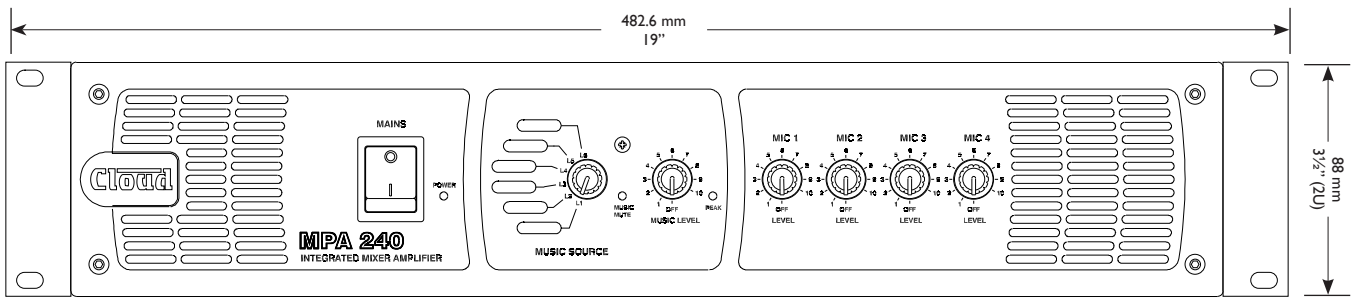
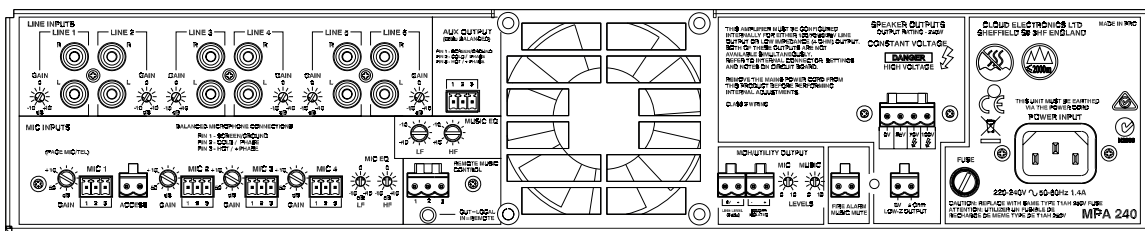


# CLOUD MPA Series Mixer-Amplifiers



MPA Series - front panel view (MPA240 illustrated)



MPA Series - rear panel view (MPA240 illustrated)

## General Description

The Cloud MPA Series is intended to provide a complete audio solution for Houses of Worship, retail outlets, hotels, licensed premises and other spaces where music, announcements and/or flexible paging are required. It combines the functions of a four-channel microphone mixer with full paging facilities, a six-input music source selector and a mono power amplifier in a single 2U unit.

There are two models in the MPA range, which differ only in the rated power of the amplifier stage:

- MPA120 120 watts
  - MPA240 240 watts
- (all ratings are into 4 ohms)

The MPA mixer-amplifiers have six unbalanced stereo line inputs for music sources, and four balanced microphone inputs. Each microphone input has its own rear panel sensitivity control and front panel gain control, allowing multiple mics to be mixed together. Each line input has a rear panel sensitivity control; the required music source is selected by a front panel rotary switch and the volume is also adjusted on the front panel. The selected music source is mixed with the summed mic signals before being fed to the power amplifier stage.

The MPA Series is compatible with the Cloud PMI single-zone paging microphone, and may also be used for one of the zones supported by the Cloud PM4/8/12/16/4-SA/8-SA multizone paging microphones. Alternatively, Mic 1 input may be configured to suit most OEM paging systems; paging is activated by a short-to-ground access connection, and Mic 1 may be configured to have automatic priority over the other mic inputs to prevent announcement clashes. Mic inputs may

be selected to have automatic priority over the selected music source, and additionally, Line Input 6 may be set to have priority over any other selected to facilitate connection of a digital sound store or similar device. A pre-announcement chime may also be enabled at installation. Mic 1 may be configured as a galvanically-isolated input for connection to (compatible) telephone systems, to permit paging to take place from any telephone extension.

A range of EQ cards to match the MPA Series to various popular installed-audio loudspeakers is available.

A 100/70/25 V-line transformer is fitted as standard, and the output stage drives high-impedance line loudspeaker distribution systems directly. An internal jumper allows the transformer to be disabled, permitting the amplifier to be used to drive low-impedance loudspeakers.

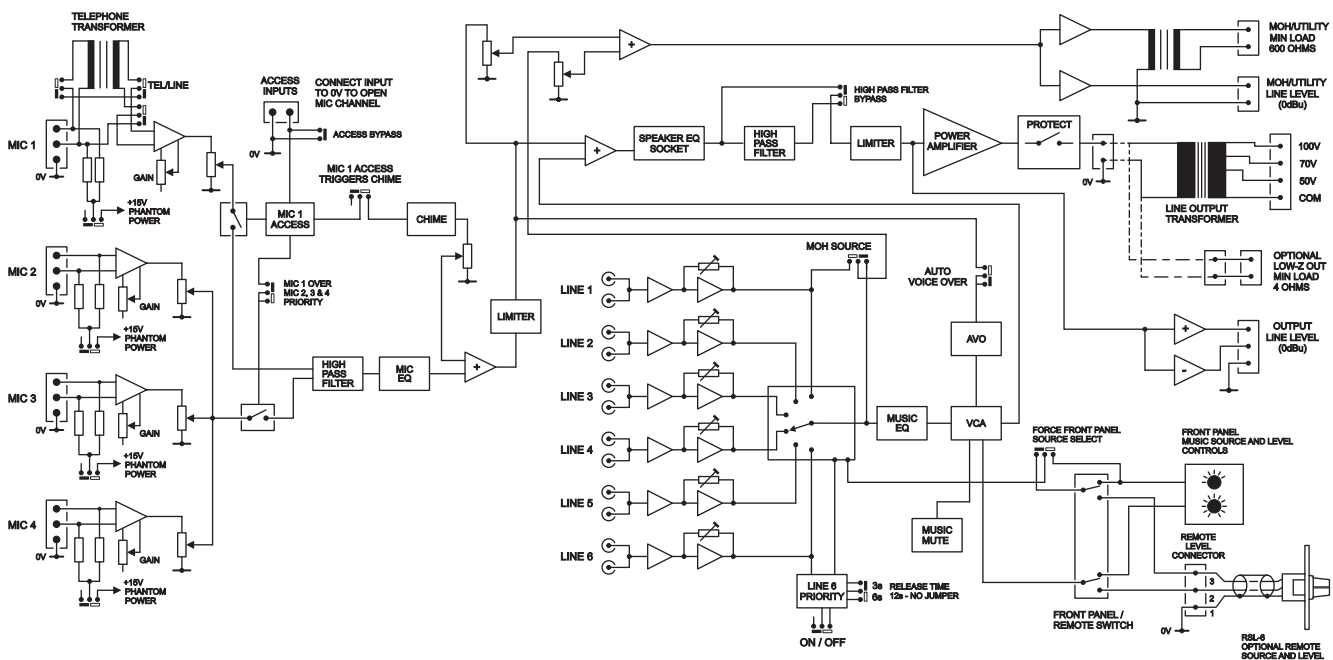
In addition to the main output, there is an MOH/Utility Output available as both an unbalanced line level signal and as a fully-isolated output suitable for driving the Music On Hold input of a telephone system. The music source at this output can follow the front panel music source selection or be fixed to Line 6, and the music/mic mix may be adjusted independently. A separate, balanced line level "Pre Out" output is also provided to facilitate the connection of additional power amplifiers.

Music level only, or music level and source selection may be controlled remotely if wished, using standard Cloud remote control plates.

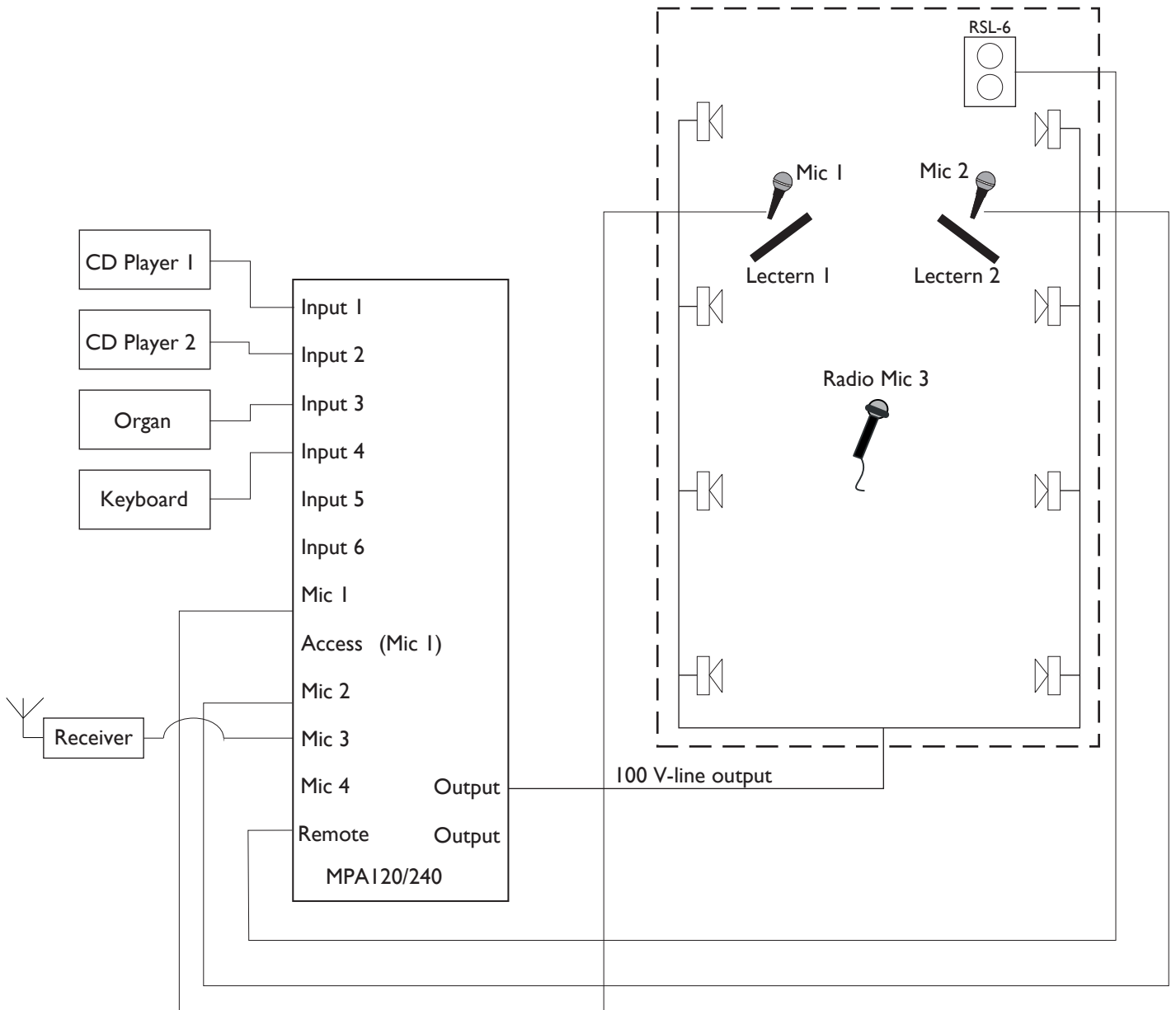
In common with most Cloud products, a Music Mute Input is provided, which may permit compliance with local Fire Authority regulations; the microphone inputs remain active when the Music Mute is applied.

- Provides amplification and simple control of music, mic sources and paging in a single unit
- Available in two versions, with output power ratings of 120 or 240 W
- Integral four-channel microphone mixer with per-input sensitivity adjustment
- Front panel controls for music source, music level and level of each mic input
- Six (unbalanced) stereo line inputs with individual sensitivity adjustment
- Four balanced mic inputs – 15 V phantom power available on any or all
- Selectable 65 Hz hi-pass filter in each mic channel
- Separate microphone limiter circuit to prevent power stage limiter from ducking music signal in the presence of high mic levels
- Separate HF/LF EQ adjustments (rear panel) for mic signals and music source
- Paging control on Mic 1 input via short-to-ground access connection
- Mic 1 configurable for paging from telephone system
- Selectable VOX mic-over-music priority on all mic inputs
- Mic 1 may be selected to have priority over Mics 2 to 4
- Selectable LINE 6 priority with choice of release times
- Selectable pre-announcement chime
- Music Mute control input (N/O and N/C) for interface to an emergency system
- Compatible with standard Cloud remote control plates: RL-1 Series (music level) and RSL-6 Series (music level and source selection)
- Power amplifier protection circuitry
- Power amplifier input limiter
- Internal 100/70/25 V-line transformer fitted as standard
- Aux output from pre-amp (balanced, line level)
- MOH/Utility Output in line level and 600 ohm isolated formats (for telephone system MOH inputs)
- Optional loudspeaker EQ cards available
- Forced-air cooling with variable speed control
- 2U 19" rack mounting unit

## Block Diagram



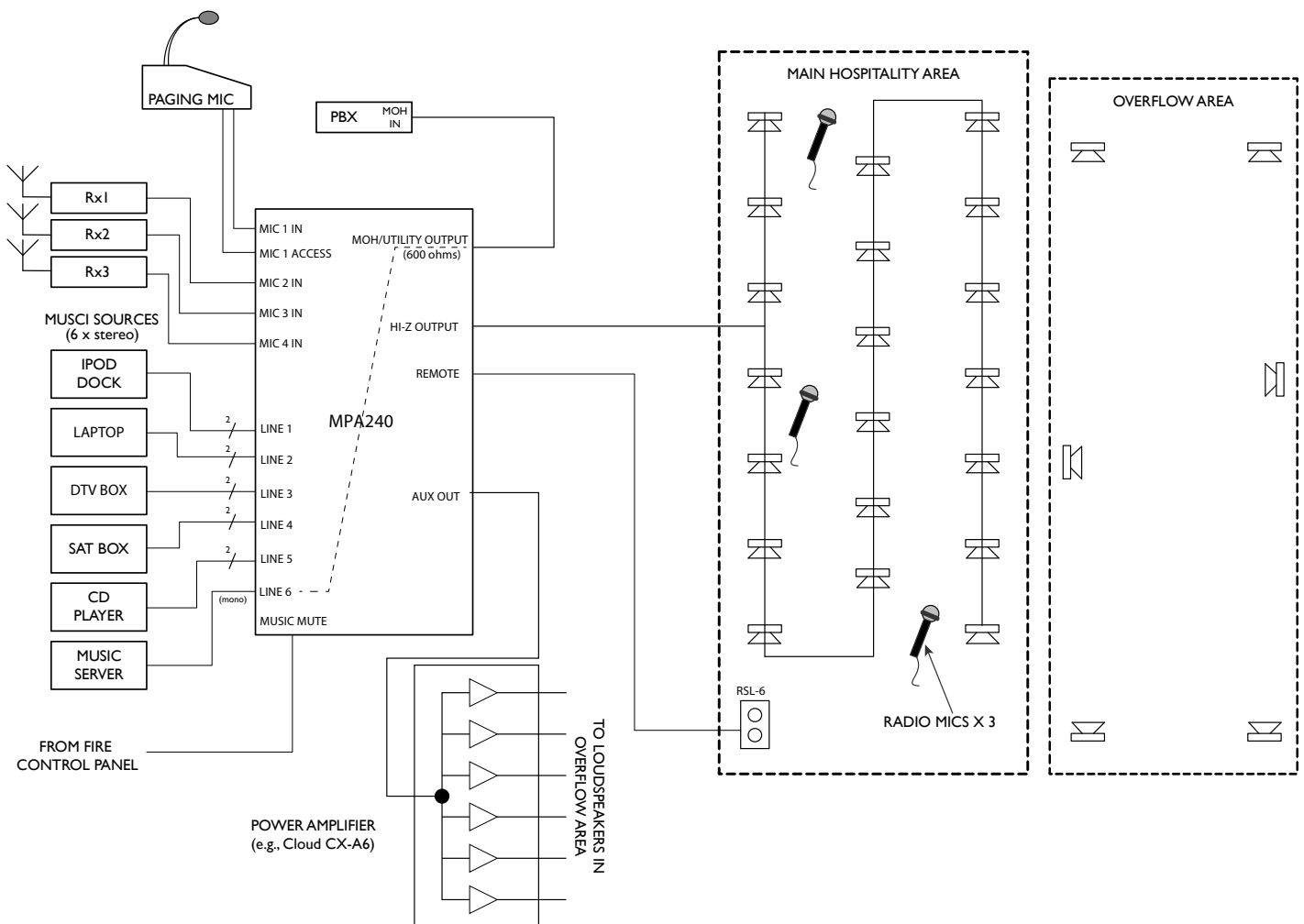
## System Example 1 - House of Worship



In the example shown, the area has two fixed mic points (at the two lecterns), plus a radio mic to allow the presenter mobility. Any of the music sources can be selected and the music level controlled from the RSL-6 remote control plate at the back of the space.

Depending on the size of the area, either MPA model - MPA120 (120 W) or MPA240 (240 W) - could be used. The system is shown with multiple speakers being driven from the high-voltage (100/70/25 V-line) output, though in a smaller space, fewer speakers being driven directly from the low-impedance output might be more practical.

## System Example 2 - Hospitality suite



In this example, a large area used for hospitality purposes is covered by multiple speakers on a 100 V-line (or 70 V-line) line distribution system, driven by an MPA240. The building has a secondary “overflow” area, fitted with low-impedance speakers driven by a separate power amplifier, whose input(s) are taken from the MPA240’s AUX OUT. The six-channel Cloud CX-A6 would be an ideal choice, as it has input routing switches enabling the inputs to be paralleled without any additional external wiring.

Any one of six stereo music sources may be selected in the area by the RSL-6 remote control plate, which can also be used to set the volume.

The MPA240’s multiple mic inputs are particularly useful in such an application, as several mics are often needed simultaneously in receptions, presentations, and the like. The example shows three

radio mics which are in addition to the paging microphone connected at Mic 1 input. The MPA240 can be configured to give the paging mic priority over any music source, and also other microphones, if required.

The MOH/Utility output is connected to the MOH input of the building’s telephone system; the source jumper for this is set to Line Input 6 (depicted by the dotted line), so that callers will always hear the Music Server regardless of what else the system is being used for.

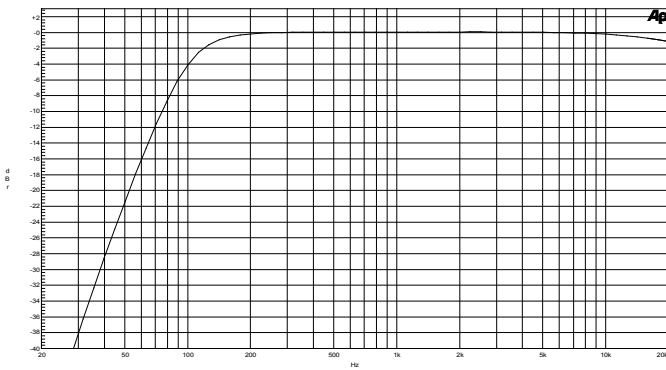
In an emergency situation, all music inputs would mute under control of the fire system.

## Technical Specifications

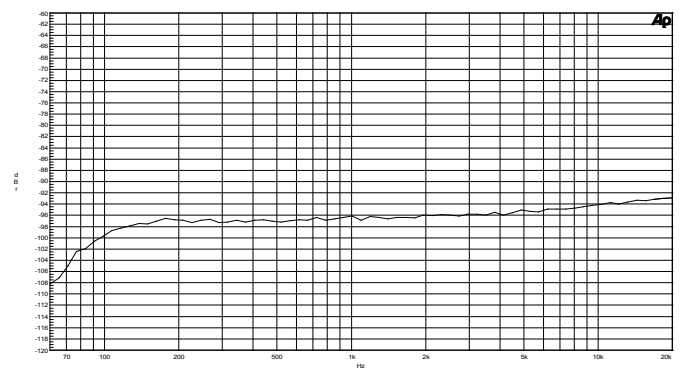
Line inputs			
Sensitivity	195 mV (-12 dBu) to 2.0V (+8 dBu)		
Input Gain control	20 dB range		
Input impedance	47 kohms		
Headroom	>20 dB		
Equalisation	HF: $\pm 10$ dB @ 10 kHz    LF: $\pm 10$ dB @ 50 Hz		
Microphone inputs			
Gain range	40 dB range		
Input Impedance	>2 kohms (balanced)		
Phantom Power	15V, switchable per-input by jumpers		
Headroom	>20 dB		
Equalisation	HF: $\pm 10$ dB @ 5 kHz    LF: $\pm 10$ dB @ 100 Hz		
Outputs			
Output Power (any output, 1 kHz continuous sine wave @ <0.07% THD+N)	MPA120	120 watts	
	MPA240	240 watts	
Frequency response	Line inputs	Low-Z output	+0 dB/-1 dB from 20 Hz – 20 kHz (65 Hz filter switched out)
		High voltage output	+0 dB/-2 dB from 20 Hz – 20 kHz (65 Hz filter switched out)
	Mic inputs	Low-Z output	-3 dB @ 100 Hz (3rd. order filter); -1 dB @ 20 kHz
		High voltage output	-3 dB @ 100 Hz (3rd. order filter); -2 dB @ 20 kHz
Distortion	Line inputs	Low-Z output	<0.03% @ 1 kHz, 1 dB below full power (80 kHz bandwidth)
		High voltage output	<0.04% @ 1 kHz, 1 dB below full power (80 kHz bandwidth)
	Mic inputs		<0.03% @ 1 kHz, 1 dB below full power (80 kHz bandwidth)
Noise	Line inputs	-90 dB 22 Hz – 22 kHz, at speaker output, relative to full power	
	Mic inputs	-127 dB EIN 22 Hz-22 kHz (150 ohms)	
Protection	Fixed level signal limiter: max gain reduction of 20 dB; DC protection, IV limiting & short circuit protection; switch-on delay		
General			
Power input	230V, 115V, 100V versions available		
Fuse rating	MPA120	230V	T2A H
		115/100V	T4A H
	MPA240	230V	T4A H
		115/100V	T6.3A H
Fuse Type	All models	20 mm x 5 mm	
Dimensions	Net	482.6 mm x 88 mm (2U) x 300 mm (less connectors & knobs) 19" x 3.5" (2U) x 11.8" (less connectors & knobs)	
	Shipping (Gross)	610 mm x 200 mm x 460 mm / 24" x 8" x 18"	
Weights	Net	MPA120	10.5 kg / 23 lbs
		MPA240	21.6 kg / 48 lbs
	Shipping	MPA120	12.0 kg / 26.5 lbs
		MPA240	14.1 kg / 31 lbs

## Performance Graphs

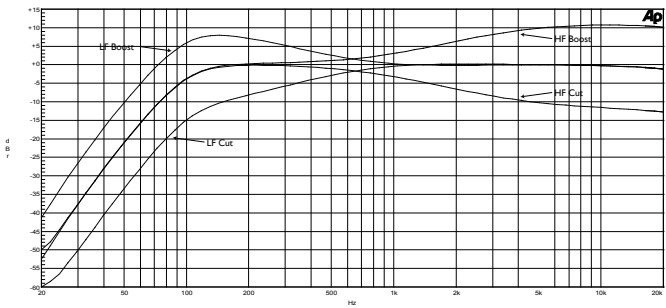
Mic Frequency Response



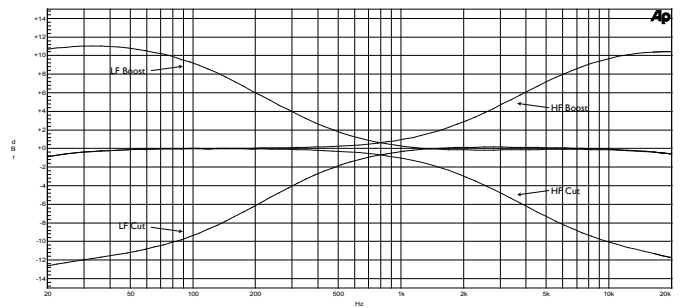
Mic Input Attenuation (front panel control at minimum)



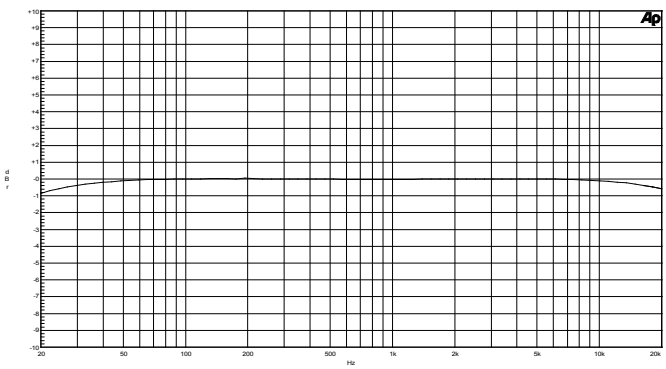
Mic EQ Curves



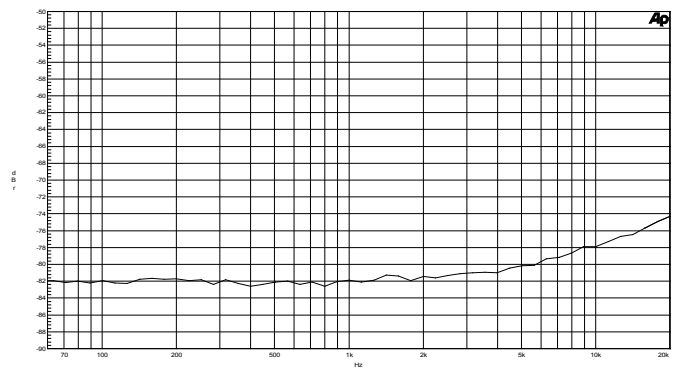
Music EQ Curves



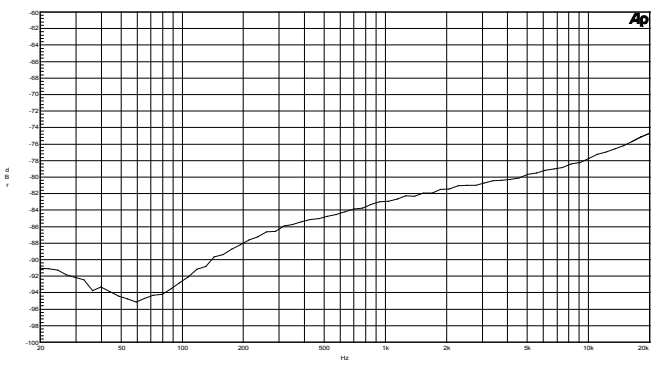
Line Input Frequency Response



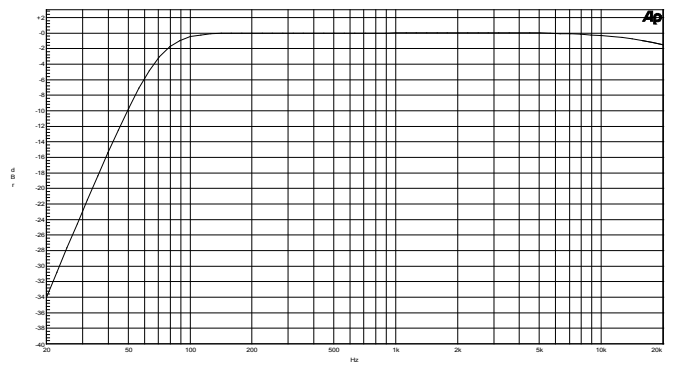
Line Input Attenuation (front panel control at minimum)



Line Input Crosstalk



Constant Voltage Frequency Response



## Architect's and Engineer's Specification

The mono mixer-amplifier shall be equipped with six unbalanced stereo music inputs on phono sockets (RCA jacks) and four balanced microphone inputs on multipin connectors. The music input to be used shall be selectable by a 6-position front panel rotary switch. The four mic inputs shall be mixed to a mono signal and summed with a mono (L+R) sum of the selected music input. Each mic input shall have its own front panel level control. It shall be possible to control the level of the music source independently of the mic levels. Each music input and each mic input shall also have a rear panel gain control. 2-band equalisation adjustment shall be provided independently for the selected music source and summed mic signals.

A control input shall be provided to activate one mic input (Mic 1) by external contact closure; it shall be possible to configure the mixer-amplifier such that this function is overridden and Mic 1 is always active. It shall be possible to configure the mixer-amplifier to perform the following additional functions: i) when activated by its control input, Mic 1 will take priority over any other mic input in use; ii) detection of a signal on any mic input will automatically reduce the music level by 30 dB, iii) one line input will automatically override all others, even if unselected. Optional remote control panels shall be available to permit control of music level only or music level and input selection; it shall be possible to retrofit these to the mixer-amplifier at any time. An external control input shall be provided to allow muting of the music source by a fire alarm or other external emergency system. The mixer-amplifier will include a chime generator circuit triggered by a signal on Mic 1 input; it shall be possible to internally disable/enable this function. It shall be possible to reconfigure Mic 1 input as a galvanically-isolated input suitable for connection to compatible telephone systems; the sensitivity of the input shall be reduced by 10 dB in this mode and the input shall be optimised for connection to a source impedance of 600 ohms.

The microphone mixer stage shall include a high-pass filter to remove background LF noise below 100 Hz (-3 dB). A second high-pass filter shall be included to remove LF content below 65 Hz (-3 dB) from the mixed music and mic signals to minimise transformer saturation in 100/70/25 V-line systems; this filter shall be internally by-passable. Two separate internal fixed limiter circuits shall be fitted; these shall be located at i) the output of the microphone mixer stage and ii) at the input of the power amplifier stage. Operation of either limiter shall be indicated by a front panel LED. The mixer-amplifier shall incorporate protection circuitry that isolates the output i) during power-up, ii) in the event of DC being detected at the amplifier output, iii) if the internal heatsink temperature exceeds 90°C (194°F).

The mixer-amplifier shall be available in two models with different output powers of 120 W or 240 W, into a 4 ohm load. The mixer-amplifier shall be capable of driving either low impedance (4 ohms or higher) loads, or 100 V-line, 70 V-line or 25 V-line line systems via an internal transformer fitted as standard. It shall not be possible to use both types of output simultaneously. The 100 V, 70 V and 25 V transformer outputs shall be available on separate rear panel output terminals, shrouded by a screw-attached safety cover.

The mixer-amplifier shall provide two secondary outputs from the pre-amplifier stages: i) a balanced line level output taken from the output of the power amplifier input limiter stage; ii) an output taken from the mixer section with separate controls of the preset type for setting the levels of the music and microphone mix components of the output signal. This output shall be available in both unbalanced line level form and as a galvanically-isolated signal suitable for connection to the Music On Hold input of compatible telephone systems having a minimum input impedance of 600 ohms. It shall be possible to configure the music source for this output to be either permanently Line Input 6 or follow user source selection made on the front panel or via a remote control plate.

The mixer-amplifier shall accept internal plug-in equaliser cards to permit use with compatible loudspeakers from various manufacturers. The mixer-amplifier shall be built in a 2U steel chassis for mounting in a standard 19" rack. Temperature-controlled forced-air fan cooling with front-to-rear airflow shall be employed. The amplifier will be fitted with a front-panel power switch with LED indication.

The mixer-amplifiers shall be the Cloud MPA120 (120 W output) and the Cloud MPA240 (240 W output). The remote control plates shall be the Cloud RL-1 Series (music level only) and the Cloud RSL-6 Series (music level and source selection).

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