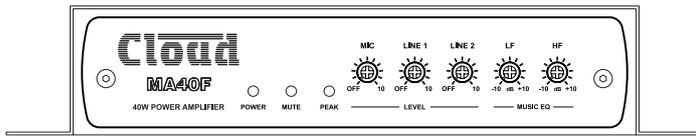
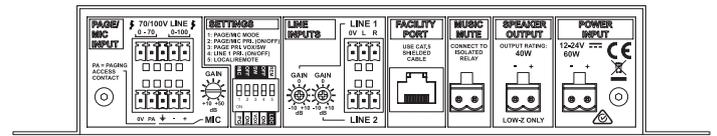


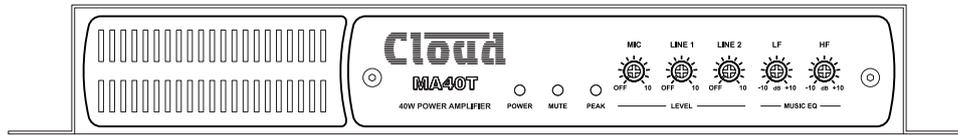
# MA40F & MA40T Mini Amplifiers



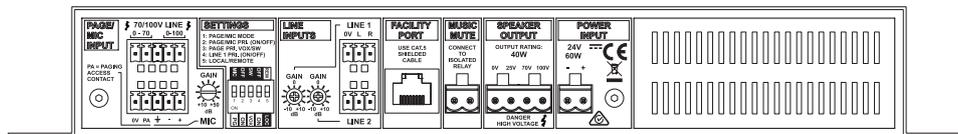
MA40F Front Panel



MA40F Rear Panel



MA40T Front Panel



MA40T Rear Panel

## General Description

The MA40F and MA40T are very compact mono amplifiers designed for integration into audio and AV systems where de-centralised installation is advantageous. They are intended as “install-and-forget” components, and are small enough to be fitted into wall or ceiling voids or in any convenient location adjacent to projectors, flat screen displays or loudspeakers. A simple set of controls and configuration options makes them easy to integrate into any audio system. They are highly suitable for use with in-store digital signage, gallery and museum exhibits and fixed or mobile tour guide systems.

The two models have identical feature sets, and differ only in dimensions and output capabilities: the MA40F can drive 40 W into a 4 ohm load (when used with the supplied PSU); the slightly larger MA40T is fitted with a line output transformer making it suitable for driving 100/70/25 V-line loudspeaker systems. An external 24 V mains PSU is supplied with each MA40F/T, though the MA40F is able to operate from any external DC supply of between 12 and 24 V. The maximum output power is reduced with supply voltages below 18V. The ability to operate from a low DC supply voltage makes them ideal for installation on buses, trams or river boats, or anywhere an AC mains supply may not be readily available.

The power amplifier stage is fully protected against DC offset, over-current, over- and under-voltage and is also thermally protected. A switch-on delay function mutes the output during power-up and power-down to protect loudspeakers.

The amplifiers mix two unbalanced stereo line inputs with a balanced microphone input; the stereo inputs are summed to mono internally. LINE 1 can be set to have priority over LINE 2 via a rear panel dipswitch to allow the connection of message stores, etc. The mic input can be configured by further dipswitches to function as a paging mic input, with the usual Cloud options for mic-over-music priority and paging control via either VOX or contact closure at the access port. The MA40F and MA40T are directly compatible with the

Cloud PMI single-zone paging mic. 12 V phantom power is available at the mic input, selectable by internal jumper. To allow integration into existing 100/70V-line PA/VA systems, the paging input also has a high impedance input which allows the local subsystem being driven by the MA40F/T to carry paging and/or emergency announcements made using the building’s main system.

Front panel controls are provided for MIC, LINE 1 and LINE 2 levels; additionally, each input has rear panel adjustments for gain. The front panel also has LF and HF EQ controls for the music channel; these allow the amplifier’s response to be optimised to suit the loudspeakers and acoustic environment. A PEAK LED illuminates if the amplifier’s dynamic clip protection becomes active, and thus clearly indicates the onset of distortion.

A particularly useful feature of the MA40F/MA40T is the Facility Port; this allows a remote input module from the Cloud LM-2 (for wired sources) or BT-I Series (for Bluetooth wireless sources) to be connected via easy-to-install screened Cat 5 cable. Microphones, and/or line sources - such as radio mics, DJ mixers, MP3 players, laptops or other audio sources - including Bluetooth-equipped laptops, tablets and smartphones - can then be connected locally, simplifying the use of the area for presentations where portable audio sources are in use. LM-2 modules also provide remote control of music level. RL and RSL Series control plates may also be connected to the MA40F/MA40T, to remotely control music level and music level and source selection respectively.

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

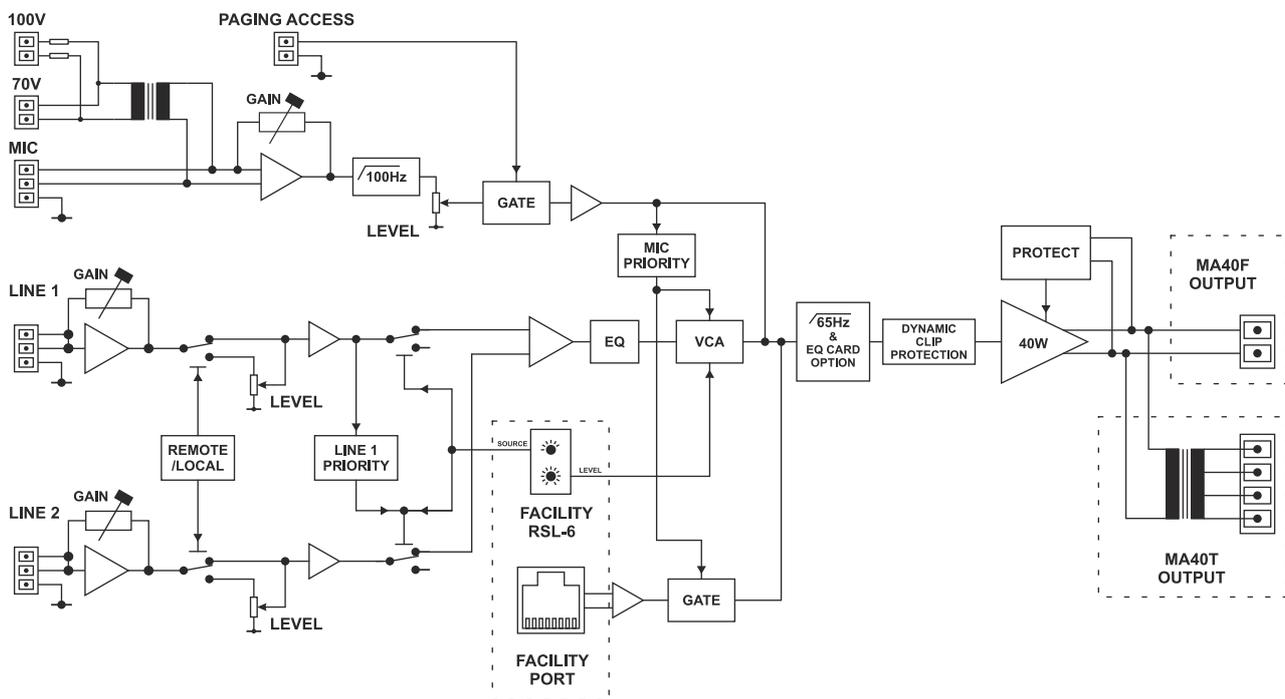
The MA40F and MA40T are very energy-efficient\* and draw very little power in a quiescent state. A user-selectable automatic power-down function puts the module into an ultra-low-current standby mode after a preset period with no signal. A bicolour front panel LED indicates standby and active statuses.

\*ENERGY STAR certification applied for.

## Key features

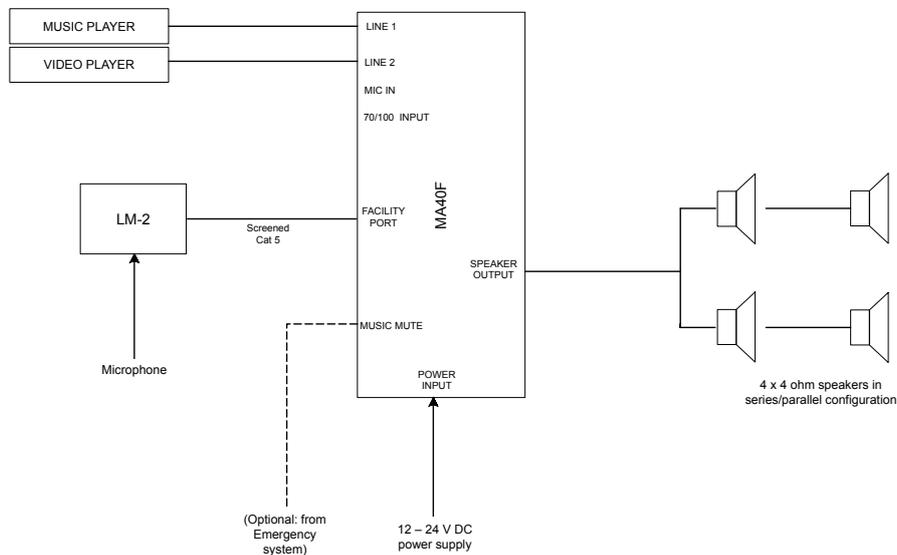
- Compact mono amplifier modules for “install-and-forget” situations
- Two (unbalanced) stereo line inputs with individual sensitivity trims
- Electronically-balanced mic input with separate gain control
- Phantom power selectable by internal jumper
- Front panel control of music level and mic levels
- HF & LF EQ adjustments for music sources
- MIC input configurable for direct connection to 100/70 V-line system: allows MA40F/T to receive announcements from main building PA/VA system
- MIC input can be used with paging mics
- Paging configurable as automatic voice-over-music (VOX mode) or contact closure via access port
- Selectable LINE 1-over-LINE 2 priority
- Facility port for connection of LM-2 remote mic/line input module via screened Cat 5 cable; also allows remote control of music level
- 40W power amplifier
- Two versions available: MA40F with low-impedance output, MA40T with internal transformer for driving 100/70/25 V-line systems
- Music Mute control input (N/O or N/C) for interface to emergency system
- Selectable 65 Hz high-pass filter for use with 100/70/25 V-line systems
- Optional EQ cards available to suit various popular installation loudspeakers
- Automatic power-down function (user-selectable)
- Less than 1 W power consumption in sleep mode
- Convection cooled – silent in operation.
- PSU meets US DoE Level VI energy requirements
- Power requirements:
  - MA40F: 12 to 24V DC, 47W
  - MA40T: 24V DC, 47W
- Universal AC adaptor included (both models), operates from 100 to 240 V AC

## Block Diagram



## System Examples

### Tour guiding with an MA40F

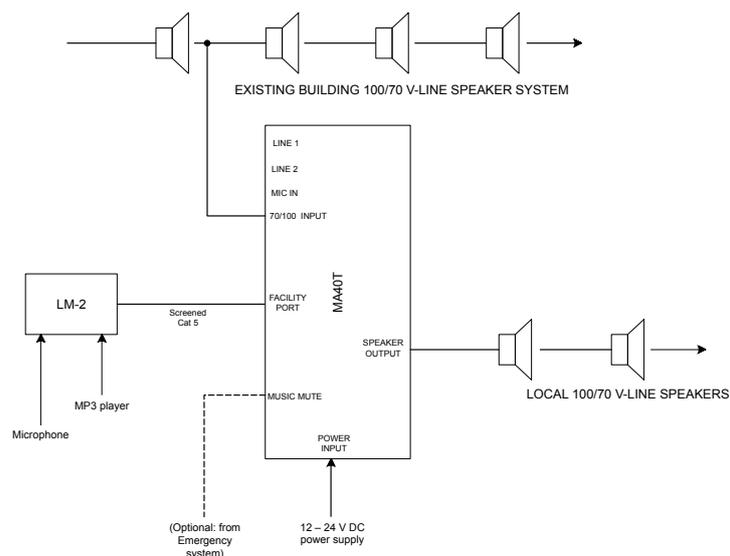


The system shown here uses an MA40F to provide the commentary and music in a mobile tour guiding application, such as on a bus, tram or river boat. The ability of the MA40 range to operate from a low-voltage DC supply makes it particularly useful for this type of application.

A music player and a video player are connected to the two line inputs; an LM-2 mic/line input module could be installed remotely at the guide's location and connected to the MA40F with screened Cat-5 cable. The guide's microphone would be plugged in here; he/she would also have the ability to control music volume from the LM-2.

Four loudspeakers are shown, connected in a series/parallel arrangement for maximum coverage.

### Extending an existing hi-Z speaker system with an MA40T



In this example, an MA40T is used to provide local music and microphone amplification in a particular part of a building (possibly a new extension), while at the same time ensuring that the local loudspeakers are integrated with the main building PA/VA system.

This is achieved by simply tapping into the existing building loudspeaker wiring and connecting the feed to the MA40T's hi-Z microphone input. Setting the priority configuration switches correctly will ensure that building-wide announcements will always interrupt any local programme sources.

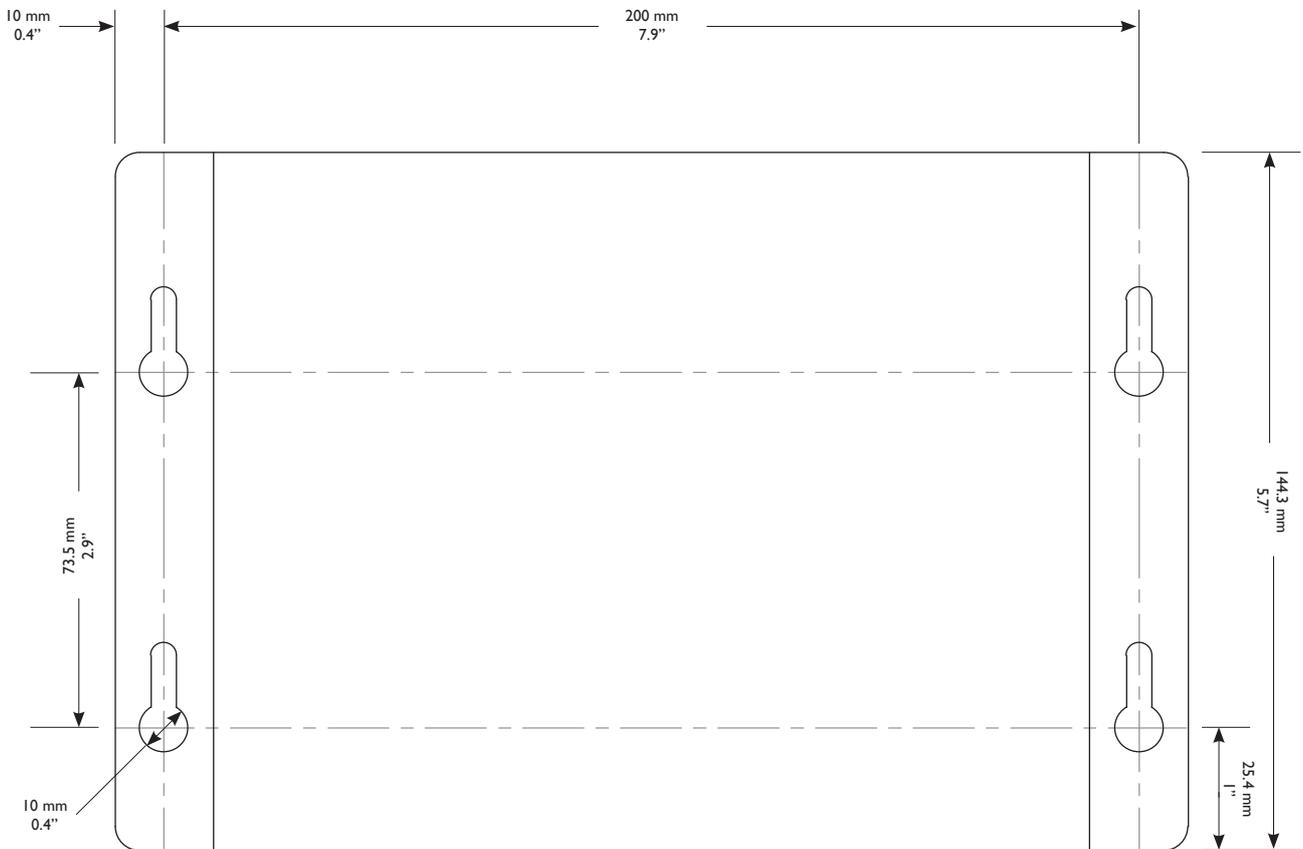
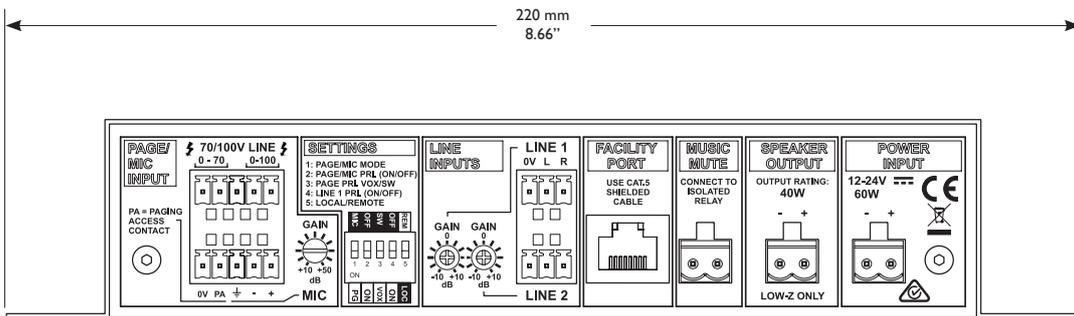
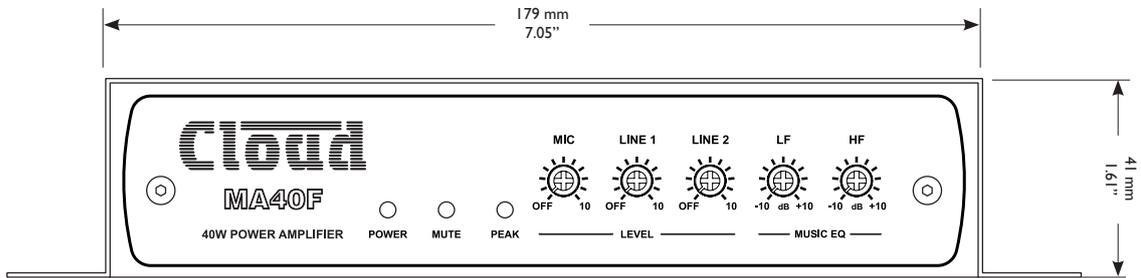
The MA40T can drive 100/70/25 V-line systems directly, so consistency of loudspeaker type throughout the building can be achieved.

## Technical Specifications

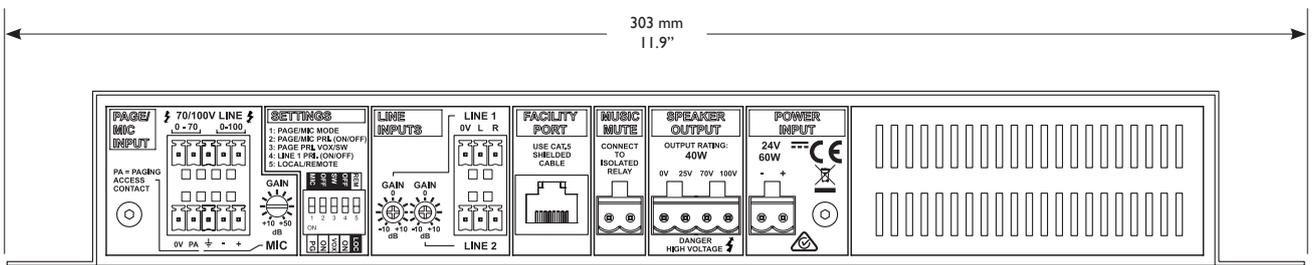
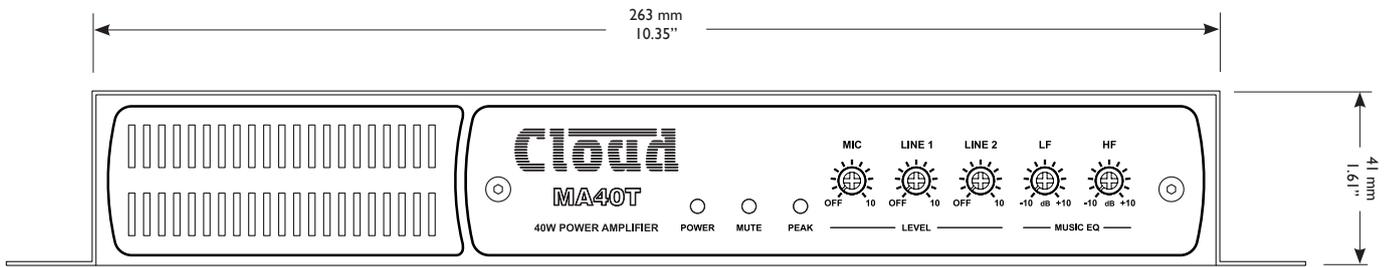
Line inputs			
Frequency Response	±1 dB, 20 Hz to 20 kHz		
Distortion	<0.1 %		
Sensitivity	0.2 V (-12 dBu) to 1.95 V (+8 dBu)		
Input Gain Control	20 dB range		
Input Impedance	10 kohms (unbalanced)		
Headroom	>12 dB		
Noise	<-90 dB		
Equalisation	LF: ±10 dB @ 50 Hz, HF: ±10 dB @ 10 kHz		
Facility input			
Input Impedance	10 kohms (balanced)		
Sensitivity	0.775 V (0 dBu)		
Microphone input			
Frequency Response	-3dB @ 120 Hz (filter) to 20 kHz ±1 dB		
Distortion	<0.1%		
Gain	10 dB to 50 dB		
Input Impedance	>2 kohms (balanced)		
Headroom	>12 dB		
Noise	<-90 dB		
Phantom Power	+12 V (internal jumper)		
Output			
Output Power (1 kHz continuous sine wave)	40 W, DC input >21 V		
General			
Power Input	MA40F: 12 V to 24 V DC: MA40T: 24 VDC*		
Power consumption	47 W		
External AC PSU adaptor	Universal type, 100 V to 240 V, 47 to 63 Hz		
Amplifier protection	Fixed level signal limiter; Protection against DC, PSU overcurrent, amplifier overcurrent, over-temperature, supply voltage under/over-voltage, Resettable internal breaker (no fuses)		
Dimensions (w x h x d)	MA40F	Net	220 mm x 41 mm x 144.5 mm, 8.7" x 1.6" x 5.7"
		Shipping	290 mm x 160 mm x 210 mm, 11.4" x 6.3" x 8.3"
	MA40T	Net	303 mm x 41 mm x 144.5 mm, 11.9" x 1.6" x 5.7"
		Shipping	290 mm 160 mm x 380 mm, 11.4" x 6.3" x 15"
Weight	MA40F	Net	750 g
		Shipping	1.0 kg
	MA40T	Net	1.65 kg
		Shipping	1.8 kg

\* The MA40T must be operated from a 24 V supply for 100 V-line operation. Lower supply voltages may be used, but the output power will be reduced. See power de-rating table on page 7.

Dimensions: MA40F

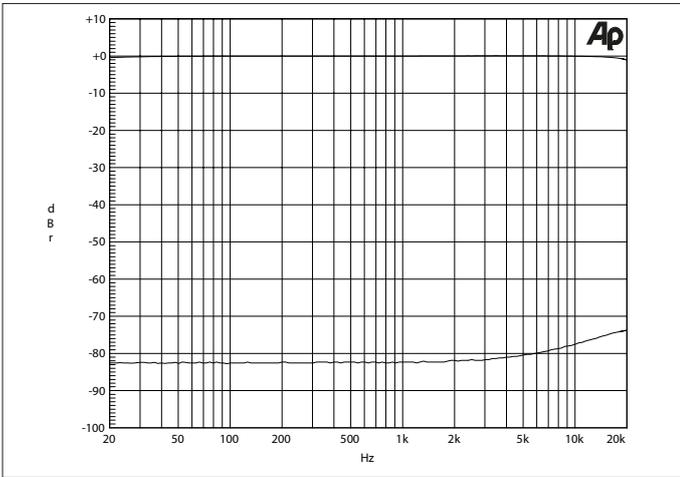


Dimensions: MA40T

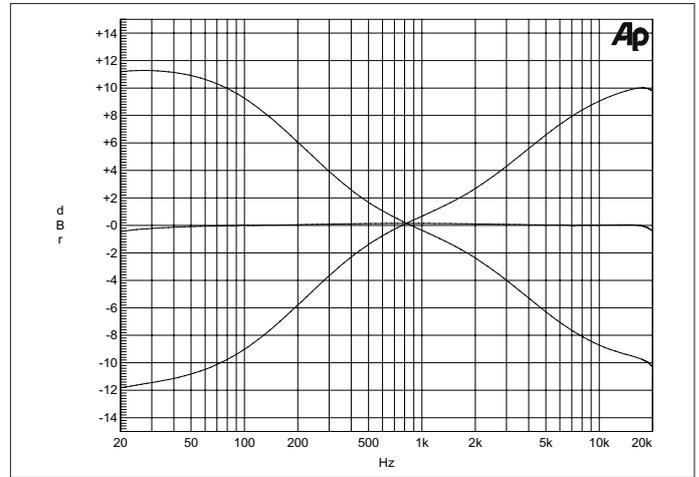


## Performance Graphs

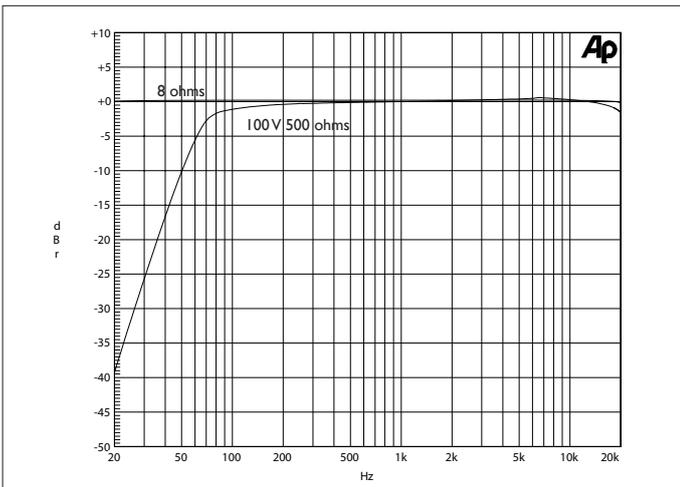
Line Attenuation



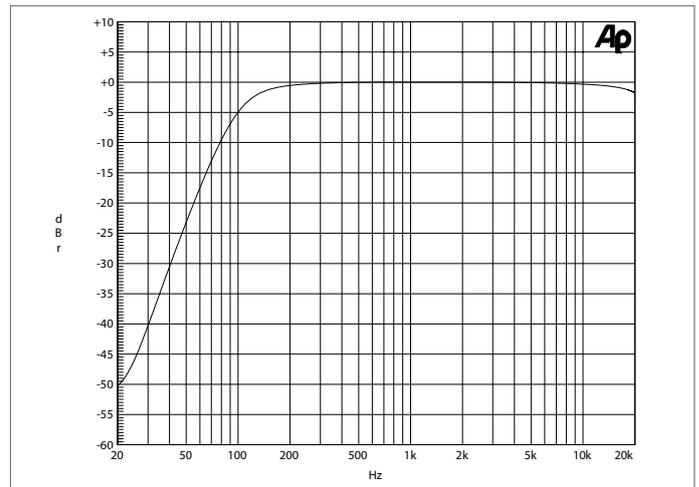
Line EQ



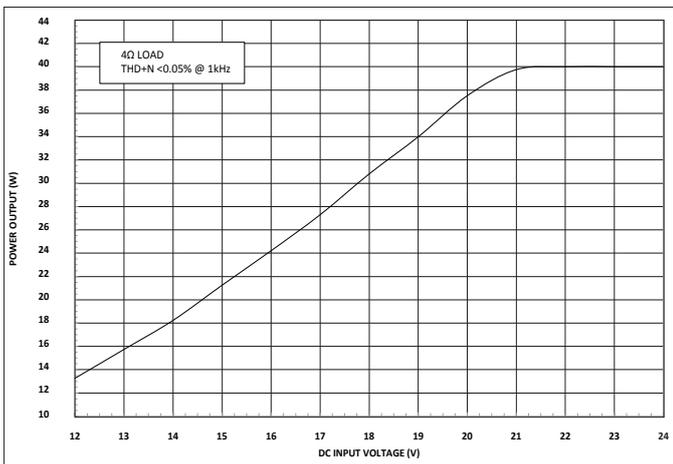
Line Frequency Response (8 ohms + 100V 500 ohms)



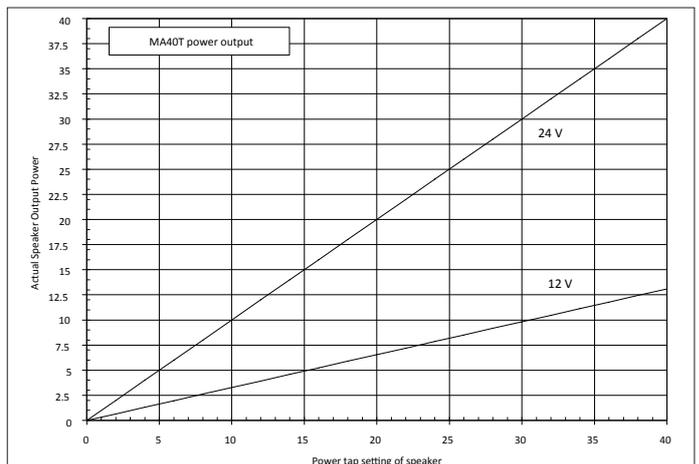
Microphone Frequency Response



Power vs Supply Voltage (MA40F)



Power vs Supply Voltage (MA40T)



## Architect's and Engineer's Specification

The single channel amplifier shall be available in two versions: one with a low-impedance output able to deliver 40 W into a 4 ohm load, the other with a transformer-coupled high-impedance output suitable for driving 100 V-line, 70 V-line or 25 V-line loudspeaker distribution systems, also able to deliver a power output of 40 W. The output shall be via plug-in screw terminal connectors on both versions.

The amplifier shall be equipped with two unbalanced stereo line inputs and an electronically balanced microphone input; the line inputs shall be summed internally to mono (the music channel), and mixed with the microphone input. Each of the three inputs shall have rear panel sensitivity controls of the preset type. The front panel shall be fitted with a microphone level control, separate level controls for each line input and HF and LF equalisation controls for the music channel. Phantom power shall be available at the microphone input, selectable by an internal jumper. An alternative microphone input shall also be provided, which should be suitable for connection directly to either a 100 V-line or 70 V-line loudspeaker system. All input connections shall be via plug-in screw terminal connectors. There shall be visual indication on the front panel if any input signal activates the amplifier's clip protection.

A control input shall be provided to activate the microphone input by external contact closure. It shall 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 on the microphone input will automatically mute the music signal, ii) detection of a signal on one line input will automatically override the other. It shall be possible to select all configurations, including the choice of microphone input, without removing any part of the amplifier housing.

The amplifier shall be provided with a multi-function control port using a connector of the RJ45 type. An optional active input module shall be available which may be wired to this connector using standard screened Category 5 cable, enabling external mic and/or line level signals to be routed to the zone from a remote location. The connector shall also permit the direct connection of a balanced audio source, and provide DC power for the remote plates. It shall be possible to control the level of the music channel via this port.

An external control input shall be provided on a plug-in screw terminal connector to allow muting of the music channel 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. There shall be visual indication of the mute input's state on the front panel.

The amplifier shall be compliant with the relevant provisions of EnergyStar® Eligibility Criteria Ver. 3.0 for Audio-Video Products. In the absence of an input signal, it shall automatically enter "standby" mode wherein the DC power consumption shall be less than 1 W. It shall be possible to override this mode by an internal jumper.

The amplifier shall be built in a robust steel housing suitable for installation in unattended locations. Cooling shall be by natural convection. Both versions of the amplifier shall be supplied with an external 24 V DC power supply capable of operating on any AC mains supply voltage from 100 V to 240 V, however the low-impedance output version shall be capable of operating from a DC power supply in the range 12 V and 24 V; the maximum output power of 40 W shall be available when the amplifier is operated from a supply of 18 V or higher. The power input connector shall be of the plug-in screw terminal type. There shall be colour-coded visual indication of the amplifier's power status (i.e., active or standby modes) on the front panel.

The amplifiers shall be the Cloud MA40F (low-impedance output) and Cloud MA40T (100/70/25 V-line output). The optional active module shall be the Cloud LM-2 Series.