MAINTENANCE MANUAL
SYSTEM BOARD
19D901891G3

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DESCRIPTION

The System Board provides A+ switching to all boards in the MDR and MDX mobile radios. For applications with DATA ONLY radios (LBI-38917), the switching function is disabled by connecting the source to the drain on transistor Q903 (done at the factory). For the DATA ONLY application, discussions of options, speaker audio, or switching functions are not applicable. Main power is routed through W901/J1 to the System Board where it is distributed throughout the radio. A power distribution block diagram is provided in the Service Manual.

All options for the radio are routed through the System Board and can be interconnected to the radio through option connector J905. A slotted opening is provided for the option cable at the rear of the radio adjacent to the power cable.

Speaker audio is routed through the System Board and connects to the speaker in the Front Cap Assembly via J904. An alternate speaker connection is provided on the Control Board or the Audio Amplifier Board (in MDX radios).

CIRCUIT ANALYSIS

POWER DISTRIBUTION

Main power to the radio is supplied by the System Board and is interconnected to the radio by W901/J1. An ignition sense lead provides a means for applying or removing power from the radio with the ignition switch of the vehicle. Refer to the Installation Manual for a detailed description of the power connections.

The A+ switching circuitry consists of a digital logic circuit and a power MOSFET. The low current logic circuit receives power continuously from the A+ lead from the battery to "remember" if the radio was left on or off when controlled by the ignition sense lead. C901 provides several minutes of memory when A+ is completely removed or when A+ dips to a low voltage while starting the vehicle engine.

The power switch input line J902-13 is normally at 13 volts and is momentarily grounded when the power switch is pressed. This ground turns on Q901 which supplies 13 volts to the clock lead of U901. The Q output of the D-type flip-flop U901-1 alternately toggles high or low each time the clock lead goes high. R906 and C904 provide a time delay to debounce the power switch.

To turn the radio on, 13 volts must be present on the ignition sense lead of J1. The power switch must toggle the Q output of U901 to the high state to prevent grounding the ignition sense voltage through D902-A. The voltage is then able to forward bias D902-B and turns on Q902. Q902 grounds the gate of MOSFET Q903. Q903 turns on, supplying switched A+ through fuse F901 to the other boards in the radio. The 5 amp fuse protects the radio and any options from high current failures.

The power cable W901/J1 is a weather proof pigtail that routes ignition power, battery power, and ground to the System Board.

J904 provides the audio to the internal speaker (8 ohm speaker) for MDX. Resistors R920 and R921 provide the voltage drop necessary to deliver 4 watts (max) of audio to the internal speaker (MDX).

Connector J905 is normally used for external options (i.e. external speaker). The option cable plugs into J905, pins 1-13. Pins 15 and 16 are used in desktop applications (MDX).

SPKR HI and SPKR LO are differential outputs from the speaker amplifier on the Audio Amplifier Board capable of supplying 10 watts of audio to the external speaker (4 ohms) through the option connector, J905.

ERICSSON

Ericsson Inc.
Private Radio Systems
Mountain View Road
Lynchburg, Virginia 24502
1-800-528-7711 (Outside USA, 804-528-7711)

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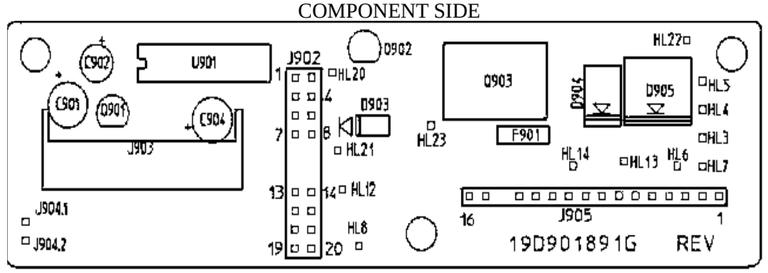
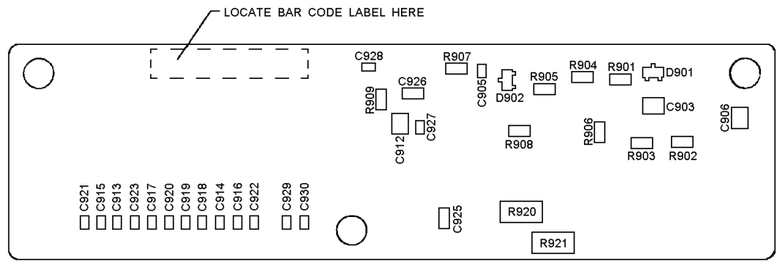
COMPONENT SIDE

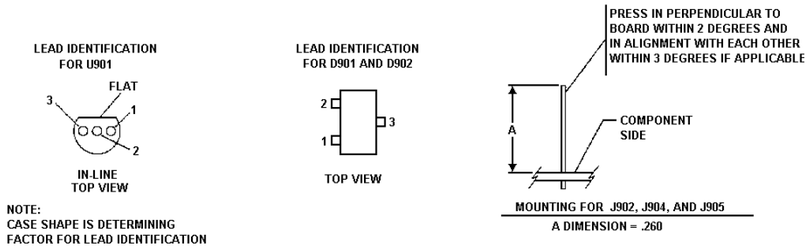


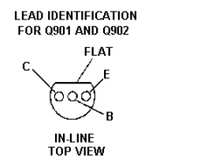
(19D901891, Sh. 3, Rev. 3)

SOLDER SIDE



(19D901891, Sh. 3, Rev. 3)





System Board 19D901891

SYMBOL	PART NUMBER	DESCRIPTION
		- - - - - - - CAPACITORS - - - - - - - -
C901	19A701534P7	Tantalum: 10 µF ±20%, 16 VDCW.
C902	19A701534P4	Tantalum: 1 µF ±20%, 35 VDCW.
C903	19A702052P26	Ceramic: 0.1µF ±10%, 50 VDCW.
C904	19A701534P7	Tantalum: 10 µF ±20%, 16 VDCW.
C905	19A702052P14	Ceramic: 0.01 µF ±10%, 50 VDCW.
C906	19A702052P26	Ceramic: 0.1µF ±10%, 50 VDCW.
C912	19A702052P26	Ceramic: 0.1µF ±10%, 50 VDCW.
C913 thru C923	19A702061P77	Ceramic: 470 pF ±5%, 50 VDCW, temp coef 0 ±30 PPM.
C925 and C926	19A702061P99	Ceramic: 1000 pF ±5%, 50 VDCW, temp coef 0 ±30 PPM/°C.
C927 thru C930	19A702061P77	Ceramic: 470 pF ±5%, 50 VDCW, temp coef 0 ±30 PPM.
		- - - - - - - - - - DIODES - - - - - - - - -
D901 and D902	19A703561P2	Silicon, fast recovery (2 diodes in series).
D903	T324ADP1041	Silicon: Rectifier; sim to 1N4004.
D904	19A703588P3	Zener, transient suppressor: sim to 1N6278A.
D905	19A700082P1	Rectifier, silicon; sim to MR751.
		- - - - - - - - - FUSES - - - - - - - - - -
F901	19A702169P11	Enclosed link; rated 5 amps @ 125 v; sim to Littelfuse 255003.
		- - - - - - - - - JACKS - - - - - - - - - -
J902	19A703248P11	Post: Gold Plated, 10 mm length.
J903	19A705245P1	Printed wire: 6 contacts, sim to Molex 10-02-1062.
J904 and J905	19A703248P11	Post: Gold Plated, 10 mm length.

SYMBOL	PART NUMBER	DESCRIPTION
		- - - - - - - - TRANSISTORS - - - - - - - -
Q901	19A700022P2	Silicon, PNP: sim to 2N3906.
Q902	19A700023P2	Silicon, NPN: sim to 2N3904.
Q903	19A705325P1	MOSFET, P-Channel: sim to Seimens BUZ171.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R901	19B800607P561	Metal film: 560 ohms ±5%, 1/8 w.
R902	19B800607P103	Metal film: 10K ohms ±5%, 1/8 w.
R903	19B800607P473	Metal film: 47K ohms ±5%, 1/8 w.
R904	19B800607P682	Metal film: 6.8K ohms ±5%, 1/8 w.
R905	19B800607P104	Metal film: 100K ohms ±5%, 1/8 w.
R906	19B800607P154	Metal film: 150K ohms ±5%, 1/8 w.
R907	19B800607P334	Metal film: 330K ohms ±5%, 1/8 w.
R908	19B800607P104	Metal film: 100K ohms ±5%, 1/8 w.
R909	19B800607P223	Metal film: 560 ohms ±5%, 1/8 w.
R920 and R921	344A4173P1R0	Metal film: 1 ohm ±5%, 1 w.
		- - - - INTEGRATED CIRCUITS - - - -
U901	19A700029P9	Digital: Dual Data Flip-Flop; sim to 4013B.
		- - - - - - - - - CABLES - - - - - - - - -
W901	19C851585P15	Cable.

PRODUCTION CHANGES

Changes in the equipment to improve performance 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.

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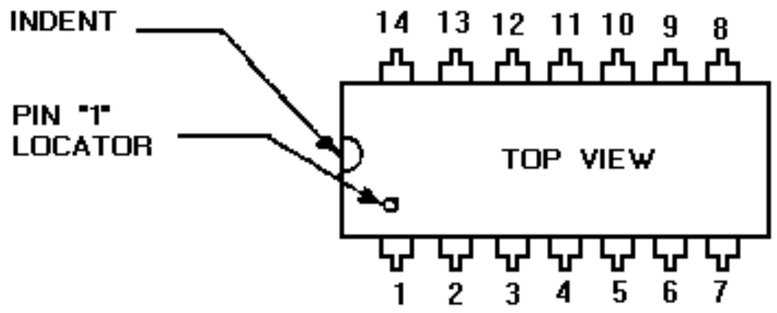
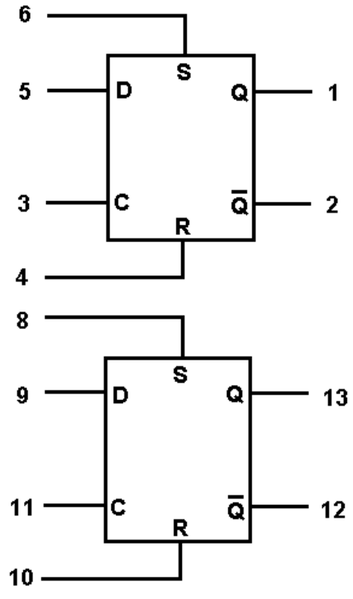
REV. A - To improve protection of all circuits. Added diode D905 (19A701659P2).

REV. B - Diode D905 (19A701659P2) was replaced.

SYSTEM BOARD
19D901891G3

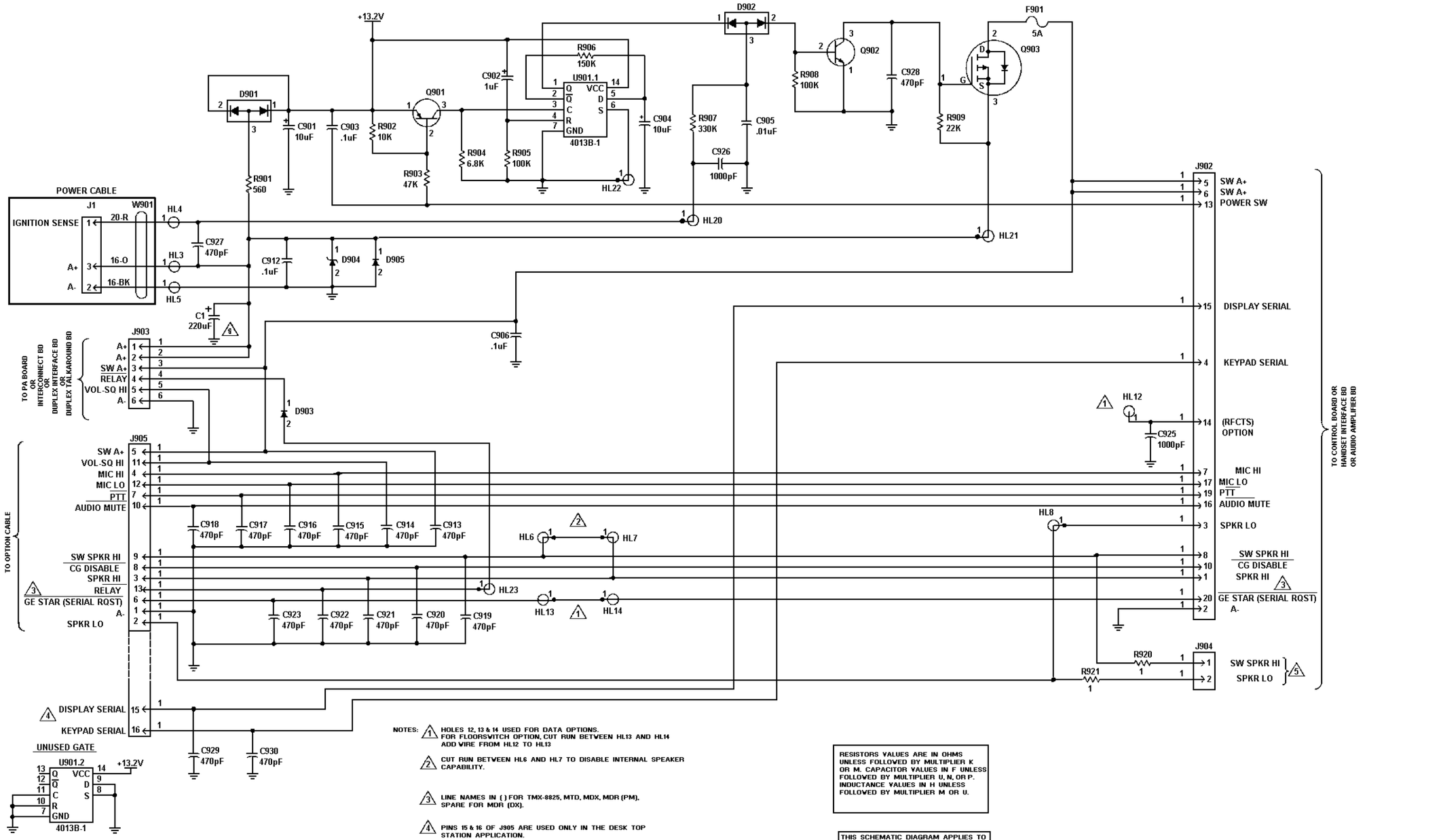
PIN CONFIGURATION





U901
19A700029P9
DUAL "D" FLIP FLOP WITH RESET

VDD = PIN 14
VSS = PIN 7



NOTES:
1. HOLES 12, 13 & 14 USED FOR DATA OPTIONS. FOR FLOORSWITCH OPTION, CUT RUN BETWEEN HL13 AND HL14 ADD WIRE FROM HL12 TO HL13
2. CUT RUN BETWEEN HL6 AND HL7 TO DISABLE INTERNAL SPEAKER CAPABILITY.
3. LINE NAMES IN ( ) FOR TMX-8825, MTD, MDX, MDR (PM), SPARE FOR MDR (DX).
4. PINS 15 & 16 OF J905 ARE USED ONLY IN THE DESK TOP STATION APPLICATION.
5. USE SPEAKER CONNECTOR ON AUDIO AMPLIFIER BD. FOR MDX REMOTE MOUNT APPLICATIONS.
6. NOT USED.

RESISTORS VALUES ARE IN OHMS UNLESS FOLLOVED BY MULTIPLIER K OR M. CAPACITOR VALUES IN F UNLESS FOLLOVED BY MULTIPLIER U, N, OR P. INDUCTANCE VALUES IN H UNLESS FOLLOVED BY MULTIPLIER M OR U.

THIS SCHEMATIC DIAGRAM APPLIES TO	
MODEL NO.	REV LETTER
19D901891G3	B

SYSTEM BOARD
19D901891G3

(19D904373, Rev. 3)