

JDK AUDIO

8MX2

8 Channel Preamp / Mixer



User Manual

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8MX2 Preamp / Mixer

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Introduction:

JDK Audio would like to congratulate you on this **8MX2** purchase. JDK realizes the importance of any equipment purchase and would like to assure you that strong product support has always been a commitment of JDK.

The History:

The **8MX2** was developed to specifically address applications in the Professional Audio and Broadcast industries where compact high performance circuitry is required. In response to the wide scale use of Hard Disk and tape based Digital Multitrack Recorders for live music and film location sound recording, JDK applied the acclaimed mic pre-amp technology originally found in all Audio Toys, Inc. (ATI) Paragon mixing consoles to the **8MX2** pre-amp/mixer. The same pre-amp design was originally found in **ATIs Paragon and Paragon II**, the reference standard in sound reinforcement consoles, and the highly regarded **PRO6 Processor**.

ATI was founded in 1988 to manufacture audio equipment for live sound reinforcement use. Paragons could be found on many of the top tours of the past 20 years. ATI was able to acquire API in 1999. Today, the engineering approach and manufacturing processes of ATI have been incorporated into the company which has become Automated Processes, Inc. (API).

The sonic quality of the high voltage mic pre-amp makes the **8MX2** a perfect device for the mixing engineer by including 8 Mic pre-amps in one chassis. Additional versatility was added which allows mixing with pan to a stereo buss of either the multitrack feed or the return of all 8 channels. Included on the mic input channel is a variable threshold limiter with an Infinity :1 ratio. Inter-unit linking was added to provide Slave / Master coupling. This document will outline the basic blocks of the **8MX2** and show some unique ways in which this device could be used on your next project.

Overview:

There are nine audio blocks that make up the **8MX2**: Eight Input / Output / Return Channels and a Master section.

Channel front panel switches include Cue, Phase Reverse, 48V Phantom Power, Channel / Return signal select for Mix level & pan and Mix assignment. There are two dual concentric controls. Input gain (Inner) with Limiter Threshold (Outer) and Mix Level (Inner) with Mix Pan (Outer).

Master Section front panel switches include Mix Output / Mix 2 Trk Return to Phones (monitor), Channel Return to Phones (monitor), Channel pre / post VCA signal select to Phones (monitor) when Input Cue is selected. There is one dual concentric that controls Mix Level (Inner) and Mix Pan (outer), and a single shaft control which controls Phones (monitor) level. A phones jack is provided on the front panel. There are two 10 segment meters for Level and Gain Reduction metering.

On the rear panel each channel section has individual Ground Lift switches. Two 9 pin D connectors are provided for inter unit linking and two 25 pin D connectors carry the channel outputs and channel return signals. Mix, Mix 2 Trk return and Monitor signals are all TRS jacks. All inputs and outputs are fully balanced. AC input can either be 118VAC or 240VAC with a more than acceptable operating range from minus 15% to

Signal Flow

The proprietary JDK microphone preamplifier will accept signal levels from 0dB to minus 65dB. This preamplifier has 48+ve and 48-ve power rails and produces very low THD even at high input levels or gain. The **8MX2** is pin 2 hot. Following the main gain stage there is a phase reverse switch. The output of the Mic preamp passes through a VCA used for hard wall limiting and feeds the 25 pin D machine send multipin connector on the rear panel. The Input gain control and the Limiter threshold have 41 position detents for easily resetting levels. The Cue switch when depressed allows the monitoring of all signals in the channel and the return paths. **See Input / Limiter.** Machine return 25 pin D connector signals feed balanced line input amplifiers on each channel. Signal feed to the Mix Level / Pan can be either the channel output signal or the return signal (RET). The MIX assign switch places this signal onto the Mix buss. **See Mix Level / Pan.** Channels have individual XLR Ground lift, **See Input Rear Panel**, and 48V Phantom Power switches, **See Input / Limiter.**

The Master section of the **8MX2** allows the monitoring of the cue signals either PRE / POST VCA or channel return. When a channel is cued the Limiter gain reduction is shown on a 10 segment display whilst the selected signal level is displayed on a second 10 segment tri-color display. The signal can be monitored via headphones or the monitor outputs on the rear panel. **See Output Rear Panel.**

Mix master level and balance is a dual concentric control with the Mix Left and Right outputs on the rear panel. Left and Right inputs are made available for 2 Trk (MIX) Returns and can feed the monitor signal path. A mono sum of Left and Right MIX signals is displayed on the level meter when no cue is selected. A separate monitor level control is provided. **See Master Section / Power.**

For a better understanding of the signal flow always refer to the Block Diagram found on page 2.1.

NOTE: Because of switch to switch proximity, some function labels are above a switch and in other cases labels are below. Please read the appropriate descriptions carefully.

Specifications:

Electrical

Frequency Response:

+0/-1 dB, 10Hz-50kHz

Gain Structure:

20dB headroom throughout

THD+N 0.008%, 20Hz-20kHz, at +4dBm

Clipping Level- All Stages: +24dBm

Total Voltage Gain: 65dB at Channel Out

Hum and Noise: (20kHz Bandwidth)

-132 dBm E.I.N. (shorted input)

-129 dBm E.I.N. (150 ohm source)

-86 dBm residual output noise

Input Preamp/Trim Control:

Proprietary High Voltage Preamp

Adjustable Gain 0-65dB, single control
(no pad required)

41 Pos. Detented gain control

Constant Input Impedance: 4K ohms

Better than 0.008% THD+N at +60dB gain

CMR >80 dB, no trimming required

RMS level display- 30 dB range

Phantom Power +48 volts

Limiter:

RMS Level Detection

Threshold: +4dBm to +24dBm (Out)

Ratio: Infinity:1

Gain Reduction Display, 20 dB range

General / Physical

Connectors:

Input: XL-type 3 pin (pin 2 High)

2 Track Returns, Mix Outputs,

Monitor Outputs:

1/4 in. (63mm) phone jacks

Multitrack Inputs and Outputs:

2 Multipin female DB25 connectors

Multiple-unit connectors:

2 Multipin female DB9 connectors

AC Input: Fused, Voltage Selectable

AC Line cord: IEC type, Detachable

Dimensions:

1U, 1 3/4 x 19 in. (44mm x 483mm)

11 in. depth behind front panel (280mm)

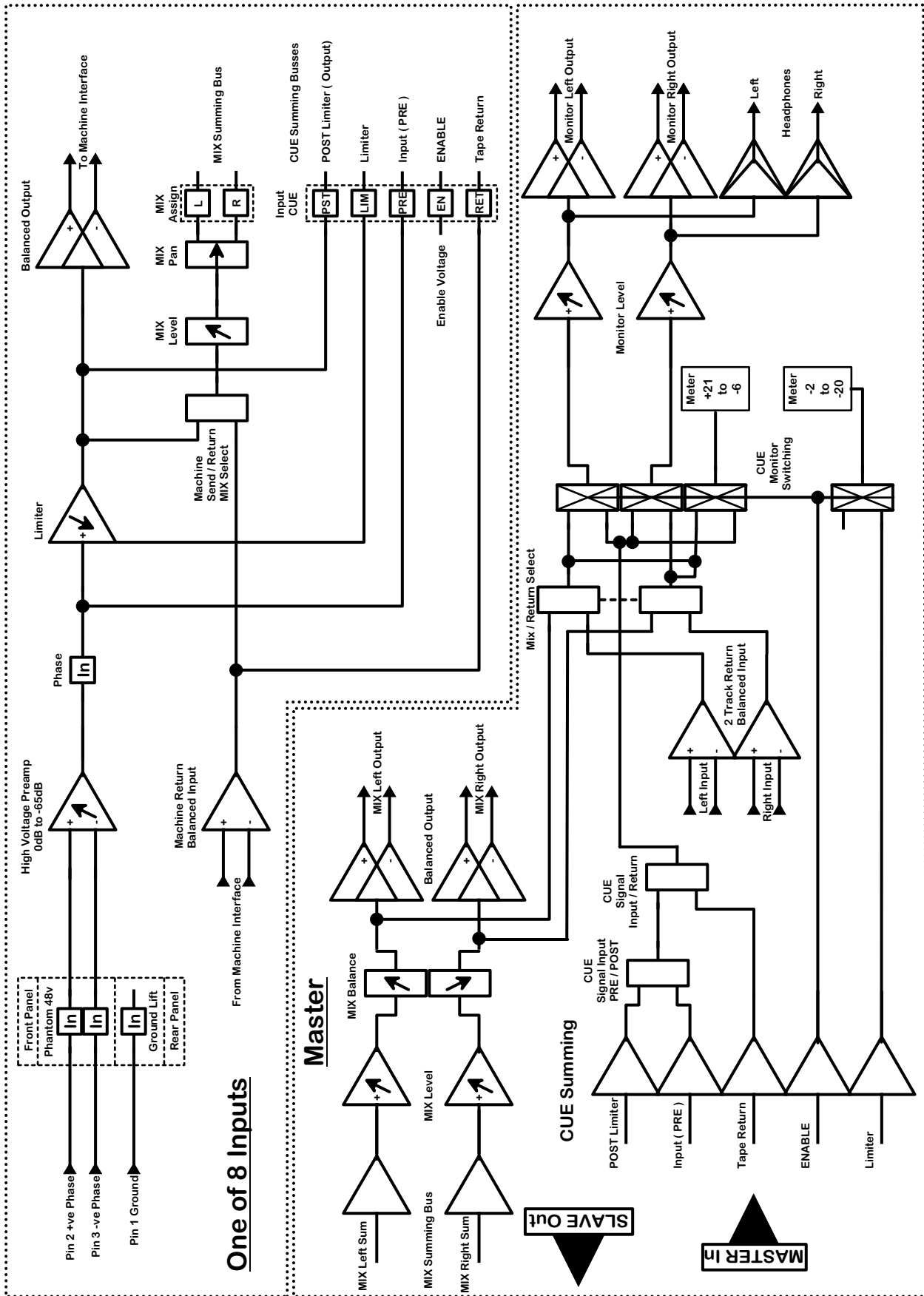
Weight: 10 Lbs. (4.5Kg)

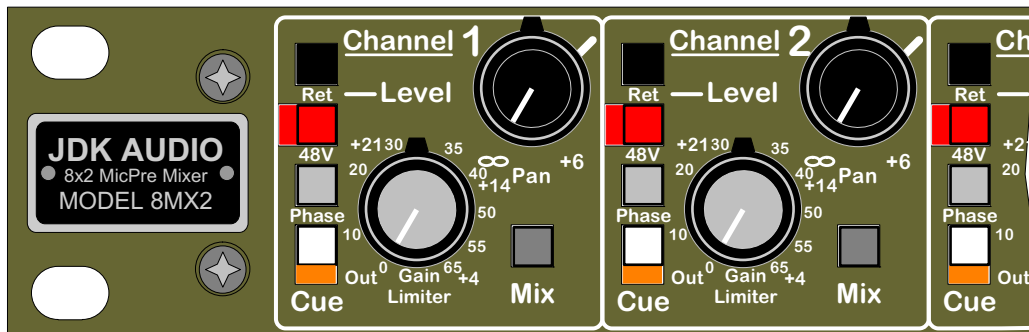
Electrical Requirements:

100-120/220-240 V AC, 50-60 Hz, <60 watts

8MX2 Preamp / Mixer

Block Diagram





Input Level (Gain)

The inner knob of this dual concentric control is the Input Gain potentiometer. The gain of the preamplifier can be adjusted from 0dB (unity) to maximum gain of 65dB. The control has 41 detents. The maximum input signal is +24dB.

Limiter

The outer control of the Input gain dual concentric is the limiter threshold. The threshold is continuously viable from +24dBu (out) ccw to +4dBu cw. The limiter has an infinity to 1 ratio.....This means that once the threshold has been reached the output signal will remain constant at that threshold level. Care should be taken when setting the limiter threshold so as to retain dynamics in the original program material.

RET

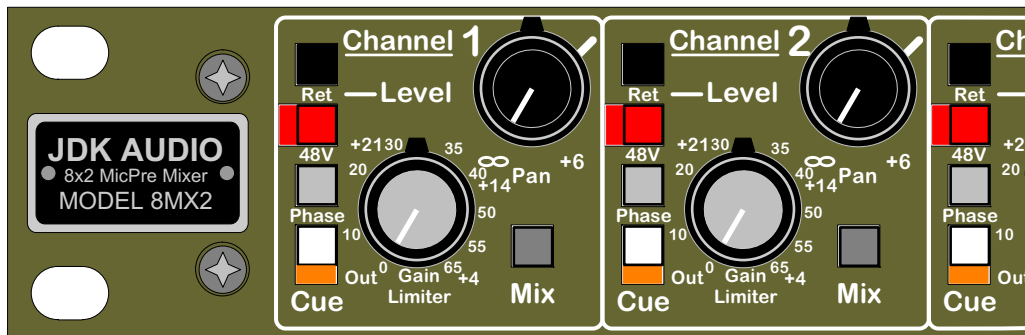
This switch determines the signal that feeds the Mix level and Pan controls. In the up position the channel output signal (post limiter) will feed the Mix level and Pan. In the down position the channel return signal will feed the Mix level and Pan.

MIX LEVEL & PAN

This dual concentric control is used to vary the selected signal in Level (inner) and Pan (outer) that feed the Mix busses via the Mix switch.

MIX

The MIX switch assigns the output of the Level and Pan control to the Mix buss. Both Left and Right are assigned at the same time allowing the switch to act as a channel to Mix mute if needed.



Phase

Phase invert switch is provided and when in the down position will invert the phase / polarity of the input signal.

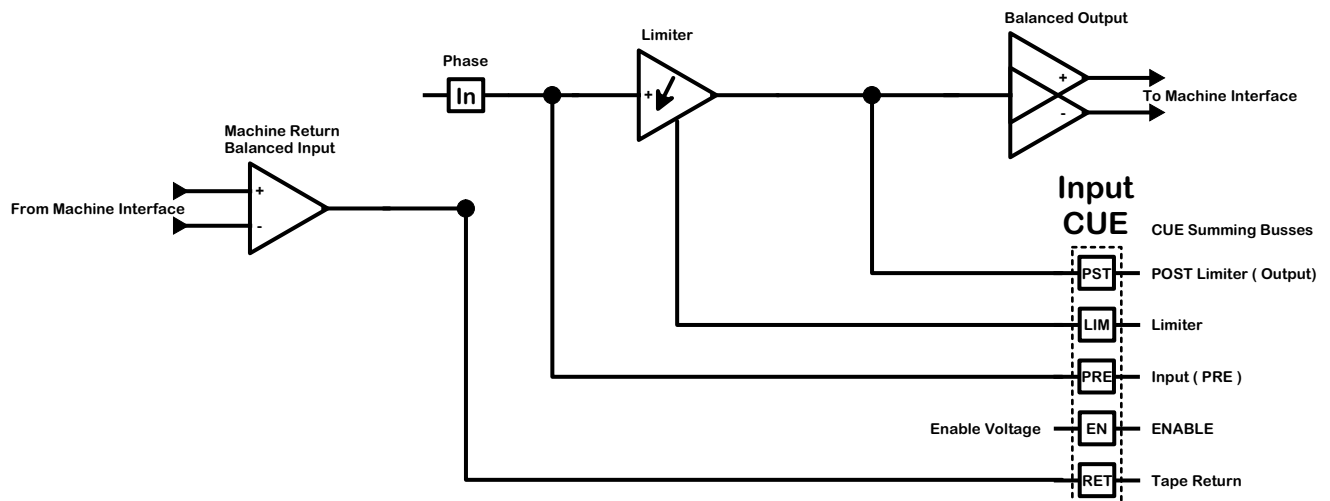
NOTE: Normal operation is Pin 2 Hot (+ve)

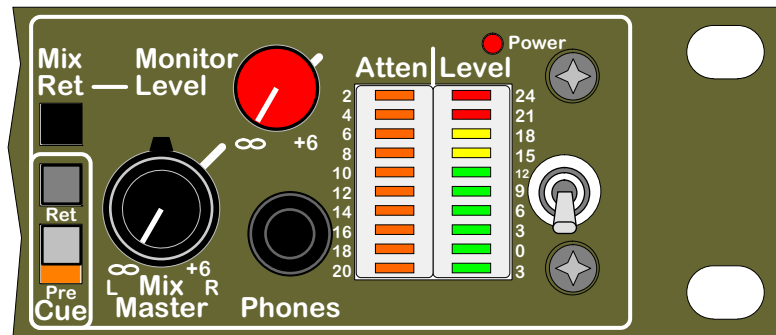
Input 48V Phantom Voltage

When depressed the 48V switch will apply 48V to Pins 2 & 3 of the input XLR. Note that the input ground lift switch **MUST** be in the grounded position when using Phantom Power, see note on page 5.0. A red LED beside the switch will illuminate when 48V is ON.

CUE

When depressed the Cue switch applies a control voltage to the Cue enable circuit and feeds the following audio signals to the master section for monitoring; Channel Input signal pre VCA, Channel Output signal post VCA, and Channel return signal. The Cue switch also feeds the VCA control voltage to the master section for visual monitoring on the 10 segment gain reduction meter.





Meters

The two meters display Limiter attenuation and signal level.

The Limiter meter is calibrated to indicate 20dB of attenuation in 2dB steps. Channel Limiter attenuation will be displayed when a channel's Limiter is activated and that channel's Cue is selected.

The level meter displays the absolute signal level at any one of three points when a channel is Cued. When no channel is Cued a -6dB sum of Mix Left and Right will be displayed. **See CUE**

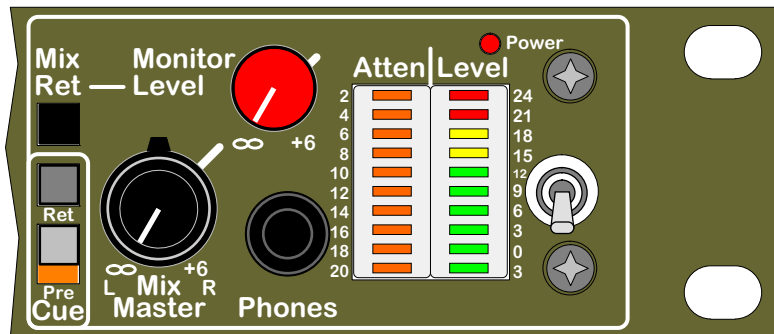
Power

The main power switch for AC input with power ON LED

When switching this unit to operate on either 118Vac input or 240Vac always check the fuse value. The fuse plug contains a spare fuse. For 118Vac 500mA slow blow and for 240Vac 250mA slow blow.

CUE

As can be seen from the input block diagram there are four dynamic signals applied to the cue busses when a channel Cue is depressed. These are: Channel Input (Pre VCA), Channel Output (Post VCA), Channel Return (Machine Input) and Limiter control voltage. The Limiter control voltage is displayed on the 10 segment display as dB attenuation. **See Meters.** The audio signal monitored is selected by the Pre (located directly above the CUE indicator) and Ret switches. Normally with the Pre switch in the up position the signal that is monitored and shown on the Level meter will be the Channel Output. If the Pre is depressed the signal will be the Channel Input pre VCA. The middle switch is the Ret switch and when selected the Channel Return signal is metered and monitored. The Cue system is "Pile on" type. **See Rear Panel.**



Monitor Level

This control is used to vary the level of the monitor signal selected by the Mix Ret switch or when a channel CUE is selected. The headphone amplifier and the balanced monitor output jacks on the rear panel will have identical signals. When an input CUE is selected any one of the three signals may be monitored.

Mix Master

This dual concentric control is the main level control for the Mix outputs. The inner control is level and the outer control is balance. The Left and Right Mix outputs are balanced and are located on the rear panel.

Phones

A standard 1/4" jack is provided for headphone connection. The amplifier design requires that **PROFESSIONAL HIGH IMPEDANCE** headphones **ONLY** be used.

NOTE: DO NOT USE CONSUMER LOW IMPEDANCE HEADPHONES

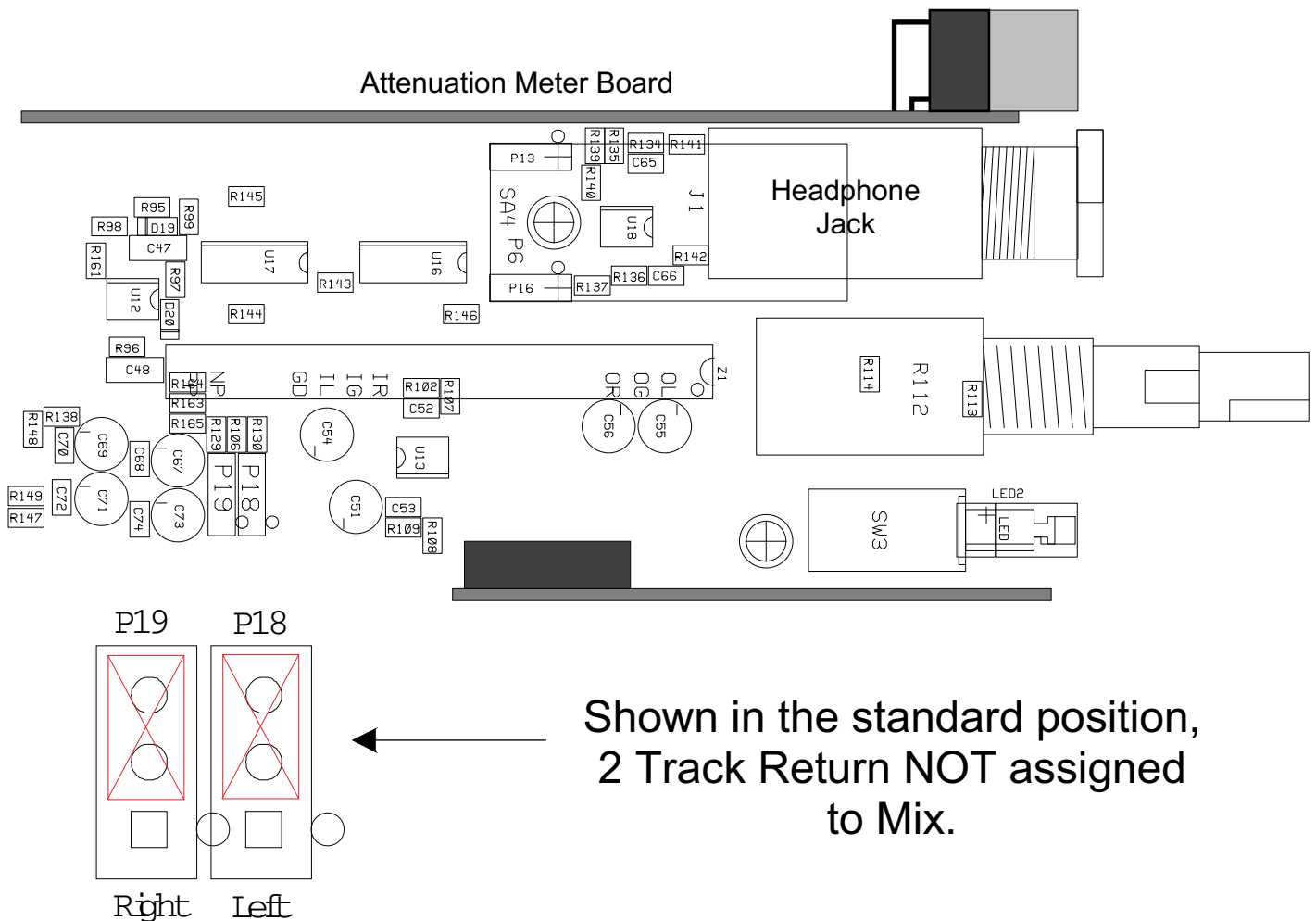
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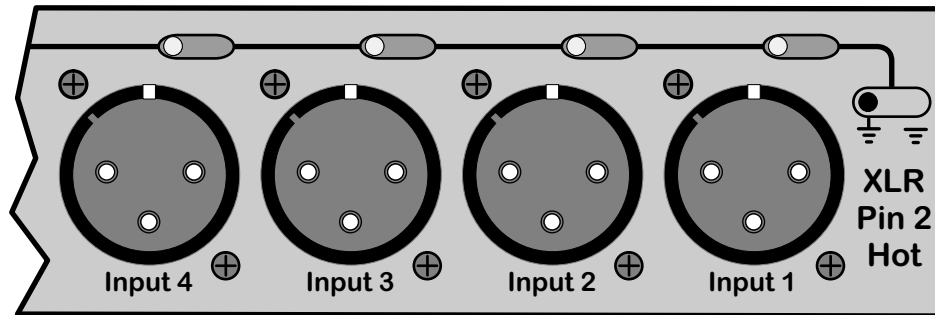
2 Trk Mix Return Options

The **8MX2** gives the user the option to customize their unit slightly. There is the capability via internal jumpers to assign the 2 Trk Return signal directly to the mix buss. This is unity gain direct inject, there is no level control. One application for this is to use the 2 Trk Return as an effect return to the mix buss, or any other similar purpose. The cueing of the 2 Trk Return is unaffected and can still be monitored by pressing the Mix Ret button on the front panel. **See 2 Trk Return page 5.1**

To assign the 2 Trk Return to the mix buss, simply move the two jumpers to the position marked 2 Trk Return to Mix shown below. P18 is for the right side signal and P19 is for the left side signal. The **8MX2** is shipped with the jumpers in the standard position with 2 Trk Return not assigned to the mix buss.

Master Section





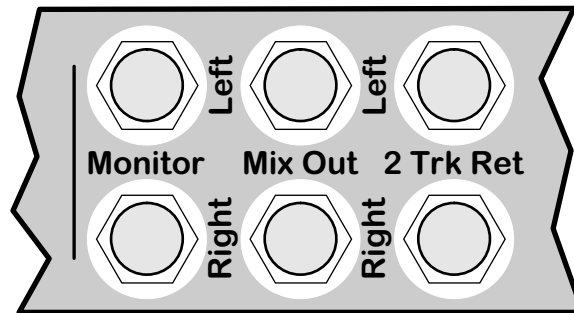
Input XLR

Inputs are XLR type and will accept a maximum input level of +24dB. Pin 2 is Hot.

Input Ground Lift

The switch to the upper right of the XLR when in the Left position will connect the main chassis ground to Pin 1 of the XLR. When the switch is in the Right position chassis ground is REMOVED from Pin 1.

NOTE: If 48V Phantom is being supplied from the 8MX2 this switch must be to the Left or Grounded position.



Monitor Output

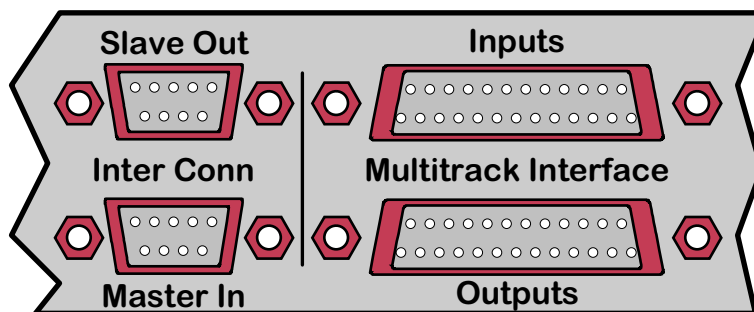
The Monitor Output level is set by the Monitor Level control on the front panel. Left and Right outputs are balanced TRS. Maximum output is +28dB. Tip is Hot.

Mix Output

The Mix Output level and balance controls are on the front panel. Left and Right outputs are balanced TRS. Maximum output is +24dB. Tip is Hot.

2 Trk Return

The 2 Trk Mix Returns are balanced TRS and feed the Mix Ret switch on the front panel. Maximum input is +24dB. Tip is Hot. The 2 Trk Mix Return is monitored by depressing the RET switch in the Master section of the front panel and would be used to listen to the output of your 2 Trk Machine, **see CUE page 4.0**. The 2 Trk Mix Return can be used as a balanced input to Mix Left and Right by using internal jumpers should you need a Mix inject. **See Master Section / Power 4.3**



Inter Unit Connections

There are two interface connections for linking multiple 8MX2's. It is recommended that the accessory link cable be used. Twisted pair type cable can be used but care should be taken to ensure correct ground connections for signal flow. Signals can be used to feed other devices such as larger mixing consoles. CUE enable voltage OUT is neg5V when a CUE is selected. Limiter DC voltage is neg130mV at 20dB of attenuation. Ground connections are chassis 0V.

Slave Out

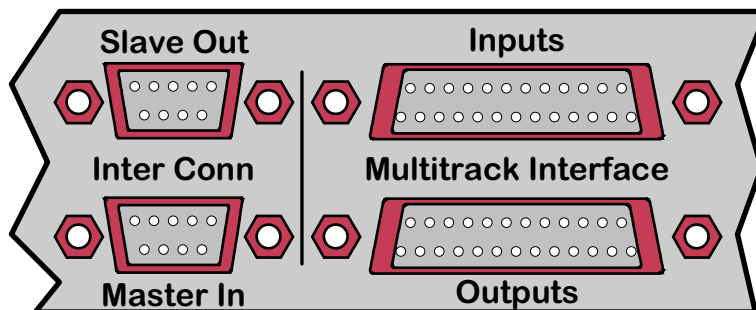
This connector is a 9 pin D type connector and carries the Cue, Cue Enable, and Mix send signals. These **send** signals are:

Pin 1 MIX Left	Pin 2 CUE Enable	Pin 3 CUE CH Return
Pin 4 CUE CH Post VCA	Pin 5 Chassis Ground	Pin 6 Mix Right
Pin 7 Limiter DC	Pin 8 CUE CH Pre VCA	Pin 9 Chassis Ground

Master In

This connector is a 9 pin D type connector and receives the Cue, Cue Enable, and Mix receive signals. These **receive** signals are:

Pin 1 MIX Left	Pin 2 CUE Enable	Pin 3 CUE CH Return
Pin 4 CUE CH Post VCA	Pin 5 Chassis Ground	Pin 6 Mix Right
Pin 7 Limiter DC	Pin 8 CUE CH Pre VCA	Pin 9 Mix In Low



Multitrack Interface

All inputs and outputs are balanced. Maximum input / output is +24dBu.

This connector is a 25 pin D type connector. This pin-out is compatible with DA-88 I/O connections. Suitable twisted pair cable should be used.

H = In Phase signal (Hot)

C = Out of Phase signal (Cold)

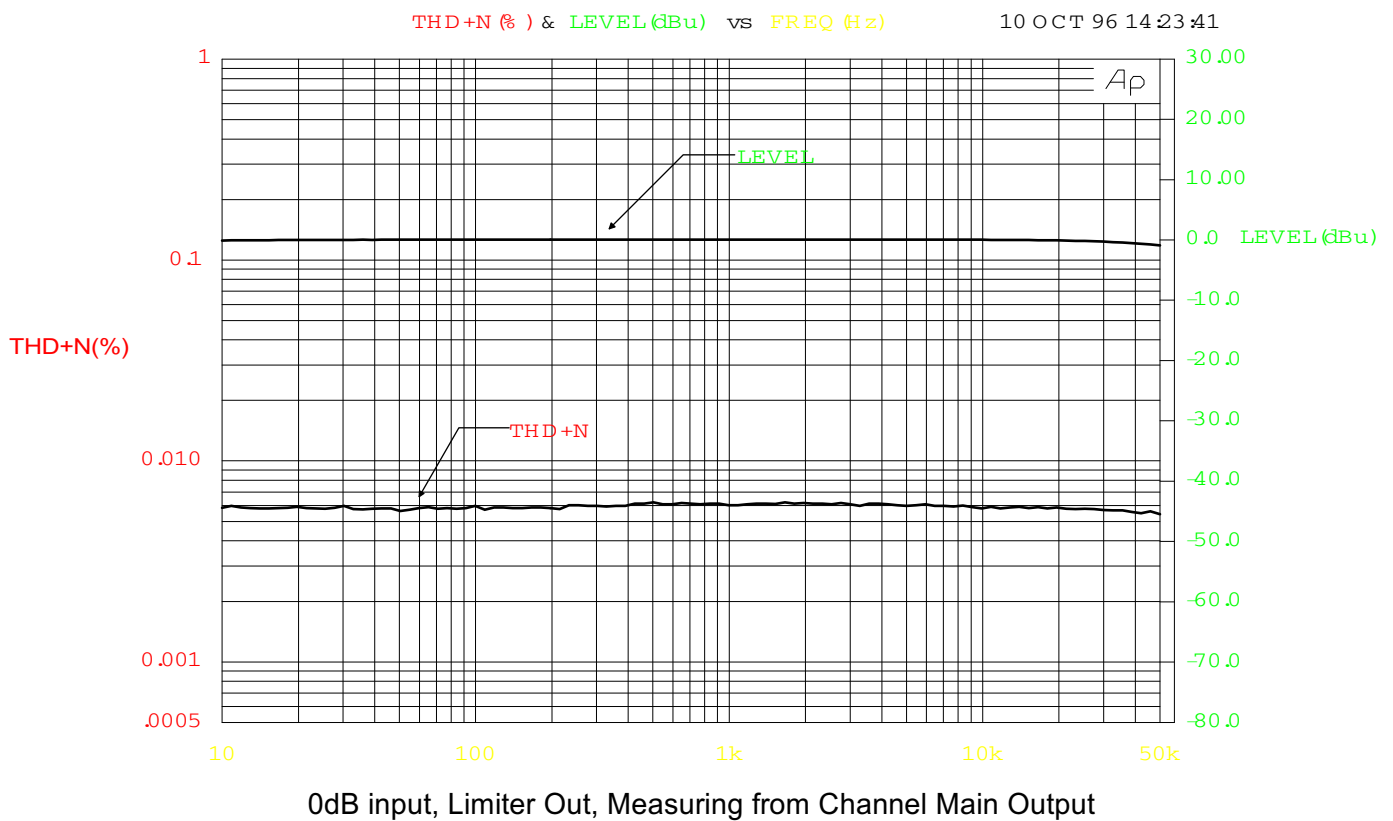
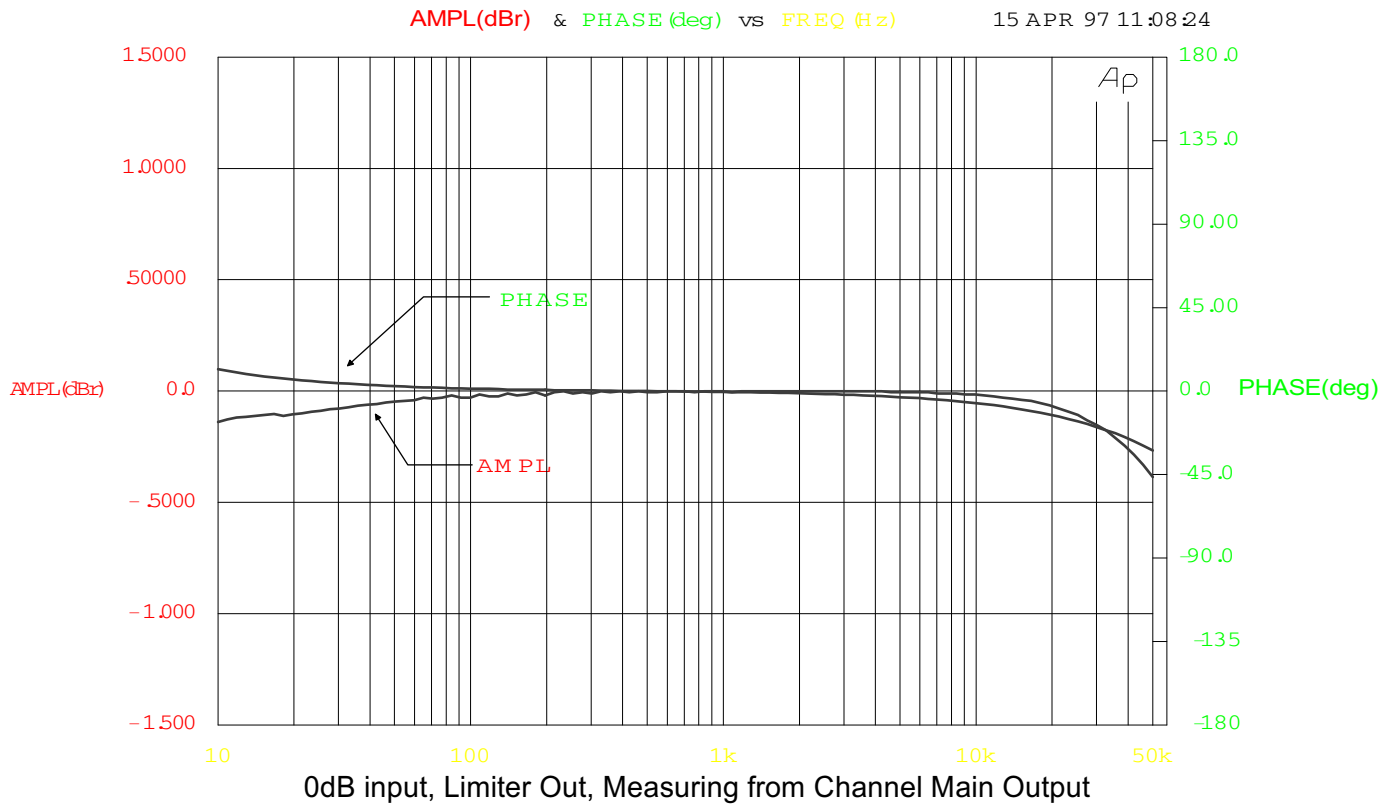
GND = Ground

Outputs / Inputs

Pin No.	Signal	Channel
1	H	8
14	C	8
2	GND	8
15	H	7
3	C	7
16	GND	7
4	H	6
17	C	6
5	GND	6
18	H	5
6	C	5
19	GND	5
7	H	4
20	C	4
8	GND	4
21	H	3
9	C	3
22	GND	3
10	H	2
23	C	2
11	GND	2
24	H	1
12	C	1
25	GND	1
13	N/A	N/A

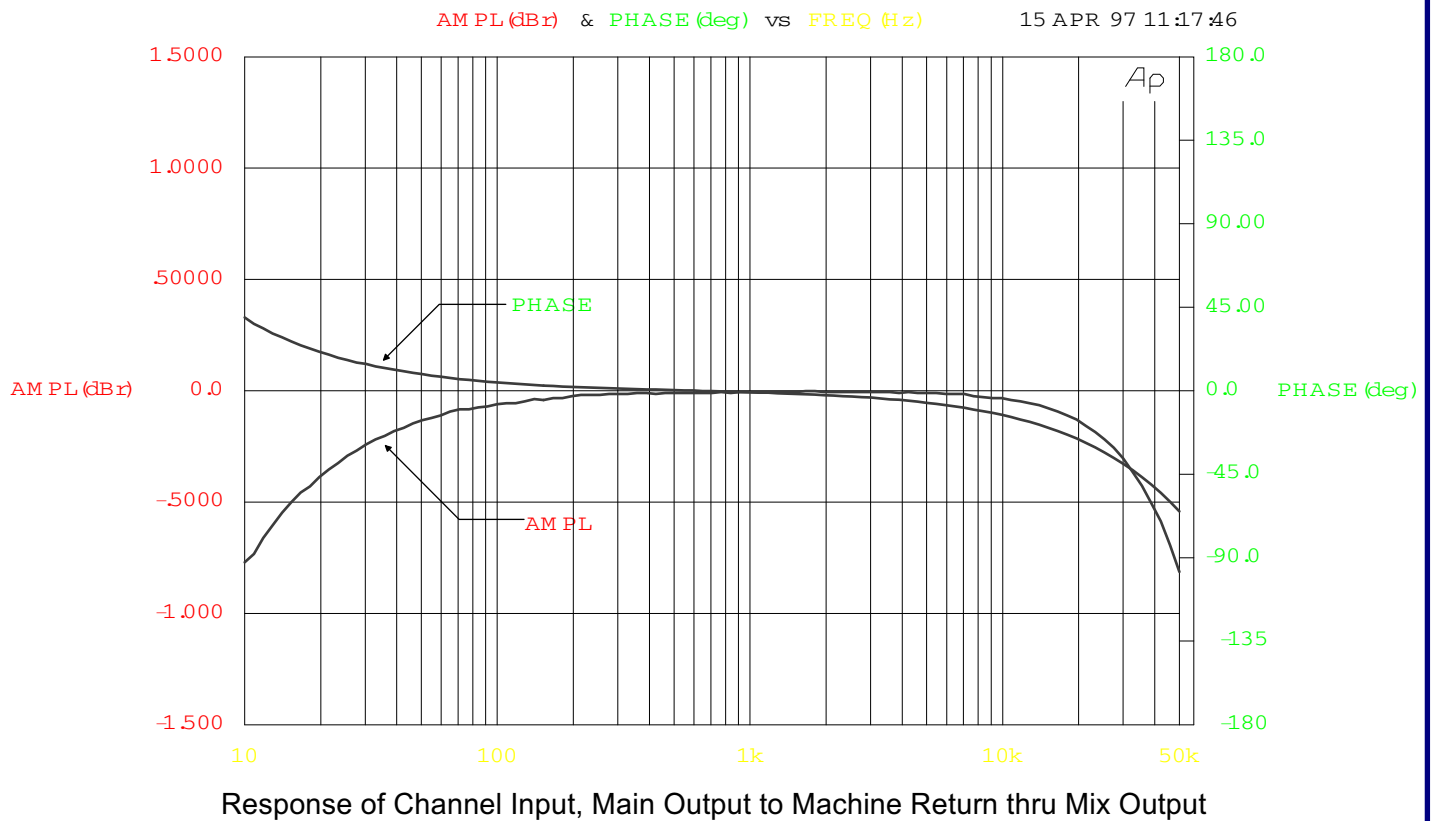
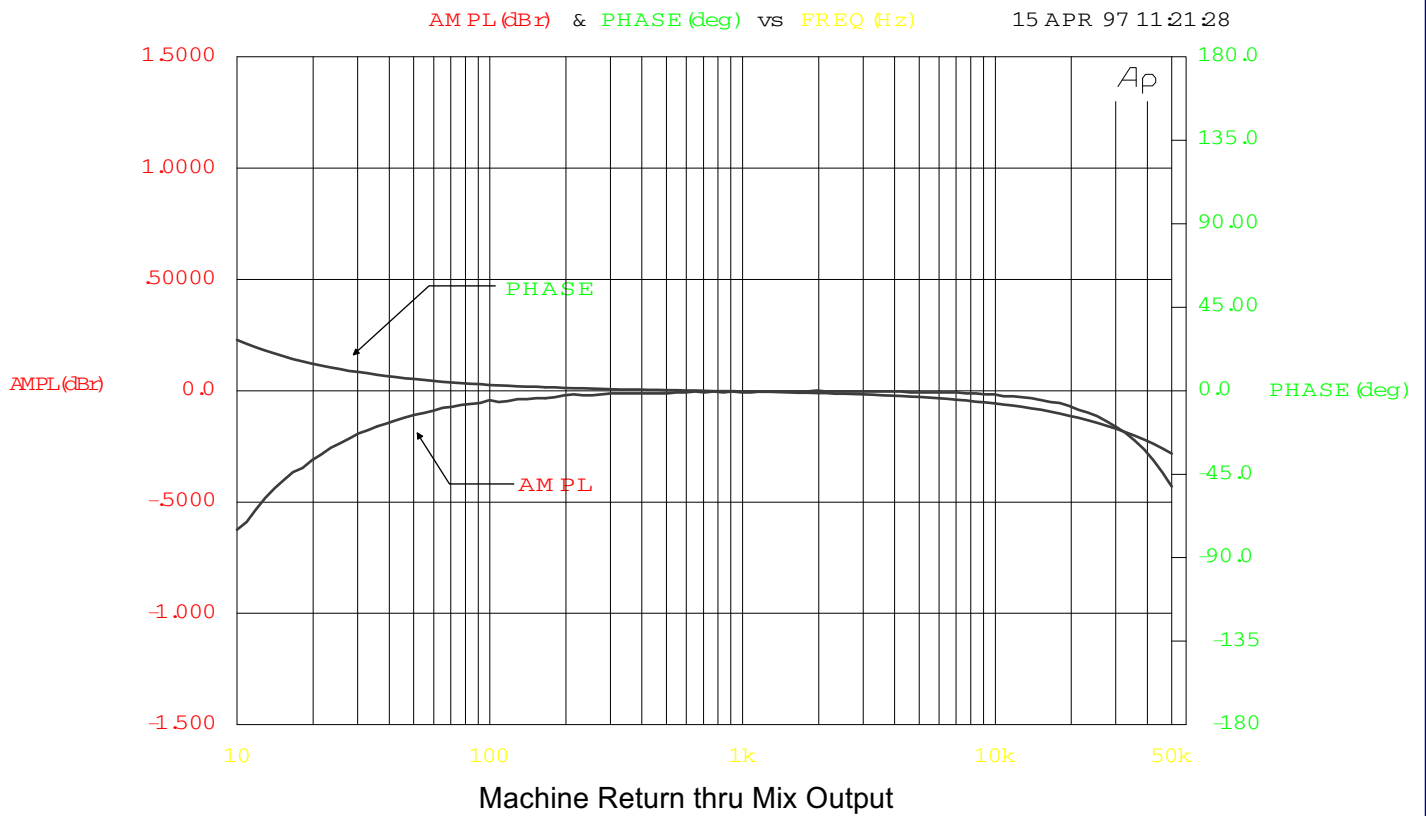
8MX2 Preamp / Mixer

Performance Graphs



8MX2 Preamp / Mixer

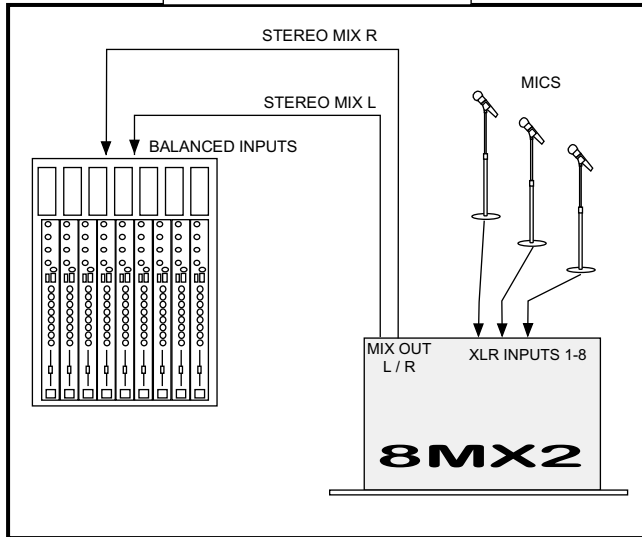
Performance Graphs



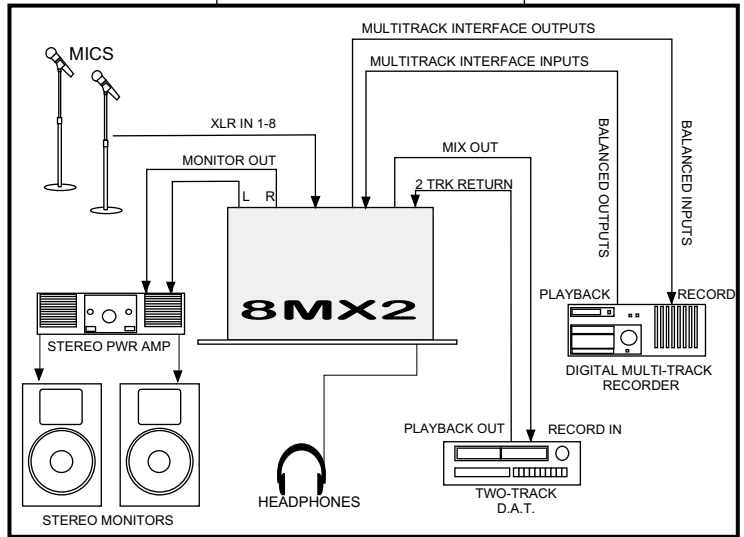
8MX2 Preamp / Mixer

Application Diagrams

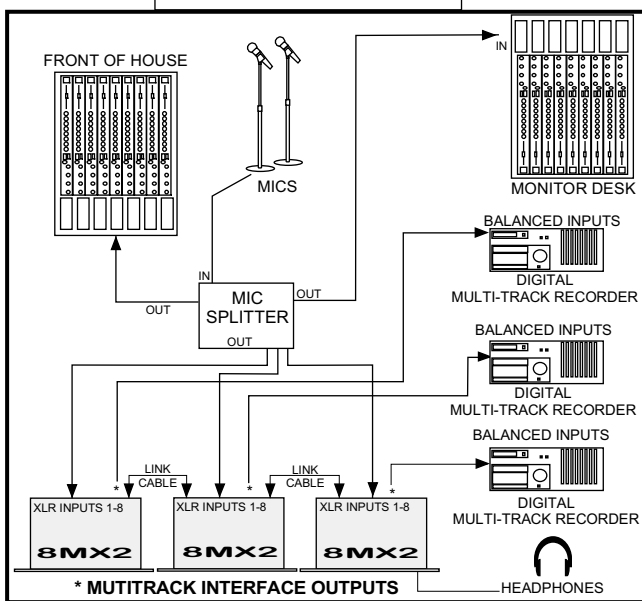
8MX2 AS SUB MIXER



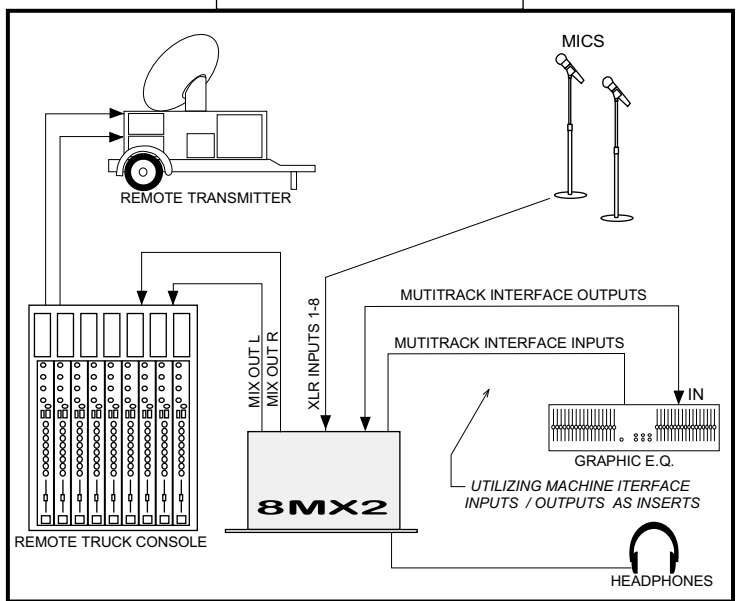
LOCATION RECORDING



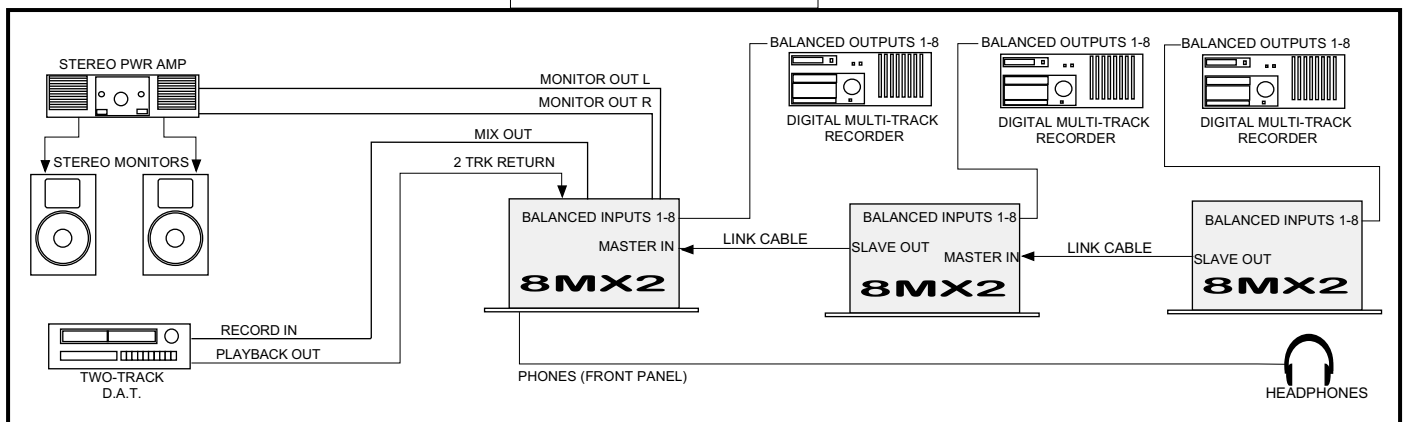
24 TRK RECORDING: LIVE PERFORMANCE



LIVE TO AIR BROADCAST SUBMIXER



PLAYBACK: 24 X 2



- a. **Warranty Information:** This product carries a one year parts and labor warranty from date of purchase. JDK Audio does not cover claims for damage due to alteration and/or abuse. This warranty is limited to failures during normal use, which are due to defects in material or workmanship. If any defects are found in the materials or workmanship, or if the product fails to function properly during the applicable warranty period, JDK Audio, at its option, will repair or replace the product.
- b. JDK Audio reserves the right to inspect any products that may be the subject of any warranty claims before repair or replacement is carried out. Final determination of warranty coverage lies solely with JDK Audio.
- c. This warranty is extended to the original purchaser and to anyone who may subsequently purchase this product within the applicable warranty period. Proof of purchase may be required.
- d. To obtain service:
 - a. Call JDK Audio c/o API at 301-776-7879, 8:30 AM to 5 PM Monday through Friday (Eastern Time) to get a Return Authorization (RA). Products returned without an RA number may not be accepted.
 - b. Pack the defective part by wrapping in plastic and cushioning material. Seal securely in an approved shipping container. If you do not have a sufficient shipping container, ask JDK Audio for advice when calling for the RA number.
 - c. Include a note explaining the problem and conditions of the service request. Include your complete return address (no P.O. Boxes, please)
 - d. Ship the product freight prepaid to:

JDK Audio c/o API
8301 Patuxent Range Road
Jessup, MD 20794

IMPORTANT: Be sure the RA number is plainly written on the shipping carton

- e. This is your sole warranty. JDK Audio does not authorize any third party, including any dealer or sales representative, to assume liability on behalf of JDK Audio or to make any warranty for JDK Audio.
- F. THE WARRANTY GIVEN ON THIS PAGE IS THE SOLE WARRANTY GIVEN BY JDK AUDIO AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE WARRANTY GIVEN ON THIS PAGE SHALL BE STRICTLY LIMITED IN DURATION TO ONE (1) YEAR FROM THE DATE OF THE ORIGINAL PURCHASE FROM JDK AUDIO OR AN AUTHORIZED JDK AUDIO DEALER. UPON EXPIRATION OF THE APPLICABLE WARRANTY PERIOD JDK AUDIO SHALL HAVE NO FURTHER WARRANTY OBLIGATION OF ANY KIND. JDK AUDIO SHALL NOT BE LIABLE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES THAT MAY RESULT FROM ANY DEFECT IN THE JDK AUDIO PRODUCT OR ANY WARRANTY CLAIM.
- G. This warranty provides specific legal rights and you may have other rights which vary from state to state.

IMPORTANT!

Record the serial number of your 8MX2 in the space below for your records. Should you ever need to contact the factory about this equipment, please have this number handy.

serial no. found on right side panel _____



JDK Audio is a product line designed and manufactured by

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