

THERMIONIC

CULTURE

THE KITE
stereo equaliser with attitude

OPERATING MANUAL



WARNING

For your personal safety, please read this operating manual and warning thoroughly before using the equipment.

This unit must be installed in such a manner that operator access to the mains plug is maintained. Where the product is to be rack mounted, this may be achieved by having access to the disconnection device for the whole rack.

To reduce the risk of electric shock, it is essential that the unit is disconnected from the mains supply before removing the cover.

Please also note that the power supply capacitors within this unit can remain charged even after the mains supply has been disconnected. It is essential that these capacitors are discharged after the mains supply has been disconnected and the covers have been removed.

In the event that this unit has been dropped or has suffered an impact, an electrical safety test must be carried out before reconnection to the mains supply.

This equipment is not intended for use in explosion hazard environments. It must be used and stored in studio conditions, such that the ambient relative humidity does not exceed 80%, nor is the temperature to be allowed to drop to a level, which would cause dew point to be reached.

It is not advisable to operate this equipment if all valves are not in place and working, as voltages will rise and components may overheat and fail.

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1 Introduction

The Kite has been developed by Thermionic Culture in response to requests and feedback from many of our customers. Familiar features include the “Attitude” control and broad, effective EQ in a 2-channel format.

The sound shaping controls are all dual channel controls, allowing the user to make fast, intuitive changes to the stereo mix without having to check alignment between channels. However, there are independent output level controls should any adjustment need to be made to the left/right balance.

The “Attitude” design is taken from the Fat Bustard and allows the Kite to be run as a very low distortion device or to be progressively made richer in 2nd harmonic content as the “Attitude” control is increased. We should point out that this “Attitude” circuit is unique to Thermionic Culture Ltd.

The type of valve used is critical to the success of the sound in adding useable and desirable harmonic content to the signal without incurring any noise or headroom issues. It was selected for several electronic properties that it has and also through many careful listening tests that proved it simply “sounded right” when used in the “Attitude” circuit.

The effect of adding 2nd harmonic content to the stereo mix bus is well known to bring extra dimension and character to the sound. There is also a subtle squeezing of the dynamic range due to the saturation of loud peaks and transients in the stereo signal. This can be very beneficial when used judiciously to achieve a louder overall mix, rather like the effect of running a mixing console’s stereo mix bus just to the point of saturation. However, the valve circuitry will inherently give a larger, more forgiving range within which to utilise the saturation than any solid-state console could provide.

The EQ section of the Kite is also inspired by the Fat Bustard EQ section but has been developed further.

The “Bass boost” control has 2 frequency positions with Thermionic Culture’s own “varislope” EQ curves and there is also a continuously variable shelving “Bass Cut” control. This gives fine control over the type of bass that can be added and the interplay between the “Bass Boost” and “Bass Cut” provides unique shaping possibilities for the low end. For example, the “Bass Cut” can be used to subtly tighten up the bass end when applying bass lift or it can be used to provide a simultaneous low midrange cut and low bass lift, in varying degrees.

A 2-position high pass filter “HPF” control allows further adjustment to the very low end of the sound.

The “Top Shelf” control is now brought right down into the midrange with 2 frequency choices, allowing a very broad musical lift of a wide band of frequencies in the mid to high end of the spectrum. This can be perceived as an intuitive and musical approach to stereo EQ as there is no peak or centre frequency that becomes dominating when EQ lift is applied, just the smooth addition of presence to the musical content in the selected range.

For control of the very high end there is a rather special “Air” control. This is a transparent sounding control that gives additional openness and sparkle to the sound. It makes the sound so clear (at Att 1) that there is almost zero phase shift in the whole audio spectrum when this control is set to 5!

If the user wishes to use a lot of “Attitude” and gain to achieve a more saturated, dense sound, the “-6dB” switches are there to ensure the output controls stay within any easy to adjust central range of the control.

2 Installation

The Kite should be rack mounted. There are 4 valves in the unit and they get hot! There is usually no need for a gap to be left above if the ambient temperature in the rack is reasonably cool, but it may be prudent to leave a space of 1U in case equipment above is overheated by the valves. Common sense is needed and of course we cannot be held responsible for any damage.

DON'T FORGET TO ENSURE THAT THE MAINS SWITCH IS SET CORRECTLY FOR YOUR AREA BEFORE YOU SWITCH ON!

If we know the destination for the unit, we will set the switch and install the correct fuse but it's best to double-check.

Do not operate The Kite with monitor speakers facing directly into the back of the unit. We use valves with large electrodes for their special sound, but they can be a tiny bit microphonic. Also, their life may be shortened if they are subjected to very loud noise or vibration.

INPUTS are semi floating with Pin 2 Hot and Pin 3 connected to Ground (Pin 1) via a small resistor so as not to short out a part of a balanced signal on pin 3. If coming from an unbalanced source, then always connect the signal to pin 2 and connect ground to pins 3 and 1.

OUTPUTS are unbalanced with the signal on pin 2 and 3 & 1 shorted

Standard XLR twin screened cables should be used for both inputs and outputs. Cable length is not an issue, within reason. If a balanced output is required, a Balancing Box can be supplied containing 2 high level Sowter transformers.

3 Controls

Rotary controls feature matched stereo potentiometers with 21 indents for easy recall, excepting Attitude which is a 6 position rotary Alpha switch and Output Trims which are mono controls with 31 indents each.

3.1 Gain

This is self-evident. Can be used with

3.2 Bypass Switches

to achieve unity gain for comparison purposes. Bypass is exactly what it says and connects inputs direct to outputs with no electronics involved.

3.3 Bass Lift

This control features our ‘*Varislope*’ design. It’s a shelving control up to around 6, when the 2 selectable frequencies (140 & 70 Hz) are lifted by 3dB. As the control is increased the lower frequencies become more dominate, peaking at 30 & 20 Hz at max.

3.4 Bass Cut

This is a strictly shelving control, the frequencies selected (1kHz & 400Hz) represent 3dB cut points. NOTE; Using Bass Lift and Cut together can give a useful mid-range reduction – see curves.

3.5 HPF

A High Pass Filter with a 12dB/octave slope, being 6dB down at 20 or 40 Hz

3.6 Top Shelf

A rather different idea, like a “presence” boost. A flat shelf with 3dB points at displayed frequencies (1.2kHz & 700Hz). The high top can be provided by

3.7 Air

This control starts to operate at the very top of the audio spectrum. When set to 1 or 2 you may hear nothing as it starts to operate above 20 kHz, but at 3 and above you'll hear a natural brightness free from added solid state hardness. At 10 it's 5dB up at 10kHz, peaking at 40kHz.

3.8 Attitude

This is a clone from The Fat Bustard and gives exactly the same musical 2nd harmonic colouration. Ranging from 0.01% to 5% distortion it's a useful tool to add “character” to a mix

Frequency response is a bit restricted at high Attitude settings, so the sound becomes more “valvey”.

3.9 Output Trims

These facilitate very fine control of the output levels, being 2 individual potentiometers with associated – 6dB switches. These switches are useful if the unit is being driven hard with a high Attitude setting.

4 Servicing & Maintenance

The Kite comes with a 12-month warranty covering all parts, including valves. It is essential that in the event of a fault occurring, it is returned to our factory, or to the dealer from which it was purchased for repairs to be carried out, otherwise the warranty will be invalidated. There is however, one exception to this rule.

4.1 Valves

It is safe for the user to change the valves, but the unit must not be operated without all valves plugged in. If a fault occurs, it may be a valve, so unplug the mains, remove the top cover, and wait for the valves to cool down a little. DO NOT touch any part of the circuit board or other components.

The two Input valves are on the left side of the unit (looking from the front). The 2 Output valves are a little to the right of centre.

You can swap the valves from side to side to isolate a fault. To remove a valve, press the screening can down and twist anticlockwise, when it will spring out. Then remove the valve by pulling upwards, possibly using a cloth if it's still hot. Take care not to bend the pins when putting back in.

For optimum results, if valves are replaced, replace them in pairs. DO NOT MIX INPUTS WITH OUTPUTS.

Valve complement:

Input - 2 x 5965/12AV7;
Output - 2 x ECC802S/6189

4.2 Operating Voltages/Fuse

The Kite can be set to operate from either 230V or 115V 50/60Hz AC. The appropriate voltage can be selected on the red switch located next to the mains inlet. NOTE: Mains fuses must be replaced in accordance with the following table: -

Operating Voltage	Fuse Rating
115V	T630mA 20mm type
230V	T315mA 20mm type

5 Specification

Input impedance	10k Ω
Output impedance	220 Ω
Distortion (@ +4dBu)	$\leq 0.015\%$ @ Attitude 1
MOL @ 1% Distortion	+25dBu
Noise	< -80dBu
Signal/Noise	-105dBu
Frequency response $\pm 1\text{dB}$	Attitude 1: <10Hz to 56kHz Attitude 3: <10Hz to 20kHz Attitude 6: 15Hz to 9kHz
Crosstalk (dB)	Channel 1: 1kHz -72 10kHz -64 Channel 2: 1kHz -72 10kHz -58
Phase shift	Interchannel: 0.25° at 10kHz Input to Output: 13 ° at 10kHz
Power Consumption	39.1W
Net Weight	5.1kg
Dimensions	(W)483mm x (H)89mm x (D)315mm

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