



CX132
ZONE MIXER
USER GUIDE

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CX132 ZONE MIXER

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1 Safety Notes

The CX132 contains several PCB mounted jumpers which can be set to provide the desired configuration for a specific venue or installation. These adjustments should be performed by a technically qualified person who understands the hazards associated with mains operated equipment. Do not remove the top panel unless you are qualified to do so.

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

The CX132 is supplied with a power cable fitted with a moulded plug. If the plug is cut off the lead for any reason, remember that the discarded plug is a potential hazard and should be disposed of in a responsible manner.

2 General Description

The Cloud CX132 is versatile two zone audio mixer. The unit has applications where three stereo line signals and one microphone signal are required to feed two areas. Each zone has a front panel mounted music source select switch and adjacent music level and microphone level controls. All pre-set controls are located on the rear panel with additional configuration jumpers mounted on the printed circuit board. A VCA module is available for applications which require remote control of the music level.

3 Schematic diagram

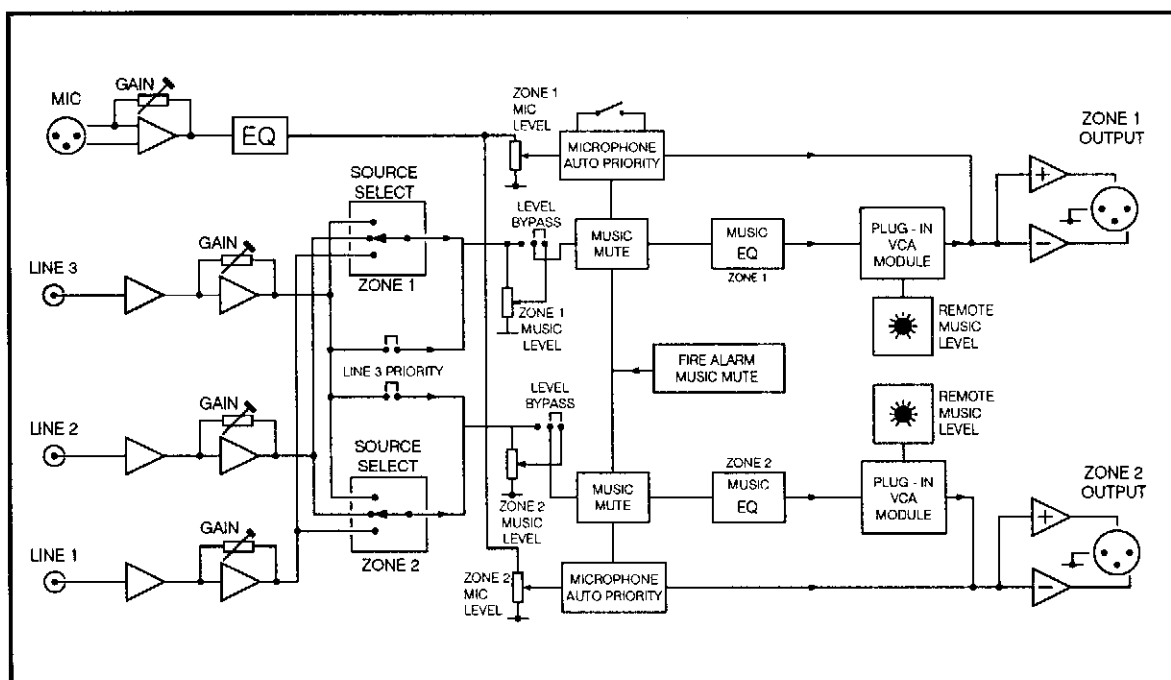


Figure 1

4 Music Inputs

The unit has three stereo line inputs which are suitable for most music sources such as compact disc players, tape players and satellite receivers etc. All inputs are unbalanced and use RCA phono sockets. The input impedance is 47k ohms.

4.1 Sensitivity & Gain Control

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

4.2 Music Source Select

Each zone has an independent source select control. The three position switch is used to select the desired music signal. Use the supplied label pack to identify the signal sources on the front panel. Line 3 input can be configured to have priority over any other selected signal, see section 7 for full details.

4.3 Music Level Control, Local or Remote.

A front panel mounted music level control is provided for each zone. Remote control of the music level is possible by fitting the optional VCA module (VCA-3) together with a remote level control plate (RL-1). See the section 5 'Fitting a VCA Module'. The VCA module is a two channel device providing voltage control for one stereo zone output and the CX132 can accommodate one VCA module on each of the two zone outputs. If a CX132 is fitted with a VCA module, and operated in the mono mode, the module can be configured to allow two level plates to control the mono signal present on the left and right output sockets independently (see section 6 'Mono Operation'). The front panel level control can be defeated by configuring the relevant internal jumpers, see Figure 2 for full details. Use two core screened cable to interconnect the remote level plate for stereo operation or alternatively single screened cable can be used for each RL-1 where two controls are used in the mono mode.

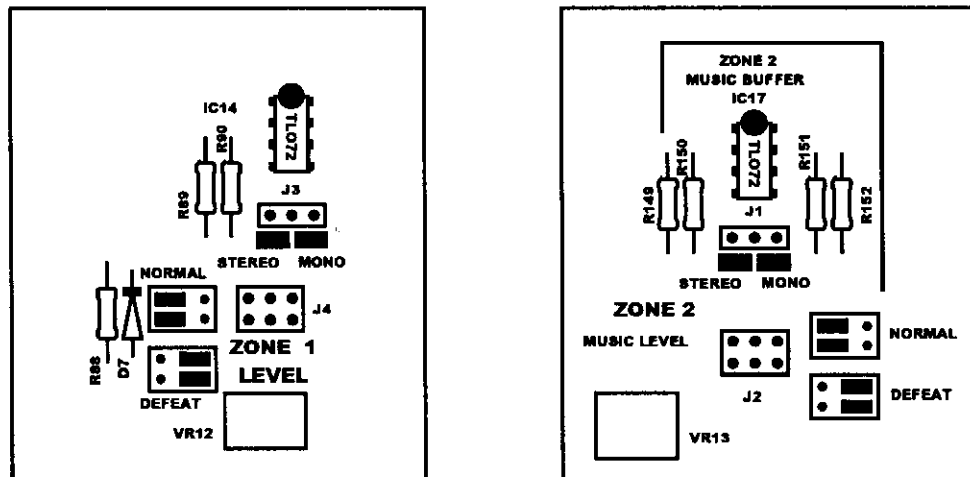


Figure 2

5 Fitting a VCA Module

Remove the power cable and read the safety notes in section 1 before commencing. Remove the top panel from the CX132 then remove the relevant connector cover from the rear panel of the unit. Locate the 10 pin male header (CON2 for zone 1 & CON1 for zone 2) and remove the two jumpers from the 10 pin header (male connector). Carefully position the VCA module so that the 3 pin connector is located just through the hole in the rear panel and locate the 10 pin female connector on the module accurately over the header and push the module down against the mounting pillars. Make sure that the module is accurately positioned so that the mounting holes align with the mounting pillars, if not, check that the connector is mating correctly with all 10 pins. Secure the module with the two M3 machine screws provided and replace the top panel.

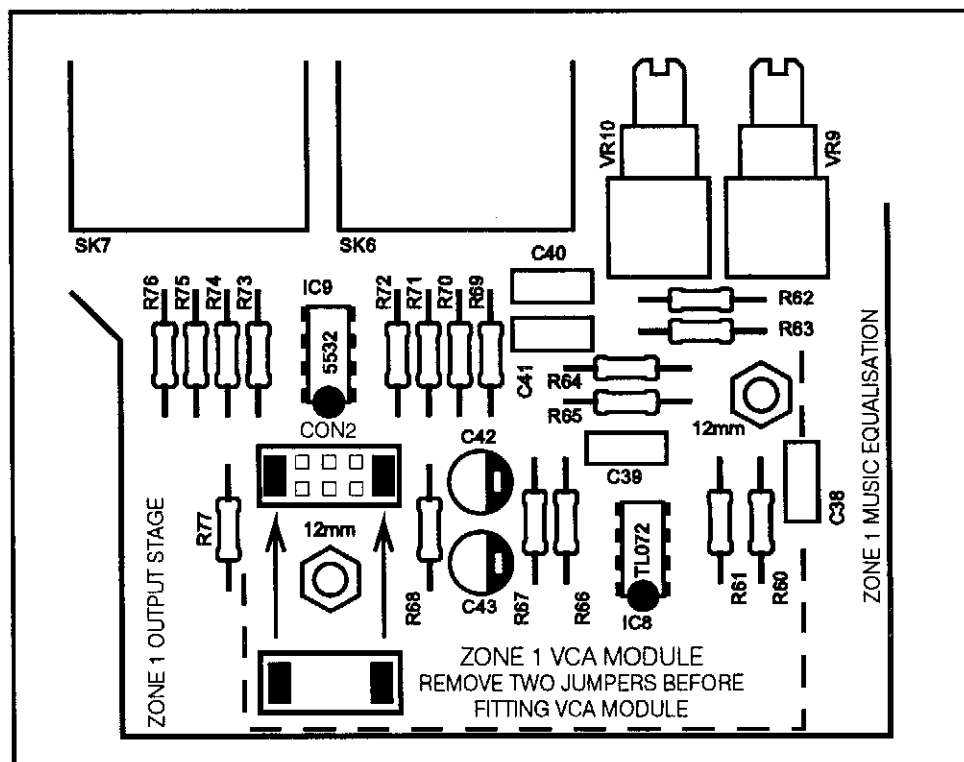


Figure 3

6 Mono Operation

Internal jumpers allow either zone to operate in mono (see Figure 2). In the mono mode of operation, both the left and right output sockets carry the same mono signal and either or both sockets can be used. If a VCA module is fitted, separate remote control of the mono signal on the left and right output socket can be achieved by positioning the jumpers on the VCA module in the dual position and connecting two control plates to the 3 pin connector as shown in Figure 4 when this feature is used, we suggest that the respective front panel level control is defeated (see section 4.3). When two control plates are used on one module, the interconnecting cable to each plate can be single screened type.

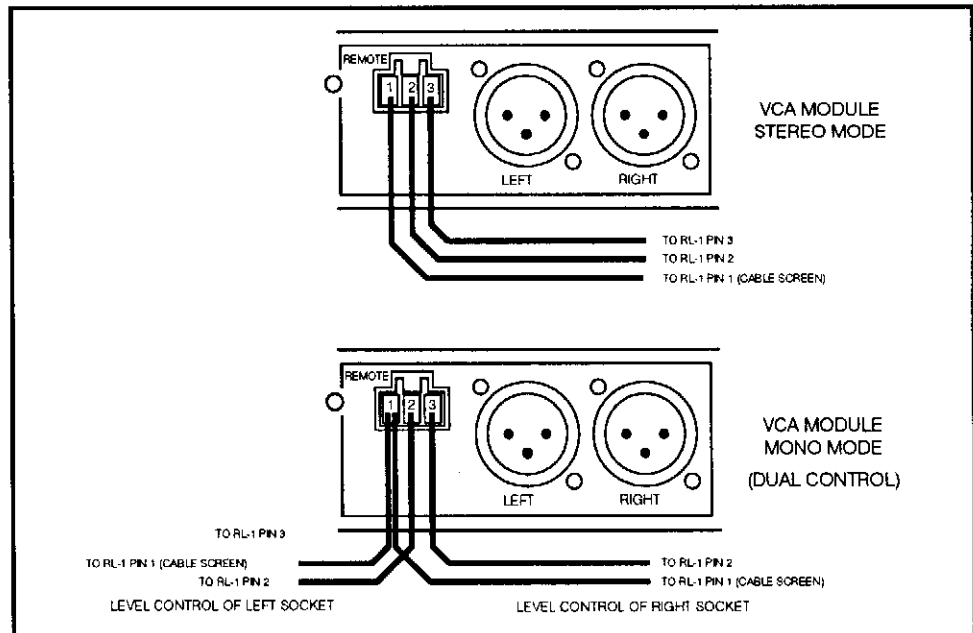


Figure 4

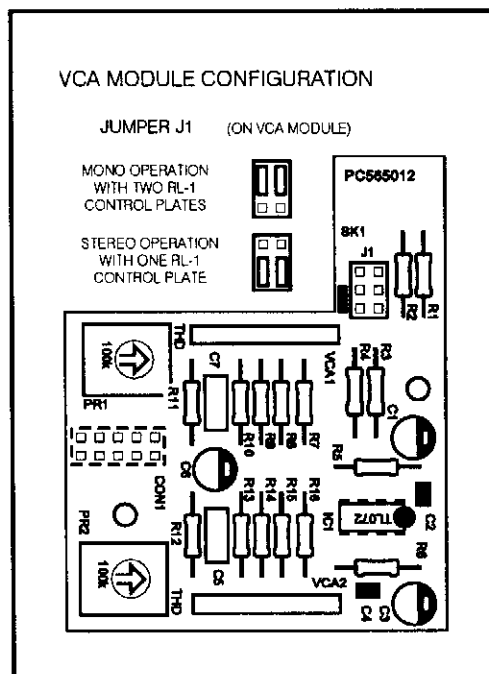


Figure 5

7 Priority

When a Juke Box or Spot Announce Player is connected to the CX132, fully automatic priority over any selected line input can be achieved by using the Line 3 input and configuring the relevant internal jumpers (see Figure 6). When this mode of operation is selected, the unit will operate normally until a signal is detected on line 3 and this causes the selected signal (usually background music) to mute, allowing the signal on line 3 to operate with priority. Once the signal on line 3 ceases, the selected signal will smoothly restore to its former level. The time taken for the selected signal to be restored can be set at 3, 6 or 12 seconds by fitting the appropriate jumper (J5) on the printed circuit board. The line 3 priority option can be configured to operate on either or both zone outputs.

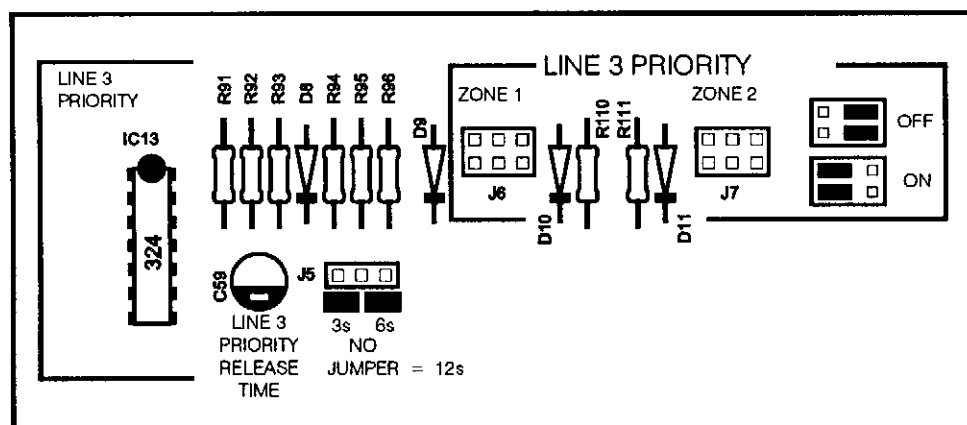


Figure 6

8 Microphone Input

8.01 Mic Input

A microphone input is provided and the microphone amplifier is an electronically balanced, transformerless design configured for optimum low noise performance. The input impedance is greater than 2k Ω and is suitable for microphones in the 200 to 600 ohm range. Input is via a gold plated 3 pin XLR type connector with latch, which is positioned on the rear panel. For balanced microphones, connect the cable screen to pin 1, the in phase signal to pin 2 and the reverse phase to pin 3. To operate the channel in the unbalanced mode, connect pin 3 to pin 1 (ground) inside the XLR cable plug. Use pin 2 as hot and pin 1 as screen (ground).

8.02 Gain Control

A pre-set gain control is provided adjacent to the XLR input connector. The gain can be adjusted from 0dB to 60dB and this wide range of gain allows direct connection of high output devices such as radio microphones without the need for additional attenuation. A high overload margin is maintained at all gain settings.

9 Front Panel Level Controls.

A separate microphone level control is provided for both Zone 1 and Zone 2 and these provide the user with a convenient means to operate the microphone at a suitable level in the zone of their choice. The microphone signal is routed directly to the respective output stage and is unaffected by the operation of the music level control. The gain control on the rear panel should be set at a level where it is not possible to have excessive gain even when the front panel level controls are fully clockwise. Self adhesive labels are provided to customise the controls.

10 Microphone Equalisation

The microphone channel has both a high pass filter and independent pre-set equalisation controls positioned on the rear panel. The filter attenuates the signal below 100Hz and the tone controls provide $\pm 10\text{dB}$ at 100Hz and 5kHz.

11 Microphone Priority

Fully automatic, voice operated priority is provided for the microphone channel. A priority on/off switch is positioned on the rear panel. With the priority function switched on, when a microphone signal is detected, the music signal is attenuated, allowing the message to be clearly heard; normal music operation is restored smoothly after the announcement has been made.

12 Inhibiting mic or music sections.

If the CX132 is required to provide a microphone signal, without any music programme, the mixer can be configured to operate with the music channel disabled by simply removing the two jumpers on the VCA module connector, CON2 for zone 1 and CON1 for zone 2. If there is a requirement to operate either zone with the microphone channel disabled, remove R68 & R77 for zone 1 and R50 & R55 for zone 2.

13 Zone Outputs

The two output zones have balanced output stages using 3 pin XLR type connectors and can operate into loads as low as 600Ω . The nominal output level is 0dBu (775mV) but the CX132 can operate with a wide range of signal levels up to a maximum output of +20dBu (7.75V). A 3 pin XLR type female connector is required for each output. For balanced interconnections, 2 core screened cable should be used. Connect the cable screen to pin 1. Pin 2 is the in phase signal (normally red) and pin 3 is the reverse phase signal (normally blue or black). If you plan to connect any zone output to an unbalanced load, see section 15.4 'Unbalanced Mode'.

13.1 Equalisation

Both Zone 1 and Zone 2 have separate pre-set treble and bass controls for the music signals only. These pre-set controls are located on the rear panel adjacent to the respective zone output sockets. The music treble control has a range of $\pm 10\text{dB}$ at 10kHz and the music bass control operates with a range of $\pm 10\text{dB}$ at 50Hz.

14 Fire Alarm Interface

In certain circumstances, 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 CX132 provides a facility to mute the music signals only, by using a fully isolated pair of contacts (*usually a relay mounted close to the CX132 which is powered by the fire alarm control panel*) which should close during an alarm condition.

To avoid a panic situation, the muting has a slow response. The front panel mounted 'Music Mute' LED will illuminate to indicate the operation of the mute circuit.

15 General Notes

15.1 Multi-zone Applications

Where the sound system specification calls for separate control in more than 2 zones, the CX132 can be used in multiples. The signal sources can be connected to several inputs as required but care must be taken to ensure that the output stage of the signal source is capable of driving a lower impedance load. The impedance of the line input stage is $47\text{k}\Omega$ and it would be reasonable to assume that most op-amp based signal sources should drive a $10\text{k}\Omega$ load, thus allowing up to five parallel circuits. The input impedance of the microphone amplifier is $2.4\text{k}\Omega$ making it suitable for a microphone with a maximum impedance of 600Ω . A single 200Ω microphone could therefore be connected to three balanced inputs. To avoid any problems associated with differences in mains supply earthing, we recommend that all the CX132's used in a multi-zone application should be located close together and connected to a common mains supply.

15.2 EMC Considerations

The CX132 fully conforms to the relevant electromagnetic compatibility (EMC) standards and is technically well behaved. You should experience no problems interfacing the unit to other items of equipment and under normal circumstances, no special precautions need to be taken. If the unit is to be used within close proximity to potential sources of HF disturbance such as high power communication transmitters, radar stations and the like, it is suggested that the cable screen be connected to the shell of the XLR type connector and the line input signal leads be kept as short as possible. Always use balanced interconnections wherever possible.

15.3 Earthing

The 0V rail of the CX132 is coupled to the chassis ground by a parallel resistor/capacitor network and no interconnection problems should be encountered. 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 'hum' can be remedied in several ways; the preferred method is to operate the output links to the power amplifiers in the balanced mode, with the cable screen only connected at the receiving end (amplifier input). The signal source units should be located as close as possible to the CX132 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 the interconnected units, including the power amplifiers to a common power source to ensure that a common ground is provided.

15.4 Unbalanced Mode

If the zone outputs are required to operate in the unbalanced mode, the unused pin of the XLR type connector should be left with no connection.

16 Technical Specifications

Stereo Line Inputs

Frequency Response	20Hz-20kHz ± 0.5 dB
Distortion	<0.02% 20Hz-20kHz
Sensitivity	-12dBu(200mV) to +8dBu(2.0V)
Input impedance	47k Ω
Input gain	± 10 dB
Headroom	>20dB
Noise	-95dBA (0dB gain)
Equalisation	HF ± 10 dB 10kHz
	LF ± 10 dB 50Hz

Microphone Inputs

Frequency response	100Hz -3dB(filter) 20kHz ± 0.5 dB
Distortion	<0.02% 20Hz/20kHz
Gain range	0dB-60dB
Input impedance	>2k Ω (balanced)
Common mode rejection	>70dB 1kHz
Headroom	>20dB
Noise	-128dB EIN 22Hz-22kHz (150 Ω)
Equalisation	HF ± 10 dB 5kHz
	LF ± 10 dB 100Hz

Zone outputs

Nominal output level	0dBu balanced
Minimum load impedance	600Ω
Maximum output level	+20dBu

17 General Specifications

Power consumption	12VA
Power requirements	230V±10% or 115V±10%
Fuse rating	T50mA for 230V input
	T100mA for 115V input
Fuse type	20mm x 5mm class 3 T 250V
Width	482.60mm
Height	44.00mm
Depth	160mm
Weight	3.50kg including packing

This product conforms to the following European Standards

EN 50081-1: 1992
 EN 50082-1: 1992
 EN 60065 : 1994



SAFETY CONSIDERATIONS

CAUTION - MAINS FUSE

TO REDUCE THE RISK OF FIRE REPLACE THE MAINS FUSE ONLY WITH THE SAME TYPE, WHICH MUST BE A CLASS 3, 240 VOLT, TIME DELAY TYPE, RATED AT 50mA WHERE THE MAINS INPUT VOLTAGE IS SET TO 230 Volts ± 10% AC.

FOR A MAINS VOLTAGE OF 115 Volts ± 10% AC. THE FUSE SHOULD BE RATED AT 100mA

THE FUSE BODY SIZE IS 20mm x 5mm.

CAUTION - SERVICING

THIS UNIT CONTAINS NO USER SERVICEABLE PARTS. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL. DO NOT PERFORM ANY SERVICING UNLESS YOU ARE QUALIFIED TO DO SO.

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

6 December 1996