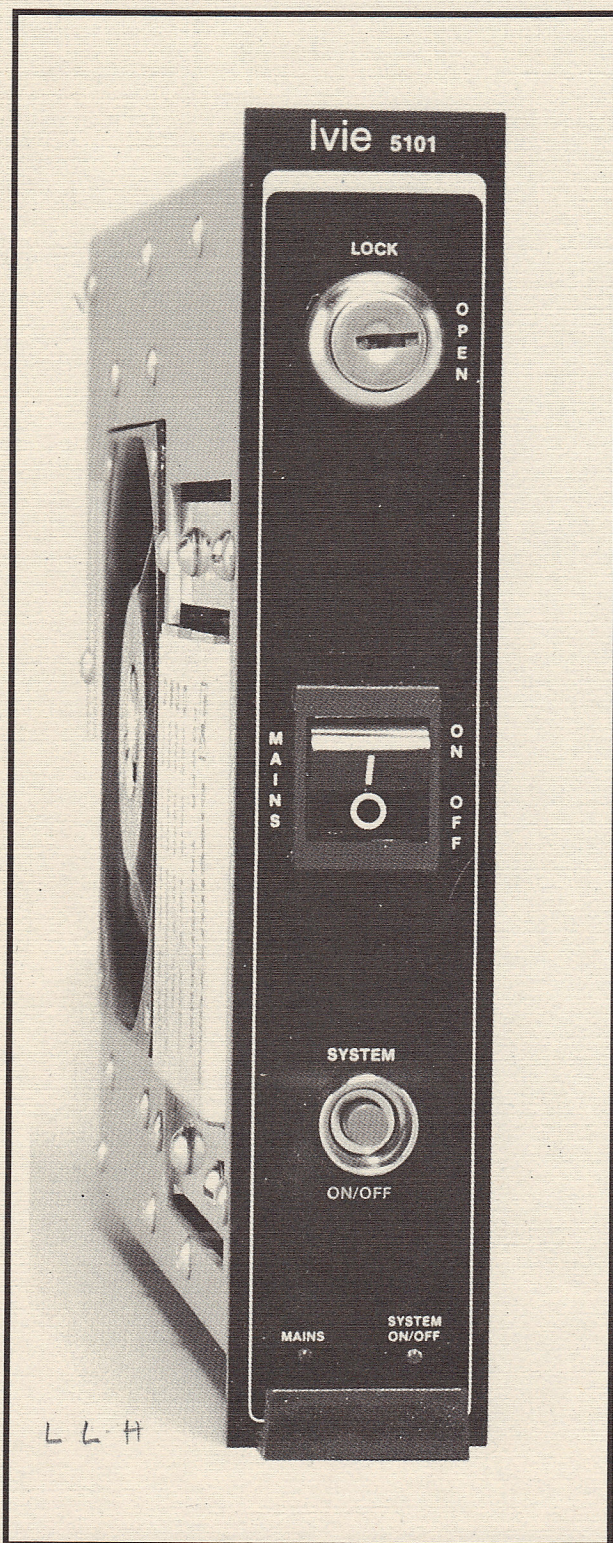


# 5101 MANUAL



Operation and  
Owners Manual  
for the  
**5101 Power Module**  
**5000 Modular Sound System**



## INTRODUCTION

The 5101 Power Module is one of the two essential components of the 5000 Modular Sound System. It, along with the 5001 Mainframe, is necessary for system operation.

The 5101, like other components of the the 5000 Modular System, is designed employing state-of-the-art technology to ensure durability, with ease of operation and simplicity of installation.

## DESCRIPTION

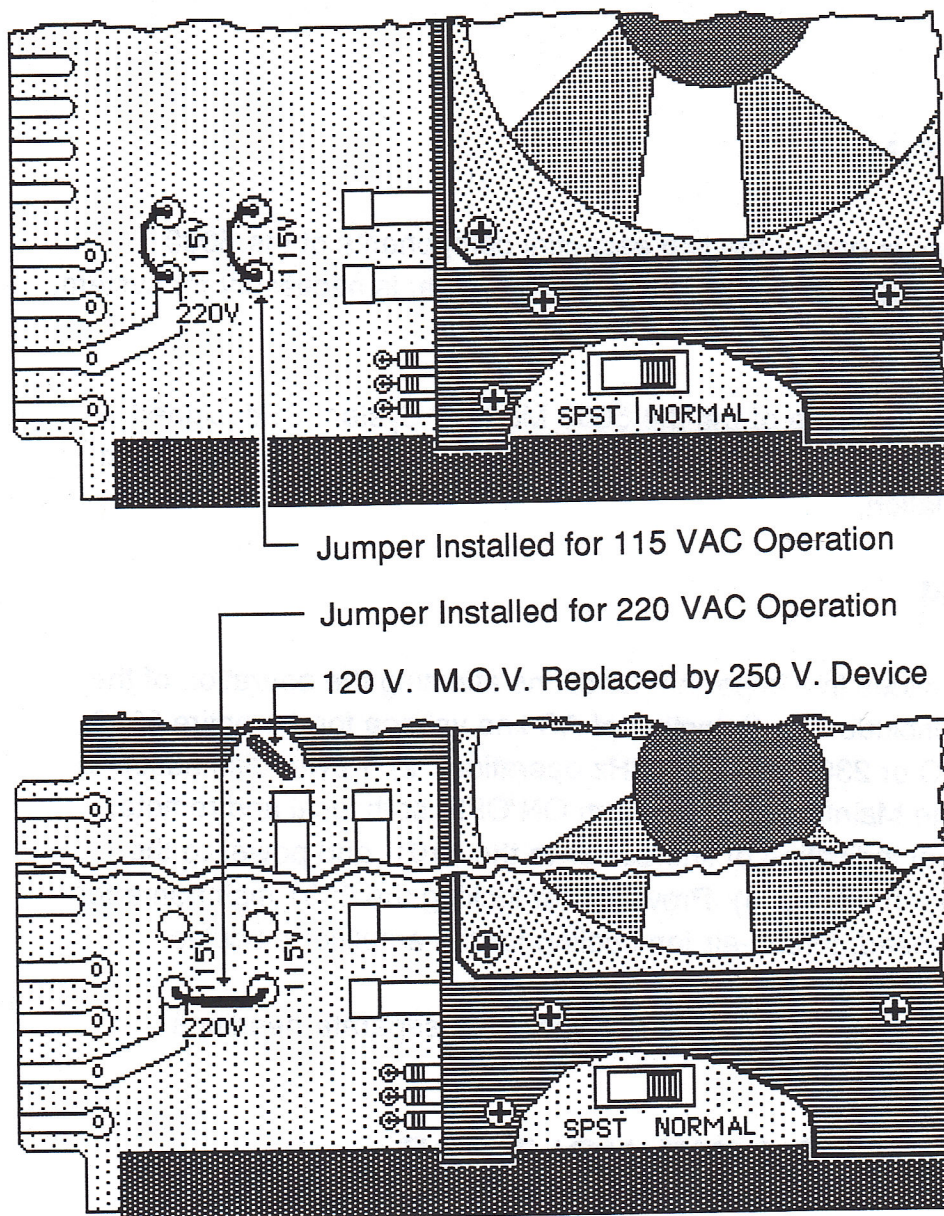
The Power Module provides five important functions affecting the operation of the entire system. These include: 1) Selection of AC line voltage for the entire 5000 system (either 115 VAC or 230 VAC, 50/60 Hz operation), 2) Power distribution to the other modules in the Mainframe, 3) System ON/OFF, both local and remote, including positive, visual indication of line power to the 5101, and power to the remainder of the system modules, 4) Provision for locking the 5001 mainframe for security, and 5) Two speed, forced-air fan cooling for the amplifier modules.

These functions will be examined individually under the separate headings following.

## SELECTION OF AC LINE VOLTAGE

The 5101 selects the operating voltage for the entire 5000 Modular Sound System. The system will operate at either 115 or 230 VAC, 50/60 Hz. The 5101 Power Module comes from the factory set for 115 VAC operation. *When operation at 230 VAC is required, the 5101 should be ordered that way from the factory.* When this is not possible, field modification to 230 VAC operation can be accomplished on the 5101 by removing two jumpers, installing a third one, and replacing a 120 volt M.O.V. with a 250 volt M.O.V. Figure 1 on the following page illustrates this jumper and M.O.V. change. ***Do not modify a 5101 for 230 VAC operation and leave the 120 volt M.O.V. installed. The M.O.V. will not handle 230 volts and will pop spectacularly, possibly damaging the PC board.***





## Changing the Line Voltage Operation from 115 to 230 VAC

1. Remove the 115 VAC jumpers as they come installed from the factory. Be careful not to damage the pads on the PC board when removing the jumpers.
2. Install the 220 VAC jumper as shown by the bottom drawing. Cold solder joints should be carefully avoided.
3. Remove the 120 volt M.O.V. (partially hidden by the support chassis) and replace with a 250 volt device (General Electric V250LA20A, or equivalent). The M.O.V. can simply be removed and not replaced, but replacement is recommended.

Figure 1

## AC POWER DISTRIBUTION TO OTHER MODULES

All of the amplifier modules of the 5000 system are powered by the mains voltage. The rest of the modules (excepting, of course, the 5101 Power Module) are powered by 30 VAC and 5 VAC. *Each 5000 module has its own on-board, DC power supply which uses this AC voltage and rectifies it to provide the necessary power for operation.*



The various modules receive their AC power from a power bus structure on the motherboard at the rear of the 5001 Mainframe. The power is supplied to the bus structure by the 5101 Power Module. The transformer in the 5101 provides the 30 VAC and the 5 VAC. These voltages, along with line voltage are always provided to the bus structure by the 5101, regardless of whether the line voltage is 115 or 230 VAC. Thus, the 5101 selects the operating voltage for the entire system. Once the proper operating voltage had been selected by jumper installation, the rest of the system can be installed without regard to line voltage.

## SYSTEM ON/OFF, LOCAL AND REMOTE

The front panel of the 5101 contains a rocker switch (See Figure 2) which controls mains power. When in the "ON" position, AC power is routed to the 5101 Power Module, and positive indication of that power status is provided by the green LED on the front panel. To provide system security, the Mains Switch is not accessible when the front panel of the Mainframe is locked.

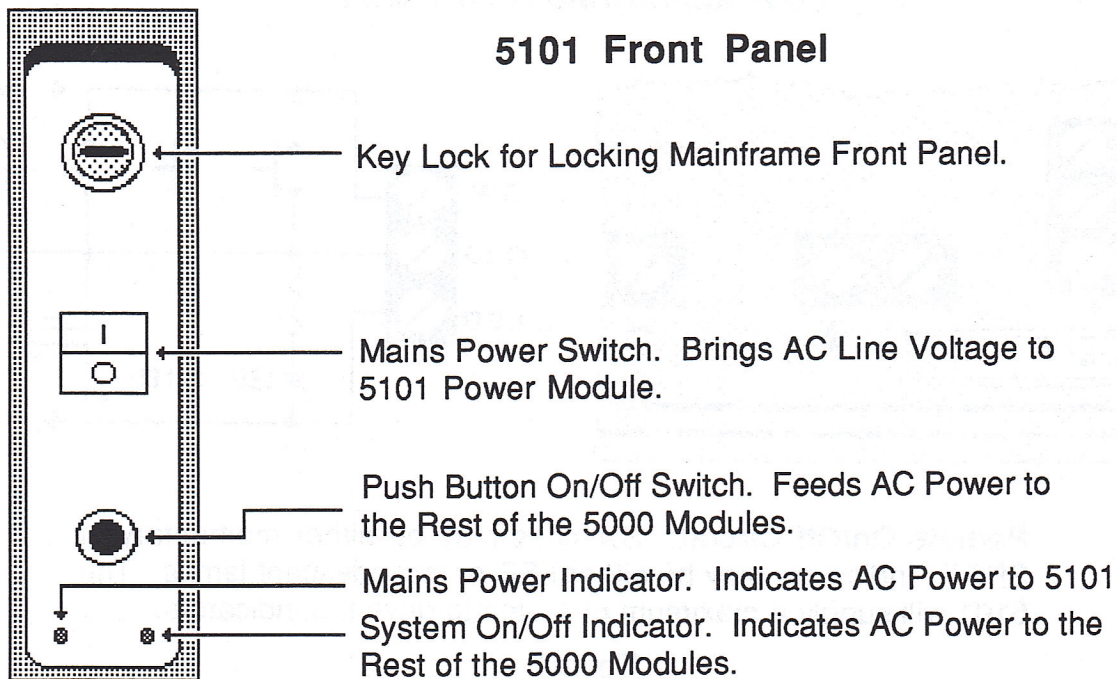


Figure 2

Directly below the Mains Switch is a push button type System ON/OFF Switch (See Figure 2). When the switch is in the "ON" position, AC power is fed from the 5101

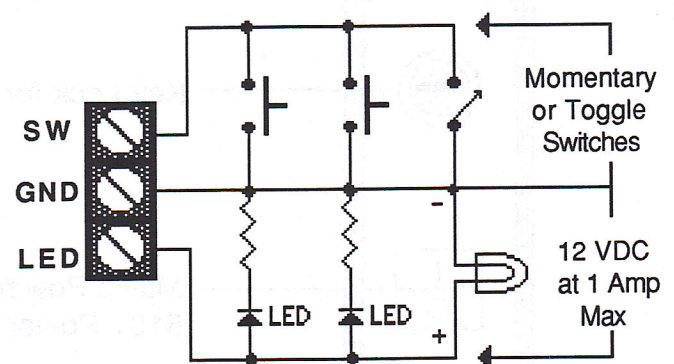
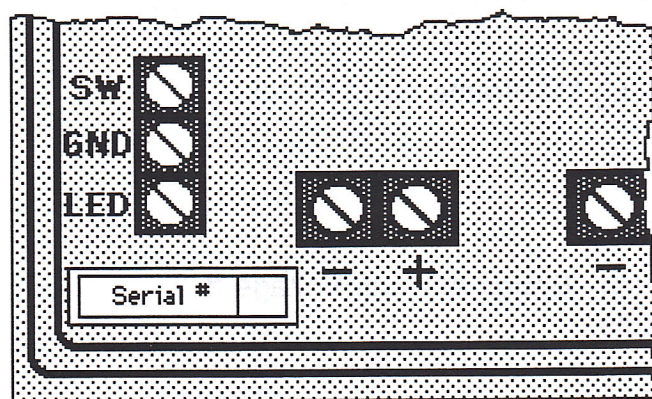


Mainframe to the power bus structure in the rear of the 5001 Mainframe where it is accessed by the other modules in the Mainframe. Positive indication of this condition is provided by the illumination of the yellow LED on the 5101 front panel. *The System ON/OFF Switch is accessible when the front panel of the Mainframe is locked so the system can be turned on and off without allowing access to other system controls.*

Because the System ON/OFF Switch controls the triac (a solid state AC switch), the system ON/OFF function can be remoted, or several ON/OFF switches may be remoted in parallel, if needed. If desired, an LED may also be remoted with these switches to provide visual ON/OFF indication at remote switch points. *The triac has memory so that, if mains power is temporarily lost, the system will "remember" whether it was on or off when power returns.*

The connectors to which remote ON/OFF switches are tied are not on the 5101, but are on the back of the 5001 Mainframe. Figure 3 below details these Mainframe connectors, and shows a simple, remote ON/OFF switch circuit:

### 5001 Mainframe Rear Panel



**Remote On/Off Circuit:** Switches may be either momentary or SPST. Indicators may be either LED or incandescent lamps. The 5101 will supply a maximum of 1 amp to drive the indicators.

Figure 3

As the circuit illustration in Figure 3 above shows, either momentary switches or SPST (toggle) switches may be used for remote ON/OFF, *but both may not be used together. One or the other must be used exclusively.* If a SPST switch is to be used, this type of switch must be selected on the 5101. Figure 4 on page 5



illustrates how this is done. Notice that the selection switch is somewhat hidden under the fan bracket of the 5101, but it is easy to locate once you know where it is.

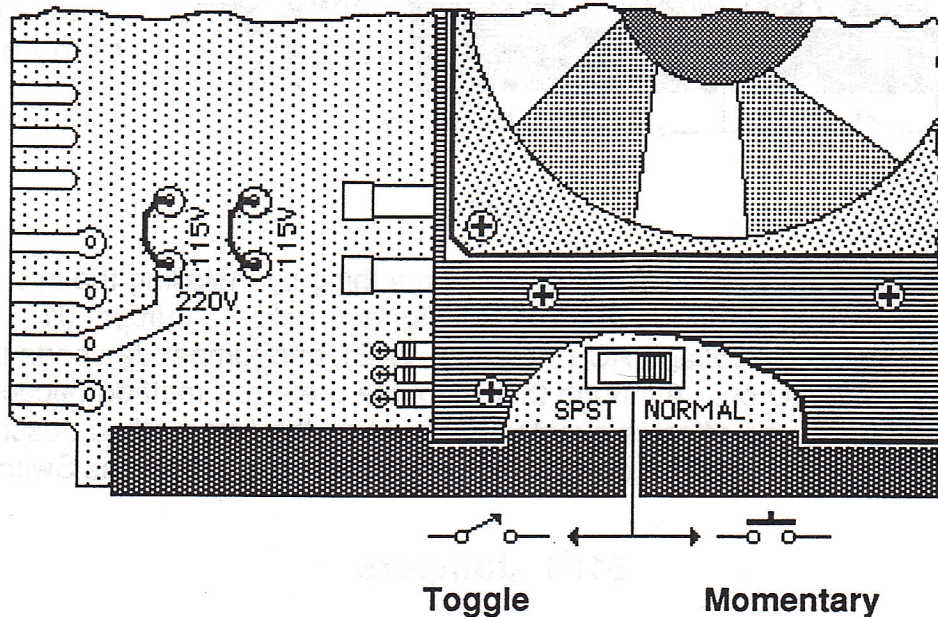


Figure 4

If a System ON/OFF Switch is removed, it will normally be in parallel with the front panel System ON/OFF Switch. If desired, the front panel System ON/OFF Switch may be permanently disabled so that the control of the system ON/OFF function is remote only. This is accomplished by cutting jumper J4 on the PC side of the 5101 PC board. (See Figure 6 on the following page for J4 location).

## ON/OFF SWITCH OVERRIDE

It is also possible to override the System ON/OFF Switch so that system ON/OFF control is accomplished by the Mains Switch alone. The preferred way of doing this is to select SPST on the remote switch selector, and then short the remote switch terminals (SW and GND) on the rear of the 5001 Mainframe together. When this is done, complete system ON/OFF control will be transferred to the Mains Switch. Figure 5 on the following page illustrates this procedure, showing both the switch on the 5101, and the terminals on the rear of the 5001 Mainframe.



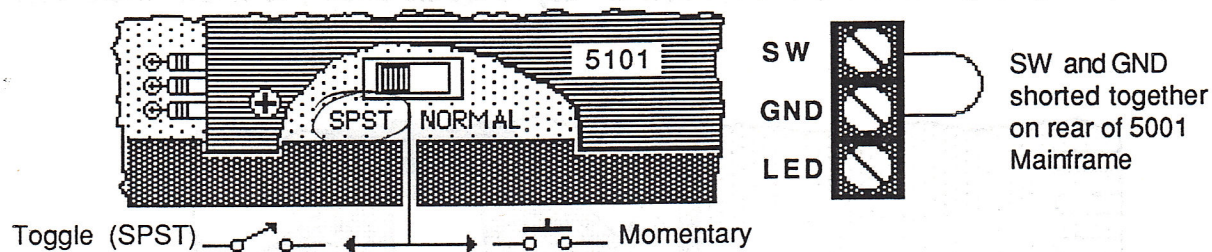


Figure 5

There is a second way of accomplishing this same thing by installing the two jumpers labeled J1 and J2 on the 5101. (See Figure 6 below). Jumper J1 permanently turns on low voltage AC (30 and 5 VAC), and jumper J2 shorts the triac so it is permanently on. Although this is not the preferred method because of the soldering required, the effect is exactly the same as the first method described, that is, complete system ON/OFF control will be transferred to the Mains Switch.

### 5101 Jumpers

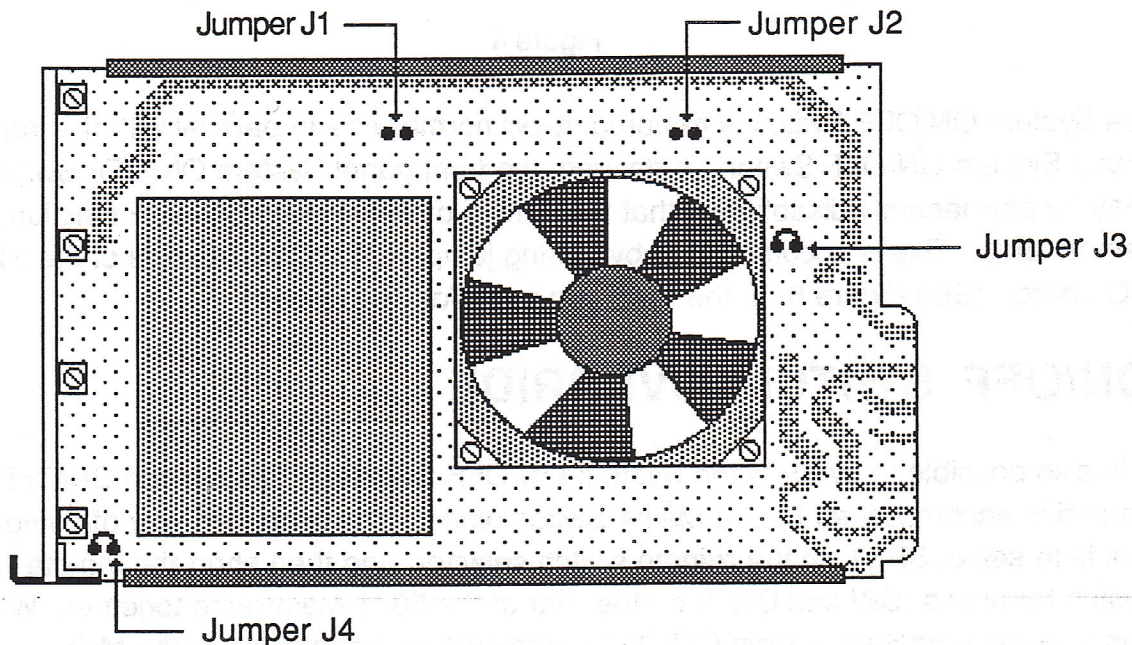


Figure 6

## TWO SPEED, FORCED-AIR FAN COOLING

The 5101 contains a fan for amplifier cooling. The fan operates at an idle speed



until any or all amplifiers indicate a need for more cooling. A thermal sensor in each amplifier can boost the fan into high speed operation as needed. When the cooling system has lowered the 5001 Mainframe temperature, the fan automatically returns to its idle speed.

*The fan has two idle speeds. As shipped from the factory, the fan is on "high idle." This idle speed should always be used when 5 or more amplifiers are in a single Mainframe. If in doubt, use high idle. The high idle speed is, however, noisier than might be desired in applications where the surrounding environment is quiet (i.e. Control Rooms, consumer applications, etc.), and in such cases, assuming that the number of amplifiers in a single Mainframe is less than 5, it is possible to set the 5101 for "low speed idle". This is done by clipping jumper J3 (See Figure 6 on the preceding page). Remember that "high idle" fan is not the same as "high speed" fan. Whether the idle speed of the fan is set for high or low, if more cooling is needed by an amplifier, the fan will be triggered into high speed operation, and return to its selected idle speed when the amplifier has cooled.*

## ADDITIONAL INFORMATION

In applications requiring more than one Mainframe, it may be possible to use only one 5101 Power Module. A single 5101 can power single processing modules in a second Mainframe. To transfer AC power from a 5101 to another mainframe, connect the two Mainframes together using an umbilical cable. Figure 7 below shows where the umbilical plugs on to the two 5001 Mainframes:

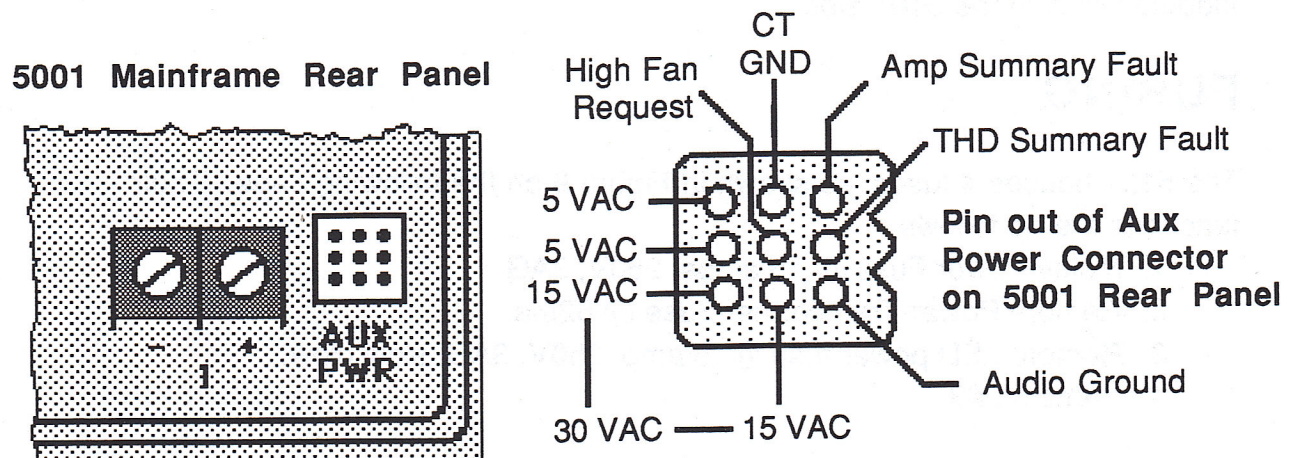


Figure 7



The limitations to this approach are as follows: 1) All amplifiers require fan cooling and must, therefore, be in a Mainframe with a 5101 Power Module. A Mainframe without a 5101 may house only low voltage (signal processing) modules. 2) The 5101 Power Module is capable of supplying 100 watts to signal processing modules. The total power consumed by all the signal processing modules in both Mainframes must not exceed 100 watts. Power consumption for several modules is listed below. *Power consumption for every module is listed in its manual.*

**Low Voltage Power Consumption Per Module**

Module	5101	5202	5301	5303	5306	5503	5505	5506	Amps
Watts	0	1.8	3.8	7.7	3.4	11	4.5	9.9	0

Figure 8

## LOCKING THE 5001 MAINFRAME

5101 Power Module comes with a keyed lock (See Figure 2, page 3). With the 5101 installed in the Mainframe, the front panel can be locked in place using the key lock in the 5101 Power Module.

## INSTALLATION

The 5101 Power Module must be installed in the right-most slot in the 5101 Mainframe. It is keyed such that it will not fit in any other slot. Also, no other 5000 module will fit in the 5101 slot.

## FUSING

The 5101 houses 4 fuses, as shown in Figure 9 on the following page. Their functions are as follows:

1. Mains Power Fuse @ 15 amps, 250V, 3AG.
2. Remote Power Transformer Fuse @ 62ma.
3. Remote LED power fuse @ .5 amp, 250V, 3AG, slow blow.
4. Same as #3.



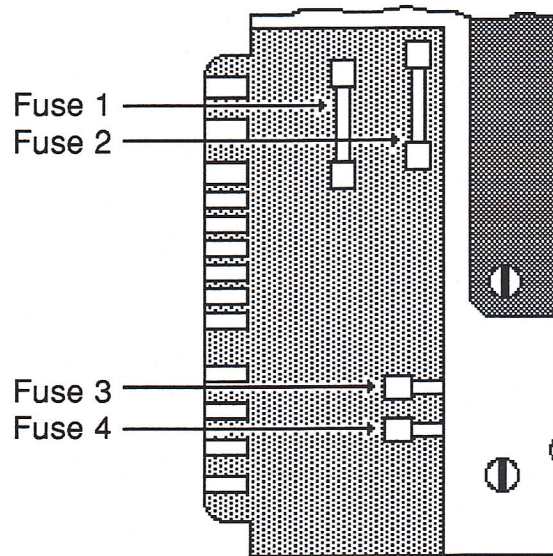


Figure 9

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