BAE AUDIO

10DC/DCF INSTRUCTION MANUAL

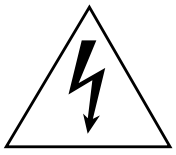
SAFETY

WARNING:
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



For Service or Repair

BAE
7421 Laurel Canyon Blvd
Unit 14
North Hollywood, CA 91605
(818) 784-2046
baeaudio.com

Read instructions - All the safety and operating instructions should be read before operating the unit. The term "unit" hereforth includes the remote power supply.

Retain instructions - The safety and operating instructions should be retained for future reference

Head Warnings - All warnings pertaining to the unit and power supply should be adhered to.

Follow Instructions - All operating and use instructions should be followed.

Water and Moisture - The unit should not be used near water - for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, and the like.

Ventilation - The unit should be situated so that its location or position does not interfere with normal ventilation.

Heat - The unit should be situated away from heat sources such as power amplifiers and power conditioning filters.

Grounding - Precautions should be taken so that the safety grounding means are not defeated and the protective earth terminal/safety ground should be connected to a mains outlet with a protective earth/safety ground connection.

Power Cord Protection - Power supply cords, AC and 5 pin DC, should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs and the point where they exit from the power supply and unit.

Nonuse Period - The power cord of the appliance should be unplugged from the AC outlet when left unused for a long period of time.

Object and Liquid Entry - Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through the openings such as the ventilation slots.

Servicing - The user should not attempt to service or modify the unit unless qualified to do so and under the guidance of BAE service personnel.

SPECIFICATIONS

FREQUENCY RESPONSE
5Hz to 45kHz -1dB Measured at +8dBu

NOISE
-80dBu with 200Ω source

MAXIMUM OUTPUT LEVEL
+33dBu into 10kΩ
+27dBU into 600Ω

DISTORTION
Varies from 0.03% to greater than 1%

COMPRESSOR THRESHOLD:
-20dBu to +16dBu with 2dB steps

RATIO:
1.5:1 to 10:1 with 6 position switch

ATTACK:
2mS to 80mS with 6 position switch

RECOVERY:
100, 200, 400, 800mS
Auto 1 100mS isolated peaks, 2 Sec prolonged levels
Auto 2 50mS isolated peaks, 5 Sec prolonged levels

LIMITER THRESHOLD:
+4dBu to +15dBu with 0.5 dB steps

ATTACK:
Slow 4mS, Fast 2mS

RECOVERY:
100, 200, 400, 800mS
Auto 1 100mS isolated peaks, 2 Sec prolonged levels
Auto 2 50mS isolated peaks, 5 Sec prolonged levels

GAIN MAKE-UP:
0 to +20dBu in 1 dB steps

OUTPUT IMPEDANCE
100Ω Balanced earth free

POWER CONSUMPTION
200mA at 24VDC

DIMENSIONS IN INCHES
19W x 1.75L x 9D (Rackmount)

INTRODUCTION

Congratulations on purchasing the BAE Audio 10DC Compressor/Limiter! The 10DC was engineered to fulfill the critical need for a high performance audio compressor/limiter and is emblematic of the years of experience BAE Audio has had in professional audio. We recommend that you spend a few minutes reviewing this manual to learn about the operation and functionality of your unit.

UNPACKING

Prior to unpacking you BAE 10DC, carefully inspect the packing material for any damage. Once you have determined that the packing material has not been compromised, carefully unpack the unit and inspect it for obvious damage. BAE takes great care in designing the packaging to withstand most expected impacts during shipping. If any damage is discovered during the inspection process, contact your BAE dealer so the issue can be immediately addressed.

SETUP

We know you can't wait to plug in the 10DC but here are just a few things to know about during installation. When first powering on the 10DC, allow a few minutes of idle warmup. The components need time to charge before making any critical signal processing. It is not necessary to keep the unit on at all times. This was customary in the days of vacuum tubes where the sudden influx of power, coupled with the often cold internal ambient temperature, can shorten the life of the tube. Not so with transistors. You can turn the 10DC on and off everyday, but keeping in mind to allow for a few minutes of warmup time when powered on.

The power supply comes with a special power cord. Although it looks like an ordinary AC cord, you should look closely and you will read that it is SHIELDED. This means that the safety ground conductor covers the live and neutral conductors along with a drain wire. It is very effective in containing the electromagnetic field in the cord to help lower the coupling of noisy fields, and should be the only AC cord to use for the 10DC.
It is recommended that the 10DC be located away from any strong electromagnetic sources when racked. These sources can include power supplies, AC distributors and power conditioners, digital clocks, power amplifiers, and other units that may work on larger currents which would usually have a field above or below the unit it powers. Some units with built in power supplies are made to be shielded for the circuit it was designed for inside the unit, but not designed to shield above or below the unit thereby throwing off interference to other units.

During initial installation, have the 10DC plugged into the power supply with the XLR's connected. Turn the unit on and listen to it with no signal going through the input - just monitor the output. As a certain test for noise, you can also engage the Compressor and turn the Gain Make-Up level and listen for any hum or buzz that gets amplified proportional to the gain. This test would reveal any noise coupling in the system and give you a chance to find the source of the noise before starting recording.

If you hear any noise, you can start turning units around the 10DC off to see if something changes. You may need to redistribute the order of gear in your rack or put a space between units if possible. Another possibility of noise is simply known as "ground noise". This is when one unit has two sources of ground with different impedances to each one, causing a voltage to flow and contaminating the audio signal. Be sure to connect all units that would otherwise interface with each other, like a compressor, equalizer, and digital recorder, to the same power outlet.

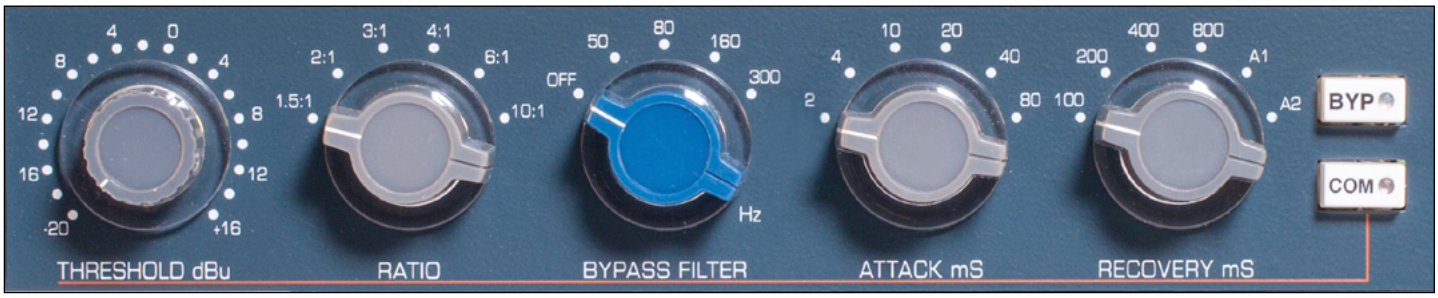
OPERATION

The 10DC can be fed from a wide range of Line output devices anywhere from -20dBu to +30dBu making it very versatile with many sources. Both the Compression and Limiter circuits are completely independent and can be used separately or together via the illuminated push-buttons that corresponds to each side. For point of reference, analog level of 0dBu is equal to 0.775 volts (RMS).

BYPASS

This is a hard bypass which simply connects your input XLR to your output XLR. The input XLR does terminate to the input transformer so it's equivalent to connecting your XLR's together with a 10kΩ floating load.

COMPRESSOR



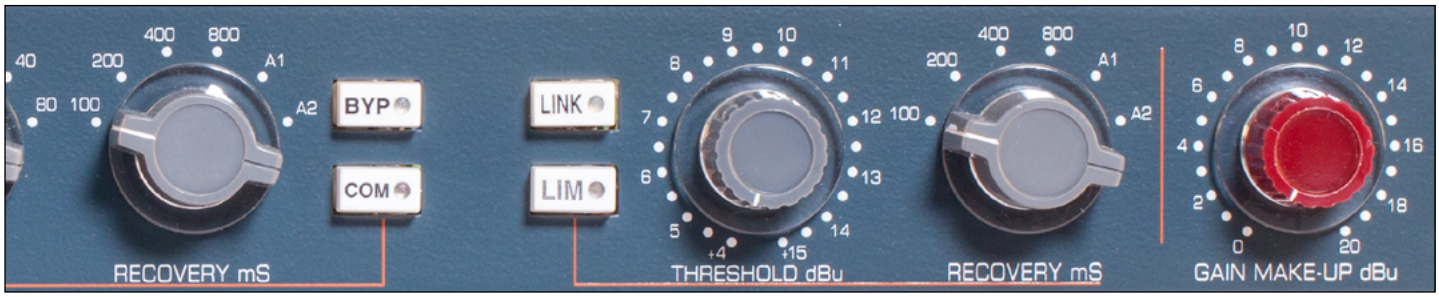
THRESHOLD:
This sets the audio level at where the signal begins its compression. It covers a range from -20dBu to +16dBu in 2dB steps. Usually, this is the control to set first just to get a feel of where your levels are, and then revisit again once you are more sure of the amount of compression needed.

RATIO:
This selects the ratio between input and output levels for audio signals that have gone above the level set by the compression threshold. It has six selections from 1:5:1 to 10:1 giving you the right amount of compression from a subtle "kiss" to something more heavy-handed.

ATTACK:
A well-received feature to this style of compressor, the ATTACK control sets the amount of time it takes for the 10DC to begin compressing the signal once it is above the threshold. It is selectable in six steps from 2mS for fast response to peaks to 80mS for very slow response to retain the dynamics before compression takes control. For example, drums can sound more dynamic and alive with the right setting.

RECOVERY:
This control sets how fast the compression circuit returns the input signal to its original level. It has six settings - the first four are the static settings from 100mS to 800mS, and the last two are automatic settings, A1 and A2 respectively. The static functions follows the envelope of the program material in a fixed time release during compression. The automatic functions derive the attack and recovery times from the input signal's change where composite control is needed. As program material enters the circuit, it responds with rapid recovery for isolated peaks and a slower recovery after prolonged high levels. See specifications above for recovery times.

LIMITER



THRESHOLD:
This sets the audio level at where the signal begins its compression. It covers a range from +4dBu to +15dBu in 1dB steps. Limiter functions are considered with more care and refinement as the recording device would be more sensitive to maximum levels, especially with digital media where there is not much give going into the red with metering. Therefore, knowing where your recording or broadcasting device actually clips is a good information to know and explore during the setting of the threshold. It may be as simple as looking at the digital dBFS meter on your screen and making sure it does not pass digital “0”. Remember that analog and digital level metering is different - maximum level handling capabilities, or headroom, can range from +12dBu to +23dBu for digital audio recorders, with the maximum level designated as a “0” and all levels below it as negative integers.

ATTACK:
The attack time for the Limiter is fixed at 2mS. Limiting attack time must be fast because it is necessary for preventing audio levels from exceeding the limit threshold that is set and endangering a recording from level overload.

RECOVERY:
Similar to that of the compression side, this control sets how fast the limiter circuit returns the input signal to its original level. Also like the compressor, it has six settings - the first four are the static settings from 100mS to 800mS, and the last two are automatic settings, A1 and A2 respectively. The static functions follows the envelope of the program material in a fixed time release during compression. The automatic functions derive both the attack and recovery times from the input signal’s change where composite control is needed. As program material enters the circuit, it responds with a rapid recovery to isolated peaks and a slower recovery after prolonged high levels. See specifications above for recovery times.

GAIN MAKE-UP

This sets the output gain of both the compressor and limiter. It can be adjusted from no gain, signified by the 0, to +20dB in 1dB steps. Use the gain make-up to compensate for the signal level loss due to compression and to adjust the nominal output level. Note that it works for both the compression and limit side of the circuit, though on the limiter side, levels will never exceed passed the limit threshold level. However pointless this may seem, it is done deliberately to give the user the option of over-limiting the limiter side chain which may produce it’s own artifacts in addition to those of the class A circuit.

METER

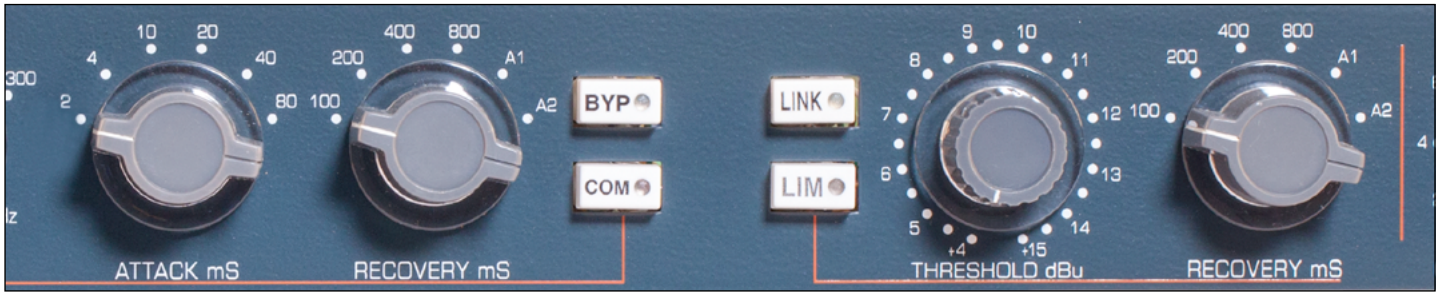
The meter was selected for easy reading and lit with LED's so there is never a bulb to burn out. It is only for gain reduction in decibels (dB) in a gas-tank style so that loss of audio level moves the meter to the left. The meter is internally calibrated, and the outer flathead screw should never be turned.

STEREO LINKING

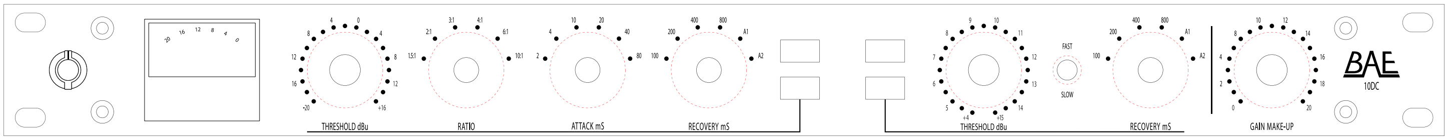
The 10DC is equipped to be linked in stereo operation if desired. When using two 10DC units, either one of them could be used as the Master by simply setting the controls so that it compresses or limits more than the other unit. The unit which is exhibiting more level loss sends its control voltage to the other unit so that both units apply the same amount of gain reduction. Because this control voltage is not an audio signal, a simple RCA type cable (provided with the purchase of two units) can be used to link the units together. To minimize accidental linking, BOTH pushbuttons must be engaged for stereo operation.

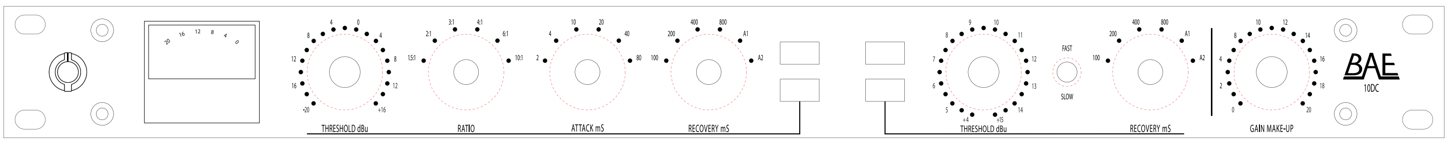
BYPASS FILTER
(10DCF Model)

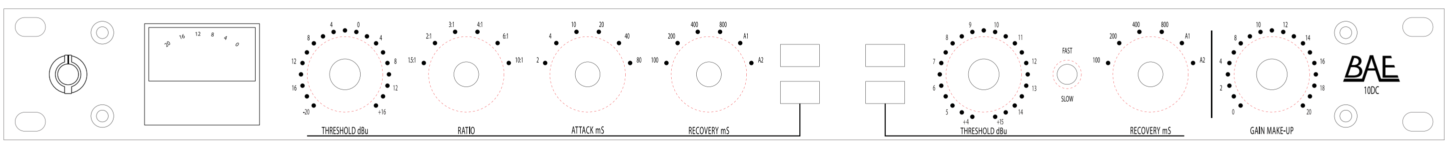
The 10DCF model features a low frequency bypass filter. The rotary switch can adjust from OFF to bypassing frequencies below which you DO NOT want to compress in the side-chain. These frequencies are 50, 80, 160, and 300Hz. The idea behind this is that lower frequencies have more energy making the 10DCF react more to compress and/or limit the audio and thereby affecting the entire audio bandwidth along with it. If lower frequencies are bypassed, then you can have more control over midrange and higher frequencies while preventing low frequencies from overtaking the attenuation.

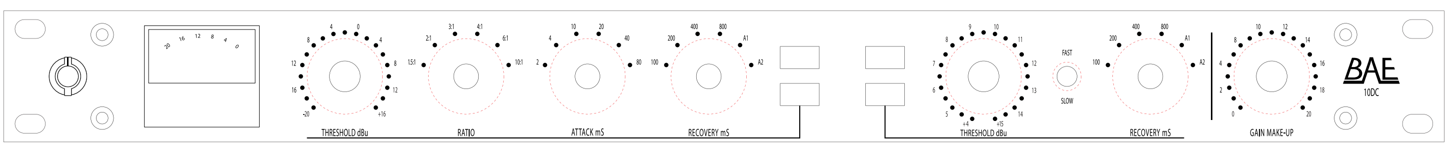


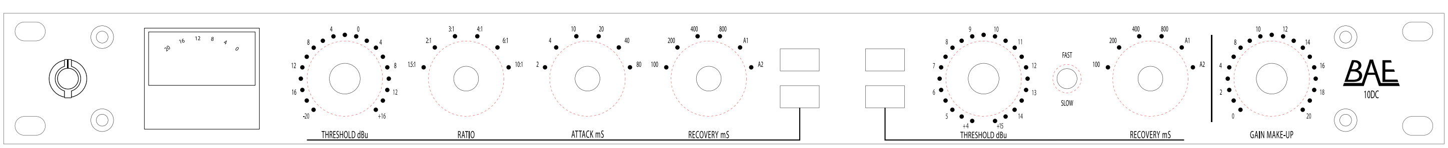
RECALL SHEET

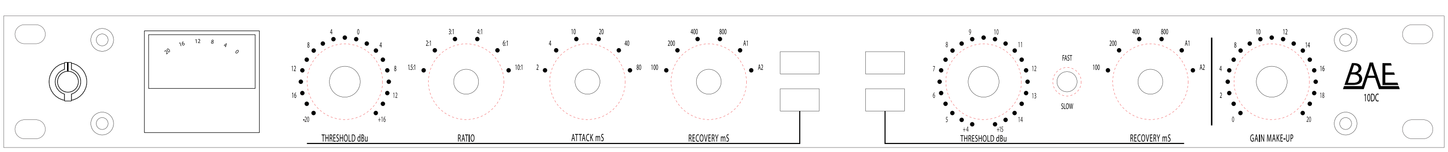












DATE:	ARTIST:	SONG: