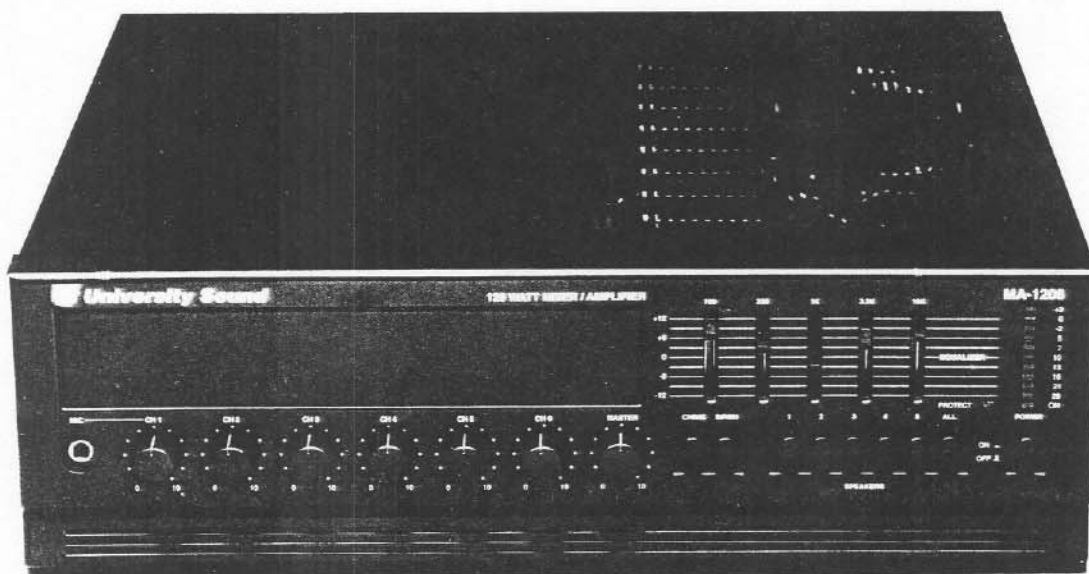




MA-1206

120 Watt Paging Mixer/Amplifier Owner's Manual



**University
Sound Inc.**

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Specifications

Power Output 120 Watts RMS

THD at rated output <0.5% at 1 kHz

Frequency Response 60 Hz-20 kHz $\pm$ 2 dB

Graphic Equalizer

Center Frequencies 100,330,1k,3.3k,10kHz

Cut/Boost $\pm$ 12 dB

Input Sensitivity/Impedance

Channels 1-6 0.25-80 mV/600 Ω (bal)

Phono 2 mV/22K Ω (unbal)

Link In 100 mV/15K Ω (unbal)

Telephone In 0.775 V/600 Ω (unbal)

Power Amp In 1 V/47K Ω (unbal)

Signal-to-Noise Ratio

Channels 1-6 72 dB

Phono 63 dB

Link In 73 dB

Telephone In 73 dB

Power Amp In 100 dB

Output Level/Impedance

Pre-Amp Out 1V/600 Ω (unbal)

Link Out 500 mV/600 Ω (unbal)

Speaker Outputs

4 Ω , 8 Ω , 25V, 70.7V

Dimensions

Height 5.25" (13.5 cm)

Width 16.5" (42.0 cm)

Depth 13.5" (34.3 cm)

Net Weight

26.5 lbs. (12.0 kg)

Shipping Weight

28 lbs. (12.7 kg)

Power Requirements

120 VAC, 50/60 Hz

Power Consumption

24 Watts idle

350 Watts @ rated output

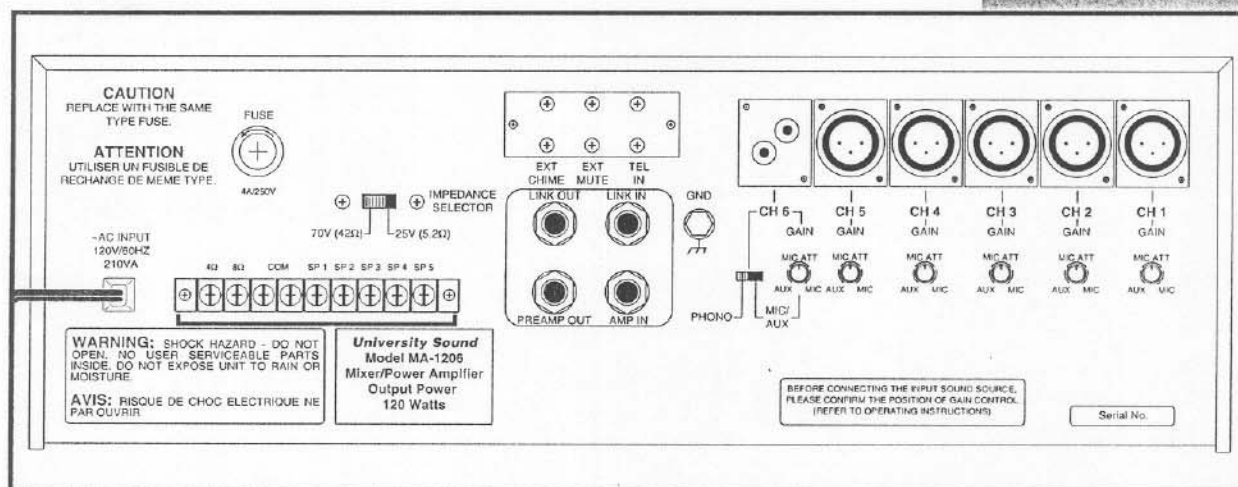
Protection

4 Amp / 250V fuse

Optional Accessory

RM-4/10 Rack Mount Kit

Rear-panel View



Model MA-1206 Owner's Manual

Key Features:

- 120 Watts RMS power output
- Seven input channels
- Channels 1-6 adjustable from Mic to Line Level
- Channel 6 can also match phono signal
- Channel 7 is a 600 Ω phone page input
- XLR connectors on inputs 1-5
- Channel 6 has mono-combining dual RCA jack connector
- Additional phone jack connection to channel 1 on front panel
- 5-band graphic equalizer
- Voice-over-music paging with mute
- Five-zone speaker selector
- Siren and Chime functions
- Link In / Link Out simplifies interconnection of other mixer and amplifiers
- Pre-Amp Out / Amp In pair allows use of signal processing equipment
- 4 Ω , 8 Ω , 25V, and 70.7V power outputs

Description

The Model MA-1206 is a six-input, 120 Watt mixer/amplifier incorporating many features that enable it to serve well in a variety of paging and other commercial sound reinforcement applications.

Each of the six inputs has its own rear-panel gain control that allows any signal level from Lo-Z microphone to Auxiliary to be matched. In addition, Input 6 can be field-converted to match either a Mic-to-Aux signal or a Phono signal. Inputs 1-5 use XLR input connectors, while Input 6 uses a dual RCA jack plate very useful for combining stereo signals without the use of an external adaptor. Each of these six inputs has a corresponding front-panel level control, and a MASTER control adjusts the level of the overall mix. An additional input is available for connection to telephone-driven paging systems. This input appears on two screw terminals and provides the standard 600 Ω impedance used by such paging systems.

Internal muting circuitry is provided to accommodate voice-over-music paging. A mute is activated by contact closure across two rear-panel screw terminals. When activated, the muting circuitry causes the signals from Inputs 3-6 to be muted, while the signals from Inputs 1 and 2, LINK IN, CHIME, and SIREN are not muted. When a signal is detected on the telephone page input, a mute is automatically activated, and all other input signals save for the page input itself are muted.

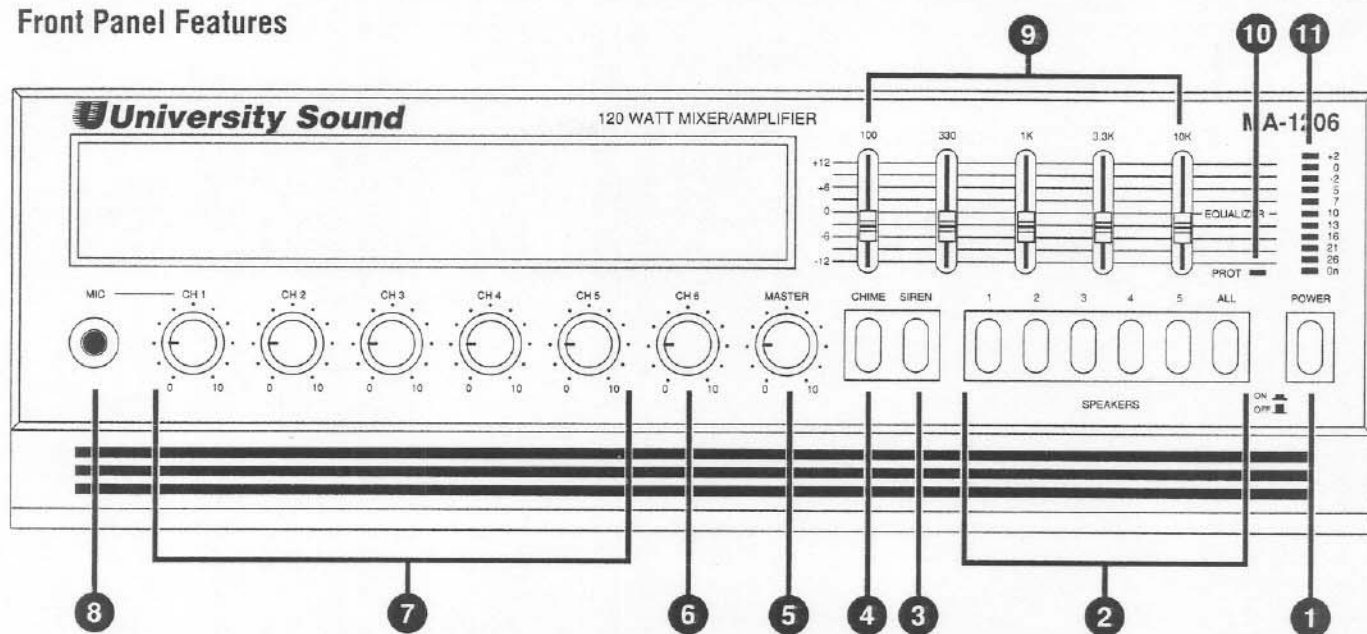
Four connections to the internal mixing buss are provided: a LINK IN / LINK OUT pair and a PREAMP OUT / AMP IN pair. All four connections are line-level inputs and outputs, and all appear on standard 1/4" phone jacks. The LINK pair of connections allows other mixer/amplifiers to be interconnected with the MA-1206 to provide additional input channels, additional output power, or both. The PREAMP/AMP pair is very convenient for applying signal processing to the final mix of the MA-1206. When a phone plug is inserted into the AMP IN connection, the internal link between the two is automatically disconnected. This prevents the unprocessed pre-amp mix from interfering with the signal sent to the AMP IN jack.

A number of the unit's features are conveniently located on the front panel. A 1/4" phone jack to the left of the first level control feeds directly into Input 1, particularly useful for temporary use of a sound source. Six speaker selector switches allow five separate speaker groups to be selected, or all five groups to be selected simultaneously. Five separate speaker screw-terminals on the rear-panel correspond to these five groups. A five-band graphic equalizer is incorporated into the MA-1206 for rapid and convenient tonal adjustment of the final pre-amp mix. There is also an internal tone generator with two separate functions. The chime function is available for page alert or other applications; the chime can be triggered either by pushing a front-panel button or by contact closure across the EXT CHIME rear-panel screw terminals. The siren function allows the MA-1206 to be used as a central music, page, and emergency warning system. The front-panel SIREN button is a push-and-lock button, and is the sole trigger for this function. When either of these functions are triggered, a mute is triggered.

All power amplifier outputs are available via a screw-terminal barrier strip on the rear-panel. Outputs are provided for 4 Ω , 8 Ω , and constant-voltage speaker lines. Using the switch directly above the output strip, the constant-voltage output can be configured to use 25 Volt or 70 Volt lines. The single-channel amplifier of the MA-1206 is rated at 120 Watts RMS.

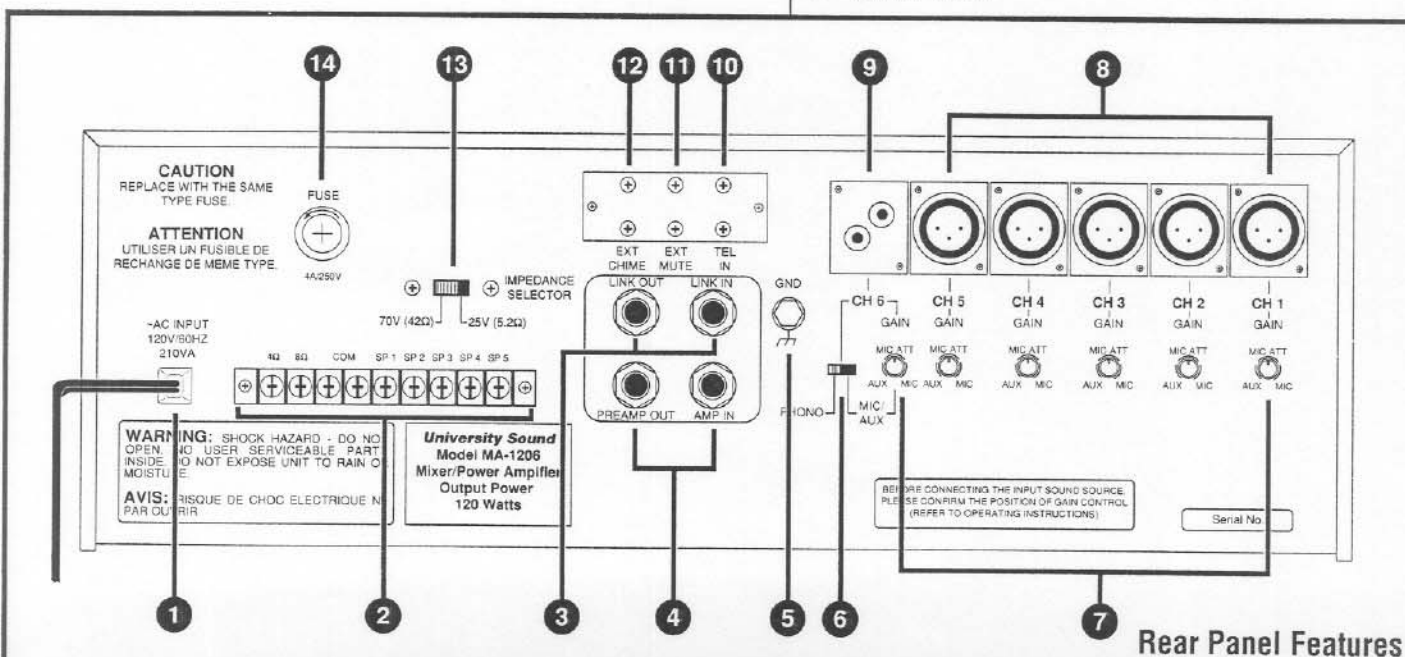
The MA-1206 operates from a standard 120 VAC 60 Hz power source, and is protected by a 4 Amp, 250 Volt fuse. The front panel of the unit is fabricated from black, high-impact polycarbonate, while the rest of the enclosure is steel finished in black.

Front Panel Features



- 1 Power Switch
- 2 Speaker Selector
- 3 Siren Button
- 4 Chime Button
- 5 Master Volume
- 6 Channel 6 / Phono Level Control
- 7 Channels 1-5 Level Control
- 8 Channel 1 Alternate Input Jack
- 9 Graphic Equalizer
- 10 Protection Indicator LED
- 11 Power Output Meter LEDs

- 1 AC Cord
- 2 Speaker Output Terminal
- 3 LINK IN / LINK OUT jacks
- 4 PREAMP OUT / AMP IN jacks
- 5 GND Terminal
- 6 Channel 6 MIC/AUX / PHONO Selector Switch
- 7 Input Channel Gain Controls
- 8 Channels 1-5 Input Connectors (XLR-female)
- 9 Channel 6 Dual RCA phono jack connector
- 10 Telephone Page Input Terminals
- 11 External Mute Trigger Screw Terminals
- 12 External Chime Trigger Screw Terminals
- 13 Speaker Line Impedance Selector Switch
- 14 Fuse Holder

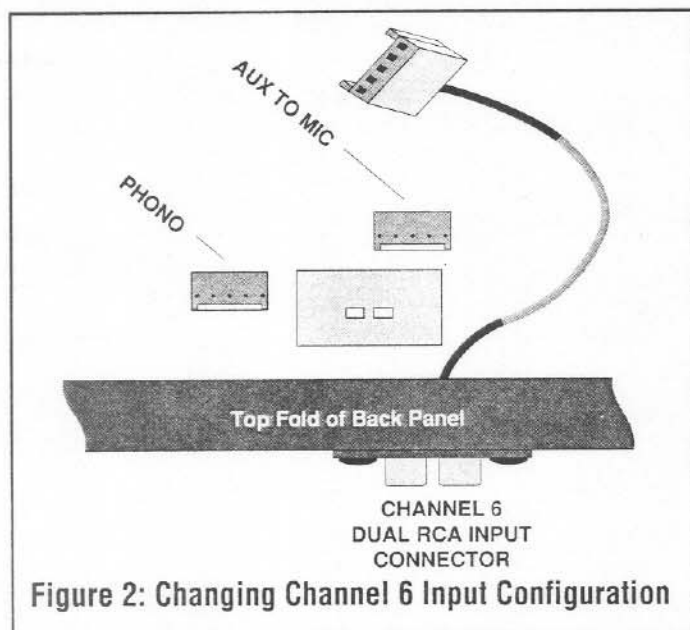


Rear Panel Features

Input Connections

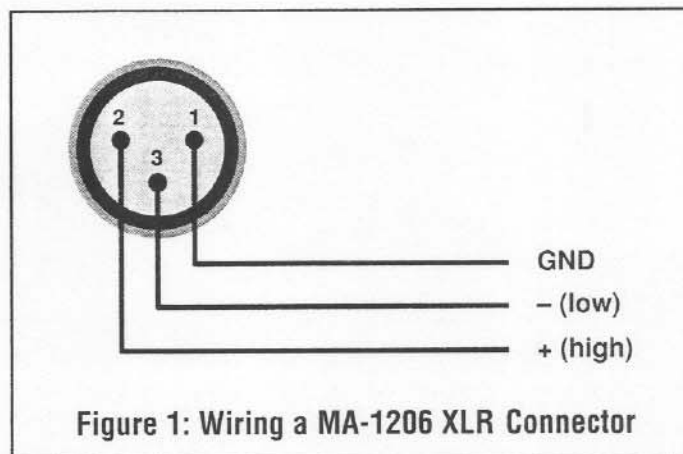
The MA-1206 has seven input channels. Channels 1-6 have individual rear panel gain controls and front panel level controls, and can match any input level from microphone to line (AUX) level. These channels have balanced inputs and female XLR connectors. Proper wiring for these connectors is shown in Figure 1. Channel 1 has an additional input connection on the front panel, consisting of a standard 1/4-inch phone jack, useful for temporarily connecting a microphone or other sound source without having to remove the unit from a more permanent installation. Plugging into this connector automatically disconnects the rear-panel connector to channel 1.

Channel 6 can be used as either a magnetic phono input or as a sixth microphone to aux level input. The input to this channel has two mono-combining RCA phono jacks, which eliminate the need for an external mono-to-stereo adaptor when using this input with a stereo signal source. The MA-1206 comes from the factory with channel 6 configured for use with a mic/aux input.



To use this channel as a phono input, move the slide switch below the channel 6 input connector to the PHONO position. Next the top cover of the MA-1206 must be removed. Figure 2 illustrates a top-

view of the area around the channel 6 input connector. When the top cover is first removed, the leads from the input connector will be connected to a jumper attached to the MIC/AUX header, and the PHONO header will be unconnected. Gently pull the jumper off of the MIC/AUX header, and attach it to the PHONO header. No soldering is necessary to establish these connections. Now the top cover should be replaced. Note that the MIC ATT control below the channel 6 input connector, which had previously been active, now has no effect on the signal

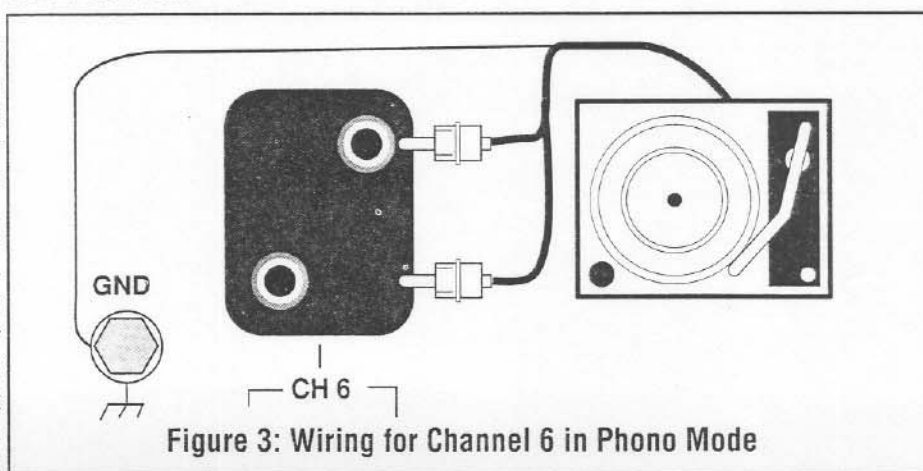


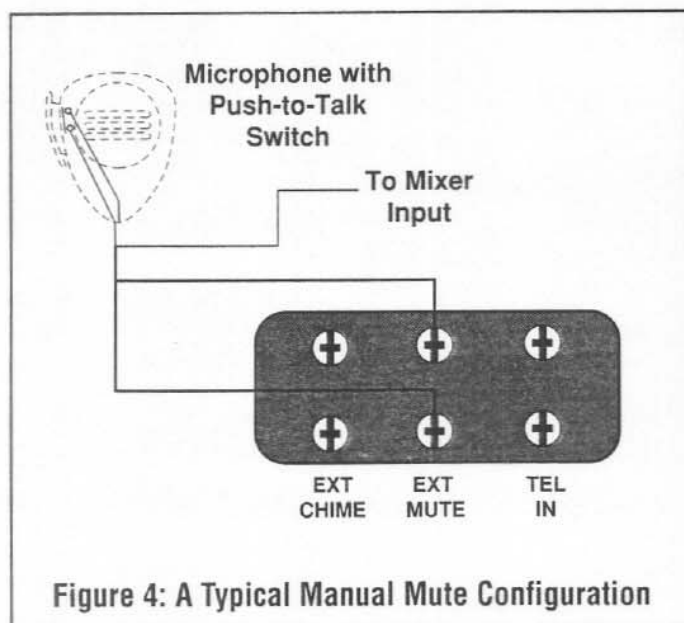
level to that channel. Also note that if the MIC/PHONO selector switch is moved back to MIC/AUX, the input is inactive.

The seventh input channel is accessed from the rear panel via a pair of screw terminals, and is marked TEL IN which stands for "telephone page input." This input channel has no level or gain control, since most telephone switchboards and PABX have their own level or gain controls on their page outputs. This input provides the standard 600Ω line impedance and 0.775 mV sensitivity required by most telephone-driven paging systems. Such equipment contains the protective circuitry required by the FCC. If a paging output is not available from the telephone equipment, then either the University Sound Model TAP trunk access paging adaptor or the University Sound Model TSA telephone station access paging adaptor must be used to properly match this input to the phone system. Under no circumstances may this input be directly connected to the national telecommunications network.

Muting Circuit

The Model MA-1206 incorporates a music mute circuit that provides two ways to implement page-over-music priority muting. To manually activate a paging mute, as with a push-to-talk switch on a microphone, a contact closure is made across the two rear panel screw terminals marked EXT MUTE. This is illustrated in Figure 4. When a mute is triggered in this manner, channels 3-6 are muted, while channels 1-2 are unaffected. This way, if all back-





ground music sources are connected to channels 3-6 and all paging sources (i.e. microphones) are connected to channels 1-2, the background music can be silenced during the page.

The MA-1206 muting circuit is also capable of automatic (voice-activated) muting, but only in conjunction with the telephone paging (TEL IN) input. When a signal is detected on this input, all other inputs are muted. When the person stops speaking, the mute is deactivated, and any background music in use is slowly faded back in. Additionally, whenever the SIREN or CHIME functions (see below) are triggered, channels 3-6 are muted.

Graphic Equalizer

The unit has a five-band graphic equalizer for tailoring the sound of the MA-1206 output to suit different listening environments. Each of the five bands has a maximum boost or cut of 12 dB. The equalizer affects all of the inputs to the MA-1206 except for the telephone page input.

Tone Generator

A two-function tone generator is incorporated into the MA-1206 to provide signaling and emergency warning capabilities. The CHIME function is a simple three-tone signal that can be used to provide an alert signal before a page. The CHIME can be triggered either from a front panel push-and-release button, or by contact closure across the rear panel screw terminals marked EXT CHIME. The SIREN function is a continuous tone suitable for use as an emergency warning signal. This function is triggered by a push-and-lock button on the front panel. As noted above, whenever either of these functions are triggered, channels 3-6 are muted.

LINK IN / LINK OUT

This pair of connections facilitates the interconnection of one or more mixer/amplifiers with the MA-1206, giving the installer the ability to add more input channels, more output power, or both to a MA-1206 based system. Both connections appear on standard 1/4-inch phone jack connectors. To add more input source material to the mix of the MA-1206, connect the output of the additional sound source or mixer to the LINK IN jack. To couple the output of the MA-1206 to another power amplifier, connect the LINK OUT jack to the LINE or AUX input of the power amplifier, or to the LINK IN input of another MA-1206. Both of these arrangements are illustrated in Figure 5. Connections to either the LINK IN or LINK OUT should be made using shielded audio cable to prevent noise pickup.

PREAMP OUT / AMP IN

This pair of connections allows the installer to use audio signal processing equipment (i.e., compressor/limiters, digital delay lines) with the MA-1206. The PREAMP OUT connection can also be used as a monitor output to a tape deck or other line-level device. Both connections appear on standard 1/4-inch phone jack connectors. To use these connections with signal processing equipment, connect the PREAMP OUT to the input of the signal processor, and the AMP IN to the output of the processor. Once a connection to AMP IN is established, the internal connection between the PREAMP OUT and the AMP IN is broken. This prevents unprocessed signal from interfering with the signal fed to the AMP IN jack. For this same reason, if a monitor out is required, it should be taken from the PREAMP OUT, so as not to interrupt the power output of the MA-1206.

Output Connections

Power outputs are provided for 4 Ohm and 8 Ohm speaker lines or for distribution on 25 Volt or 70.7 Volt constant-

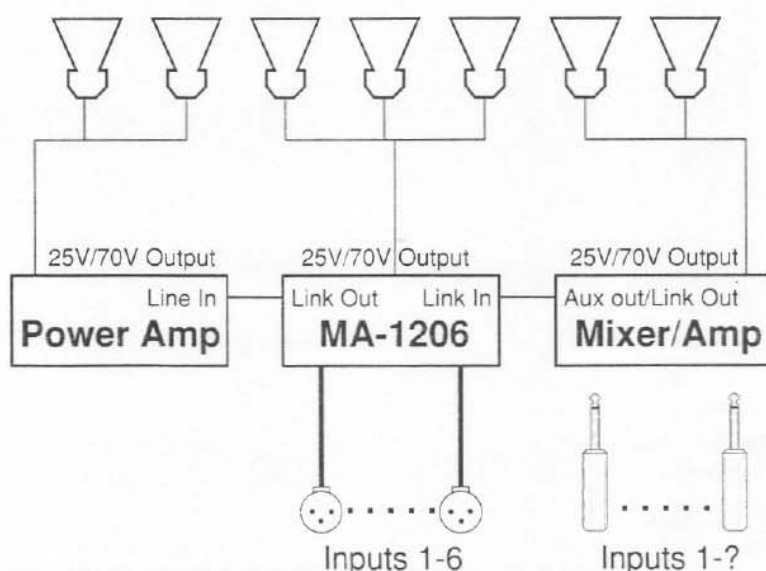


Figure 5: LINKing the MA-1206 with Other Mixers and Amplifiers

voltage lines. Output connections are made to the SPEAKER OUTPUT screw terminals on the rear panel of the MA-1206. These screw terminals are provided on a barrier strip with a protective coverplate for safety. To make connections, this coverplate must be removed, but should be replaced once the connections are permanently established.

When using the constant-voltage line output, a set of six front panel buttons provides selection of five separate speaker zones, as well as an all-zone selection. Each of these buttons is a push-and-lock control, and more than one zone can be selected at a given time. The first five buttons correspond to the SP1 - SP5 connections on the rear panel SPEAKER OUTPUT terminal strip. When the front panel ALL button is depressed, all of the SP outputs are active.

A front panel power output LED meter provides an indication of the output level. When the top-most LED is constantly lit, an overload condition exists. If this condition is severe enough to present a hazard to the MA-1206 circuitry, an automatic protection circuit will activate, the

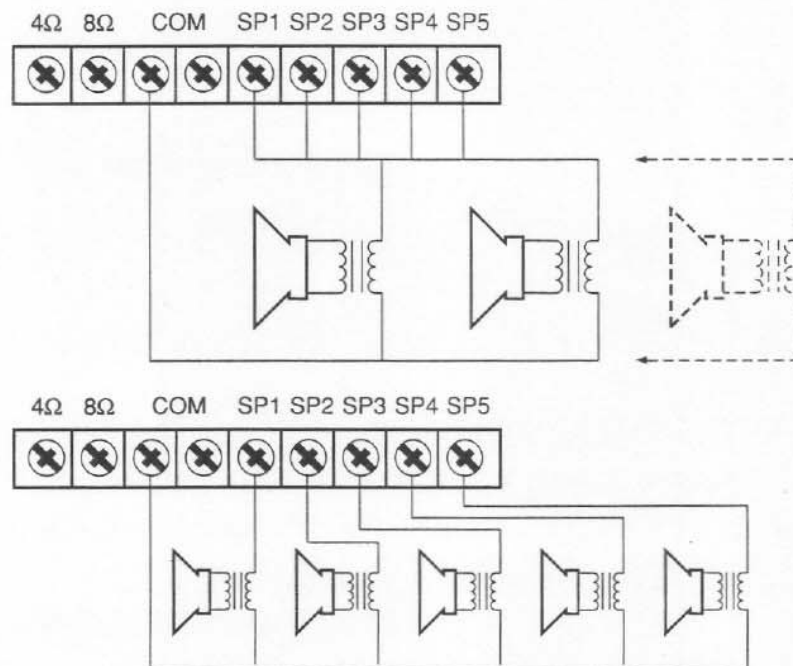


Figure 6: Speaker connections for Constant-Voltage 25V/70.7V Outputs

front panel PROT light will be illuminated, and the speaker output will be cut off.

The MA-1206 can deliver up to 120 Watts RMS output power to any of its output terminals. When using the 25V/70.7V outputs (SP1 - SP5), connect one wire of the speaker system to the appropriate 25V/70.7V terminal and the other wire to one of the "COM" terminal. To select 25V or 70.7V, use the IMPEDANCE SELECTOR switch directly above the power output terminal strip. This switch has a protective plastic guard that must be removed in order to change its setting. Never change this setting while the MA-1206 is in operation. Damage to the MA-1206 or to the speaker system could result. Methods for connecting constant-voltage speaker systems are shown in Figure 6.

Long speaker lines have an appreciable resistance, resulting in the output power loss. This power loss can be avoided to a large degree by using 25 Volt or 70.7 Volt constant-voltage lines to distribute the output signal. This line format also allows for the connection of speakers having different wattage ratings, and greatly simplifies the calculation of the total system wattage demand. To avoid inducing hum into the speaker lines do not run speaker cables parallel to power lines. In some areas, 70.7 Volt distribution lines must be run in conduit. Check your local city electrical codes before installing a 70.7 Volt speaker system to determine the requirements.

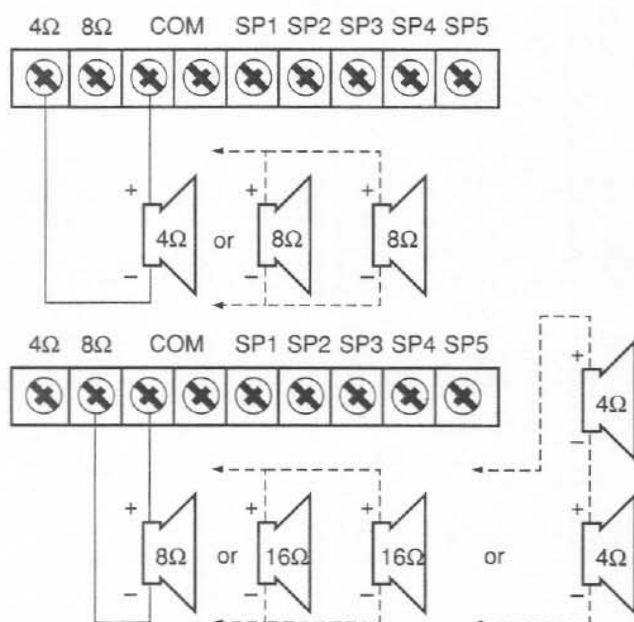


Figure 7: Speaker connections for 4Ω/8Ω Outputs

The 4Ω and 8Ω outputs are used when connecting directly to speaker voice coils. When using these outputs, connect one speaker wire to the appropriate 4Ω or 8Ω terminal, and the other wire to one of the terminals marked "COM." Do not load both outputs at their rated impedance simultaneously, as this will act as demand for twice the rated output and overload the amplifier. Similarly, do not load both a speaker coil output and a 25/70.7 Volt output at full power demand. A combination of speaker loads is permissible using the various outputs from the amplifier; however, the sum of these demands should not exceed the rated output of the amplifier. Methods for connecting 4Ω and 8Ω speaker networks are shown in Figure 7.

Optimum performance of any amplifier depends upon proper impedance match between the output and the load. Connecting a load of mismatched impedance to an amplifier will deteriorate the overall performance of the system. To accurately measure the impedance of a speaker line, the University Model LWT should be used. This test instrument permits direct reading of the wattage demand or impedance of a speaker line and is a valuable aid in determining opens, shorts, and mismatch conditions.

Specifications

Power Output	120 Watts RMS	Output Level/Impedance	
		Pre-Amp Out	1V/600Ω (unbalanced)
THD at rated output	<0.5% at 1 kHz	Link Out	500 mV/600Ω (unbalanced)
Frequency Response	60 Hz-20 kHz, ± 2 dB	Speaker Outputs	4Ω, 8Ω, 25V, 70.7V
Graphic Equalizer		Dimensions	
Center Frequencies	100,330,1k,3.3k,10kHz	Height	5.25" (13.5 cm)
Cut/Boost	±12 dB	Width	16.5" (42.0 cm)
		Depth	12.6" (32.0 cm)
Input Sensitivity/Impedance		Weight	26.5 lbs. (12kg)
Channels 1-6	0.25-80 mV/600Ω (balanced)	Power Requirements	120 VAC, 50/60 Hz
Phono	2 mV/22KΩ (unbalanced)	Power Consumption	24 Watts idle
Link In	100 mV/15KΩ (unbalanced)		350 Watts @ rated output
Telephone In	0.775 V/600Ω (unbalanced)	Protection	4 Amp / 250V fuse
Power Amp In	1 V/47KΩ (unbalanced)		
Signal-to-Noise Ratio			
Channels 1-6	72 dB		
Phono	63 dB		
Link In	73 dB		
Telephone In	73 dB		
Power Amp In	100 dB		

Warranty: These units have been very carefully inspected and are warranted to be free from defects in material and workmanship under normal use and service for a period of one year from sale to original purchaser. This warranty does not extend to any unit that has been subject to abuse, misuse, neglect, accident, improper installation, or alterations. The obligation of University Sound under this warranty is limited to the repair of any defect in material or workmanship and/or the replacement of any defective part, provided the unit is returned transportation paid within one year. It is recommended that any unit on which service is required be processed through your local distributor or installation company wherever possible. This Warranty is expressly in lieu of all other Warranties, expressed or implied, and of all other obligations or liabilities on our part. We neither assume for us any other liability in connection with the products manufactured by University Sound.

Architect's and Engineer's Specifications

The mixer/amplifier shall have seven total input channels, six of which shall have individual level and gain controls. The seventh input shall be configured to match the paging output of a telephone PABX or switchboard. There shall be a MASTER level control for adjusting the level of the overall mix. The first six inputs shall be able to match any input signal level from Lo-Z microphone to auxiliary (line level). The sixth input channel shall be field-convertible to match either a Mic-to-Aux signal or a phono signal, as determined by the position of a rear-panel switch. The first five channel inputs shall appear on standard female XLR connectors, while the sixth channel input shall have a pair of stereo-combining RCA phono jacks. The XLR connectors shall use the pin two high (+) standard. The telephone paging (seventh) input shall appear on a pair of screw terminals and provide the standard 600 Ω line impedance required by telephone paging systems. All input connections shall be made to the rear panel, with the exception of the first channel's input, which shall have, in addition to the rear-panel XLR connector, a front-panel 1/4-inch phone jack.

An internal muting circuit shall, when activated by contact closure across rear-panel screw terminals, mute input channels 3-6, while leaving all other inputs unaffected. When a signal is detected on the telephone paging input, the muting circuit shall be automatically triggered, and all inputs except for the telephone paging input shall be muted.

Four connections to the mixing buss shall be provided: a LINK IN / LINK OUT pair and a PREAMP OUT / AMP IN pair. All four connections shall appear on standard 1/4-inch phone jacks, and all four connections shall be line level inputs and outputs. The LINK pair shall facilitate the interconnection of additional mixers and power amplifiers. The PREAMP/AMP pair shall facilitate the use of signal processing equipment; when a connection is established to either the AMP IN connection, the internal connection between the pre-amp and power-amp shall be broken.

A five-band graphic equalizer shall be provided with all controls on the front panel. The equalizer shall have center frequencies at 100 Hz, 330 Hz, 1 kHz, 3.3 kHz, and 10 kHz, and shall have a maximum boost or cut of 12 dB.

There shall be six front panel switches allowing five different speaker networks to be selected, or all of the five to be selected at once. Corresponding to these selector switches, there shall be five different constant-voltage power amplifier output screw terminals.

There shall also be an internal tone generator with two distinct functions: CHIME and SIREN. The front panel switch for the siren function shall be a push-and-lock button. The front panel switch for the chime function shall be a push-and-release button, triggering a three-tone chime sequence. This chime function shall also be triggerable from contact closure across two rear panel screw terminals. When either of these functions are triggered, all inputs to the MA-1206 shall be muted.

Three power amplifier outputs shall be provided: 4 Ω and 8 Ω connections for direct speaker voice coil connections, and the series of five constant-voltage outputs for use with the front panel speaker selector switches. A rear panel slide switch shall determine whether the signal output on the constant-voltage terminals matches a 25 Volt or 70.7 Volt transformer line. A front panel LED meter shall be provided to monitor the output of the power amplifier.

The unit shall operate from a standard 120 VAC 50/60 Hz power source, and be protected by a 4 Amp, 250 Volt fuse. The front panel shall be fabricated of black, high-impact polycarbonate, while the rest of the enclosure shall be of a sturdy steel construction, finished in black. The unit shall measure 5.25" x 16.5" x 13.5" (13.5cm x 42.0cm x 34.3 cm), and weigh 26.5 pounds (12 kg).

The mixer/amplifier shall be the University Sound Model MA-1206.



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