MAINTENANCE MANUAL

FRONT PANEL CMD-417 FOR MLS TWO-WAY RADIOS

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DESCRIPTION

Front Panel CMD-417 (A803) for the MLS Two-Way FM mobile radio is made of highly durable plastic and has rounded corners and recessed controls and indicators for passenger safety. The Front Panel interfaces with the MLS radio to provide a POWER on/off switch, a VOLUME, MAX/MIN switch, a MONITOR switch, a CHANNEL, ADD/DELETE switch and a SCAN on/off switch. The Front Panel also provides XMIT and BUSY indicators, a CHANNEL 1 or CHANNEL 2 indicator or a 7-segment eight or sixteen channel digital display. The panel also provides indicators for Priority 1 (P1), Priority 2 (P2), SCAN and Scan List (S).

This Front Panel consists of Control Unit A804 and a 4-ohm speaker. The Control Unit (A804) consists of one of five plug-in modules as follows:

- CMD-418 (Two-Channel Plug-In Module)
- CMD-419A (Eight Channel Plug-In Module)
- CMD-419B (Eight Channel, Two Priority Scan Plug-In Module)
- CMD-420A (Sixteen Channel Plug-In Module
- CMD-420B (Sixteen Channel, Two Priority Scan Plug-In Module)

CIRCUIT ANALYSIS

The Front Panel/Control unit interfaces with the MLS radio through connector J801, flexible circuit ribbon cable ZC801 and connector J702 on System Control/Synthesizer Board A801 (refer to the System Interconnection Diagram in the applicable Maintenance Manual). The internal speaker (SP801) connects to connector J552 on the Transmitter/Receiver Board (A802).

When the radio is turned on through the power switch on the Front Panel through J801-23 (POWON), the MSD DRV control line (J801-24) for the two frequency radio or the LSB DRV control line (J801-9) for the eight or 16 channel radio goes high. In a two frequency radio, the channel selected by the CHANNEL, CHAN 1 or CHAN 2 switch through J801-13 or J801-15 respectively will determine which LED channel indicator (CD805 or CD806) will light by applying 0 volts from the display drivers on System

Control/Synthesizer board to either J801-12 for channel 1 or J801-14 for channel 2.

In an eight channel radio, the display drivers on the System Control/Synthesizer Board drive each segment control line (A through G) to light the display and indicate the selected operating channel. The segment control lines are J801-4, 6, 8, 10, 12, 14 and 16.

In a 16 channel radio the MSB DRV line and the LSB DRV line alternately go high to display the 10^0 and 10^1 digits for the selected channel. This switching rate is fast enough that both displays appear to be on at the same time. These channels are selected by the ADD or DELETE switches through J801-13 (CH-UP) or J801-15 (CH-DW) respectively.

XMIT LED indicators CD01 and CD802 and BUSY LED indicators CD803 and CD804 light as 0 volts is applied to J801-22 when the transmit circuit is keyed or to J801-20 when the receive channel is busy.

The volume for the MLS radio is controlled through J801-3 (VOL-UP) and J801-2 (VOL-DW).

A MONITOR switch disables Channel Guard through J801-9 (MON) so that the operator can monitor a non-Channel Guarded signal.

In an eight or 16 channel radio equipped with SCAN, the SCAN LED indicator CD806 (CMD-419B), CD807 (CMD-420B) will light when the SCAN/P1 control line is low and the LSB DRV line is low. The P1 (Priority 1) LED indicator CD807 (CMD-419B), CD808 (CMD-420B) will light when J801-9 is low and the MSB DRV line goes high. The P2 (Priority 2) LED indicator CD808 (CMD-419B), CD809 (CMD-420B) will light when the BUSY/P2 line is low and LSB DRV line is high. Also, the "S" (Scan) LED indicator CD809 (CMD-419B), CD810 (CMD-420B) will light when the XMIT/S control line is high and the LSB DRV line is high. This indicator indicates the radio is in the SCAN mode when the transmit circuit is keyed. The SCAN mode is activated by a switch labeled SCAN through J801-11 (SCAN).

CAUTION

Use Front Panel CMD-417 and plug-in modules CMD-418 thru CMD420B in radios identified by part numbers 19A705800P1 thru P7 ONLY. The Control Panel CMD-417 and associated plug-in modules are not interchangeable with earlier units CMD-333 and plug-in modules CMD-319 thru CMD-320B used in radios with part numbers 19A704991P1 thru P7.

ERICSSON

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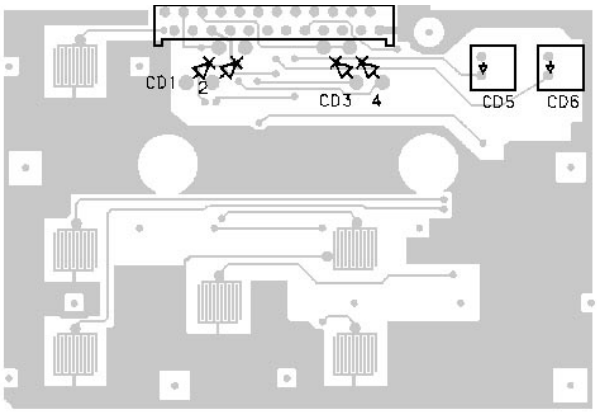
FRONT PANEL/CONTROL UNIT
MLS
ISSUE 1

SYMBOL	GE PART NO.	DESCRIPTION
		FRONT PANEL CMD-417
SP801	B19/5USAF00061	- - - - - - - - - - - SPEAKERS - - - - - - - - - - - Speaker: 4 ohms, 4 w.
ZC803	B19/6ZCLD00089	- - - - - - - - - - - CABLES - - - - - - - - - - - Speaker Cable.
		2 CHANNNEL 19A705800P100 CMD-418
		- - - - - - - - - - - DIODES - - - - - - - - - - -
CD801 and CD802	B19/5TXBG00035	Diode, optoelectronic, red: sim to Stanley BR2222S-B1.
CD803 and CD804	B19/5TXBG00036	Diode, optoelectronic, green: sim to Stanley BG222S-B1.
CD805 and CD806	B19/5TXBG00026	Diode, optoelectronic, green: sim to Rohm LD-101MG.
		- - - - - - - - - - - JACKS - - - - - - - - - - -
J801	B19/5JWBS00275	Connector: 24 pin.
		- - - - - - - - - - - RESISTORS - - - - - - - - - - -
R801 and R802	B19/5REAG01740	Metal film: 1.5K ohms ±5%, 1/8 w.
R803 thru R806	B19/5REAG01728	Metal film: 150 ohms ±5%, 1/8 w.
		8 CHANNEL 19A705800P101 CMD-419A
		- - - - - - - - - - - DIODES - - - - - - - - - - -
CD801 and CD802	B19/5TXBG00035	Diode, optoelectronic, red: sim to Stanley BR2222S-B1.
CD803 and CD804	B19/5TXBG00036	Diode, optoelectronic, green: sim to Stanley BG222S-B1.
CD805	B19/5TXBG00009	Diode, optoelectronic, green: sim to Rohm LA-301MB.
		- - - - - - - - - - - JACKS - - - - - - - - - - -
J801	B19/5JWBS00275	Connector: 24 pin.
		- - - - - - - - - - - RESISTORS - - - - - - - - - - -
R801 and R802	B19/5REAG01740	Metal film: 1.5K ohms ±5%, 1/8 w.
R803 thru R804	B19/5REAG01728	Metal film: 150 ohms ±5%, 1/8 w.
R809 thru R815	B19/5REAG01729	Metal film: 180 ohms ±5%, 1/8 w.
		8 CHANNEL WITH PRIORITY SCAN 19A705800P102 CMD-419B
		- - - - - - - - - - - DIODES - - - - - - - - - - -
CD801 and CD802	B19/5TXBG00035	Diode, optoelectronic, red: sim to Stanley BR2222S-B1.
CD803 and CD804	B19/5TXBG00036	Diode, optoelectronic, green: sim to Stanley BG222S-B1.
CD805	B19/5TXBG00009	Diode, optoelectronic, green: sim to Rohm LA-301MB.
CD806 thru CD809	B19/5TXBG00023	Diode, optoelectronic, red: sim to Stanley BR3432S.
		- - - - - - - - - - - JACKS - - - - - - - - - - -
J801	B19/5JWBS00275	Connector: 24 pin.
		- - - - - - - - - - - RESISTORS - - - - - - - - - - -
R801 and R802	B19/5REAG01740	Metal film: 1.5K ohms ±5%, 1/8 w.
R803 thru R804	B19/5REAG01728	Metal film: 150 ohms ±5%, 1/8 w.
R805 thru R808	B19/5REAG01740	Metal film: 1.5K ohms ±5%, 1/8 w.
R809 thru R815	B19/5REAG01729	Metal film: 180 ohms ±5%, 1/8 w.
		16 CHANNEL 19A705800P103 CMD-420A
		- - - - - - - - - - - DIODES - - - - - - - - - - -
CD801 and CD802	B19/5TXBG00035	Diode, optoelectronic, red: sim to Stanley BR2222S-B1.
CD803 and CD804	B19/5TXBG00036	Diode, optoelectronic, green: sim to Stanley BG222S-B1.
CD805 and CD806	B19/5TXBG00009	Diode, optoelectronic, green: sim to Rohm LA-301MB.
		- - - - - - - - - - - JACKS - - - - - - - - - - -
J801	B19/5JWBS00275	Connector: 24 pin.
		- - - - - - - - - - - RESISTORS - - - - - - - - - - -
R801 and R802	B19/5REAG01740	Metal film: 1.5K ohms ±5%, 1/8 w.
R803 thru R804	B19/5REAG01728	Metal film: 150 ohms ±5%, 1/8 w.
R809 thru R815	B19/5REAG01729	Metal film. 180 ohms ±5%, 1/8 w.
		16 CHANNEL WITH PRIORITY SCAN 19A705800P104 CMD-420B
		- - - - - - - - - - - DIODES - - - - - - - - - - -
CD801 and CD802	B19/5TXBG00035	Diode, optoelectronic, red: sim to Stanley BR2222S-B1.
CD803 and CD804	B19/5TXBG00036	Diode, optoelectronic, green: sim to Stanley BG222S-B1.
CD805 and CD806	B19/5TXBG00009	Diode, optoelectronic, green: sim to Rohm LA-301MB.
CD807 thru CD810	B19/5TXBG00023	Diode, optoelectronic, red: sim to Stanley BR3432S.
		- - - - - - - - - - - JACKS - - - - - - - - - - -
J801	B19/5JWBS00275	Connector: 24 pin.
		- - - - - - - - - - - RESISTORS - - - - - - - - - - -
R801 and R802	B19/5REAG01740	Metal film: 1.5K ohms ±5%, 1/8 w.
R803 thru R804	B19/5REAG01728	Metal film: 150 ohms ±5%, 1/8 w.
R805 thru R808	B19/5REAG01740	Metal film: 1.5K ohms ±5%, 1/8 w.
R809 thru R815	B19/5REAG01729	Metal film: 180 ohms ±5%, 1/8 w.

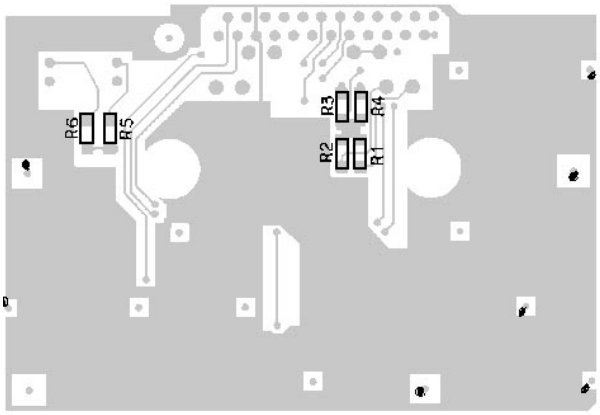
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

Two Channel (CMD-418)

COMPONENT SIDE



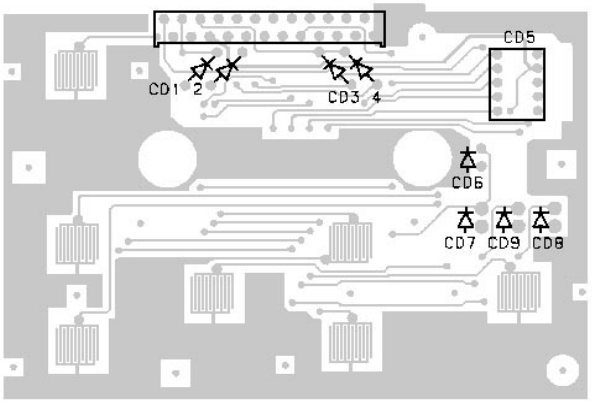
SOLDER SIDE



(6PCLD00189)

Eight Channel (CMD-419A/B)

COMPONENT SIDE



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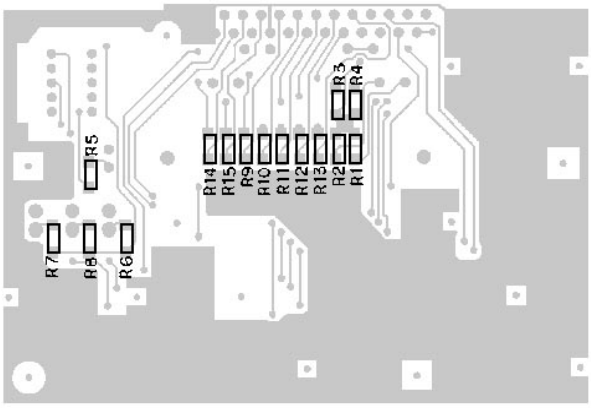

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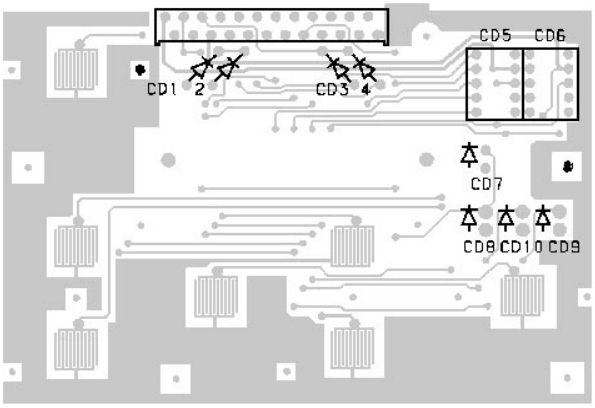
Sixteen Channel (CMD-420)

COMPONENT SIDE



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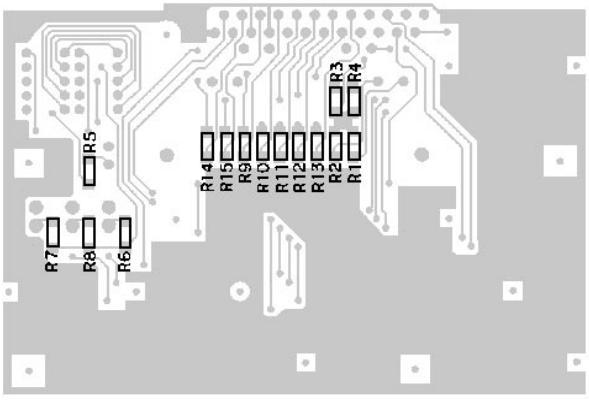

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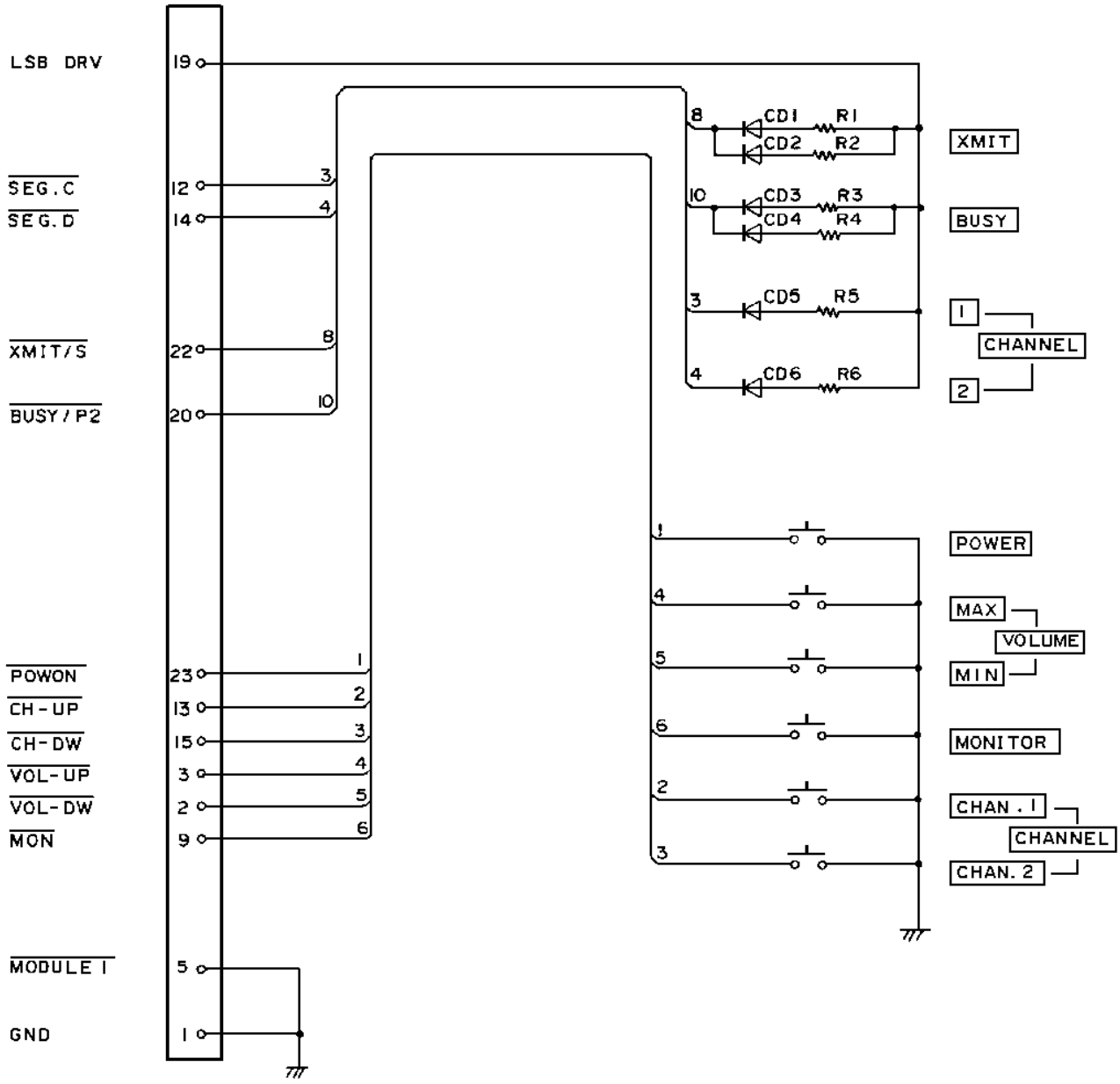
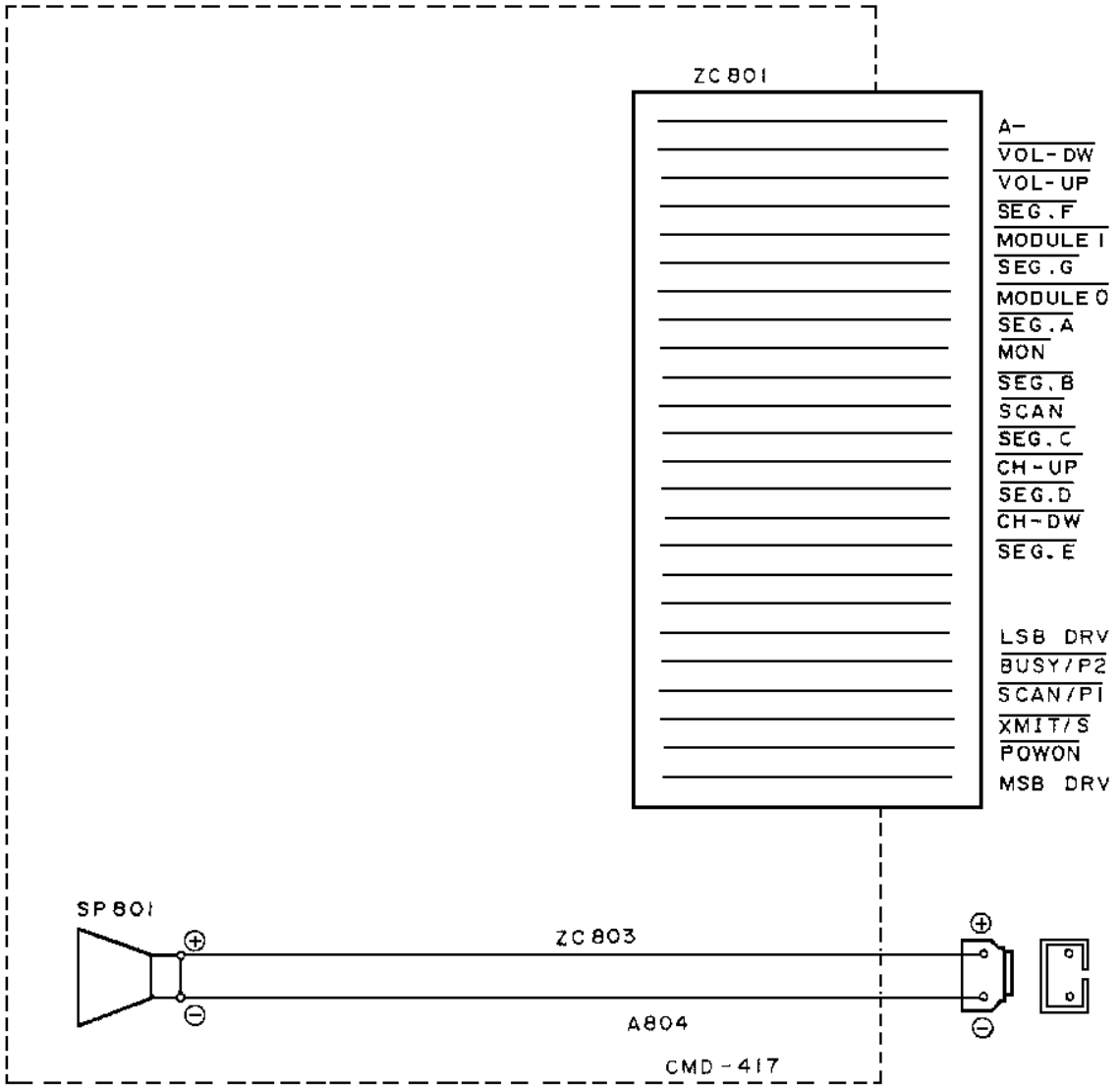


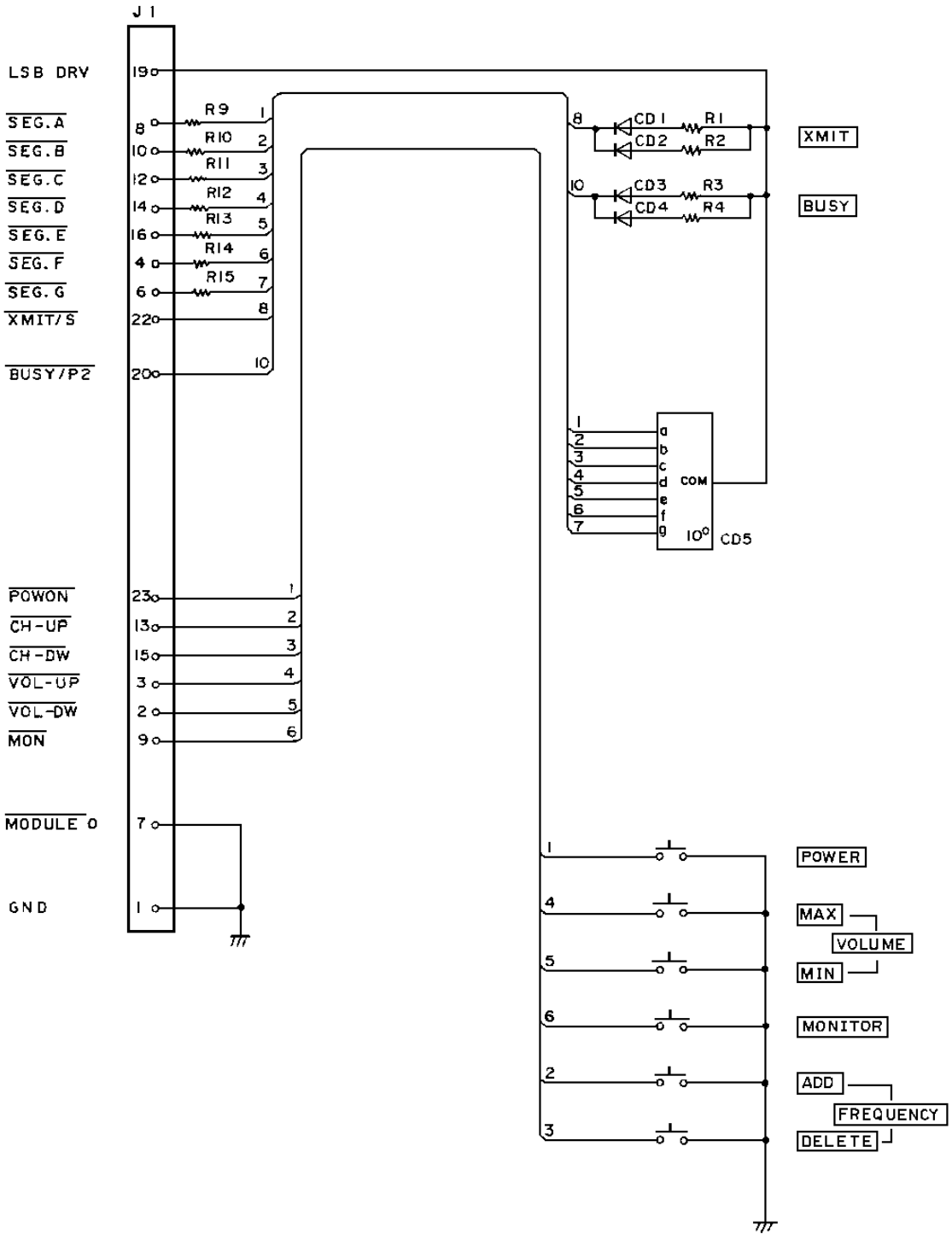
TWO CHANNEL (CMD-418)



PANEL CMD-417

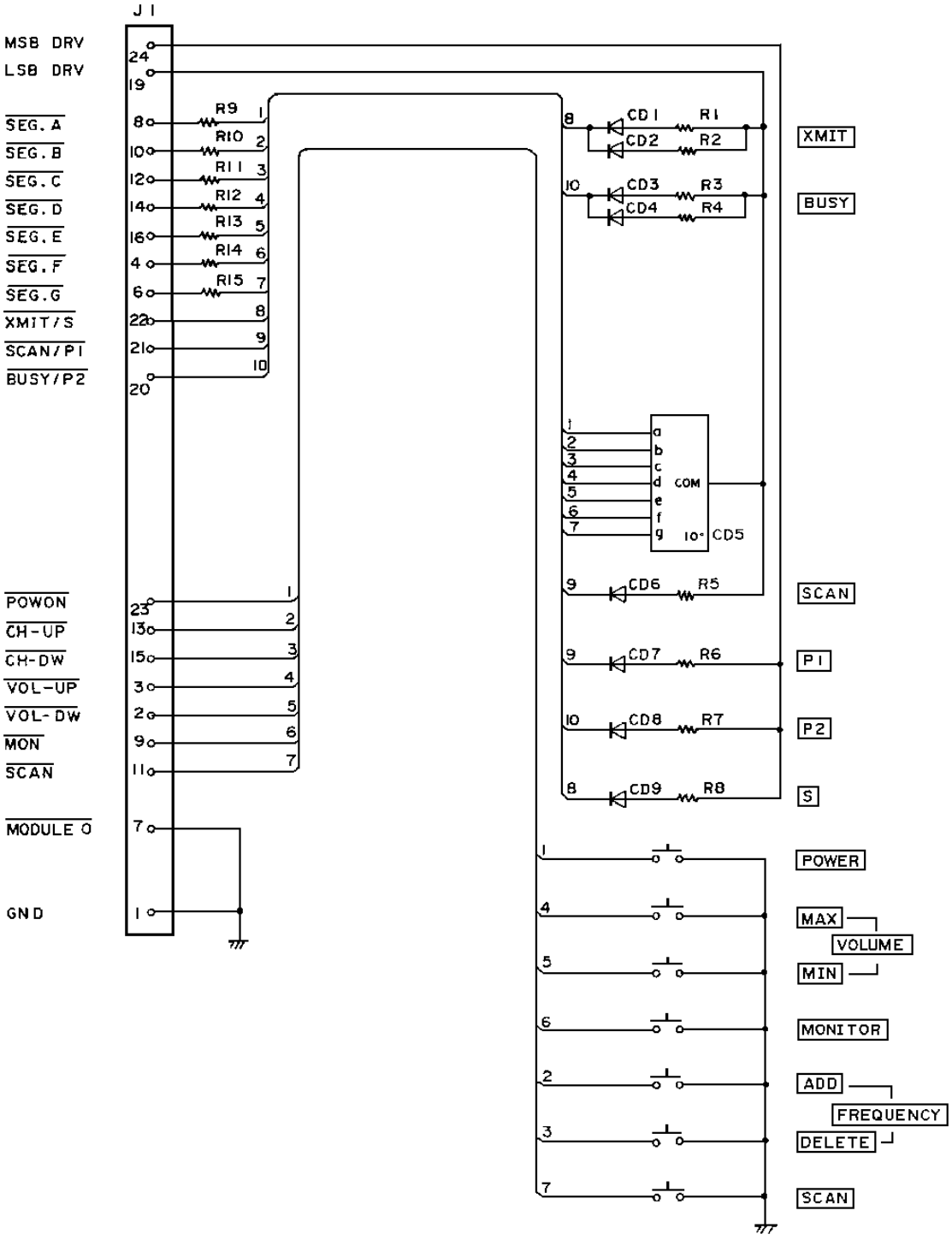
FRONT PANEL (CMD-417)

)-420)



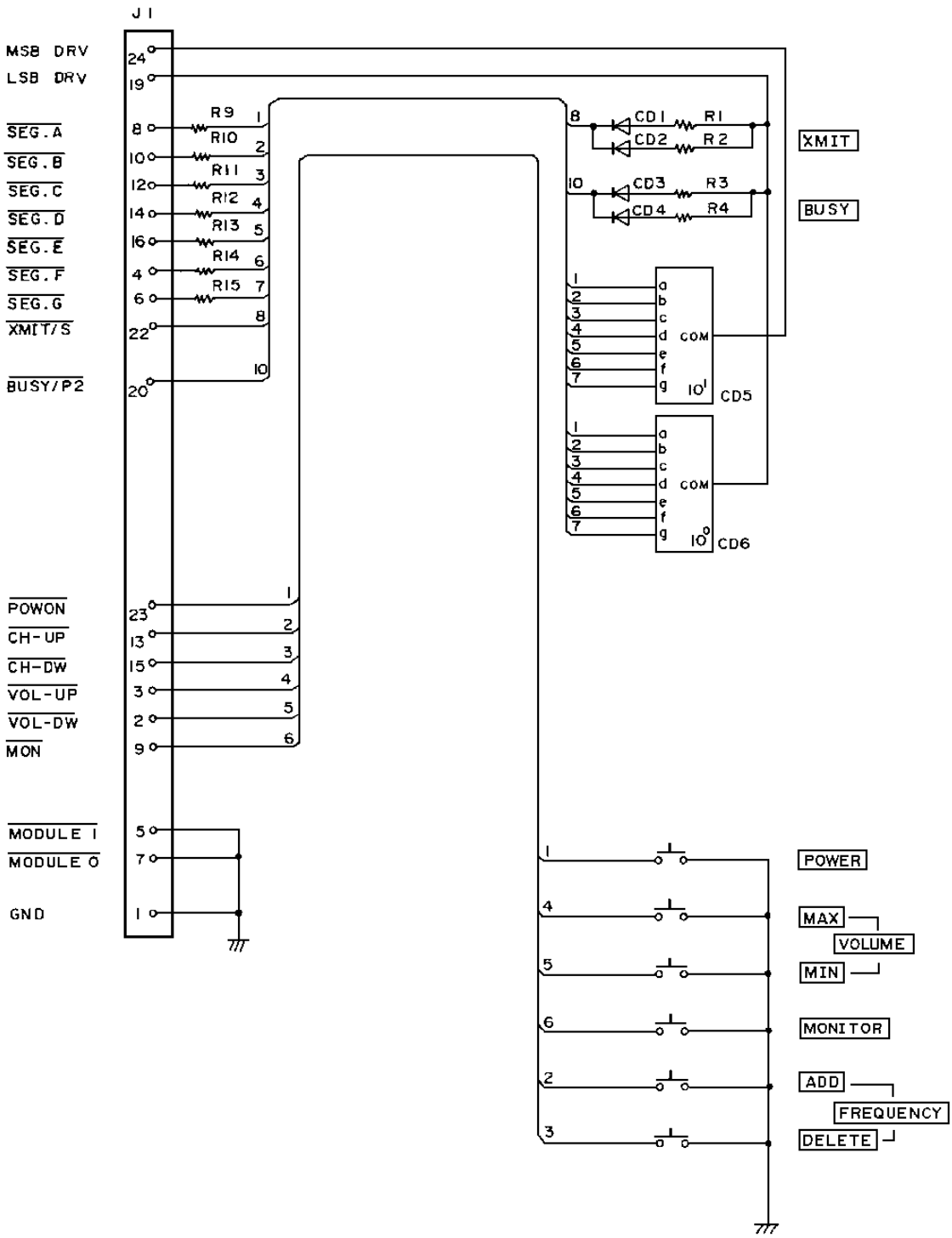
CMD-419A EIGHT CHANNEL PLUG-IN MODULE

EIGHT CHANNEL (CMD-419)



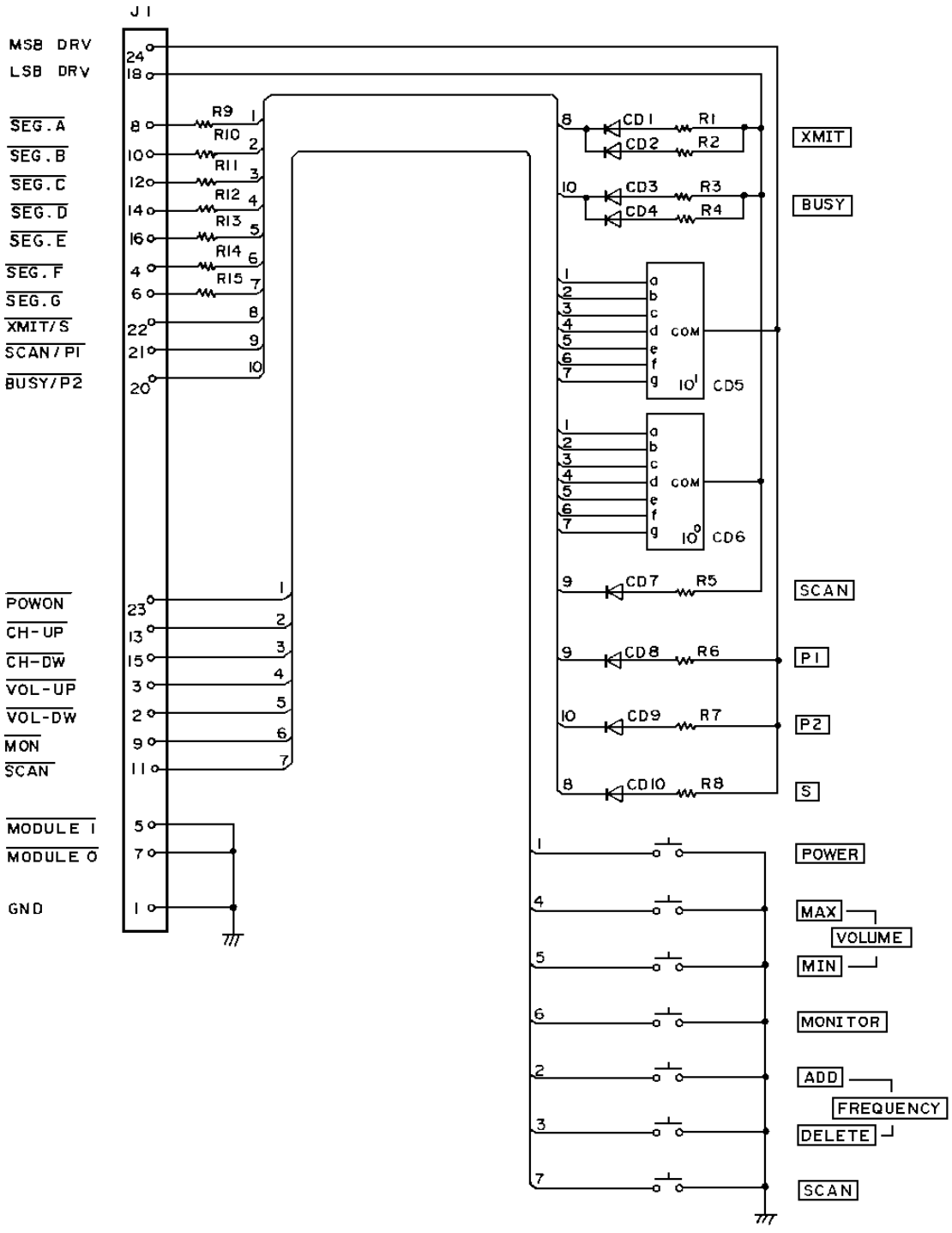
CMD-419B EIGHT CHANNEL TWO PRIORITY SCAN PLUG-IN MODULE

EIGHT CHANNEL (CMD-419)



CMD-420A 16 CHANNEL PLUG-IN MODULE

SIXTEEN CHANNEL (CMD-420)



CMD-420B 16 CHANNEL TWO PRIORITY SCAN PLUG-IN MODULE

SIXTEEN CHANNEL (CMD-420)