8201REB

OWNER'S MANUAL

CAUTION

To prevent electrical shock, do not disassemble. No user-serviceable parts inside; refer servicing to qualified service personnel. Serviceman must disconnect line cord before disassembling.

INPUT CONTROLS AND CONNECTIONS

The 8201REB has eight input channels that are identical in layout and operational use as input channels on an 8201B or 6201B. The input channels on the 8201REB have the following controls:

MIC/LINE SWITCH: Selects either input source, Lo-Z, balanced mic(3-pin XLR connector, transformer balanced) or Line level input via a ¼" phone jack on the rear panel.

MONITOR: Pre-channel gain/EQ signal; completely independent of other channel controls except the Mic/Line Switch.

EFFECTS: Post-channel gain/EQ control sets up seperate mix for signal to effects sends.

BASS AND TREBLE EQ: These two controls provide $\pm$18dB of boost or cut bass and treble.

PAN: Selects the "location" or placement of a signal within the stereo panorama.

CHANNEL GAIN: Increases or decreases overall gain of the signal from the input channel. The input channel Gain controls on the 8201REB are TAPCO's Differential AutoPad® that not only helps you control distortion, but allows the input channel to be turned completely "off". Even with hot signal levels coming into the REB, crosstalk and leakage need not be a problem.

The Input Connectors, like controls functions, are the same on the REB as on a 6201B/8201B.

MIC INPUT: The Mic Input on each input channel of the REB is designed to accept any Lo-Z, balanced Mic. The Mic input is a 3-pin, female XLR-type connector.

LINE INPUT: The Line Input accepts line-level signals from tape machines, pre-amps, etc. The Line Input is a ¼" phone jack.

Either input source can be selected by the Mic/Line Switch. Since the Mic/Line Switch completely disconnects the "unused" source, both inputs can be connected to the REB at the same time. If the Line Input, for example, was not being used, the Mic/Line Switch could be used as a channel "on/off" switch.

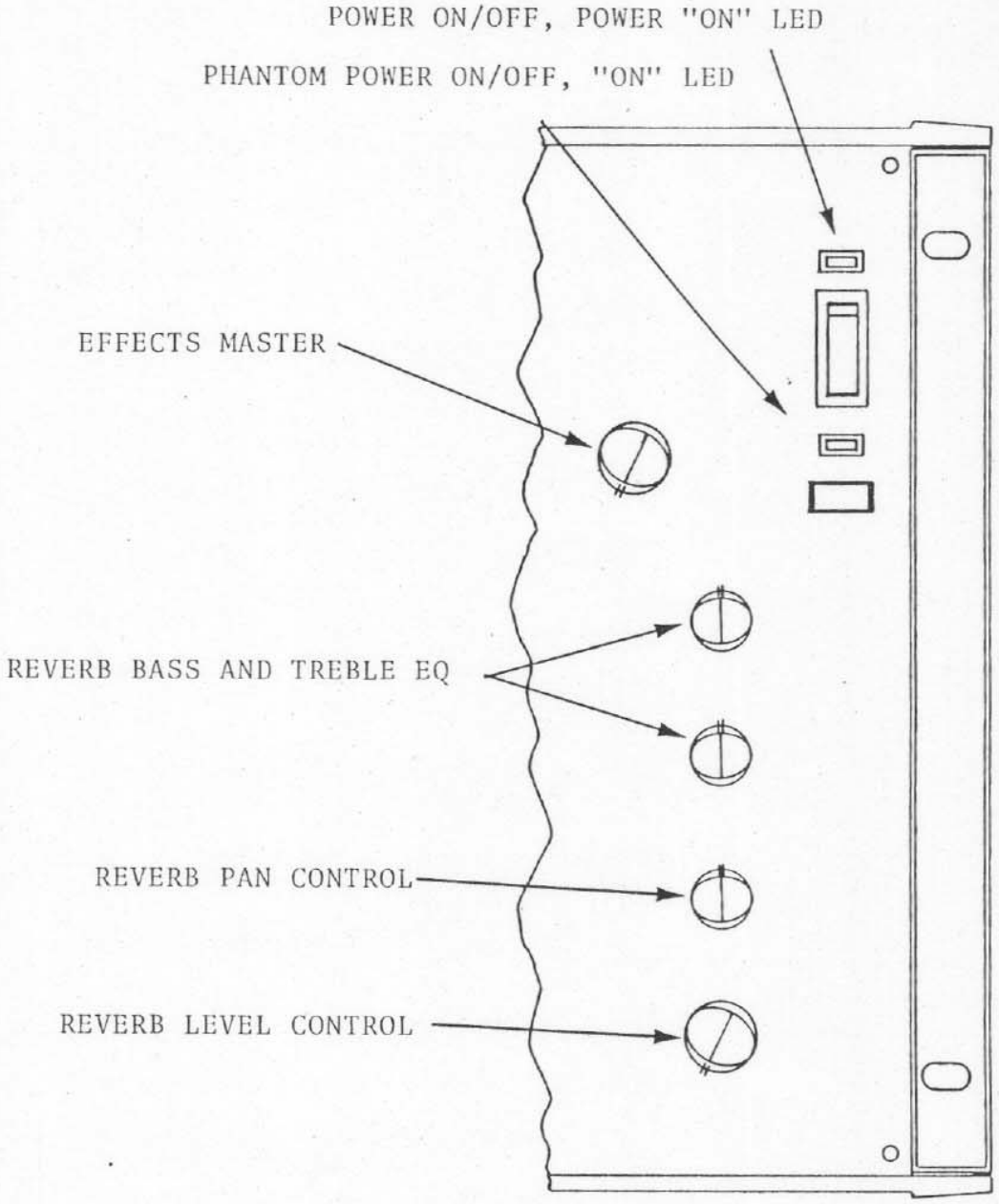
CHANNEL PATCHING/DIRECT OUTPUTS: The two ¼" phone jacks below the XLR mic input and ¼" line input are a set of normalled jacks that allow a post channel gain/EQ output and return for each input channel on the REB. The Direct Out can be used without effecting

the use of the channel. However, a ¼" phone plug inserted in the ¼" phone jack marked "in" will break the normal. Any signal the channel would receive would be supplied at this point. The signal could come from an external effects device, etc.

Additional information on the various input control functions on the 8201REB are availible in the 6201B or 8201B Owner's Manual beginning on page . Consult the master unit Onwer's Manual for any information not included in this text covering the operation of input controls and connections.

OUTPUT CONTROL LAYOUT

The illustration below is the layout of the output control section on the 8201REB. Descriptions of the individual controls begins on the next page.



OUTPUT CONTROL FUNCTIONAL DESCRIPTIONS

POWER ON/OFF

The black rocker switch at the upper right-hand corner of the REB turns the unit on, or off. The green LED indicator glows when the power is switched "on".

DO NOT MAKE ANY CONNECTIONS TO THE 8201REB, OR CHANGE USER-REPLACABLE FUSE WITH THE POWER "ON". MAKE SURE UNIT IS OFF, OR UNPLUGGED TO PREVENT POSSIBLE ELECTRICAL SHOCK.OR UNIT DAMAGE.

When setting up your PA/recording system, try and follow this series of events in the following order when turning system power on:

1) Don't turn anything on until all system connections are complete.

2) After completing connections, turn all mixers, effects and other devices "at the board" or pre-power amp on FIRST.

3) Next, with input attenuators turned down, switch the power amplifier(s) on.

This proceedure may save your loudspeakers from destruction by powerful turn on transients. Transients, or "thump" can cause serious damage to fragile drivers. The 8201REB and many other TAPCO mixers have a ramp on/off power supply that goes a long way to prevent turn on, or off transients. TAPCO's CP-X Electronic Crossover, C-201 Graphic Equalizer and power amps have relays that prevent the outputs of those units from "seeing" the transients.

The idea is to make turn on/off situations a non-traumatic experience when using TAPCO gear. However, it's still a good idea to follow the above proceedure turning the system on, and a good idea to follow the proceedure below when shutting the system down:

1) Turn all input attentuators on the power amps down, then switch the power amps off.

2) Then turn all mixers and outboard auxillary gear off.

If power to the system is accidently interrupted(somebody-kicked-out-the-plug syndrome), restart the system as described for turning the system on. The PA you save will probably be your own.

PHANTOM POWER ON/OFF

The push on/off switch directly below the AC on/off switch controls the +48V Phantom Power supply. The red LED indicator above the switch will glow when Phantom power is "ON".

Like the 6201B and 8201B, the REB's Phantom Power supply will power most condenser microphones without any problems or adapters. However, there are a few exceptions. On page , there is a more in-depth discussion of Phantom

power and listings of mics that can, and can't be used with TAPCO's Phantom power system on the REB and other TAPCO mixers with it.

As a general rule of thumb, check with the mic manufacturer, TAPCO or a qualified audio technician if you're not sure about a mic that doesn't appear on the list.

As with other TAPCO mixers having Phantom Power, the REB can use a mix of condenser mics and Lo-Z, balanced dynamic mics in conjunction with it. If you're not sure if your mics are Lo-Z balanced, find out by consulting the right people.

EFFECT MASTER

The Effects Master sets the output gain of the effects mix established by the Effects controls on individual input channels. The actual output is taken on the rear panel of the REB from two ¼" phone jacks labelled Effects Send Hi and Lo.

Along with the eight individual Effects signals, the signal from the master unit to the rear panel ¼" phone jack marked "From Master Effects Send" and any signal from the Effects Stacking jack is also handled by the Effects Master. The summed signals are sent to the two Effects Send jacks.

This allows the REB to have overall effects control of the system Effects Sends. To get signals processed by an external effects device back into the mixing system, the appropriate Effects Returns on an 8201B or 6201B should be used. This allows the master unit to control the effects remix with the main outputs of the master unit.

NOTE: Effects Send Hi should be used with line level effects devices(many digital delays, some echo devices, etc.). Effects Send Lo is for guitar or mic level effects devices. Hi and Lo refer to signal levels. The Lo Effects Send is attenuated 20dB down from the Hi level send.

External effects devices should be connected to the system as follows:

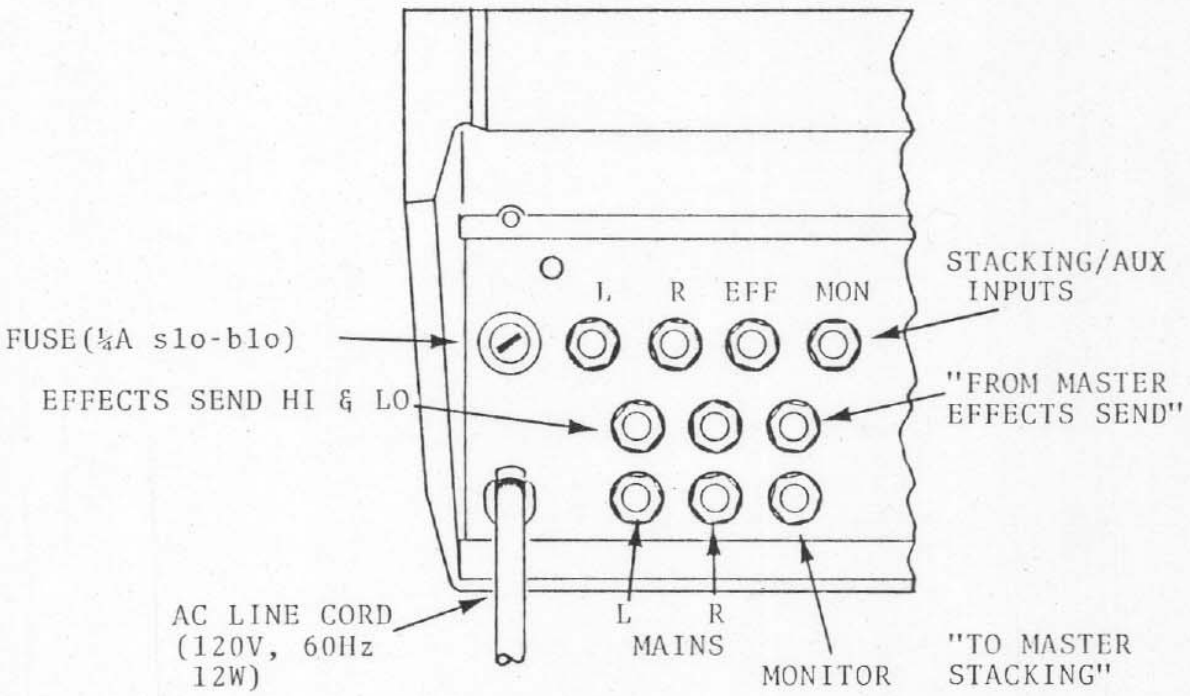
1) Take and interconnect between the appropriate Effects Send and the input of the external effects device.

2) Interconnect between the output of the effects device and the appropriate Effects Return(s) on the master 6201B or 8201B. If you wish, the output of the external effect can be "Y" corded to the Returns, or used with the Returns in the "mono" mode.

Two types of external effects can be used with the system at the same time and use the Effects Return level controls in mono,as mentioned. The Left/Right controls simply are level controls for the amount of effect desired in the main mix.

REAR PANEL OUTPUT CONNECTOR LAYOUT

The illustration below show the layout of the various output and other connectors on the rear panel of the 8201REB. Make careful note of the location and callouts of these ¼" phone jacks: they are important to the interconnection of the REB to the master unit and stacking expanders. Descriptions of the connectors begin on the following page.



OUTPUT CONNECTORS/CONNECTIONS

TO MASTER STACKING

There are three ¼" phone jacks on the bottom of the rear panel output group labelled "To Master Stacking". The signals taken from these jacks are sent via a ¼" phone plug to ¼" phone plug cable to the Stacking Buss on a 6201B or 8201B. The function of these jacks are as follows:

MAIN LEFT/RIGHT: The two jacks marked Main L and R supply the summed main output signals from the REB to the Stacking Buss of the master unit. There are no master output controls on the REB because the control of the overall main output is handed over to the master unit via the master unit's summing buss(the Stacking Buss on the master unit puts a signal from a output function of the expander or other mixer into the main mix, monitor. More about this in a minute.)

The signals at the REB's L and R output jacks is the summed total of the input channel signals.

MONITOR: Like the L and R outputs, the signal from the ¼" phone jack marked "Monitor" is the summed signals from each of the input channel's monitor controls. The signal from the Monitor jack, like the L and R main outputs, go to the Stacking Buss on the master unit. A ¼" phone to ¼" phone is used for the interconnect between connectors.

EFFECTS SEND

There are two jacks for Effects Sends on the REB: one marked "Hi", the other "Lo". As mentioned earlier, the Hi and Lo refer to the level of signals from the jacks. The Hi send should be used with external effects devices that are compatible with line level signals. The Lo send with guitar or mic level effects.

The Hi level Effects Send is used when stacking another 8201REB onto a 8201B/REB combination.

FROM EFFECTS SEND MASTER

Unlike the output connectors and connections we've been talking about, the ¼" phone jack marked "From Effects Send Master" is an input connection.

The Hi Effects Send from the master 6201B or 8201B is connected to this jack via a ¼" phone to ¼" phone plug cable. This allows the REB to control the Effect Send from the master unit: effects controls is handled exclusively in this manner.

8201REB REVERB SYSTEM CONTROLS

BASS AND TREBLE EQ

The Bass and Treble EQ controls for the Reverb section of the 8201REB provide tone control of the reverb sound itself. The Bass and Treble controls allow for ±12dB worth of boost or cut to the reverbrated signal before it's mixed into the main mix.

EQ on the reverb allows you to custom tailor the reverb to the way you want it to sound. This control translates into the proper reverb sound for the proper source. You may want one type of reverb tone for vocals, another for a keyboard or woodwind. The choice is yours, and the control is there when you want it.

Because of the unique method of mixer interconnect, the EQ'd reverb signal is also available for the other 6 or 8 input channels on the master unit.

PAN

Like the Pan control on an input channel, the reverb Pan routes the reverb signal to the stereo output buss. This allows for placement of the reverbrated signals within the stereo panorama, or allows for accurate, "actual" placement of the effect in a mix. Say to the "audible"left of a right source signal, etc.

If a left/right only reverb is desire, simply position the pan control center. Again, the reverb Pan can be used for all 14, 16 or more channels in the mixing system.

REVERB LEVEL

The Reverb Level control, located at the base of the output section on the REB, controls the amount of reverbrated signal sent to the main mix.

When the Reverb Level control is turned clockwise, the amount of reverbrated signal increases in the main mix. Obivously, if the control is left off, or turned down, the amount of reverbrated signal will be small, or non-existant in the main mix.

The actual signal that is sent to the reverb system is taken pre, or before the Effect Master. This signal is then sent through drive circuitry to the Accutronics 3-spring reverb "tank", throught the Reverb Level, EQ and pan controls before being added to the main stereo mix. This restates some of the information that we talked about in the last section, but it is an important point.

Unlike some people's reverb systems that are mounted in a mixer, the 8201REB reverb system does not require additional patching or control at the input channel. Reverb can be added when needed at the point before going to the mix, but yet after the Effects Send. This allows for both use of reverb and external effects without getting into a wierd or complex control situation.

STACKING/AUX INPUTS

The uppermost row of ¼" phone jacks on the rear panel output group labelled Main L/R, Effects and Monitor are, like the From Master Effects Send, are inputs...not outputs.

These inputs are functionally similar to the Stacking Buss jacks on a 6201B or 8201B. Signals being supplied from the outputs of another REB or another mixer. The signals are sent to the summing busses of the individual functions: left and right mains, effects and monitors.

This system allows for adding on other types of mixers that could include a TAPCO 6000, 6100R system...just about anything except the outputs of a integrated, or powered mixer.

Interconnects are made with standard ¼" phone to ¼" phone plug cables.

INTERCONNECTING THE 8201RED TO A 6201B or 8201B

The REB is a seperately powered, add-on expander unit that can be simply connected to the master 6201B or 8201B by common ¼" phone to ¼" phone plug terminated cable. This "type" of cable is common: any electronic supply shop, even hi fi store carry them. However, a word of caution.

Cables and cords in any component system can be a source of trouble. The better the construction quality of the cable, chances are the longer it will live through the pounding a line can take in use. There are cables on the market today that are of high-quality construction, made from good connectors and cabling. They are also expensive. It may be wise to purchase a spare set of interconnect cables in case on gets lost, etc. Make sure that the cables you use with your 8201B are wire correctly: tip hot, sleeve ground.

The interconnect is as follows:

8201B/6201B	8201REB
A) LEFT MAIN STACKING	L MAIN
B) RIGHT MAIN STACKING	R MAIN TO MASTER STACKING
C) MONITOR STACKING	MONITOR section ¼" jacks
D) EFFECTS SEND "HI"	FROM MASTER EFFECTS SEND

By interconnecting these points you can have a 14 or 16 channel mixing system using a 6201B or 8201B. If you desire more channels, another 8201REB(or 6201B/8201B) can be added to the system by making the following connections between the add-on unit and the 62/8201B/REB combination:

62/8201B/REB	Add-on REB/Master
A) LEFT MAIN STACKING/AUX	L MAIN From TO MASTER STACKING
B) RIGHT MAIN STACKING/AUX	R MAIN or main outputs
C) MONITOR STACKING/AUX	MONITOR
D) EFFECTS STACKING/AUX	EFFECTS SEND "HI"

This set-up makes even more input channels for your 8201REB expanded mixing

system.

If you desire more information about the stacking system used on your 8201B or 6201B, please consult that unit's Owner's Manual.

OTHER REAR PANEL FEATURES

FUSE

The REB has a ½ amp. slo-blo fuse that is user-ervicable. If the fuse should fail, make sure that you replace it with that type of fuse ONLY!

MAKE SURE THE UNIT IS SWITCHED OFF AND/OR UNPLUGGED BEFORE MAKING CONNECTIONS OR REPLACING FUSE. AVOID SHOCK HAZARD.

AC POWER

The line cord from the REB is terminated in a grounded, 3-prong plug. Power requirements for the 8201REB are 120V, 60Hz, 12W.

8201REB SPECIFICATIONS(TYPICAL or MAXIMUM)

FREQUENCY RESPONSE normalized gain, 150ohm source, +4dBm:	MIC:	+ -1.3
	LINE:	+ -0.5
T.H.D(%) normalized gain, +4dBm 150ohm source	MIC:	.5(20Hz) .05(1KHz) .05(20KHz)
	LINE:	.05(20Hz) .05(1KHz) .05(20KHz)
CCIF IM DISTORTION (%; 19 & 20KHz mixed 1:1) +4dBm, normalized gain, mic or line input		.05
SMPTE IM DISTORTION (%; 60Hz & 7KHz mixed 4:1)		.05
E.I.N. (mic in, 150ohm source, 20-20KHz NBW)		-128dBV

MAXIMUM INPUT LEVEL (at 1KHz, ref .775 Vrms)	MIC:	+1.5dBu
	LINE:	+31.5dBu
	CHAN. PATCH:	+19dBu
INPUT SENSITIVITY (pan centered, chan.vol. at 10, +4dBm	MIC:	-40dBu
	LINE:	-10dBu
MAXIMUM GAIN (pan centered, channel vol. max.)	MIC:	62dB
	LINE:	32dB
MAXIMUM OUTPUT (1KHz, 20K load)	MAIN OUT:	23dBu
	CHAN. PATCH OUT:	22dBu
CHANNEL EQ RANGE/CONTROL (Bass at 50Hz, Treble at 20KHz)		±18dB
INPUT IMPEDANCES	MIC IN:	1.2K ohms
	LINE IN:	20K ohms
	CHAN PATCH IN:	8.3K ohms
	STACKING IN:	91K ohms

MONITOR

THD FREQ. RESPONSE IM EIN	Same as Main Outputs
MAXIMUM OUTPUT (1KHz, 20K ohm load)	22dBu
STACKING IMPEDANCE	20K ohms
MAX. INPUT LEVEL MAX GAIN	Same as Main Output

EFFECTS

MAXIMUM OUTPUT (Hi out, 1KHz)	600 ohms	19dBu
	20K ohms	22dBu

STACKING INPUT IMPEDANCE:	56K ohms
REVERB TANK (Accutronics type 9) Delay Time: -60dB Decay:	 40ms 1.8s
REVERB TONE CONTROLS (Bass at 120Hz, Treble at 3KHz)	 $\pm$12dB
MAXIMUM GAIN (Eff. Send and master maxed.	 94dB(from mic in)

Product and specifications subject to change without notice

PHANTOM POWER

All condenser microphones have one thing in common: they all require some kind of electrical power. This power is needed to operate the mic's preamp circuits, and in some cases to charge the capacitive plates that constitute the actual transducer elements. In the newer electret condenser mics the power is used only for the internal preamp because the plates are permanently charged when the mic is built.

Early condenser mics contained tube type preamps. The tubes required an external AC power supply, which was usually connected to the mic through a multi-conductor cable that also housed the audio lines. Transistors have now virtually eliminated the use of tubes in condenser mics because they offer lower power consumption, greatly reduced size, and improved noise performance.

The newer, solid state mics get their power from either internal batteries, or an external supply that is fed to the mic via the audio cable. Many of the battery powered mics may also be externally powered - check the manufacturer's literature for specifics. External power may be applied two ways:

1. Phantom or Simplex powering DIN standard 45 596

2. "T" system powering (also called modulation lead powering, or AB powering), DIN standard 45 595

The difference between the two systems is the way the power is applied to the mic, through the audio cable.

Phantom powering imposes a positive voltage on both audio conductors, using the shield for the power ground. The "T" system imposes a positive voltage on one audio lead, using the other as the power ground. In the "T" system the shield functions, as it usually does in a balanced system, only as a shield. THE TWO SYSTEMS ARE NOT COMPATIBLE WITHOUT SPECIAL ADAPTERS.

The term Phantom Power, specifically, means only one thing: +48V dc applied to the microphone on both pins 2 and 3, through some nominal current limiting resistance. The important thing to note is that when the term Phantom Power is used, +48V dc is the voltage standard. All microphones that are labeled as Phantom or Simplex powered will operate from this voltage, regardless of any other voltage mentioned in the microphone manufacturer's literature. This is because any other voltage will only be mentioned as a minimum operating voltage at which the mic will meet its specs.

These microphones are NOT Phantom Power compatible:

Sennheiser:	MKE 201	MKH 110
	MKE 401	MKH 110-1
	MKE 801	MKH series with T suffix
	MKE 10	MKH 435 U
Vega:	S-10	
Neumann:	FET 70 series	KM64
	KTM	KM56
	U series	M series

AKG:	C60, C12, C24	
Beyer:	MC715	
E-V	PL 76 (battery only)	
Altec:	M50	M20
	M51	M21

If your microphone isn't listed here consult the data sheet or the manufacturer.

CAUTION: A "T" powered mic may be damaged by +48 V Phantom powering. Always check manufacturer's specifications before applying power to any microphone.

Some dynamic and ribbon mics may exhibit random noise (crackling, sputtering, or even humming) when used in a Phantom powered system. The problem is that the transformer inside the microphone has developed leakage, from the winding to the microphone case (pin 1). It's the leakage that causes the noise, not the power. There are three solutions:

1. Turn off the Phantom Power.

2. Insert a 1:1 isolation transformer in series with the bad mic.

3. Get the mic repaired.

Note: With the exception of "T" powered mics, the mics listed in the table above can be used with your 6201, but they require their own power supplies to be used. However, still check with us or the mic manufacturer if you aren't sure about a mic.