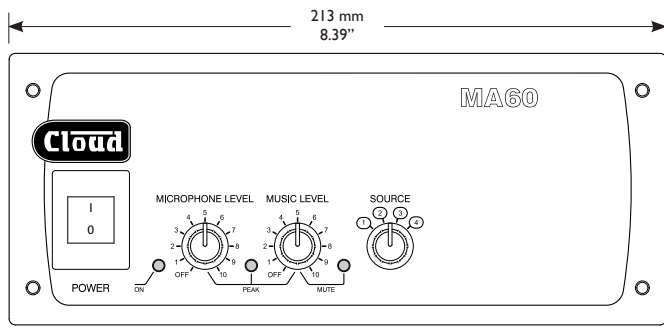
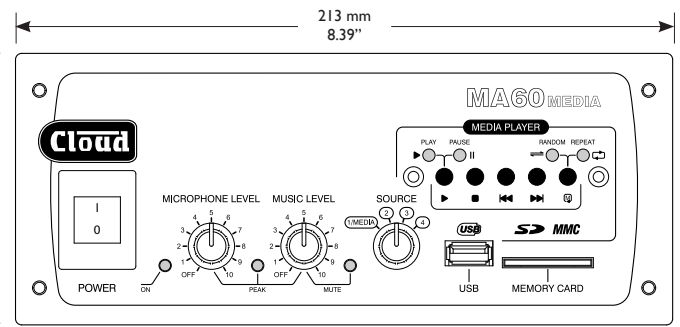


# CLOUD MIXER-AMPLIFIERS

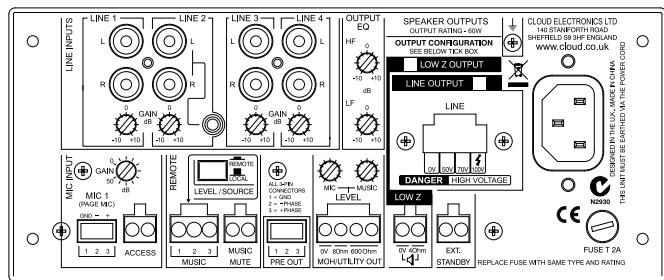
Models MA60, MA60MEDIA, MA60T & MA60TMEDIA



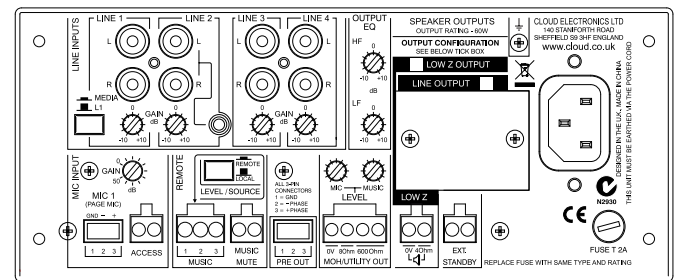
Cloud MA60



Cloud MA60MEDIA



Cloud MA60 Rear Panel



Cloud MA60TMEDIA Rear Panel  
(with protective Line Output cover fitted)

## General Description

The Cloud MA60MEDIA is a rack-mounting (2U, half-width), single-zone mixer-amplifier combined with an integral digital media player. It is a reliable, compact and self-contained source of background music, ideally suitable for installation in retail premises, bars, hotels, restaurants, licensed premises and many other entertainment locations.

The MA60 has all of the features and facilities of the MA60MEDIA, but without the internal digital media player. It is ideal for any application where a well-featured and cost-effective mixer-amplifier is required.

Both models have four stereo line inputs for music sources on phono (RCA) sockets and a balanced microphone input. Any one of the music sources may be user-selected, and mixed with the microphone input to provide paging. Phantom power is available at the mic input. Line 2 input is duplicated on a 3.5 mm stereo jack socket to permit simple connection of a laptop, portable MP3 player, or similar. An isolating transformer is fitted (selected by internal jumpers) to reconfigure the mic input for use with an analogue telephone system, permitting paging announcements to be made from any phone extension.

On the MA60MEDIA, the internal media player may be selected as the Line 1 source. It can play MP3 and WMA files directly from a USB device or SD memory card. All standard data rates and sampling frequencies are supported.

Both models have a 60 W power amplifier, which is suitable for low-impedance loads; a transformer (Model CXL-50T) may be readily retrofitted internally to allow 100/70/50 V-line systems to be driven. [Note: for the North American market only, alternative models MA60T and MA60TMEDIA are available; these have the CXL-50T transformer pre-fitted, and configured for 70 V-line operation].

A balanced “pre-amp” output is fitted, the signal being taken from post the level control; this may be used to feed additional power amplifiers. A transformer-isolated auxiliary output is also provided which may be used as an interface to telephone MOH systems, or as a utility output to drive a local rack monitor or an induction loop amplifier. This output may be selected by internal jumper to either follow the main output, or be permanently fed with any one of the music sources.

Front panel controls are provided for music source selection, and music and microphone levels. The front panel of the MA60MEDIA also has a socket for a standard SD memory card, and a USB port for connection of USB memory sticks. A conventional set of “transport” buttons allows Start and Stop, Next and Previous Track/File, and selection of Random and Repeat modes. Rear panel controls include gain adjustment for each music source and the microphone input, output HF/LF EQ adjustment, and independent music and mic level controls for the MOH/Utility output.

The MA60MEDIA and MA60 are directly compatible with Cloud PM Series paging microphones. Alternatively, the Mic input may be configured to suit most short-to-ground OEM paging systems with VOX or access-triggered mic-over-music priority. One line input may be set to have priority over any other selected to facilitate connection of a digital sound store or similar device.

Music level only, or music level and source selection may be controlled remotely if wished, using a Cloud RL-1 or RSL-4 remote control plate (respectively). In common with most Cloud audio products, EQ cards to match various popular ranges of installed-sound loudspeakers may be fitted to the amplifier stage. An external Music Mute control input is provided (selectable N/C or N/O) to allow the unit to be interfaced to an external emergency system.

- Four-input mixer-amplifier with integral 60 W mono power amplifier
- Built-in digital music player supports MP3 and WMA files from USB memory sticks or SD cards at all standard data rates/sample frequencies (Models MA60MEDIA and MA60TMEDIA only)
- Gain trims on all inputs
- Electronically-balanced mic input
- Mic input may be configured as telephone interface (transformer-isolated, enabled by internal jumper)
- Front panel control of music source/level and mic level
- 3.5 mm jack input (LINE 2) for MP3 player, laptop, etc.
- Overall HF & LF EQ adjustment
- Paging may be VOX-triggered, or via short-to-ground access connector
- Selectable LINE 4 priority over other music inputs
- Music Mute control input (N/O or N/C) for interface to emergency system
- Compatible with standard Cloud remote control panels – RL-1 (music level) and RSL-4 (music level and source selection)
- Electronically-balanced pre-amp output

- Transformer-isolated auxiliary output with independent mic and music level control - for use with telephone MOH systems
- Aux output source selection (internal jumper) – fixed source or follow main output
- Remote Standby control input
- 2U half-width (9.5") rack mounting unit

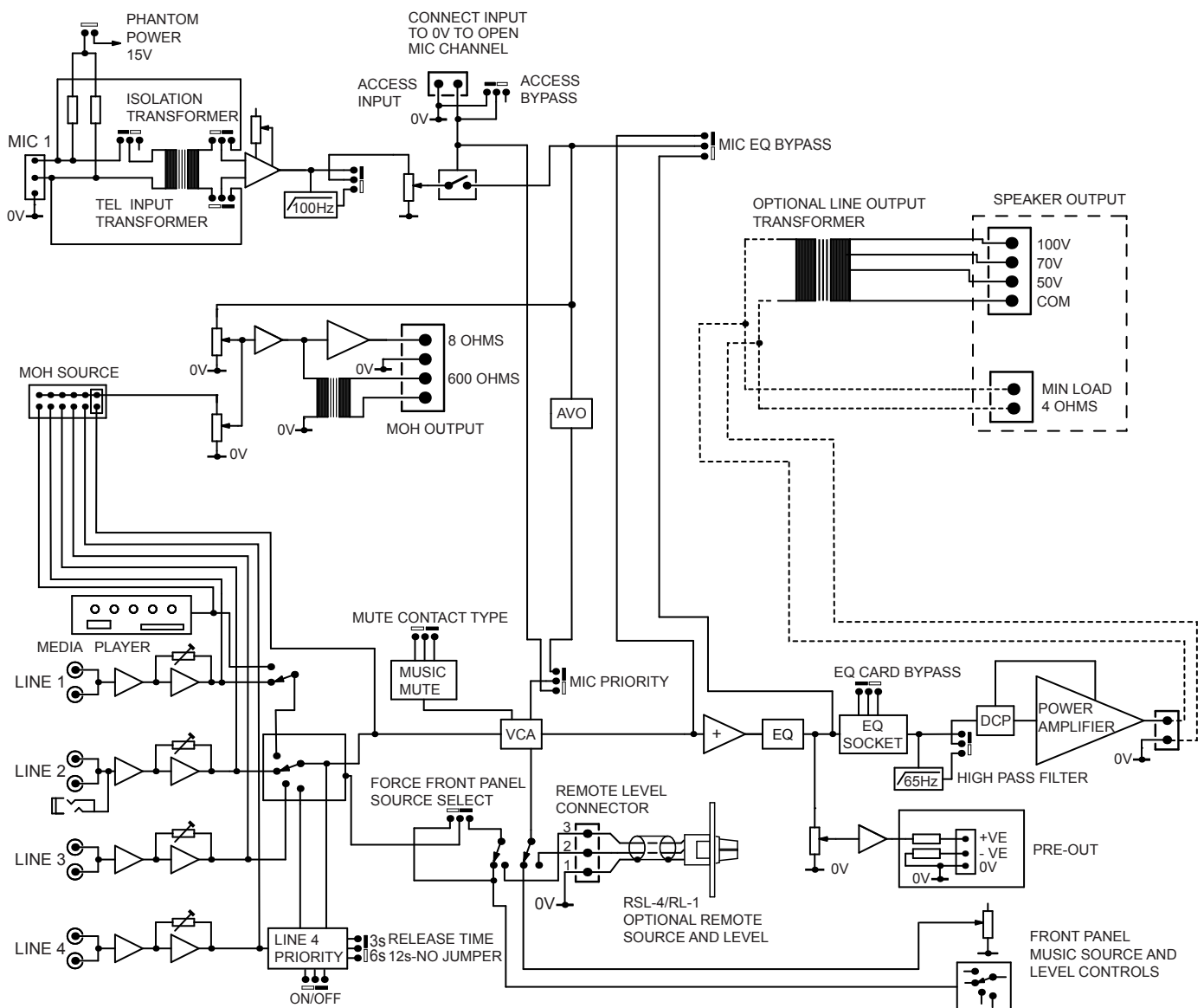
#### Available Options:

- RL-1 remote control panel for music volume
- RSL-4 remote control panel for music source selection and volume
- CXL-50T output transformer for driving 100/70/50 V-line systems<sup>1,2</sup>
- Loudspeaker EQ cards<sup>1</sup>
- 19" rack mounting kit for one unit
- 19" rack mounting kit for two units

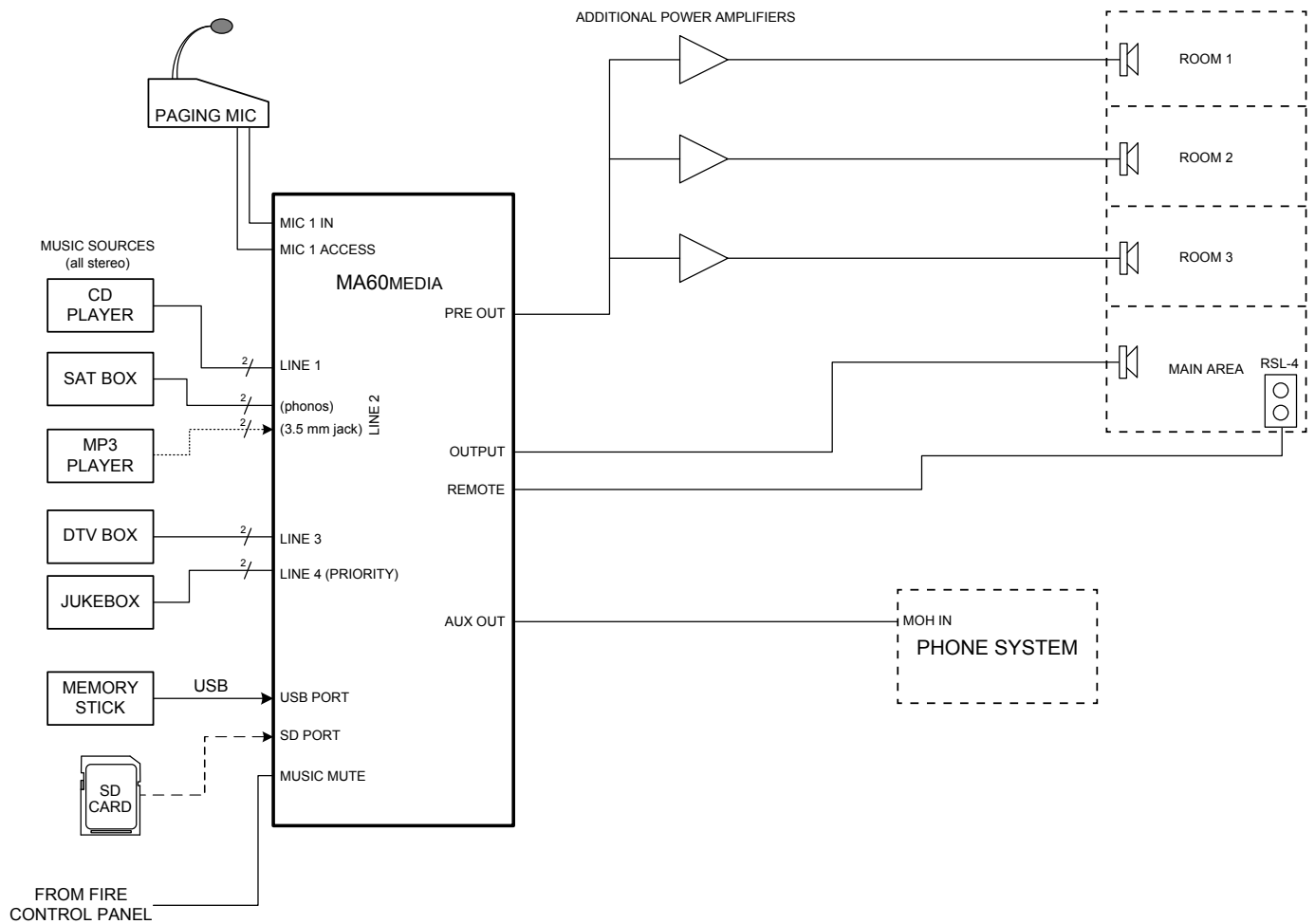
<sup>1</sup> These items are internally-fitted.

<sup>2</sup> Fitted as standard (configured for 70V-line operation) to Models MA60T and MA60TMEDIA.

## Block Diagram



## System Example



The example shows how the various features of an MA60MEDIA may be used. Up to four music sources are connected to the line inputs; the satellite receiver in Line 2 would be overridden by plugging the MP3 player into Line 2's alternative 3.5 mm input. Note that a jukebox is connected to Line 4 – this input may be set to have automatic priority over all other inputs when in use.

The MA60MEDIA's internal media player can play audio files from either a USB memory stick or an SD card plugged into the front panel, and the unit's controls used to access and play the files.

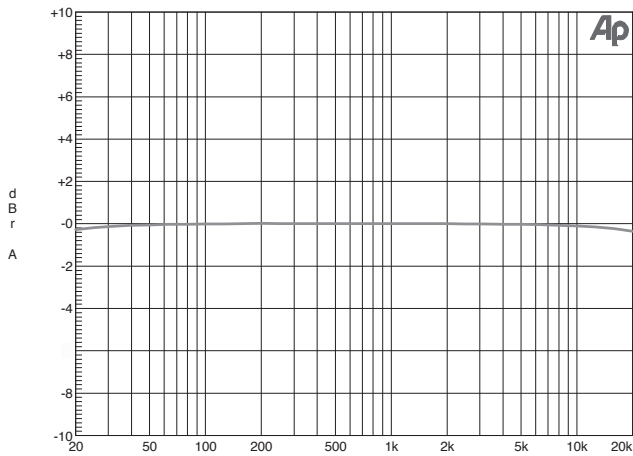
A simple paging mic (e.g., the Cloud PM1) may be connected for announcements, and the auxiliary output used to provide Music On Hold (MOH) to the building's telephone system. Additional amplifiers may be connected to the Pre Out sockets. Music source and volume may be controlled from an RSL-4 remote control plate installed in the main area if wished. Note also that the unit's Music Mute input may be interfaced with the building's fire control panel to automatically mute all music sources in an emergency.

## Technical Specifications

| Line inputs                     |   |                                |
|---------------------------------|---|--------------------------------|
| Frequency Response              | Low-Z output: +0/-1 dB, 20 Hz to 20 kHz (65 Hz filter out)  |                                |
|                                 | 100/70/50V-line output (with CXL-50T transformer fitted): +0/-3 dB, 20 Hz to 20 kHz (65 Hz filter out)                                |                                |
| Distortion                      | Low-Z output: <0.05% @ 1 kHz, 1 dB below full power (80 kHz bandwidth)  |                                |
|                                 | High voltage output: <0.05% @ 1 kHz, 1 dB below full power (80 kHz bandwidth)   |                                |
| Sensitivity                     | 195 mV (-12 dBu) to 2.0 V (+8 dBu)  |                                |
| Input Gain Control              | 20 dB range   |                                |
| Input Impedance                 | 47 kohms  |                                |
| Headroom                        | >20 dB  |                                |
| Noise                           | -93 dB, 22 Hz to 22 kHz; measured at speaker output, relative to full power   |                                |
| Microphone inputs               |   |                                |
| Frequency Response              | Low-Z output: -3 dB @ 100 Hz (3 <sup>rd</sup> . order filter); -1 dB @ 20 kHz   |                                |
|                                 | High voltage output: -3 dB @ 100 Hz (3 <sup>rd</sup> . order filter); -2 dB @ 20 kHz  |                                |
| Distortion                      | <0.05% @ 1 kHz, 1 dB below full power (80 kHz bandwidth)  |                                |
| Gain                            | 40 dB range   |                                |
| Input Impedance                 | >2 kohms (balanced)   |                                |
| Phantom Power                   | 15 V, switchable per-input by jumpers   |                                |
| Headroom                        | >20 dB  |                                |
| Noise                           | -127 dB EIN, 22 Hz to 22 kHz (150 ohms)   |                                |
| Outputs                         |   |                                |
| Output Power                    | Low impedance output: 60 W @ 1 kHz & <0.07% THD+N   |                                |
|                                 | 100/70/50V-line output: 50 W @ 1 kHz & <0.07% THD+N   |                                |
| Equalisation                    | HF: +/-10 dB @ 5 kHz LF: +/-10 dB @ 100 Hz  |                                |
| Protection                      | Dynamic level signal limiter max gain reduction of 20 dB, Thermal protection, IV limiting & short circuit protection, Switch on delay |                                |
| General                         |   |                                |
| Power input                     | 230V, 115V, 100V versions available   |                                |
| Fuse Rating                     | 230/120V - T2A H  |                                |
| Fuse Type                       | 20 mm x 5 mm  |                                |
| Cooling                         | Convection cooled, vents top and bottom   |                                |
| Dimensions (w x h x d)          | 213 mm x 88 mm (2U) x 278 mm (plus connectors and knobs)  |                                |
|                                 | 8.4" x 3.5" (2U) x 10.9" (plus connectors and knobs)  |                                |
| Shipping Dimensions (w x h x d) | 270 mm x 140 mm x 380 mm  |                                |
|                                 | 10.6" x 5.5" x 15"  |                                |
| Weight                          | MA60: 3.5 kg / 7.84 lb  | MA60T: 4.6 kg / 10.3 lb        |
|                                 | MA60MEDIA: 3.7 kg / 8.29 lb   | MA60TMEDIA: 5.05 kg / 10.75 lb |
| Shipping Weight                 | MA60: 4.2 kg / 9.41 lb  | MA60T: 5.4 kg / 12.1 lb        |
|                                 | MA60MEDIA: 4.35 kg / 9.74 lb  | MA60TMEDIA: 5.6 kg / 12.54 lb  |

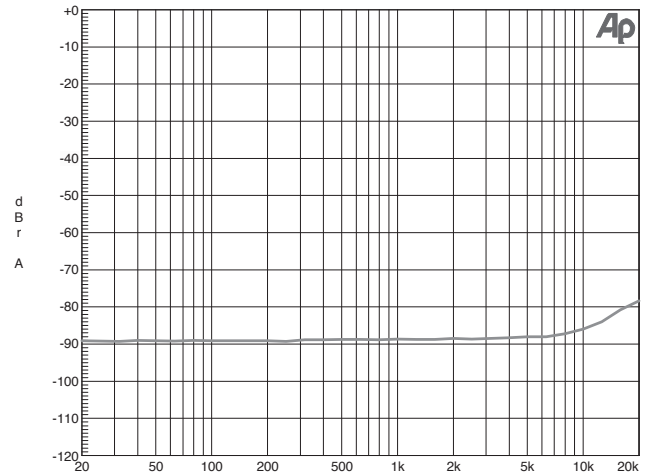
## Graphs

Cloud Electronics MA60 Main Output Frequency Response, 4 Ohm load, 1dB Below Full Power 12/07/11 15:48:40



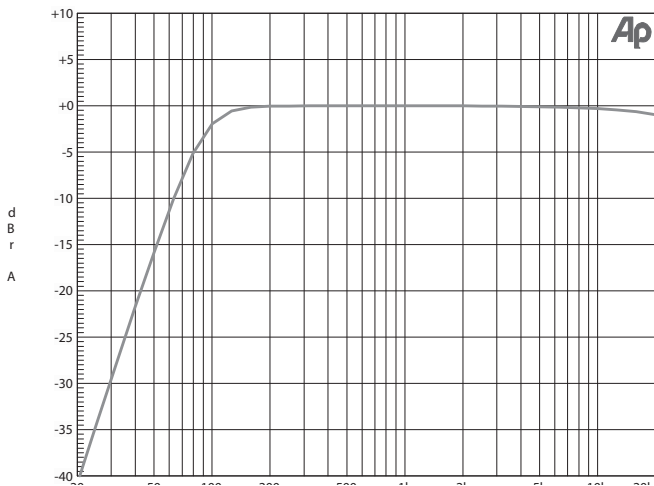
Frequency Response

Cloud Electronics MA60 Main Output, Line 1 to line 2 Crosstalk & Noise, 22kHz BW 12/07/11 17:00:21



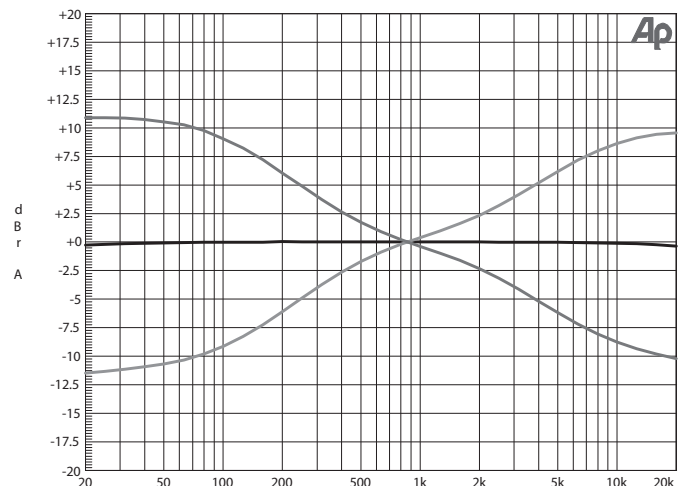
Line 1 to 2 Crosstalk and Noise

Cloud Electronics MA60 Mic Input Frequency Response 12/08/11 14:35:33



Mic Input Frequency Response

Cloud Electronics MA60 Tone Control Frequency Response 12/08/11 11:57:42



Tone Control Frequency Response

## Architect's and Engineer's Specification

The mixer-amplifier shall be available in four versions: with or without a built-in digital media player, and with or without a factory-installed output transformer allowing the mixer-amplifier to drive 70 V-line loudspeaker systems. Unless specifically stated otherwise, the following specification is applicable to all versions.

The mixer-amplifier shall be equipped with four unbalanced stereo music inputs on rear panel phono sockets (RCA jacks), an electronically balanced microphone input, and one main output, one auxiliary output and one electronically-balanced mono line-level output, all on rear panel multipin connectors. The auxiliary output shall be suitable for connection to equipment designed to be driven from a low-impedance speaker output, and having at least 8 ohms impedance. One of the music inputs shall also be available on a 3-pin 3.5 mm jack socket.

The mixer section shall mix the microphone input with the mono sum of the selected music input. There shall be front panel controls for microphone level, music level and a rotary switch to select the music source. Each music input and the microphone input shall have a rear panel input sensitivity control. Two-band equalisation adjustment shall be provided on the rear panel for the summed microphone and music signals. It shall be possible to configure the mixer section by internal jumper so that the microphone signal is not affected by the EQ adjustment. Phantom power shall be available at the microphone input when selected by an internal jumper. It shall be possible to configure the microphone input for connection to an analogue telephone system, to permit paging to be performed from a telephone extension. In this configuration, the microphone input shall be galvanically-isolated. A front panel LED will illuminate if either the music or microphone signal levels reach clip level.

A control input shall be provided to activate the microphone input by external contact closure, and it shall also be possible to configure the mixer such that this function is overridden and the microphone input is always active. It shall also be possible to configure the mixer to perform the following functions: i) detection of a signal at the microphone input will automatically reduce the music level by 30 dB, ii) external contact closure will automatically reduce the music level by 30 dB, iii) one line input will automatically override all others in all channels, even if unselected.

Optional remote control panels shall be available to permit control of i) music level; ii) music source selection and music level; it shall be possible to retrofit these to the mixer at any time. The remote control panels shall connect via a rear panel multipin connector. It shall be possible to disable either the front panel music level or the music level and music source selection controls with a rear panel switch and by moving internal jumpers. An external control input shall be provided to allow muting of the music source by a fire alarm or other external emergency system via isolated, 'volt-free' contacts, and this input shall be configurable to respond to either a short or open external circuit. A front panel LED will be fitted to indicate mute status.

The mixer-amplifier's main output shall be capable of delivering 60 W into a load of four ohms. On models without the factory-installed line output transformer, it shall be possible to retrofit a suitable transformer within the unit's enclosure to allow it to drive 100 V-line, 70 V-line and 50 V-line loudspeaker systems. The auxiliary output shall be galvanically-isolated to make it suitable for connecting to the MOH (Music-On-Hold) input of an analogue telephone system and be able to deliver 1 W into a load of eight ohms. It shall be provided with independent rear panel adjustments for music and microphone levels. The level of the balanced line-level mono output shall follow the setting of the front panel music level control.

The mixer shall accept internal a range of plug-in equaliser cards to permit use with compatible loudspeakers connected at the main output.

The mixer-amplifier shall be built in a 2U steel chassis and shall be mountable in a standard 19" rack with an optional rack mounting kit. An alternative kit shall be available enabling two mixer-amplifiers to be rack-mounted side-by-side. The mixer-amplifier shall be available in versions which operate from nominal AC mains voltages of 230 V, 115 V or 100 V, and shall be fitted with a front-panel power switch and LED indication. The mains supply shall be connected via a detachable IEC cable.

Alternative versions of the mixer-amplifier shall be available, which will include an internal digital media player. It will be possible to configure one of the music inputs as the music player's output, in which case that input's rear panel phono inputs will be disconnected. The input used shall be neither that which is fitted with a 3.5 mm jack socket input nor that on which it is possible to set override priority. The media player shall be able to play audio files recorded in either MP3 or WMA formats using a variety of data rates from 32 kbps and 384 kbps and sample rates from 8 kHz to 48 kHz. The media player shall play audio files either from USB devices such as memory sticks, or standard SD or SDHC memory cards of up to 32 GB capacity. Front panel sockets shall be provided for connection of either type of memory device. Front panel controls shall be provided to start, stop and pause playback, and select the next or previous audio track or file on the memory device. It shall also be possible to select a random track/file playback mode and automatic repeat mode where all tracks/files on the memory device are played repeatedly. LED indication shall be provided for Play, Pause, Random and Repeat modes.

The mixer-amplifiers shall be the Cloud MA60 (without media player), Cloud MA60MEDIA (with media player), Cloud MA60T (with factory-installed line output transformer) and MA60TMEDIA (with both media player and factory-installed line output transformer). The optional remote control panels shall be the Cloud RL-1 (music level only) and the Cloud RSL-4 (music level and source selection). The optional line output transformer shall be the Cloud CXL-50T.