

CX335 : Compressor-Limiter

482.6mm / 19"



44mm
/ 1 3/4"
(1U)

Cloud CX335 front view



Cloud CX335 rear view

General Description

The Cloud CX335 is an analogue, two-channel compressor-limiter designed specifically for use as part of installed sound systems. Typically connected in the audio chain immediately before the system power amplifier(s), its purpose is to control the dynamic range of music programme, provide protection for the amplifiers and loudspeakers, and also to limit the maximum SPL that the sound system can generate. Once set up, its controls can be hidden behind a security tamper-proof cover to prevent alteration. The cover is supplied with a pair of one-time seals to ensure that unauthorised removal of the security cover cannot pass undetected.

The CX335 has been designed to be particularly simple to set up, with a choice of four basic operating modes offering combinations of fast or slow transient response and hard or soft knee characteristics. A wide range of compression ratios is available, allowing the compressor to be used as a limiter if wished. However, a separate peak limiter section is included as well, which can be adjusted to provide power amplifier and loudspeaker protection when the compressor is set up to reduce overall programme dynamic range.

The traditional controls for compressor attack and release times have been omitted from the CX335; instead these time constants

are automatically adjusted according to the frequency content of the programme material. As a consequence, the unit is extremely transparent in operation and when set correctly, imposes minimum colouration on the audio programme.

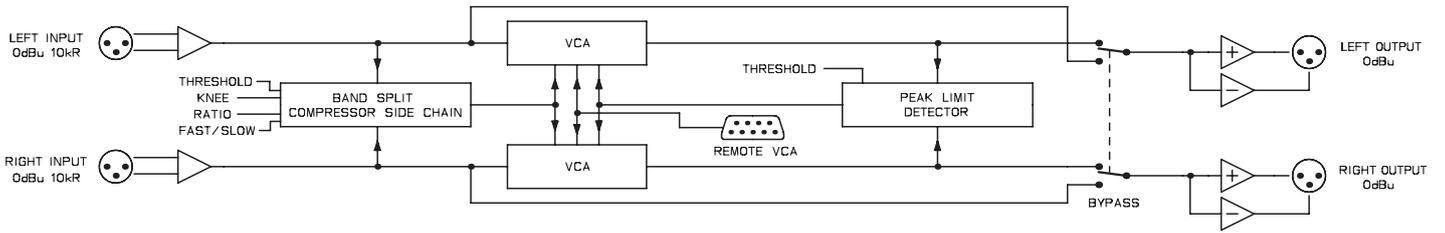
The unit's main VCA may also be controlled from an external source via a rear panel 9-pin Dsub connector. This allows - for example - remote volume control, or emergency muting from a fire alarm or other building safety system.

The stereo inputs and outputs are electronically balanced, and accessed via rear panel XLR connectors. The unit can accept signal levels of up to +26 dBu.

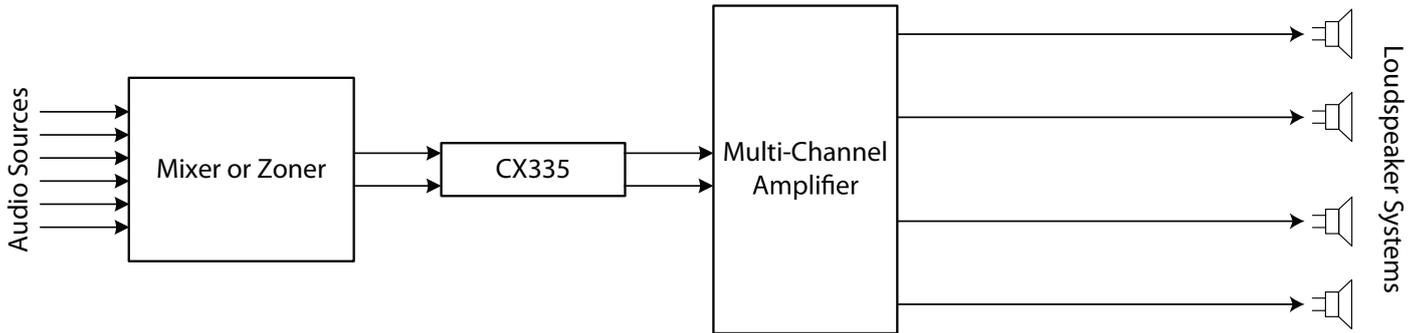
The CX335 is a 1U 19" rackmounting unit of sturdy steel construction, and has an internal AC mains power supply. All controls are on the front panel, which is also fitted with three 9-segment LED bargraph meters showing stereo output signal level and overall gain reduction. The meters remain visible once the security cover is fitted in place.

- Stereo compressor-limiter for dynamic range control and amplifier/speaker protection in fixed audio installations
- Fully analogue design
- Electronically balanced inputs and outputs on rear panel XLRs
- +26 dBu maximum input and output levels
- Automatic operation with minimal controls – very simple to set up
- Transparent in operation
- Separate peak limiter section with LED indication
- Bargraph meters for output level and gain reduction
- Bypass switch
- Anti-tamper security cover with one-time seals
- VCA control port for Music Muting or remote level control
- 1U 19" rackmounting unit
- Five year warranty

Block Diagram



System Example

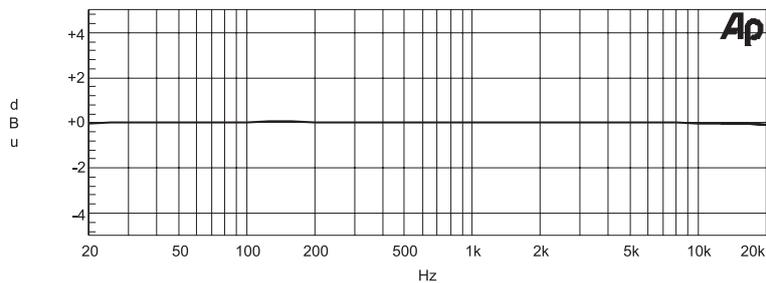


The CX335 is normally connected into the audio system between the mixer, zoner or other sound source selection component, and the main power amplifiers. The connection is entirely straightforward; the active audio source feeds the CX335's inputs, and its outputs feed the power amplifiers' inputs. All interconnections are stereo, and

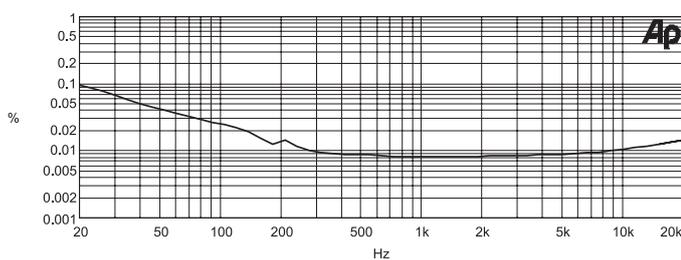
should be balanced if possible. To prevent unauthorised bypassing of the CX335, we recommend that it is installed in a rack with lockable (or fixed) rear and sides, so that access to the rear of the unit is impossible.

Performance Graphs

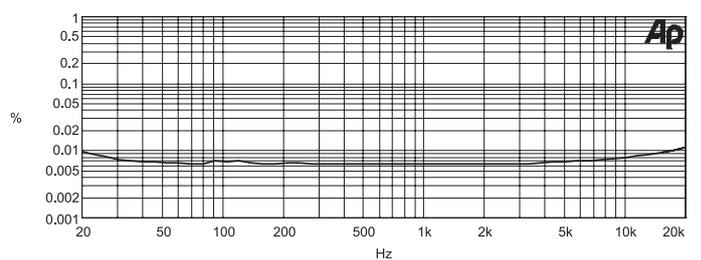
CX335 - Frequency Response



CX335 - THD with 10 dB compression



CX335 - THD with no compression



Technical Specifications

Performance

Frequency Response	20 Hz - 20 kHz, ± 0.5 dB
Distortion @ 1 kHz	<0.02% (0 dBu, unity gain); <0.1% (+10 dBu input, 10 dB gain reduction)
Distortion @ 10 kHz & 100 Hz	<0.03%, (0 dBu, unity gain); <0.1% (+10 dBu input, 10 dB gain reduction)
Noise	<-90 dB, unity gain, unweighted, 22 Hz – 22 kHz

Inputs

Type & Connectors	Electronically balanced, XLR3F
Input Impedance	10 kohms
Maximum Input Level	+26 dBu

Outputs

Type & Connectors	Electronically balanced, XLR3M
Output Impedance	80 ohms
Maximum Output Level	+26 dBu
Minimum Output Load	600 ohms

Compressor

Threshold Range	-20 to +10 dBu
Ratio	Adjustable: unity (no compression) to ∞ (brick-wall limiting)
Knee	Front panel hard/soft switch
Attack & Release Times	Automatic; front panel normal/slow switch
Peak Limiter Threshold	Set independently; -6 to +26 dBu
Gain Make-up	± 12 dB
Metering	9-segment LED bargraphs for output level and gain reduction

General

Power Input	220-240 V (internally selectable to 100-120 V)
Power Consumption	15 W
Mains Protection	Replaceable fuse, T100mA (230 V) or T200mA (115 V)
Dimensions (w x h x d)	482 mm x 44 mm (1U) x 155 mm
Weight	3.5 kg packed

Architect's and Engineer's Specification

The compressor-limiter shall be of analogue design throughout and shall have two identical channels with electronically-balanced inputs and outputs. The circuitry shall be capable of handling signals of up to +26 dBu in level.

The compressor-limiter shall be provided with a single set of controls operating on both channels simultaneously. There shall be rotary controls for compressor threshold and ratio, and gain make-up. Threshold shall be adjustable in the range -20 to +10 dBu, compression ratio shall be adjustable from unity (no compression) to infinity, and gain make-up shall be adjustable in the range -10 to +10 dB. The design shall be capable of automatically adjusting the attack and release times of the compressor depending on the spectral content of the programme material to minimise audible artefacts; there shall be a single control switch for selecting two overall speeds of operation. A switch shall be provided to select a "hard knee" or "soft knee" characteristic, determining whether the selected compression ratio is applied to all signals above the threshold or introduced gradually as the signal level exceeds the threshold.

The compressor-limiter shall have a separate peak detection system to introduce hard limiting regardless of the settings of the compressor-limiter section; the threshold of the peak limiter shall be adjustable independently of the compressor-limiter. A front panel LED shall be provided to indicate peak limiter action.

It shall be possible to bypass the entire compressor section from the front panel of the unit.

The compressor-limiter shall be provided with LED meters indicating the output levels of each channel in the range -20 to +12 dB and a further meter displaying the degree of gain reduction being applied in the range 0 to 30 dB.

A connector shall be provided to make it possible to control the compressor-limiter's variable gain element from an external source by the application of a DC voltage; the connector shall also provide reference voltages to allow simple external control of signal level; it shall also be possible to mute the outputs of the compressor-limiter by external contact closure at this connector.

The compressor-limiter shall be supplied with a non-removable security cover which prohibits access to all the unit's controls. Security tags shall be included with the cover such that the cover's removal is impossible without permanently breaking the tags.

The compressor-limiter shall be built in a steel chassis suitable for mounting in a standard 19" equipment rack, and occupy one rack space. The unit shall be silent in operation.

The compressor-limiter shall be capable of operating on either 230V or 115V AC mains, the mains voltage selection being made by internal jumper setting.

The compressor-limiter shall be the Cloud CX335.