



essence

API™ 500 Series Compatible
Differential Opto Compressor

Users Manual



Thank you for choosing the Buzz Audio Essence compressor module. Please take the time to read this manual so that you are familiar with the operation of the unit.

To gain our Extended Warranty, please return the enclosed Registration Card or register your purchase online at www.buzzaudio.com

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ESSENCE USERS MANUAL VERSION-1, SEPT. 2006.

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PO BOX 6677, TE ARO. WELLINGTON, NEW ZEALAND. VOICE/FAX 64+4+385-2478.

www.buzzaudio.com email management@buzzaudio.co.nz

1] Compatibility and Power

The Essence compressor module is designed to be installed into an API™ 500 Series compatible rack and cannot function stand alone, requiring the power source supplied by the rack system.

It should be noted that the Essence module consumes more power supply current than most other 500 series modules due to the True Class A amplifiers used in the design. For this reason, there may be limitations on how many Essence modules can be installed into some older rack systems.

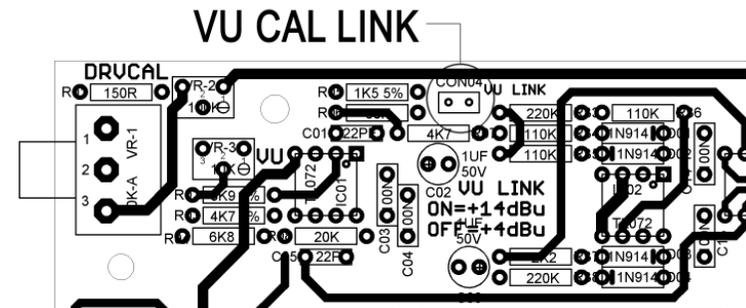
The current consumption of the Essence is rated at 120 milliamperes at +/-15 volts DC. If 5 modules are installed into a 10 space rack, then a total of 600 milliamperes will be required from the rack power supply. Most currently manufactured racks will easily meet this requirement but if in doubt, please check with the manufacturer of your particular rack.

For more information on the API™ 500 Series racks and the VPR Alliance, visit the API™ website at www.apiaudio.com.

2] VU Meter Cal Option

Before installing the Essence into your 500 Series rack, you may wish to change the 0dB reference of the front panel VU meter. This can be set to read either +4dBu (VU meter standard, LINK OFF) or +1.4dBu (as supplied from the factory, LINK ON).

The +1.4dBu setting is useful if the Essence is feeding a digital work station, as the levels will generally be higher than working with an analogue tape recorder.



Locate the LINK at the top left hand side of the outer circuit board behind the DRIVE control and remove or replace the link as required. No other adjustment is needed.

3] Installation

Installation into the 500 Series rack is relatively straight forward. Ensure the rack is completely powered down before attempting installation to prevent damage to the module.

Choose the position in the rack to which you will install the module. Note that the Essence has two edge connectors that must mate with the rack connectors. Slide the unit in so that the gold plated edge connectors of the module align with the matching connectors in the rack. A gentle push and the module should slide home into the rack connectors.

Please avoid touching the gold plated edge connector of the module to prevent sweat from tarnishing the gold plate and thereby avoiding any connection reliability problems in the future.

Attach the Essence front panel to the front of the rack with screws supplied by your rack manufacturer. This is important for mechanical rigidity. Do not over tighten these screws to avoid stripping out the threads.

!! Important Note !!

The Essence consumes 2 slots within the 500 rack. If the unit is installed into slot 1 and 2 of the rack, the main audio input and output is accessed via the XLR connectors associated with slot 1. The XLR connectors

associated with slot 2 can be used to insert another device (an equalizer for example) into the side chain path of the compressor. The male XLR is the send to the external device, the female is the return from the device. More on side chain insertion later in this manual.

Once you have the module in place, apply power, test that everything is working OK, and most importantly, enjoy!

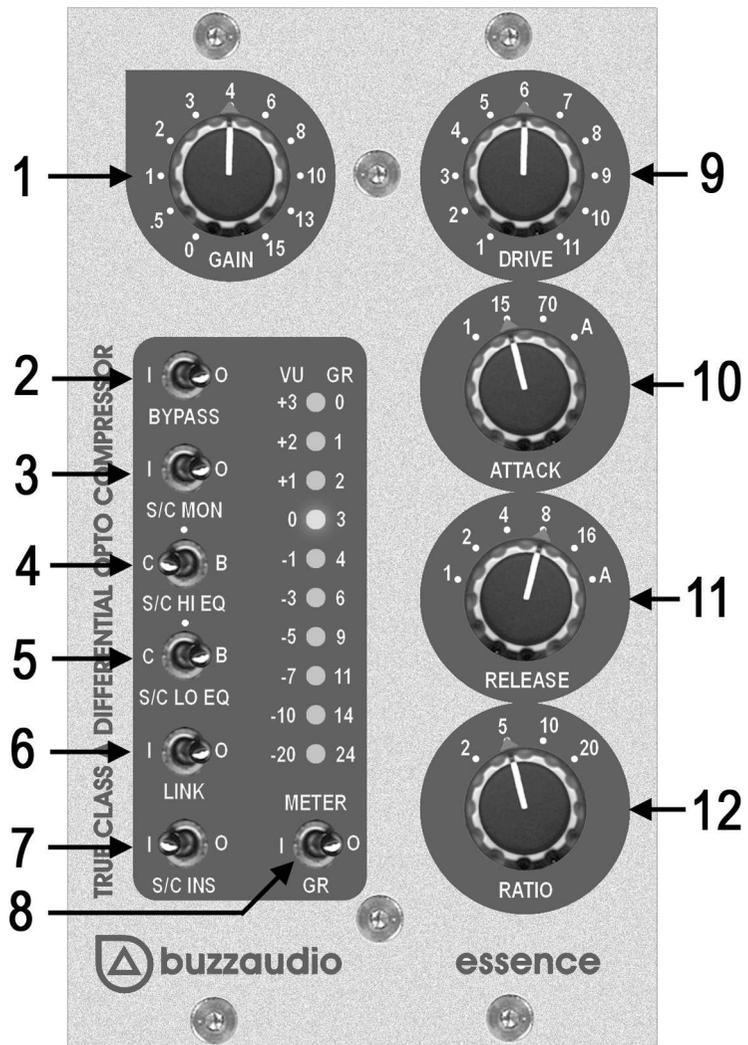
4] Controls and Indicators

Please refer to the picture on the following page.

[1] GAIN This rotary control varies the output gain of the Essence from 0 to +15dB and makes up for the loss associated with compression. This control is bypassed when using the **S/C MON** function (3).

[2] BYPASS This switch completely removes the compressor from the audio path connecting the input to the output directly. The compressor is bypassed in the **I** (in) position and active in the **O** (out) position.

[3] S/C MON S/C is the abbreviation for Side Chain. This control allows you to monitor (via the Essence main output) the audio feeding into the compressor control circuitry. This is useful if you have an equaliser inserted in the S/C path or are using the onboard S/C EQ.



ESSENCE FRONT PANEL

Controls and Indicators continued...

[4] S/C HI EQ This switch allows you to boost (**B**) or cut (**C**) the treble feeding into the Essence side chain (or control circuitry). In the centre position, the control is bypassed. If you apply boost into the S/C, then the compressor will be more sensitive to the treble frequencies, and more compression is applied. If you apply cut, the compressor becomes less sensitive at high frequencies.

[5] S/C LO EQ Similar to the **S/C EQ HI**, this switch applies boost (**B**) or cut (**C**) in the bass register or low frequencies.

[6] LINK This switch connects the Essence S/C to other Essence compressors that may be installed in the rack and will provide tracking of the two linked units for stereo or multi channel compression tasks.

!! IMPORTANT NOTE !!

The Essence should NOT be linked with any other type or brand of compressor – damage may result! Please consult the rack manufacturer's instructions for setting up the link function in your rack.

[7] S/C INS Side Chain Insert. This switch connects whatever is feeding the S/C return into the compressor control circuitry (slot 2 female XLR connector). The Side Chain Insert allows you to connect another device (such as an equaliser) to modify the Essence compression

Controls and Indicators continued...

characteristic. The Side Chain send or output (slot 2 male XLR) is always active. The Essence onboard **S/C EQ** is post the S/C Insert point.

[8] METER Use this switch to monitor on the LED VU Meter the input level to the Essence (**I**), the output level leaving the Essence (**O**) or the amount of Gain Reduction (**GR**) being applied to the audio signal. The VU meter 0dB reference point (in **I** or **O** modes) can be set to either +4dBu (VU standard) or +14dBu (digital). See section 2 of this manual.

[9] DRIVE This rotary control is used to adjust the amount of compression applied to the audio signal, similar to a threshold control on other compressors. Clockwise rotation increases the amount of compression.

[10] ATTACK A four position switch which adjusts the attack time or time taken for the compressor to respond to the incoming audio signal peaks. Position **1** is the fastest attack, with the Essence taking 1mS (milli-second) or less to respond. Position **15**, the compressor takes 15mS to respond, and position **70**, the attack time is slow at 70mS. Position **A** is the auto mode where the attack time of the Essence varies with program material.

[11] RELEASE A six position selector which adjusts the time taken for the compressor to recover from a program peak. The release times are **100mS**, **200mS**,

Controls and Indicators continued...

400mS, **800mS**, **1600mS**. The **A** position is the Auto mode whereby the compressor will release from fast transient signals quickly, but will maintain a slower release time with more continuous signals.

[12] RATIO This control adjusts the change in gain reduction for a given change in input signal level. The ratios are **2:1**, **5:1**, **10:1**, **20:1**. As an example, in position **5** a 5dB increase in input signal level will yield a 1dB increase in output signal level, being a ratio of 5:1. Because the Essence has a soft knee characteristic, the ratio value selected is the ultimate achieved and will appear to be softer at onset of compression. See the next section for more on this.

5] Tips for Using the Essence

Unlike some other audio compressors that are designed to “text book” parameters, the Buzz Audio Essence possesses a unique “musically transparent” soft knee compression characteristic provided by the unique Differential Drive Side Chain topology. It is equally at home providing gentle level control of acoustic sources through to full on squash for “in your face” lead vocals. The following operational tips will help in getting the best out of your unit, but the final word has to be – use your ears!

Tips for Using the Essence continued...

•70mS Attack

The slow 70mS position is useful in obtaining more fronts from percussive sounds. For example, a snare that has no "stick" sound may be improved by gentle compression with a slow attack and quick (1 or 2) release time. The initial transient of the snare is allowed to pass unaffected but compression is applied to the "tail" of the sound, bringing the "stick" forward.

•Auto Attack

Best choice for low ratio light compression of sources like acoustic guitar, bass guitar, vocals and even stereo mixes. The adaptive nature of the auto position prevents "pumping" and really is the "classic" sound of LDR based Optical compressors.

•1mS Attack

Generally, when high ratio's and heavy compression are applied to vocals, the fast attack position is the best choice to prevent sibilance problems. When compressing a stereo mix, the fast position will help control peaks in the program material getting through.

•Release Times

Selecting the most appropriate compressor release time is best achieved by ear but here are some guidelines.

Tips for Using the Essence continued...

Stereo Mixes – generally speaking, a release time of 400mS (number **4** on the dial) or Auto is appropriate, but really does depend on the type of program material.

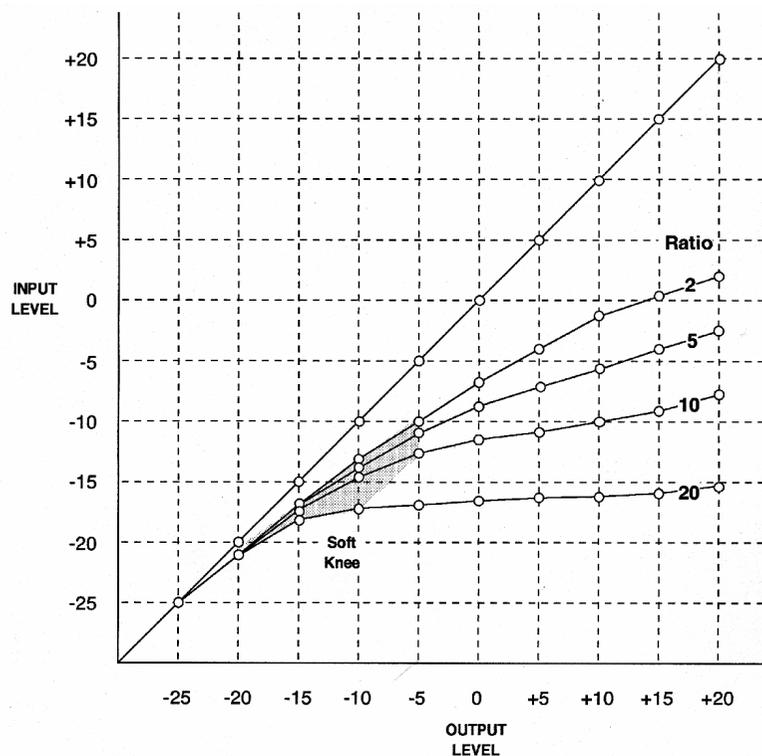
Bass Sounds - faster release times will distort the bass register as the compressor actually starts to track the bass frequencies, however the effect of a fast release and the distortion may be the sound you're looking for!

Vocals & Voice Overs – under heavy gain reduction, 100mS release (number **1** on the dial) will prevent "pumping" and missing phrases due to the compressor still releasing from a loud patch. If using a low ratio and light compression, slower release or the **A**uto position may sound warmer. Again, experimentation is the key.

Auto Release – a clever little circuit inside the Essence provides a quick release from transients and peaks whilst maintaining a slow release on overall program. This is similar to an automatic gain control (AGC) type action, although a lot more intelligent in it's response.

•Ratios

The graph on the next page shows the input to output relationship of the four available ratios with the Drive control set fully clockwise.



ESSENCE INPUT/OUTPUT RELATIONSHIP

From this graph we see that for lower ratios settings (2:1 and 5:1), the ratio is ultimately achieved only after another further 10dB of gain reduction from threshold, (threshold meaning 0dB gain reduction). For higher ratios, (10:1 and 20:1) the ultimate ratio is achieved within approx. 10dB and 5dB respectively.

Tips for Using the Essence continued...

This area of the graph represents the "soft knee" of the Essence compression characteristic and is an important feature of it's design.

Choosing a low ratio setting for gentle control of level and thereby increasing the loudness of a sound within a mix is possible without signal degradation and minimal colouration. On the other hand, with higher ratio settings, a sound may be "clamped" or levelled whilst still retaining some audible dynamic.

Note that the 20:1 ratio setting is virtually hard limiting in that a 20dB input change only results in a 1dB output change.

•Side Chain Equalizers

The on board equalizers can be used to alter the sensitivity of the compressor at high and low frequencies. By boosting the **S/C HI EQ**, the compressor is more sensitive at high frequencies, which may be useful in controlling a sibilant vocal.

By boosting the **S/C LO EQ** the compressor is more sensitive to low frequencies, which may be useful in compressing a bass guitar that has an accentuated low end.

Combinations of boost and cut on both EQ's can be used to either enhance midrange compression (cut

Tips for Using the Essence continued...

both **HI** and **LO EQ**) or reduce it (boost both **HI** and **LO EQ**). Once again, experimentation is the key and there is no right or wrong way to use this function. And remember that you can monitor what you doing with these switches by engaging the **S/C MON**.

•Side Chain Insert

This function has numerous uses including inserting a more elaborate equalizer into the Essence side chain or for “keying” the compressor. By inserting a 1/3 octave graphic equalizer, very narrow band compression to clamp a troublesome resonance on a bass track is possible. Or, by using fast attack and release times and boosting around 6-20Khz on the graphic, vocal de-essing is possible.

Keying involves using a particular sound to reduce the volume of another sound. As an example, a guitar track could be made to reduce in volume with the vocal track by passing the guitar through the Essence main audio path and feeding the vocal track into the side chain insert return. With appropriate adjustments, the guitar track will get quieter when the vocal is present. All sorts of similar effects are possible.

6] Specifications

Frequency Response with no gain reduction
14Hz to 107kHz, +/- 1.5dB

Maximum Input Level +25dBu
Maximum Output Level +27dBu

Total Harmonic Distortion

Measured at 0dBu input, no gain reduction, make up Gain 0dB
100Hz 0.1%, **1kHz** 0.015%, **10kHz** 0.002%
Measured at +10dBu input, 20dB gain reduction, make up Gain +15dB, Attack AUTO, Release 16
100Hz 0.1%, **1kHz** 0.015%, **10kHz** 0.005%

Residual Noise -95dB A wtg, 150ohm source Z, make up Gain 0dB
Make up Gain 0dB to +15dB
Maximum Available Gain Reduction 25dB
S/C HI EQ Boost/Cut 8dB @ 10kHz
S/C LO EQ Boost/Cut 8dB @ 100Hz

Main Audio Input Impedance 20k ohms, bal or unbal
Main Output Impedance 100 ohms bal or unbal

Sidechain Send Output Impedance 100 ohms unbal
Sidechain Return Input Impedance 44k ohms bal or unbal
Sidechain Max Input/Output Levels +22dBu

Size = (3"Wx5.25"H). Fits 2 spaces in API™ 500VPR Series rack format
Power requirements = 120mA +/- 15-18 volts DC, as supplied by rack power supply.

Specifications are typical of a production unit and are subject to change without notice because we might be able to make it slightly better. 0dBu reference = 0.775 volts RMS.

7] Warranty and Service

We are confident that you will receive many years of trouble free operation from your unit. If however you experience any technical problem with your Essence, contact your dealer or Buzz Audio for recommendations on what to do.

For on line support visit our web site;
www.buzzaudio.com and click on Users Area

Buzz Audio, 42b Hania St, PO Box 6677, Te Aro,
Wellington, New Zealand.
Voice/Fax 64+4+385-2478.
Email; support@buzzaudio.co.nz

•Disclaimer

Buzz Audio Ltd is not liable for any damage to amplifiers, consoles, speakers, the rack and power supply into which it is fitted or any other equipment and/or electric shock to humans that is caused by negligence or improper installation and/or use of the Essence compressor module.

•Standard Product Warranty

Buzz Audio guarantees the Essence to be free of defective materials and/or workmanship for a period of 1 year (12 months) from the date of sale, and will replace defective parts and repair malfunctioning

products under this warranty when the defect occurs under normal installation and use – provided the unit is returned to our factory (or duly authorised service centre) via prepaid transportation with a copy of the proof of purchase, ie, sales receipt. This warranty provides that examination of the returned product must indicate, in our judgement, a manufacturing defect. This warranty does not extend to any product that has been subjected to misuse, neglect, accident, improper installation, or where the date code has been removed or defaced. The standard warranty is NOT transferable.

•Product Warranty Extension

The above Warranty may be extended to a period of 2 years (24 months) from date of sale provided the enclosed Warranty Registration card is completed and returned to the office of Buzz Audio within 4 weeks (28 days) from purchase date. Alternatively, you may Register your purchase on-line at our web-site www.buzzaudio.com. The Extended Warranty is transferable to the new owner if you on sell the unit during the warranty period.

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