

# **MC Series**

## **8 X 2 Mic/Line Mixers**

**User Manual**

**8002MCB-XLR**

**8002MCB-FP**

**8002 MCB-PHNX**

## Intelix U.S. "Fresh Start" Warranty

All Intelix products are guaranteed against malfunction due to defects in materials or workmanship for two years after date of purchase. If a malfunction does occur during the specified period, the defective product will be repaired/replaced, at Intelix's option, without charge. Furthermore, the "Fresh Start" program ensures that a product which has been repaired/replaced is itself guaranteed for an additional two years.

This warranty does not cover: 1) Malfunction resulting from use of the product other than as specified in the user manual; 2) Installation specific wiring; 3) Malfunction resulting from abuse or misuse of the product; 4) Exterior chassis appearance; 5) Malfunction occurring after repairs have been made by anyone other than Intelix or any of its authorized service representatives; 6) Acts of nature; 7) Optional embedded software upgrades or updates.

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*Note: Warranty Terms and Conditions subject to change and do not apply outside the US.*

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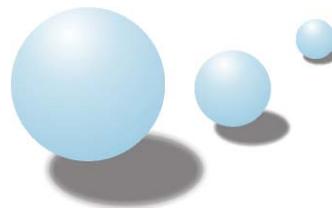
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*Note: Intelix Shipping Statement subject to change. Please contact the factory for the most up-to-date information.*

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## 1.0 Introduction

This manual describes the components and operation of the Intelix MC Series line of mic/line mixers. As with all Intelix products, the MC Series ensures the highest quality audio signal production and control through easy-to-use features.

Intelix offers three models of MC Series mic/line mixers to choose from: the 8002MCB-FP with XLR connectors and all trim and pad controls on the front panel; the 8002MCB-PHNX with Phoenix connectors; and the 8002MCB-XLR with XLR connectors.

All three models offer studio quality compression/limiting and feature recessed selector switches for the bussing of input signals to the main, AUX, or both outputs.

## 1.1 Safety Instructions

**Read all directions carefully before use.**

The VC Series system includes a variety of electrical equipment; all precautions usually taken with electrical equipment must be abided by. Specifically:

- **Grounding:** verify both the VC Series mixer and the devices connected to it are properly grounded.
- **Power Supply:** use only the power supply provided by the manufacturer or one that meets the manufacturer's specifications.
- **Cords and Cables:** route all cords and cables so that they will not be trip hazards or subject to damage (from being run over or pinched) which could cause them to become shock hazards. Pay particular attention to cords at plugs, convenience receptacles, and the point where they enter the mixer.
- **Fire:** if the mixer or other electrical equipment catches fire, extinguish the fire using a carbon dioxide (CO<sub>2</sub>) extinguisher or any extinguisher rated for electrical fires. Never use a water extinguisher.

## 1.2 Maintenance Guidelines

Electronic devices operate best in clean, *well-ventilated* environments. The MC Series mixer contains many electronic components in a compact arrangement, thereby generating more heat than the average electronic device. It should be located where it will be well-ventilated and far from other heat-generating equipment, such as amplifiers.

The main ventilation ports are in the sides of the chassis. To operate properly, they must be kept clear of other components (cables, etc.). When several MC Series mixers are located together, the amount of heat generated may be difficult to dissipate if the units are stacked directly on each other.

*Ensure adequate ventilation is provided on the sides, ambient air temperature does not exceed 72 degrees F, and an open rack space is left above and below the units.*

To minimize hum in the system, avoid placing cables near EMF-producing devices such as electrical motors, fluorescent lights, AC power lines, and SCR dimmers.

Keep the mixer and other equipment clean and free of dust by occasionally wiping with a soft, damp cloth.

Protect the mixer from electrical damage by disconnecting it from the power source whenever it will be unused for a week or longer.

## 1.3 Quick Start for the MC Series Mixer

### 1.3.1 Unpack and connect

1. Check mixer for shipping damage.
2. Verify whether special features are to be used. If so, configure the features before the unit is mounted in the rack.
3. Turn both mixer and amplifier volume controls to zero.
4. Connect inputs and set the input pad switch for each channel to the appropriate level (either mic or line). *Set all unused channels to line level; factory default is in the mic position.*
5. Connect output and set the output pad switch at the appropriate (either mic or line) level.

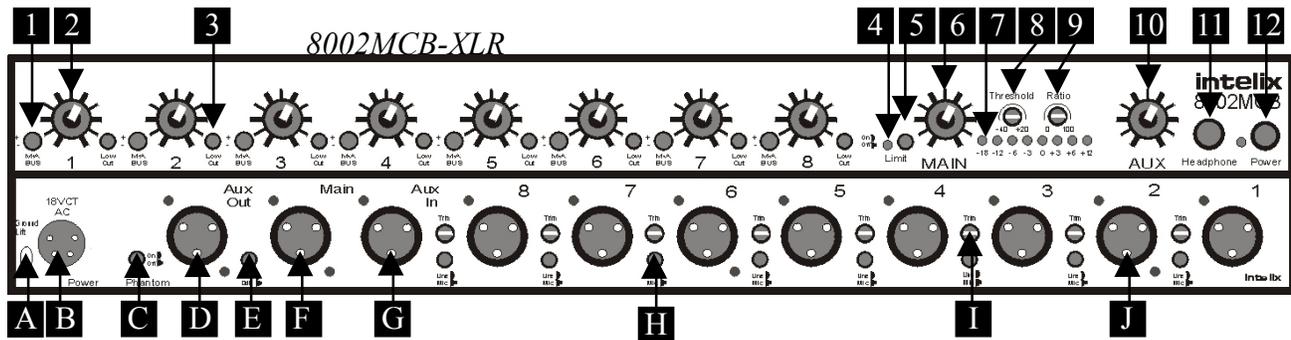
### 1.3.2 Power and set up

1. Connect mixer's AC power supply.
2. With the volume controls turned down, power up mixer and amplifier.
3. Adjust the input volume for each channel by performing audio level tests. If necessary, adjust the gain for individual channel(s).
4. Adjust the amplifier's volume controls and master output volume.
5. Adjust individual channel volume knobs to achieve the desired mix.

### 1.3.3 Fine tuning

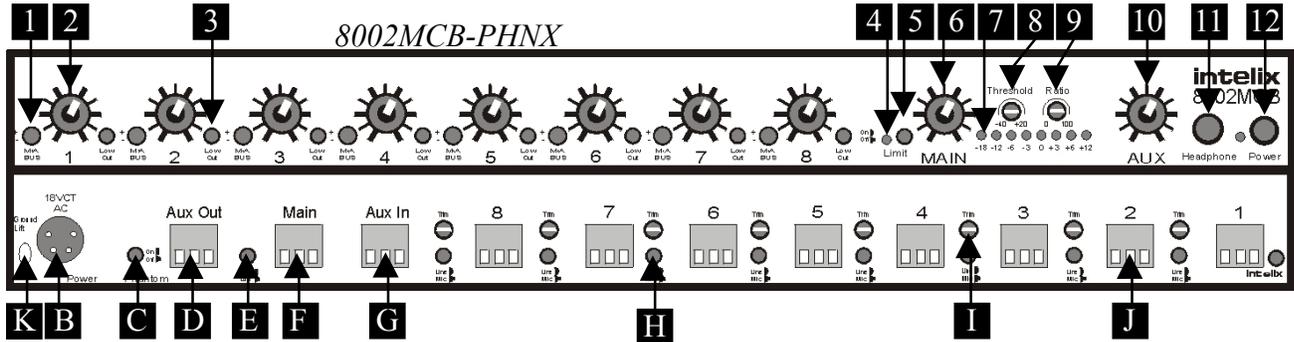
1. In the event of excess bass, set the low cut filter switch to *on*.
2. If condenser mics are not otherwise powered, set the phantom power switch to *on*.
3. In the event of occasional excessive output level, set the limiter switch to *on*.

## 2.0 Panel Descriptions



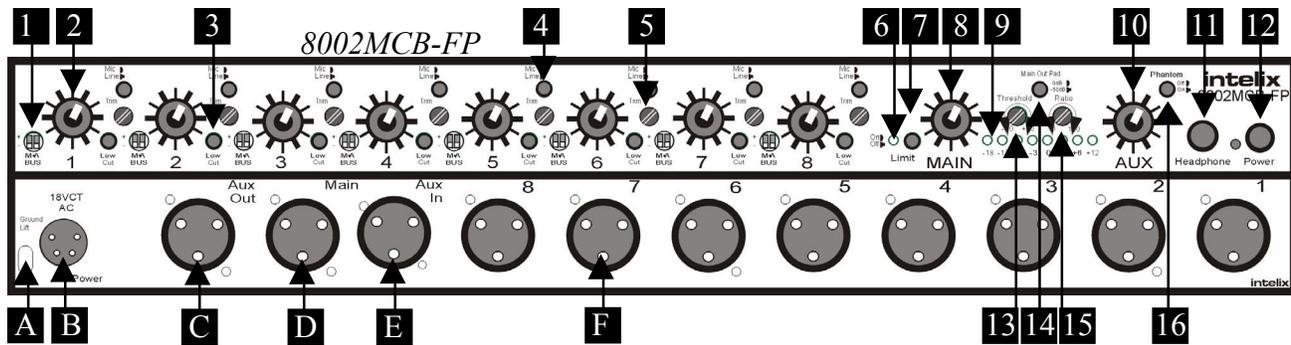
### 8002MCB-XLR and 8002MCB-PHNX Front Panel

- 1** *Main/Auxiliary Bus Selector* (one per channel) - 4-position switch which selects the destination of the input channel. Route channels as follows:
  - A) Main Bus - *M switch up, A switch down*
  - B) Auxiliary Bus - *M switch down, A switch up*
  - C) Both the Main and Auxiliary Bus - *M switch up, A switch up*
  - A) Neither Bus - *M switch down, A switch down*
- 2** *Channel Volume Knob* (one per channel) - controls volume on the input channel.
- 3** *Low Cut Switch* - eliminates low frequency noise, such as rumbling.
- 4** *Signal Clip LED* - if lit (red), indicates a +18 dB or greater input signal which may cause signal distortion.
- 5** *Output Limiter Switch* - eliminates clipping distortion of the output by controlling its dynamic range.
- 6** *Main Output Volume Knob* - controls the output signal volume of the main bus.
- 7** *LED Bar Graph Output Meter* - displays output signal levels in decibels, ranging from -18 (green) to +12 (red) dB. May be set to indicate the signal of either the main or the auxiliary bus and to indicate either the average or the peak signal.
- 8** *Threshold Control* - controls the signal level at which the compressor/limiter becomes active.
- 9** *Ratio Control* - controls the amount of compression of the signal above the threshold.
- 10** *Auxiliary Output Volume Knob* - controls the output signal volume of the auxiliary bus.
- 11** *Headphone Jack* - 1/4 inch-diameter TRS mono jack
- 12** *Power Switch Button* - “in” position powers unit; “out” position powers down unit. LED displays status.



### 8002MCB-XLR and 8002MCB-PHNX Rear Panel

- A** *Ground Lift Jumper* - access to ground lift jumper J19.
- B** *AC Power Connector* - mixer power supply input; accepts a 4-pin DIN connection from an 18VCT 1.5 amp transformer.
- C** *Phantom Power Switch* - when activated, supplies +15 VDC power (for condenser microphones) to all channels with the mic/line switch set to mic position.
- D** *Auxiliary Bus Output Connector* - XLR or Phoenix balanced/unbalanced, line-level connector.
- E** *Master Mic/Line Switch* - selects master output as either mic level (-50 dBu) or line level (0 dBu).
- F** *Main Bus Output Connector* - XLR or Phoenix balanced/unbalanced, line-level connector.  
*Auxiliary Input Connector* - balanced/unbalanced, buffered, uncontrolled, line-level XLR or Phoenix jack for an additional (ninth) input connection directly to the summing buses as selected by the internal jumpers.
- G**
- H** *Input Mic/Line Switch* - selects mic level (-50 dBu) or line level (0 dBu) for the corresponding channel.
- I** *Channel Input Gain/Trim Control Potentiometer* - Adjusts input stage gain over a range of 40 dBu.
- J** *Main Input Connector* - XLR or Phoenix balanced/unbalanced connector.
- K** *Ground Lug* - Featured on the 8002MCB-PHNX, the ground lug allows the mixer to be tied to a building ground, thereby eliminating ground loops.



## 8002MCB-FP Front Panel

- 1** *Main/Auxiliary Bus Selector* (one per channel) - 4-position switch which selects the destination of the input channel. Route channels as follows:
  - A) Main Bus - *M* switch up, *A* switch down
  - B) Auxiliary Bus - *M* switch down, *A* switch up
  - C) Both the Main and Auxiliary Bus - *M* switch up, *A* switch up
  - A) Neither Bus - *M* switch down, *A* switch down
- 2** *Channel Volume Knob* (one per channel) - controls volume on the input channel.
- 3** *Low Cut Switch* - eliminates low frequency noise, such as rumbling.
- 4** *Input Mic/Line Switch* - selects mic level (-50 dBu) or line level (0 dBu) for the corresponding channel.
- 5** *Channel Input Gain/Trim Control Potentiometer* - Adjusts input stage gain over a range of 40 dBu.
- 6** *Signal Clip LED* - if lit (red), indicates a +18 dB or greater input signal which may cause signal distortion.
- 7** *Output Limiter Switch* - eliminates clipping distortion of the output by controlling its dynamic range.
- 8** *Main Output Volume Knob* - controls the output signal volume of the main bus.
- 9** *LED Bar Graph Output Meter* - displays output signal levels in decibels, ranging from -18 (green) to +12 (red) dB. May be set to indicate the signal of either the main or the auxiliary bus and to indicate either the average or the peak signal.
- 10** *Auxiliary Output Volume Knob* - controls the output signal volume of the auxiliary bus.
- 11** *Headphone Jack* - 1/4 inch-diameter TRS mono jack
- 12** *Power Switch Button* - “in” position powers unit; “out” position powers down unit. LED displays status.

- 13** *Threshold Control* - controls the signal level at which the compressor/limiter becomes active.
- 14** *Master Mic/Line Switch* - selects master output as either mic level (-50 dBu) or line level (0 dBu).
- 15** *Ratio Control* - controls the amount of compression of the signal above the threshold.
- 16** *Phantom Power Switch* - when activated, supplies +30VDC power (for condenser microphones) to all channels with the mic/line switch set to mic position.

### 8002MCB-FP Rear Panel

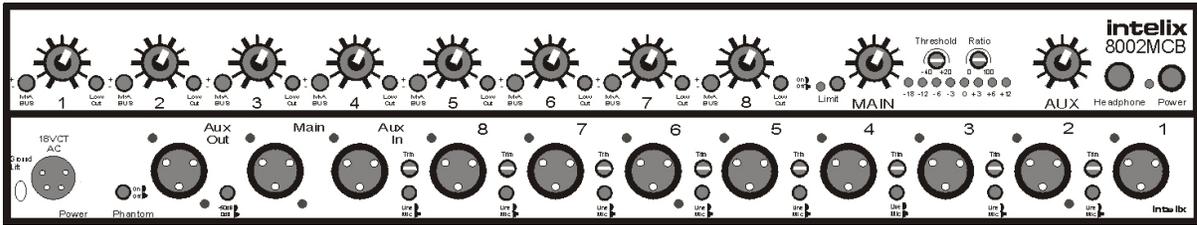
- A** *Ground Lift Jumper* - access to ground lift jumper J19.
- B** *AC Power Connector* - mixer power supply input; accepts a 4-pin DIN connection from an 18VCT 1.5 amp transformer.
- C** *Auxiliary Bus Output Connector* - XLR or Phoenix balanced/unbalanced, line-level connector.
- D** *Main Bus Output Connector* - XLR or Phoenix balanced/unbalanced, line-level connector.
- Auxiliary Input Connector* - balanced, buffered, uncontrolled, line-level XLR or Phoenix jack
- E** for an additional (ninth) input connection directly to the summing buses as selected by the internal jumpers.
- F** *Main Input Connector* - XLR or Phoenix balanced/unbalanced connector.

### 3.0 Installation and Operation

The following sections will examine the installation and operation details for the 8002MCB-XLR, 8002MCB-PHNX, and 8002MCB-FP mic/line mixers.

### 3.1 Unpacking and Connecting the Mixer

1. Take the mixer out of box and inspect for shipping damage. If there is obvious physical damage to the outside of the mixer, contact your Intelix representative *before* you begin installation.
2. Turn all mixer and amplifier Volume Control Knobs to zero.

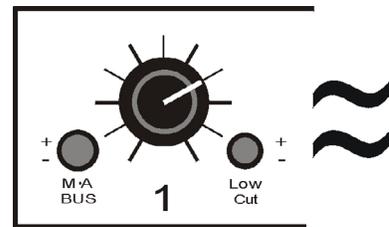


3. Connect the source inputs the 8002MCB’s XLR or Phoenix connectors on the rear panel.
  4. Toggle each input’s mic/line switch to the appropriate position; *in* for line inputs and *out* for mic inputs. Note that the input from some microphones is actually close to line level (-20 dB) and should be set to the line position. All unused channels should be set to line level.
- Note: The auxiliary input is line level only.*
5. Connect the destination output. Specifically, connect the main bus XLR or Phoenix connector to an amplifier’s input.
  6. Toggle the main output’s mic/line switch to the appropriate position; *in* for line level outputs and *out* for mic level outputs.
  7. Connect the auxiliary bus XLR or Phoenix connector to the second destination device.

*Note: The auxiliary output is line level only.*

### 3.2 Powering and Configuring the Mixer

1. Connect the 8002MCB’s power supply to the rear panel power supply connector. Then connect the power supply to an AC power jack.
2. Power up the mixer. Toggle the front panel power switch *in* so that the front panel power indicator LED illuminates.
3. Toggle the mixers main output volume knob and auxiliary volume knob to “2 o’clock.”



*Volume knob set at “2 o’clock”*

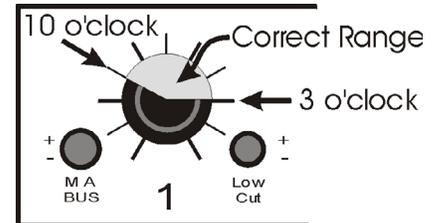
4. Power up the amplifier.

### 3.3 Setting Gain Structure

The primary goal when establishing the gain settings of the MC mixers is to have each channel operating at the maximum gain without clipping, while leaving adequate headroom on the volume control knob. Setting the gain structure involves two interactive adjustments: the channel's front panel volume knob and the channel's input gain/trim control.

The channel input gain/ trim control directly control the microphone preamplifier available at each channel.

The channel volume control on the front panel controls how much of the gain is routed to the main output stage. The front panel controls should optimally operate between "10 o'clock" and "3 o'clock" when gain structure is correct.



The master output control on the front panel controls the mixer's final amplifier stage to the master output. This control should optimally operate between "10 o'clock" and "3 o'clock" when gain structure is correct.

With all channels operating, the main output meter should show a signal output range between 0 and +6. Adjust the main output control accordingly. If the output occasionally peaks in the range of +6-+12, activate the compressor/limiter.

### 3.4 Gain Structure Procedure

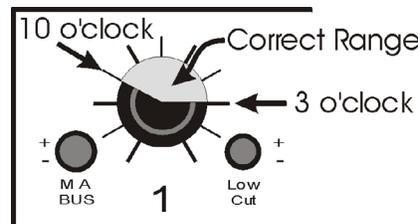
1. Adjust each channel's input volume.
  - a. Verify an audio source is driving the channel being adjusted. Turn the front panel volume knob for that channel up until the yellow (+3 to +6) range of the LED bargraph lights. The channel adjustment is correct if the front panel volume knob is between "10 o'clock" and "3 o'clock" when the yellow range is reached. Make small adjustments using the front panel volume knob.
  - b. If the front panel volume knob is *not* between "10 o'clock" and "3 o'clock", adjust the gain/trim control.
    - If the front panel volume knob was set lower than "10 o'clock", set the front panel knob to "2 o'clock" and use a small slot screwdriver to turn the input gain/trim control down (counterclockwise) until the yellow range on the bar graph is reached at the normal volume desired.
    - If the front panel volume knob was set higher than "3 o'clock", set the front panel knob to "2 o'clock" and use a small slot screwdriver to turn the input gain/trim control up (clockwise) until the yellow range on the bar graph is reached at the normal volume desired.
2. Toggle the amplifiers to the audio levels desired and use the mixer's front panel volume knobs to make final adjustment to levels.

### 3.5 Troubleshooting Gain Structure

If a satisfactory gain structure is not achieved after working through sections 3.3 and 3.4, please consult the following suggestions.

#### 3.5.1 If channel clipping occurs

If the signal is clipping or producing audible distortion, the gain is too high. Reduce the input gain/trim control by turning it counterclockwise until clipping does not occur. Also make sure that the new setting of the gain control offers a usable control range between “10 o’clock” and “3 o’clock” on the front panel volume control knob.



#### 3.5.2 If channel volume is too high

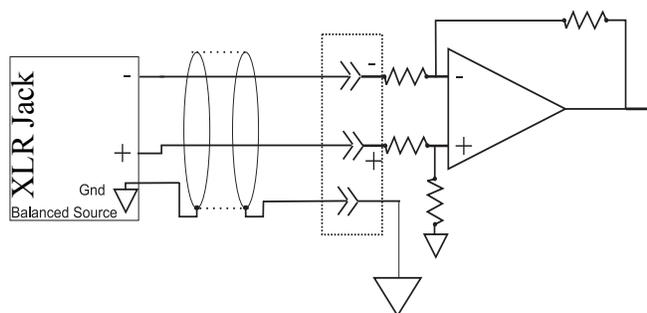
If a channel is not clipping but must be set above “3 o’clock” to achieve the proper volume level, the input gain control setting is too high. Reduce the input gain/trim control by turning it counterclockwise.

### 3.6 Recommended Input Wiring Methods

Intelix recommends the following input wiring methods depending on your application.

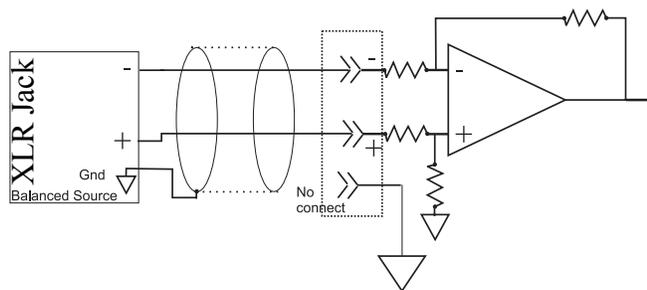
#### Balanced Source to Balanced Input

Shown is the typical wiring method for a balanced source device. It has +6 dB gain and excellent ground current and noise rejection.



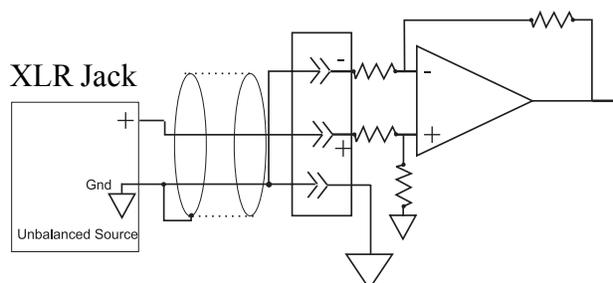
#### Balanced Source to Balanced Input

If the above method does not work in your application, use the wiring shown at right. This method solves certain ground loop problems. It has +6 dB gain and good noise and ground loop rejection.



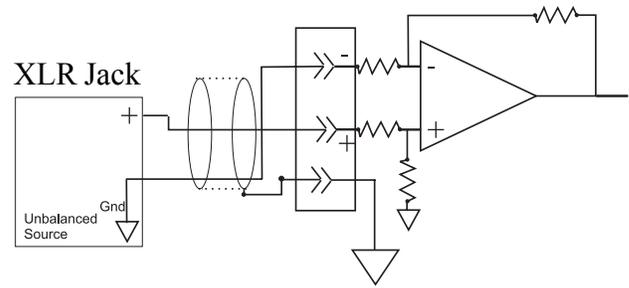
#### Unbalanced Source to Balanced Input

For an unbalanced source device, the drawing at right shows the best wiring method. Because of the design of the Intelix mixer, this wiring provides a slight (+6 dB) boost, and moderate noise and ground loop rejection.



### Unbalanced Source to Balanced Input

For an unbalanced source device, the drawing at right shows an alternative wiring method. Because the grounding of the minus input is not to the mixer ground, this method does not provide the +6 dB boost. Ground current and noise rejection is good.



## 3.7 Fine Tuning

This section details several 8002MCB features which aid in fine tuning the audio signal.

### 3.7.1 Low cut switch

The low cut switch helps eliminate low frequency noise (signals of 150 Hz and below), such as the back-ground rumble from ventilation systems, and is used primarily with mic-level inputs. It is particularly effective when used in conjunction with handheld microphones.

### 3.7.2 Phantom power

The phantom power switch powers condenser (capacitor) mics through the microphone cable. Depressing the phantom power button activates all channels set to mic-level simultaneously. All 8002MCB models support 30VDC phantom power.

### 3.7.3 Ground lift jumper

The ground lift jumper (J19) is designed to help prevent ground loops. When the jumper is present, mixer electronics are grounded to the chassis. If the mixer is installed in a non-metal cabinet, the jumper should be left in place. The jumper should be removed when the mixer is installed in a grounded metal rack frame, or when there is obvious ground loop noise in the output. The jumper may be removed with a needlenose pliers.

### 3.7.4 Compressor/limiter

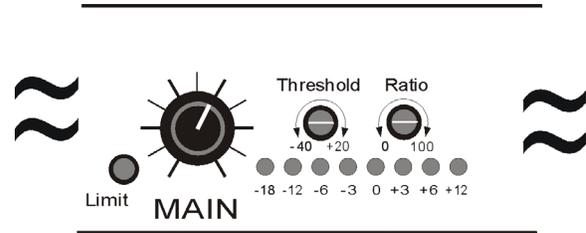
The compressor/limiter is a dynamic range controller that is used to compensate for signals that may sound unnatural or cause audible distortion, as indicated by the bar graph output meter occasionally exceeding +12 VU (red). The compressor/limiter is activated by pressing the main output compressor/limiter switch.

The compressor is used to slightly reduce the dynamic range of a signal. This effect is perceived to quiet loud sounds and boost quiet sounds. The compressor smooths transients.

The limiter is used to prevent a signal from exceeding a certain level. This function guards against amplifier or recording level overloads.

This dynamics controller allows for compression and limiting functions by providing a threshold and ratio controls.

The threshold control sets what signal level will activate the compressor/limiter. It has a range of -40 to +20dBu. The factory setting for the threshold is 0 VU (+4 dBu); however, it may be adjusted from -40 dBu to +20 dBu and is adusted with a screw-potentiometer located on the front of the chassis.



The ratio control sets the compression ratio that will be applied when the signal exceeds the threshold. It has a range from 0% to 100%. Limiting is engaged when the compression ration is 10:1 or greater. The factory setting for the compression ratio is 100% (at this *maximum* setting, the circuit performs the limiter function); however, it may be adjusted through a screw-potentiometer located on the front of the chassis.

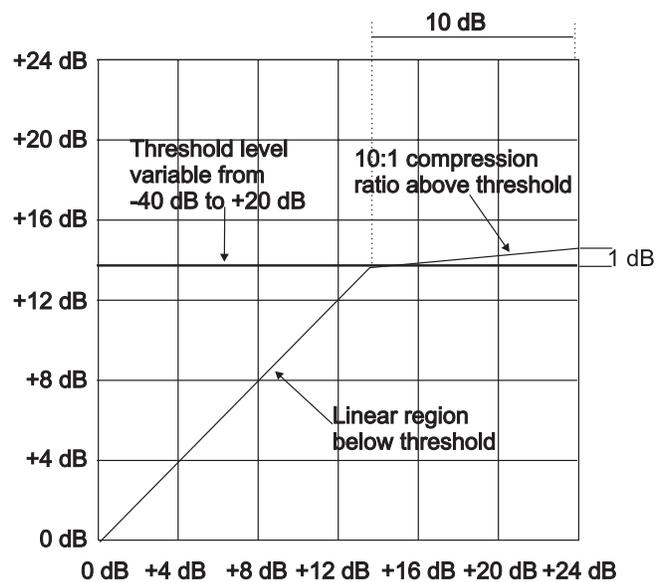
*Note: The Bar Graph Output Meter is used to view the effects of adjusting the Compressor/Limiter controls. Ensure the amplifiers are off while making adjustments. If the amplifier/speaker combination being used is such that the speaker(s) can be overdriven to failure, always operate the mixer with the Output Limit Switch in the “on” position and the ratio should be set at 100%.*

**3.7.4 .1 How the compressor/limiter works**

Two variables control the operation of the Compressor/Limiter: Ratio and Threshold.

The ratio setting determines the ratio of input to output and can vary from 1 to infinity. Set at 1 the compressor has no effect on the signal; a 1 dB change on the input causes a 1 dB change on the output. Set at infinity, there is a “brick ceiling” at the threshold, since a change on the input causes no change at all on the output. The factory setting for the ratio is infinity.

The threshold setting determines the input level at which the compressor/limiter takes effect. The threshold is variable from -40dBu to +20 dBu. Below the threshold, the compressor/limiter has no effect on audio. Above threshold the compressor limiter compresses the audio at the rate determined by the ratio setting. The factory setting for the threshold is +4 dBu.



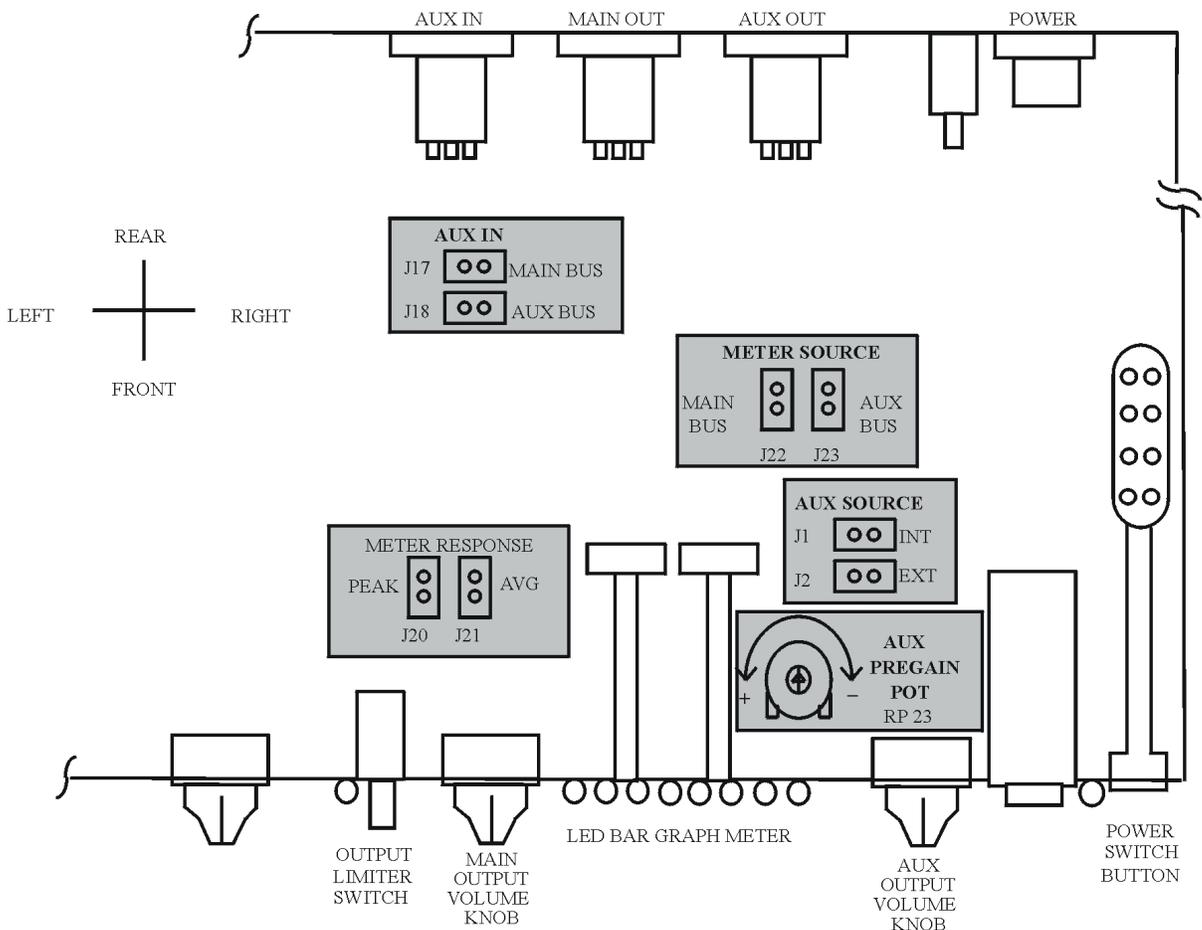
### 3.8 Special Features Activation

Intelix 8002MCB mixers have several built-in features which are easily activated through internal adjustments inside the mixer chassis. Changing the selection of all built-in features requires only the correct placement of internal jumpers or varying the settings of an internal potentiometer.

All adjustable internal components—jumpers and potentiometers—are highlighted in the drawing below. *Adjustments made to any other internal components may void the warranty.*

#### 3.8.1 Changing jumper settings

To change a jumper setting, remove the ten screws secure the top of the mixer. After removing the top of the mixer, locate the jumper to be changed. Jumpers are included from the factory in positions J2, J17, J18, J21 and J22.



#### 3.8.2 Jumper options

##### 3.8.2.1 Bar graph options

The mixer’s meter may be configured to meter the output of either the main or auxiliary bus. In addition, the bar graph may be configured to register either the peak or average level of the audio signal.

### 3.8.2.2 Jumpers J22-J23

The LED Bar Graph Output Meter may be set to register either the main or auxiliary bus output audio signal. The choices are:

- J22 installed: The Bar Graph meters the main bus output. This is the factory default.
- J23 installed: The Bar Graph meters the auxiliary bus output.

*Note: The meter will operate only when a jumper is in one of these two positions.*

### 3.8.2.3 Jumpers J20-J21

The LED Bar Graph Output Meter may be set to register either the peak or average level of the output audio signal. The choices are:

- J20 installed: The Bar Graph meter registers the peak level of the audio output.
- J21 installed: The Bar Graph registers the average level of the audio output. This is the factory default.

*Note: The Bar Graph meter will operate only when a jumper is in one of these two positions.*

## 3.8.3 Bus Routing Options

### 3.8.3.1 Aux in jumpers J17 and J18

These jumpers determine the destination of the Auxiliary Input. The choices are:

- J17 installed: Auxiliary Input is routed to Main Output
- J18 installed: Auxiliary Input is routed to Auxiliary Output.
- J17 and J18 both installed: Auxiliary Input is routed to *both* Main and Aux outputs. This is the factory default setting.

### 3.8.3.2 Aux source jumpers J1 and J2

These jumpers determine which of two gain controls are used to control the level of the Aux output. The choices are:

- J1 installed: Aux output gain is controlled by the internal pot, “Aux pregain pot” RP23 (see page 19 for location). The front panel Aux output volume knob continues to independently control the gain of the headphone amplifier jack on the front panel. This setting is typically used in a linking situation where the output from a mixer must remain fixed, since J1 makes the output of that mixer tamper proof (from the front panel). With J1 installed, the front panel volume knob controls only the headphone level.
- J2 installed: Aux output gain is controlled by Aux volume knob on front panel. 1/4 inch Headphone amp also controlled by the Aux volume knob, but not independently of the Aux output.

*Note: Never install jumpers in both positions J1 and J2.*

## 3.9 Linking

Intelix 8002MCB mixers may be linked in several ways. The two principal methods of linking are “simple” and “complex.”

Simple linking is the expansion to more than 8 inputs by connecting two 8002MCB mixers via the auxiliary bus. Essentially, simple linking is the “daisy-chaining” of multiple mixers to expand the number of inputs routed to a single output. Inputs are multiplied in increments of 8 by adding mixers to the chain.

The number of mixers that can be daisy chained is limited only by the accumulation of noise. Typically 6 mixers utilizing all 48 inputs may be used without excessive degradation. This gives you the equivalent of a 48 input by 1 output mixer. Each doubling of inputs reduces the system’s noise floor by 6dB.

Complex linking allows the use of multiple 8002MCB mixers as a single 2 output mixer. For example, two MC series mixers may be linked as a 16 input by 2 output channel mixer stack in which there are two separate output mixes with full control over distribution of the inputs to the two outputs. Among other applications this feature can be used to implement the so called “mix minus” technique, in which no microphone drives the output nearest itself.

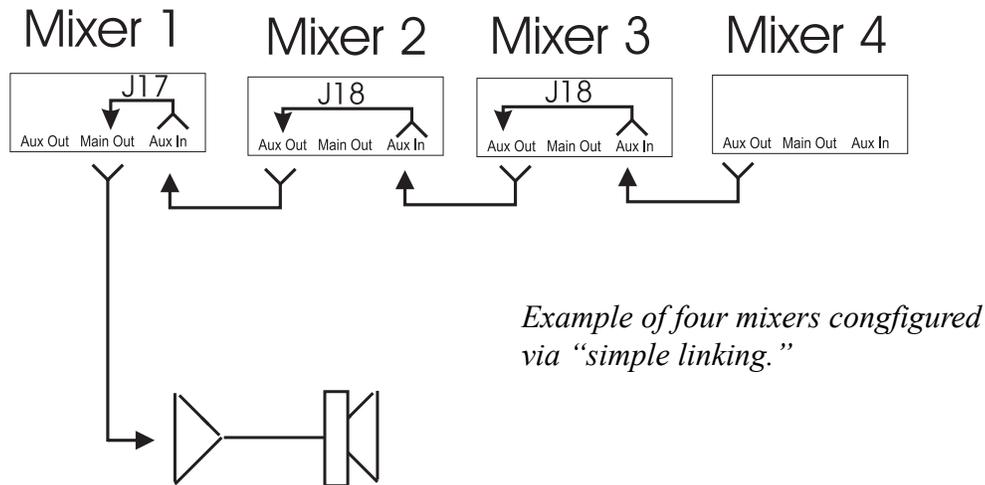
Not all techniques for linking are shown here. If you have questions regarding a linked application, please contact the Intelix applications department.

### 3.9.1 Simple linking

Simple linking or “daisy chaining” allows the expansion of mixer inputs in multiples of eight by chaining together multiple 8002MCB mixers with the auxiliary buses. To preserve certain mixer features this must be done via the following method.

- 1) For each mixer, remove the jumper from J2 and place it on J1. This causes the Auxiliary Out level to be set by an internal pot, fixing the linked gain structure. The external pot only controls the headphone out level.
- 2) In the last mixer in the chain remove the jumper from J18. Leave the jumper in place on J17. This routes the Aux in to the Main output, preserving the compressor/limiter feature.
- 3) All other mixers in the chain should have jumper J18 in place, and J17 removed.
- 4) Using XLR cables, connect each mixer’s Aux Out jack with the Aux in jack of the next mixer in the chain.
- 5) Take the summed daisy chain output from the Main Out jack of the last mixer in the daisy chain. This must be the mixer with J17 in place (from step 1).
- 6) All mixers except the last mixer in the chain (#1 in the drawing below) must have all its frontpanel M-A switches in the A position, to route its inputs to the Auxiliary bus. The position of jumpers J17 and J18 in the first mixer (#4 in the drawing below) do not matter, and can be left undisturbed.

You should now have a daisy chain configured as shown in the drawing on page 18. Note that the position of J17 and J18 are shown within the drawing of each mixer in the chain (except mixer #4 in which the jumper position is immaterial).

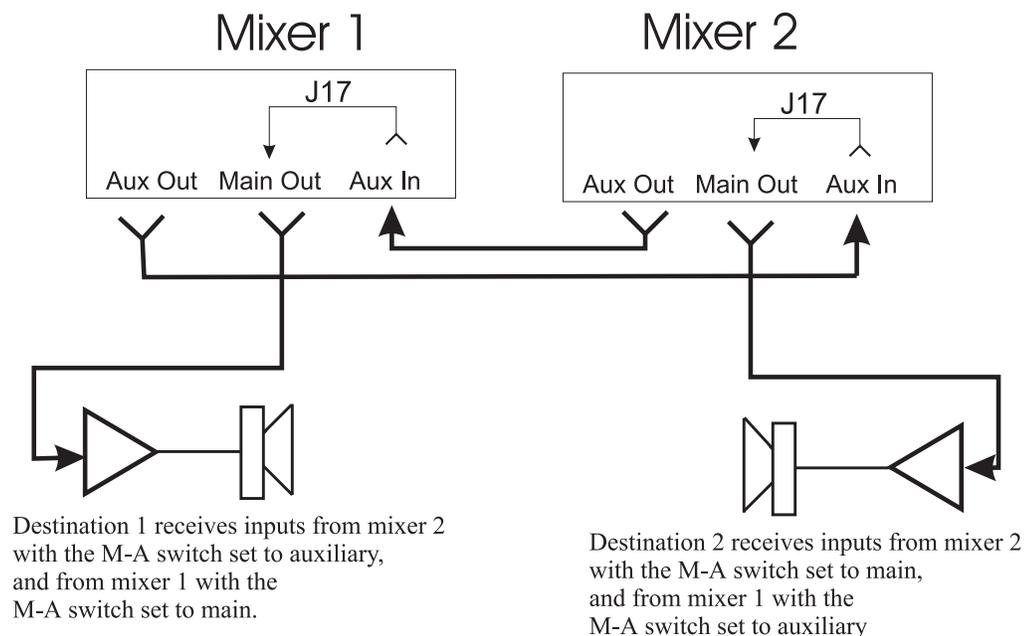


### 3.9.2 Complex linking

Complex linking allows multiple 8002MCB mixers to produce two separate mixes from the same set of inputs. This method may also be used to implement a "mix minus" application by creating two separate mixes. Both destinations are routed through the compressor/limiter, since both destinations are driven by main outputs. Destination 1 receives inputs from mixer 1 with main/auxiliary bus selector set to main, and inputs from mixer 2 with main/auxiliary bus selector set to aux. Destination 2 receives inputs from mixer 1 with main/aux set to aux, and inputs from mixer 2 with main/aux set to main.

To complex link the mixers, take the following steps:

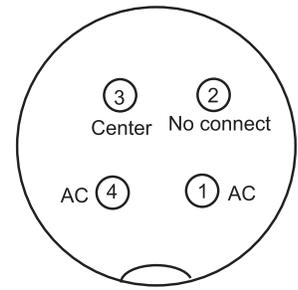
- 1) Set jumpers as shown in the drawing below: J17 alone in both mixers.
- 2) For both mixers, remove jumper from J2 position and place it in position J1. This gives internal control of both auxiliary buses.
- 3) Using external cables, connect the two mixers as shown below.



## 3.10 Mixer Power Connections

### 3.10.1 AC power connection

The manufacturer supplies an 16 Volt, 2.5 Amp center-tapped transformer to power the mixer. Shown at right is the end view of the power supply's power cord connector. If another AC supply is used instead, it should be of equal voltage and have at least a 21 Volt-Amp rating.



## 4.0 Troubleshooting Tips

### NO POWER

- Check the connections between the mixer and the power supply and the external AC power supply.
- Check the wall outlet.

### NO SOUND

- Make sure the mic/line switch is in the proper position. (This is the most likely cause.)
- Make sure both the master and channel input controls are turned up.
- Check that the source signal cable(s) is properly connected and undamaged.
- Adjust trim/gain potentiometer(s) to increase gain.
- If there is still no sound, try changing input source(s) to different channel(s).
- Make sure that jumper J1 is in place.

### DISTORTED SOUND

- Turn down the *master* volume control. If distortion persists, input channel(s) is likely cause.
- Check position of *all* line/mic switches.  
Check the position of DIP switch number 8 it should be in the up position unless you have special reset requirements.
- Determine the distorting input channel(s) by checking them one at a time.
- Decrease gain of input channel(s) causing distortion. (By turning the gain/trim control potentiometer on the rear panel.)

### EXCESSIVE HISS or HUM

**Hiss:** Make sure the volume control knobs for all the unused channels are set at “0” and in line position. Make sure the mic/line switch is in the correct position for both the input and output.

**Hum:** Mics lines can easily cause hum. Make sure to locate them away from vibration and magnetic field sources (motors, power supplies and lines, and data lines).

Check mic lines, especially the shield, for damage.

Another common source of hum is a *ground loop*, which can result from connecting two or more *powered* devices together. Turn the master volume down. If the hum is still present, the ground loop or other cause is **not** in the mixer, but in the connections or devices after the mixer in the audio path.

If the hum is “in” the mixer, first check to see if the Ground Lift Jumper (**J4**) is present. It should be removed, unless the mixer is in a nonmetal cabinet. Check for unbalanced connections; use balanced connections, if possible. For all unbalanced connections, try to disconnect the signal line ground to “lift” the ground.

# 5.0 Technical Specifications

## GENERAL

- Frequency Response** ±5 dB from 20 Hz to 20 kHz  
+0, -3 dB from 10 Hz to 30 kHz
- Max Voltage Gain** 96 dB
- Signal to Noise** Ref +26 dBu @ 54 dB  
sys gain = 90dB
- Equivalent Input Noise** -129 dB @ 150 Ohms,  
20 Hz to 20 kHz
- Crosstalk** better than -90 dB
  
- Bar Graph** -18, -12, -6, -3, 0, +3, +6, +12VU
- Reading** Avg. or Peak, Main or Aux Output
- Attack** 1.7 ms
- Decay** 650 ms
- Phantom Power** +30V switchable  
(bypassed in line mode)
  
- Compressor/Limiter**
- Threshold Adjustment** -40 to +20 dBu
- Ratio Adjustment** 1:1 to ∞:1
- Power Requirements** 16 VAC Center-Tapped, 21VA
- Dimensions** 19" x 6" x 1.75"  
(48.2 cm x 15.2 cm x 4.4 cm)
- Shipping Weight (average)** 11.5 lb

## INPUTS

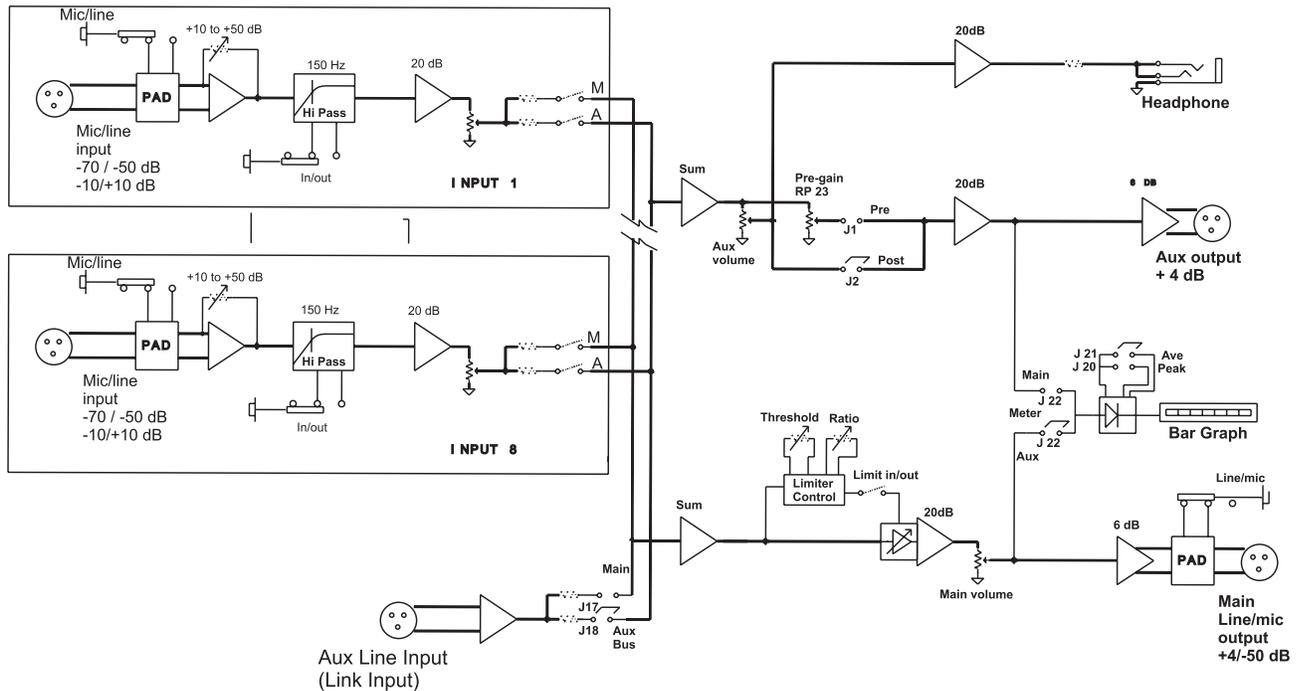
- Gain Range** 96 dB
- Input Trim Range** 40 dB
- Input Impedance** 3.5 kOhms Mic / 15 kOhms Line
- Nominal Source Impedance** 150 Ohms
- Mic/Line Pad** -50 dB
- Max Input Level** +20 dBu (line pad on)
- Low Cut Filter** 12 dB per octave @ 120 Hz
- Aux Input Impedance** 20 kOhms balanced

## OUTPUTS

- Output Impedance** (balanced) 440 Ohms  
(unbalanced) 220 Ohms
- Nominal Load Impedance** 600 Ohms
- Nominal Level** +4 dBu RMS
- Maximum Level** +26 dBu RMS (balanced)
- Main Out Mic/Line Pad** -50 dB



# 6.0 Block Diagram



MC8002 MICROPHONE MIXER

## 7.0 Glossary

**Auxiliary Input** - An additional (ninth) audio input channel. Unlike the other eight channels, it only accepts balanced, line-level inputs. The auxiliary input has no volume control.

**Balanced Line Input** - Balanced, direct line level input to the summing junction that provides an additional audio input source.

**Compression Threshold** - The volume level in dB which is set as the optimum device operating level, and above which the compressor/limiter begins to operate.

**Compressor** - A special type of limiting device which controls the total volume level of a signal by compressing the part of the signal which exceeds a pre-determined threshold. The threshold may be varied.

**Gain/Trim Control** - Trim is the adjustment of the gain of the input stage to offset the differences between input signal levels. Gain is the ratio between the input and output signal levels

**Ground Loop** - A condition which can occur when several ground pathways exist between two or more devices and which can cause hum in the audio signal.

**Jumper** - A short length of conductor used to connect pins electrically.

**Limiter** - A device that severely (at rates greater than 20:1) restricts the upper dynamic range of a signal, by regulating the rate of increase of an input signal's amplitude so that it will not exceed a predetermined threshold.

**Line/Microphone Level** - The two signal level ranges at which the mixer accepts input. Mic level is usually -50 dBu and line level is usually +4 dBu

**Low Cut Switch**- Removes the lower-frequency (<150 Hz) components, which cause rumble, from a signal.

**Phantom Power** - A method of powering condenser microphones by sending DC current over the same mic cable that carries the audio signal. Called "Phantom" as there is no visible power cord and the voltage is not perceptible in the audio signal.

**Signal Clip LED** - On the MC mixers, the indicator that lights (red) when the input signal to a channel is greater than +18 dB.

**Signal Present LED** - On the MC mixers, the indicator that lights (green) when the input signal to a channel is at least -10 dB.

**Summing Junction** - The point in the MC circuitry where the audio signals are mixed.

**XLR** - Rugged, locking, multi-pin balanced connectors frequently used to terminate cables.



