EMX2

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 EMX2 is dedicated to the 3-way EM105 and EM185 full-range systems and the EM200 and EM250 sub-bass systems. For complete description and specifications, please refer to the EMX2 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 EMX2 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 the 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

EMX2 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

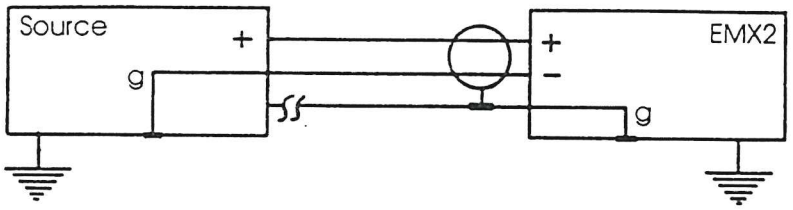
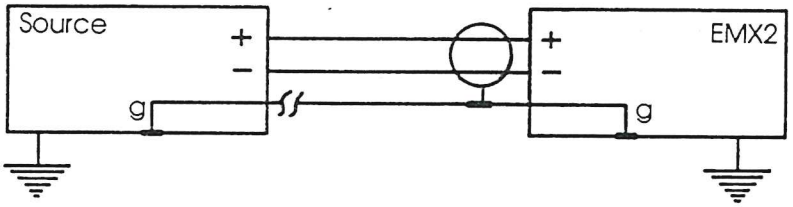


FIG. 2



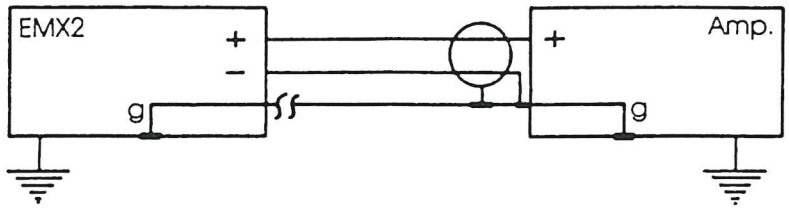
5.0 OUTPUT CONNECTIONS

EMX2 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.

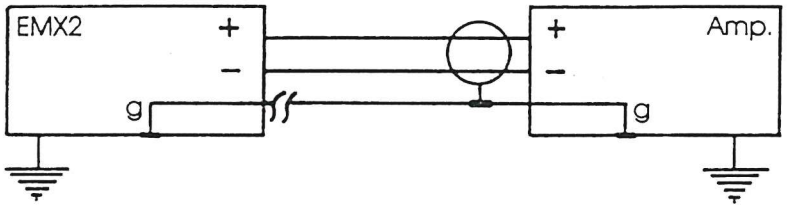
For unbalanced use, having decided which pin is "hot" (see above), connect the "cold" pin and the cable screen to the ground of the driven amplifier at the amp input. The screen should, in the case of hum occurring, be lifted at the EMX2 output. This method takes advantage of the hum rejection properties 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 EMX2 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 EMX2 is a 2-channel system controller which is recommended for use with Martin Audio EM105 and EM185 3-way loudspeaker systems used either full-range or with additional Martin EM200 or EM250 sub-bass systems.

In its full-range mode, the EMX2 is a 2in/4out device providing full system equalisation and 450 Hz electronic crossover functions to drive the separate low and mid/high sections of bi-amplified EM105 and EM185 systems. It also features 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/6 out 120Hz and 450Hz electronic crossover which provides outputs for the sub-bass, low and mid/high sections, All six outputs 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. 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.

The EMX2 full-range mode normally provides separate outputs to the low and mid/high sections of the EM105 or EM 185 bi-amplified systems. For special applications, the EMX2 low frequency outputs can be switched to full-range by means of an internal PCB mounted slide switch.

7.0 SENSE INPUTS

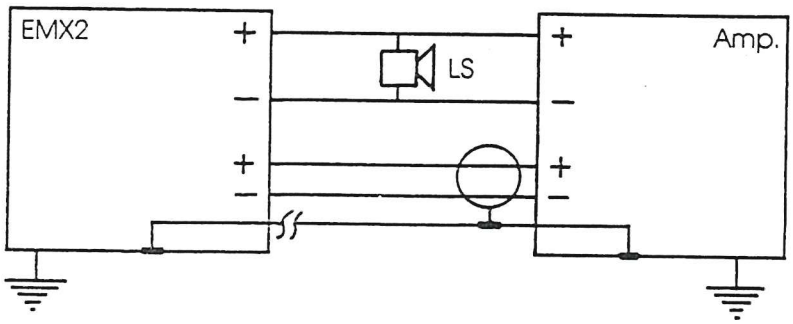
Each EMX2 output has an associated limiter which provides momentary gain reduction when that output signal level exceeds a preset threshold. Internal PCB mounted jumper plugs select the thresholds for the particular EM Series loudspeaker system being used as follows:

SYSTEM	OUTPUT	JUMPER	POSITION
EM105	Ch1 Bass	J3	Left
	Ch2 Bass	J4	Left
	Ch1 Mid/high	J5	Left
	Ch2 Mid/high	J6	Left
EM185	Ch1 Bass	J3	Right
	Ch2 Bass	J4	Right
	Ch1 Mid/high	J5	Left
	Ch2 Mid/high	J6	Left
EM200	Ch1 Sub	J1	Left
	Ch2 Sub	J2	Left
EM250	Ch1 Sub	J1	Right
	Ch2 Sub	J2	Right

Note:
As supplied by the factory, jumpers J1-J6 are each set in the left position - appropriate for the EM105 full-range system and EM200 sub-bass. For use with the more powerful EM185 and EM250, jumpers J1-J4 should be moved to the left-hand position as indicated by the table above to increase the associated limiter thresholds.

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 EMX2 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
EM105	IN
EM185	IN

The EMX2 is supplied from the factory with the HF EQ switch in the IN position.

9.0 LEVEL ADJUSTMENT

The low-frequency output level is set at 0dB gain. To balance the complete system, sub-bass levels and mid/high levels can be adjusted by means of PCB mounted balance controls accessed with a small screwdriver through the two holes in the EMX2 top cover. 0dB settings are achieved when the screwdriver slots in the balance controls are parallel with the front panel. For access to these controls when the unit is in a rack, remove the rack mounting screws and ease the unit forward until the holes in the top panel are exposed.

MARTIN AUDIO products are warranted against manufacturing defects in material or craftsmanship over a period of 12 months from the date of purchase. This warranty is in addition to your statutary rights. MARTIN AUDIO cannot. however, be held responsible for failures caused by abuse, unauthorised modifications, improper operation or damage caused elsewhere within your system. The determination of the cause of failure will be made by MARTIN AUDIO LTD or its authorised service agent or distributor based upon physical inspection of the failed parts. Due to our policy of continuous improvement all specifications are subject to change without notice.

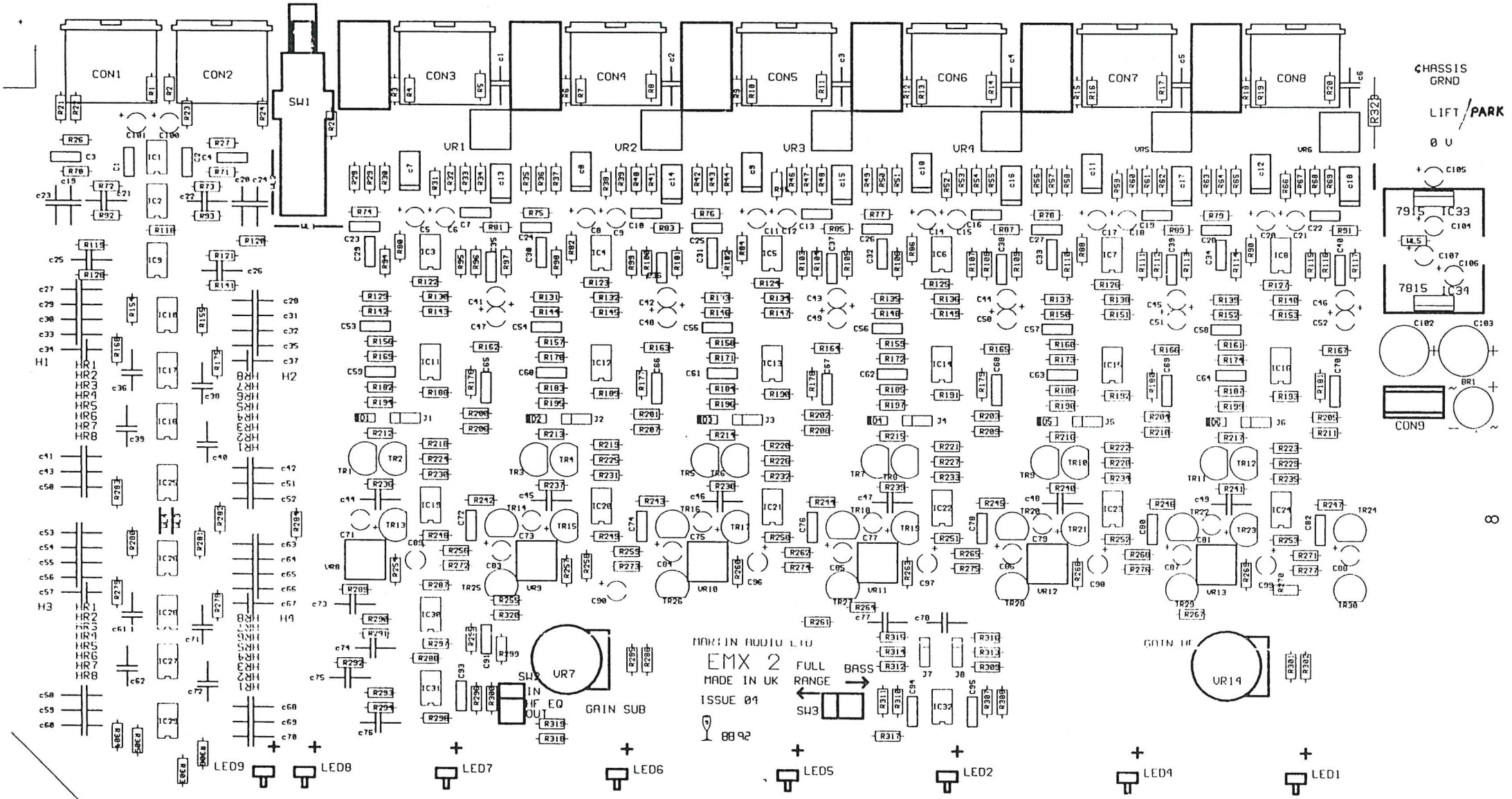


FIG. 6 EMX2 COMPONENT DISPLAY

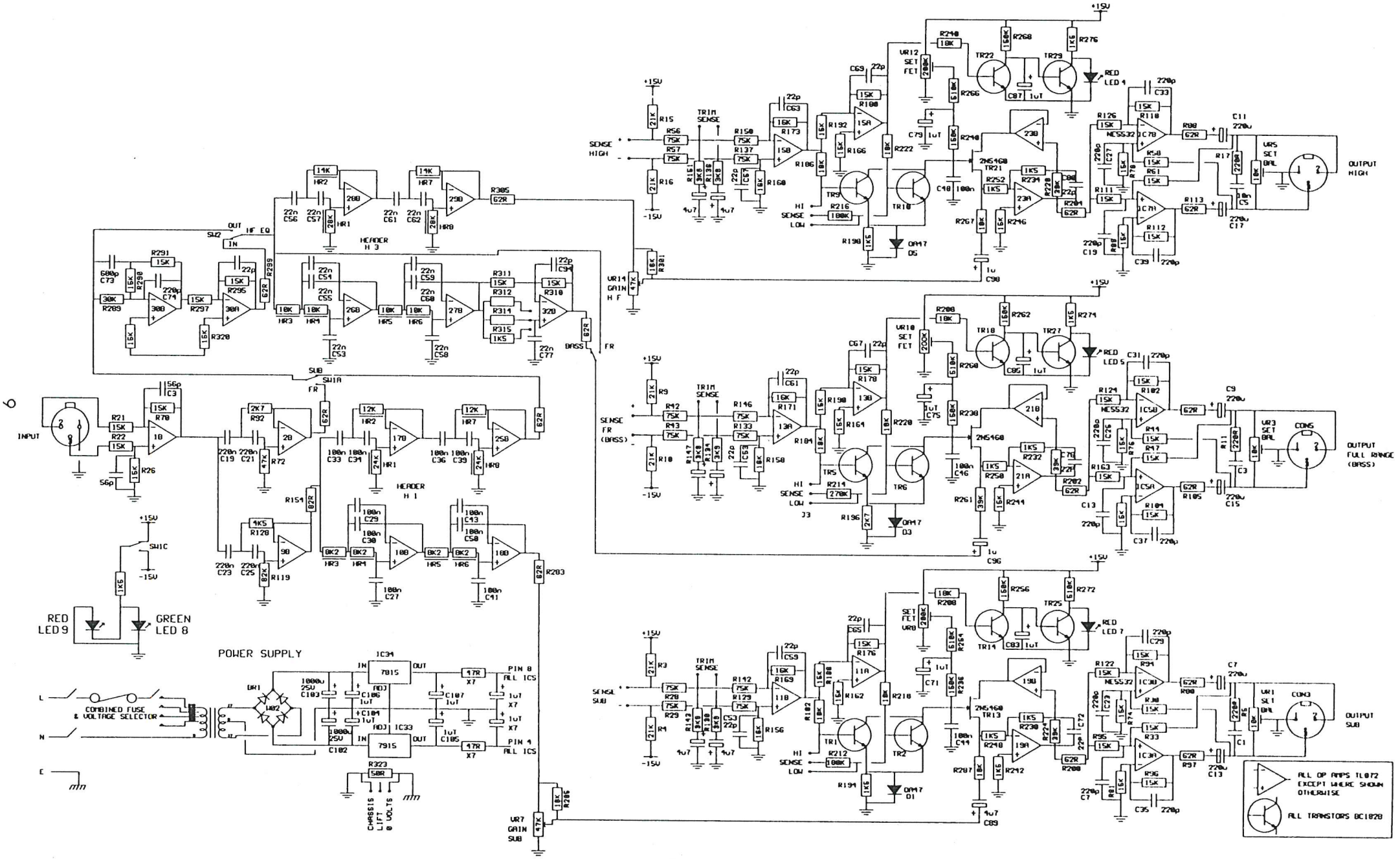


FIG 7.1 EMX2 CIRCUIT DIAGRAM