

# Model 750 Audio Mixer

The unique requirements of electronic news-gathering (ENG) trucks, satellite news-gathering (SNG) trucks, and specialized remote broadcast applications demand more than just a general-purpose audio mixer. That's why Studio Technologies created the Model 750, a special piece of equipment for special applications. Only by taking the time to speak with industry professionals, designers of ENG and SNG vehicles, along with numerous field technical personnel, were the necessary specifications established. Using that information as a "road map" to guide the process, additional features, operating ergonomics, and the overall "look-and-feel" issues were addressed. The result is a high-performance, easy-to-use audio mixer expressly designed to go "on-the-road."

## Highlights

- Four mic/line inputs
- Two stereo line inputs
- Setup section, including voice record/playback and tone generation
- Main and AUX stereo audio buses
- Studio-quality limiter/compressors
- Three isolated main output connections
- Extensive monitor section
- Separate speaker and headphone outputs
- VU meters with peak LEDs
- All operator controls on front panel
- Two rack-space (2U) mounting

## Mic/Line Inputs

Four transformer-coupled input channels are provided for connection to microphone or line-level signals. A full set of features is provided for each input channel, including selectable input sensitivity, +48V phantom power, low-cut filter, phase reverse, level control, and pan pot. For operator assistance, a bi-color LED provides signal present and peak indication. Two illuminated pushbutton switches control the routing of the input signal to the main and auxiliary (AUX) audio buses. For convenience, the four mic/line input sensitivity buttons, like all the Model 750's operator controls, are located on the front panel.

## Stereo Line Inputs

Two stereo line-level input channels are provided, and are intended for connection with audio signals associated with video playback. The channels support "real world" broadcast applications, where left and right signals may, or may not, be an actual stereo pair. Routing buttons allow each left and right input to be assigned to the left output bus, to the right output bus, to both output buses, or muted. A level control, along with a bi-color signal present/peak LED, supports each left and right input. Two illuminated buttons control the routing of the input signals to the output buses.

## Main Audio Bus

Signals from the mic/line input channels, stereo line input channels, and the setup section combine to create the main audio bus. The main bus is stereo, but can be used to create two independent monaural audio mixes. Studio-quality, stereo limiter/compressors are provided to control the dynamic range of the main bus. Far from a simple "clipper," each limiter/compressor circuit utilizes a sophisticated laser-trimmed voltage-controlled amplifier (VCA) integrated circuit for quiet, low-distortion level control. For installation flexibility, three sets of stereo output circuits provide access to the main bus: two are electronically-balanced,



line-level; the third is transformer-balanced, with a selectable mic or line output level.

## AUX Audio Bus

The Model 750 provides a second stereo bus that can be configured to operate in either of two modes: as an auxiliary (AUX) output or as a monitor interrupt function. In the AUX output mode special applications are easily supported, such as creating a “mix-minus” feed or serving as a second stereo output bus for on-air use. Signals from the mic/line input channels, stereo line input channels, and the setup section can be assigned to the AUX bus. Direct access to the AUX bus is provided by means of an electronically-balanced, line-level output. In most cases, however, the AUX interrupt mode will be selected, allowing the normal monitor source to be interrupted and the AUX signal monitored in its place. Model 750 users will find this function extremely useful, enabling one or more of the input channels to be monitored without interfering with signals assigned to the main output bus. Two DIP switches, accessible from the front panel, allow the interrupt function to be configured. One switch selects whether the monitor speaker output will be interrupted by the AUX signal, the other whether the headphone output will be interrupted.

## Configurable Outputs

Four monaural, balanced, line-level outputs can serve in a wide range of installation-specific applications. DIP switches, located on the back panel, are used to select from the five available signal sources: main audio bus left and right, AUX audio bus left and right, and mic/line input channel direct. The switches can be set to create a number of resources, including: additional stereo outputs, monaural outputs from the main or AUX audio buses, or direct outputs from the mic/line input channels.

## Monitor Section

Reminiscent of much larger audio consoles, the Model 750's monitor section gives the operator an extensive set of resources. Separate stereo outputs and level controls are provided for connection to a monitor amplifier and headphones. In addition to monitoring the main and AUX audio buses, provision has been made for monitoring two external audio sources. These stereo inputs are intended to be connected to off-air, microwave, or satellite receivers. External Monitor Input 1 is

compatible with “+4” signals, while External Monitor Input 2 can be set, using a front-panel DIP switch, for “-10” or “+4” compatibility.

Multiple sources can be simultaneously selected for monitoring. This can prove useful by allowing, for example, an operator to simultaneously monitor a local mix and an externally-provided mix-minus signal. A mono function allows the monitored audio source to be checked for phase cancellation problems and acceptable “sum-to-monaural” performance.

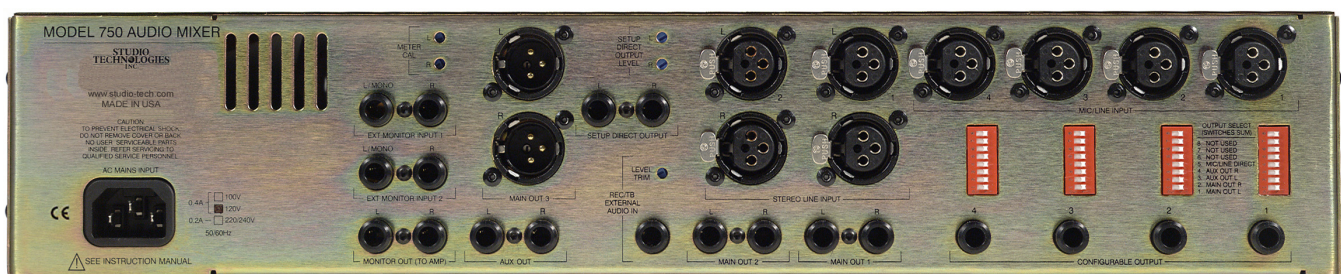
The AUX interrupt mode allows monitoring of selected input channels and the setup section without interfering with normal operation of the main audio bus. For operator assistance, the meters can be configured to monitor the AUX bus whenever it is active.

The mechanical VU-type meters, along with peak level LED indicators, provide a “user-friendly” indication of audio-signal levels. Fanatics for addressing the details, Studio Technologies has even eliminated the issue of burned-out meter-scale illumination by implementing a solid-state, LED-based lighting scheme.

## Setup Section

Unique to the Model 750 are the features provided by the setup section, the highlight being the ability of the operator to record and play back three voice identification segments. The Left+Right segment allows a voice message of up to 12 seconds in length to be recorded, with playback going to the left and right output channels. The Left Only and Right Only segments allow recording of up to 4 seconds each, with playback going only to their respective channels. The voice segments can prove useful, allowing the facilities that receive the vehicle's signal (generally provided by microwave or satellite links) to quickly “learn” more about the origin of the transmission. Information such as vehicle identity, physical location, the names of technical and on-air personnel, mobile telephone numbers, and left and right channel identifiers can easily be sent. The voice audio source is selectable, being either an internal microphone or an externally-connected signal.

The setup section also contains a digitally-controlled sine-wave generator which, under software control, produces a “0-level” single-tone reference or multi-tone sequences. The single-tone output is selectable for either 400Hz or 1kHz—the two



industry-standard frequencies. The tone sequences allow frequency response testing of a transmission chain, with the choice of either a basic or an advanced sequence. In the basic setting a 1kHz "0-level" reference is generated, followed by individual 10kHz, 1kHz, and 100Hz tones. In the advanced setting a 1kHz reference is generated, followed by 14 individual tones, ranging from 15kHz to 50Hz. While the voice and tone setup signals can be assigned to the main and AUX audio buses, a direct line-level stereo output is also provided. This allows the generation of setup and test signals without interfering with normal audio mixer operation.

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## Model 750 Specifications

### **General Audio Parameters:**

Frequency Response: 20Hz-20kHz,  $\pm 0.5$ dB, stereo line in/main out 1  
Distortion (THD+N): 0.04%, measured at 1kHz, mic in/main out 3  
S/N Ratio: 80dB, referenced to +4dBu, mic in/main out 3

### **Connectors:**

Mic/Line, Stereo Line, Main Out 3: 3-pin XLR-type (pin 2 high)  
All Other Audio: ¼-inch, 3-conductor phone jacks  
AC Mains: 3-blade IEC-type

### **Mic/Line Inputs: 4**

Type: balanced, transformer-coupled  
Level Range: selectable for mic or line level  
Microphone Power: +48V phantom-type  
Low-Cut Filter: -3dB at 85Hz, 18dB/octave slope  
Status LED: bi-color, signal present/peak  
Pan Type: constant energy  
Pan Attenuation: 60dB, nominal

### **Stereo Line Inputs: 2**

Type: electronically balanced  
Nominal Level: +4dBu (-8 to +10dBu acceptable)  
Status LED: 2, bi-color, signal present/peak

### **Main Audio Bus Limiter/Compressor: 2**

Threshold: +10dBu (6dB above nominal output level)  
Attack Time: 2mSec, nominal  
Release Time: 100mSec, nominal  
Slope: 5:1, nominal

### **Outputs — Main 1, Main 2, AUX, Configurable, & Setup Direct:**

Type: electronically balanced, compatible with balanced or unbalanced loads  
Nominal Level: +4dBu  
Maximum Level: +27dBu into 10k ohms, +26dBu into 600 ohms

### **Main Output 3:**

Type: balanced, transformer-coupled  
Nominal Level: mic -36, line +4dBu, selectable  
Maximum Level: +22dBu into 10k ohms

### **Monitor Output:**

Type: electronically balanced, compatible with balanced or unbalanced loads  
Nominal Level: -2dBu  
Maximum Level: +21dBu into 10k ohms, +20dBu into 600 ohms

### **Headphone Output:**

Compatibility: intended for connection to headphones with impedance of 100 ohms or greater  
Maximum Output Voltage: 8Vpp, 100 ohm load

## Talk Back

The Model 750 includes a talk back function. Two pushbutton switches allow the selected voice source to be routed to the setup direct output and/or the main and AUX audio buses.

## Installation

While the Model 750 is loaded with features, it only requires two spaces in a standard 19-inch rack. Neutrik XLR-type and ¼-inch, 3-conductor audio connectors are used for audio interconnections. Mains power is factory configured for 100, 120, or 220/240V, 50/60Hz.

### **External Monitor Inputs:**

Quantity: 2, stereo  
Type: electronically balanced  
Nominal Level, Input 1: +4dBu  
Nominal Level, Input 2: -10 or +4dBu, selectable

### **Setup Section:**

Record L+R Duration: 12 seconds, maximum  
Record L Only, R Only Duration: 4 seconds, maximum  
Record Audio Source: internal microphone or external line level, selectable  
Single Tone Frequency: 400Hz or 1kHz, selectable  
Basic Multi-Tone Frequencies: 1kHz reference, followed by 10kHz, 1kHz, 100Hz  
Advanced Multi-Tone Frequencies: 1kHz reference, followed by 14 tones (15kHz-50Hz)  
Setup Direct Output Level: +4dBu, nominal, adjustable, range -2 to +10dBu

**Talk Back:** connects voice audio source to setup direct and/or main and AUX outputs

### **Record/Talk Back External Audio Input:**

Type: electronically balanced  
Level Range: -20 to +4dBu, adjustable

### **Metering: 2**

Type: analog panel, VU scale, with signal peak LED  
Calibration: 0 VU = +4dBu, nominal, adjustable, range -2 to +10dBu

**AC Mains Requirement:** 100, 120, or 220/240V,  $\pm 10\%$ , factory configured, 50/60Hz, 40 watts maximum

### **Dimensions (Overall):**

19.00 inches wide (48.3cm)  
3.49 inches high (8.9cm)  
9.50 inches deep (21.4cm)

**Mounting:** 2 standard (2U) rack spaces

**Weight:** 14.0 pounds (6.4kg)

Specifications subject to change without notice.

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