



CXM Mixer
User Guide v 4.0

Cloud Electronics Limited
140 Staniforth Road, Sheffield, S9 3HF England
Tel +44 (0) 0114 244 7051
Fax +44 (0) 0114 242 5462

CXM MODULAR MIXER

USER GUIDE

Contents

Section	Page
1 CS1 Stereo Music Module	4
1.01 Input Select Switch.....	4
1.02 Gain Control	4
1.03 Channel Fader.....	4
1.04 Crossfade Assignment.....	4
1.05 Mono Switch.....	4
1.06 BAL Balance Control.....	4
1.07 Equalisation.....	4-5
1.07a HF High Frequency	5
1.07b Mid Middle Frequency	5
1.07c LF Low Frequency	5
1.08 PFL (Pre Fade Listen).....	5
1.09 Start Switch	5
1.10 Peak Led	5
1.11 Aux 1 & Aux 2 Auxiliary Sends.....	5
2 CM1 Microphone Module	6
2.01 Input Select Switch.....	6
2.02 Mute Switch.....	6
2.03 Channel Fader.....	6
2.04 Gain Control	6
2.05 Equalisation.....	6
2.05a HF High Frequency	6
2.05b Mid Middle Frequency	7
2.05c LF Low Frequency	7
2.05d 100Hz High Pass Filter	7
2.06 PFL (Pre Fade Listen).....	7
2.07 Aux 1 & Aux 2 Auxiliary Sends.....	7
2.08 Peak Led	7
2.09 Stereo Pan	7

Section		Page
3	Master Module.....	8
3.01	Main Output Section.....	9
3.02	Output 2	9
3.03	Crossfade, Chopfade & X-Filter	9
3.04	Headphone Amplifier & Split Cue.....	9
3.05	AVO (Auto Voice Over).....	10
3.06	Auxiliary Sends Master Controls.....	10
3.07	Auxiliary Return Control	10
3.08	Recording	10
3.09	Remote Music Mute	10
4	CZ1 Zone Module.....	11
4.01	Zone 1	11
4.02	Zone 2	11
4.03	Zone 3	11

Introduction

The Cloud CXM modular mixer has been designed to provide the varied facilities required in a modern discotheque. The versatility of the modular format and the flexible facilities of the master module make it suitable for a wide range of applications such as in broadcast or production studios.

The main frame, containing one master output module, is available in three sizes, with space for 8, 12, or 16 channel modules. Two input modules are used in a variety of configurations, possibly together with the CZ1 Zone Module to form a complete mixer:

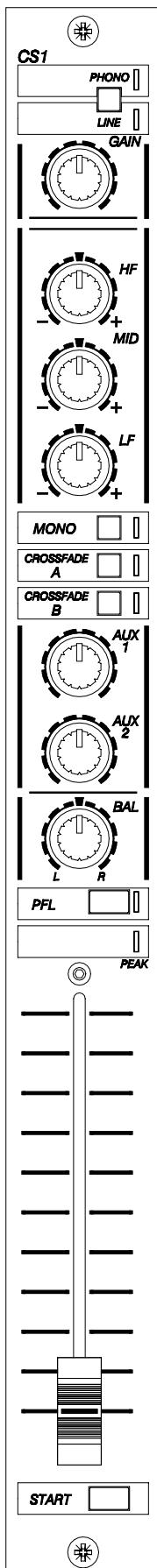
- The CS1 is a two input stereo music module.
- The CM1 is a two input microphone module.
- The CZ1 is a three Zone Output Module

The three modules are detailed separately on the following pages.

The unit should be connected into the sound system by a technically qualified audio installation engineer for which a separate technical manual is available.

It is assumed that the operator is familiar with basic mixing techniques, the terminology and the connected ancillary equipment. After installation is complete, it is common that many of the controls and switches will not need adjustment at all. Some controls will only need minor movement periodically, and some controls, especially faders, will be constantly on the move. It is important that the user familiarise themselves with the operations of all controls, if only to know which controls should not be adjusted 'ad-hoc'.

To help the user work their way through the control settings for each module, the instructions are listed in the order that an un-adjusted module should be set up, and not necessarily from 'top-to-bottom'.



1 CS1 Stereo Music Module

1.01 Input Select Switch

This two position switch is used to select the desired input source. The 'phono' position, indicated by a green LED, is primarily used for turntable inputs. The 'line' position, indicated by a yellow LED, is used for all other inputs such as CD players and tape decks etc. The CS1 module can have two inputs permanently connected.

However, switching between them can be tedious and both inputs cannot be heard at the same time. It is more common to have each input device connected to a single channel.

1.02 Gain Control

This is set to give the required level throughout the mixer. The amount of gain required depends upon the level of the input signal source. It can easily be correctly adjusted by first selecting the channel PFL (see section 1.08) and adjusting the gain whilst observing the PFL LED display on the master module. The display should peak around the 0dB or +1dB LEDs. The use of excessive gain should be avoided and may result in distortion.

1.03 Channel Fader

In general, the channel fader should be set to the maximum position when the channel is operating. This absolute position of the fader is not critical but a situation where the fader is operated below 50% of its travel should be avoided as this will degrade the normally excellent signal to noise ratio.

1.04 Crossfade Assign

The crossfade and chopfade controls on the master module can be used to fade or chop between music signals, which have been assigned to either channel A or channel B.

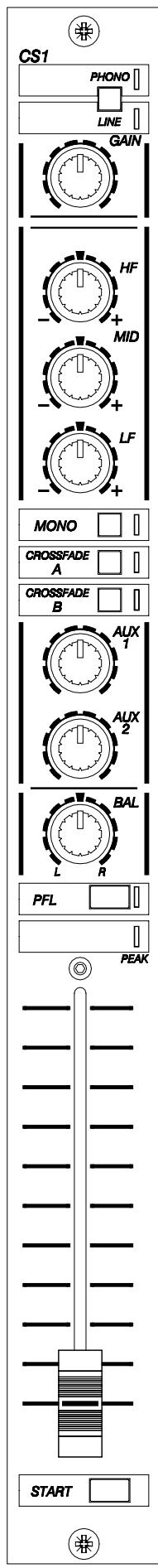
With the 'crossfade A' switch depressed, the yellow LED illuminates and the channel is routed to the crossfade A channel and similarly, 'crossfade B' illuminates the green LED and routes to the crossfade B channel. Switch 'A' must be released to operate Switch B. With both switches off, the music signals will bypass the crossfade/chopfade circuitry.

1.05 Mono Switch

The mono switch is used to mix the left and right stereo channels to form a mono signal. The red LED illuminates when the mono switch is on.

1.06 BAL - Balance Control

This control is used to trim any stereo imbalance between the left and right channels. It should be noted that the control will seem to respond like the 'pan' control on the CM1 microphone channel, however with the CS1 module being fully stereo, the balance control will only increase or reduce the left-channel-versus-right-channel relative volume levels. The balance control will not assign both stereo signals to one output channel if rotated to either extreme. If this form of 'mono' routed output is required (eg. one track playing through the left output only), then the mono button should also be depressed.



1.07 Equalisation

The three equalisation (or EQ) controls will alter the tone of the audio passing through the channel. It is not normal to assume that all three controls need to be rotated off their centre detented position at the same time. More so, if all three controls are rotated clockwise, then a previously optimised gain setting, could still produce overload and distortion at the boosted high, middle and low frequencies. Excessive EQ adjustment for any pre-recorded material should be avoided, what is more, if large amounts of EQ are needed to produce normal listen quality then the user should check the condition of ancillary equipment (eg. damaged turntable cartridge, dirty tape machine playback heads) or even faulty audio wiring.

1.07a HF - High Frequency

This control can be used to make adjustment to the treble content of the music signals, a centre detent is provided, with clockwise movement to boost treble, and anti-clockwise to reduce treble.

1.07b MID - Middle

Use this control to adjust the middle frequency content of the music, operation is identical to the HF control. Rotating this control towards the left will have the effect of reducing the harshness of the audio input signal.

1.07c LF - Low Frequency

This adjusts the bass content of the music signals, again with centre detent and similar operation to the HF control.

1.08 PFL - Select (Pre-Fade Listen)

This switch routes the pre-fade signal (not controlled by the fader), to the PFL display on the master module and to the headphone amplifier. The switch will automatically cancel previous selections and two or more can be selected simultaneously.

1.09 Start Switch

When connected to suitable equipment, this switch can be used to start turntables, CD players and tape decks etc.

1.10 Peak LED

This red LED is used to indicate that the channel has reached or is very close to the threshold of distortion. The gain control must be reduced and set in accordance with 1.02.

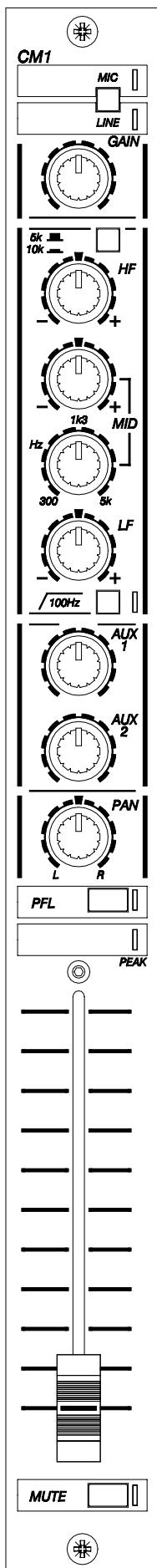
1.11 AUX 1 and AUX 2 - Auxiliary Sends

The auxiliary send controls provide a useful, flexible output facility that can be used to interface a variety of units for signal processing, such as sampling or digital delay effects.

They can also be used as a flexible extra output facility. Unless configured differently by the installation engineer, the factory settings for the Aux outputs are:-

AUX 1 is normally configured to operate with pre-fade signals (i.e. signals not controlled by the fader).

AUX 2 is normally operated in the post fade mode (i.e. signals are controlled by the fader).



2 CM1 Microphone module

2.01 Input Select Switch

This two position switch is used to select the desired input source. The 'Mic' position, indicated by a green LED is used for the microphone input. The 'Line' position, indicated by a yellow LED is used for line level inputs such as high output capacitor microphones or radio mics. The CM1 can have two inputs permanently connected, using the input switch to select one or other inputs, it is however more common to have one input per module.

2.02 Mute Switch

This momentary action switch is used to conveniently turn the microphone channel on and off. In normal use, the channel fader is left in the maximum position and the mute switch is used to activate the channel, a red LED illuminates when the channel is muted.

2.03 Channel Fader

In general, the channel fader should be set to the maximum position. This position of the fader is not critical but a situation where the fader is operated below 50% of its travel should be avoided as this will degrade the normally excellent signal to noise ratio.

The operator can activate the channel by the mute switch or sliding the fader from one extreme to the other.

2.04 Gain Control

With the mute switch in the 'On' position, the channel fader in the maximum position and the master mic fader set to 75% of its travel, the gain control can be adjusted to give the required level.

2.05 Equalisation

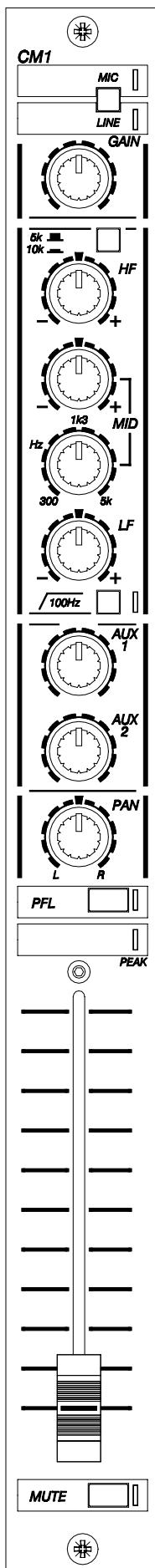
The four equalisation controls (or EQ) and one switch will alter the tone of the audio passing through the channel. It is not normal to assume that correct equalisation will require all controls to be rotated off their centre detented position at the same time. Note: if all three controls are rotated clockwise, then a previously optimised gain setting, could still produce overload and distortion at the boosted high, middle and low frequencies. If large amounts of EQ are needed to produce normal listen quality then the user should check the condition of input source (eg. damaged microphone, microphone incorrectly wired) or even faulty audio wiring.

2.05a HF- High Frequency

The HF control is used to adjust the treble content of the microphone signal, a centre detent is provided, with clockwise movement to boost treble and anti-clockwise rotation to reduce treble. An adjacent switch selects the operating frequency of 5KHz or 10KHz. With poor quality speakers the 10KHz setting might appear to have little effect.

2.05b MID - Middle Frequency

The middle frequencies are controlled by two rotary controls, the upper control is used to adjust the amount of boost or cut and has a centre detent for positive neutral settings. The lower control selects the frequency of operation in the range 300Hz to 5KHz. Slightly reducing, or 'cutting' the EQ at frequencies around 600Hz to 1.2KHz will give a rich sound to any microphone user.



2.05c LF - Low Frequency

This adjusts the bass content of the audio signals, again with a centre detent and similar operation to the HF control. Be careful not to add too much low frequency boost as this will over emphasise any hard sounding consonants and microphone handling noises. If a humming sound increases when the LF control is rotated clockwise then the input device might be incorrectly wired.

2.05d 100 Hz High Pass Filter

This high pass filter operates at 100Hz and effectively reduces low frequency rumble and other extraneous signals. It can be used to good effect to enhance vocal projection, particularly when bass boost is used. The adjacent yellow LED illuminates when the filter is operating. Do not be afraid to use this facility, as a human voice produces very little sound below 100Hz.

2.06 PFL Select (Pre-fade listen)

This switch routes the pre-fade signal (not controlled by the fader) to the pfl display on the master module and to the headphone amplifier. The switch will automatically cancel previous selections and two or more channels can be selected simultaneously.

2.07 Peak LED

This red LED is used to indicate that the channel is close to or has reached the threshold of distortion. If the LED illuminates, the gain control must be reduced and set in accordance with 2.04.

2.08 AUX 1 and AUX 2 - Auxiliary sends

The auxiliary send controls provide a useful, flexible output facility that can be used to interface a variety of units for signal processing, such as sampling or digital delay effects.

They can also be used as a flexible extra output facility. Unless configured differently by the installation engineer, the factory settings for the Aux outputs are:-

Aux 1 is normally configured to operate with pre-fade signals (i.e. signals not controlled by the fader).

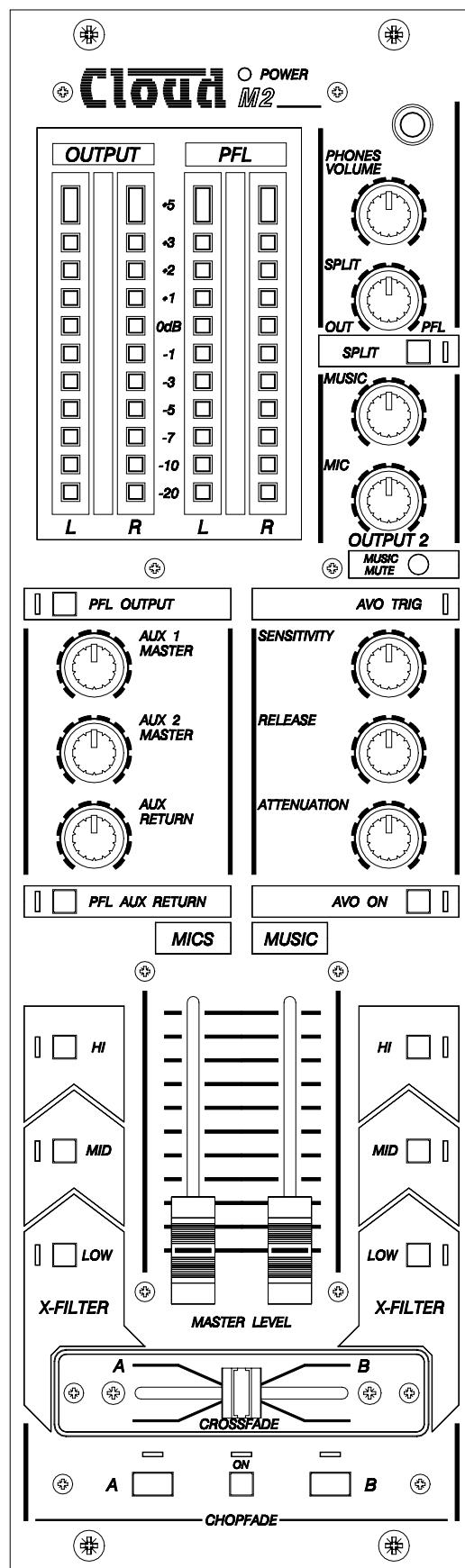
Aux 2 is normally operated in the post fade mode (i.e. signals are controlled by the fader).

2.09 Pan

The pan control will position the input source in the stereo image. The normal position is centre detented.

One use of pan is where the CM1 channel was being used for a microphone user who is 'on-the-move'. As the person approaches speakers on one of the stereo sides, (eg. left), the pan control can be rotated towards the speaker on the other side (eg. right). This would prevent feedback howl and still retain output level.

3 M2 Master Module



3.01 Main Output Section

Separate faders are provided for microphone level and music level, making individual master level adjustment possible.

The microphone fader should be used at approximately 75% of its travel; this will allow the operator to increase the output significantly if required. A setting below 50% of the fader travel must be avoided and could result in premature distortion.

The music fader is simply used to control the level of the music output signal, however, care must be taken to set up the stereo input module gain as detailed in 1.02.

The Main output signal can be monitored via the PFL display and headphone amplifier by pressing the "PFL output" button on the M1 Master Module.

3.02 Output 2

The use of this output is very much dependent upon the installation and the venue.

Possible uses include providing a signal for a peripheral area, a second dance floor or to provide a signal for a DJ monitor system. As with the main output the microphone and music levels are controlled independently, though rotary controls rather than faders.

3.03 Crossfade, Chopfade and X-fade

The crossfade fader can be used to smoothly fade between music signals which have been assigned to the A and B channels by the input channel assign switching (see 1.04).

A detent is provided in the centre position when both A and B channels are operative.

A chopfade facility is also provided for fast switching between crossfade channels. The central momentary action switch turns the effect on and off. When switched on, the centre green LED will illuminate, together with one of the red A or B LEDs at random. Pressing the respective A or B switch will simulate swift action of the crossfade control. For a positive condition upon switch on, the A or B switch should be depressed at the time of switching on. Holding both A and B switches will result in both channels operating, simulating the centre fader position.

The X-fade switches allow the operator to filter out parts of the signals before they enter the crossfade and chopfade facilities. Both the A and B channels have their own, separate bass, mid and high switches. When depressed the adjacent LED illuminates and the respective tone range is filtered from the signal. Used in conjunction with the crossfade this allows two signals to be mixed without any unwanted interaction.

3.04 Headphone Amplifier

The headphone amplifier operates in conjunction with the PFL select circuitry, any channel can be routed to the headphone amplifier and PFL display by simply pressing the respective PFL switch. The volume control adjusts the signal level.

The 'split' cue mode can be selected with the switch marked 'split', the adjacent yellow LED will illuminate when selected. In this mode, the stereo headphone and display signal is split, with a mono output signal routed to one headphone channel, and the selected PFL channel routed to the other headphone channel. The balance control can be used to compensate for different levels and only operates in the "Split Cue" mode.

Headphones with a rated impedance in the range 8 to 600 Ohms can be used, but optimum performance is obtained using headphones in the 32 to 60 Ohm range. The lightweight 'walkman' style headphones are normally rated around 50 Ohm.

A headphone socket is provided on the front panel with a second socket on the rear panel. Do not use headphones with 2 pole (mono) jack plugs.

3.05 AVO - Auto Voice Over

The auto voice over uses any microphone signal to trigger a circuit which reduces the level of the music signals. A switch is provided to turn on the effect, with a green LED adjacent; once switched on, the sensitivity control can be turned clockwise until the yellow 'trig' LED illuminates when the microphone is used. The circuit will now operate and the 'attenuation' control sets the music level and the release control adjusts the time taken for the music to return to its former level.

3.06 Aux Send Master Controls

The Aux 1 Master level control is used to adjust the overall signal level at the Aux 1 output. The Aux 2 Master is identical to Aux 1.

3.07 Aux Return Control

This control is used to adjust the level of any unit connected to the Aux return socket with a provision to monitor the signal via the PFL switch. It is obviously intended to be used by signal processors etc. but can be used by any signal source which requires a basic input such as a background music system etc.

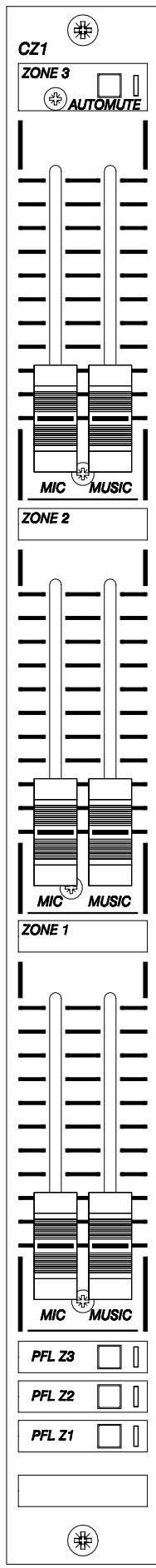
3.08 Recording

The master module has two stereo pairs of output phono sockets on the rear panel to facilitate recording mixer operator performance. The signal level present on these connectors follows the Main output programme.

Two additional pairs of output sockets are provided with music signals only and these signals are derived before the master fader.

3.09 Remote Music Mute

The CXM mixer has a facility to interface with a fire alarm control panel. If this facility is used, and the fire alarm is activated, the music signals will muted. To indicate this condition, the red "Mute" LED will flash on and off. Any currently selected PFL channels will be cancelled, this will mute the headphone amplifier. The microphone channels will still operate normally to organise controlled evacuation.



4 CZ1 Zone Module

The CZ1 Zone Module extends the output facilities of the M1 and M2 Master Modules by providing an extra 3 output zones, each with independent control of microphone and music levels.

4.02 Zone 1

Separate microphone and music faders are provided and these control the respective levels in the area assigned to Zone 1. Depending upon how the module was configured by the installation engineer, the signal level may be controlled by the levels set on the Master Module or totally independently.

The output signal can be monitored by pressing the Z1 PFL button. The PFL display will accurately show the output signal level and the headphone amplifier will be connected to the Zone 1 output signal.

4.03 Zone 2

This operates identically to Zone 1 above, and may sometimes be used as a record output.

4.04 Zone 3

This Zone can only operate in the post-master fader mode i.e. signal levels are controlled primarily by the master faders on the master module. An automute function is provided. This will automatically mute the output when a microphone channel is turned on via the microphone mute switch. This facility will only operate when the "automute" is depressed, illuminating the adjacent LED, in addition, the microphone channel(s) must have been configured at the time of installation.

This CXM Modular Mixer conforms to the following European EMC Standards:

BS EN 55103-1:1997

BS EN 55103-2:1997



This product has been tested for normal use in the commercial and light industrial environment. If the equipment 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 CXM conforms to the following European electrical safety standard.

BS EN 60065:1998

Safety Considerations and Information

This unit must be earthed. Ensure that the mains power supply provides an effective earth connection using a 3-wire termination.

When the mains switch is in the off 'O' position some components remain connected to the Mains

CAUTION – 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

CAUTION - Mains Fuse

To reduce the risk of fire, replace the mains fuse only with the same type and rating.

The fuse body size is 20mm x 5mm.

CAUTION – Servicing

The CXM 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 or bottom panel
Only reassemble the unit using bolts/screws identical to the original parts**

In the interest of continuing improvements Cloud Electronics Limited reserves the right to alter specifications without prior notice.

Cloud Electronics Limited 140 Staniforth Road Sheffield S9 3HF England
Telephone +44 (0) 114 244 7051 Fax +44 (0) 114 242 5462 E-mail: Info@cloud.co.uk
