCTION

The Voter communicates with a stationary transceiver at the Main Site (or the Control Point in the case of Simulcast Systems) and up to 63 stationary Satellite Receivers or Remote Stations. Figure 1 shows the Voter along with other EDACS components. All three of the system components, Voter, Main Site, and remote Receiver Stations are connected using data grade telephone lines, microwave link, fiber optics, or hard wire connections. Alternate systems configurations include co-locating the Voter with either the Main Site or a remote Receiver Station.

The remote Receiver Stations relay the portable or mobile radio's audio and digital information to the Voter Site. Typically, several Receiver Sites relay the same transmission to the Voter Site. The Voter evaluates all the incoming signals, votes for the best audio and digital signal, and relays the voted signals to the Main Site.

Refer to the INTERCONNECTION DIAGRAMS section of this LBI for detailed information on connections. In addition, refer to Voter System Manual LBI-38224 and GETC Maintenance Manual LBI-38894 for detailed information concerning the Voter and basic GETC configuration.

### SOFTWARE REQUIREMENTS

Voter software release 19A149567G12 is compatible with revision B or later GETC (19D902104G1) hardware. In addition, Voter software release 19A149567G12 is compatible with Station GETC software release 19A149256G18 or later. Additional information is contained within the Voter's Software Release Notes, SRN 1007.

When installing or updating Voter software, ensure that all Digital Receivers and the Selector for a particular EDACS channel are updated with the same software version. This ensures software compatibility within the same EDACS channel. Since there is no Voter software interaction between EDACS channels, different versions of software may exist on different channels. Normally, all channels are configured with the same software version.

The GETC software resides as part of an EPROM installed in the GETC's socket XU2 shown in Figure 3. The EPROM is interchangeable between the Digital Receiver and the Selector. The software knows the difference between the two configurations by checking dip switch S3-7. Close S3 section seven to indicate the GETC is configured as a Digital Receiver. Open S3 section seven to indicate the GETC is configured as a Selector.

Properly installed Voter Software is verified by reading the GETC's coded LED display. Each GETC shelf has a row of seven front panel mounted LED's. When on, L1 indicates the correct installation of software and operational readiness of the Digital Receiver or the Selector. When on, L4 indicates the GETC is configured as a Digital Receiver. Similarly, when on, L5 indicates the GETC is configured as a Selector. In addition, both L4 and L5 have a coded blink rate to indicate failure modes. Refer to the LED INDICATORS section of this LBI for more information.

### INSTALLATION AND CHECKOUT

Installation or removal of the shelf sub-assemblies involves sliding the GETC shelf out from the cabinet into the service position. This forward position allows access to the shelf's interior. Observe basic safety precautions to prevent injury or equipment damage. Install all components with the appropriate screws, nuts, and washer hardware. Notice the modem uses insulating washers on both sides of the printed circuit board.

Ensure the correct EPROM version of software is installed in XU2. Each Digital Receiver's software must match the Selector software. Replacing or upgrading Voter software involves changing the EPROM located in the GETC socket XU2.

**NOTE**

Ensure the GETC jumpers are properly configured and the dip switch settings are correct. Refer to SWITCH SETTINGS and JUMPER CONFIGURATION tables.

Ensure the GETC is properly configured by referring to Tables 1 through 5 for detailed information on jumpers and switch settings. Refer to Figure 2 for jumper locations. Close dip switch S3-7 section seven to indicate the GETC is configured as a Digital Receiver. Open S3-7 to indicate the GETC is configured as a Selector. Unused dip switch sections are closed.

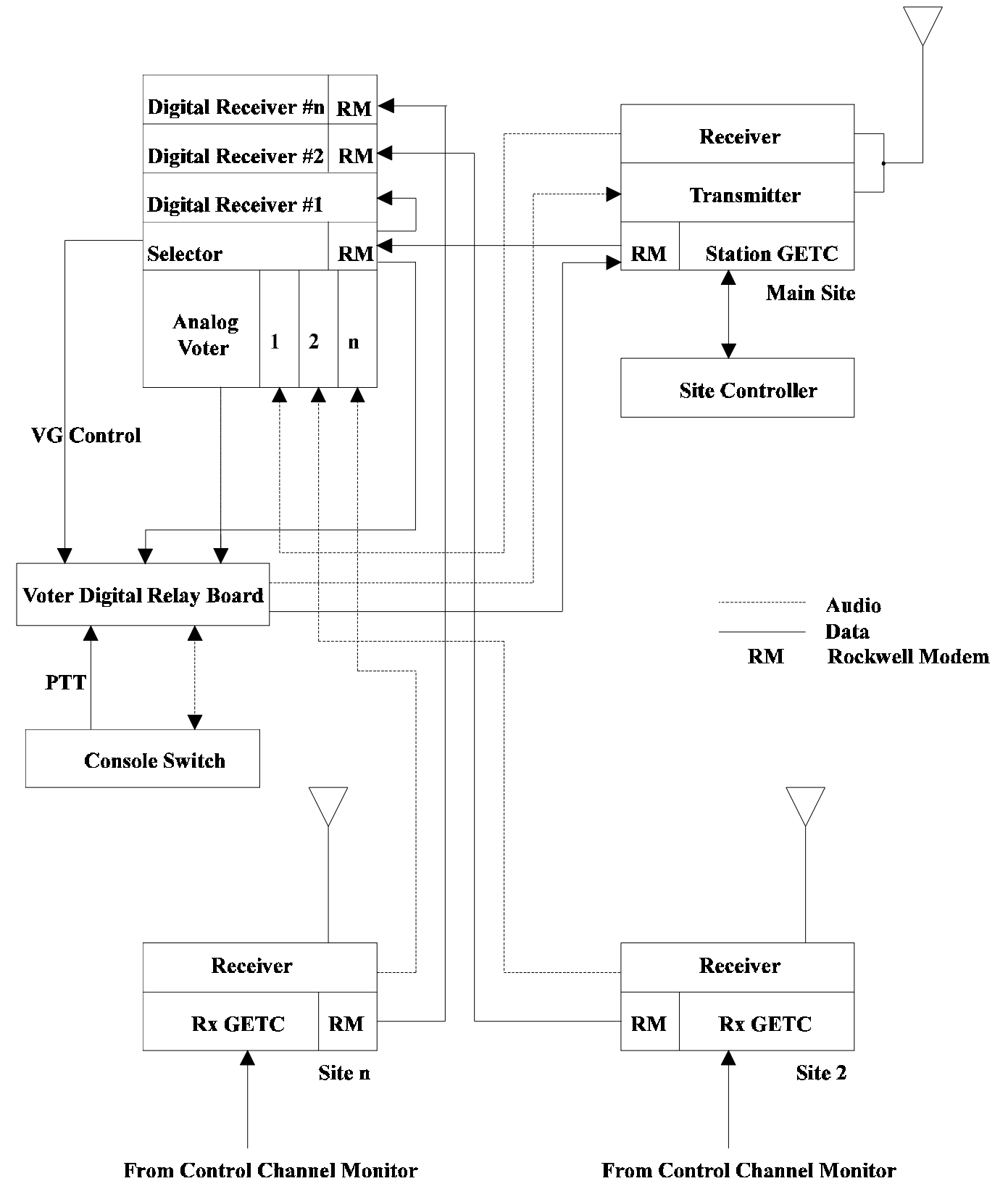


Figure 1 - EDACS Voter Block Diagram

Each remote Receiver Station connected to the Voter is assigned a slot number determined by the Digital Receiver's dips switch S1 sections one through six. The Voter uses the slot number to identify each remote Receiver Station. There is no correlation between the remote Receiver Station's slot number and site numbers used in other EDACS equipment such as system managers, consoles, portable and mobile transceivers.

Install the replacement GETC by reversing the removal procedure. Take care to replace all the hardware and harness connectors. Carefully check the shelf's interior for loose washers and foreign objects. Ensure insulating washers are installed on both sides of the Rockwell modem printed circuit board.

Return the Voter cabinet to service and ensure the audio and data inputs from the remote Receiver Stations are present and correct according to procedures in the PHONE LINE AND TEST TONE LEVELS section of LBI-38224.

Use Figure 3 to locate and adjust Digital Receiver R1, Receive Level, to approximately 85 mVRMS at U18-1. Use

an oscilloscope to check for the presence of demodulated digital data at TP107. Adjust R2, the Selector's Transmit Level, for .77 VRMS or 0 dBm across J6-8 and J6-9.

Check the EDACS channel for proper operation during all operating modes by using portable and mobile transceivers within the Voter's coverage area. Place a call and observe the GETC LEDs for proper indications. Verify the Analog Receiver audio is squelched when the corresponding remote Receiver Station is idle or not receiving.

Test the system's fault tolerance by keying a radio then turning the radio power off without releasing the PTT switch. The channel should drop the call and return to an idle state within two to three seconds.

Refer to the Trouble Shooting section of Voter System Manual LBI-38224 for identifying problems with the Digital Receiver and Selector. Also, refer to GETC Maintenance Manual LBI-38894 for detailed board level GETC test procedures.

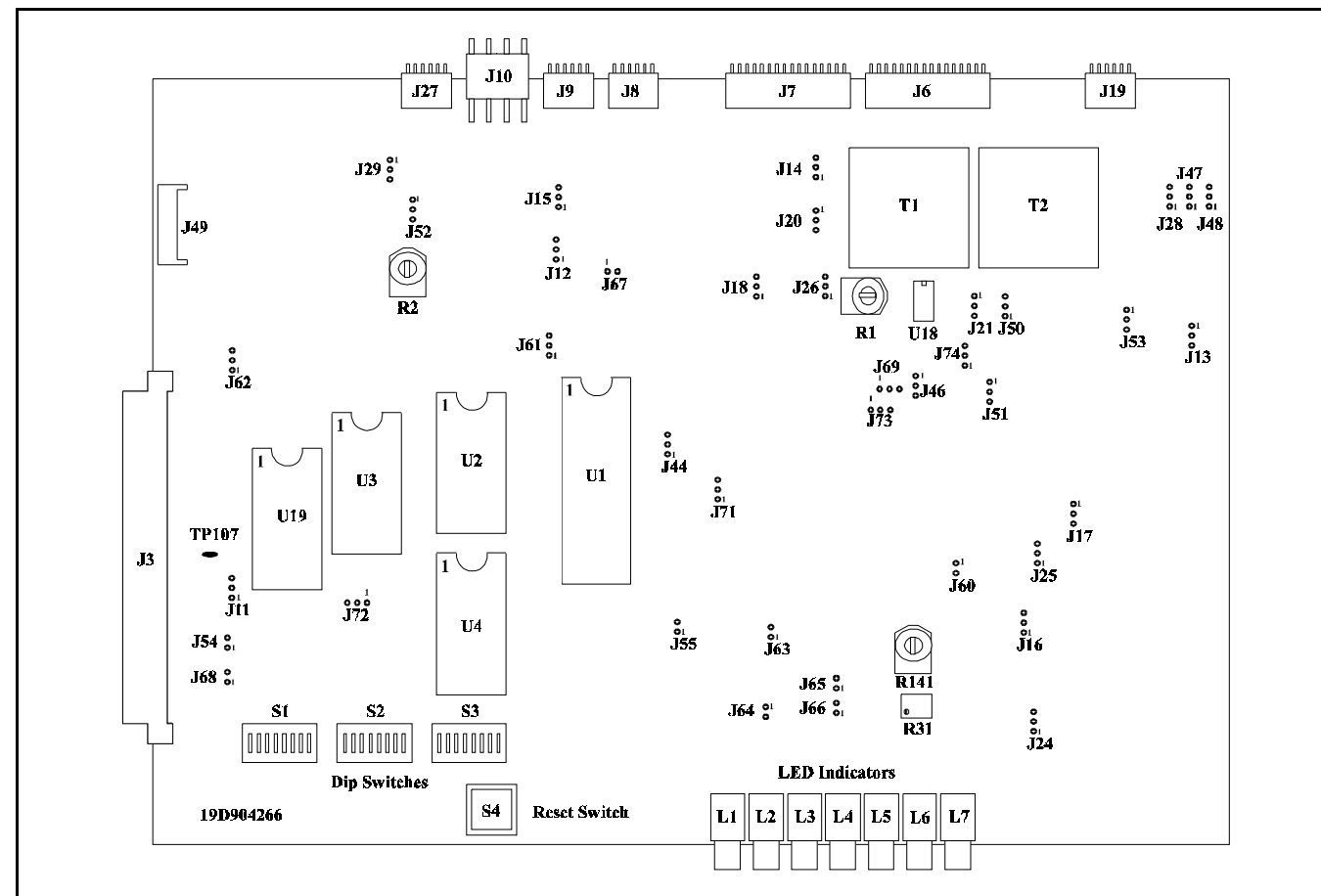


Figure 2 - Jumper Locations (19D904266)

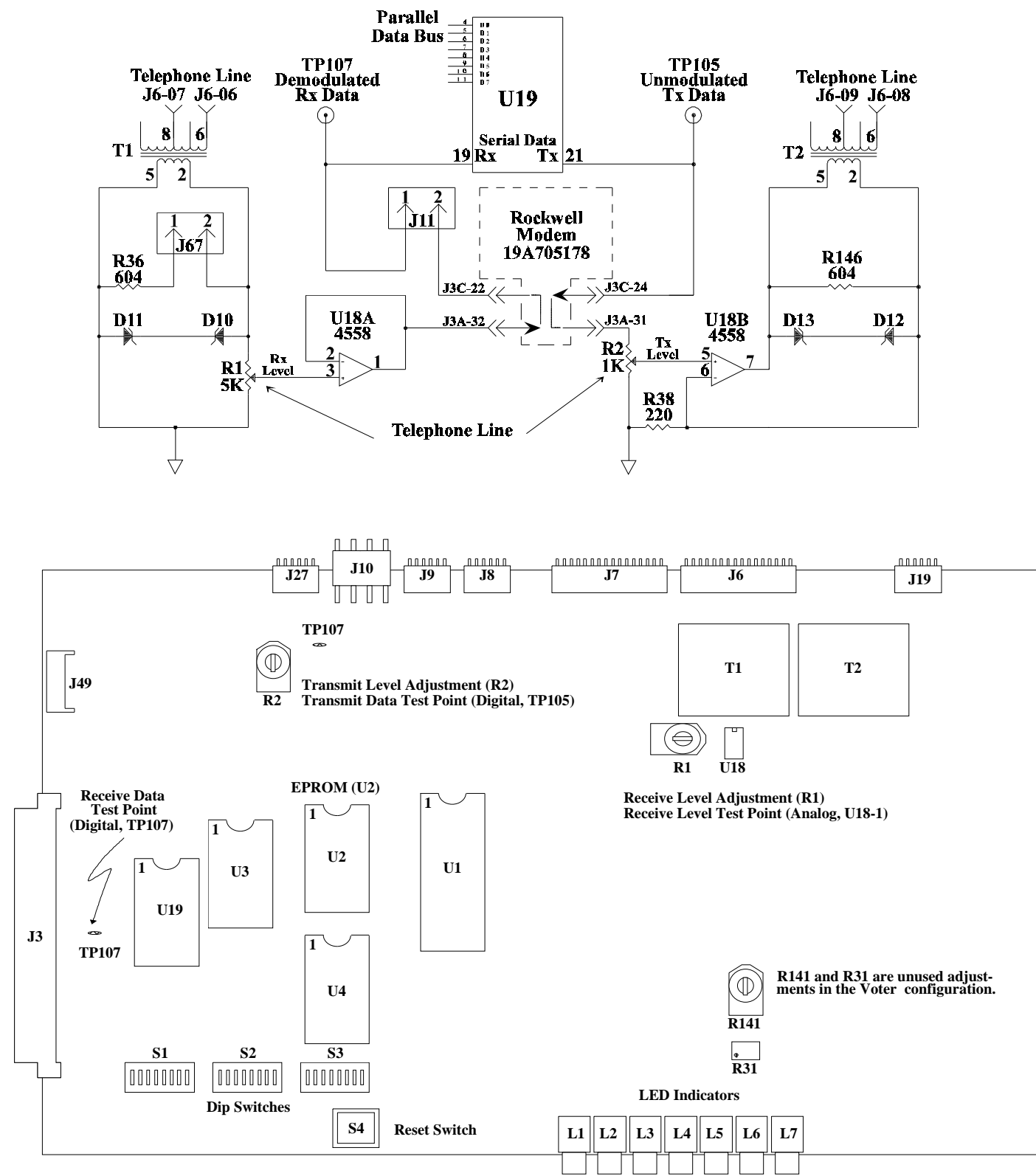


Figure 3 - GETC Receive Level Adjustment

## OPERATION

Digital Receivers and Selectors are used in various channel configurations depending on the number of remote Receiver Sites. A channel configuration includes a single Selector with its corresponding Digital Receivers. One Digital Receiver is added for each additional remote Receiver Site. Therefore, the number of Digital Receivers varies according to the number of remote Receiver Sites for the channel.

The basic Voter configuration, VP001, assumes one remote Receiver Site and may assume the Voter is co-located with the Main Site. The Voter's first Digital Receiver corresponds to the Main Site's receiver and enables voting of the Main Site. Expanded Voter configurations include up to 63 remote Receiver Sites.

The functions of the Digital Receiver and Selector depend on the type of call in progress and the current operating mode. Basically, the Digital Receiver and Selector process Voter related information from the remote Receiver Sites and Main Site in the form of digital data. The digital data represents Digital Voice, Data Calls, and internal Voter related messages such as Status, RF, Alarm, Special Key, and Special Call Block messages.

All Digital Receivers and the Selector can function in either the Control Channel or Working Channel operating mode. The Control Channel mode involves processing messages related to channel requests and current status. The Working Channel mode involves processing information which represents digital communication.

In addition, the Digital Receiver controls the squelch of its associated Analog Receiver in the Analog Voter. The Digital Receiver squelches the audio output of its Analog Receiver whenever the remote Receiver Station is idle or not receiving. The Selector performs a similar function by muting the selected audio within the Analog Voter whenever the PTT switch is released, drop message is processed, or when a phone line fails.

## DIGITAL VOTING

Digital voting occurs in two modes, Digital Voice (Voice Guard or Aegis), and Data. The Clear Voice and Control Channel modes require the Digital Receiver to process messages from the remote Receiver Station and the Selector. A basic overview of digital voting in both modes begins with the Main Site telling the Selector that a Digital Voice or Data call is in progress. The Selector relays the call type to its corresponding Digital Receivers over the 19.2K baud Backup Serial Link (BSL).

Digital voting continues when the Digital Receiver processes Digital Voice information from the remote Receiver Stations, maintains sync on the data stream, and performs continuous Bit Error Rate (BER) calculations during a Digital Voice call. During a Data Call, an initial BER calculation is performed by the remote Receiver Site. Both the Digital Voice and Data calls result in the Digital Receiver sending a Ready message to the Selector over the BSL. The Selector continues the digital voting process by simultaneously notifying all the remaining affected Digital Receivers to begin their BER calculations and report the results via the BSL.

The end result is the Digital Receiver with the lowest of five possible BER values relays its data to the Selector over the BSL. In turn, the Selector relays the voted data on to the Main Site. In the event of two or more equal BER values, the Digital Receiver's data with the lowest slot number is voted.

Finally, the Selector relays the voted Digital Voice or Data on to the Main Site and updates all Digital Receivers with status information. Digital Voice calls are voted approximately four times a second and the Digital Receiver with the best BER and lowest slot number sends voted data to the Selector.

## DIGITAL RECEIVER

The Digital Receiver processes messages from its corresponding remote Receiver Station through TB10-9 and TB10-10 at the rear of the GETC shelf. The 19B234809G4 harness, located inside the GETC shelf as shown in the Digital Receiver Interconnection Diagram, routes the signal from TB10 to the Digital Receiver J6-6 and J6-7. Figure 3 shows the signal is transformer-coupled into the GETC by T1 and buffered by U18A before entering the Rockwell Modem at J3A-32 for demodulating the digital messages.

### Rockwell Modem

The Rockwell Modem is controlled by its corresponding Digital Receivers or Selector and provides a high speed synchronous serial interface between EDACS components in the Voter, Main Site, and remote Receiver Stations. The modem is used in the Voter configuration to receive serial digital data from the remote Receiver Stations. In addition, the Selector sends and receives from the Main Site through the modem interface. Data transfer rates are typically 9600 bits per second (bps) using unconditioned four-wire telephone lines.

In addition to the GETC providing transformer isolation and conditioning, the modem provides automatic adaptive signal equalization allowing normal operation using input signal levels from -40 dBm to 0 dBm. The modem demodulates the input signal and the resulting data is transferred using a serial interface between the modem and GETC. The physical con-

nections for the interface are at J3C-22, J11-1, J11-2, and U19-19.

The modem senses a received signal by initiating a training state upon detecting an increase in the input signal level. The modem begins processing data at the end of the training state if the input signal is still above the nominal -40 dBm receiving threshold value. Otherwise, the modem returns to an idle mode at the end of the training state if the input signal is below the nominal receiving threshold value.

The duration of the modem's training state is determined by the GETC control signals. Resetting the GETC or cycling the GETC Shelf's operating power initializes the modem for proper operation. Reset the GETC by either using GETC S4 (Figure 3) or cycling the GETC's operating power. Proper modem initialization and operation is indicated by the GETC illuminating LED indicator L1 on the Digital Receiver or Selector.

The digital messages from the remote Receiver Stations are either RF, Alarm, Status, Digital Voice, or Data. RF and Alarm messages are stored in a five-deep message queue and processed on a first-in-first-out (FIFO) basis. Status messages are stored in a single receive buffer, verified, transferred to a holding buffer, and routed to the Selector.

The remote Receiver Station transmits messages to the Digital Receiver using a four-part message format. A continuous bit pattern is used in between messages for synchronizing. The first part of a message is a digital word that signals the message's beginning. Part two is the next byte which represents the message type. Part three is the message itself and is represented by the next three to eight bytes. The message length is determined by the message type. Finally, part four of the message is a one byte checksum value which is used for error checking and validation.

The message is stored and processed minus the bit sync pattern and checksum. The initial word is replaced by the message length. Processing involves sending the message to the Selector using the BSL.

### Voter Interface Board

During the Clear Voice Working Channel mode, the Digital Receiver enables the Analog Receiver output to the Audio module of the Analog Voter as described in the following paragraphs. In addition, the Analog Voter notifies the Selector when the Analog Voter is receiving a signal.

The Digital Receivers are configured with an Analog Voter Interface Board which conditions a signal between each Digital Receiver and its associated Analog Receiver in the Analog Voter. The signal, named SQUELCH, is used to

squelch the output of the Analog Receiver. The Digital Receiver originates the SQUELCH signal which is buffered by the Voter Interface Board and routed to the Analog Receiver.

The Digital Receiver Interconnection Diagram shows the SQUELCH line originates at J49-9 of the Digital Receiver and is routed through harness 19B234809G4 to the Voter Interface Board at J2-1. The harness then routes the buffered SQUELCH line to TB10-5 located on the rear of the GETC Shelf.

An alternate Voter configuration disconnects the SQUELCH line and allows the Analog Voter to operate autonomously.

The Selector's Voter Interface Board conditions a signal named RCVNG coming from the Analog Voter. The Analog Voter uses the RCVNG signal to inform the Selector that the Analog Receiver is receiving a signal.

The RCVNG signal enters the Selector's shelf at J100-2, is routed to the Voter Interface Board at J2-2, and exits the Voter Interface Board at J1-3. The shelf harness, 19B234809G5, completes the connection to the Selector at J49-8.

## SELECTOR

The Digital Receivers communicate via the BSL with the Selector. The BSL is configured with all of the Digital Receiver transmit lines connected in parallel to the Selector receive line. Conversely, the Selector transmit line is connected in parallel to all the Digital Receiver receive lines.

The Voter Interconnection Diagram shows the BSL connections at the rear of each GETC shelf. TB10-1 is the BSL RX line and is connected, in parallel, to all Digital Receivers and the Selector. TB10-2 is BSL TX and TB10-3 is GND, used for reference.

Harness 19B234809G5 routes the BSL signals from TB10 at the rear of the GETC shelf to the GETC connector J8. BSL GND is J8-3, BSL TX is J8-5, and BSL RX is J8-6.

The Selector requires a periodic message from the Digital Receivers to obtain information concerning the current status of the remote Receiver Station and the Digital Receiver. A copy of the status buffer is transmitted to the Selector at least every 250 mS. However, RF and Alarm messages have a higher priority than Status messages and are processed first.

During normal operation most of the messages from the Digital Receiver to the Selector are the required 250 mS status updates. The Digital Receiver appends the site number to the status update messages sent to the Selector. The Selector echoes the message, including the site number, on the BSL for other Digital Receivers to hear. The appended site number is used by the Digital Receiver to determine if the message on the BSL is their own.

The Digital Receiver associated with the Main Site shares a Rockwell Modem with the Selector. The shared modem provides a common data path between the Main Site, the Selector, and the first Digital Receiver.

The shared modem is located in the Selector shelf where a connection is made to the first Digital Receiver. The common data path begins at Selector TB10-8 and is routed to the first Digital Receiver at TB10-11.

A modem isn't necessary to complete the data path when the Voter and Main Site are co-located. Instead, a hard wire connection is made between the Voter and Main Site. The common data path in this instance begins at Selector TB10-8 and is routed to the first Digital Receiver at TB10-10.

### Voter Digital Relay Board

The Selector routes voted Data and Digital Voice data to the Main Control Site through the Voter Digital Relay Board (VDRB). The VDRB accepts the voted outputs of the Selector and the Analog Voter then routes the voice or data to the MultiSite Coordinator (MSC), Console Electronics Controller (CEC), or Integrated MultiSite and Console Controller (IMC). The Selector's voted output originates at TB10-11 & 12 and is routed to the VDRB's J2-3 & 4.

When directed by the MSC, CEC, or IMC the VDRB uses an active low control signal, VG, originating at the Selector in order to route voted audio and data to the MSC, CEC, or IMC. The Selector connection is made at TB10-5 and the VDRB connection is at J2-2. Otherwise, communication continues normally without the monitoring of the MSC, CEC, or IMC.

### BSL SYNCHRONIZING

A synchronizing signal, SYNC, is used to arbitrate BSL use to prevent the multiple Digital Receivers from trying to transmit messages to the Selector at the same time. Each Digital Receiver must first check the SYNC line before transmitting on the BSL. The Digital Receiver will wait until the SYNC line is inactive before initiating a message to the Selector.

The SYNC line is present at J19-6 of the Digital Receiver and routed through harness 19B234809G4 to the rear of the GETC shelf at TB10-4. The SYNC line is then connected to all the remaining Digital Receivers at J19-16 as shown in the Voter Interconnection Diagram.

The Digital Receiver will activate the SYNC line to initiate a message and waits a predetermined period before continuing. This waiting period prevents two Digital Receivers from using the SYNC line simultaneously. Each Digital Receiver waits for a unique period which is determined by adding one to its slot number and multiplying the sum by 150 uS. The Digital Receiver knows its slot number by reading dip switch S1-1 through S1-6. Refer to Tables 3 and 4 for information on setting the Digital Receiver dip switches.

The Digital Receiver with the longer waiting period, sees activity on the BSL, stops its attempt to use the BSL, and restarts the process of checking the SYNC line condition.

### SIMULCAST

The Simulcast Voter configuration places the Voter at the same physical location as the Control Point. Figure 4 shows the Selector transmitting data to the Control Point through a Rockwell Modem. This is similar to a standard Voter with the Voter Digital Relay Board routing the Selector's Tx data to the Control Point. However, due to the proximity of the Voter and Control Point in the Simulcast application, the Selector receives data from the Control Point directly through an RS-232 serial connection.

Rx data from the Control Point reaches the Selector at TB10 terminals 9 and 10, continues through P9 pins 4 and 6 of harness 19B234809G5, and reaches the Selector at J9 pins 4 and 6. The Selector's P11 jumper is positioned between 2 and 3 of J11 to enable the RS-232 data path.

Figure 4 also shows the Selector's Tx path to the Control Point. The Selector transmits to the Control Point from J6 pins 8 and 9, through P26 pins 8 and 9 of harness 19B234809G5, to the rear of the GETC shelf at TB10 terminals 11 and 12. The Selector's P12 jumper is positioned between 1 and 2 of J12 to enable the modem's Tx functions.

### Other Simulcast Configurations

Other Simulcast configurations, including Digital Dispatch, MultiSite Digital, and Landline Data use the Rockwell Modem as shown in Figure 4.

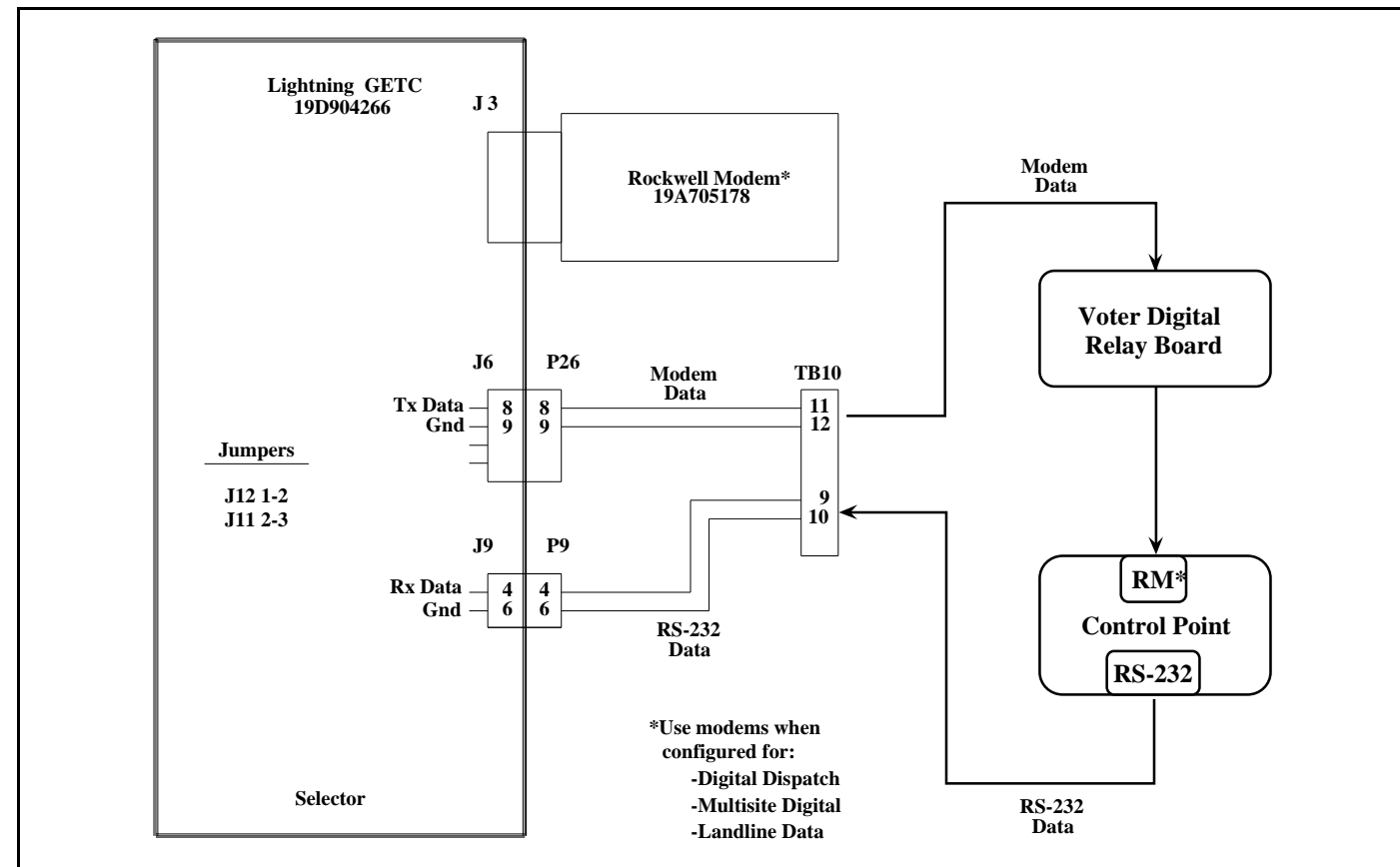


Figure 4 - Simulcast Data Path

### LED INDICATORS

The front panel LED's indicate the Digital Receiver and Selector's current status or state of operation. Please refer to Table 1 for basic quick reference information.

### DIGITAL RECEIVER

Table 1 shows Digital Receiver L1 is on during normal operation indicating the Digital Receiver is ready to send and receive messages.

L2 is on while the Digital Receiver is operating in the Control Channel Mode. Conversely, L2 is off in the Working Channel mode. An additional operating mode is indicated when L2 is on during the Working Channel mode and while the Digital Receiver is receiving Digital Voice data.

L3 is on when the Digital Receiver is sending information to the Selector over the BSL. Typically, L3 flashes at a 4 Hz rate which represents the required 250 msec status updates.

When on, L4 indicates the GETC is configured as a Digital Receiver. When flashing, L4 indicates an error. Flashing at a 2 Hz rate indicates a BSL failure, a 1 Hz rate indicates a phone line failure, and flashing erratically indicates a combination of BSL and phone line failures.

L5 is on during a Digital Voice call when BER is 0 to 3 %. L6 is on during a Digital Voice call when BER is 3 to 4.5 %. L7 is on during a Digital Voice call when BER is greater than 4.5 %.

**SELECTOR**

Table 1 shows Selector L1 is on during normal operation indicating the Selector is ready to send and receive messages. L2 is on while the Selector is operating in the Control Channel mode. L2 is off in the Working Channel mode. L3 is on when the Selector is sending information to the Main Site. When L3 is flashing at a 1 Hz rate, the Selector is transmitting a status update to the Main Site.

When on, L5 indicates the GETC is configured as a Selector. When flashing, L5 indicates an error. Flashing at a 2 Hz rate indicates a BSL failure, a 1 Hz rate indicates a phone line failure, and flashing erratically indicates a combination of BSL and phone line failures. LEDs L4, L6, and L7 have no assigned functions and are normally off.

Table 1 - Digital Receiver and Selector (19D901868) Front Panel Indications

Digital Receiver	LED Indicators						
	1	2	3	4	5	6	7
Normal Operation	●	○	○	○	○	○	○
Control Channel Mode or Receiving Digital Voice Data	○	●	○	○	○	○	○
Transmitting to the Selector Usually Flashes at a 4 Hz rate	○	○	*	○	○	○	○
Configured as Digital Receiver	○	○	○	●	○	○	○
Indicates a BSL failure when flashing at a 2 Hz rate	○	○	○	*	○	○	○
Indicates a Phone Line failure when flashing at a 1 Hz rate	○	○	○	*	○	○	○
BER value is < 3 %	○	○	○	○	●	○	○
BER value is between 3 to 4.5 %	○	○	○	○	○	●	○
BER value is > 4.5 %	○	○	○	○	○	○	●

Selector	LED Indicators						
	1	2	3	4	5	6	7
Normal Operation	●	○	○	○	○	○	○
Control Channel Mode Indicates Working Channel Mode when L2 is Extinguished	○	●	○	○	○	○	○
Transmitting to the Main Site Usually flashes at a 1 Hz rate	○	○	*	○	○	○	○
Configured as a Selector	○	○	○	●	○	○	○
Indicates a BSL failure when flashing at a 2 Hz rate	○	○	○	*	○	○	○
Indicates a Phone Line failure when flashing at a 2 Hz rate	○	○	○	*	○	○	○

Legend: ○ = OFF ● = ON \* = FLASHING

Table 2 - Digital Receiver and Selector (19D904266) Jumpers

Digital Receiver Jumper Configuration

JUMPER	POSITION	FUNCTION
P11	1 & 2	Configured with Rockwell Modem.
P12	1 & 2	Configured with Rockwell Modem.
NOTE: Move both P11 and P12 to position 2 & 3 when the Digital Receiver is configured without a Rockwell Modem.		
P13	2 & 3	BSL Tx Rx Separate
P14	1 & 2	Master Site Controller path enabled.
P15	1 & 2	Backup Site Controller path disabled.
P16	2 & 3	Backup Serial Link enabled.
P17	1 & 2	Low speed data encode path enabled.
P18	2 & 3	Low speed data decode path enabled.
P21	1 & 2	Hi speed data acquisition control enabled.
P24	1 & 2	BSL Select enabled.
P25	1 & 2	Low speed data encode path enabled.
P26	1 & 2	800 MHz operation enabled.
P28	1 & 2	Sync line input path enabled.
P44	1 & 2	Selects 256K or 512K PROM size.
P46	2 & 3	BSL collision detection enabled.
P47	1 & 2	Backup Serial Link enabled.
P48	1 & 2	Backup Serial Link enabled.
P50	1 & 2	Enables tone control for voted systems.
P52	2 & 3	TXD polarity selection.
P53	1 & 2	RXD polarity selection.
P54	1 & 2	U15A MODCNTL enabled.
P60	1 & 2	High speed filter data path enabled.
P61	1 & 2	256K PROM size enabled.
P62	1 & 2	U4 11 MHz clock frequency enabled.
P67	1 & 2	600 ohm phone line impedance enabled.
P68	1 & 2	Delayed PTT enabled.
P69	1 & 2	COMB PTT enabled.
P71	1 & 2	RTS enabled.
P72	1 & 2	Enables U19's crystal oscillator.
P73	1 & 2	Enables NOR gate U22B.
P74	2 & 3	CAS polarity.
Remove and omit P20, P29, P51, P55, P63, P64, P65, and P66.		

Selector Jumper Configuration

JUMPER	POSITION	FUNCTION
P11	1 & 2	Configured with Rockwell Modem.
NOTE: Move P11 to position 2 & 3 to enable the RS-232 interface in the co-located Voter/Simulcast configuration.		
P12	1 & 2	Configured with Rockwell Modem.
P13	2 & 3	BSL Tx Rx Separate
P14	2 & 3	Master Site Controller path enabled.
P15	1 & 2	Backup Site Controller path disabled.
P16	2 & 3	Backup Serial Link enabled.
P17	1 & 2	Low speed data encode path enabled.
P18	2 & 3	Low speed data decode path enabled.
P21	1 & 2	Hi speed data acquisition control enabled.
P24	1 & 2	Backup serial link selection enabled.
P25	1 & 2	Low speed data encode path enabled.
P26	1 & 2	800 MHz operation enabled.
P28	1 & 2	Sync line input path enabled.
P44	1 & 2	Selects 256K or 512K PROM size.
P46	1 & 2	BSL collision detection disabled.
P47	1 & 2	Backup Serial Link enabled.
P48	1 & 2	Backup Serial Link enabled.
P50	1 & 2	Enables tone control for voted systems.
P52	2 & 3	TXD polarity selection.
P53	1 & 2	RXD polarity selection.
P54	1 & 2	U15A MODCNTL enabled.
P60	1 & 2	High speed filter data path enabled.
P61	1 & 2	256K PROM size enabled.
P62	1 & 2	U4 11 MHz clock frequency enabled.
P67	1 & 2	600 ohm phone line impedance enabled.
P68	1 & 2	Delayed PTT enabled.
P69	1 & 2	COMB PTT enabled.
P71	1 & 2	RTS enabled.
P72	1 & 2	Enables U19's crystal oscillator.
P73	2 & 3	Disables NOR gate U22B.
P74	2 & 3	CAS polarity.
Remove and omit P20, P29, P51, P55, P63, P64, P65, and P66.		

Legend: LSD = Low Speed Data      BSL = Backup Serial Link      RxD = Receive Data  
 HSD = High Speed Data      MSL = Main Serial Link      TxD = Transmit Data

Table 3 - Digital Receiver (19D904266) Dip Switch Settings Slot Number 0 Through 31

Table 4 - Digital Receiver (19D904266) Dip Switch Settings Slot Number 32 Through 63

**SWITCH SETTINGS**

**SWITCH SETTINGS**

Slot #	S1								S2								S3							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
0	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1	C	C	C	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	O	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	O	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	O	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	O	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	O	C	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	O	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	O	C	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	O	C	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	O	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	O	C	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	O	O	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	O	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	O	O	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	O	O	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	O	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	O	O	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

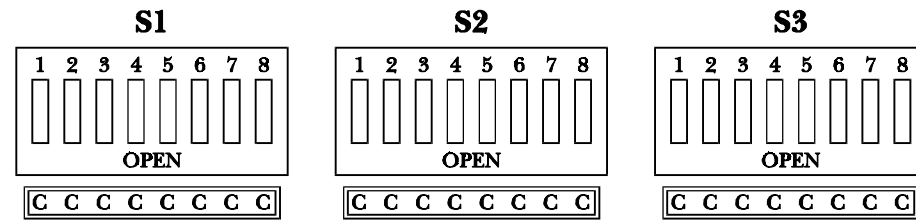
Legend: C=Closed, O=Open

Slot #	S1								S2								S3							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
32	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
33	O	C	C	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
34	O	C	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
35	O	C	C	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
36	O	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
37	O	C	C	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
38	O	C	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
39	O	C	C	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
40	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
41	O	C	O	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
42	O	C	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
43	O	C	O	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
44	O	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
45	O	C	O	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
46	O	C	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
47	O	C	O	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
48	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
49	O	O	C	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
50	O	O	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
51	O	O	C	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
52	O	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
53	O	O	C	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
54	O	O	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
55	O	O	C	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
56	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
57	O	O	O	C	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
58	O	O	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
59	O	O	O	C	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
60	O	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
61	O	O	O	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
62	O	O	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
63	O	O	O	O	O	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

Legend: C=Closed, O=Open

Table 5 - Selector (19D904266) Dip Switch Settings

**SWITCH SETTINGS**

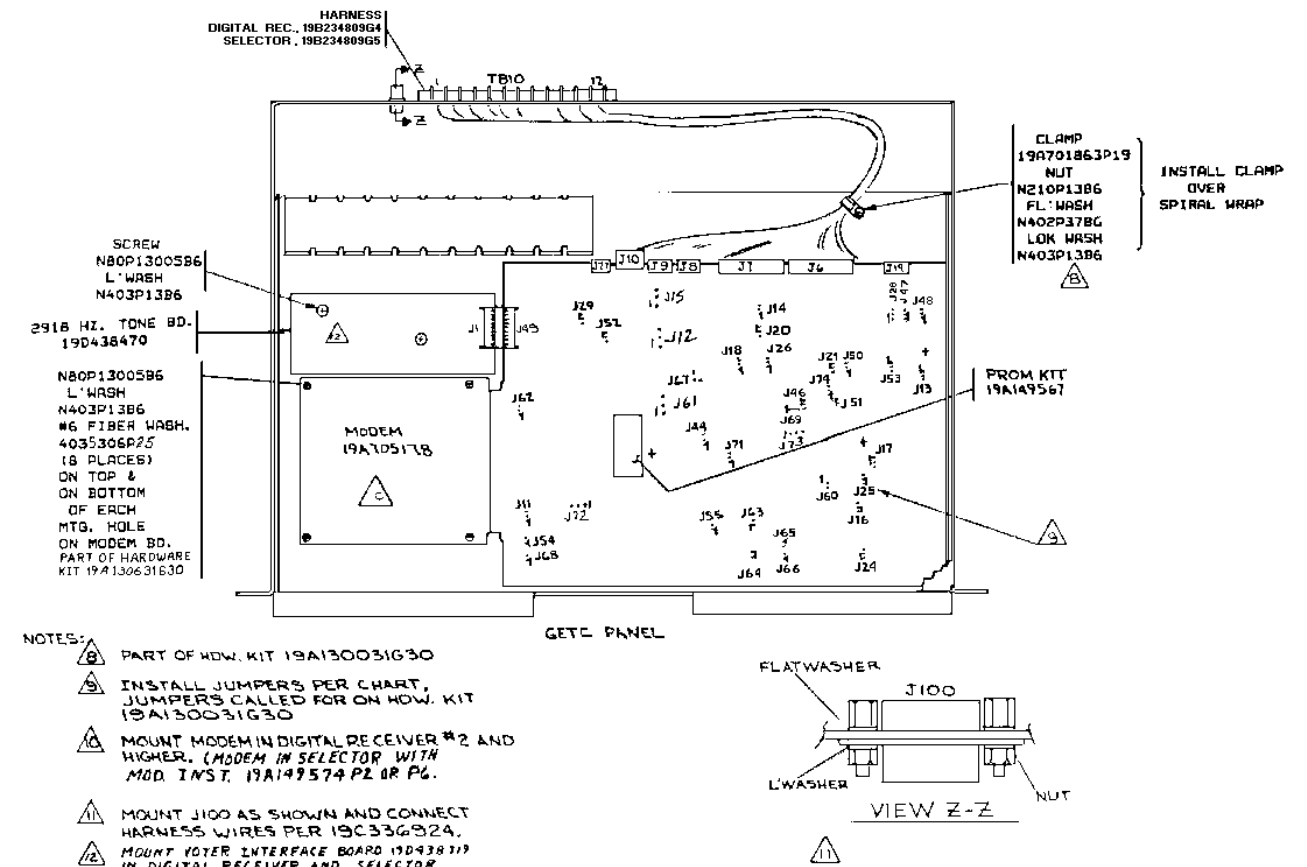


Legend: C = Closed, O = Open

Digital Receiver and Selector  
GETC Shelf 19D901868G3

SYMBOL	PART NUMBER	DESCRIPTION
A1	19D904266G1	Lightning GETC Printed Circuit Board
A2	19C336816G2	Regulator Assembly
A3	19D438719G1	Voter Interface Board
	19B235310P5	Nameplate
	19B234809G4	Digital Receiver Harness
	19B234809G5	Selector Harness
	19C851553G1	Tray
	19C851586G1	Shelf
	19A115594P2	Plastic Grommet
	19A115204P1	Grease
	19B235048P1	Cable Guide
	19B201109P1	Rivet
	19A149567G12	Voter Software
	19A704305P3	Integrated Circuit, sim to 27C256-25
	SRN 1007-XX	Software Release Notes

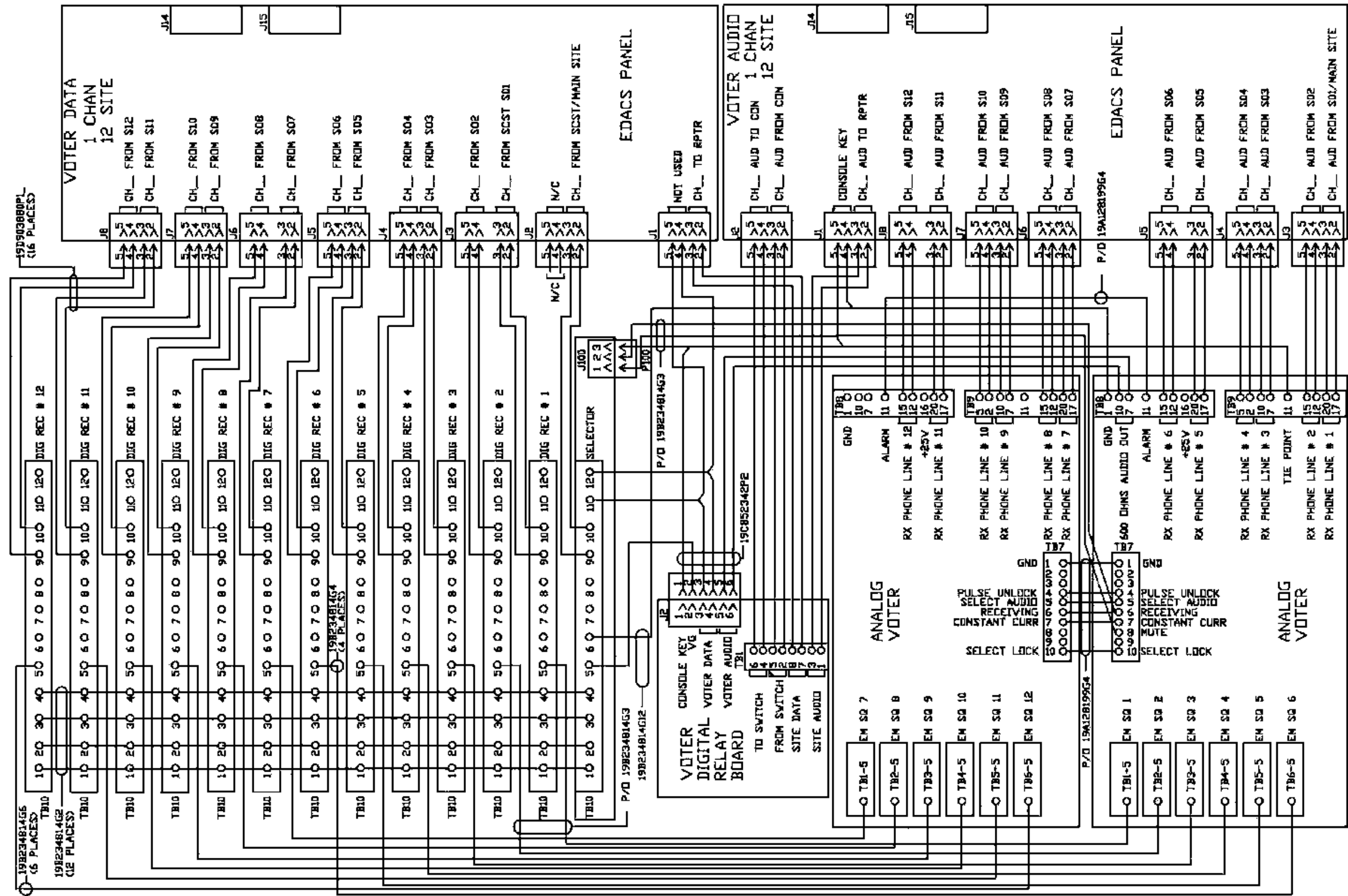
\* COMPONENTS ADDED, DELETED, OR CHANGED BY PRODUCTION CHANGES



**EDACS VOTER GETC SHELF ASSEMBLY  
19D901868G3**

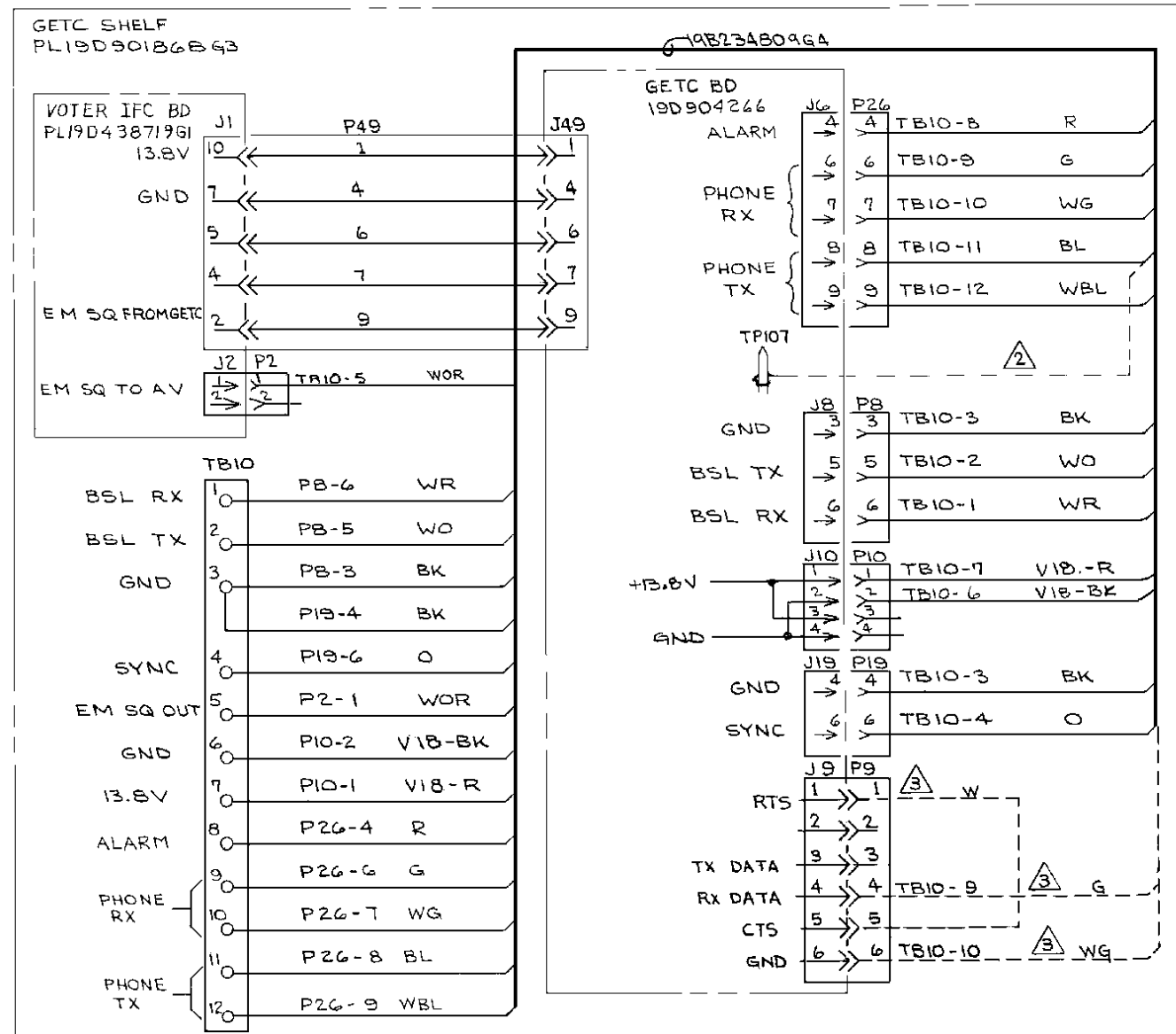
(19D438440, Sh. 3, Rev. 14)



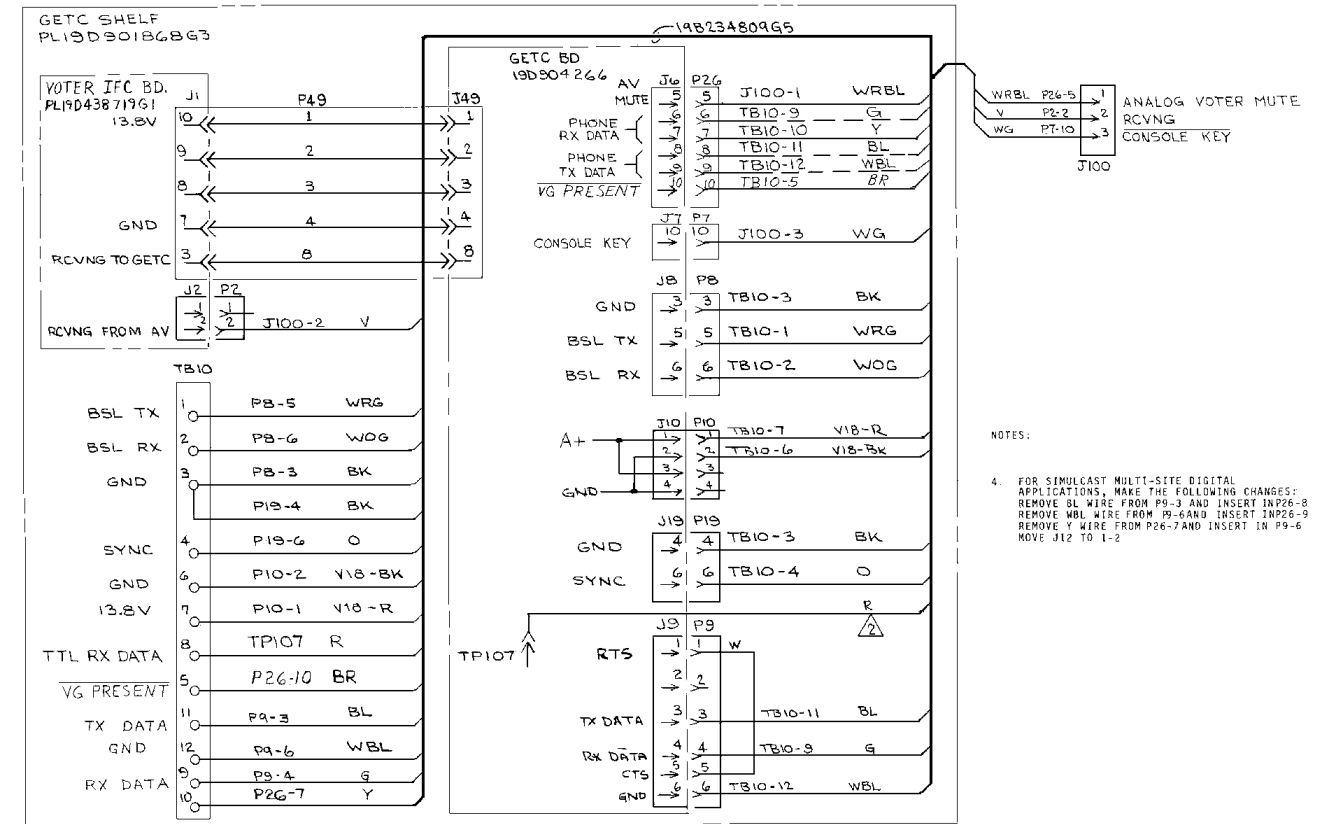


EDACS VOTER INTERCONNECTION  
1 CHANNEL, 1 TO 12 SITES, WITH DIGITAL RELAY BOARD

(19C337789, Sh. 1, Rev. 0)



- NOTES: 1. ALL WIRES SF24 UNLESS OTHERWISE SPECIFIED.
2. WHEN 9600 BAUD MODEM COMMUNICATION IS USED TO THE MAIN SITE, "BL" WIRE IS REMOVED FROM P26-8 AND SOLDER TO TP107 IN DIGITAL RX #1 ONLY. P11 MUST BE REMOVED IN DIGITAL RECEIVER #1.
3. WHEN RS232 COMMUNICATION IS USED THE MAIN SITE RECEIVER OR SATELLITE RECEIVER, REMOVE "G" WIRE FROM P26-6 AND "WG" WIRE FROM P26-7. INSTALL INP9 AS SHOWN. P9 AND "W" WIRE IS SUPPLIED IN MOD. KIT PL19A149572G1. THIS CONNECTION IS TYPICALLY USED IN SIMULCAST AND ON DIGITAL RECEIVER #1 WHEN THE VOTER IS LOCATED NEAR THE MAIN SITE.  
 RS232 RX DATA TB10 - 9  
 RS232 GND TB10 - 10
4. P4, P8, AND P2 ARE NOT CONNECTED TO GETC BOARD WHEN 19B234809G4 CABLE IS USED IN A TSIN GETC (OPTION PSTS01).



- NOTES: 1. ALL WIRES SF24 UNLESS OTHERWISE SPECIFIED
2. HARNESS IS SHOWN CONFIGURED FOR RS232 COMMUNICATION TO THE MAIN SITE. WHEN 9600 BAUD MODEM COMMUNICATION IS USED, 3 WIRES ARE REMOVED FROM P9 AND INSERTED IN P26 AS SHOWN.  
 PHONE TX DATA TB10-11,12  
 PHONE RX DATA TB10-9,10

- NOTES: 4. FOR SIMULCAST MULTI-SITE DIGITAL APPLICATIONS, MAKE THE FOLLOWING CHANGES:  
 REMOVE BL WIRE FROM P9-3 AND INSERT IN P26-8  
 REMOVE WBL WIRE FROM P9-6 AND INSERT IN P26-9  
 REMOVE Y WIRE FROM P26-7 AND INSERT IN P9-6  
 MOVE J12 TO 1-2

EDACS VOTER DIGITAL RECEIVER INTERCONNECTION  
 19D901868G3

(19C336921, Sh. 1, Rev 5)

EDACS VOTER SELECTOR INTERCONNECTION  
 19D901868G3

(19C336924, Sh. 1, Rev. 7)