CX163
Two Zone Stereo Mixer with Mono Utility Output

Cloud

Clearly better sound

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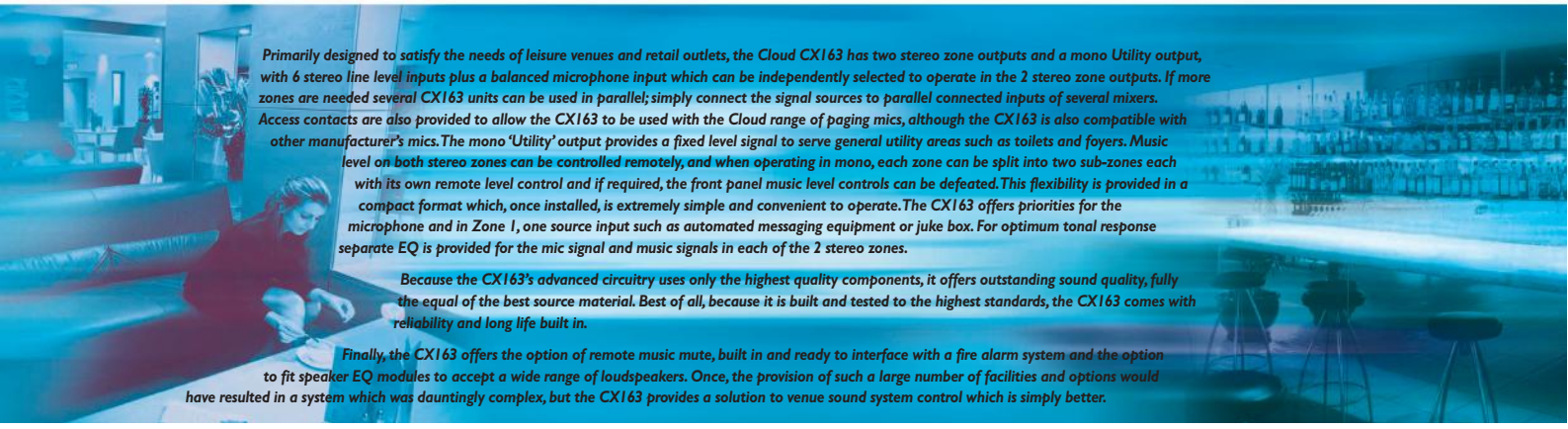


Primarily designed to satisfy the needs of leisure venues and retail outlets, the Cloud CX163 has two stereo zone outputs and a mono Utility output, with 6 stereo line level inputs plus a balanced microphone input which can be independently selected to operate in the 2 stereo zone outputs. If more zones are needed several CX163 units can be used in parallel; simply connect the signal sources to parallel connected inputs of several mixers. Access contacts are also provided to allow the CX163 to be used with the Cloud range of paging mics, although the CX163 is also compatible with other manufacturer's mics. The mono 'Utility' output provides a fixed level signal to serve general utility areas such as toilets and foyers. Music level on both stereo zones can be controlled remotely, and when operating in mono, each zone can be split into two sub-zones each with its own remote level control and if required, the front panel music level controls can be defeated. This flexibility is provided in a compact format which, once installed, is extremely simple and convenient to operate. The CX163 offers priorities for the microphone and in Zone 1, one source input such as automated messaging equipment or juke box. For optimum tonal response separate EQ is provided for the mic signal and music signals in each of the 2 stereo zones.

Because the CX163's advanced circuitry uses only the highest quality components, it offers outstanding sound quality, fully the equal of the best source material. Best of all, because it is built and tested to the highest standards, the CX163 comes with reliability and long life built in.

Finally, the CX163 offers the option of remote music mute, built in and ready to interface with a fire alarm system and the option to fit speaker EQ modules to accept a wide range of loudspeakers. Once, the provision of such a large number of facilities and options would have resulted in a system which was dauntingly complex, but the CX163 provides a solution to venue sound system control which is simply better.

Applications
The CX163 is the solution to a wide range of applications, such as:
- Restaurants
- Leisure venues
- Licensed premises
- Retail outlets

Stereo Line Inputs
The CX163 has 6 stereo line inputs, which are suitable for a wide variety of music sources, such as CD players, MP3 players, hard disc systems, video sound tracks, satellite receivers, juke box etc. Connection is by way of RCA phono sockets on the rear panel.

Music Input Sensitivity & Gain Control
All six stereo line inputs have a pre-set gain control adjacent to the respective input sockets. The gain control has a range of 24dB allowing the input sensitivity to be varied from –18dBu (100mV) to +6dBu (1.5V).

Music Source Select
A front panel 6 position rotary switch is provided for each stereo zone to select the desired music source.

Line 6 Priority
The signal on Line 6 can be configured on Zone 1 to have full priority over the selected music signal. This function is useful to interface priority music signals derived from a Juke Box or spot announcement machine

Music Level Control
A front panel level control is provided for each stereo zone to adjust the level of the selected music source. Alternatively the level of the selected music source can be controlled remotely by a RL-1 and when used in this mode, the front panel mounted control can be defeated if required.

Remote Level Control
Because the CX163 is fitted with VCA's as standard,

remote control of the music level on Zone 1 & 2 is possible by simply connecting the optional remote level control plate(s) (RL-1). The 4 pole connector provided on each of the two stereo zones can be wired to one RL-1 to control a stereo signal or alternatively, for mono applications, each zone can operate in the 'split' mode where two RL-1's can be wired to control the mono signal on the left and right outputs independently.

The microphone signals operate independently and are not controlled by the remote level controls when fitted.

Microphone Input
A single mic input is provided on the CX163, the electronically balanced input stage employs low noise circuitry with a high input overload margin at all gain settings and is suitable for microphones with an impedance in the range of 200 to 600Ω.
Input is via 3-pin plug in screw terminal connectors (Phoenix type) located on the rear panel.

Mic Gain
A pre-set gain control is provided adjacent to the input connector. The gain can be adjusted from 10dB to 50dB, this wide range of gain also allows direct connection of high output devices such as radio microphones without the need for additional attenuation.

Mic Level
The Mic level in each of the two stereo zones is set independently by the respective front panel level control; a pre-set mic level control is provided on the rear panel for the Utility output. The level set by these controls is not varied by the remote level controls, when fitted.

Mic EQ
Microphone Equalisation is provided for the microphone channel, this has both a high pass filter and independent rear panel HF & LF pre-set equalisation controls. The filter attenuates the signal below 100Hz and the EQ controls are optimised for tonal correction of speech signals providing ±10dB at 100Hz and 5kHz.

Phantom Power
A facility to provide +15V phantom power is included.

Paging
A paging mic can be connected to the CX163 and this utilises the individual paging access contacts provided for each of the stereo outputs and the utility output. The CX163 is compatible the Cloud range of

paging mics but can also be used with many other types

Priority
Mic over music priority is optional on each of the outputs, this can be configured on each output individually to be activated either by closure of the access contacts or by audio signals on the mic input

Stereo Zone Outputs
The CX163 features two zones, each with stereo output stages, all balanced via 3-pin plug-in screw terminal connectors (Phoenix type). The low noise output circuitry is capable of driving into loads as low as 600Ω and the nominal output level is 0dBu (775mV) although the CX163 is capable of providing a maximum output of up to +20dBu (7.75V).

Equalisation
Both Zone 1 and Zone 2 have separate pre-set treble and bass controls for the music signals only. These rear panel pre-set controls are located adjacent to the respective zone output sockets, the music treble control has a range of ±10dB at 10kHz and the music bass control operates with a range of ±10dB at 50Hz.

Stereo/Mono
Independent jumpers are provided for each zone to allow stereo or mono operation and when configured for mono, the signal is present on both the left and right output sockets. The Utility output is derived from a mono mix of the stereo signal.

Utility Output
The Utility output is a fixed level, balanced output primarily intended to provide a mono signal for utility areas such as toilets and foyers. The music source can be derived from the Zone 1 or Zone 2 programme or directly from the Line 1 input. The music derived from the zone selection is prefade with the source from Zone 1 being after the line 6 priority circuitry. The microphone signal (with priority if required) can be added to the signal by adjusting the pre-set mic level control positioned next to the Utility output socket. The nominal output level is 0dBu (775mV) with a minimum load of 600Ω.

Speaker Equalisation Modules
Each output channel can accept an equalisation module. Cards are available to match the following

Bose® loudspeakers models; M8, M16,M32, MA12, 402, 502A, 502B, 502BEX, 802, MB4, MB24, LT3302, LT4402, LT9402, & LT9702

Remote Music Mute
In certain installations, such as licensed premises or retail outlets in a shopping mall, there may be a local authority or fire service requirement to mute the music signals via a fire alarm control panel in an alarm condition. The CX163 provides a facility to mute the music signals only, by using a fully isolated pair of contacts (usually a relay mounted close to the CX163 which is powered by the fire alarm control panel).

The relay contacts can be either open or closed during an alarm condition, internal jumpers are provided to select N/O or N/C operation. The front panel mounted 'Music Mute' LED will illuminate to indicate the operation of the mute circuit.

TECHNICAL SPECIFICATIONS

Stereo Line Inputs

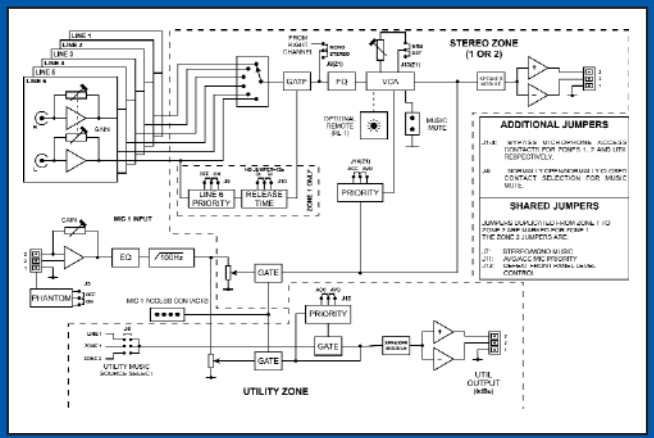
Frequency response	20Hz-20kHz +0, -0.3dB
Distortion	<0.05% 20kHz-20kHz Typical
Sensitivity	100mV (-17.8dBu) to 1.5V (+6dBu)
Input impedance	47kΩ
Input gain control	24dB range
Headroom	>20dB
Noise	-90dB rms 20Hz-20kHz (0dB gain)
Equalisation	HF ±10dB/10kHz
	LF ±10dB/50Hz

Microphone Inputs

Frequency response	100Hz -3dB (filter) 20kHz ±0.5dB
Distortion	<0.05% 20Hz-20kHz typical
Gain range	10dB-50dB
Input impedance	>2kΩ (balanced)
Common mode rejection	>70dB 1kHz
Headroom	>20dB
Noise	-128dB EIN 20Hz-22kHz 150Ω
Equalisation	HF ±10dB/5kHz
	LF ±10dB/100Hz

General Specifications

Power consumption	15VA
Power input	230V ±10%
Fuse rating	T100mA for 230V input T200mA for 115V input
Fuse type	20mm x 5mm 250V
Dimensions	482.6mm x 44.0mm (1U) x 152.5mm deep (+connectors)
Weight	3.5kg including packaging



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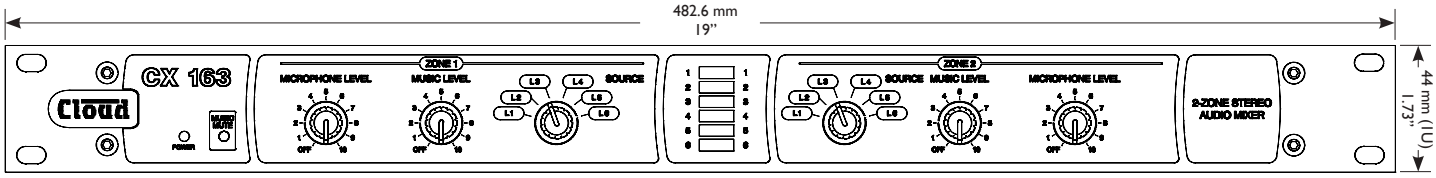
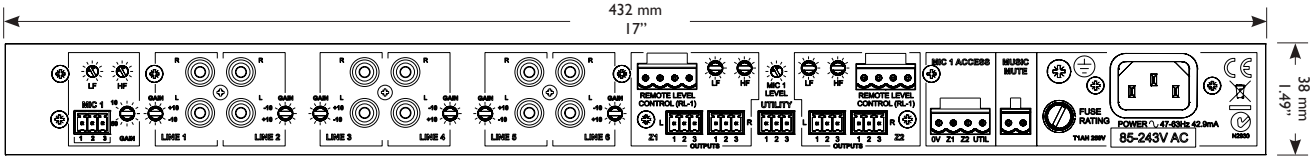
CLOUD CX163 ZONE MIXER



Cloud CX163 Zone Mixer - front panel view



Cloud CX163 Zone Mixer - rear panel view

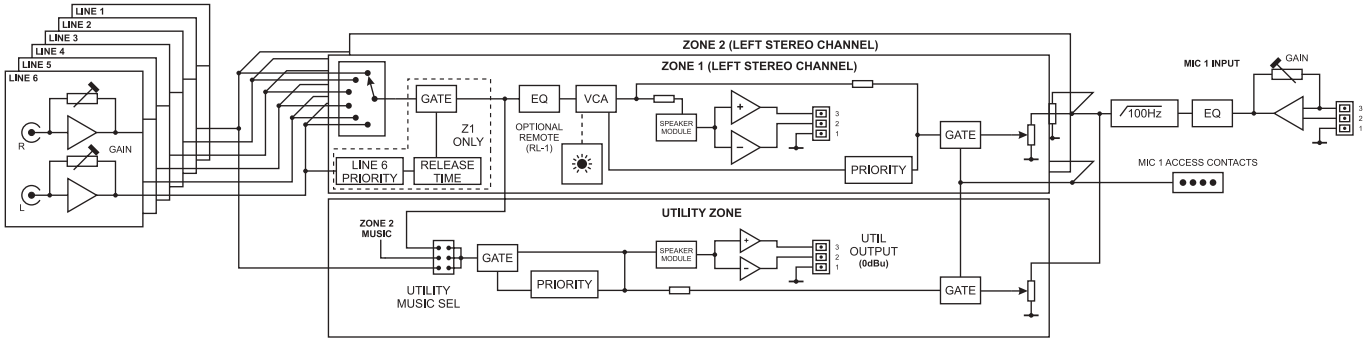
The Cloud CX163 is a two-zone, rack-mounting (1U) audio mixer suitable for use in licensed premises or other leisure sector venues, shops, offices, hotels, or any space where easy control of background music in two separate areas needs to be combined with a microphone or paging system.

The CX163 has six stereo line inputs and a microphone input. It has two separate zone outputs, in each of which one of the line inputs and the microphone input may be mixed together. Separate control of music source selection, and music and mic levels are provided for each zone. The two main zone outputs are stereo, and there is an additional fixed-level mono utility output, which is suitable for speakers in general areas such as foyers and toilets. Music level may be controlled remotely in each zone by standard Cloud RL-1 remote control panels if wished, and if zone outputs are configured as mono, separate RL-1s may be connected to control the left and right outputs.

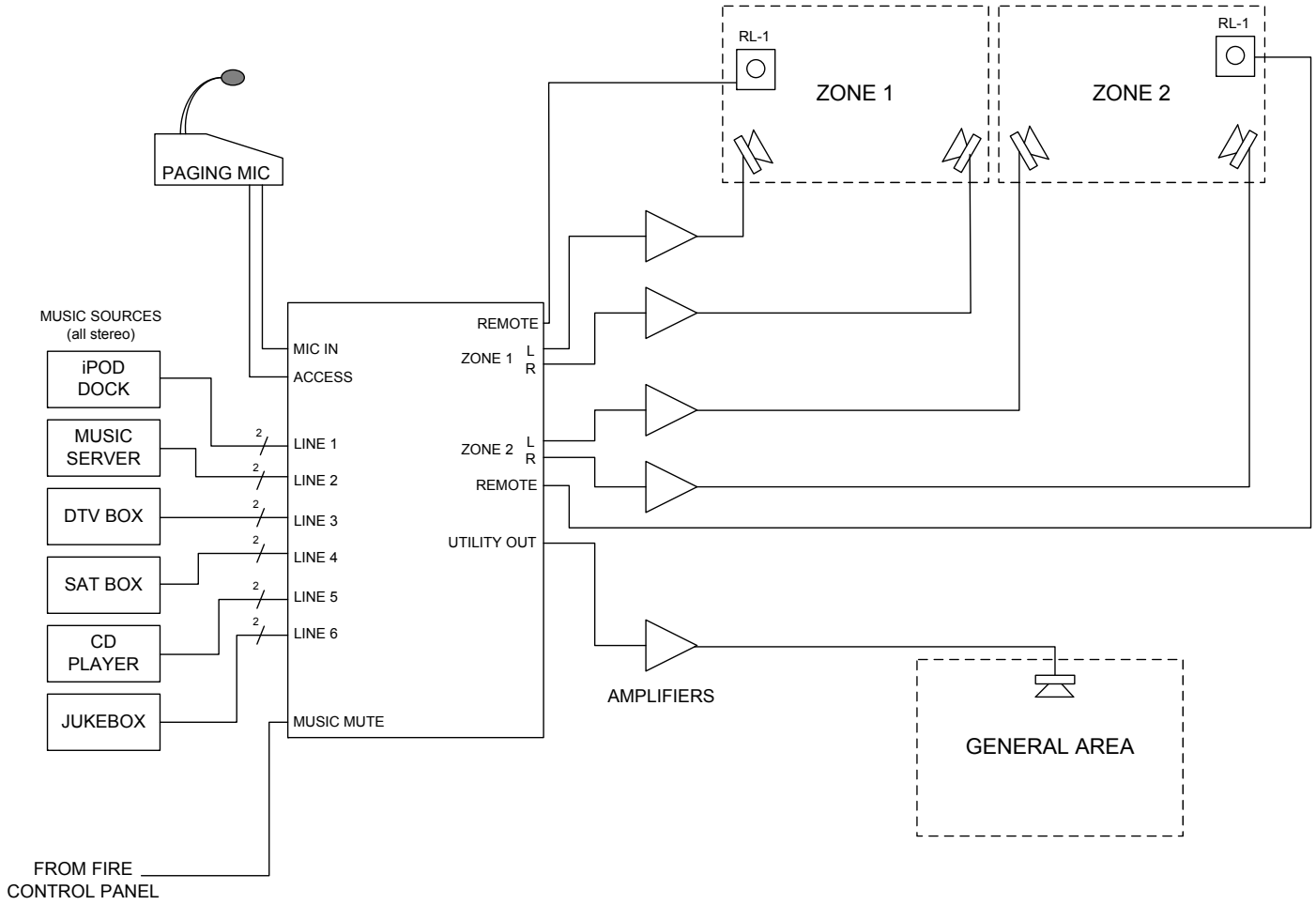
The CX163 is directly compatible with Cloud PM Series paging microphones. Alternatively, the mic input may be configured to suit most OEM paging systems: the mic input may be routed to either zone by short-to-ground access connections. Also, in Zone 1, LINE 6 input may be set to have priority over any other selected input to facilitate connection of a digital sound store or similar device.

- Provides music and paging in two zones
- Front panel controls for music source, music level and mic level in each zone
- Six (unbalanced) stereo line inputs with individual gain controls
- Balanced mic input: 12V phantom power available
- Sensitivity and HF/LF EQ adjustment for mic input
- Two electronically-balanced stereo zone outputs (configurable mono by internal jumpers), each with HF/LF EQ adjustment
- Further electronically-balanced mono utility output with independent mic level adjustment
- Utility output source selection (via internal jumper) – follows either Zone or always LINE 1
- Paging priority control via short-to-ground access connection or VOX triggering
- Selectable music-under-microphone ducking
- Zone 1 has selectable LINE 6 priority with choice of release times
- Music Mute control input (N/O or N/C) for interface to emergency system
- Compatible with standard Cloud RL-1 remote music level control panels
- Optional loudspeaker EQ cards available
- 1U 19" rack mounting unit

Block Diagram



System Example



The example shows a CX163 used to provide music and paging in two separate areas (zones) of a pub or bar. Each area can set its own volume by means of the local RL-1 remote control panels (optional). Alternatively, it can be set from the front panel of the mixer itself. Music at a lower level could be made available to a third area, such as the lobby or toilets.

Paging to either or both zones is achieved using a paging mic (such as the Cloud PM4), which would typically be located somewhere other than either of the two zones.

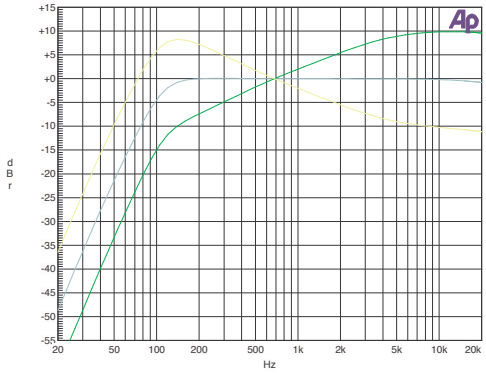
Note that the jukebox is shown connected to Line input 6; If Line 6 Priority is enabled in the mixer, then whenever the jukebox is in use it will always be heard in Zone 1, regardless of the music source setting.

Technical Specifications

Line inputs	
Frequency Response	20 Hz to 22 kHz, +0/-0.5 dB
Distortion	<0.05% typical, 20 Hz to 20 kHz
Sensitivity	100 mV (-17.8 dBu) to 1.5 V (+6 dBu)
Input Gain Control Range	24 dB
Input Impedance	48 kohms
Headroom	>20 dB
Noise	<-84 dB, 20 Hz to 22 kHz @ 0 dB gain
Equalisation	LF: +/-10 dB @ 50 Hz, HF: +/-10 dB @ 10kHz
Microphone input	
Frequency Response	-3 dB @ 100 Hz (filter) to 20 kHz, +/-0.5 dB
Distortion	<0.05%, 20 Hz to 22 kHz
Gain Range	10 dB to 50 dB
Input Impedance	>2 kohms
Common Mode Rejection	>70 dB @ 1 kHz
Headroom	>20 dB
Noise	-128 dB EIN, 20 Hz to 22 kHz @ 0 dB gain
Equalisation	LF: +/-10 dB @ 100 Hz, HF: +/-10 dB @ 5 kHz
Outputs	
Output level (nominal)	0 dBu
Maximum output level	+20 dBu
Minimum load impedance	1.2 kohms
General	
Power input	85 V to 253 V AC, 50/60 Hz
Current consumption	42.9 mA at 240 V
Fuse Rating	1A
Fuse Type	T1A, 20 x 5 mm
Dimensions (w x h x d)	482.6 mm x 44 mm (1U) x 152.5 mm
	19" x 1.73" (1U) x 6"
Shipping Dimensions (w x h x d)	560 mm x 140 mm x 290 mm
	22" x 5.5" x 11.4"
Weight	2.10 kg
	4.63 lb
Shipping Weight	3.2 kg
	7.2 lb

Graphs

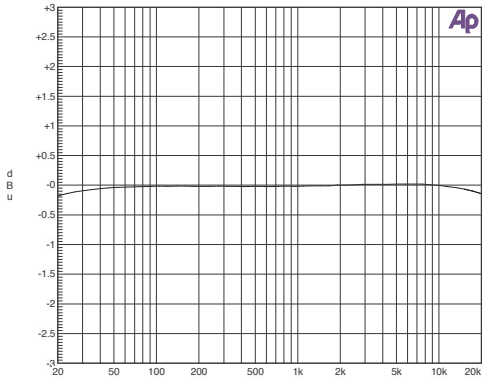
Mic EQ Curves



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Cyan	Solid	1	Anlr.Ampl	Left	
2	1	Green	Solid	1	Anlr.Ampl	Left	
3	1	Yellow	Solid	1	Anlr.Ampl	Left	

Last.at1

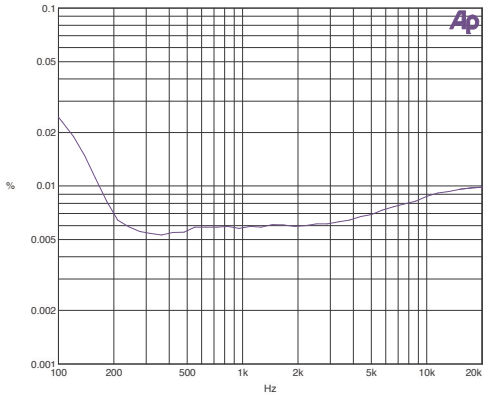
Music Frequency Response



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Cyan	Solid	1	Anlr.Ampl	Left	

Last.at1

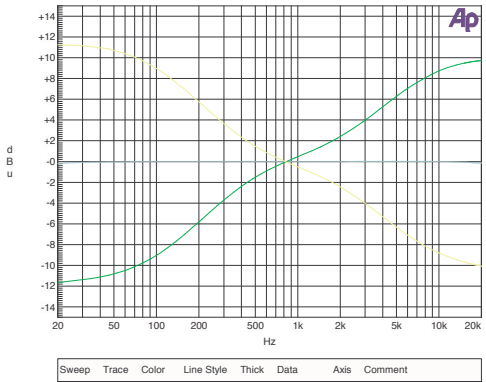
Mic THD+N



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	1	Anlr.THD+N Ratio	Left	

Last.at1

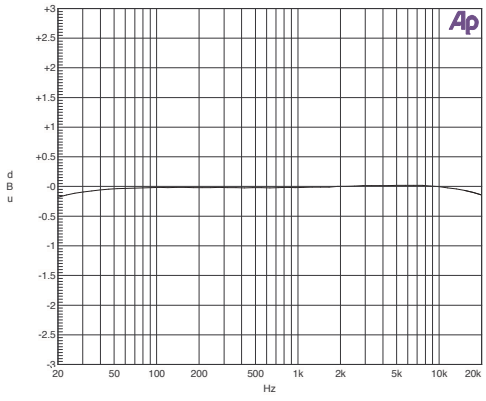
Music eq curves



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Cyan	Solid	1	Anlr.Ampl	Left	
2	1	Green	Solid	1	Anlr.Ampl	Left	
3	1	Yellow	Solid	1	Anlr.Ampl	Left	

Last.at1

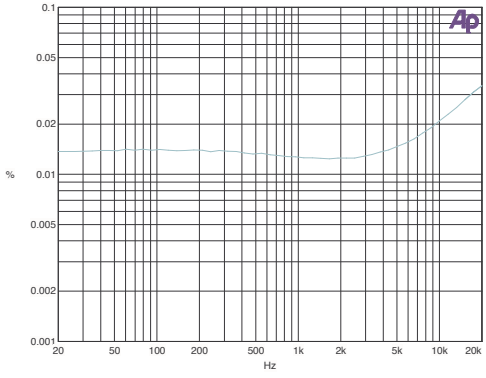
Music Frequency Response



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Cyan	Solid	1	Anlr.Ampl	Left	

Last.at1

Music THD+N 0dBu Signal Measured over 80kHz BW



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Cyan	Solid	1	Anlr.THD+N Ratio	Left	

Last.at1

Architect's and Engineer's Specification

The mixer shall be equipped with six unbalanced stereo music inputs on rear panel phono sockets (RCA jacks), one electronically balanced microphone input, two main zone (L & R) electronically balanced outputs and one electronically balanced mono utility output, all on rear panel multipin connectors.

The mixer shall have two stereo channels designated Zone 1 and Zone 2. Except where indicated below, the channels shall be identical. The microphone input shall be mixed and summed with the music input selected in each channel separately. Each channel shall have its own front panel microphone level control. The music input to each channel shall be selected by 6-position front panel rotary switches. It shall be possible to control the level of the music source independently of the microphone levels in each channel.

Each music input and the microphone input shall also have a rear panel input sensitivity control. Independent two-band equalisation adjustment shall be provided on the rear panel for i) the music signal in each mixer channel and ii) the microphone input. Phantom power shall be available at the microphone input when selected by an internal jumper.

A control input shall be provided to activate the microphone input by external contact closure, with separate routing to each mixer channel. 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 reduce the music level by 30 dB; ii) one line input will automatically override any other in one mixer channel only when a signal is present at the input, even if it is unselected.

Optional remote control panels shall be available to permit control of music level in either mixer channel; 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 the front panel music level controls by moving an internal jumper. 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.

The mono utility output shall be configurable internally to i) follow whichever music source is selected to either mixer channel, or ii) to be permanently fed with a mono sum of one line input; this line input will not be the same one that can be set to have priority over the other line inputs. If the utility output is selected to follow the music signal in mixer channel 1 and the priority line input feature is enabled, the priority line input will also feed the utility output when the input becomes active. The microphone input shall also be mixed into the utility output and it shall be possible to set the microphone level at the utility output independently of that at the main outputs with a rear panel control.

The mixer shall accept a range of plug-in equaliser cards to permit use with compatible loudspeakers. It shall be possible to fit these in any or all of the outputs.

The mixer shall be built in a 1U steel chassis for mounting in a standard 19" rack. A front-panel LED shall indicate when mains power is applied to the unit. The mixer shall operate on mains supply voltages from 85 to 253 V. Mains supply shall be connected via a detachable IEC cable.

The mixer shall be the Cloud CX163; the optional remote control panel shall be the Cloud RL-1 Series.