

**MAINTENANCE MANUAL**

**DVIU INTERFACE UNIT**

**– INCLUDES –**

**INTERFACE BOARD 19D438302G1**

**INTERFACE SHELF 19B802903G1 AND**

**INTERFACE TRAY 19C851553G2**

**I  
N  
T  
E  
R  
F  
A  
C  
E  
  
U  
N  
I  
T**

**TABLE OF CONTENTS**

	<u>Page</u>
<b>DESCRIPTION</b> .....	1
<b>CIRCUIT ANALYSIS</b> .....	2
<b>INTERFACE BOARD</b> .....	2
Receive Signal Path (Radio-Originated Aegis Call).....	2
Transmit Signal Path (Console-Originated Aegis Call).....	2
Audio and Modem Signal.....	2
Relay Contact Signalling.....	3
<b>TONE REMOTE CONTROL BOARD</b> .....	3
<b>ROCKWELL MODEM</b> .....	4
<b>ALIGNMENTS</b> .....	4
<b>ILLUSTRATIONS</b>	
<b>Figure 1 – DVIU Interface Unit (Shown Extended for Service Access)</b> .....	3
<b>Figure 2 – DVIU Signal Path Block Diagram (One Channel)</b> .....	5
<b>PARTS LISTS</b> .....	6
<b>ASSEMBLY DIAGRAMS</b>	
<b>INTERFACE SHELF</b> .....	8
<b>CABLE 19B801735P5</b> .....	8
<b>INTERFACE TRAY</b> .....	9
<b>OUTLINE DIAGRAM</b>	
<b>INTERFACE BOARD</b> .....	10
<b>SCHEMATIC DIAGRAM</b>	
<b>INTERFACE BOARD</b> .....	11
<b>MODIFICATION INSTRUCTION 19D904876P2</b> .....	12

**DESCRIPTION**

The DVIU Interface Unit, shown in Figure 1, interfaces the 600-ohm full-duplex balanced lines from the DVIM within the CEC/IMC to the Aegis Module in the Aegis Chassis Assembly. The Interface Unit also provides 4-level 4-phase modem signal conversions and basic transmit/receive mode interfacing for the DVIU structure. It consists of the following components:

- Interface Board 19D438302G1  
(modified per Modification Instruction 19D904876P2)
- Tone Remote Control Board 19A704868P6  
(modified per Modification Instruction 19D904876P2)
- Rockwell Modem 19A705178P1
- Interface Shelf 19B802903G1
- Interface Tray 19C851553G2

- Modification Kit 19A149226G3
- Interconnect Cables

This manual does not furnish maintenance details on the Tone Remote Control Board and the Rockwell modem. See LBI-31552 and LBI-33031 respectively, for maintenance information on these items.

## CIRCUIT ANALYSIS

### INTERFACE BOARD

Interface Board 19D438302G1 contains the DVIM-to-DVIU transmit and receive coupling circuitry and the relay contact or M-lead ( $\overline{PTT}$ ) interface circuitry for the Interface Unit. It also contains many of the board-to-board interconnections within the DVIU channel structure.

#### NOTE

Before using Interface Board 19D438302G1 in a DVIU, it must be modified per Modification Instruction 19D904876P2.

Since the Interface Board is the central point for all signals within the DVIU, the following circuit analysis is presented to describe the basic flow of signals through the DVIU channel structure. Main focus is on the circuitry on the Interface Board. Refer to Figure 2 in this manual, the Interface Board's schematic diagram in this manual, and the Interconnection Diagram in LBI-39041.

### Receive Signal Path (Radio-Originated Aegis Call)

The 600-ohm balance line from the DVIM's output is connected to terminal block TB1 pins 1 and 2. TB1 is located on the back of the Interface Unit. It is mounted on the back of the Interface Shelf.

During a radio-originated call, 4-level 4-phase (16-state) Aegis modem signals on this line are coupled into the Interface Board via the associated interconnecting cable, J7/P1 pins 1 and 2 and 600-ohm coupling transformer T1. The Aegis modem signal is then level-adjusted by R7 and applied to buffer op amp U2-A. Typical signal level at TP1 (U2 pin 1) during a radio originated Aegis call is 400 mV peak-to-peak ( $\cong$  140 mV rms). This signal is then applied to the receive input of the Rockwell modem at J3/P1 pin A32.

The Rockwell modem converts the 4-level 4-phase Aegis modem signal to a 9600 baud serial data stream and outputs the 9600 baud data stream at J3/P1 pin C22. TTL inverter U1-D on the Interface Board buffers the 9600 baud data and drives the Aegis Module's receive data input via J1/P1 pin 7 and the associated cable interconnections. At the Aegis Module, the receive data input is J3/P7 pin 4. This data stream is applied to the non-return to zero (NRZ) receive data demodulator formed from U3C and associated components on the Aegis Module's Audio Board (not shown in Figure 2). This circuit is used, instead of direct TTL-to-TTL connection, to ensure noise and cable rings do not falsely trigger the modem chip within the Aegis Module.

During a radio originated Aegis call the Aegis Module performs the decoding/decrypting of the Aegis signal. See the Aegis Module's maintenance manual (LBI-31674 or LBI-31665) for a specific description on the decode/decrypt circuitry.

After the Aegis Module decodes/decrypts the Aegis data stream, the resulting clear voice audio signal is routed back to the Interface Board via J1/P5 pin 16 and J5/P2 pin 7. Next, the signal is applied to potentiometer R23 for level adjustment and coupled through C15 to switch U4-B pin 3. U4-B pin 5 is pulled high during console receive by R54; therefore, U4-B passes the clear voice signal to pin 4 and C16 couples the signal into line driver op amp U3-A. This op amp drives T3, another 600-ohm coupling transformer. The line-side of T3 connects to the DVIM's input line via J7/P1/TB1 pins 6 and 7, and the associated cable interconnections.

Next, the DVIM's Audio Board channel within the CEC/IMC converts the clear voice signal to a PCM signal and applies this signal to the TDM bus. The clear voice signal is then routed to the appropriate consoles via CIMs, logging recorder equipment via LRIMs, etc, per the call requirements and CEC/IMC configuration.

### Transmit Signal Path (Console-Originated Aegis Call)

### Audio and Modem Signal

During a console-originated Aegis call, clear voice console mic audio from the DVIM's output line is coupled into the Interface Board via TB1 pins 8 and 9 (using jumper cable 19B234814G2), J7/P1 pins 8 and 9, coupling transformer T4, R30 and R31. Capacitor C25 is removed in DVIU applications per Modification Instruction 19D904876P2; therefore, the signal is only routed to J1 on the Tone Remote Control Board via J8/P1 pin 1 and the associated interconnecting cable.

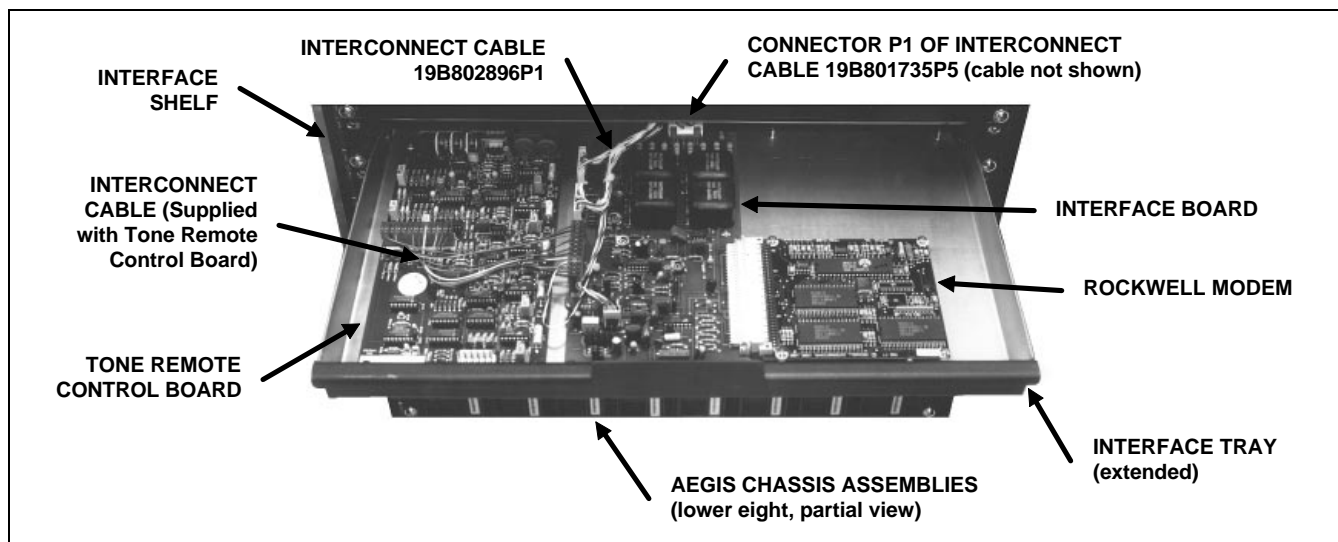


Figure 1 – DVIU Interface Unit (Shown Extended for Service Access)

After amplification, the Tone Remote Control Board routes the clear voice audio signal back to the Interface Board via the MIC HI connection between the Tone Remote Control Board and the Interface Board. The signal is then applied to the Aegis Module's MIC HI INput at J1/P5 pin 4.

During a console-originated Aegis call the Aegis Module performs the encoding/encrypting functions. See the Aegis Module's maintenance manual (LBI-31674 or LBI-31665) for specific details.

Next, encoded/encrypted 9600 baud Aegis signals from the Aegis Module are synchronously clocked into the Rockwell modem using inverters U1-A and U1-B on the Interface Board. Inverted data appears on J3/P1 pin C24 and the inverted clock pulses are on J3/P1 pin A22. The Rockwell modem converts the 9600 baud Aegis signals to 4-level 4-phase modem signals and outputs them at J3/P1 pin A31. Aegis modem signals are next applied to the transmit coupling circuitry on the Interface Board.

The transmit coupling circuitry consists of R9, U2-B, T2 and associated components. Potentiometer R9 sets the Aegis modem signal transmit data level out of the Interface Board. It is adjusted for a 0 dBm signal level across J7/P1/TB1 pins 3 and 4. R6 on the Interface Board is removed in DVIU applications per Modification Instruction 19D904876P2.

### Relay Contact Signalling

Just before console-originated clear audio is sent to the DVIU channel, the DVIM channel's relay contact (M-lead) closes to ground TB1 pin 11. This grounds the Interface Board's  $\overline{\text{PTT}}$  line at J6 pin 4.  $\overline{\text{PTT}}$  remains grounded for the duration of the console's Aegis transmission. Specifically,

J6 pin 4 ( $\overline{\text{PTT}}$ ) is connected to J7/P1 pin 10 (GND) by the relay contact and the associated cable interconnections between the cabinets.

Grounding  $\overline{\text{PTT}}$  fulfills two (2) functions for the Interface Unit. First, it signals the Rockwell modem so its turn-on sequence will begin. Second, it disables the receive audio path by opening switch U4-B on the Interface Board. Refer to Modification Instruction 19D904876P2 and the Interface Board's schematic diagram for the following discussion.

DVIU Modification Instruction 19D904876P2 wires the anode of diode D17 directly to the input of inverter U17-F (U17 pin 13). Therefore, the Rockwell modem's  $\overline{\text{RTS}}$  input at J3 pin A25 always follows the logic level on  $\overline{\text{PTT}}$  line. The modem's turn-on sequence begins when the  $\overline{\text{PTT}}$  line transitions low. DVIU applications do not use the one-shot (monostable multivibrator) circuit on the Interface Board.

When the  $\overline{\text{PTT}}$  line is grounded, diode D21 conducts and pulls U4-B's control input (pin 5) low. This action opens U4-B and thus prevents noise on the VOL/SQ HI line between the Aegis Module and the Interface Board from passing to the DVIM input line during a console-originated Aegis call.

### TONE REMOTE CONTROL BOARD

Tone Remote Control Board 19A704686P6 used in the Interface Unit provides amplification for clear voice mic audio signals originating from a console. It provides a voltage gain of approximately two. Tone decoding circuitry on the board is not utilized in DVIU applications. As viewed from the front, the board mounts on the left side of

the Interface Unit. See LBI-31552 for detailed maintenance information on this board. For the following circuit analysis, refer to the Interface Board's schematic diagram in this manual and the Interconnection Diagram in LBI-39041.

**NOTE**

Before using Tone Remote Control Board 19A704686P6 in a DVIU, it must be modified per Modification Instruction 19D904876P2.

Clear voice mic audio signals originating from a console are applied to the Interface Board at J7/P1 pins 8 and 9. These pins correspond to TB1 terminals 8 & 9 and 1 & 2 on the back of the Interface Unit. Next, the signals are coupled to the Tone Remote Control Board at J1 pins 3 and 4 by transformer T4 on the Interface Board and the associated connector and cable interconnections. After amplification, the clear voice audio signals are routed back to the Interface Board via the MIC HI line. The signals are then routed to the Aegis Module via J5/P2 pin 1, cable 19B802896P1 and J1/P5 pin 4. Signal level at the Aegis Module's MIC HI INput (J1/P5 pin 4) is approximately 1.25 V rms when a 0.77 mV rms (0 dBm) audio signal is applied to the DVIU input line. A jumper/plug setting (J20/P20) inside the Aegis Module sets its MIC HI INput impedance to approximately 6000 ohms.

## ROCKWELL MODEM

The modem used in the Interface Unit is a Rockwell R96FT 9600 baud modem (EGE part number

19A705178P1). It employs 4-level 4-phase (16-state) quadrature amplitude modulation techniques which effectively reduce the data rate over the 4-wire link to 2400 baud. The modem mounts on the right side of the Interface Tray as viewed from the front. Connector P1 on the modem connects to J3 on the Interface Board, a 64-pin DIN connector. See LBI-33031 for specific information on the Rockwell modem.

When the DVIU channel is operating in receive mode, Aegis 4-level 4-phase modem signals from the DVIM are applied to the ("station") receive coupling circuitry on the Interface Board. This circuitry then applies the Aegis modem signals to J3/P1 pin A32 for conversion. The 9600 baud converted signal is then asynchronously applied to the Aegis Module via J3/P1 pin C22 and TTL inverter U1-D on the Interface Board.

During a console originated Aegis call, encode/encrypted TTL-level 9600 baud Aegis signals from the Aegis Module are synchronously clocked into the Rockwell modem via J3/P1 pin C24 (data) and J3/P1 pin A22 (clock). The Rockwell modem converts these Aegis signals to 4-level 4-phase modem signals and outputs them at J3/P1 pin A31. The Aegis modem signals are then applied to the ("station") transmit coupling circuitry on the Interface Board.

## ALIGNMENTS

See LBI-39041 for alignment instructions for the level adjustment potentiometers within the Interface Unit.



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

Printed in U.S.A.

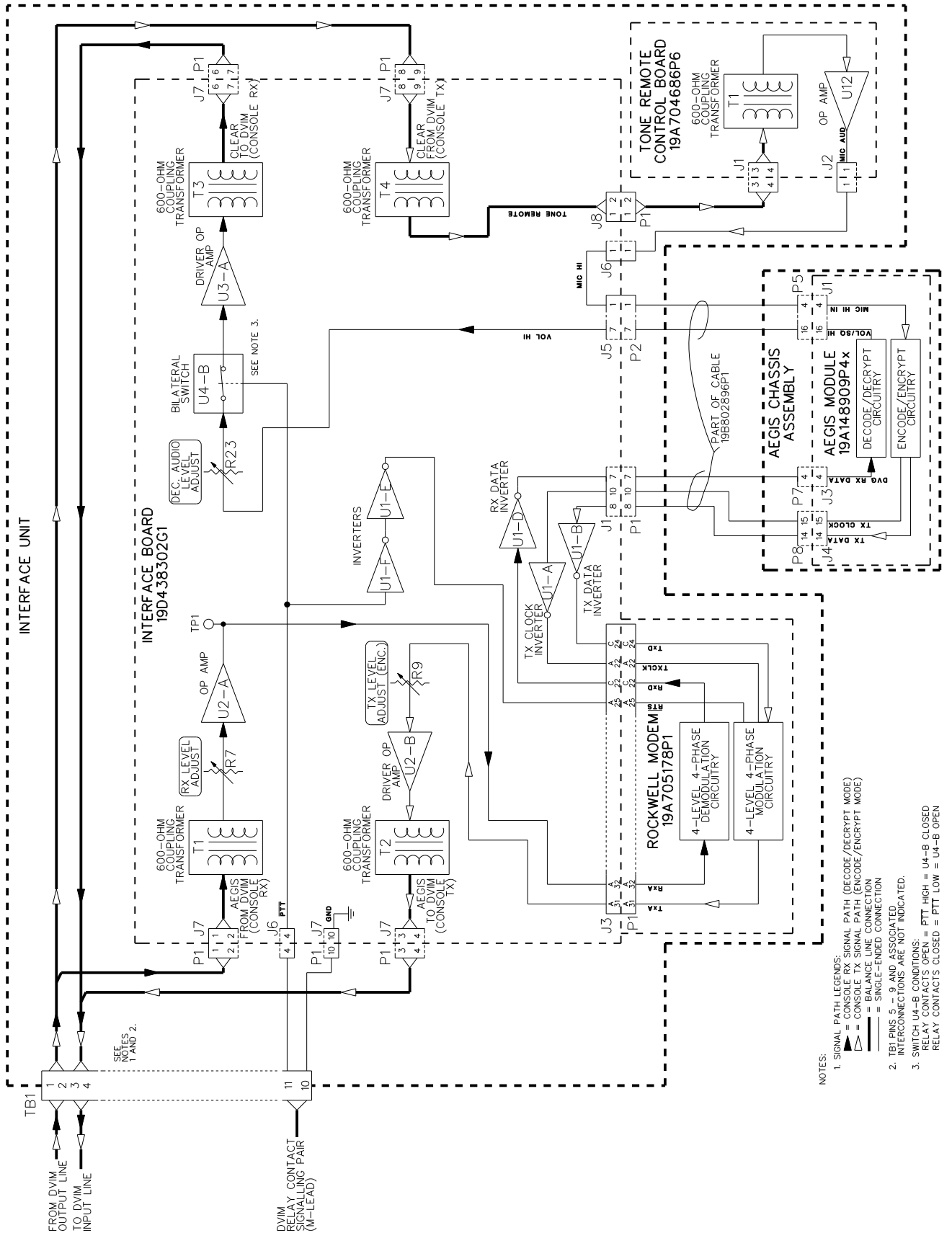


Figure 2 - DVIU Signal Path Block Diagram (One Channel)

- NOTES:
1. SIGNAL PATH LEGENDS:  
 ○ = CONSOLE RX SIGNAL PATH (DECODE/DECRYPT MODE)  
 ▲ = CONSOLE TX SIGNAL PATH (ENCODE/ENCRYPT MODE)  
 — = BALANCE LINE CONNECTION  
 — = SINGLE-ENDED CONNECTION
  2. TBI PINS 5 - 9 AND ASSOCIATED INTERCONNECTIONS ARE NOT INDICATED.
  3. SWITCH U4-B CONDITIONS:  
 RELAY CONTACTS OPEN = PTT HIGH = U4-B CLOSED  
 RELAY CONTACTS CLOSED = PTT LOW = U4-B OPEN

**INTERFACE BOARD  
19D438302G1  
(Non-Modified; See Modification Instruction  
19D904876P2 for DVIU Application Changes)**

**ISSUE 1**

SYMBOL	PART NUMBER	DESCRIPTION
----- CAPACITORS -----		
C1	19A701534P8	Tantalum: 22 uF ±20%, 16 VDCW.
C2	19A701534P7	Tantalum: 10 uF ±20%, 16 VDCW.
C3	315A604P224U	Tantalum: 0.22 uF.
C4	19A702250P113	Polyester: 0.1 uF ±10%, 50 VDCW.
C5	19A701534P8	Tantalum: 22 uF ±20%, 16 VDCW.
C6 thru C12	19A702250P113	Polyester: 0.1 uF ±10%, 50 VDCW.
C13	19A703314P6	Electrolytic: 1 uF -10+50% tol, 50 VDCW; sim to Panasonic LS Series.
C14	19A703314P7	Electrolytic: 2.2 uF -10+50%, 50 VDCW; sim to Panasonic LS Series.
C15 and C16	19A703314P6	Electrolytic: 1 uF -10+50% tol, 50 VDCW; sim to Panasonic LS Series.
C17	19A701534P8	Tantalum: 22 uF ±20%, 16 VDCW.
C18	315A604P224U	Tantalum: 0.22 uF.
C19	T644ACP310	Polyester: 0.01 uF 50 VDCW.
C20	19A700005P4	Polyester: 3300 pF ±10%, 50 VDCW.
C21	5491656P16	Polyester: 0.015 uf ±5%, 100 VDCW; sim to GE Type 61F.
C22	19A702250P113	Polyester: 0.1 uF ±10%, 50 VDCW.
C23 thru C25	19A703314P7	Electrolytic: 2.2 uF -10+50%, 50 VDCW; sim to Panasonic LS Series.
C27 and C28	19A703314P2	Tantalum: 220 uF, -10+50%, 10 VDCW.
C29	19A703314P10	Electrolytic: 10 uF -10+50%, 50 VDCW; sim to Panasonic LS Series.
C30	19A702250P113	Polyester: 0.1 uF ±10%, 50 VDCW.
C31	19A703314P7	Electrolytic: 2.2 uF -10+50%, 50 VDCW; sim to Panasonic LS Series.
C32 and C33*	19A703314P9	Electrolytic: 4.7 uF -10+50% tol, 50 VDCW; sim to Panasonic LS Series.
C34*	19A700004P5	Metallized polyester: 0.33 uF ±10%, 63 VDCW.
C35*	7489162P39	Silver mica: 330 pF ±5%, 500 VDCW; sim to Sprague Type 118.
----- DIODES -----		
D1 thru D8	19J706030P2	Silicon: sim to 1N4736A.
D9 thru D22*	19A700028P1	Silicon: 75 mA, 75 PIV; sim to 1N4148.
----- JACKS -----		
J1	19A700072P36	Printed wire: 10 contacts; Molex 22-27-2101.
J2	19A116659P50	Printed wire: 6-contacts; Molex 09-65-1061.

SYMBOL	PART NUMBER	DESCRIPTION
J3	P196B32P0DF0020	Connector: 64-pin DIN.
J4	19A700072P30	Printed wire: 4 contacts rated at 2.5 amps; sim to Molex 22-27-2041.
J5	19A700072P36	Printed wire: 10 contacts; sim to Molex 22-27-2101.
J6	19A116659P167	Printed wire; sim to Molex 09-67-1062.
J7	19A700072P36	Printed wire: 10 contacts; sim to Molex 22-27-2101.
J8	19A700072P28	Printed wire: 2 contacts rated at 2.5 amps; sim to Molex 22-27-2021.
J9* thru J16*	19A703248P12	Post: Gold Plated, 13 mm length
----- PLUGS -----		
P9 thru P16*	19A702104P1	Shorting Jumper, Tin Plated.
----- TRANSISTORS -----		
Q1	19A700023P2	Silicon, NPN: sim to 2N3904.
Q2	19A700022P2	Silicon, PNP: sim to 2N3906.
----- RESISTORS -----		
R1 thru R4	19A700112P23	Composition: 22 ohms ±5%, 1 w.
R5 and R6	19A701250P176	Metal film: 604 ohms ±1%, 1/4 w.
R7	19B800784P105	Variable: 1K ohms ±20%, .5 w.
R8	19A700019P29	Deposited carbon: 220 ohms ±5%, 1/4 w.
R9	19B800784P105	Variable: 1K ohms ±20%, .5 w.
R10	19A701250P301	Metal film: 10K ohms ±1%, 1/4 w.
R11	19A701250P176	Metal film: 604 ohms ±1%, 1/4 w.
R12 thru R19	19A700106P79	Composition: 4.7K ohms ±5%, 1/4 w.
R20	19A701250P301	Metal film: 10K ohms ±1%, 1/4 w.
R21	19A700106P79	Composition: 4.7K ohms ±5%, 1/4 w.
R22	19A701250P301	Metal film: 10K ohms ±1%, 1/4 w.
R23	19B800784P108	Variable: 10K ohms ±20%, 1/2 w.
R24 and R25	19A701250P301	Metal film: 10K ohms ±1%, 1/4 w.
R26	19A701250P176	Metal film: 604 ohms ±1%, 1/4 w.
R27	19A700106P111	Composition: 100K ohms ±5%, 1/4 w.
R28 thru R31	19A700112P23	Composition: 22 ohms ±5%, 1 w.
R32	19A700019P29	Deposited carbon: 220 ohms ±5%, 1/4 w.
R33	19B800784P105	Variable: 1K ohms ±20%, .5 w.
R34	19A700019P30	Deposited carbon: 270 ohms ±5%, 1/4 w.
R35	19A700019P40	Deposited carbon: 1.8K ohms ±5%, 1/4 w.
R36 thru R38	19A700106P111	Composition: 100K ohms ±5%, 1/4 w.
R39	19A701250P348	Metal film: 30.9K ohms ±1%, 1/4 w.
R40	19A116430P7	Variable: 5K ohms ±10%, 15 turn, 3/4 w.

\* COMPONENTS ADDED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	PART NUMBER	DESCRIPTION
R41	19A700019P69	Deposited carbon: 0.47M ohms ±5%, 1/4 w.
R42	19A700019P78	Carbon: 2.7M ohms ±10%, 1/4 w.
R43	19A700106P79	Composition: 4.7K ohms ±5%, 1/4 w.
R44 and R45	19A700106P111	Composition: 100K ohms ±5%, 1/4 w.
R46	19A701250P312	Metal film: 13K ohms ±1%, 1/4 w.
R47	19A700106P63	Composition: 1K ohms ±5%, 1/4 w.
R48 thru R51	19A700106P111	Composition: 100K ohms ±5%, 1/4 w.
R52 and R53	19A701250P301	Metal film: 10K ohms ±1%, 1/4 w.
R54	19A700106P91	Composition: 15K ohms ±5%, 1/4 w.
R55*	19A700106P79	Composition: 4.7K ohms ±5%, 1/4 w. ----- TRANSFORMERS -----
T1 thru T4	19A703656P1	Audio Frequency: sim to Nova Magnetics 5577-06-0001. ----- INTEGRATED CIRCUITS -----
U1	19A700037P305	Digital: Hex Inverter; sim to 74LS04.
U2 and U3	19A700086P4	Linear: Dual Op Amp; sim to 4558.
U4	19A700029P44	Digital: Quad Bilateral Switch; sim to 4066B.
U5	19A701999P1	Linear: Voltage Regulator; sim to LM317T.
U6		Linear: Tone Decoder; XR2211.
U7	19A700029P38	Digital: CMOS Triple 2-Channel Multiplexer; sim to 4053B.
U8	19A701865P1	Linear: Timer; sim to Signetics NE555N. ----- VOLTAGE REGULATORS -----
VR1	19A700025P5	Silicon, zener: 4.7 Volt, 400 mW max; sim to BZX55-C4V7.

**PRODUCTION CHANGES**

Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter" which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for the descriptions of parts affected by these revisions.

**REV. A – INTERFACE BOARD 19D438302G1**

Updated circuitry for VGE and trunking applications: added C33 - C35, D22, J10 - J16, P10 - P16, R55 and changed J9. J9 was 19A700072P2 – Printed wire: 3 contacts; sim to Molex 22-03-2031.

**INTERFACE TRAY  
19C851553G2**

**ISSUE 1**

SYMBOL	PART NUMBER	DESCRIPTION
3	19B209217P19	Stud, shelf cinching
5	19A149365P1	Rivet.
6	4037460P106	Stud, shelf cinching.
8	19D901867P2	Tray, steel.

**INTERFACE SHELF  
19B802903G1**

**ISSUE 1**

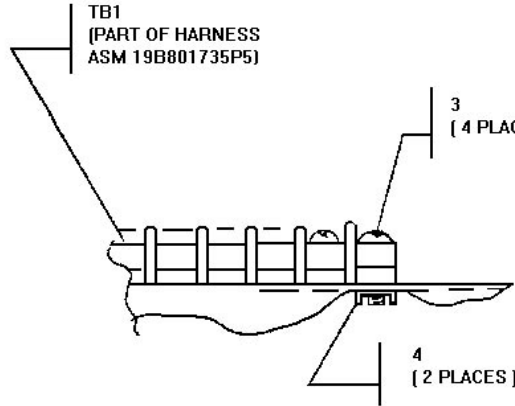
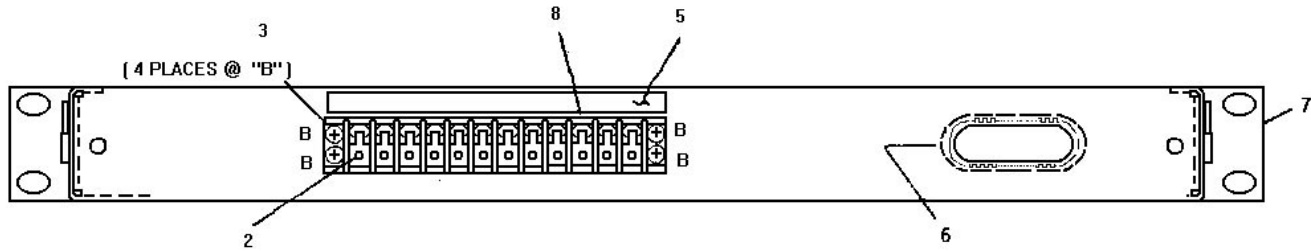
SYMBOL	PART NUMBER	DESCRIPTION
2	N80P13004B6	Screw, machine: Pan head; No. 6-32 x 1/4".
3	N80P13008B6	Machine screw, panhead: No. 6-32 x 1/2.
4	7160508P2	Nut, sheet spring: sim to Tinnerman C1356-632-24.
5	19A149242P1	Nameplate.
6	19A115594P2	Grommet.
7	19C851587G1	Shelf Assembly.
8	19B801735P5	Cable, interconnect. Includes:
	19C301086P8	Terminal Block: 12-terminals; sim to GE CR151B75412AA. (TB1)
	19A700041P36	Shell: sim to Molex 22-01-2105. (Part of P1)
	19A700041P26	Contact: 22-30 AWG; sim to Molex 08-50-0113. (Part of P1; qty of 10 required.)
9	19B234814G2	Cable, interconnect jumper. Includes:
	19B209260P103	Solderless terminal: sim to AMP 60495-1. (Qty of 8 required.)
	19J706152P5	Retainer strap: sim to Panduit Corp. SST-1.

**MODIFICATION KIT  
19A149226G3**

**ISSUE 1**

SYMBOL	PART NUMBER	DESCRIPTION
		----- CAPACITORS -----
C33	19A703314P10	Electrolytic: 10 uF -10+50%, 50 VDCW; sim to Panasonic LS Series.
C38	T644ACP410K	Polyester: 0.1 uF ±10%, 50 VDCW. ----- DIODES -----
D1	19A700028P1	Silicon: 75 mA, 75 PIV; sim to 1N4148. ----- MISCELLANEOUS -----
	N80P13004B6	Screw, machine: Pan head; No. 6-32 x 1/4".
	4037072P6	Plug, button; plastic.
	19B234912G1	Cable, interconnect. Includes:
	19A700041P28	Connector, shell; printed wire; sim to Molex 22-01-2025.
	19A700041P26	Contact; sim to Molex 08-50-0113. (Qty of 2 required.)
	4035306P52	Washer, fiber.
	19B801468P1	Locking plate, left side.
	19B801468P2	Locking plate, right side.
	19A115871P22	Wire, stranded.

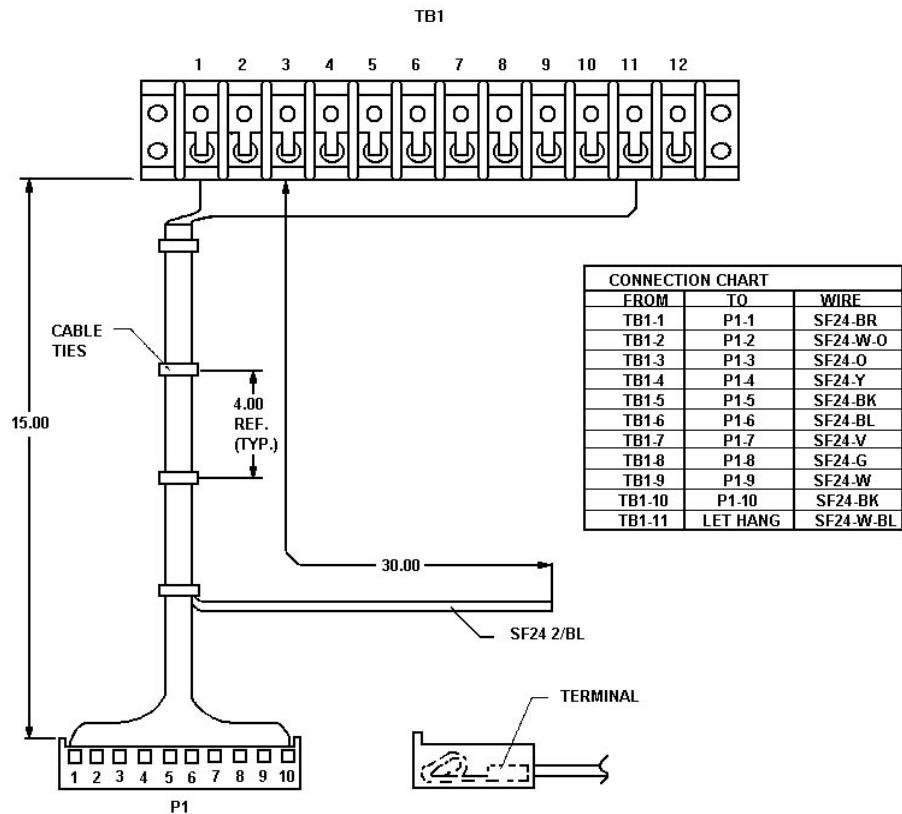
I  
N  
T  
E  
R  
F  
A  
C  
E  
  
U  
N  
I  
T



- NOTES:
- CONNECT CABLE 19B234814G2 TO TB - 1 (REFERENCE DIAGRAM 19D904636).

**INTERFACE SHELF  
19B802903G1**

(19B802903, Sh. 1, Rev. 1)

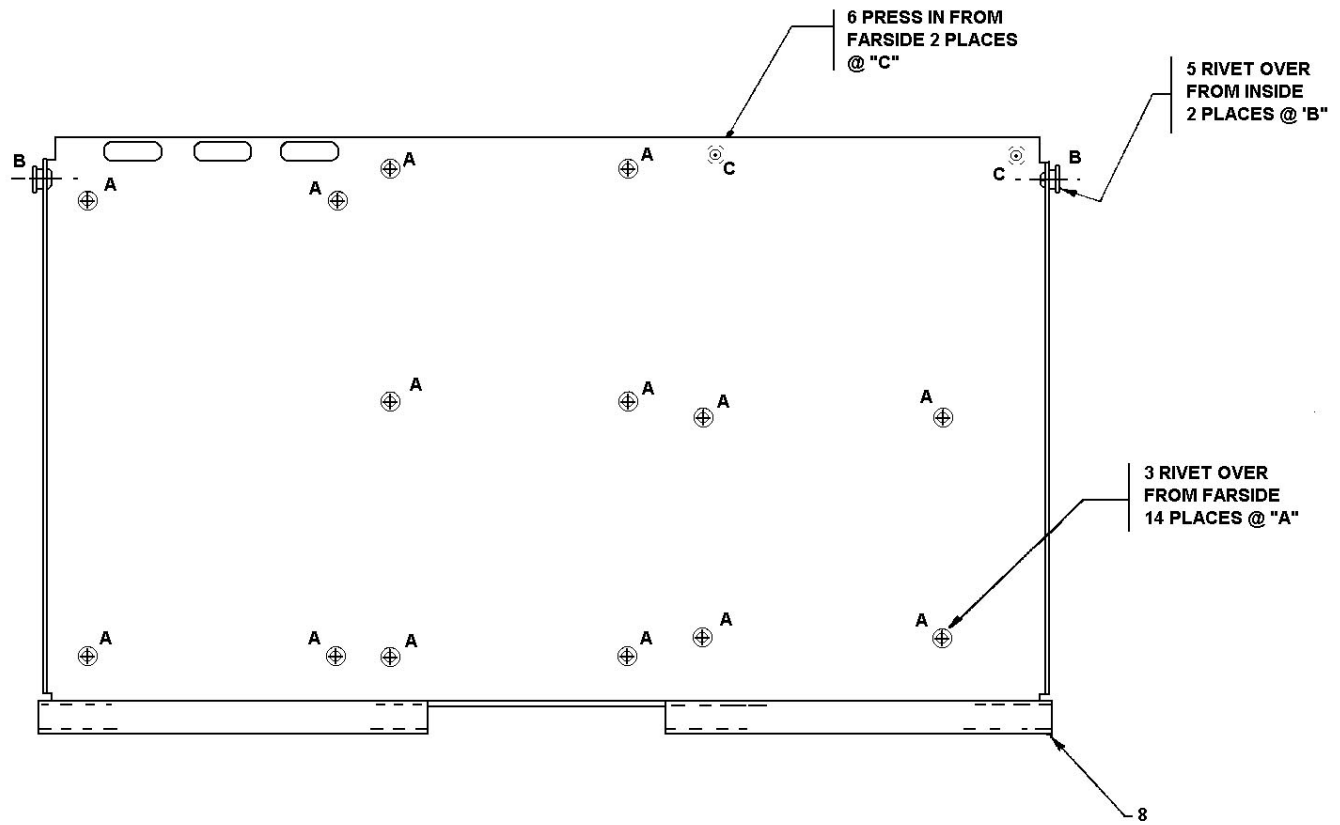


**CABLE  
19B801735P5**

(19B801735, Sh. 5, Rev. 5)

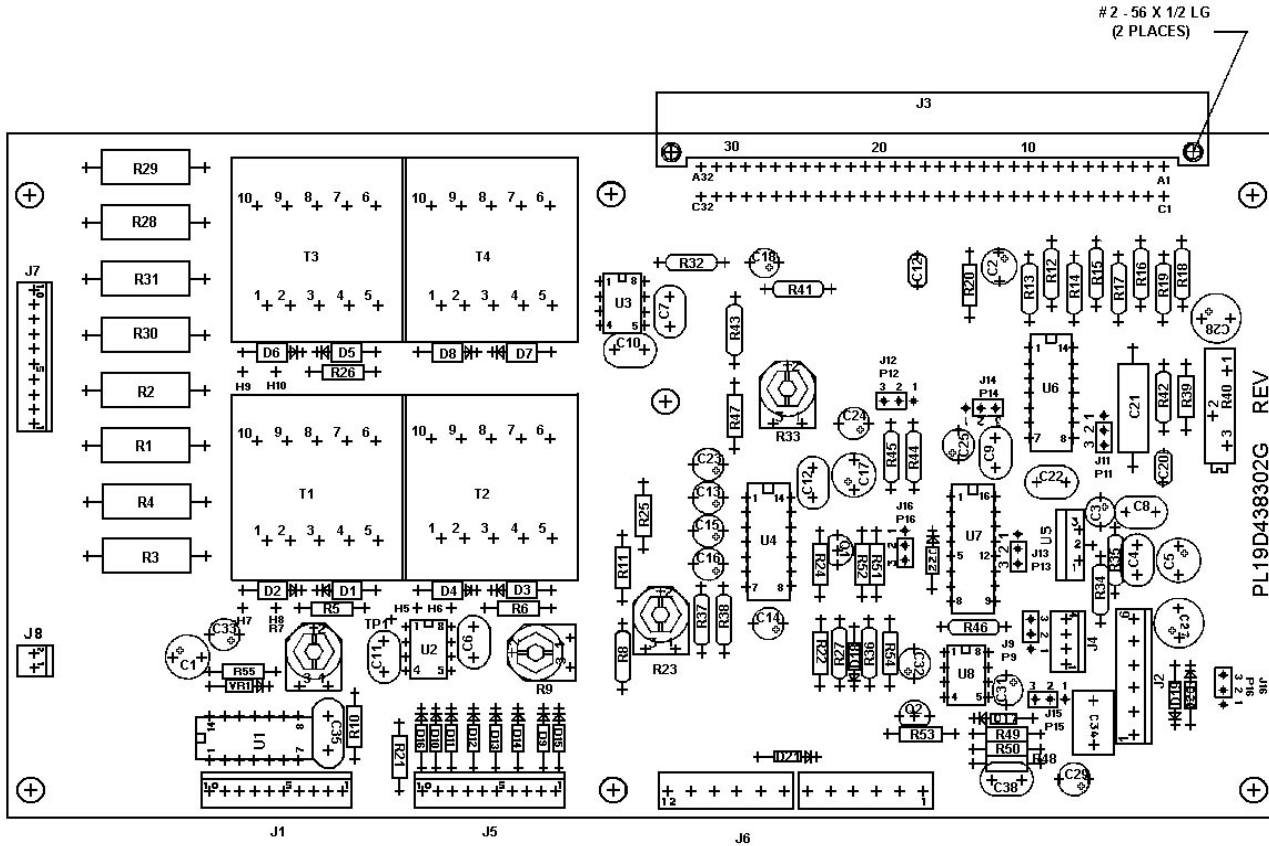


I  
N  
T  
E  
R  
F  
A  
C  
E  
  
U  
N  
I  
T



**INTERFACE TRAY**  
**19C851553G2**

(19C851553, Sh. 2, Rev. 5)



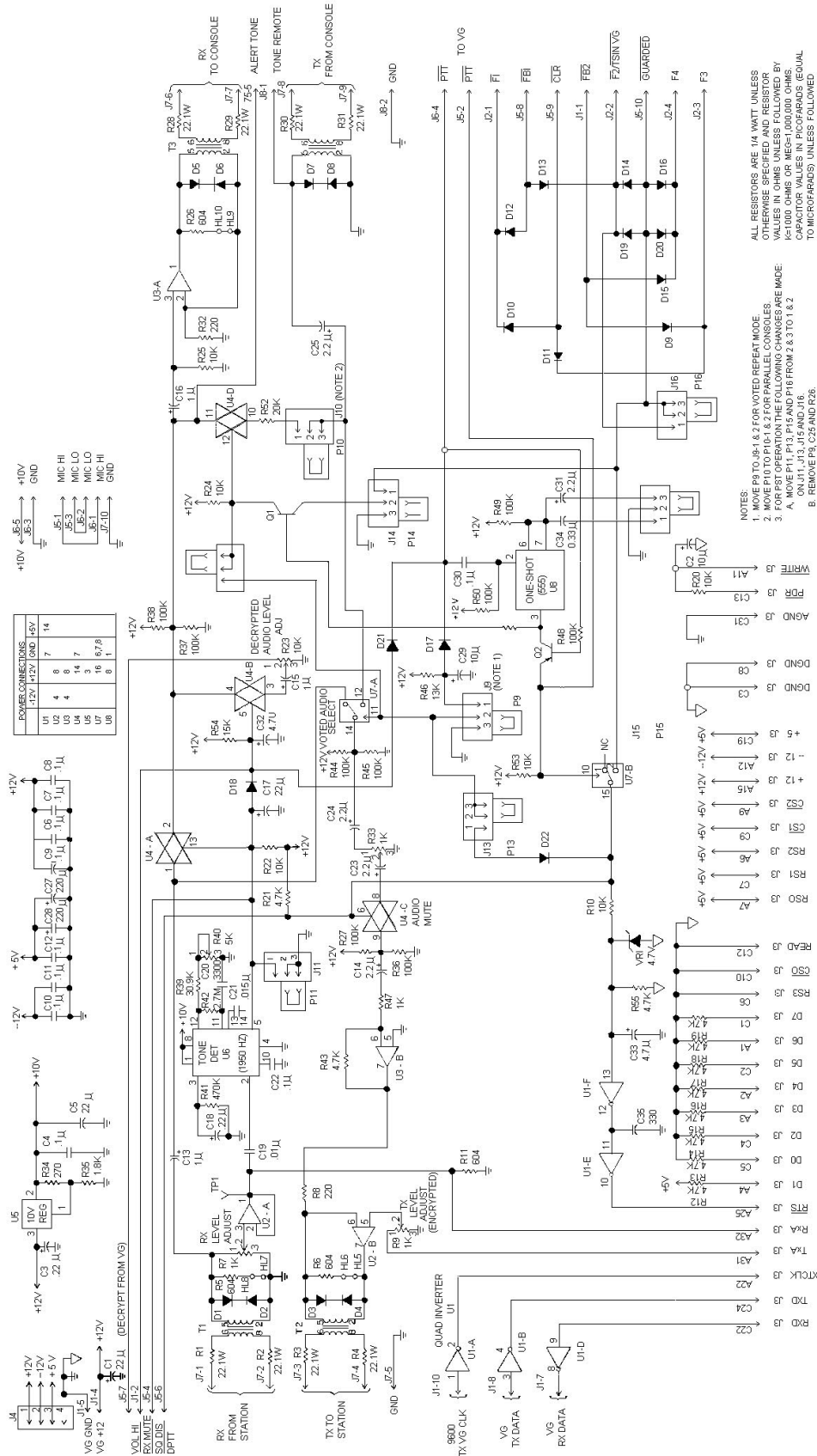
**CAUTION**

OBSERVE PRECAUTIONS  
FOR HANDLING

ELECTROSTATIC  
SENSITIVE  
DEVICES

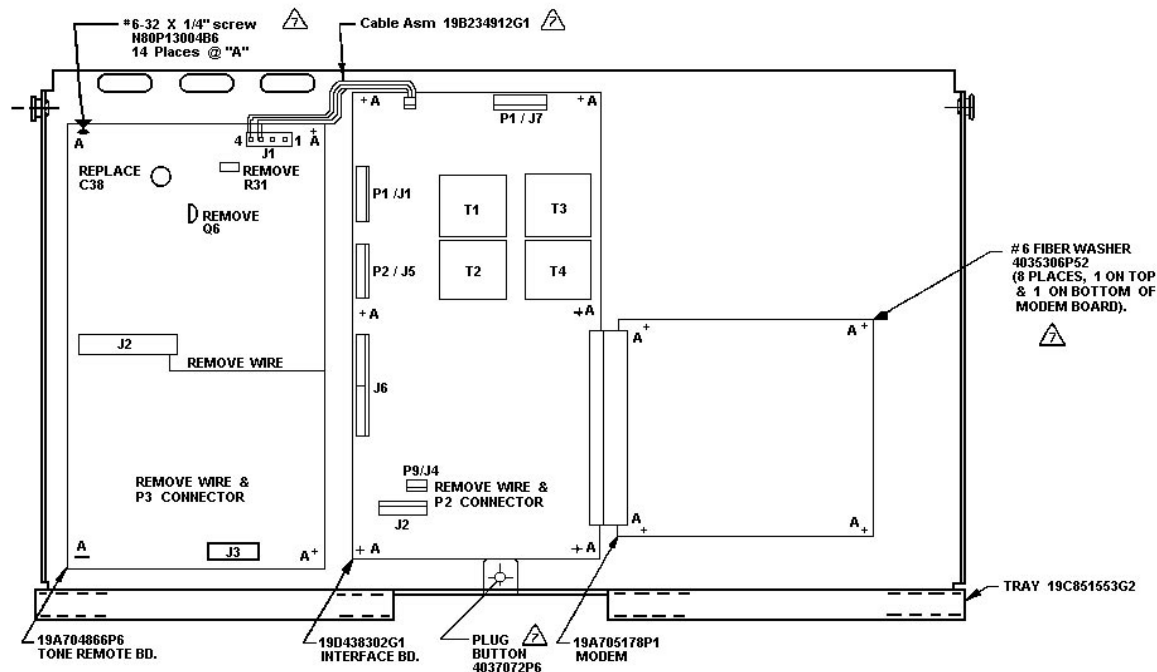
**INTERFACE BOARD  
19D438302G1**

(19D438302, Sh. 1, Rev. 1)



**INTERFACE BOARD**  
**19D43830G1**

(19D438308, Sh. 1, Rev. 3)



INSTRUCTIONS TO ASSEMBLE A DVUI INTERFACE TRAY BY USING KIT 19A149226G3 APPLIES TO REV. A AND LATER INTERFACE BOARD.

1. ON INTERFACE BOARD 19D438302G1:
    - 1a. MOVE P11, P13, P15, AND P16 FROM 2 & 3 TO 1 & 2 ON J11, J13, J15, AND J16.
    - 1b. REMOVE P9, C25, R26, C13, AND R6.
    - 1c. REPLACE C33 WITH 10 $\mu$ F CAPACITOR.
    - 1d. ADD JUMPER OF NO. 26 AWG WHITE WIRE FROM J2 - 2 TO J15 - 2.
    - 1e. REMOVE THE ENDS OF R13 AND R15 CLOSEST TO U6. THIS LIFTS THE RESISTORS FROM GROUND. CONNECT THE NOW FREED ENDS OF R13 AND R15 TO THE END OF R12 CLOSEST TO U6. R13 SHOULD REACH WITHOUT A PROBLEM. A WIRE MAY OR MAY NOT BE NEEDED ON R15. IF A WIRE IS NEEDED, R15 MUST BE STAKED DOWN WITH A DROP OF EPOXY. THIS MOD CHANGES THE CONTROL WORD TO THE ROCKWELL MODEM.
    - 1f. REMOVE C33 AND C29. RUN A WIRE FROM JUMPER P9 PIN 1 TO THE NOW EMPTY "+" HOLE OF C33. THIS LETS CONSOLE PTT INITIATE A MODEM TRAINING SEQUENCE THROUGH D17.
    - 1g. REPLACE R10 WITH A 19A700028P1 (1N414B) DIODE. PLACE THE CATHODE END OF THE DIODE TOWARD J1. THIS DIODE IS NEEDED TO KEEP DPTT AND THE CONSOLE PTT FROM PULLING ON EACH OTHER.
    - 1h. MARK THE MODIFIED BOARD AS "MODIFIED PER 19D904876P2" USING MARKING SPEC 19A700154P1.
  2. ON TONE REMOTE BOARD 19A704686P6:
    - 2a. REMOVE Q6 AND R31.
    - 2b. REMOVE U6 FROM SOCKET AND DISCARD. ADD JUMPER OF NO. 26 AWG WHITE WIRE FROM XU6.1 TO XU6.4 ON SOLDER SIDE.
    - 2c. REPLACE C38 WITH A 0.1 $\mu$ F POLYESTER CAPACITOR.
  3. REMOVE AND DISCARD CABLE (CONNECTORS AND WIRES) BETWEEN J2 ON INTERFACE BOARD AND J3 ON TONE REMOTE BOARD.
  4. MOUNT INTERFACE BOARD, TONE REMOTE BOARD AND 19A705178P1 MODEM IN THE TRAY.
  5. USE CABLE 19B234912G1 TO CONNECT J1 ON TONE REMOTE BOARD TO J8 ON INTERFACE BOARD. CONNECT J2 ON TONE REMOTE BOARD TO J6 ON INTERFACE BOARD.
  6. REMOVE AND DISCARD THE WIRE CONNECTING J6.4 ON THE INTERFACE BOARD TO J2.4 ON THE TONE REMOTE BOARD.
- ▲ PART OF HARDWARE KIT 19A149226G3.
8. INTERCONNECT DIAGRAM 19D904636.

## MODIFICATION INSTRUCTION

### 19D904876P2

(19D904876, Sh. 2, Rev. 5)