MOBILE RADIO

LBI30706
(DF4098)

INSTRUCTIONS

FOR

DC REMOTE CONTROL BOARD 19D417051G2

TABLE OF CONTENTS

DESCRIPTION

The 19D417051G2 DC Remote Control Board is used in MASTR® II Base Stations with remote single frequency transmit and receive requirements. The board plugs into the Control Shelf Mother Board.

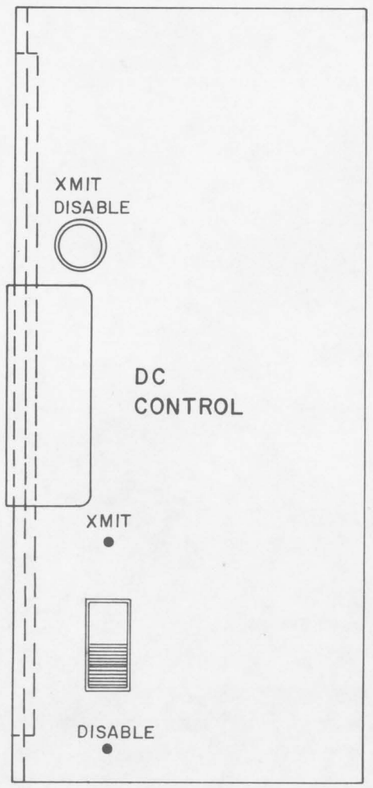
CIRCUIT ANALYSIS

The DC Remote Control Board consists of an optocoupler (U1) used for current control and line isolation. The coupler contains a Light Emitting Diode (LED) serving as a light source and a light-sensitive phototransistor serving as a light detector. The light source and detector are both housed in a single package, sealed from outside light. When a DC current of the correct polarity to forward bias the LED is applied to the input of the optocoupler, the LED conducts and emits light. This light is detected by the phototransistor, turning it on and coupling the input signal to the output of the optocoupler.

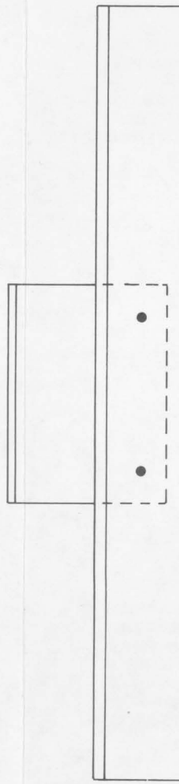
When zero current is present on the control pair (D4 and D5), the LED in U1 is turned off. The phototransistor in U1 is therefore not conducting, holding Q1 off. This is the receive mode of the control circuit. Applying +6 mA to the control pair will result in the voltage at the base of Q4 being clamped to 6 VDC. The voltage at the emitter of Q4 rises to 0.6 VDC above the base and the transistor is turned off, allowing the LED in U1 to conduct. The phototransistor detects the light and operates. The low at the collector of the phototransistor turns on Q1. Conduction of Q1 turns emitter-follower Q2 on which, in turn, operates Q3. Conduction of Q3 applies ground through TRANSMIT DISABLE switch S1 to the TRANSMIT terminal D3 to key the station transmitter. If S1 is moved to the TX DISABLE position, this ground is connected to the cathode of LED CR1, turning on the light.

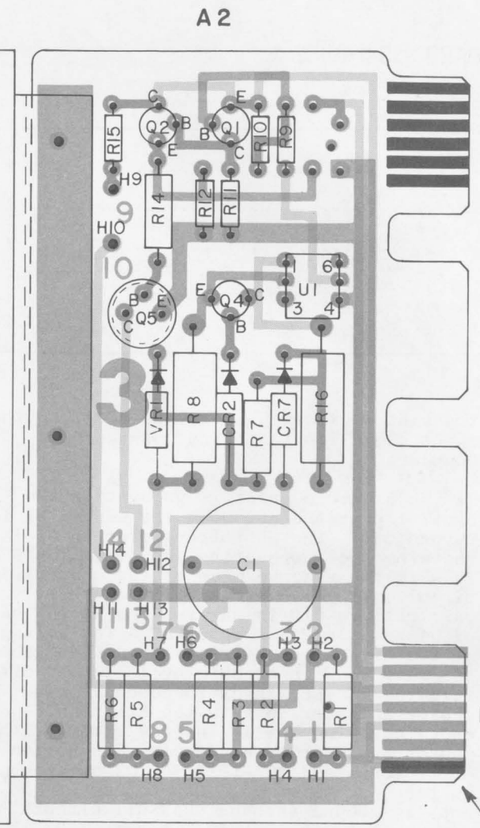
MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502

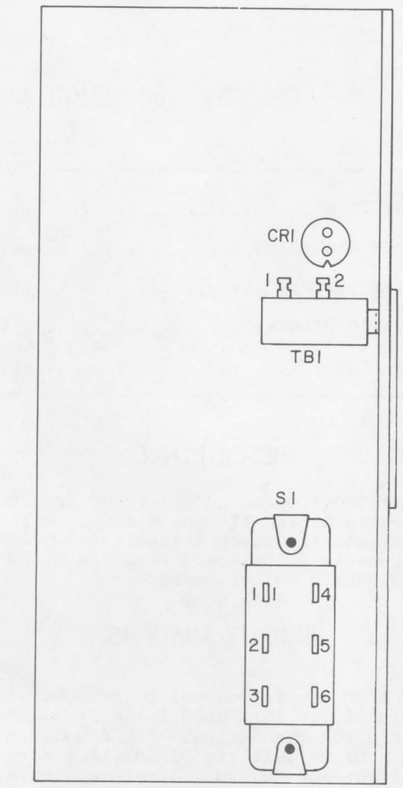
GENERAL ELECTRIC



FRONT PANEL



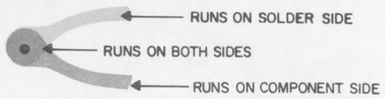




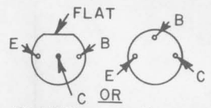
REAR VIEW OF FRONT PANEL

(19D423186, Rev. 0)
(19C320518, Sh. 2, Rev. 3)
(19C320518, Sh. 3, Rev. 3)

DETAIL "A"

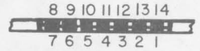


LEAD IDENTIFICATION
FOR Q1, Q2, Q4 & Q5



IN-LINE TRIANGULAR
VIEW FROM LEAD END

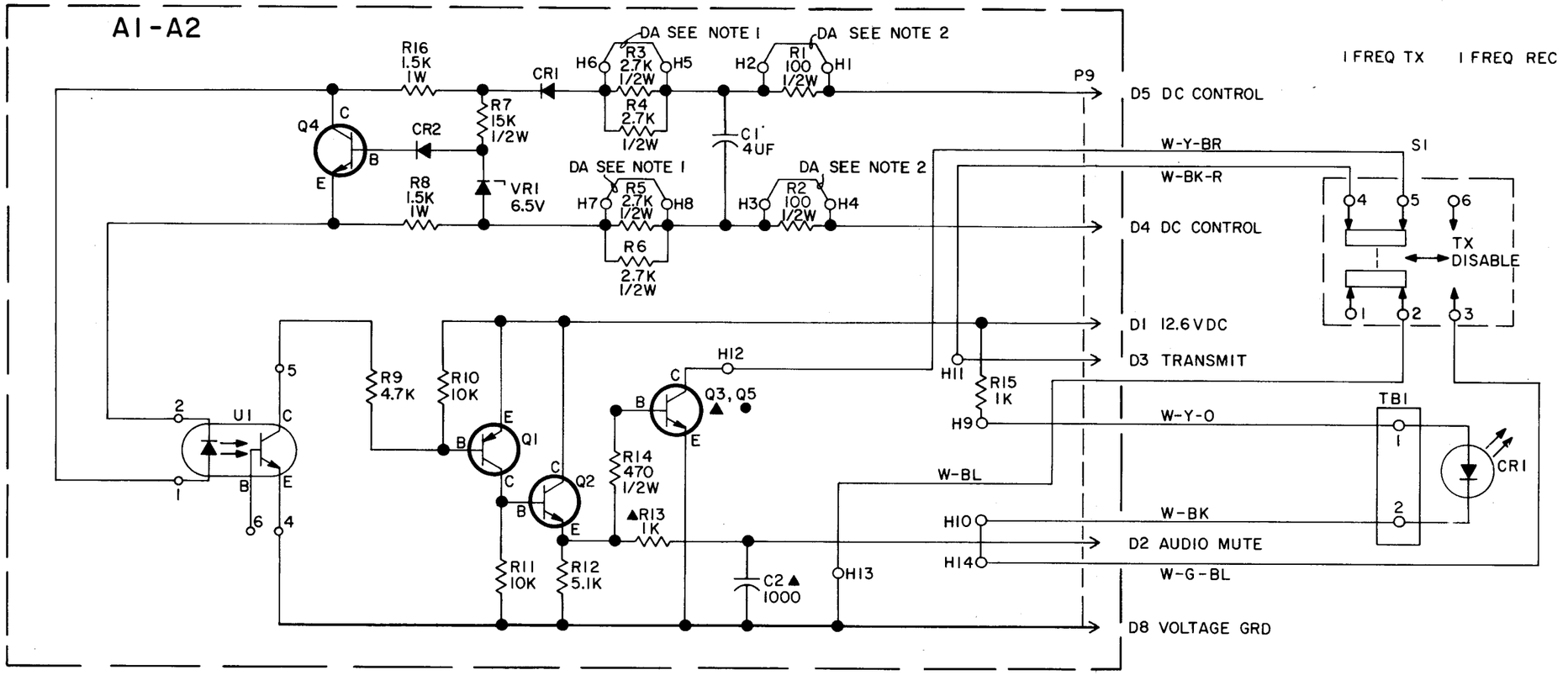
NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.



DETAIL "A"
TYP. NUMBERING OF CONT. FINGERS

OUTLINE DIAGRAM

DC REMOTE CONTROL BOARD
19D417051G2



▲ NOT PRESENT IN G2
● PRESENT IN G2 ONLY

SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT, FOR DESCRIPTION OF CHANGES UNDER EACH REVISION LETTER

THIS ELEM DIAG APPLIES TO

MODEL NO	REV LETTER
PLI9D417051G1	
PLI9D417051G2	

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

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.

NOTES:

1. DA JUMPERS BETWEEN H5 & H6 AND BETWEEN H7 & H8 NOT PRESENT WHEN USED WITH TCC OR DESKON HAVING 6MA & 15MA CONTROL CURRENTS.
2. FOR SEPARATE AUDIO AND CONTROL PAIRS, DA JUMPERS BETWEEN H1 & H2 AND H3 & H4 NOT PRESENT.

(19C320521, Rev. 4)

SCHEMATIC DIAGRAM

DC REMOTE CONTROL BOARD
19D417051G2

PARTS LIST

LBI-4805A

DC REMOTE CONTROL BOARD
19D417051G2

SYMBOL	GE PART NO.	DESCRIPTION
A2		COMPONENT BOARD 19C320520G2
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1	7486445P5	Electrolytic, non polarized: 4 µf +100% -10%, 150 VDCW.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1 and CR2	4037822P2	Silicon.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q1	19A115768P1	Silicon, PNP; sim to Type 2N3702.
Q2	19A115889P1	Silicon, NPN.
Q4 and Q5	19A115889P1	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1 and R2	3R77P101K	Composition: 100 ohms ±10%, 1/2 w.
R3 thru R6	3R77P272J	Composition: 2700 ohms ±5%, 1/2 w.
R7	3R77P153J	Composition: 15,000 ohms ±5%, 1/2 w.
R8	3R78P152J	Composition: 1500 ohms ±5%, 1 w.
R9	3R152P472K	Composition: 4700 ohms ±10%, 1/4 w.
R10 and R11	3R152P103K	Composition: 10,000 ohms ±10%, 1/4 w.
R12	3R152P512K	Composition: 5100 ohms ±10%, 1/4 w.
R14	3R77P471K	Composition: 470 ohms ±10%, 1/2 w.
R15	3R152P102K	Composition: 1000 ohms ±10%, 1/4 w.
R16	3R78P152J	Composition: 1500 ohms ±5%, 1 w.
		- - - - - - - - INTEGRATED CIRCUITS - - - - - -
U1	19A116908P1	Optoelectronic coupler: Dual In Line 6 Pin Mini Dip Package; sim to Fairchild FCD 5004.
		- - - - - - - - - - VOLTAGE REGULATORS - - - - - -
VR1	4036887P6	Silicon, Zener.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1	19A134146P4	Diode, optoelectronic: red; sim to Opcoa LSM-6L.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1	19B209261P8	Slide: DPDT, 2 poles, 2 positions, .5 amp VDC or 3 amps VAC at 125 v; sim to Switchcraft 46206L.
		- - - - - - - - TERMINAL BOARDS - - - - - - - -
TB1	7487424P15	Miniature, phen: 2 terminals.
		- - - - - - - - MISCELLANEOUS - - - - - - - -
	4032480P1	Nut, sheet spring: sim to Vector Electronic 440.
	19B201074P204	Tap screw, Phillips POZIDRIV®: No. 4-40 x 1/4.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES