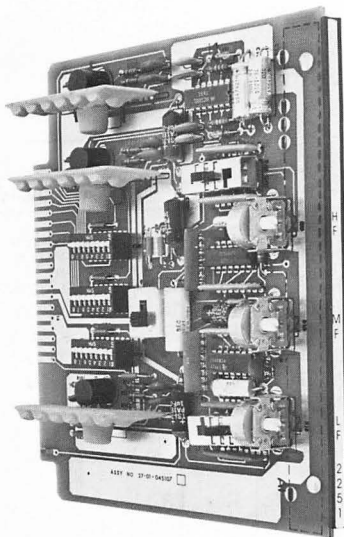


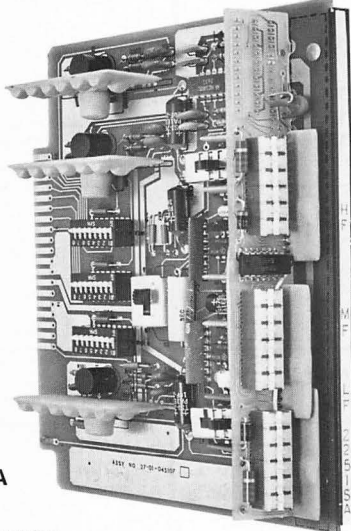
ALTEC LANSING

MODEL 2251 and 2251SA CROSSOVER DRIVER MODULES

TECHNICAL INSTRUCTIONS



2251



2251SA

DESCRIPTION

The Model 2251 and 2251SA Crossover Driver Card Modules are plug-in components of the ALTEC Incremental Power System. The driver modules feed inputs to the power amplifier modules to achieve the desired combinations of output signals and output power. One or two driver modules may be inserted in the main frame of the Incremental Power System to process the inputs.

The Models 2251 and 2251SA provide two-way or three-way electronic crossover. Each module includes three driver amplifier circuits and an 8-channel output switching matrix. Selectable crossover frequencies are 625 Hz, 800 Hz, 1250 Hz, and 1600 Hz for the low to mid frequency range; 3150 Hz, 4000 Hz, 5000 Hz, and 8000 Hz for the mid to high frequency range. Slope rate is fixed at 12 dB per octave. Attenuators of the Model 2251 are continuously adjustable to a maximum attenuation of -60 dB. Attenuators of the Model 2251SA are adjustable in discrete increments of 1 dB, to a maximum attenuation of -63 dB.

INSTALLATION, SETUP, OPERATION

Refer to Operating Instructions for the Incremental Power System (42-02-045121).

SPECIFICATIONS, MODEL 2251, 2251SA

| | |
|---|---|
| Type | 2-way or 3-way electronic crossover card with 3 driver amplifiers and an output switch matrix. |
| Crossover Frequencies | 625 Hz, 800 Hz, 1250 Hz, 1600 Hz (Low/Mid); 3150 Hz, 4000 Hz, 5000 Hz, 8000 Hz (Mid/High). |
| Slope Rate | 12 dB/octave |
| Frequency Response | Each filter is -3 dB at the selected crossover frequency. The LOW output is less than -0.5 dB at 20 Hz; the HIGH output is less than -0.5 dB at 20 kHz. All filters are essentially flat within their respective passbands. |
| Phase Response | All filters conform to standard "butterworth" phase response within $\pm 20^\circ$. |
| Total Harmonic Distortion | Less than 0.1% from 20 Hz to 20 kHz from any driver amp output, all attenuators at full CW rotation. |
| Hum and Noise | 95 dB Signal to Noise ratio at driver amp outputs with equal channel gains. |
| Maximum Voltage Amplification from 2220 Input to Special Input/Output Jacks J213, J214 or J215 | + 15.0 dB (+ 11.5 dB in bi-amp) to J213 ("HIGH" output); + 11.5 dB to J214 ("MID" output); - 0.5 dB to J215 ("LOW" output). Note: LOW, MID and HIGH attenuators do not affect the output level at the Special Input/Output Jacks J213, J214 and J215. |
| Minimum Load Impedance on Special Input/Output Jacks J213, J214, J215 | 3000 Ohms (actual output impedance is 270 Ω) |
| Switches | 3 DIP (dual inline package) output bus matrix switches—8-SPST switches per DIP; 1 "BI/TRI" switch, 2 Crossover Frequency Switches. |
| Driver Amplifiers | X 57.3 (35.2 \pm .2 dB voltage amplification) amplifiers designed specifically to drive the Model 2275 Power Amplifiers. 3 driver amplifiers, one each for the HIGH, MID and LOW outputs. Driver amplifiers drive the Model 2275 Power Amplifiers but do not drive the Special Input/Output Jacks J213, J214 and J215. Mid Output may be used as a full-range channel in bi-amplifier mode with an input attenuator accessible through J214. |
| Attenuators | 2251: 2251SA: |

Specifications and components subject to change without notice. Overall performance will be maintained or improved.

**ALTEC
LANSING**
SOUND PRODUCTS DIVISION

1515 S. Manchester Ave., Anaheim, Calif. 92803

42-02-045286-02 1078-1M
LITHO IN USA

PARTS LIST

MAIN PCB ASSEMBLY

| Reference Designator | Ordering Number | Name and Description |
|----------------------|-----------------|---|
| — * | 27-01-045256-01 | Circuit Board Assy., 3 Channel Step Attn. |
| C1,101 201,301 | 15-01-100156-01 | Cap., 1 mF, 25V |
| C2 | 15-06-121538-01 | Cap., 0.033 mF ± 2%, 100V |
| C3 | 15-06-109398-01 | Cap., 0.0033 mF ± 2%, 200V |
| C4 | 15-06-121539-01 | Cap., 0.15 mF ± 2%, 100V |
| C5 | 15-06-119542-02 | Cap., 0.015 mF ± 2%, 100V |
| C6,7 | 15-02-100307-01 | Cap., 0.01 mF ± 20%, 100V |
| C8,9 | 15-02-107469-01 | Cap., 0.0015 mF ± 20%, 100V |
| C10,11 | 15-01-100205-01 | Cap., 10 mF, 25V |
| C12 | 15-02-100024-02 | Cap., 100 pF ± 10%, 500V |
| C102,202, 302 | 15-01-100233-01 | Cap., 15 mF, 15V |
| C103,203, 303 | 15-02-100032-01 | Cap., 270 pF ± 10%, 500V |
| C104,204, 304 | 15-02-100007-01 | Cap., 3.3 pF ± 10% |
| C105,205, 305 | 15-02-100010-01 | Cap., 10 pF, 500V |
| CR1,2 | 48-01-100876-01 | Diode, 1N270 |
| R1,5 | 47-10-121622-01 | Net., 1.00K/2.00K/5.11K/68.00K |
| R2,6 | 47-10-121621-01 | Net., 4 x 5.11K |
| R3,4 | 47-10-121620-01 | Net., 402/1.18K/1.40K/2.43K |

| Reference Designator | Ordering Number | Name and Description |
|----------------------|-----------------|-----------------------------------|
| R7,8 | 47-10-121619-01 | Net., 1.69K/2.80K/3.24K/3.92K |
| R9 | 47-01-102102-01 | Res., 10 kΩ ± 5%, ¼ W |
| R10,13,18 | 47-06-121822-01 | Pot., 50 kΩ, audio taper |
| R11 | 47-03-109437-01 | Res., 10 kΩ ± 1%, ¼ W |
| R12,16,17 | 47-01-102156-01 | Res., 270Ω ± 10%, ¼ W |
| R14,15 | 47-01-102024-01 | Res., 5.6Ω ± 5%, ¼ W |
| R19 | 47-01-102095-01 | Res., 5.1Ω ± 5%, ¼ W |
| R101,201, 301 | 47-01-102185-01 | Res., 68 kΩ ± 10%, ¼ W |
| R102,202, 302 | 47-03-108433-01 | Res., 1.21 kΩ ± 1%, ¼ W |
| R103,203, 303 | 47-03-109159-01 | Res., 68.1 kΩ ± 1%, ¼ W |
| S1,2 | 51-01-121953-01 | Switch, 2P4T, slide |
| S3 | 51-02-121951-01 | Switch, 3PDT, slide |
| S101,201, 301 | 51-02-121529-01 | Switch, SPST, 8-sect. mini rocker |
| U1,2 | 17-01-121305-01 | Int. Ckt., quad op amp |
| U3 | 17-01-121282-02 | Int. Ckt., dual track reg |
| U100,200, 300 | 17-01-121528-01 | Int. Ckt., op amp, high voltage |

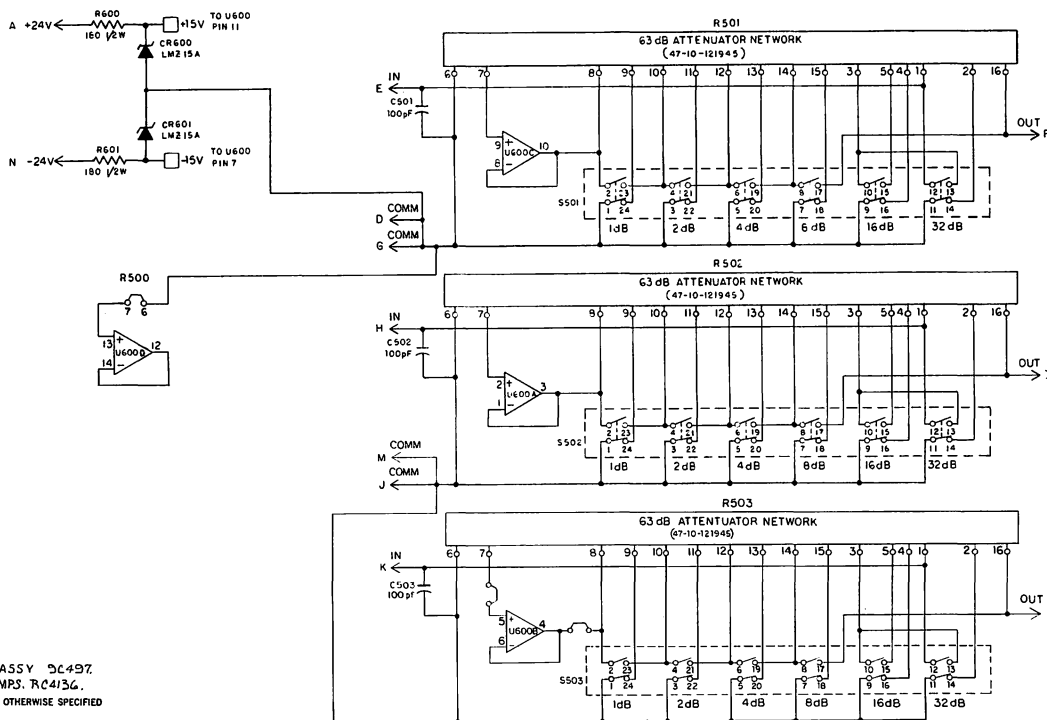
*Model 2251SA only
**Model 2251 only

THREE-CHANNEL ATTENUATOR ASSEMBLY*

| Reference Designator | Ordering Number | Name and Description |
|----------------------|-----------------|----------------------------|
| C501,502, 503 | 15-02-100024-02 | Cap., 100 pF ± 10%, 500V |
| CR600,601 | 48-01-108576-02 | Diode, zener, 15V ± 5%, 2W |
| R501,502, 503 | 47-10-121945-01 | Network, 63 dB attenuation |

| Reference Designator | Ordering Number | Name and Description |
|----------------------|-----------------|-----------------------|
| R600,601 | 47-01-102345-01 | Res., 180Ω ± 10%, ½ W |
| U600 | 17-01-121305-01 | Int. Ckt., op amp |
| S501,502, 503 | 15-02-121946-01 | Switch, 6X SPDT |

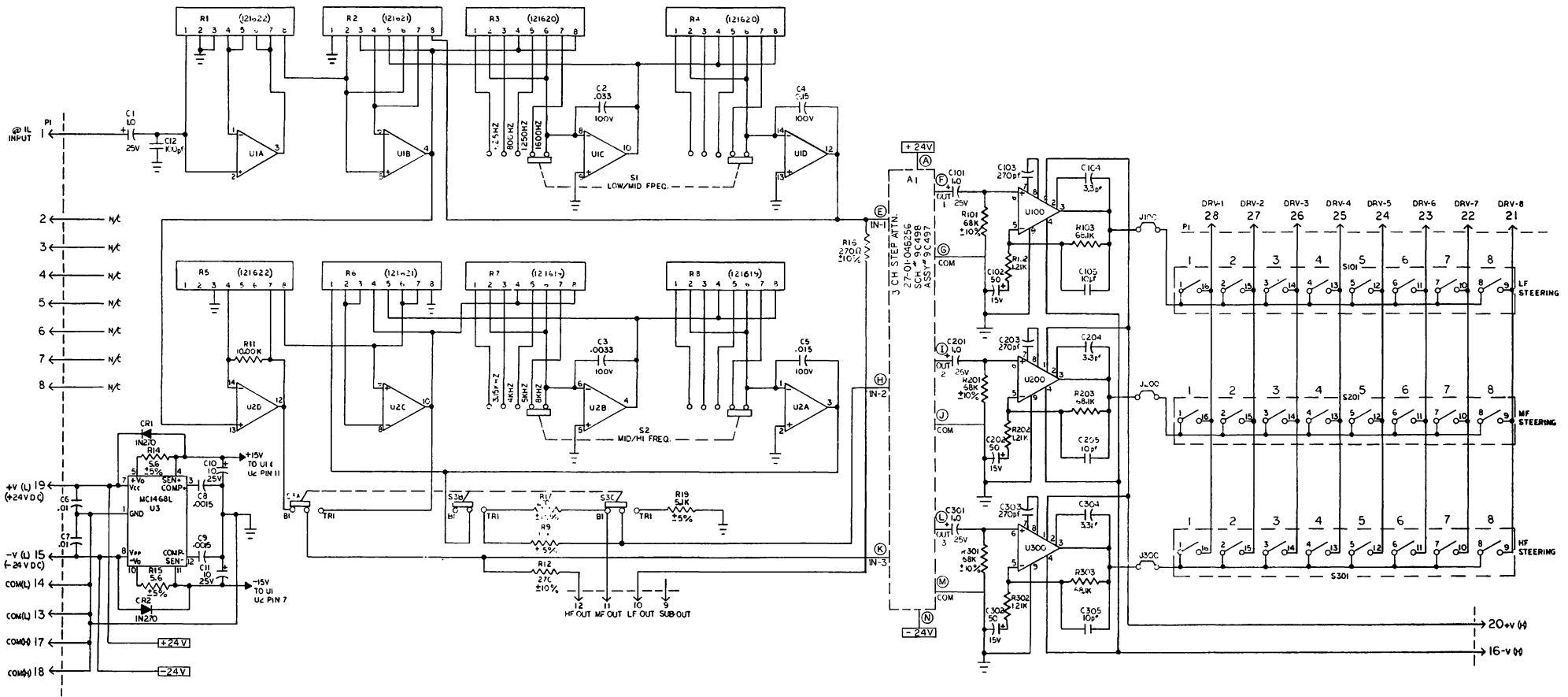
*Model 2251SA only



2. SEE ASSY 9C497.
1. OP AMPS, RC415G.
NOTES: UNLESS OTHERWISE SPECIFIED

Figure 1. Schematic (9D498-01), 3-Channel Step Attenuator

| ISSUE | | | | REVISIONS | | | APPROVED | |
|-------|------|----|--------------------|-----------|-----|-----|----------|--|
| NO | DATE | BY | DESCRIPTION | DATE | ENG | REL | | |
| A | | | REL. FOR PROTO | | | | | |
| 01 | | | REL FOR PRODUCTION | 5-17-78 | | | | |

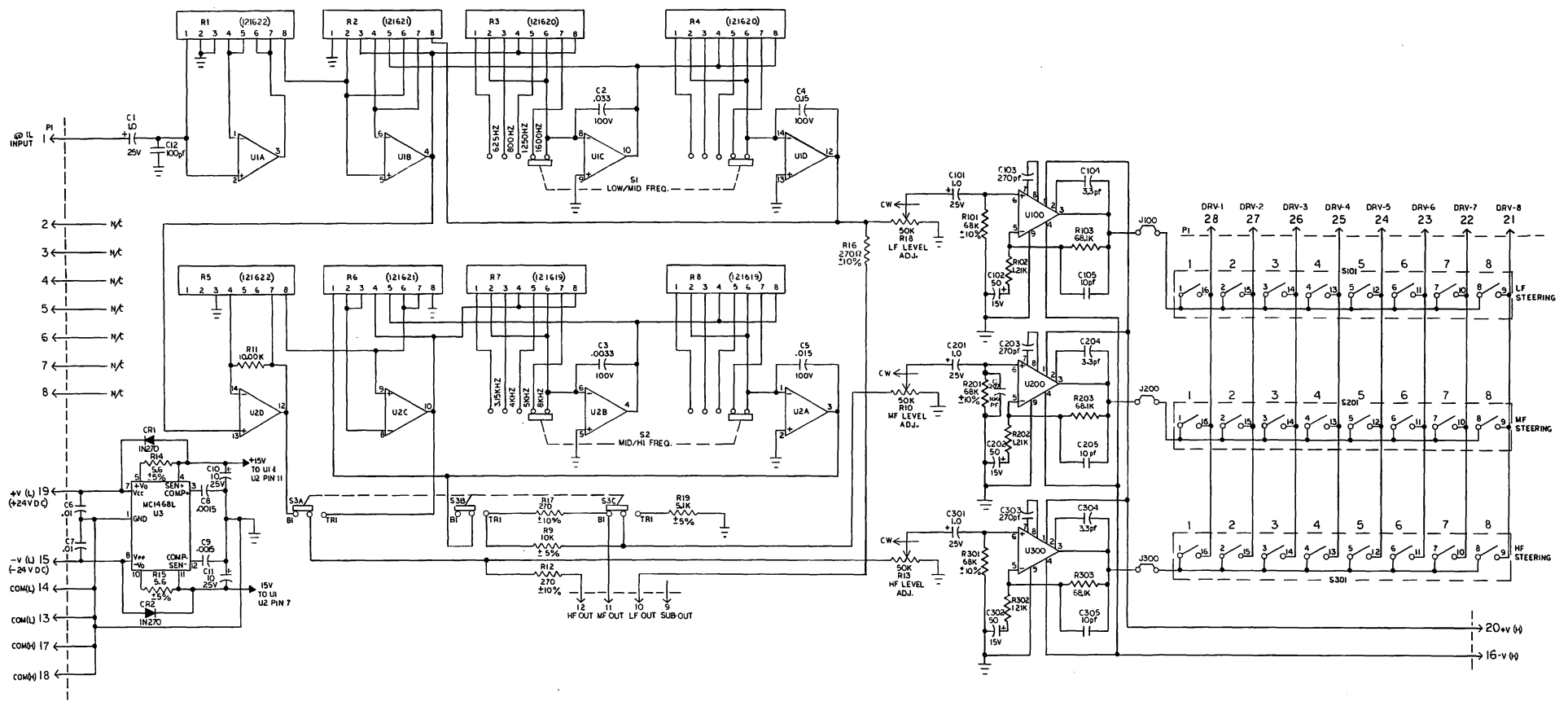


6. FOR ASSEMBLY DRAWING SEE 9C485
5. FOR WIRING DIAGRAM SEE 9D144
4. FOR INTERCONNECTION DIAGRAM SEE 9D145
3. FOR SEPARATE BILL OF MATERIALS SEE 10-02-01-212 ; 27-01-045253
2. ALL CAPACITOR VALUES ARE IN MICROFARADS.
1. ALL RESISTOR VALUES ARE IN OHMS 1/4W ±1%.

NOTES: UNLESS OTHERWISE SPECIFIED

Figure 2. Schematic (9D486-01), Model 2251SA Crossover Driver Module

| REVISIONS | | | | APPROVED | |
|-----------|------|-------|---------------------|----------|---------|
| ISSUE | ZONE | ECO | DESCRIPTION | BY | DATE |
| 01 | | | REL. FOR PRODUCTION | H.L. | 4-4-79 |
| 02 | 3C | R8837 | ADDED C207 100 PF | H.L. | 6-21-81 |



4

Figure 3. Schematic (9D129-02), Model 2251 Crossover Driver Module