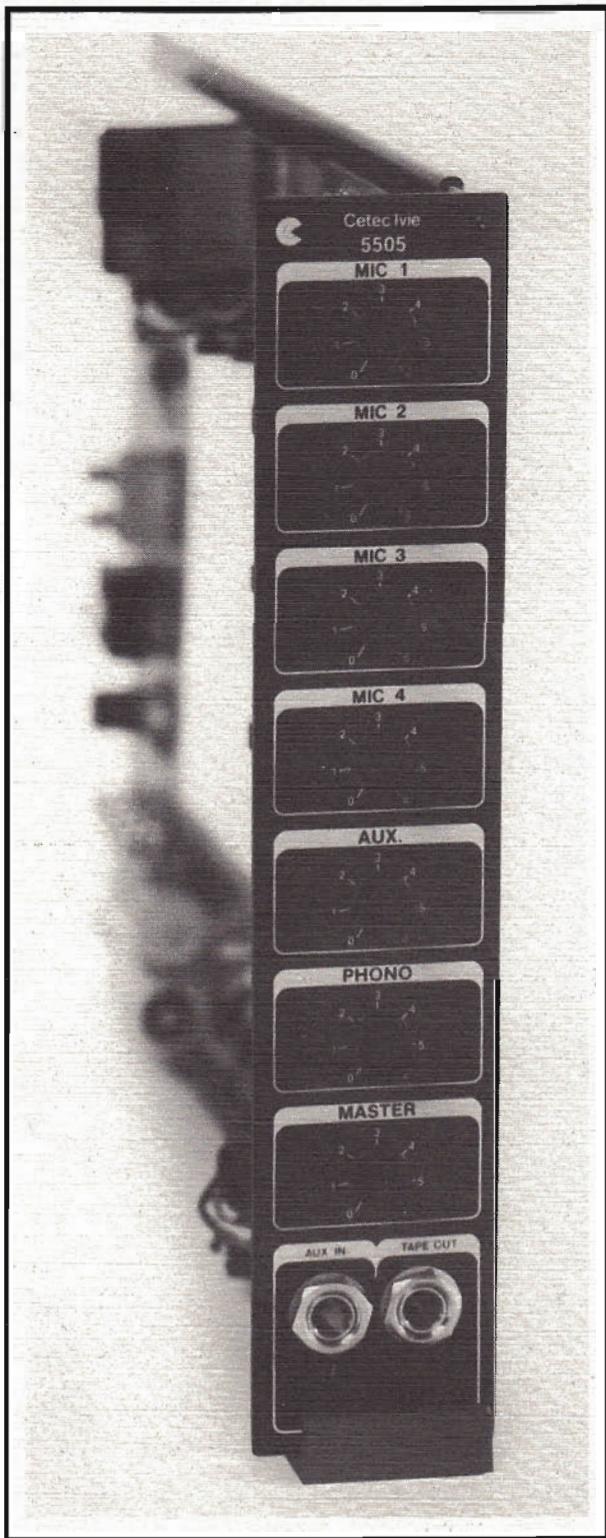




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# 5505 MANUAL



**Operation and  
Owners Manual  
for the  
5505 6X1 Mixer  
5000 Modular Sound System**

Printed in U.S.A.

## INTRODUCTION

The 5505 is a 6 input audio mixer designed for use with the Ivie 5000 Modular Sound System. The six inputs consist of 4 transformer-balanced microphone inputs, 1 unbalanced auxiliary line level input, and 1 stereo (combined to mono) magnetic phono input.

Each microphone input has a switchable, high pass filter designed to reduce "P-pop" type noises and other unwanted low frequency noise. The response of the filter is 6dB down at 125Hz and 32dB down at 60Hz.

Low voltage phantom power is also available on the four microphone inputs. A switchable 20dB pad is provided for each microphone input as well.

The auxiliary, line level input appears on both the rear panel TB-40 connector, and the front panel of the 5505. The input is "normaled" through the input connector on the front panel. The AUX input from the TB-40 is disabled when a 1/4-inch phone plug is inserted into the front panel jack.

The 6th input is a stereo, magnetic phono cartridge input. The two channels, left and right, are electronically combined to mono and then properly equalized following the RIAA standard.

The 5505 may be combined or "ganged" with other 5505 or 5506 mixers if additional channels or mixing capability is desired. For example, two 5505 mixers ganged together would provide 12 inputs and 2 isolated outputs.

Each of the four microphone inputs has a prefader, direct output accessible on the TB-40. As an example of use, these outputs could be sent directly to a logging recorder or monitor mixer. There is also a buffered tape output available which comes before the Master Volume Control. It appears on both the rear TB-40 and at the 1/4-inch phone jack mounted on the front panel.

## INSTALLATION

Installation of the 5505 mixer is simple and straightforward. All connections are made to the TB-40 terminal block supplied with the 5505. This terminal block should be mounted on the rear of the 5001 Mainframe. After determining which slot the 5505 will occupy, remove the adhesive-backed foil from the rear of the

Mainframe, uncovering the slot to be used. With the three supplied screws, mount the TB-40 to the rear of the Mainframe so the 5505 will mate with it when slid into the slot. The connection diagram for the TB-40 can be found on the inside of the rear cover of this manual.

*Note that the microphones share a common terminal for the shield, and that the polarity of the input is referenced to the shield terminal. The positive (+) input terminal, which should be connected to pin number two (2) of the microphone, is always adjacent to the shield terminal.*

As shown by the TB-40 diagram inside the rear cover of this manual, all unbalanced inputs and outputs on the left side have their ground terminals located below the signal terminal. Contrastingly, on the right side of the terminal block, all ground terminals are located above the signal terminal. This was done intentionally so that the accessory RCA-1, (RCA phono to TB-40 adaptor) could be employed.

Before the 5505 is placed into the Mainframe, the internal switches should be set to their required positions. The following sections of this manual describe in detail the various features and functions of the 5505 mixer.

## **MICROPHONE INPUTS**

The four microphone inputs of the 5505 mixer are low Z, and are transformer balanced. The actual input impedance is approximately  $1200 \Omega$ , which provides proper matching for microphones with output impedance ranging from  $150 \Omega$  to  $600 \Omega$ .

Refer to the TB-40 connection diagram located on the inside rear cover of this manual. Please pay particular attention to the polarity on the TB-40. *Note that the plus terminal (2) is always located adjacent to the ground terminal.*

Should you require phantom powering on any microphone input, please consult the section of this manual titled "PHANTOM POWER," on page 5.

## **AUX OR LINE INPUT**

The line input impedance is  $100,000 \Omega$ , and is designed to accept line level signals of approximately one volt, which covers most tape recorders, projectors,

CD players, tuners etc. The line input is unbalanced, and the input terminals are 13 (signal) and 14 (shield) on the TB-40. The signal is routed through the 1/4 inch phone jack on the front panel labeled "AUX IN," and the level is controlled by the front panel control labeled "AUX."

The 1/4 inch phone jack labeled "AUX IN" is a convenience jack. A line level signal may be connected to the mixer by plugging a 1/4 inch phone plug into this jack. Since the 5505 will accept only one input signal at a time, when a signal is input into the mixer via the AUX IN jack, it disables any signal input to the mixer via terminals 13 and 14.

## **PHONO INPUT**

The 5505 has a stereo, magnetic phono input. The two channels, left and right, are mixed together and then appear at the front panel control labeled "PHONO." This input is designed to work with any standard, magnetic phono cartridge.

A stereo phono output would be fed to the 5505 via terminals M, N, P, and R on the 5505 TB-40. One channel would be connected to M (signal) and N (shield), and the other channel to P (signal) and R (shield). These connections may be made using conventional spade lugs, or the optional RCA-1 adaptors can be used to adapt the terminal block screws to RCA phono connectors, thus allowing the use of standard phono connectors.

## **TAPE OUTPUT**

The 5505 provides a pre-master, buffered output for a tape recorder. The signal level of this output is not affected by the setting of the Master Level Control, so the level of the sound system can be controlled without affecting the feed to the tape recorder. However, the individual input level controls will affect the signal feed to the recorder.

A permanent recording connection may be made via the TB-40, using terminals W (signal) and X (ground). Also, the tape out signal can be accessed from the front panel via the 1/4 inch phone jack labeled "TAPE OUT". This jack is in parallel with the TB-40 tape out terminals. This means that the TB-40 terminals are not disconnected when a plug is connected to the "TAPE OUT" jack. Both outputs are operational simultaneously.

## MASTER OUTPUT

The master output of the mixer appears at two separate locations on the 5505. It appears at the ten position Bus Assign Switch located at the rear of the module, near the gold fingers on the PC board. The Bus Assign Switch allows the output of the mixer to be assigned to any of the ten Mainframe audio buses. The output of the 5505 may be isolated from the Mainframe audio bus structure by cutting wire jumper W2, located adjacent to the Bus Assign Switch. For more information regarding bus assignments please refer to the 5001 Mainframe manual. The master output also appears at the TB-40, terminals 19 (signal) and 18 (ground), as outlined in Figure 1 below:

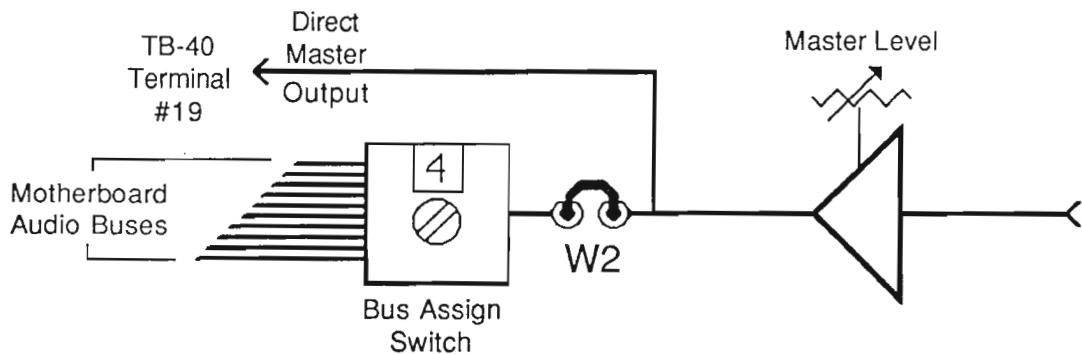


Figure 1

## INTERNAL CONTROLS

### HIGH PASS FILTER

All four microphone inputs have a high pass filter that may be switched in or out of the circuit. The high pass filter switch for a channel is located directly behind the input level control for that channel. This high pass filter is designed to reduce "P-pop" noise, and other unwanted low-frequency noise, without significantly affecting the vocal range frequency response. The response of the filter is 6dB down at 125Hz and 32dB down at 60Hz.

## PHANTOM POWER

The 5505 has limited phantom powering capability. A positive 15 volts is available for phantom powering and may be connected to the center-tap of the microphone, input transformer primary. The connection of the supply voltage to the center-tap is accomplished by soldering either a wire jumper, or a resistor, on the printed circuit board, as shown in Figure 2 below. If the microphone will accept +15 VDC, then a wire jumper may be used to connect the phantom power to the transformer. Should the microphone require a voltage higher than +15 VDC, the 5505 will not be able to phantom power it. If the mic requires a voltage lower than +15 VDC, a voltage dropping register should be used instead of a wire jumper. The value of this resistor is calculated using Ohms law ( $R = E/I$ ). For example: a microphone requiring 9 volts at 4 mA calls for a resistor that will drop 6 volts ( $15 - 9 = 6$ ). So  $R$  (resistance in ohms) is equal to  $E$  (the required voltage drop) divided by  $I$  (current in amperes) or  $R=6/.004$  which is 1500  $\Omega$ . A 1/4 watt resistor is recommended.

### 5505 PHANTOM POWER

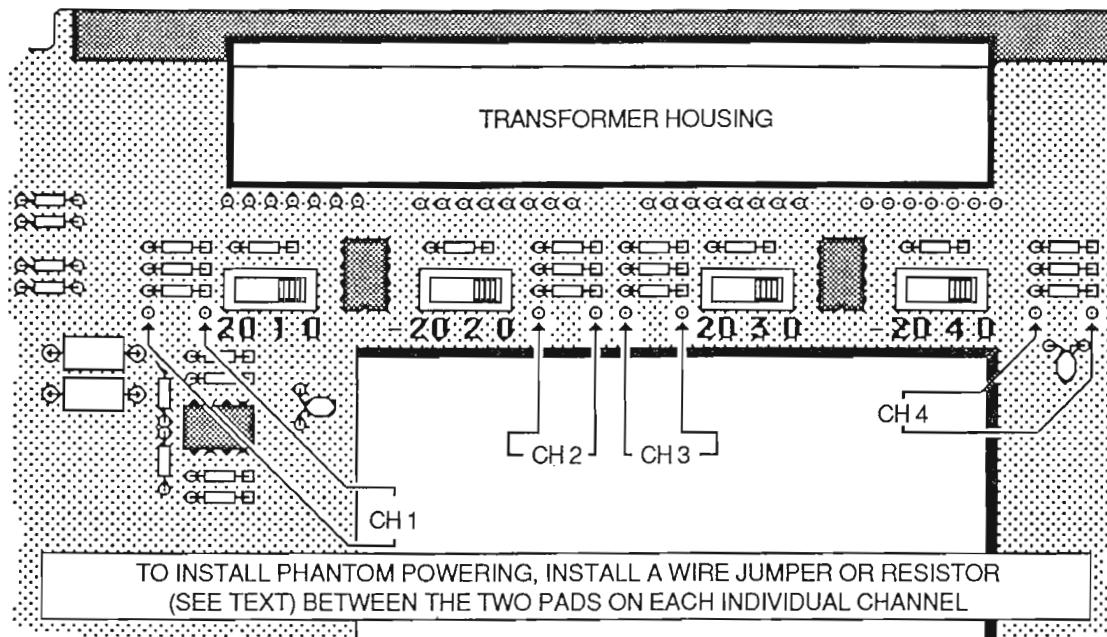


Figure 2

## MIX BUS ASSIGN SWITCHES

The 5505 may be combined or "ganged" with other 5505 or 5506 mixers to

provide a larger number of inputs and outputs. The motherboard in the 5001 Mainframe contains two specifically designated mix buses for the 5505 and 5506 mixers. The 5506, 6 input, 2 output mixer automatically accesses these buses unless its mix bus I/O jumpers are cut. Refer to the 5506 manual for more detailed information. The 5505 has two slide switches that allow assignment of its own internal mix bus to either mix bus "A" or "B" in the 5001 Mainframe. When both switches are off, the 5505 is not connected to any other mixer in the Mainframe and is completely independent. When the "A" bus switch is in the "ON" position, the mixers own internal mix bus is connected to the Mainframe mix bus, and thus is combined with any other mixer connected to that bus. Bus switch location is shown in Figure 3 below. *NOTE: the 5505 cannot be connected to both the "A" and "B" bus at the same time as this will short the two buses together.* This means that only one bus switch may be turned "ON" at any given time.

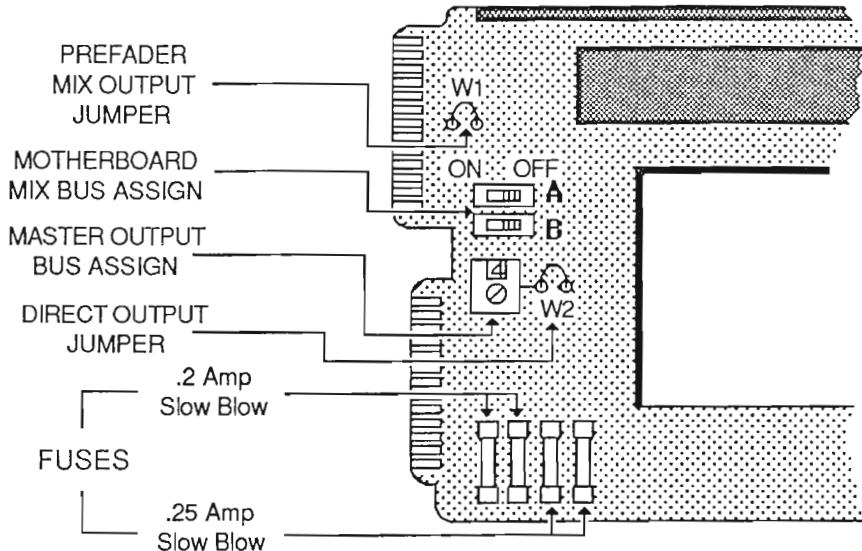


Figure 3

*Note: The 5502 and 5503 automixers are not compatible with the 5505 or 5506 mixers. Also the 5502 and 5503 automatic mixers do not access the internal motherboard mix buses, and therefore, cannot be combined with 5505 or 5506 mixers at the mix bus level. However these mixers may be combined at their outputs with the addition of a  $600\ \Omega$  isolation resistor.*

## FUSES

The 5505 has four slow-blow fuses, as show in Figure 3 above. There are two

.2 amp and two .25 amp fuses. *Should any of these fuses fail they should be replaced with fuses of the same rating. Should they again fail after replacement, the 5505 requires servicing. Replacing the fuses with a fuse larger than the recommended values may damage the module and will VOID THE WARRANTY.*

## **20dB INPUT PAD**

There is a switchable, 20dB pad on each of the four microphone inputs. This pad is, in fact, a 20dB gain block that is switchable in and out of the circuit. The four individual switches are located directly below the square metal box that houses the input transformers (See Figure 2, page 5). This allows the sensitivity of each input to be switched 20dB, thus compensating for the output level differences between microphones - dynamic vs. condenser microphones, for example. This pad should be used only when it is clearly required.

## **MASTER OUTPUT BUS ASSIGN SWITCH**

The master output Bus Assign Switch connects the master output of the 5505 to any one of the ten audio buses on the motherboard of the Mainframe. The selected bus is indicated in the window of the Bus Assign Switch. DO NOT assign more than one module output to the same Mainframe motherboard bus. This will, in effect, short the outputs of both modules together and cause gross distortion. If you desire to combine two mixers together, that is covered next. For additional information regarding bus selection and assignment, refer to the 5001 Mainframe manual.

## **COMBINING MIXERS**

The 5505 mixer may be combined with other 5505 and 5506 mixers, but not 5502 and 5503 automixers, as already mentioned. If 5506 mixers are going to be used in the same Mainframe with 5505 mixers, this section of the manual should be carefully studied.

The 5001 Mainframe contains two mix buses on the motherboard, mix bus A and mix bus B. All 5506, 6X2 mixers automatically access both buses when inserted into the Mainframe, unless their mix I/O jumpers are cut by the installer. These mixers will automatically combine and "talk together," or exhibit "cross talk," if their mix bus I/O jumpers are not cut prior to installation. This, of course, means that any 5505 with either of its two Mix Bus Assign Switches set to the

"on" position will also be mixed in with the other mixers in the Mainframe.

At times, it may be desirable to combine more than two separate groups of mixers. Some decisions will, therefore, have to be made. If, for example, we need three mixers that provide eight microphone inputs each, we will need to combine two mixers for each group of eight inputs. We can use mix bus A for one group of two, and mix bus B for the second group, but how do we combine the third group of mixers without interfering with groups one or two?

The answer is to externally wire the last group of two together via the TB-40's, using the PRE FADER MIX OUTPUT. This is terminal 17 on the TB-40. To combine this third pair together, first make certain that none of the Mix Bus Assign Switches are set to the "ON" position, thus assuring their isolation from motherboard buses A and B. Next, connect a wire from terminal 17 on the TB-40 of one mixer to terminal 17 on the TB-40 of the other mixer. If a shielded wire is used, the shield should be connected to terminal 18 at one, *and only one*, TB-40. The other end of the shield is not connected to anything.

## MICROPHONE DIRECT OUTPUTS

All four microphone inputs of the 5505 have direct outputs. The direct outputs are pre-fader, so their output level is unaffected by any volume control on the front panel of the mixer. The output impedance of each direct output is  $604\ \Omega$ . The direct output has a nominal output gain of 32dB, relative to the microphone input level. The gain of the output is determined by the setting of the 20dB pad on each channel. The gain is 32dB when the pad is set to "0" and 12dB when the pad is set to "-20," as shown in Figure 4 below:

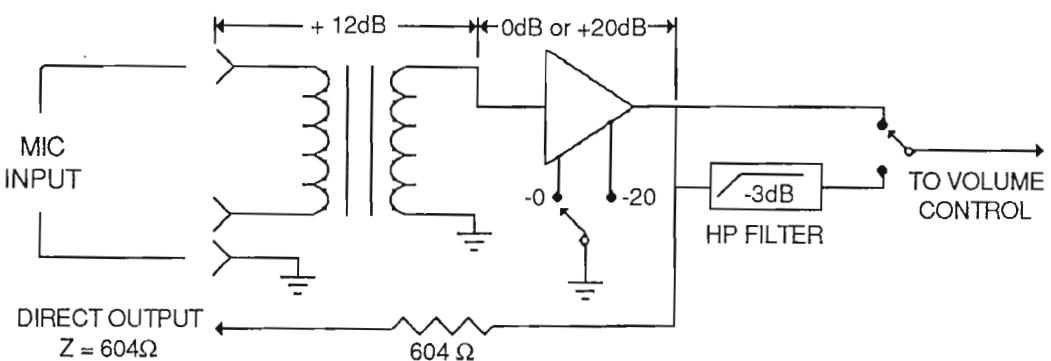


Figure 4

The direct outputs may be accessed via the mixer's TB-40, using terminals H, K, 8, and 10. See the inside rear cover of this manual for the TB-40 diagram.

## FRONT PANEL LED

The 5505 has a yellow LED mounted on the front panel just below the TAPE OUT connector. This LED indicates the presence of audio signal on the master output. The intensity of the LED varies according to the amplitude of the audio signal. Every audio module in the 5000 system has signal presence LED's. They visually indicate the flow of the audio signal through the system, providing a valuable troubleshooting aid.

## FRONT PANEL TEST POINT

There is an audio test point located on the front panel below the AUX IN connector. The test point is connected to the master output of the 5505 through a  $604\ \Omega$  resistor. It is a convenient point to monitor the audio signal at the output of the mixer. Real-time analyzers, AC voltmeters, and oscilloscopes may be connected to this point in order to evaluate and document system performance.

The test point is designed to accept and retain the probe tips of either the Ivie IE-30A Real Time Analyzer, or the PC-40 Audio Analysis System. The spring-loaded hook tip of the probe should be unscrewed exposing the probe tip. This tip will be retained when firmly inserted into the test point. The ground clip lead of the probe should be clipped to the chassis of the 5001 Mainframe.

## SPECIFICATIONS

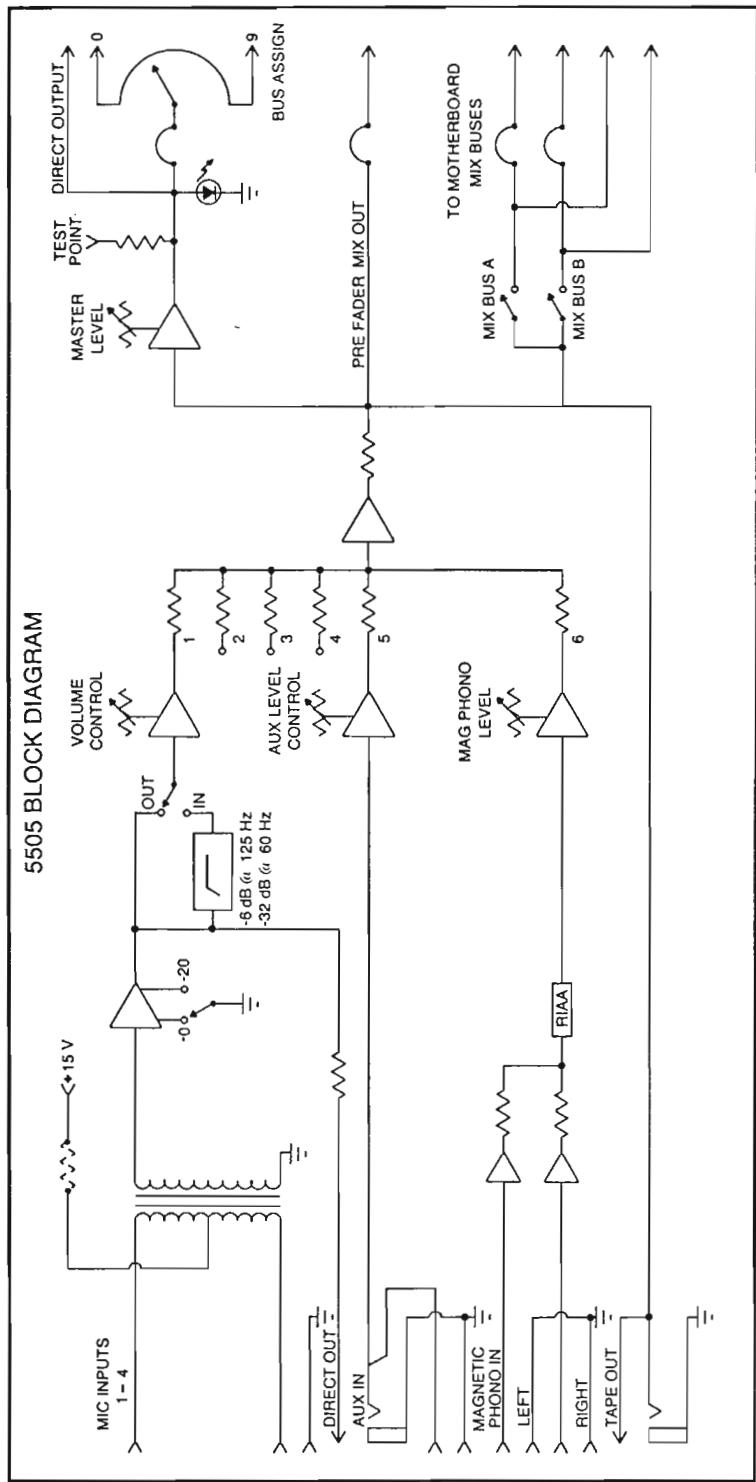
Power Consumption -----	4.5 Watts
Microphone Input Impedance -----	150-600 $\Omega$ , Transformer Balanced
High Pass Filter -----	-6dB @ 125Hz, -32dB @ 63Hz
Input Pad -----	+0, -20dB
Phantom Power Supply -----	+15 VDC
Auxiliary Input Impedance -----	100,000 $\Omega$

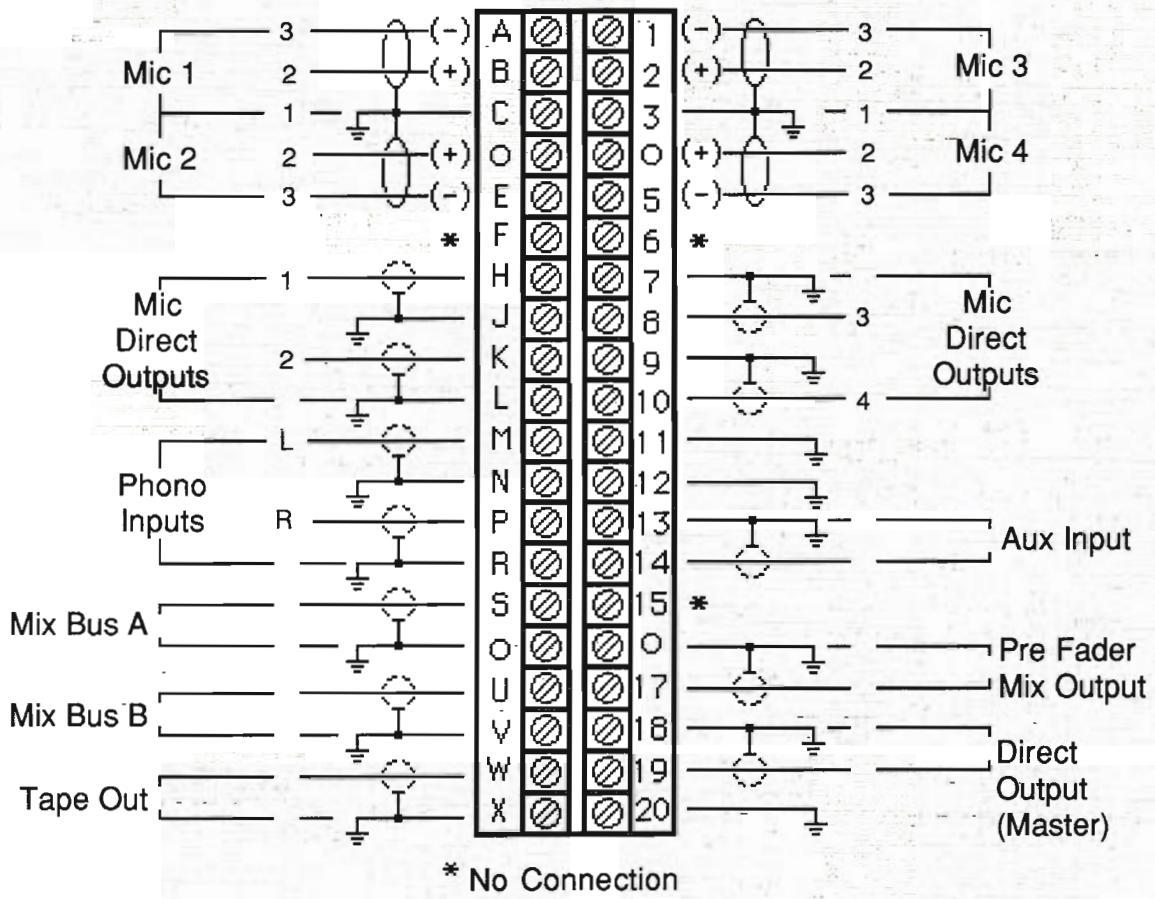
## SPECIFICATIONS CONTINUED

Frequency Response ----- 20 Hz - 20,000 Hz,  $\pm 0.5$ dB  
Total Harmonic Distortion ----- .01% Typical  
Input Noise ----- -126dBm, A Weighted  
Master Output Load Impedance ----- 600  $\Omega$  or Greater  
Master Output Level ----- +18 dBm  
Tape Output Load Impedance ----- 10,000  $\Omega$   
Weight ----- 2 Lbs.  
Dimensions ----- 8.5 x 14.2 x 1.7 Inches

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## 5505 TB-40 Connections