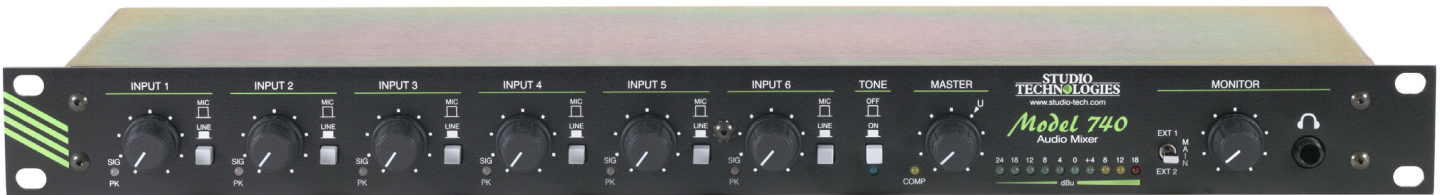




Model 740

Audio Mixer



Model 740 Front Panel

The Model 740 Audio Mixer is expressly designed for use in compact electronic-news-gathering (ENG) vehicles. Many other specialized audio production applications can also be supported. Model 740 features include six microphone/line-level inputs, a monaural output bus, LED metering, and a flexible monitoring section. It's important to note that the feature set was carefully selected to provide exactly what's needed—and no more! Keeping it simple was the design mantra. The Model 740 is targeted for use by operators that have a multitude of tasks to perform, and too little time to do them. Using its experience in mobile broadcast applications, Studio Technologies was able to design the Model 740 to include all the crucial features required to meet the needs of fast-paced news-gathering operations, while still providing the operator with an extremely easy-to-use product.

Product Highlights:

- Six mic/line inputs
- Setup oscillator with dedicated output
- Studio-quality compressor
- Internal power supply
- Flexible monitor section
- 10-segment LED meter
- All operator controls on front panel
- Single rack-space mounting

Model 740 Audio Mixer

The hallmarks of the Model 740 are application flexibility, simplicity in use, audio quality, and long-term reliability. A number of internal configuration jumpers allow the unit's performance to be tailored to the needs of specific installations. The carefully selected feature set ensures that the Model 740 will be a "team player" when it's integrated into an audio system. While there's flexibility on the inside, the operator is presented with an easy-to-use set of front-panel controls and indicators—the operator never has to access the back panel to operate the unit. In this way the goal of delivering successful on-air and production audio, day-after-day, can best be achieved. The Model 740's audio quality is "pro" throughout. The components were carefully selected to deliver low-noise, low-distortion performance. Reliability over the long haul was a Model 740 design criteria. To that end the unit's enclosure is made of steel, combining strength with effective RF rejection. On the inside, all components are mounted on an FR4 (fiberglass-based) circuit board assembly.

Mic/Line Inputs

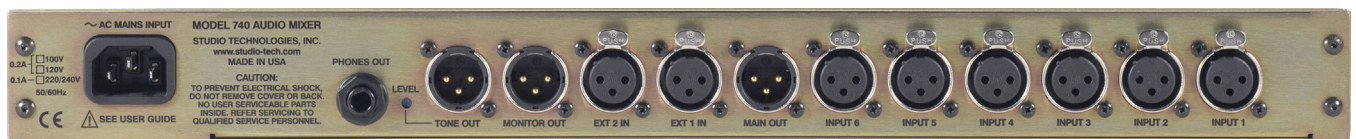
Six input channels are provided for connection to microphone or line-level signals. The electronically balanced circuitry is "ruggedized" for reliability under tough operating conditions. The low-noise, low-distortion, high-headroom audio performance is what's expected of sophisticated "pro audio" equipment. Features provided for each input channel include an input sensitivity button, rotary level control, and level status LED. For ease of use, the rotary level control sets both the gain of the input circuit and the level being sent to the main audio bus. For convenience the six input sensitivity buttons, like all the Model 740's operator controls, are located on the front panel. For operator assistance, the bicolor level status LED provides signal present and peak level indication.

Main Output

Signals from the six mic/line input channels combine to create a monaural signal called the main output bus. A rotary control sets the overall level of the main bus. An electronically balanced output circuit is associated with the main output bus. It provides a line-level signal capable of driving balanced or unbalanced loads of 600 ohms and greater. A studio-quality audio compressor circuit is provided to control the dynamic range of the main audio bus. An LED indicator lights whenever the compressor circuit is actively controlling the signal. Far from a simple "clipper," the compressor circuit utilizes a sophisticated laser-trimmed voltage-controlled amplifier (VCA) integrated circuit for quiet, low-distortion operation. To help minimize operator error, no compressor on/off switch is provided on the Model 740's front panel. An internal 3-position configuration jumper determines the compressor circuit's operating mode. From the factory the jumper is set so that the compressor's operating threshold is 6dB above the nominal +4dBu output level. This is an excellent general-purpose setting for broadcast use where voice signals are the primary audio content. To meet the needs of other installations, a technician can change the jumper to make the threshold 2dB above the nominal +4dBu. This could prove useful when using the Model 740 with level-sensitive RF transmission systems. For other applications a technician can set the jumper to a third position which completely disables the compressor function.

Monitor Section

The Model 740's monitor section provides a line-level monitor output, along with two headphone outputs. Associated with the monitor section is a rotary level control and a 3-position source select switch. The monitor output is compatible with a variety of monitor amplifiers and amplified loudspeakers.



Model 740 Back Panel

For flexibility, two headphone output jacks are provided, one on the front panel and one on the back. Each headphone jack is supported by an independent output circuit. A 3-position toggle switch is used to select the audio source to be monitored. This allows monitoring of the main audio bus, along with two external monaural audio sources. These external monitor inputs are intended to be connected to devices such as off-air, microwave, or satellite receivers. Alternately, other mobile broadcast support equipment, such as a PC-based editing system, can be connected.

Unique to the Model 740 is the ability to configure the monitor output to meet the needs of the “real world.” This is accomplished by using an internal 3-position configuration jumper to select the monitor output mode. From the factory the monitor output is configured to “follow” the setting of the front-panel level control. In addition, the monitor output mutes whenever a pair of headphones is plugged into the front-panel jack. A technician can change the jumper so that the monitor output still follows the setting of the front-panel level control, but is not impacted by use of the front-panel headphone jack.

A third jumper position allows a technician to configure the monitor output such that it is electrically before (“pre”) the level control. As with the previous mode, the output isn’t impacted by use of the headphone output. This mode is very useful when an amplified loudspeaker that contains a user-accessible level control is connected. Examples of amplified speakers that contain user level controls include the popular Fostex® 6301-series. With the jumper in the pre-level-control position, only one level control—the one on the amplified speaker—would be used to set the speaker level. This can greatly minimize operator confusion while still utilizing the resources of the Model 740’s monitor section.

Metering

A 10-segment LED meter provides an indication of audio-signal level. An internal selection jumper determines the audio source for the meter. From the factory the meter is set to monitor the signal level of the main audio bus. A technician can change the configuration so that the meter monitors the source selected by the monitor section’s 3-position switch. In this way the level of the main audio bus, as well as the two external monitor sources, can be displayed by the meter.

Reference Tone

A sine-wave audio tone is provided for alignment and reference use. From the factory the tone is configured for 400Hz. If required, a technician can revise the frequency to be 1kHz. A button on the Model 740’s front panel allows the tone to be connected to the main audio bus. In addition, a dedicated reference tone output is also provided. This continuous source of sine-wave signal is accessed by means of a balanced line-level output on the back panel. The dedicated reference tone output is intended to provide a setup or test signal that is available at all times, and without interfering with normal operation of the main audio bus.

Mounting, Connectors, and Mains Power

The Model 740 requires one space in a standard 19-inch rack. Industry-standard XLR-type and ¼-inch 3-conductor connectors are used for all audio interconnections. To ensure maximum reliability, all connectors were selected to be premium grade. For example, the XLR-type connectors feature metal shells and are manufactured by Neutrik. AC mains power is connected directly to the Model 740 by way of a standard 3-pin detachable IEC cord set; no external power supply is used. AC mains power is factory configured for 100, 120, or 220/240V, 50/60Hz.

Model 740 Audio Mixer

Specifications

General Audio Parameters:

Frequency Response: 20Hz-20kHz, ± 0.5 dB, mic/line in to main out

Distortion (THD+N): 0.03%, measured at 1kHz, +4dBu, mic/line in to main out

S/N Ratio: 74dB, referenced to +4dBu, mic/line in to main out, 22Hz-22kHz

Mic/Line Inputs: 6

Input Sensitivity: switch selectable for microphone or live-level signals; 43dB line input "pad" implemented using sealed bifurcated contact telecom relays

Operating Level Range: mic input position: -78 to -8dBu; line position: -35 to +35dBu. Range specified to give +4dBu on main output, master level control set to unity gain position.

Type: electronically balanced

Impedance: mic position 2k ohms, line position 15k ohms

Common Mode Rejection Ratio: 70dB @ 60Hz, 69dB @ 40kHz (typical), mic position, ref +4dBu on main out

Status LED: bicolor, displays signal present and peak

Compressor:

Type: single-knee, VCA-controlled

Slope: 5:1

Threshold: configurable, choices are 1) 6dB over nominal (+10dBu on main output, factory default), 2) 2dB over nominal (+6dBu on main out), 3) disabled

Attack Time: 2mSec

Release Time: 100mSec

Status LED: compressor active

Main Output:

Type: electronically balanced, capacitor-coupled, intended to drive balanced or unbalanced loads of 600 ohms or greater

Source Impedance: 50 ohms, nominal

Nominal Level: +4dBu

Maximum Level: +26dBu into 10k ohms, +25dBu into 600 ohms

External Monitor Inputs: 2, monaural

Type: electronically balanced, direct-coupled, compatible with balanced or unbalanced signals

Impedance: 24k ohms, nominal

Common Mode Rejection Ratio: 90dB @ 60Hz, 70dB @ 86 kHz, typical

Nominal Level: +4dBu

Monitor Output:

Type: electronically balanced, capacitor-coupled, intended to drive balanced or unbalanced loads of 600 ohms or greater

Source Impedance: 50 ohms, nominal

Nominal Level: +6dBu, with monitor level control @ 100%, mode selected to be post level control (no headphone mute)

Maximum Level: +26dBu into 10k ohms, +25dBu into 600 ohms

Signal Source: configurable, choices are 1) post monitor level control with headphone muting (factory default), 2) post monitor level control, 3) pre monitor level control

Headphone Outputs:

Source: same as selected for monitor output

Configuration: separate output driver circuitry for front and back headphone output connections

Type: monaural source configured to drive stereo headphones through of 100 ohm resistors

Compatibility: intended for connection to headphones with impedance of 100 ohms or greater

Maximum Voltage: 5.5 Vpp, 100 ohm load

Reference Tone:

Frequency and Wave Form: 400Hz nominal, sine wave (technician can revise to 1kHz)

Direct Output Level: +4dBu, nominal, adjustable over -1/+3dB range

Direct Output Type: electronically balanced, capacitor-coupled, intended to drive balanced or unbalanced loads of 600 ohms or greater

Direct Output Source Impedance: 100 ohms, nominal

Metering:

Type: 10-segment LED, modified VU ballistics

Source: configurable, choices are 1) display level of main output bus (factory default), 2) source selected for monitor output

Connectors:

Mic/Line and External Monitor Inputs: 3-pin XLR-type, female

Main, Reference Tone Direct and Monitor Outputs: 3-pin XLR-type, male

Headphones: ¼-inch 3-conductor phone jacks

AC Mains: 3-blade, IEC 320 C14-compatible (mates with IEC 320 C13)

AC Mains Requirement:

100, 120, or 220/240V, $\pm 10\%$, factory configured; 50/60Hz; 0.2A maximum

Mains Fusing: 1

Type: 5x20mm, time-lag

Rating: 0.2A for 100V and 120V AC mains, 0.1A for 220/240V AC mains

Dimensions (Overall):

19.00 inches wide (48.3cm)

1.72 inches high (8.9cm)

7.2 inches deep (18.3cm)

Mounting:

One standard rack space

Weight:

7.0 pounds (3.2kg)

Specifications subject to change without notice.

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