THERMIONIC CULTURE

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 Snow Petrel is designed as a two channel microphone amplifier for all types of microphones, especially certain ribbons, eg. Coles 4038, which have a lower output level than others but offer superb quality. Their full potential can be realised with this high gain unit as it has a natural valve sound with very low background noise and distortion. The passive “AIR” control is provided to lift the very high frequencies as many ribbons suffer a little loss there and this compensates for that perfectly.

It will give excellent results with any microphone and we have included +48V phantom power and -20dB pad for use with FET and self-amplifying microphones.

There are 3 valves in each channel of the Snow Petrel, the first 2 acting as the main amplifier preceded by a specially designed Sowter input transformer, then after the passive HPF and Air controls comes the Tung Sol (6189) output valve and Sowter 1:1 transformer. This combination is capable of a clean output in excess of +25dBu. Of course many users may want valve and transformer colouration to give a bit more “edge” to the sound so we have provided 2 attenuators, O/P trim comes after the 1st 2 valves and can be used to provide a little 2nd harmonic colouration, then the “ATTEN” is at the actual output so if the unit is driven hard it will add transformer as well as valve distortion.

2 Installation

Ensure that the voltage selector at the rear is correctly set for your mains voltage!

The Snow Petrel is designed primarily for vertical rack mounting and there is no need to leave gaps above or below it, as long as there is reasonable ventilation to the rack. However, if it is mounted with the face plate horizontal you must leave a 1U gap above it for heat to escape.

Standard XLR cables are fine for ins and outs. We do not recommend jack type patch bays for the inputs.

WARNING

DO NOT APPLY LINE LEVEL SIGNALS TO SNOW PETREL INPUTS.

THIS WILL RESULT IN DAMAGE TO TRANSFORMER & POSSIBLY OTHER COMPONENTS.

MAXIMUM LEVEL IN -15dBm

3 Controls

3.1 Pad

A 20dB attenuator before the input transformer.

3.2 Input Z

Switches the input transformer from 850Ω to 2400Ω to suit different microphones. If the Pad is used, switch to Hi.

3.3 Gain

Changes the gain of the main amplifier. Figures on front panel are correct if Input Z is set to Lo, a low impedance source is used, and the output feeds a 10kΩ load with no attenuation. If input Z is set to Hi, there will be a reduction in gain of around 6dB, depending on the microphone impedance.

3.4 HPF

This is a 6dB/octave roll-off designed to reduce proximity effect, being 3dB down at selected frequencies.

3.5 Air

When set to 10 will give a lift of 5dB at 10kHz, peaking at 22kHz.

3.6 O/P Trim

Reduces the output of the input stages by up to10dB. Note: the figures on the front panel do not represent dB reduction except 0 and 10.

3.7 Atten

This switch follows the output transformer and will attenuate the signal by 7 or 15dB allowing distortion in the output stage and transformer. Figures are correct with a 10kohm load.

3.8 Phantom Power

The 48V enabling switch needs to be pulled out to switch on. Preventing accidental application, to protect ribbon microphones, etc.

4 Operational Hints

The Lo impedance setting is in fact high compared with some other mic amps and is good for most microphones, though many mics may sound better with the Hi Z setting, which will give an extended HF response with low impedance microphones. Similarly, when the Pad switch is used, the HF response is extended at Hi Z, whilst slightly rolled off at Lo Z, so giving a “warmer” sound. Many options.

The Air control will compensate perfectly for the slight roll-off of hi top in most ribbons, minimising phase shift and giving extra clarity to these microphones. Legendary engineer Geoff Emerick of Abbey Road boosted a pair of 4038s by +6 dB @ 12 kHz on The Beatles drum overheads, and this can be replicated and bettered with the Air control.

As for legendary engineers, Glyn Johns is on record as saying that part of his drum mic-ing technique was to overdrive the mixing console channel. The Snow Petrel will give you this effect by using 2 separate attenuators, one before and one after the Output stage. The sound can certainly be obtained and made even more dramatic using Coles 4038s, driving the input hard with the first attenuator set low and the final output attenuator at -7 or -15dB settings.

This technique can of course be used for many instruments, basses, guitars, even strings, BUT don’t forget the natural clear open sound of The Snow Petrel with no output attenuation!

5 Servicing & Maintenance

If servicing is required within the warranty period, which is 2 years from date of purchase (except valves which are strictly 12 months) then the unit must be returned to the supplying dealer using the original packaging.

5.1 Valves

The only exception to this rule is in the event of a possible valve problem. If the user feels confident changing valves, then he/she can take off the lid by removing the fixing screws. Assuming that the fault is with 1 channel only, valves can be swapped in turn to isolate the fault. Try the output valves first, then work back to the inputs (smaller ones in cans). Switch OFF when changing valves. WARNING: Very high voltages lurk in the circuit boards and components. DO NOT TOUCH!

Valves fitted are usually as follows, close equivalents are in brackets:

Input:	RTC 5654 (Mullard M8100)
Stage 2:	Svetlana EF 86 (JJ EF 806)
Output:	Tung-Sol or similar 6189 (12AU7A)

If you require spares, please contact your dealer, or Thermionic Culture Ltd.

Before we supply spare valves we test and select them, then "soak" them at high power for 48+ hours, then check them again in a working unit to ensure they are still up to spec before sending to customers.

5.2 Operating Voltages/Fuse

The Snow Petrel can be set to operate from either 230V or 115V 50/60Hz. The approximate 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: -

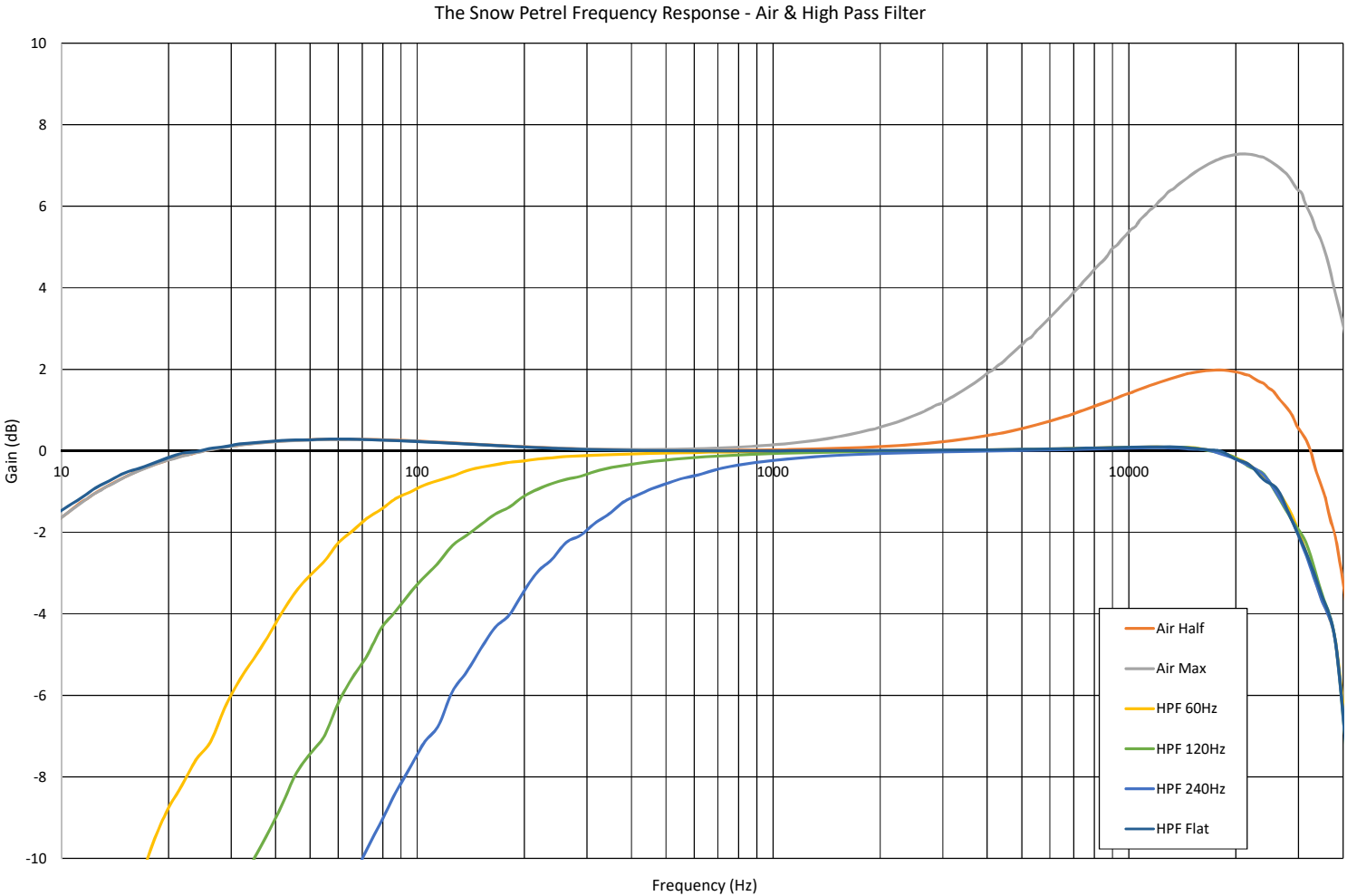
Operating Voltage	Fuse Rating
115V	T630mA
230V	T315mA

6 Specification

Input Impedance	
Lo	850Ω
Hi	2k2
Pad	2k2
Output Impedance	
@ 0 Atten	250Ω
@ -7dB	700 Ω
@ -15dB	270 Ω
Maximum Output Level (MOL, 1% dist.)	
@ most gain settings	>+26dB
Frequency Response (+0.5/-1dB, Air at 0)	
@ most gain settings	13Hz to 22kHz
@ max. gain (75dB)	35Hz to 17kHz
Distortion (THD @ 1kHz)	
@ 40dB Gain	0.012%
@ 54dB Gain	0.025%
@ 68dB Gain	0.1%
@ Max Gain	0.2%
Crosstalk	
@ most settings and frequencies	Better than -60dB
Signal to Noise	
@ most settings	Better than 100dB

NB: The above figures are typical and may vary a little with individual units. Each unit comes with its own test report. Specifications are subject to change without notice. For details of how figures are measured, please contact technical@thermionicculture.com

I/P & O/P Connectors	4 x XLR, wired balanced. Pin 1 GND
Pilot Lamp Bulb	12V 3W
Power Consumption	30W
NET Weight	6kg


The Snow Petrel Frequency Response - Air & High Pass Filter
10
8
6
4
2
0
-2
-4
-6
-8
-10
Gain (dB)
10
100
1000
10000
Frequency (Hz)
Air Half
Air Max
HPF 60Hz
HPF 120Hz
HPF 240Hz
HPF Flat

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