ERICSSON

INSTRUCTIONS
FOR
GE-MARC V™ REPEATER CONTROL BOARD 19D430967G2

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DESCRIPTION

The 19D430967G2 Repeater Control Board is used in the GE-MARC V™ repeater station to monitor the Receiver Unsquelched Sensor Operating Switch (RUSOS) and the BUSY TONE detect functions to control the station transmitter keying function. Five timers are included on the board. These timers control the major functions, supported by logic circuits. The Control Board also responds to the Local and Remote PTT functions and mutes the receiver when these functions are activated.

CIRCUIT ANALYSIS

Repeater Control Logic

When $\overline{\text{RUSOS}}$ and BUSY TONE detect are applied to the board, the circuit activates the repeater PTT. This keys the transmitter and repeats incoming traffic. If Local, Tone or Remote PTT are received, repeater PTT will also be activated but the receiver will be muted and incoming traffic will be blocked. Once activated, the Control Board maintains repeater PTT until shutdown is initiated by one or more of the timers.

PTT Latch

The PTT latch (U5B) sets whenever $\overline{\text{LOCAL}}$, $\overline{\text{REMOTE}}$ or $\overline{\text{TONE PTT}}$ is low, or when BT detect is high with $\overline{\text{TONE SW}}$ and $\overline{\text{RUSOS}}$ low. The exception is when $\overline{\text{HOLD DOWN}}$ is low or Hold-Down Timer U11 (T11) or INACTIVITY is high.

$$\text{Set PTT} = [\text{EXT PTT} + (\text{BT DETECT} \bullet \overline{\text{TONE SW}} \bullet \overline{\text{RUSOS}})] \bullet \text{HD} \bullet \overline{\text{INACT}} \bullet \text{T11}$$

The PTT Latch resets whenever the Hold-up Timer (T7) or Overtime Sequence Timer (T9) expires.

$$\text{Reset PTT} = \overline{\text{T7}} + [\overline{\text{T9}} \ (\overline{\text{T10}} + (\overline{\text{T8}} \ \overline{\text{BUSY}})] + \overline{\text{REPEATER DISABLE}}$$

Hold-Down Latch

The Hold-Down Latch U5A resets on the falling edge of PTT. The Latch sets whenever BT is low.

$$\text{Hold-Down Latch Set} = \overline{\text{BT}}$$

$$\text{Hold-Down Latch Reset} = \overline{\text{PTT}}$$

Overtime Latch

The Overtime Latch U5C sets whenever the Inactivity Timer (T10) expires, or when the Conversation Limit Timer (T8) expires and the BUSY BUS is high. U5C resets when PTT goes low.

$$\text{Overtime Latch Set} = \overline{\text{T10}} + (\overline{\text{T8}} \ \text{BUSY})$$

$$\text{Overtime Latch Reset} = \overline{\text{PTT}}$$

Inactivity Alarm Latch

The Inactivity Alarm Latch U5D sets when the Inactivity Timer (T10) expires. The latch resets when BT goes low.

$$\text{Inactivity Latch Set} - \overline{\text{T10}}$$

$$\text{Inactivity Latch Reset} = \overline{\text{BT}}$$

Hold-up Timer

When the repeater shuts down, Holdup Latch U15A-U15B is reset by the one second hold-down pulse from T11. When the repeater is first keyed again, the leading edge of the 2.8 second mute-inhibit pulse from T11 is differentiated

by C38 and R73. This causes a reset pulse to appear at U15A immediately after BT DETECT appears at the clock input of U15A. This resets U15A in a few microseconds. U15B is also reset by the mute-inhibit pulse.

The mute-inhibit pulse from T11 also causes transistor Q6 to turn on, preventing the Hold-up Timer U7 from operating until the mute-inhibit time has elapsed. This causes the normal five-second hold-up period to be effectively added to the mute-inhibit time. Thus "quick-keying" of the repeater results in a hold-up time of 7.8 seconds. This allows a worst-case minimum of four seconds repeater hold-up time after alert tones sound at the originating mobile.

When busy tone is detected a second time, U15A is set, causing transistor Q8 to turn off. R72 is switched out of the timing circuit, and the timing period of U7 is doubled. This allows ten seconds for the called party to answer. When the call is answered, the repeater receives busy tone a third time, setting flip-flop U15B and resetting U15A for the duration of the conversation, returning the holdup time to the normal five-second duration.

Hold-Down/Mute-Inhibit Timer

When the repeater shuts down, mobiles or control stations on the channel will wait approximately 0.6 second to ensure that a shutdown has indeed occurred, then drop off the channel. To ensure that all users have vacated the channel before a new conversation may be initiated, the Hold-Down/Mute-Inhibit Timer (U11) blocks the BT function for a period of one second. This prevents the repeater from keying during this interval.

Timer U11 also inhibits the RX MUTE function for a period of 2.8 seconds after the repeater is initially keyed. this allows the collection and group tones to be repeated in the absence of BUSY TONE. The period of Timer U11 is shortened during the Hold-down sequence by Q7 and R68.

Hold-Down Timer = 2.8 second interval when PTT is high.

1.0 second interval when PTT is low.

No reset. Low when expired.

Inactivity Timer

Inactivity Timer U10 sets the Inactivity Latch when an uninterrupted BUSY TONE has been received from a mobile or control station for an excessive period. This period is set at the factory for approximately two minutes. The timer is reset, along with the latch, whenever BUSY TONE is interrupted. Expiration of U10 also sets the Overtime Latch U5C and starts Overtime Sequence Timer U9.

Inactivity Timer Start = BT.

Inactivity Timer Reset = $\overline{BT}$.

Low when expired.

Conversation Limit Timer

Conversation Limit Timer U8 measures the total time the repeater is active and sets a logic condition when this time period is exceeded (set by potentiometer R46). If the time-out feature is enabled (by removing jumper across Q2), time-out of U8 will set the Overtime Latch. This in turn initiates an audible signal generated at the Repeater Tone Encode Board. The time-out feature may also be blocked by the BUSY BUS which can be connected to the other repeaters in the system. This option prevents the Overtime Latch U5C from setting unless all repeaters are busy. U8 is reset by repeater shutdown.

Conversation Limit Start = PTT.

Conversation Limit Reset = $\overline{PTT}$.

Low when expired.

Overtime Sequence Timer

Overtime Sequence Timer U9 determines how long the Overtime signal is transmitted before repeater shutdown. This period is set at the factory for approximately 12 seconds. The timer is started by expiration of the Inactivity Timer or by the Conversation Limit Timer when the time-out and shutdown features are enabled. U9 is reset by repeater shutdown. When the timer expires, the PTT Latch U5B is reset thus shutting down the repeater and resetting the Overtime Latch U5C. The Overtime Sequence Timer is low when expired.

$\overline{\text{RX MUTE}}$ Function

$\overline{\text{RX MUTE}}$ is low when BUSY TONE is not present, except when the Mute-Inhibit Timer is active. $\overline{\text{RX MUTE}}$ is also low when $\overline{\text{LOCAL}}$, $\overline{\text{REMOTE}}$ or $\overline{\text{TONE PTT}}$ is low.

$$\overline{\text{RX MUTE}} = \overline{(\text{EXT PTT} + \overline{\text{BT DETECT}}) \bullet \text{MUTE INHIBIT}}$$

where EXT PTT = $\overline{\text{TONE PTT}} + \overline{\text{LOCAL PTT}} + \overline{\text{REMOTE PTT}}$ and MUTE INHIBIT = $\overline{\text{PTT} \bullet \text{MUTE INHIBIT TIMER} \bullet \text{EXT PTT}}$

Current Pump

Timer U12 is a Current Pump which generates a square wave of approximately 2% duty cycle to charge the capacitors to timers U8, U9 and U10. This permits using much smaller timing capacitors than could be used with a constant DC supply.

REPEATER CONTROL BOARD TEST

The Control Board may be checked using a stopwatch as follows:

Hold-up Timer Check

Momentarily depress the Remote PTT switch on the 10V Regulator Control Board, starting the stopwatch at the same time. Verify that the TRANSMIT indicator lights, then goes out approximately 7.8 seconds later.

Press the switch again and hold it for 3 seconds, then release it, starting the stopwatch at the time the switch is released. Verify that the TRANSMIT indicator goes out approximately 6 seconds after the switch is released.

Press the switch again, hold it for 3 seconds, release it, depress it again, and release it, starting the stopwatch with the last release. Verify that the TRANSMIT indicator goes out approximately 11 seconds after the switch is released.

Press the switch again, hold it for 3 seconds, release it, depress it again and release it, then depress it again. Release the switch again, starting the stopwatch simultaneously. Verify that the TRANSMIT indicator goes out approximately 6 seconds after the switch is released.

Inactivity Timer/Overtime Signal Timer Check

Rotate the Limit Timer Control fully clockwise. Depress the Remote PTT switch and hold it down. Verify that after approximately 2 1/2 minutes, the INACTIVITY indicator comes on, and the TRANSMIT light goes out approximately 13 seconds later.

Conversation Limit Timer Setup

If the timeout option is desired, clip the jumper between holes 7 and 8 on the Repeater Control Board. Ensure that the Busy Bus is disconnected from the motherboard. Depress the Remote PTT switch and start a stopwatch simultaneously. Hold the switch down until the Overtime Signal appears on the signal monitor, releasing it momentarily every 30 seconds to reset the inactivity timer. Observe the elapsed time on the stopwatch, adjust the Limit Timer control and repeat as required to achieve the desired time.

(If the cut-off option is not desired, remove the jumper between holes 9 and 10 on the Repeater Control Board).

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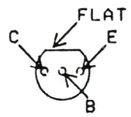
Ericsson GE Mobile Communications Inc.
Mountain View Road • Lynchburg, Virginia 24502

Printed in U.S.A.

LEAD IDENTIFICATION
FOR Q1 Q11

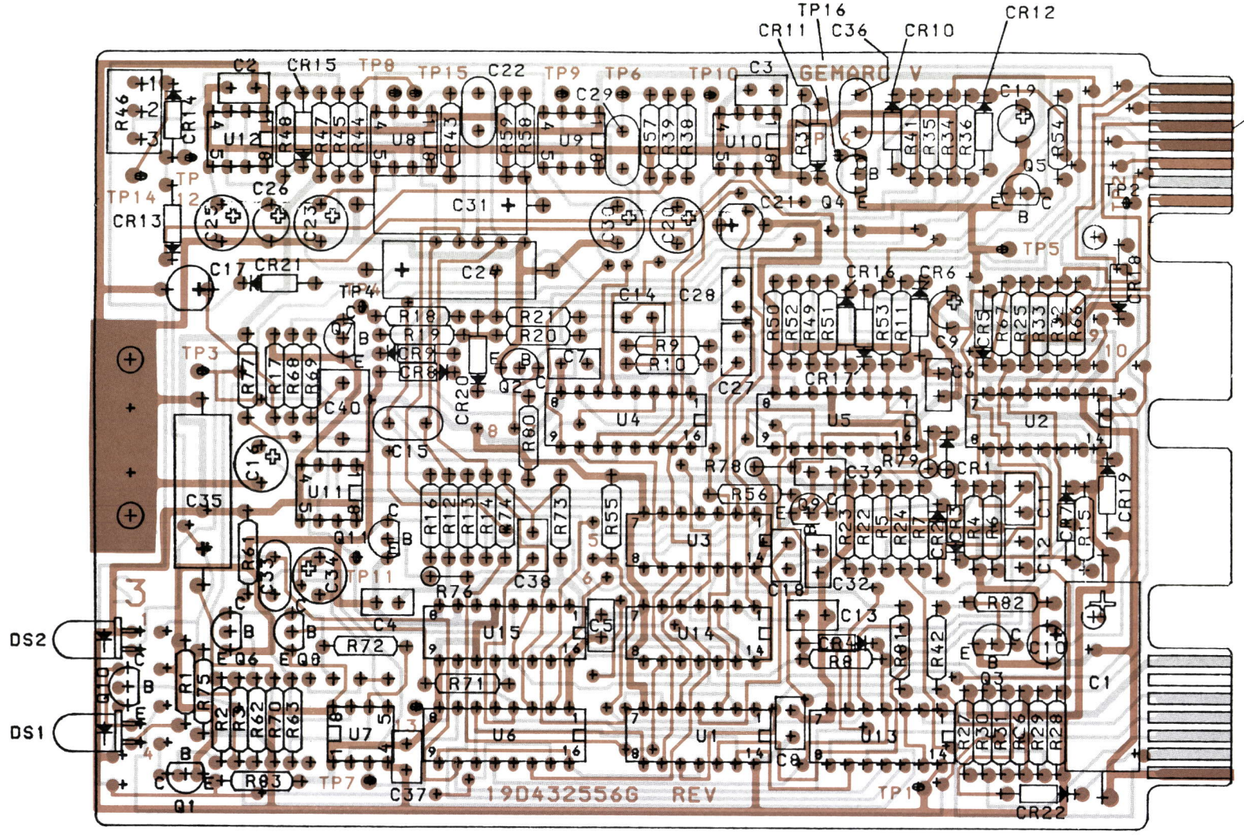


IN-LINE
TOP VIEW

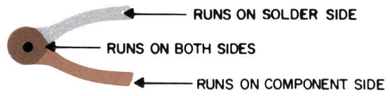
NOTE: CASE SHAPE IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.

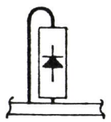
SOLDER SIDE
TYP. NUMBERING OF
CONTACT FINGERS.

DETAIL "A"



WIRE CHART		
FROM	TO	
H5	H6	DA
H7	H8	DA
H9	H10	DA



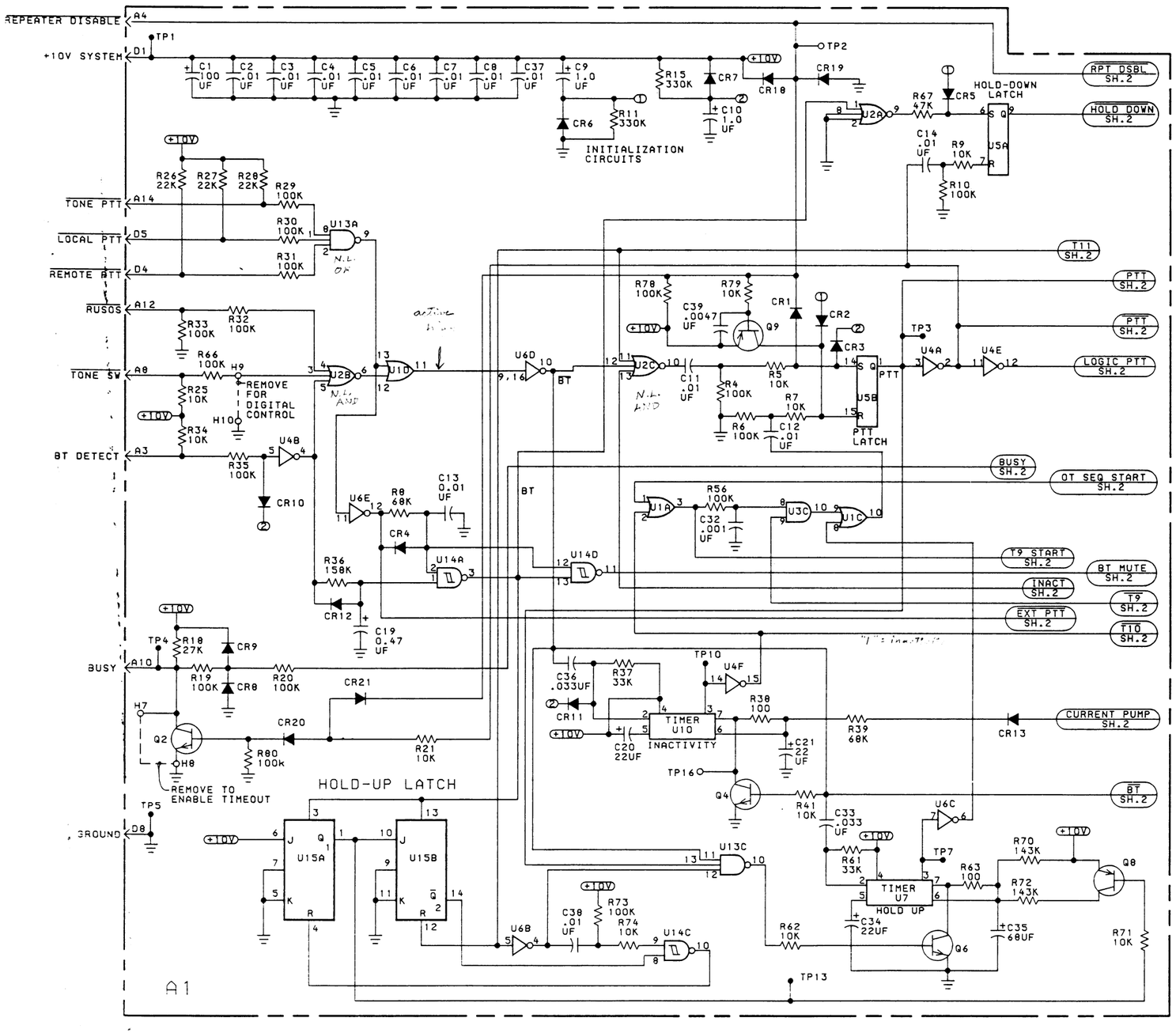


LEAD FORMING FOR CR1

(19D432558, Rev. 3)
(19A143628, Sh. 1, Rev. 3)
(19A143628, Sh. 2, Rev. 2)

OUTLINE DIAGRAM

GE-MARC V REPEATER CONTROL PANEL
19D430967G2



NOTES:
1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH 1200 SERIES. EXAMPLE: C1-C1201, R1-R1201, ETC.

2. N.L. = Negative Logic

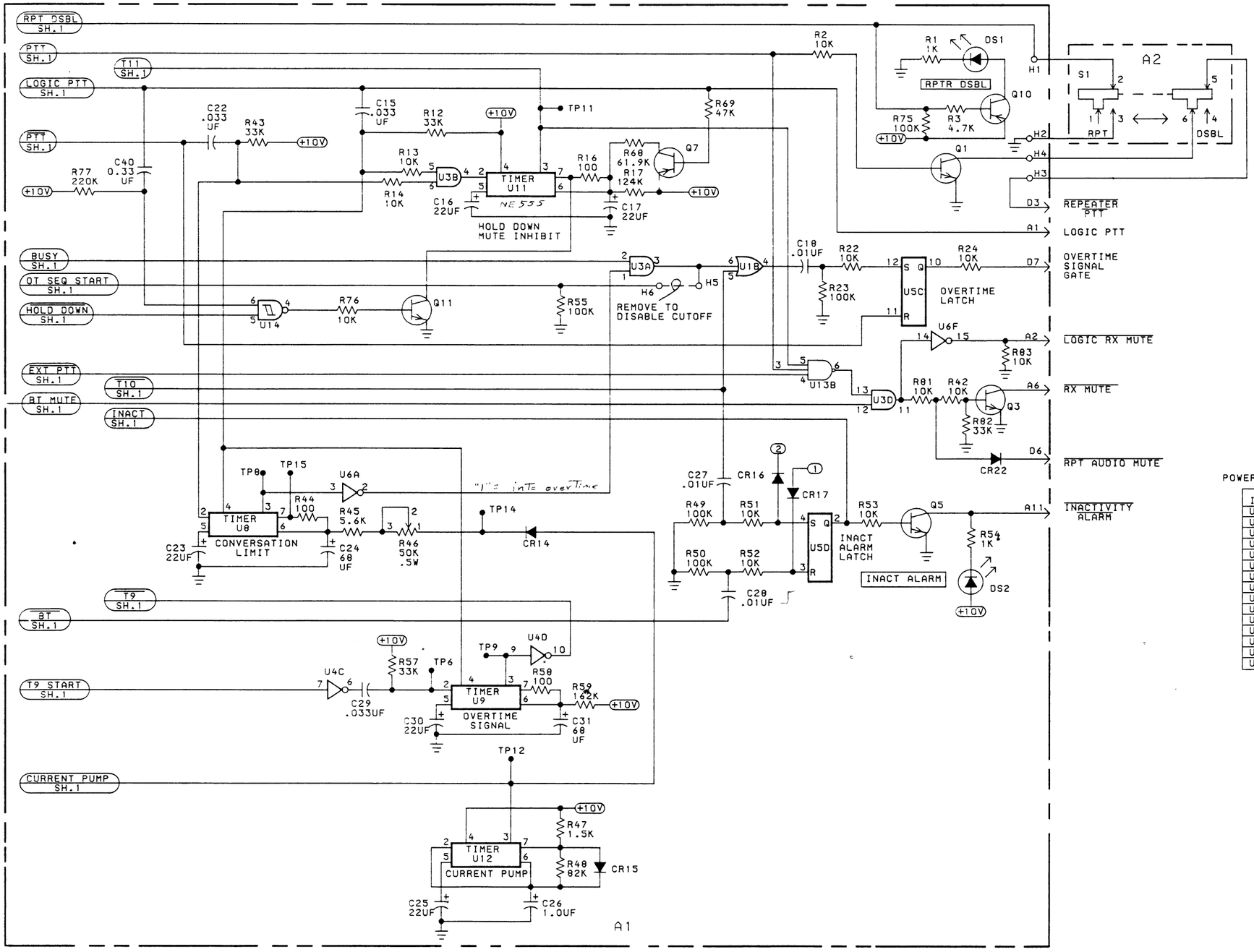
ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K-1000 OHMS OR MEG-1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF-MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH-MILLIHENRYS OR H-HENRYS.

MODEL NO	REV LETTER
PL19D43255G1	D
PL19D43096762	D

SCHEMATIC DIAGRAM

GE-MARC V REPEATER CONTROL PANEL
19D430967G2

(19D432925, Sh. 1, Rev. 4)



(19D432925, Sh. 2, Rev. 4)

POWER AND GROUND CONNECTIONS

IC	DEVICE	+10V	GND
U1	4071	14	7
U2	4025	14	7
U3	4081	14	7
U4	4049	1	8
U5	4043	5,16	8
U6	4049	1	8
U7	555	8	1
U8	555	8	1
U9	555	8	1
U10	555	8	1
U11	555	8	1
U12	555	8	1
U13	4023	14	7
U14	4093	14	7
U15	4027	16	8

SCHEMATIC DIAGRAM

GE-MARC V REPEATER CONTROL PANEL 19D430967G2

PARTS LIST

GE MARC V
REPEATER CONTROL PANEL
19D430967G2
ISSUE 7

SYMBOL	GE PART NO.	DESCRIPTION
A3		REPEATER CONTROL BOARD 19D432556G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1201	19A700064P4	Electrolytic: 100 uF, -10+150%, 250 VDCW.
C1202 thru C1208	19A700005P7	Polyester: 0.01 uF + or -10%, 50 VDCW.
C1209 and C1210	19A701534P4	Tantalum: 1 uF + or - 20%, 35 VDCW.
C1211 thru C1214	19A700005P7	Polyester: 0.01 uF + or -10%, 50 VDCW.
C1215	19A700005P10	Polyester: 0.033 uF + or -10%, 50 VDCW.
C1216	19A701534P8	Tantalum: 22 uF + or -20%, 16 VDCW.
C1217	19A134202P106	Tantalum: 22 uF + or -10%, 15 VDCW.
C1218	19A700005P7	Polyester: 0.01 uF + or -10%, 50 VDCW.
C1219	19A701534P3	Tantalum: 0.47 uF + or - 20%, 35 VDCW.
C1220	19A701534P8	Tantalum: 22 uF + or -20%, 16 VDCW.
C1221	19A134202P106	Tantalum: 22 uF + or -10%, 15 VDCW.
C1222	19A700005P10	Polyester: 0.033 uF + or -10%, 50 VDCW.
C1223	19A701534P8	Tantalum: 22 uF + or -20%, 16 VDCW.
C1224	5496267P211	Tantalum: 68 uF + or -10%, 15 VDCW; sim to Sprague Type 150D.
C1225	19A701534P8	Tantalum: 22 uF + or -20%, 16 VDCW.
C1226	19A701534P4	Tantalum: 1 uF + or - 20%, 35 VDCW.
C1227 and C1228	19A700005P7	Polyester: 0.01 uF + or -10%, 50 VDCW.
C1229	19A700005P10	Polyester: 0.033 uF + or -10%, 50 VDCW.
C1230	19A701534P8	Tantalum: 22 uF + or -20%, 16 VDCW.
C1231	5496267P211	Tantalum: 68 uF + or -10%, 15 VDCW; sim to Sprague Type 150D.
C1232	19A700005P1	Polyester: 1000 pF + or - 10%, 50 VDCW.
C1233	19A700005P10	Polyester: 0.033 uF + or -10%, 50 VDCW.
C1234	19A701534P8	Tantalum: 22 uF + or -20%, 16 VDCW.
C1235	5496267P211	Tantalum: 68 uF + or -10%, 15 VDCW; sim to Sprague Type 150D.
C1236	19A700005P10	Polyester: 0.033 uF + or -10%, 50 VDCW.
C1237 and C1238	19A700005P7	Polyester: 0.01 uF + or -10%, 50 VDCW.
C1239	19A700005P5	Polyester: 4700 pF + or -10%, 50 VDCW.
C1240	19A700004P5	Metallized polyester: 0.33 uF + or - 10%, 63 VDCW.
		- - - - - - - - - - RECTIFIERS - - - - - - - - - -
CR1201 thru CR1221	19A700028P1	Silicon, fast recovery: fwd current 75 mA, 75 PIV; sim to Type 1N4148.
CR1222	19A700047P2	Silicon, 100 mW, continuous dissipation; sim to DO-15.
		- - - - - - - - - INDICATING DEVICES - - - - - - - -
DS1201	19A134354P1	Diode, optoelectronic: red; sim to Hew. Packard 5082-4655.
DS1202	19A134354P2	Diode, optoelectronic: yellow; sim to Hew. Packard 5082-4555.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q1201 thru Q1206	19A700023P1	Silicon, NPN; sim to Type 2N3904.
Q1207 thru Q1210	19A700022P1	Silicon, PNP; sim to Type 2N3906.
Q1211	19A700023P1	Silicon, NPN; sim to Type 2N3904.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1201	H212CRP210C	Deposited carbon: 1K ohms + or -5%, 1/4 w.
R1202	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1203	H212CRP247C	Deposited carbon: 4.7K ohms + or -5%, 1/4 w.
R1204	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R1205	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1206	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R1207	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1208	H212CRP368C	Deposited carbon: 68K ohms + or -5%, 1/4 w.
R1209	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1210	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R1211	H212CRP433C	Deposited carbon: 0.33M + or -5%, 1/4 w.
R1212	H212CRP333C	Deposited carbon: 33K ohms + or -5%, 1/4 w.
R1213 and R1214	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1215	H212CRP433C	Deposited carbon: 0.33M + or -5%, 1/4 w.
R1216	H212CRP110C	Deposited carbon: 100 ohms + or -5%, 1/4 w.
R1217	19A701250P410	Metal film: 124K ohms + or - 1%, 1/4 w.
R1218	H212CRP327C	Deposited carbon: 27K ohms + or -5%, 1/4 w.
R1219 and R1220	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R1221 and R1222	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1223	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R1224 and R1225	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1226 thru R1228	H212CRP322C	Deposited carbon: 22K ohms + or -5%, 1/4 w.
R1229 thru R1233	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R1234	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1235	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R1236	19A701250P420	Metal film: 158K ohms + or -1%, 1/4 w.
R1237	H212CRP333C	Deposited carbon: 33K ohms + or -5%, 1/4 w.
R1238	H212CRP110C	Deposited carbon: 100 ohms + or -5%, 1/4 w.
R1239	H212CRP368C	Deposited carbon: 68K ohms + or -5%, 1/4 w.
R1241 and R1242	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1243	H212CRP333C	Deposited carbon: 33K ohms + or -5%, 1/4 w.
R1244	H212CRP110C	Deposited carbon: 100 ohms + or -5%, 1/4 w.
R1245	H212CRP256C	Deposited carbon: 5.6K ohms + or -5%, 1/4 w.
R1246	19A116559P208	Variable cermet: 50K ohms + or - 20%, 1/2 w; sim to CTS Series 360.
R1247	H212CRP215C	Deposited carbon: 1.5K ohms + or -5%, 1/4 w.
R1248	H212CRP382C	Deposited carbon: 82K ohms + or -5%, 1/4 w.
R1249 and R1250	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R1251 thru R1253	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1254	H212CRP210C	Deposited carbon: 1K ohms + or -5%, 1/4 w.
R1255 and R1256	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R1257	H212CRP333C	Deposited carbon: 33K ohms + or -5%, 1/4 w.
R1258	H212CRP110C	Deposited carbon: 100 ohms + or -5%, 1/4 w.
R1259	19A701250P421	Metal film: 162K ohms + or -1%, 1/4 w.
R1261	H212CRP333C	Deposited carbon: 33K ohms + or -5%, 1/4 w.
R1262	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1263	H212CRP110C	Deposited carbon: 100 ohms + or -5%, 1/4 w.
R1266	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R1267	H212CRP347C	Deposited carbon: 47K ohms + or -5%, 1/4 w.
R1268	19A701250P377	Metal film: 23.7K ohms + or -1%, 1/4 w.
R1269	H212CRP347C	Deposited carbon: 47K ohms + or -5%, 1/4 w.
R1270	19A701250P416	Metal film: 143K ohms + or -1%, 1/4 w.
R1271	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1272	19A701250P416	Metal film: 143K ohms + or -1%, 1/4 w.
R1273	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R1274	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1275	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R1276	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1277	H212CRP422C	Deposited carbon: 0.22M ohms + or -5%, 1/4 w.
R1278	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R1279	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1280	H212CRP410C	Deposited carbon: 0.1M ohms + or -5%, 1/4 w.
R1281	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
R1282	H212CRP333C	Deposited carbon: 33K ohms + or -5%, 1/4 w.
R1283	H212CRP310C	Deposited carbon: 10K ohms + or - 5%, 1/4 w.
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - -
U1201	19A700029P46	Digital: QUAD 2-INPUT OR GATE.
U1202	19A700029P19	MOS: TRIPLE 3 - INPUT NOR GATE.
U1203	19A700029P47	Digital: QUAD 2-INPUT AND GATE.
U1204	19A700176P1	Digital. HEX BUFFER/CONVERTER (INVERTING).
U1205	19A700029P30	MOS: QUAD 3 - STATE NOR RS LATCH.
U1206	19A700176P1	Digital. HEX BUFFER/CONVERTER (INVERTING).
U1207 thru U1212	19A116968P1	Linear, timer: DUAL IN-LINE 8 Pin Mini Dip Package; sim to Signetics SA555N.
U1213	19A700029P17	Digital: TRIPLE 3-INPUT NAND GATE.
U1214	19A700029P56	MOS: QUAD 2 - INPUT NAND SCHMITT TRIGGER.
U1215	19A700029P20	MOS: DUAL J-K MASTER-SLAVE FLIP FLOP.
A4		FRONT PANEL 19C330411G2
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1	7145098P1	Slide: DPDT, 0.75 amp at 125 VAC or 0.5 amp at 125 VDC; sim to Stackpole SS-150.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - - - -
	19B219690G1	Handle assembly.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

PRODUCTION CHANGES

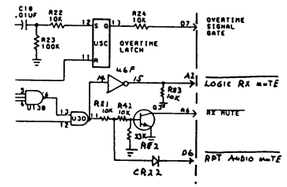
Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter," which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. C- 19D430967G2 Repeater Control Panel
REV. C- 19D432556G1 Repeater Control Board

To adapt for Duplex ICS GE-MARC V repeaters, a diode and three resistors were added for Logic RX Mute and RPT Audio Mute circuits. New components are listed below.

CR22- 19A700047P2; Diode, silicon: 100 mW cont. dissipation.
R81 - 19A700019P49; Deposited carbon: 10K ohms ± 5%, 1/4 w.
R82 - 19A700019P55; Deposited carbon: 33K ohms ± 5%, 1/4 w.
R83 - 19A700019P49; Deposited carbon: 10K ohms ± 5%, 1/4 w.

SCHEMATIC DIAGRAM (Changes)



REV. D - 19D432556G1 REPEATER CONTROL BOARD

To improve operation of mute inhibit timer. Changed R17.

R17 was: 19A701250P405 - Metal Film 110KΩ ±10%.