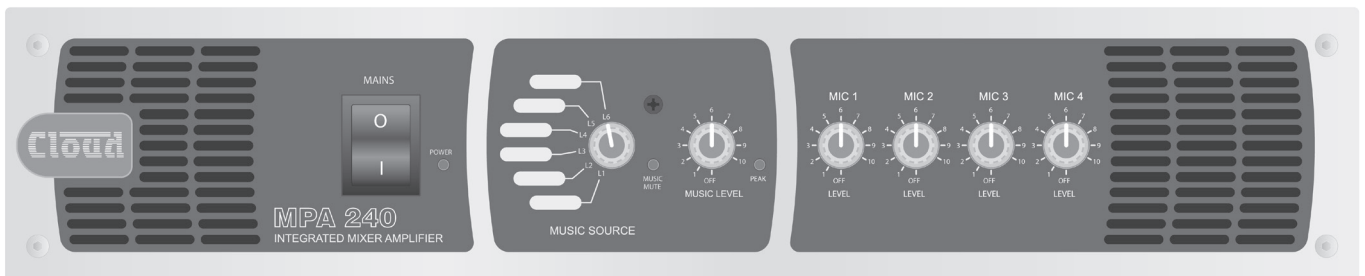




MPA SERIES

MIXER-AMPLIFIER






Installation and User Guide

WARNING:


To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

CAUTION:

Use of controls or adjustments or performance of procedures other than those specified may result in hazardous radiation exposure.

 <p>CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN</p>	<p>WARNING: SHOCK HAZARD – DO NOT OPEN AVIS: RISQUE DE CHOC ELECTRIQUE – NE PAS OUVRIR</p>
	<p>The lightning flash with the arrowhead symbol within an equilateral triangle, is intended to alert you to the presence of uninsulated dangerous voltages within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock.</p>
	<p>The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.</p>

Important Safety Instructions

1. Read these Instructions.
2. Keep these Instructions.
3. Heed all Warnings.
4. Follow all Instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturers' instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding - type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12.  Use only with the cart, stand, tripod, bracket or table specified by the manufacturer or sold with the apparatus, when a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



Do not expose the apparatus to dripping or splashing, and ensure that no objects filled with water, such as vases, are placed on the apparatus.

L'appareil ne doit être exposé aux écoulements ou aux éclaboussures et aucun objet ne contenant de liquide, tel qu'un vase, ne doit être placé sur l'appareil.



The mains plug is used as the disconnect device and it should remain readily accessible during intended use. In order to isolate the apparatus from the mains, the mains plug should be completely removed from the mains outlet socket.

Le prise du secteur ne doit pas être obstruée ou doit être facilement accessible pendant son utilisation. Pour être complètement déconnecté de l'alimentation d'entrée, la prise doit être débranchée du secteur.



This apparatus is of Class I construction and must only be connected to a mains outlet socket with a protective earthing connection.



Terminals marked with the ⚡ symbol may use Class 2 Wiring, but voltages at these terminals may be of sufficient magnitude to constitute a risk of electric shock. The external wiring connected to these terminals requires installation by an instructed person or the use of pre-made leads or cords.

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Safety Information

Safety Notes regarding Installation

- Do not expose the unit to water or moisture.
- Do not expose the unit to naked flames.
- Do not block or restrict any air vent.
- Do not operate the unit in ambient temperatures above 35°C.
- Do not touch any part or terminal carrying the hazardous live symbol (⚡) while power is supplied to the unit.
- Do not perform any internal adjustments unless you are qualified to do so and fully understand the hazards associated with mains-operated equipment.
- The unit has no user-serviceable parts. Refer servicing to qualified service personnel.
- If the moulded plug is cut off the mains lead for any reason, the discarded plug is a potential hazard and should be disposed of in a responsible manner.

Conformities

This product conforms to the following European EMC Standards:

BS EN 55103-1:2009

BS EN 55103-2:2009



This product has been tested for use in commercial and light industrial environments. If the unit is used in controlled EMC environments, the urban outdoors, heavy industrial environments or close to railways, transmitters, overhead power lines, etc., the performance of the unit may be degraded.

The product conforms to the following European electrical safety standard:

BS EN 60065:2012

The MPA Series was developed and manufactured with high quality materials and components, which can be recycled and/or reused.

The WEEE symbol indicates that electrical and electronic equipment must be disposed of separately from normal waste at the end of its operational lifetime.



Please dispose of this product by taking it to your local collection point or recycling centre.

Safety Considerations and Information

The unit must be earthed. Ensure that the mains power supply provides an effective earth connection using a three-wire termination.

When the mains switch is in the off ('O') position the live and neutral conductors of the mains transformer are disconnected.

Caution - High Voltages

Do not touch any part or terminal carrying the hazardous live symbol (⚡) while power is supplied to the unit.

Terminals to which the hazardous live symbol refers require installation by a qualified person.

Caution - Mains Fuse

Replace the mains fuse only with the same type and rating as marked on the rear panel.

The fuse body size is 20 mm x 5 mm.

Caution - Servicing

The unit contains no user serviceable parts. Refer servicing to qualified service personnel. Do not perform servicing unless you are qualified to do so.

Disconnect the power cable from the unit before removing the top panel and do not make any internal adjustments with the unit switched on.

Only reassemble the unit using bolts/screws identical to the original parts.

General Description

The Cloud MPA Series is a range of mixer-amplifiers with applications in Licensed, Retail, Leisure and similar venues.

Two models are available to suit different output power requirements (120 or 240 watts); otherwise both models have identical facilities.

The mixer-amplifiers have inputs for six stereo line signals and four microphone signals. Front panel controls are provided for music source selection, music level and microphone levels. All pre-set controls are located on the rear panel with further configuration jumpers mounted on the main PCB.

A remote level control or combined level control/music source selector can be wired to the unit for installations that require remote control.

Schematic Diagram

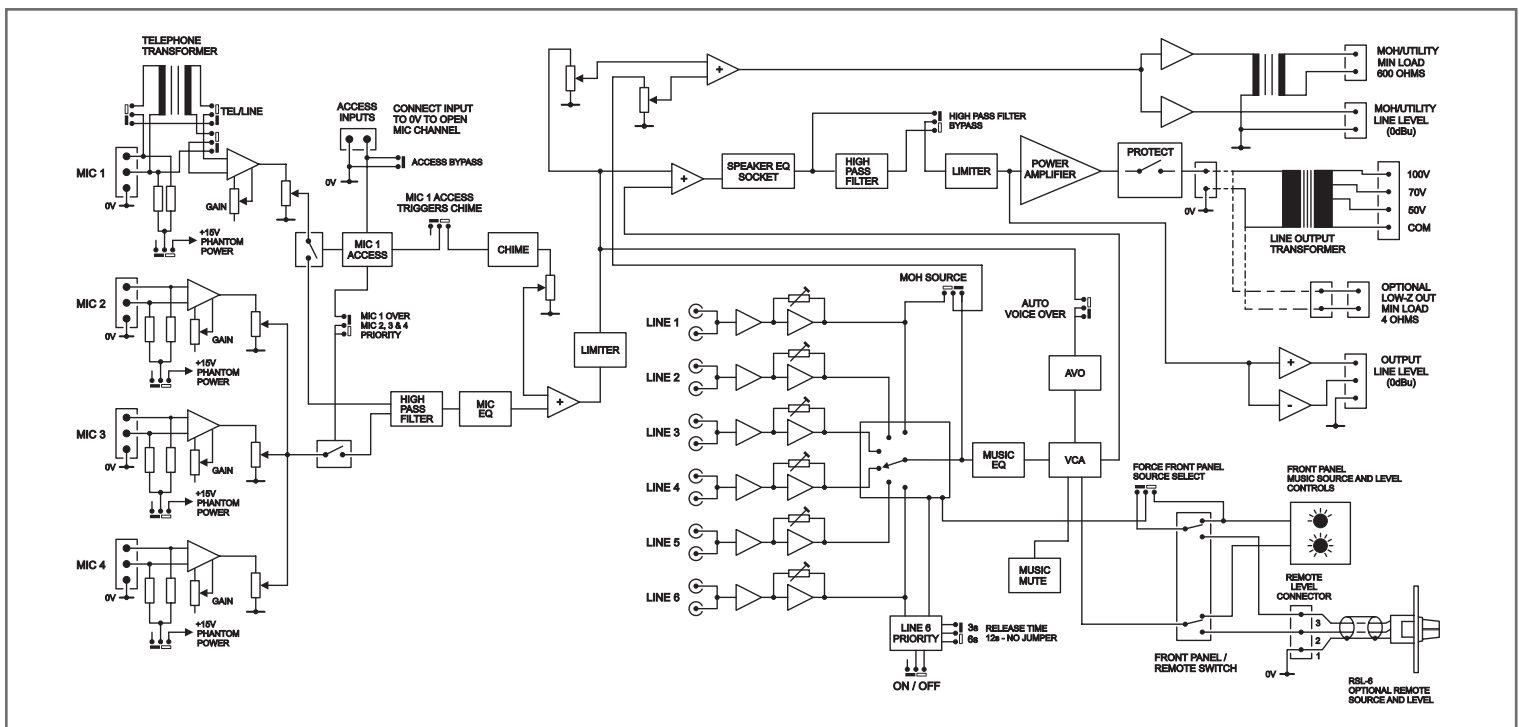


fig.1: MPA Series Schematic Diagram

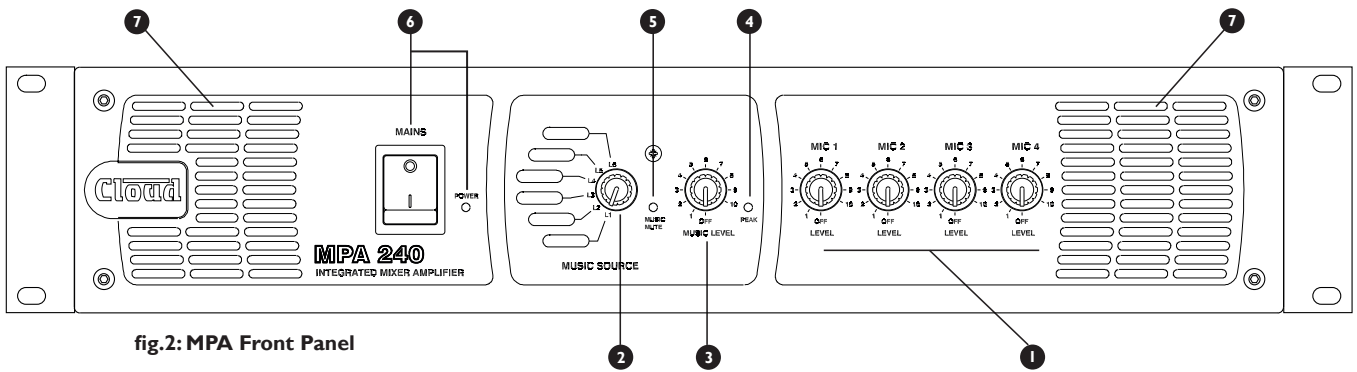


fig.2: MPA Front Panel

Front Panel Description

- 1 **MIC LEVEL 1 to 4** - level controls for Mic Inputs 1 to 4
- 2 **MUSIC SOURCE** – selects active Line Input (1 to 6)
- 3 **MUSIC LEVEL** – adjusts level of selected Line Input
- 4 **PEAK** – illuminates if Mic or Line signals level are too high
- 5 **MUSIC MUTE** – illuminates when external Emergency Mute is active
- 6 **MAINS** – AC power switch with LED
- 7 **Ventilation slots** – forced-air cooling air intake

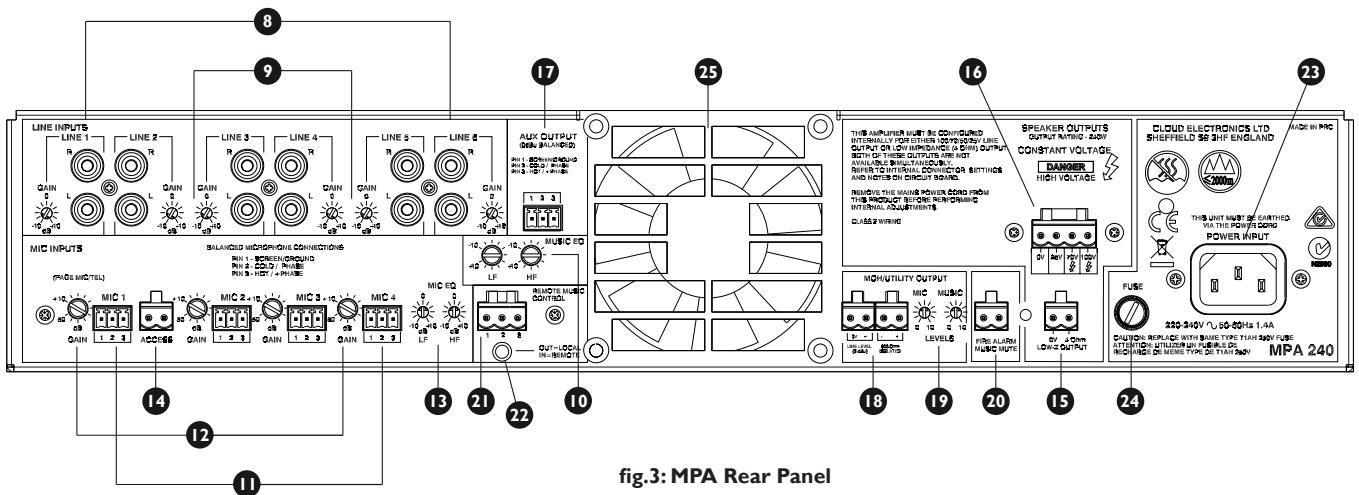


fig.3: MPA Rear Panel

Rear Panel Description

- 8 **LINE 1 to LINE 6** – stereo line inputs for music sources
- 9 **GAIN 1 to GAIN 6** – level trims for each line input
- 10 **MUSIC EQ** – LF and HF EQ adjustment for music channel
- 11 **MIC 1 to MIC 4** – balanced mic inputs
- 12 **GAIN 1 to GAIN 4** – level trims for each mic input
- 13 **MIC EQ** – LF and HF EQ adjustment for mic channel
- 14 **ACCESS** – external paging control input for Mic 1
- 15 **LOW IMPEDANCE OUTPUT** – speaker output for low-Z connection
- 16 **LINE OUTPUT** – for connection of 100V/70V/25V line distribution system
- 17 **AUX OUTPUT** – balanced line level output for feeding additional amplifiers, etc.
- 18 **MOH/UTILITY OUTPUT** – two configurable outputs for Music On Hold or ancillary use
- 19 **MIC and MUSIC LEVELS** – adjust level of mic and music at MOH/UTILITY OUTPUT
- 20 **MUSIC MUTE** – Emergency control input for muting music source
- 21 **REMOTE MUSIC CONTROL** – for connection of RL-1 or RSL-6 remote control panels
- 22 **REMOTE/LOCAL** – disables front panel controls when remote control is in use
- 23 **IEC mains input**
- 24 **Mains fuse**
- 25 **Fan** – forced-air cooling air exhaust

Music Inputs

The unit has six stereo line inputs; these inputs are suitable for most music sources such as compact disc players, tape players, satellite receivers and the like. Each stereo input is summed internally to mono.

All inputs are unbalanced and use RCA phono sockets. The input impedance is 47 kohms.

Line 6 input can be configured to have priority over any other music source, see “Music Priority” on page 10.

Sensitivity & Gain Control

All six stereo line inputs have a preset gain control on the rear panel adjacent to the respective input sockets. The gain control has a range of 20 dB allowing the input sensitivity to be varied from -12 dBu (200 mV) to +8 dBu (2.0V).

The preset gain control should be adjusted so that all the input signals are operating at the same level and that the front panel level control has an optimum range of control.

Music Source Select

This front panel switch is used to select the desired music signal. Remote control of source selection is possible with a remote control plate (RSL-6), see *fig.4*.

Music Level Control

A front panel mounted music level control is provided.

Remote control of music level is possible by connecting a remote control plate (either RSL-6 or RL-1), See *fig.4*.

Remote Control of Music Source Select and Level

The MPA Series mixer-amplifiers are compatible with standard Cloud remote control plates: RSL-6 Series (music source select and level) and RL-1 Series (level only).

Either type of plate may be connected at the rear 3-pin 5 mm-pitch screw terminal connector (**Remote Music Control**), using the wiring shown in *fig.4*.

Use two-core (RSL-6 or RL-1) or single-core (RL-1 only) screened cable to connect the remote level plate (max length 100 metres).

Pressing the button adjacent to the rear panel connector activates the remote control plate and disables both the front panel level and source select controls. If an RL-1 is being used, the internal jumper J4 should be moved from its default ‘SW’ setting to ‘FR’, to override the disabling of the front panel source select switch. See *fig.9* for location of jumpers.

Music Equalisation

One set of independent bass and treble controls is provided for the music signals. These preset controls are located on the rear panel below the line input sockets. The treble control has a range of ± 10 dB at 10 kHz and the bass control has a range of ± 10 dB at 50 Hz.

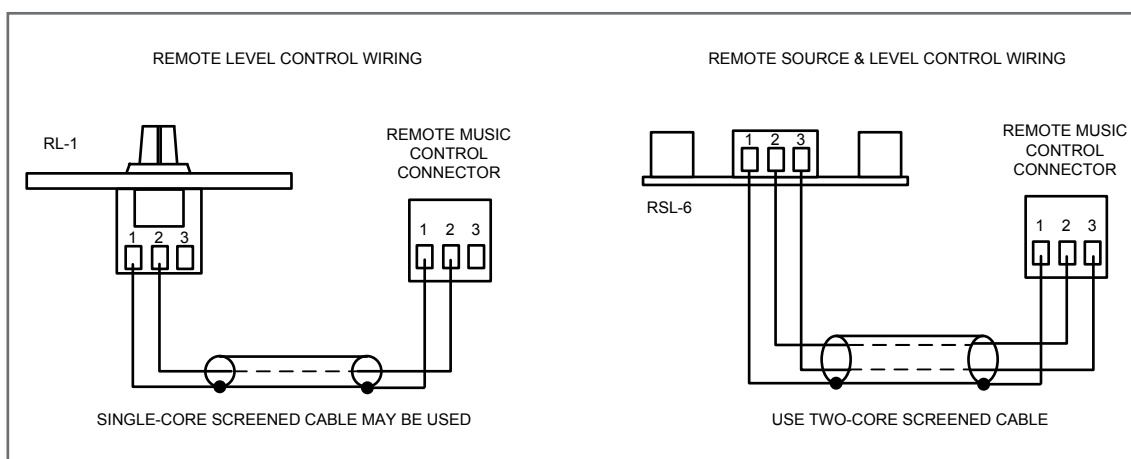


fig.4: RL-1 and RSL-6 Wiring

Music Priority

A Juke Box, Digital Sound Store or other audio source can be given automatic priority over all other music inputs by connecting it to Line 6 input and moving internal jumpers 5A and 5B from the OFF position (factory default) to the ON. When this mode of operation is selected, the unit will operate normally until a signal is detected on Line 6, when the selected source (usually background music) is muted, allowing the source connected to Line 6 to replace it. Once the signal on line 6 stops, the selected source will smoothly restore to its former level. The time taken for the restoration is set in the factory at 3 seconds, but it may be set at 6 or 12 seconds with internal jumper J7. (3s is suitable for announcements, but the longer times may be more appropriate when a jukebox or similar is the Line 6 source.) See *fig.9* for location of jumpers.

Microphone Inputs

Four microphone inputs are provided; the microphone pre-amplifiers are an electronically balanced, transformer-less design configured for optimum low noise performance. The input impedance is greater than 2 kohm and is suitable for microphones in the 200 ohm to 600 ohm range.

Inputs are via 3-pin 3.5 mm-pitch screw terminal connectors on the rear panel.

Connect microphones as shown in *fig.5*. Note that if using an unbalanced microphone, pins 1 and 2 should be connected together.

Phantom power is available on any or all of the mic inputs, and is activated by setting internal jumpers J9 to J12 (for mic inputs 1 to 4 respectively) to the ON position. See *fig.9* for location of jumpers.

Care should be taken to ensure that phantom power is activated only when the microphone connected to the input requires external phantom power; damage to the microphone may result otherwise.

Gain Control

A mic gain control (of the preset type) is provided adjacent to each input connector.

The gain can be adjusted from 10 dB to 50 dB. A high overload margin is maintained at all gain settings.

Microphone Access Input

Mic input 1 is equipped with an external access control input; this is a 2-pin 5 mm-pitch screw terminal connector adjacent to the Mic input 1 connector. The access input is primarily intended to provide compatibility with paging microphones and their associated switching arrangements. By default, the access function is bypassed.

To use the function, it must be enabled by moving internal jumper J13 from its default ON setting to OFF. See *fig.9* for location of jumpers. Once enabled, the microphone input is muted while the pins of the access connector are open-circuit. When the pins are connected together, Mic input 1 becomes active for use.

The access input can also trigger the following functions:

- Mic 1 Priority over Mics 2-4
Activation of Mic 1 via the access input will give Mic 1 priority over Mics 2, 3 and 4 if internal jumper J8 is set to ON. See *fig.9* for location of jumpers. See also "Mic 1 over Mics 2-4 priority" on page 11.
- Chime
The internal chime generator will be activated if internal jumper J11 is set to ON. See *fig.9* for location of jumpers. See also "Chime" on page 11.

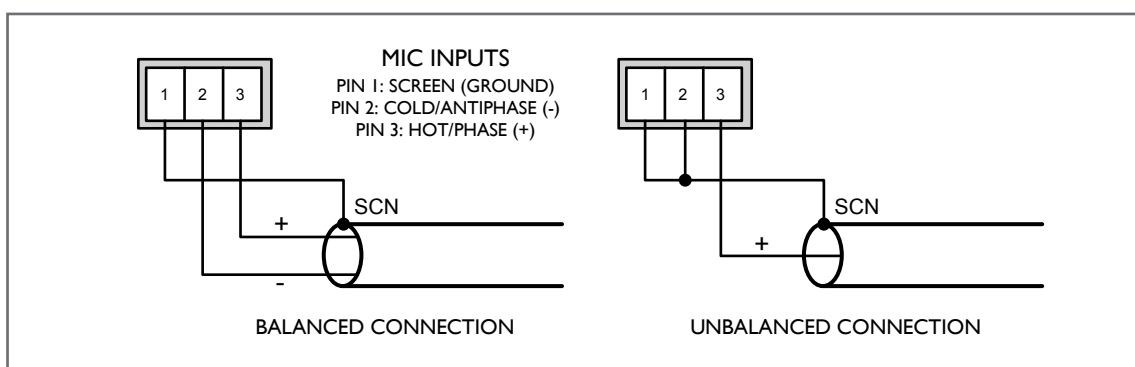


fig.5: Microphone Input Wiring

Using Mic 1 with a telephone system

Mic 1 input may be reconfigured to accept an audio input directly from a compatible telephone system. This permits announcements to be made from some (or any) internal telephone extensions in a building. Not all telephone systems are suitable for this application, and the system documentation should be consulted in detail to ensure compatibility.

Internal jumpers J15A, J15B and J15C need to be moved for this application. (See *fig.9* for internal jumper locations.) This inserts a transformer in series with the input connector to provide full electrical isolation from the telephone system. Note that the mic input sensitivity is decreased by 10 dB when the transformer is enabled, and this results in the mic gain control operating over the range 0 dB to 40 dB.

The audio (or “paging”) output of the phone system should be connected to the **MIC 1** input in the normal way. In “telephone mode”, Mic 1 input is optimised for connection to a 600 ohm output; this should suit the majority of telephone systems. Note that the front panel **MIC LEVEL 1** control is still operational.

Front Panel Microphone Level Controls

A separate level control is provided for each mic input and these provide the user with a convenient means of adjusting the audio level of the microphones.

The microphone signals are routed directly to the power stage and are unaffected by the operation of the music level control.

The gain controls on the rear panel (see Gain Control) should be set at a level where microphone distortion does not occur even when the front panel level controls are fully clockwise.

Microphone Equalisation

The four microphone inputs are summed together and are routed to the power stage via a fixed high pass filter and an adjustable EQ section. The fixed filter attenuates the signal below 100 Hz, which helps to reduce the effects of microphone handling noise.

The two preset EQ controls are on the rear panel adjacent to the mic inputs; the LF and HF controls provide ± 10 dB of adjustment below 100 Hz and above 5 kHz respectively. After installation, some test announcements should be made, ideally by the people who will normally make them. The Mic EQ should be adjusted if necessary to maximise voice clarity.

Microphone Priority

MPA Series mixer-amplifiers provide two separate microphone priority functions. One of these enables the microphones to have priority over music, the other allows Mic 1 to have priority over the other microphones.

Microphone over music priority

Fully automatic voice operated priority (VOX function) is available for the microphone signals. This function is enabled by internal jumper J6 (default setting is ON). When enabled, the music signal is automatically attenuated by 30 dB when a microphone signal is detected, allowing the message to be clearly heard. Normal music operation is restored smoothly after the announcement ends.

Note that the presence of a signal on any of the four mic inputs will operate this function.

Mic 1 over Mics 2-4 priority

If internal jumper J8 is set to ON (the default setting is OFF), Mic inputs 2, 3 and 4 will be muted whenever the Microphone Access Input is enabled. This ensures that Mic 1 will always have priority over any other microphones in use when Mic 1 is used for paging.

Note that if jumper J13 is left at its default setting of ON, Mics 2, 3 and 4 will be permanently disabled by this function, leaving Mic 1 as the only active microphone input.

Chime

MPA Series amplifiers have an internal pre-announcement chime generator. The chime is triggered by the Microphone Access Input, if enabled by jumper J1 being set to ON. J1's default setting is OFF.

An internal preset rotary control is provided to adjust the chime volume; the front panel level controls have no effect on the chime level. See *fig.9* for locations of internal controls.

Power Amplifier Stage and Outputs

Line Output

The MPA Series amplifier's output stage incorporates an output transformer suitable for driving 100V, 70V or 25V line speaker distribution. The secondary (output side) of the transformer is permanently wired to the line output connector (a 4-pin 5 mm-pitch screw terminal type). A safety cover is fitted over the connector, which may be removed to connect the speaker cable. Replace the cover after the connection has been made.

The transformer secondary has three line outputs: 100V, 70V and 25V; while these have a common 0V connection, the output is fully floating i.e., it is isolated from the rest of the amplifier. The maximum total combined load should not exceed the rated power for the amplifier model (see table below).

When driving 100/70/25V line circuits, it is strongly recommended that the amplifier's 65 Hz high pass filter is set ON (see High pass filter in following column).

Low impedance operation

To convert the amplifier to low impedance operation, the primary winding of the toroidal transformer nearer the rear of the unit should be unplugged from CON8 on the main PCB (a short pair of heavy red and black wires), and replaced by the spare plug connected to the rear panel low impedance output socket (same wire types). Refer to fig.9 ("Location of internal jumpers, etc." on page 17) for the location of this connector. Note that the 100/70/25V line outputs will no longer be available once the transformer is unplugged even though the transformer secondary is still connected to the line output connector.

The low impedance output is available on a 2-pin 5 mm-pitch screw terminal connector on the rear panel. Note that one of the output pins is connected internally to 0V.

MPA Series amplifiers are able to deliver their rated power into a 4 ohm load, as follows:

MODEL	RATED POWER
MPA120	120 watts
MPA240	240 watts

The maximum output power will be reduced with higher load impedances. When using multiple low-impedance loudspeakers (normally 8 ohms) with a single amplifier, series and parallel wiring should be employed to produce a total load impedance of not less than 4 ohms.

High pass filter

A high pass filter is provided to protect speakers, transformers etc. from the effects of low frequency signals. The filter is enabled by the internal jumper J2 (see fig.9). The filter reduces the output level of frequencies below 65 Hz, and should always be used if the line output transformer is in circuit.

MOH/Utility Output

The **MOH/UTILITY OUTPUT** (MOH = Music On Hold) is an auxiliary output which can be used for various purposes. The source is selectable by internal jumper J16. The output is available both as a transformer-isolated 600 ohm feed and a non-isolated line level feed.

A common application for the isolated output is to provide continuous music-on-hold programme to a telephone system. The line level output may be used to drive additional external power amplifiers, for example.

The output connector **18** is a 4-pin, 5 mm-pitch screw terminal type, wired as follows (see also fig.6):

PIN	LABELLED	USE
1	0V	Unbalanced 0 dBu output
2	+	
3	-	600 OHM ISOLATED
4	+	

Note that one pin of the line level output is connected internally to 0V.

The transformer-isolated output is suitable for connection to a nominal 600 ohm load. The output level is nominally 0 dBu, and the transformer provides full galvanic isolation from a telephone system. It should be noted that a fixed hi-pass filter is fitted in this output, to reduce bass frequencies when used for this purpose.

Before using the MOH/Utility output with a telephone system, it is recommended that the system manual is consulted to check suitable audio levels and any other compatibility issues.

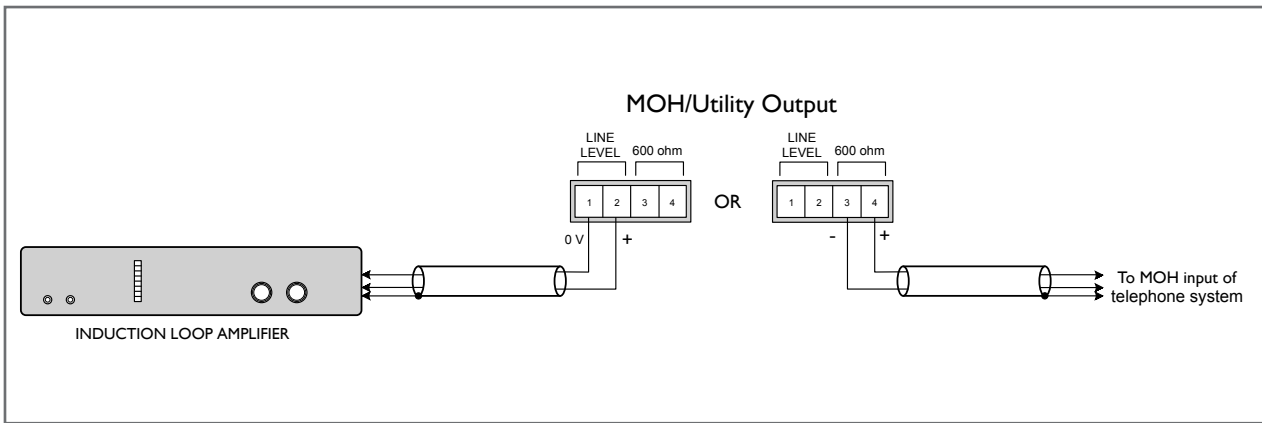


fig.6: MOH/Utility Output Wiring

MOH/Utility Output

Two source options are available for the signal at the MOH/Utility output, selected by internal jumper J16. The options are:

- The output is always fed with the music signal connected to **LINE 1**. When in use with a telephone system as an MOH source, it is generally more desirable for the music source to remain constant; these options are available for this purpose.
- The output always follows the music source selection (either on the front panel or via remote control). The **MUSIC LEVEL** control does not affect the level at the **MOH/UTILITY OUTPUT**. This option is the factory default setting.

See fig.9 for locations and settings of PCB jumpers.

The signal at the **MOH/UTILITY OUTPUT** may be any required mix of the selected music signal and the summed signals at the four microphone inputs, and is set using the rear panel presets **MIC LEVEL** control and **MUSIC LEVEL** 19. Each signal is effectively 'off' with the preset control in its fully anticlockwise position. Note that the signal at this output is NOT altered by the front panel **MUSIC LEVEL** or **MIC LEVEL** controls.

The **MIC LEVEL** control should be turned fully down if the output is to be used for Music On Hold with a telephone system, otherwise paging announcements will be heard by telephone callers.

If **SELECTED** is set as the MOH/Utility source (the factory default setting), and Line 6 Priority is enabled (see "Music Priority" on page 10), the MOH/Utility output will switch to Line 6 along with the main output if the input becomes active.

Auxiliary Output

To permit the connection of additional amplifiers (or other equipment), a balanced output from the MPA's pre-amplifier section is available at a rear panel 3-pole, 3.81 mm-pitch screw terminal connector 17. See fig.7a and fig.7b.

All the unit's controls and settings (levels, source selection, priority settings, etc.) are effective at the Auxiliary Output. However, note that neither the switchable 65 Hz high pass filter nor the fitting of an optional loudspeaker EQ card have any effect on this output.

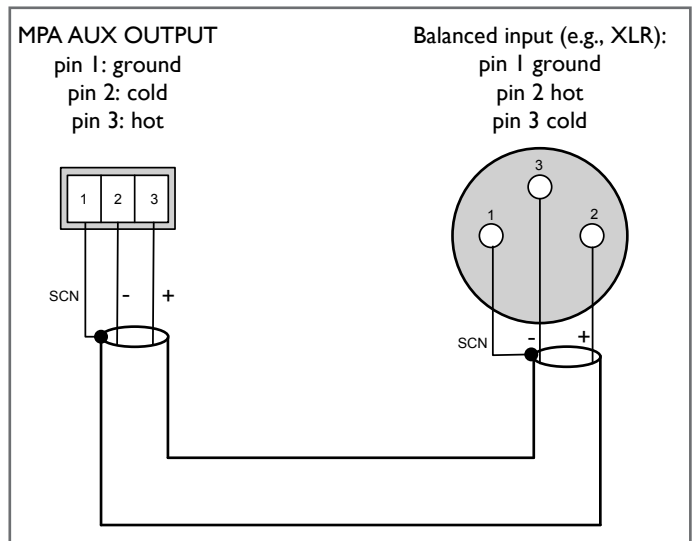


fig.7a: Balanced Wiring

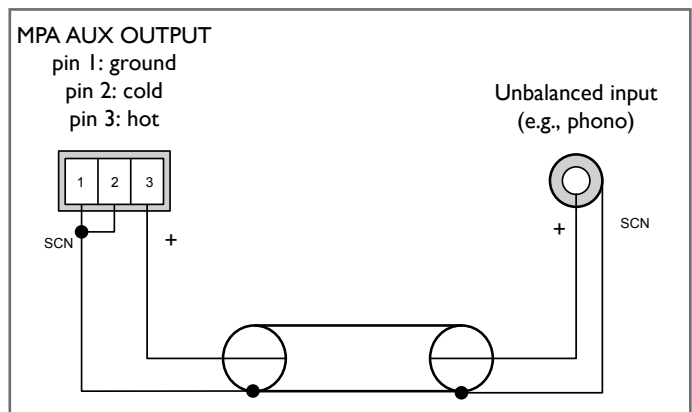


fig.7b: Unbalanced Wiring

Music Mute

(Fire Alarm Interface)

In some installations (such as licensed premises or retail outlets within a shopping mall), there may be a local authority or fire service requirement to mute the music signals from a fire alarm control panel when an alarm condition arises. The MPA Series amplifiers include a facility to mute the music signals only (i.e., mic inputs are still active), via the Music Mute input. This is a 2-pin 5 mm-pitch screw terminal connector on the rear panel, and the contacts are fully isolated.

Activation of the Music Mute is often via a relay mounted close to the MPA Series amplifier, powered by the fire alarm control panel. Other arrangements may exist depending on the design of the fire control system and the fire alarm installation company should be consulted when making the connection. The MPA Series amplifiers will mute on either a contact closure at the Music Mute input (NO) or an open-circuit (NC). Selection of NO or NC operation is made with internal jumper J14. NO is the factory default. See *fig.8*.

Loudspeaker EQ cards

MPA Series Mixer-Amplifiers are compatible with various popular installed-sound loudspeakers; a loudspeaker equalisation module may be fitted to the output stage to optimise the frequency response to the loudspeaker type being used.

The cards may be obtained from Cloud Electronics as optional accessories. Please check the Cloud website (www.cloud.co.uk) for makes and models of loudspeakers for which compatible EQ cards are available.

Installation Instructions

Refer to the PCB layout diagram (see *fig.9*) for the location of the EQ card connector and its associated bypass jumper J3.

To install an EQ module, proceed as follows:

1. Switch off the power and isolate the unit from the mains.
2. Remove the top panel.
3. Remove jumper J3 from the main PCB.
4. Plug the EQ card into its connector; note that the connector has two notches on one side which engage with lugs on the card's mating connector to ensure correct orientation
5. Replace the top panel.

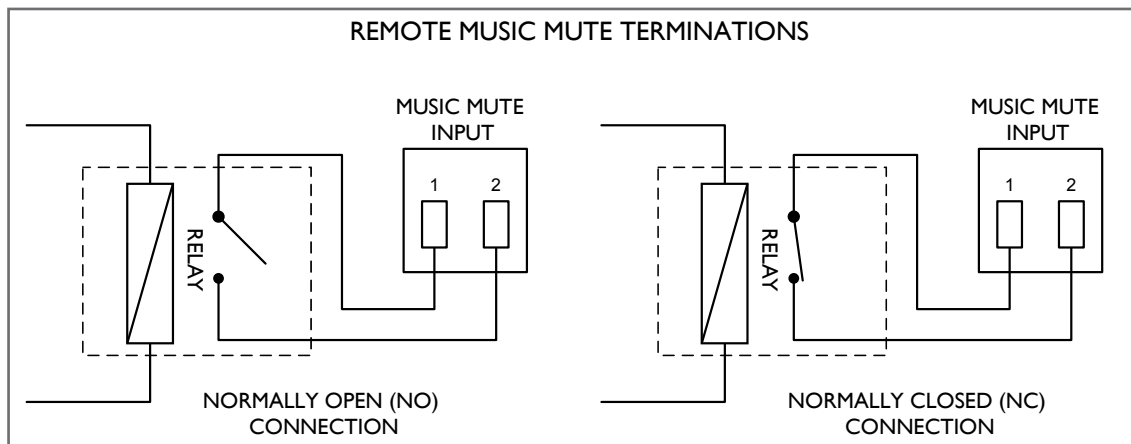


fig.8: Remote Music Mute

General Notes

Multi-zone Applications

Where the sound system specification calls for separate control in several zones, multiple MPA Series amplifiers can be used.

Signal sources can be connected to several inputs as required, but care must be taken to ensure the output stage of the signal source is capable of driving the resulting lower input impedance.

The impedance of the line inputs (music inputs) is 47 kohms and it is reasonable to assume that most op-amp based signal sources are able to drive a 10 kohm load, allowing up to five amplifiers to be paralleled.

The input impedance of the mic inputs is 2.4 kohms, making them suitable for microphones with a nominal impedance of 600 ohms or less. A single 600 ohm microphone could therefore typically be connected to four paralleled mic inputs. If this guideline figure cannot be adhered to, the use of suitable mic or line distribution amplifiers is recommended.

To avoid any problems associated with differences in mains supply earthing, we recommend that all MPA Series amplifiers used in a multi-zone application should be co-located and connected to a common mains supply.

Note that when using multiple MPA Series amplifiers in a 19" rack, suitable ventilation arrangements must be made to ensure that lower amplifiers do not cause those above to overheat (see 'Ventilation' for further information).

EMC Considerations

MPA Series amplifiers fully conform to the relevant electromagnetic compatibility (EMC) standards and are technically well behaved. You should experience no problems interfacing units to other items of equipment and under normal circumstances, no special precautions need to be taken.

If the unit is to be used in close proximity to potential sources of HF disturbance such as high power communication transmitters, radar stations and the like, it is suggested that input signal leads be kept as short as possible.

Always use balanced interconnections wherever possible. If the MPA Series amplifier is mounted in a 19" rack, do not locate the unit in close proximity to a powerful amplifier of any kind, which may radiate a strong magnetic field from the power transformer.

Earthing

When several mains powered units are connected together via their signal cables, there is a risk of one or more earth loops which may cause an audible hum on the system even with the gain controls set to minimum.

The 0V rail of an MPA Series amplifier is directly coupled to the chassis ground. No interconnection problems should be encountered, but if there is any hum or other extraneous noise when source equipment is connected, the situation can generally be remedied by observing the following guidelines:

- Always connect sources using balanced connections wherever possible, with the cable screen only connected at the receiving end (amplifier input).
- Use audio isolating transformers (readily available from trade suppliers) at the inputs if necessary. These will ensure that the amplifier is electrically isolated from the source equipment.
- The signal source units should be located as close as possible to the amplifiers and the metal housing of the various units should not be electrically connected together through the equipment rack. If this is a problem, rack isolating kits are available from specialist hardware suppliers. If the problem persists, try to connect all interconnected units, including power amplifiers to a common power source to ensure a common ground is provided.

Ventilation

MPA Series amplifiers are force cooled by a thermostatically-controlled fan. The fan is operative at all times, remaining at low speed at internal temperatures below 50 °C, then increasing in speed above this temperature to a maximum speed at 70 °C.

Always allow adequate space around the amplifier(s) to allow a free flow of air through the unit(s). In 19" rack applications we recommend leaving 1U of rack space above and below each unit. Plain 1U blank panels, not slotted ventilation panels should be used, as the latter reduce the effect of forced-air cooling.

The direction of airflow in MPA Series amplifiers is from front-to-rear; it is recommended not to mix the amplifiers with other equipment employing forced-air cooling which acts in the opposite direction within the same rack.

In free standing applications we recommend fitting the feet supplied and placing the unit on a flat surface and leaving the ventilation slots on top of the unit free from any obstructions.

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: ±10 dB/10 kHz LF: ±10 dB/50 Hz

Microphone Inputs

Gain control	40 dB range
Input Impedance	>2k ohms (balanced)
Phantom Power	15 V, switchable per-input by jumpers
Headroom	>20 dB
Equalisation	HF: ±10 dB/5 kHz LF: ±10 dB/100 Hz

Outputs

Output Power* (any output, 1kHz 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	
Protection	Fixed level signal limiter(max gain reduction of 20 dB), DC protection, IV limiting & short circuit protection, switch-on delay		

* see also “Low impedance operation” on page 12.

General Specifications

Power input	230 V, 115 V, 100 V versions available		
Fuse rating	MPA120	230 V	T2A H
		115/100 V	T4A H
	MPA240	230 V	T4A H
		115/100 V	T6.3A H
Fuse type	All models	20 mm x 5 mm	
Dimensions (W x H x D)	482.6 mm x 88 mm (2U) x 300 mm (+ connectors & knobs) 19" x 3.5" x 11.8" (+ connectors & knobs)		
Net weight	MPA120	10.5 kg 23.5 lbs	
	MPA240	21.6 kg 48.3 lbs	

Location of internal jumpers, etc.

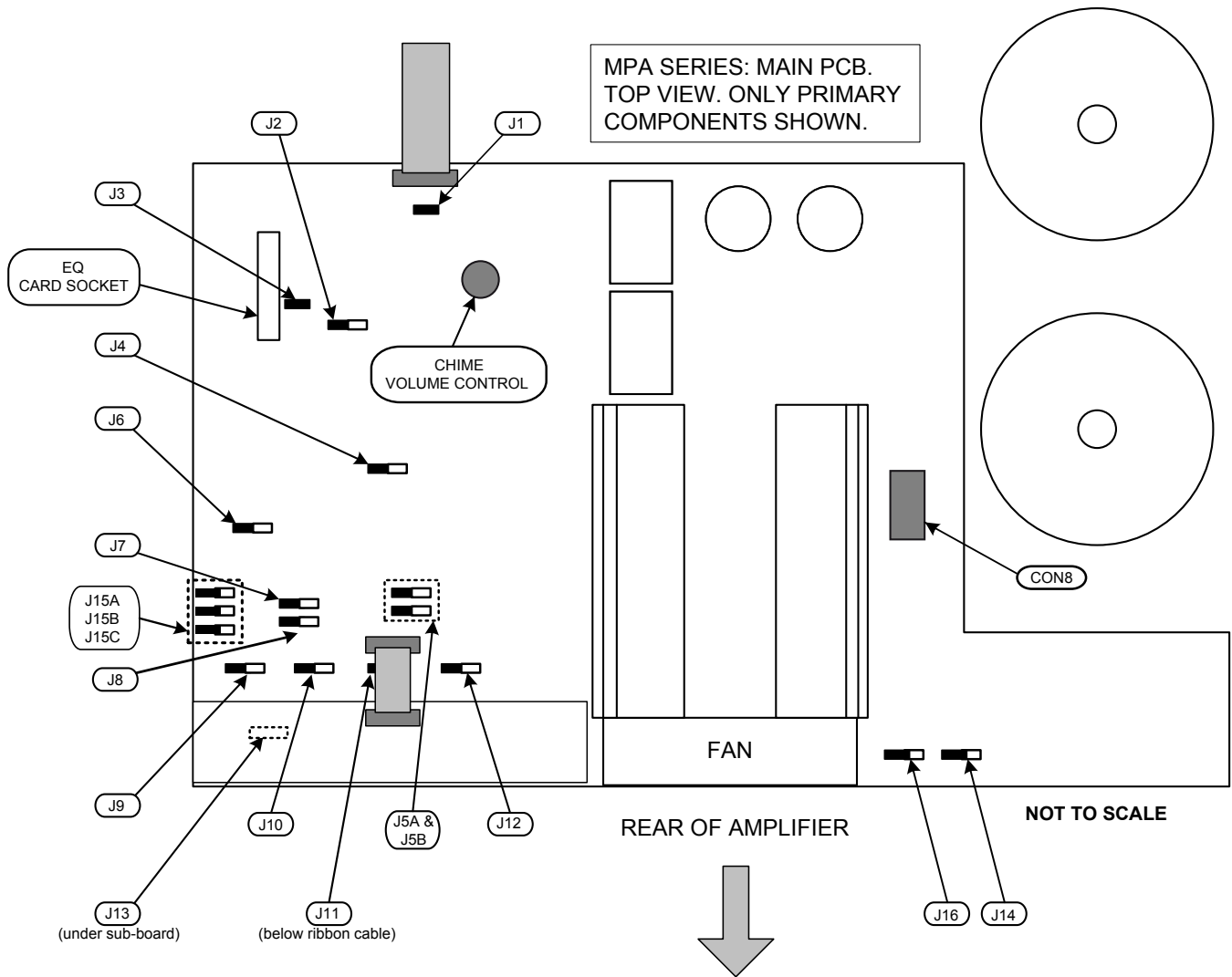


fig.9: Internal jumpers

Factory Default Jumper Settings

Jumper	Function	Default Setting
J1	Mic 1 access triggers chime	OFF
J2	65 Hz high pass filter frequency	ON
J3	EQ card socket bypass	ON
J4	Front panel source select switch disable	SW
J5 (A & B)	Line input 6 priority	OFF
J6	Mic over music priority (VOX function)	ON
J7	Line 6 priority release time 3, 6 or 12 seconds	3S
J8	Mic 1 priority over Mics 2, 3 & 4	OFF
J9	Mic 1 phantom power	OFF
J10	Mic 2 phantom power	OFF
J11	Mic 3 phantom power	OFF
J12	Mic 4 phantom power	OFF
J13	Mic 1 Access Input bypass	ON
J14	Music Mute NO or NC	NO
J15 (A, B & C)	Enable Mic 1 for telephone system	OFF
J16	MOH/Utility Output music source	SELECTED

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