

AMTEC BC-5A

INTRODUCTION

The Amtec BC-5A Band Compressor is a 500-style analogue dynamic equalizer capable of changing its frequency response according to the incoming audio signal.

The Band Compressor operates only in one of the six selectable bands. It allows to boost or attenuate the signal in the band and, additionally, to automatically reduce the gain in that band.

The static frequency response is set by the EQ TRIM control, which works as a typical EQ gain knob.

The level in the band can be automatically reduced according to the set-up of the BAND COMPRESSION knob when the energy in the band is excessive.

The dynamic range is reduced only in the selected band, the rest of the signal is not altered (unity gain).

The BC-5A uses parallel processing, where filtered, compressed (using FET gain reduction element) and phase manipulated input signal is combined with the direct unaltered path, resulting in minimal signal degradation. It adds filtered signal to the direct signal for boost or subtract it for cut.

DRY CUT button with corresponding red LED.

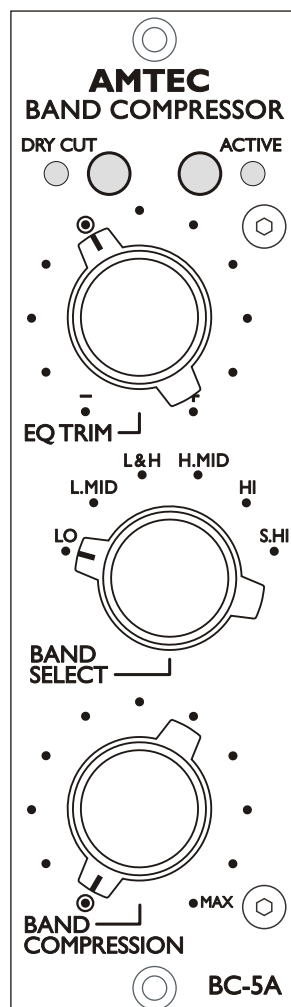
It mutes the direct path leaving only the processed signal.

Continuously variable EQ TRIM knob allows to set the basic frequency response with no compression in the selected band.

The range is -20dB to +12dB.
The zero point is off-center for increased precision when boosting.
The control sets the basic non-compressed low-level frequency response.

Continuously variable COMPRESSION knob allows to set the gain reduction in the selected band.

This control should be set so that the level of the selected band is reduced when it's too loud.



ACTIVE button with corresponding green LED.

It controls the hardwired bypass relay.

6-position BAND SELECT switch allows to choose the band of operation.

The bands are:

LO - shelving low frequency response
(internally selectable for 70Hz, 120Hz or 180Hz)

L.MID - peaking low-mid frequency response
centered at 240Hz

L&H - wide-band signal with accentuated
low and high frequencies

H.MID - peaking high-mid frequency response
centered at 3.4kHz

HI - shelving high frequency response

S.HI - shelving high frequency response with
a higher frequency point and a steeper
slope than the HI band

BANDS OF OPERATION

The BC-5A modifies the signal only in one the the six selectable bands. The bands are:

1) LO - Low Frequency Band

The first band has LF shelving characteristics at the frequency internally selectable between 70, 120 and 180Hz. The lowest frequency works best for sources like bass drum, bass guitar, bass synthesizers, drum buss or entire mixes. It lets to easily control any unevenness in the lowest registers and properly set will make instruments sound bigger and fuller, but without being boomy or muddy. It will lengthen the duration of low frequencies giving more density and sustain what gives an impression of more power and loudness. The highest frequency setting works for vocal tracks and lets to control the proximity effect and can work as de-poper.

2) L.MID - Low Mid Band

This band has band-pass characteristics with the peak centered at 240Hz. Insufficiency of energy in this band results in a lack of body and thickness, but excessive energy easily leads to unpleasant boominess, so controlling the level in this band is very important.

This band when properly set gives fullness to the sound, but without being muddy. With the EQ TRIM knob near zero it can also eliminate boxiness without sounding thin and too soft.

3) L&H - Lows and Highs

This setting is special among the band settings in the BC-5A, as it is not limited to a narrow band, but instead has effect on the whole audio spectrum to some extend.

The shape of the frequency response in this band is similar to the "loudness" curve. The human ear's sensitivity goes toward mid-range at low volume, so many processors even from the earliest days of audio included a form of correction of the frequency response at low listening volumes to favour low and high frequencies. The Band Compressor allows for automatic means of boosting these spectrum extremes at low levels and cutting them at high levels.

Use this setting to add a sense of loudness and punch.

This setting has longer attack times than the rest of the settings (which have fast attack times for quick response).

4) H.MID - High Mid Band

This band has a peaking characteristic centered at 3.4kHz. Its purpose is to add a controlled amount of presence and attack to a track.

All sources can benefit from this band, but it is the most effective on vocal tracks, guitars, piano and other that must be present in the mix and have more clarity, but without harshness and listening fatigue.

5) HI - High Frequency Band

This band has HF shelving characteristics from 5kHz up. It is designed as a general "brightener" to bring out sonic details. It has many uses and can find its way to control the high frequencies of most sources including entire mixes. It can add sparkle, brilliance and clarity, but with no sibilance nor shrillness. Particularly useful on vocals as it lets to boost HF and control it using only one processor, instead of using separate EQ and a de-esser.

6) S.HI - Super High Frequency Band

The last band is very similar to the previous one, but has a higher operating frequency and a steeper slope. It is designed to add "air" to the source tracks.

IN USE

The Band Compressor is a module that lets to dynamically alter the frequency response of one selected band. There are six selectable bands, but the low frequency shelving filter offers three frequency point options, so in total there are 8 band settings to choose from.

The static frequency response is set by the EQ TRIM control (just like an EQ gain knob on a regular equalizer) . Its range is from 20dB of cut to 12dB of boost. The level of the selected frequency band can be then only reduced by the use of the internal FET-based compressor controlled by the BAND COMPRESSION control. Only the selected band is processed by the BC-5A and the rest of the signal is not processed in any way.

Use the TRIM knob to set the basic frequency response and then use COMPRESSION knob to reduce the level of the processed band only when it's too loud.

Sources that require spectral enhancing can greatly benefit from boosting a band of interest quite heavily and then letting the band compression to take care of any excessive boost.

Instead of boosting an important band on an EQ and then taming it with another device, one can do it all using only the BC-5A with minimal signal degradation.

The DRY CUT button allows to mute the direct path leaving only the processed signal. It lets to hear what is actually being added (or subtracted) to the direct signal. Please note that due to the unique internal topology of the side-chain circuit, the processed signal can be not only compressed/limited by the side-chain compressor, but also muted and then can re-appear with inverted phase for band attenuation. This transition through zero sounds distorted in isolation, but when combined with the direct signal shapes the frequency response from boost to cut.

The "choked" muted sound indicates the moment of no actual equalization.