THERMIONIC CULTURE

The Earlybird 4

valve microphone pre-amplifier

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.

Please ensure that adequate ventilation is provided and that the ventilation slots are not obstructed. When rack mounting this equipment, a fan may be required to provide sufficient airflow.

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1 Introduction

The Earlybird 4 is a four-channel mic-amp employing a balanced push-pull all valve circuit, which as far as we know, is unique in this application. The use of this type of circuit gives seriously low noise, plenty of headroom and means a very natural interpretation of whatever sound the microphone is picking up, whether the mic is valve, dynamic or FET.

The Earlybird 4 mic amps are improved versions of the Earlybird 1 and 2 series. They have improved Sowter input and output transformers and traditional point-to-point hand wiring by experts, eliminating the (slight) performance degradation occurring when using circuit boards. The phase shift is therefore very small and the distortion so low as to be almost unmeasurable, especially in the mid range at the most used gain settings. There is a natural warmth to the sound but there is no compromising the frequency response, and of course no solid state in the audio chain so no "hardening" of the sound.

The Earlybird 4 should be considered as probably the best microphone amplifier ever made.

"It's like connecting a wire with gain to a microphone".

2 Controls

2.1 Gain

The gain is varied in steps of 5dB from 40dB to 60dB, as stated on the front panel, though actual max gain is 2 – 4 dB more with 300 ohm input .impedance and a low impedance source.

2.2 Bass filter

The response is flat when this switch is fully anti-clockwise. It acts at 50 & 100Hz. The effect becomes more drastic as the frequency drops.

2.3 Pad

Cuts down the input level by 20dB. Use with Z set to 1200Ω for cleanest results.

2.4 Z

Switches input impedance between 300Ω and 1200 Ω. This is for matching microphones (see 4).

2.5 +48V

Applies phantom power to Mic In sockets. Switch on only when an FET mic is used. NEVER use if inputs may be unbalanced or with ribbon microphones..

2.6 Phase reverse

These switches will invert the phase of the signal.in the corresponding channel, when in.

2.7 Output trim

These controls are reverse linear attenuators, operating after the electronics. The full output of the

electronics is available when the controls are set to maximum. These controls are designed to be both ‘fine’ level controls and to reduce the output to feed -10dBV systems.

3 Metering

The meters are of a VU type, but they have a compressed scale above 0VU. They measure the actual output of the electronics, less 2dB, not necessarily the actual output as they precede the Output Trim controls. They will only measure the actual output when the Output Trim is set to the 'M' position (with a load impedance of 10kΩ).

NOTE:- 0 VU is set to the original British standard of +8 dBm rather than the usual US standard or +4 dBm.

4 Operational Suggestions

For most microphones 300Ω will give best results. 1200Ω is recommended by Neumann for FET mics (though we like the sound of the U67 on 300Ω). 1200Ω is good for SM58s. For high level inputs, eg. kick drum, use the Pad to reduce level. With Pad in the input, Z will be 2kΩ.

Keep Output Level controls near maximum for cleanest results, low and increase Gain control if a bit of distortion is what you want. The electronics have plenty of headroom for most purposes, so don't worry too much if the needle of the meter hits the end stop.

High gain settings make the sound more 'gritty' than lower ones, which are very smooth.

5 Specification

Included are the figures for noise, distortion and EQ. They are all measured with the Earlybird set up for 44dB mic gain / 0 dB line gain and a 10kΩ load.

Input impedance With Pad in:	300Ω or 1200Ω, switchable, balanced 2kΩ
Output impedance (a) Output level control at max (b) Output level control at min	 55Ω balanced 500Ω balanced
Maximum gain	62-64dB
Maximum output level (MOL)	+34dBm
Distortion (THD) @ 1kHz/100Hz, unweighted, at 40dB gain	0.0035% / 0.008%
Frequency response ±0.5dB at 40dB gain setting	>10Hz to<35kHz
Gain settings (dB) Mic	 40, 45, 50, 55 & 60dB
High pass filter (Hz)	50 & 100Hz
Output trim	-17dB to +2dB reverse linear attenuator
Input and output connectors	4 x 3 pin XLRs, wired balanced
Valve complement	4x12AX7LPS/ECC803/7025 4x6189/ECC82
Pilot light bulb	12V/3W
Fuses	115V: T1 A 230V: T500mA

Typical frequency response

	40dB	**45dB**	**50dB**	**55dB**	**60dB**
LF (Hz)	3	3	4	5	9
HF (kHz)	58	50	36	23	15

Less than 1dB variation between the 'LF' and 'HF' frequencies shown above.

Typical values for Distortion, Noise and Phase shift

	40dB	50dB	60dB
THD (%) @ 100Hz * to 10kHz	0.003	0.015	0.03
Noise (dB ref. MOL)	-117	-113	-104
Phase shift (°) @			
100Hz	0 (0%)	0 (0%)	3 (0.8%)
1kHz	1 (0.3%)	1.4	2 (0.6%)
10kHz	14 (3.9%)	(0.4%)	31 (8.6%
20kHz	28 (7.8%)	17 (4.7)	62 (17%)
		35 (10%)	

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