

THERMIONIC

CULTURE

# THE PULLET

*mini passive equaliser*

OPERATING MANUAL

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## 1 Introduction

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The Pullet is a two channel passive equaliser which has no active electronic components included in its design. This means that when using the Pullet it is necessary to use a pre-amp in order to provide the make up gain required. The Pullet has been designed with the Earlybird pre-amp in mind but although it is optimised for use with the Earlybird, care has been taken to ensure that the Pullet will give excellent results when used with any suitable pre-amp available. In this respect the Pullet becomes very versatile because the Eq facilities provided can be combined with the sound quality of the chosen pre-amp.

The Pullet will give up to 21 dB of boost or 17dB of cut simultaneously to a choice of 11 boost frequencies, with variable Q, and 11 cut frequencies. We have also included an “air” control to give access to high frequencies.

As usual Thermionic Culture has taken care to ensure that the distortion and noise level introduced by the Pullet are kept as low as possible.

## **2 Connecting the Pullet**

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The Pullet is designed to work at line level (+4dBm) input. Standard 3pin XLR sockets are provided (pin 2 hot). The output is 38 dB lower and has an output impedance of 1.3k $\Omega$  (max).

The Pullet output should not be routed through a patch bay, short balanced leads are recommended for the Pullet output to pre-amp input connection. Suitable leads are available from Thermionic Culture for connecting to balanced inputs.

### 3 The Pre-amp

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The pre-amp that is used will need to give approximately 40dB of gain to the signal after it has been passed through the Pullet and ideally the pre-amp will have an input impedance of 1200Ω. This will allow the signal to be kept at unity gain when the Pullet is either in bypass or when there is no equalisation being used. The Pullet should always be placed before the pre-amp in the signal path ie. Signal goes into the Pullet then out of the Pullet into the pre-amp.

There are situations in which the 40dB of gain can be reduced. For example, a high level signal which is having 21dB of mid-boost applied to it. In these situations the amount of gain can be altered according to the user's taste.

The advantages of using the Earlybird as a pre-amp with the Pullet are that, apart from extremely low noise and high undistorted output levels, it provides the optimum input impedance as well as having active Eq built in. This gives control over bass frequencies and added flexibility over mid range and high frequencies.

It is very important to note that any pre-amp with a 48V supply for condenser microphones should have the 48V supply switched off. We have taken care to upgrade the necessary components to ensure that no damage is done to the Pullet if 48V is accidentally left on for a short time.

## 4 Controls

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### 4.1 Mid Lift

The amount of mid lift is continuously variable between 0 and 21 dB. The actual amount of gain is dependant on the Q setting, so at a narrow Q, 21dB can be added at the centre frequency but at a wide Q, this will drop to around 16dB.

#### f (kHz)

This control will select the centre frequency of the mid boost circuit.

#### Q

This control sets the width of the frequency band being boosted. 'H'i is a very narrow band of frequencies either side of the centre frequency, 'Lo' is a wide band of frequencies.

### 4.2 Mid Cut)

The amount of mid cut is continuously variable between 0 and -17 dB.

#### f(kHz)

This control will select the centre frequency of the mid cut circuit.

### 4.3 High Top (kHz)

This control allows the high frequency content of the signal to be boosted or cut with a shelving filter.

'Cut' brings a lo pass filter in which reaches -6 dB at either 15, 11 or 6 kHz.

'Lift' brings a shelving Eq in, which reaches its peak of 6 dB at either 15,12 or 10 kHz.

'∞' means that in this position there is no high top Eq being used.

#### **4.4 Bypass**

This control allows the Eq circuit to be completely bypassed, although the input transformer is still left in circuit to help with balancing issues.

There are two pre-set pots situated inside the Pullet that can be adjusted to alter the level of the bypass signal. These are factory set so that when used with the Earlybird, or fed from an impedance of much more than  $600\Omega$ , the Pullet gives unity gain when bypassed. However when used with a pre-amp that has a different input impedance from the Earlybird the pre-sets may need to be adjusted to give a unity gain bypass signal. This is simply done by putting a signal through the Pullet and adjusting the pre-sets until the bypass signal measures at the same level as the level when not in bypass and no boost or cut is used. The pre-sets are found in the centre of the pullet on a tag strip, there is one for each channel.

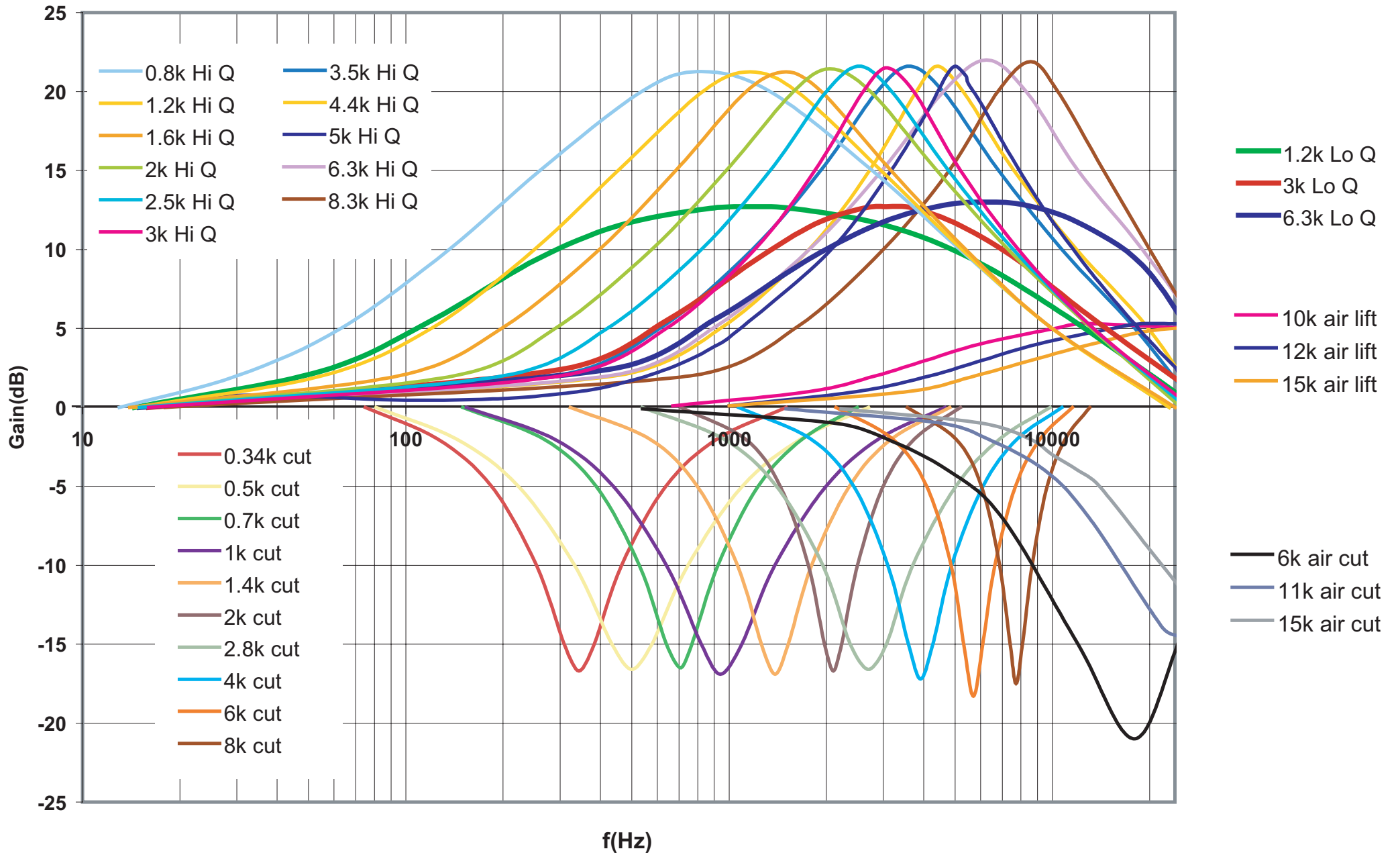
## 5 Specifications

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Output impedance	1.3k $\Omega$	(with Pullet eq. in and set flat, ie. no cut or boost)
Input impedance	15k $\Omega$	
Maximum Mid Lift	21dB	
Maximum Mid Cut	-17dB	
Max High Top Lift	6dB	
Max High Top Cut	-9dB	
Frequency response with no Eq $\pm 0.3$ dB	17Hz to 50kHz	
Input and Output connectors	4x3 pin XLRs, wired balanced, pin 2 hot	



# Pullet frequency response curves



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**Thermionic Culture Ltd., Harlow, Essex, UK**  
**Tel: +44 (0)1279 414770 Fax: +44 (0)1279 412233**

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