EMX1

SYSTEM CONTROLLER

USER'S GUIDE

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MARTIN AUDIO LTD.

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1.0 INTRODUCTION

Thank you for purchasing a Martin Audio EMX Series system controller. EMX controllers are used to optimise the performance of Martin EM Series loudspeaker systems in all modes of operation - whether full-range or with additional sub-bass. The EMX1 is dedicated to the 2-way EM25 and EM75 full range systems and the EM200 and EM250 sub-bass systems. For complete description and specifications, please refer to the EMX1 product data sheet.

2.0 UNPACKING

Each Martin EMX controller is built to the highest standards and thoroughly inspected before it leaves the factory. After unpacking the unit, examine it carefully for any signs of transit damage and inform your dealer if any such damage is found. It is suggested that you retain the original packaging so that the unit can be repacked at a future date if necessary.

Please note that Martin Audio and its distributors cannot accept responsibility for damage to any returned product through the use of non-approved packaging.

3.0 MAINS CONNECTION

The EMX1 is provided with an IEC type mains receptacle which should be fitted with a suitable three pin plug connected as follows:

GREEN/YELLOW - Earth
BROWN - Live
BLUE - Neutral

WARNING: The GREEN/YELLOW wire must be connected to the mains safety earth.

To change the mains voltage, remove the rectangular fuse cap and replace it so that the correct voltage is indicated by the arrow on the body of the rectangle. The earth terminal on the IEC connector is permanently connected to the metal casing. The unit is supplied with the 0v electronic reference ground taken to the case via an internal "signal ground" lead and spade receptacle, which inserts a 47 ohm ground lift resistor when in the lift/park position. To connect the 0v electronic reference direct to chassis ground, use a pair of pliers to pull off the spade receptacle from the lift/park position and push it onto the 0v spade terminal (marked 0v or J9 on the PCB).

4.0 INPUT CONNECTIONS

EMX1 inputs are on female XLR-type connectors and are electronically balanced. Pin 1 is always screen (ground) connection, and the signal is applied between pin 2 (cold) and pin 3 (hot).

Always use 2-core + screen "balanced" type signal leads, even for unbalanced circuits. The screen should be regarded as separate from the signal return, even if they are connected together at one end of the line.

For either balanced or unbalanced operation, always connect the signal between pins 2 and 3, and connect the cable screen to pin 1. The screen should always be connected at inputs and lifted only at source outputs if necessary, provided that normal safety requirements (i.e. the mains earth is correctly connected) are met. See Figs 1 & 2.

FIG. 1

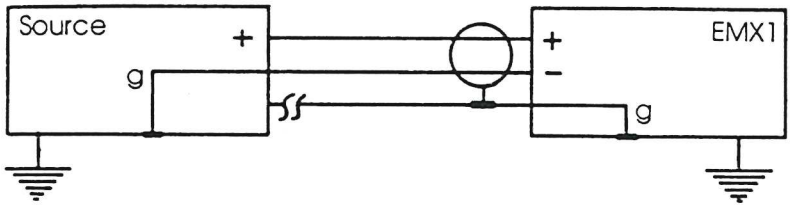
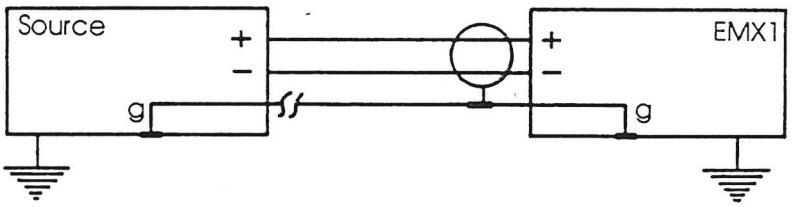


FIG. 2



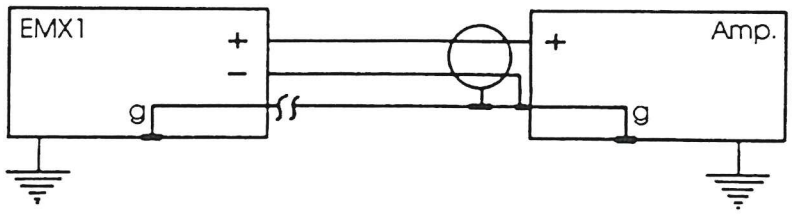
5.0 OUTPUT CONNECTIONS

EMX1 outputs are electronically balanced via male XLR-type connectors. Pin 1 is always the screen (ground) connection, and the signal appears between pins 2 and 3.

Always use 2-core + screen "balanced" type signal leads, even for unbalanced circuits. The screen should be regarded as separate from the signal return, even if they are connected together at one end of the line. This is to keep the screen a true screen so that no signal return currents flow through it which can induce signals in adjacent cables.

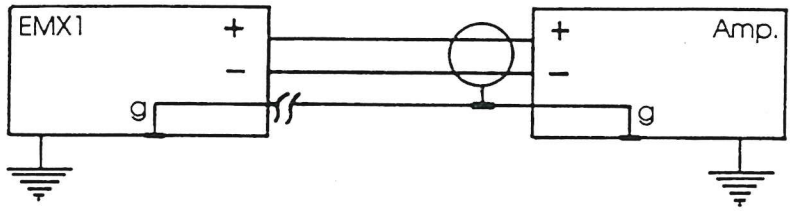
For unbalanced use, having decided which pin is "hot" (see above), connect the "cold" pin and the cable screen to the ground of the driven amplifier at the amp input. The screen should, in the case of hum occurring, be lifted at the EMX1 output. This method takes advantage of the hum rejection properties of the output stage which permit the amplifier to be locally grounded (as required for safety reasons) without causing a hum loop. See Fig 3. If the signal is merely taken between either pin 2 or 3 and pin 1, a level loss and response degradation will occur.

FIG.3



For balanced operation, the screen should be connected to pin 1 (ground) at the receiving end. To eliminate ground current loops, it should be lifted at the EMX1 output, provided normal safety requirements have been met (i.e. the mains earths are correctly connected). See Fig 4.

FIG. 4



The power ratings of amplifiers connected to EMX Series controllers should lie within the range recommended for the EM Series loudspeaker system being driven. Please refer to the section on amplification in the EM Series user's guide for further information.

6.0 MODES OF OPERATION

The EMX1 is a 2-channel system controller which is recommended for use with the Martin Audio EM25 and EM75 2-way passive loudspeaker systems used either full-range or with additional Martin EM200 or EM250 sub-bass systems.

In its full-range mode, the EMX1 provides full system equalisation as well as loudspeaker protection using limiters activated by the true voltages applied to the loudspeaker. In its sub-bass mode, it is re-configured automatically as a 2 in/4 out 120 Hz electronic crossover which provides outputs for sub-bass and modifies the full-range outputs to 120 Hz high-pass outputs. All four outputs (2 x sub-bass, 2 x full-range/high-pass) are provided with sense inputs to monitor loudspeaker voltages.

Sub-bass or full-range mode of operation is selected by a push switch on the rear panel of the EMX1 and indicated by front panel LED's. It is important to note that the sub-bass outputs are always present at the sub-bass output connector, even when full-range operation is selected for the main system.

7.0 SENSE INPUTS

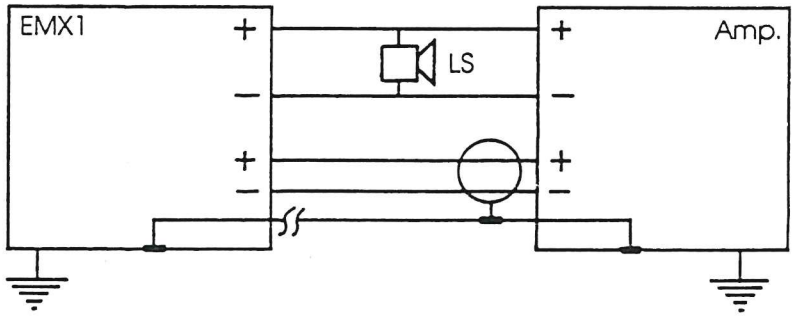
Each EMX1 output has an associated limiter which provides momentary gain reduction when that output signal level exceeds a preset threshold. An internal PCB mounted jumper plug selects the threshold for the particular EM Series loudspeaker system being used as follows:

SYSTEM	OUTPUT	JUMPER	POSITION
EM25	Ch1 Full-range	H1	Rear
	Ch2 Full-range	H3	Rear
EM75	Ch1 Full-range	H1	Front
	Ch2 Full-range	H3	Front
EM200	Ch1 sub-bass	H2	Rear
	Ch2 sub-bass	H4	Rear
EM250	Ch1 sub-bass	H2	Front
	Ch2 Sub-bass	H4	Front

Note:
As supplied by the factory, the jumpers H1-H4 are each set in the rear position - appropriate for the EM25 full-range system and EM200 sub-bass system. For use with the more powerful EM75 and EM250, the relevant jumpers should be moved to their front position as indicated by the table above fo increase the associated limiter threshold.

Onset of limiting is indicated by front panel LEDs and determined by sensing the actual voltage applied to the loudspeaker. The 4mm banana sense inputs on the rear panel should be connected as shown in Fig 5. If no sense connection is made or if the connection is broken at any time, the output level will automatically be attenuated by 20dB and the limit LED for the output concerned will light continuously to alert the operator.

FIG. 5



Amplifier gain controls should normally be set at maximum. If a single EMX1 output is used to drive several amplifier channels with different gain settings, the sense input should be connected to the channel with the highest setting.

8.0 HIGH FREQUENCY EQUALISATION

System-specific high frequency equalisation is available to tailor the power response of EM Series high frequency devices. A PCB mounted slide switch switches the HF EQ in or out, depending on the particular EM Series loudspeaker system in use.

Recommended switch settings are as follows:

SYSTEM	HF EQ
EM25	OUT
EM75	IN

The EMX1 is supplied with the switch in the OUT position.

9.0 LEVEL ADJUSTMENT

The full-range (120Hz high-pass in sub-bass mode) output levels are set at 0dB gain. To balance the system in sub-bass mode, the Ch1 and Ch2 sub-bass levels can be adjusted by means of a PCB mounted balance control accessed with a screwdriver through the hole in the EMX1 top cover. The 0dB setting is achieved when the slot in the balance control is parallel with the front panel. For access to this control when the unit is in a rack, remove the rack mounting screws and ease the unit forward until the hole in the top panel is exposed.

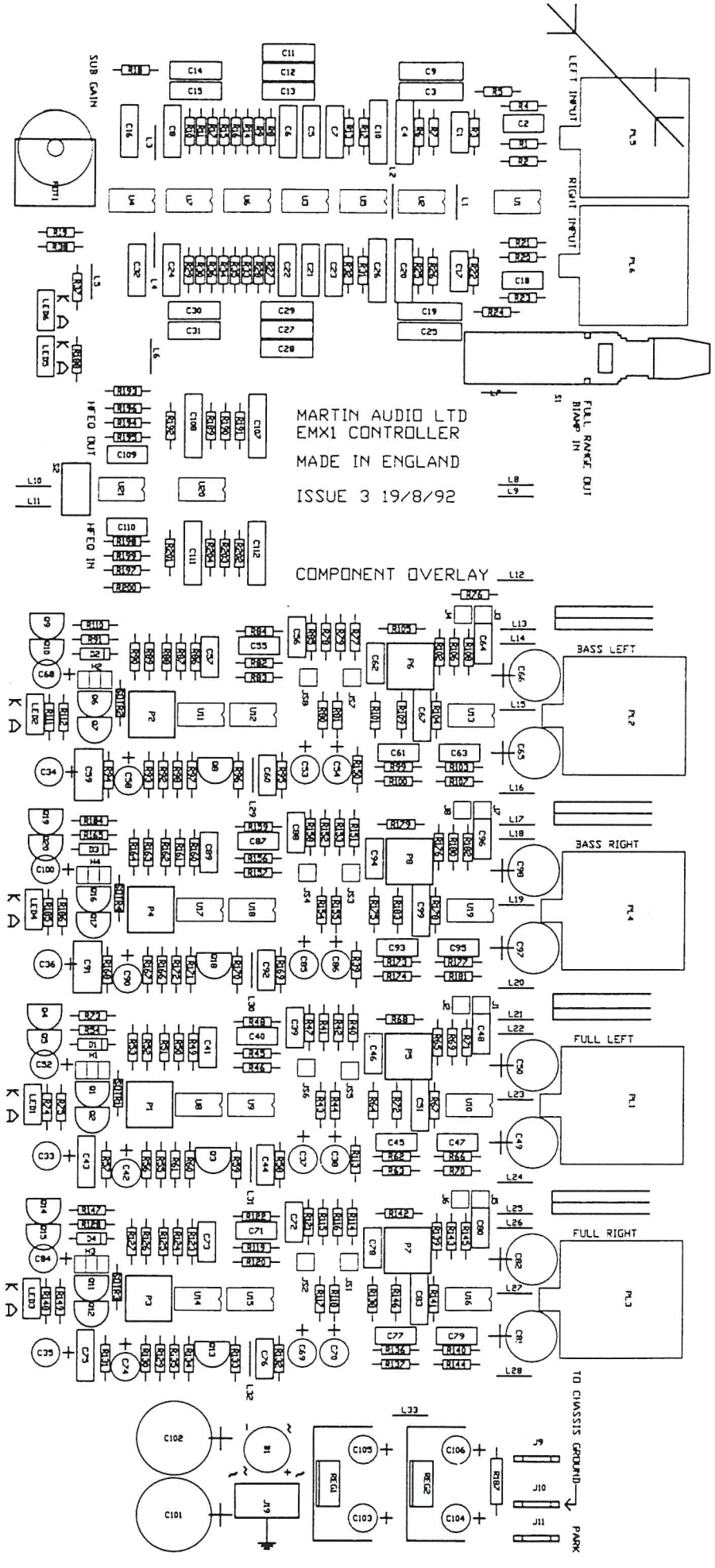


FIG. 6 EMX1 COMPONENT DISPLAY

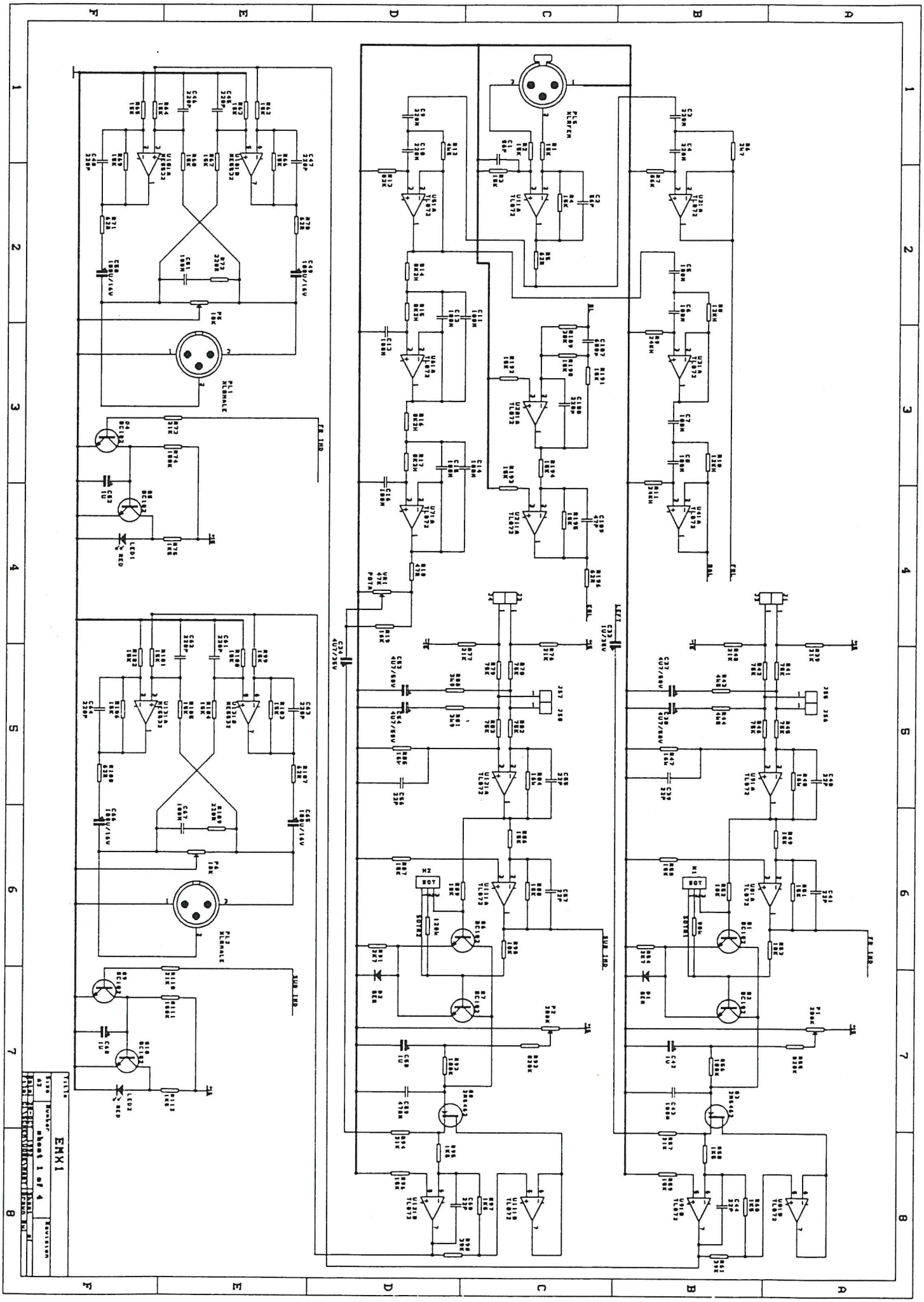


FIG. 7.1 EMX1 CIRCUIT DIAGRAM

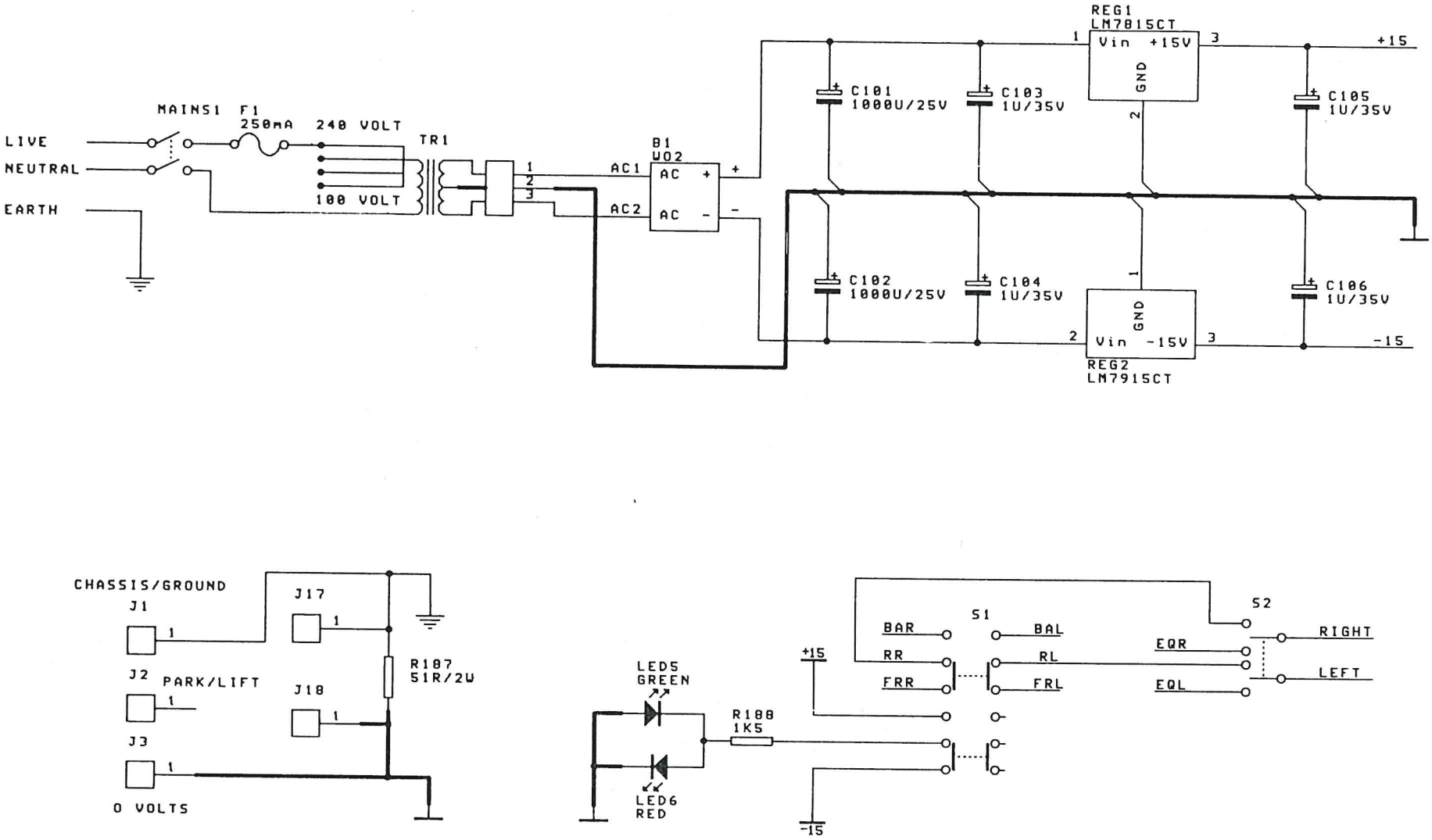


FIG. 7.2 EMX1 POWER SUPPLY/BIAMP DIAGRAM