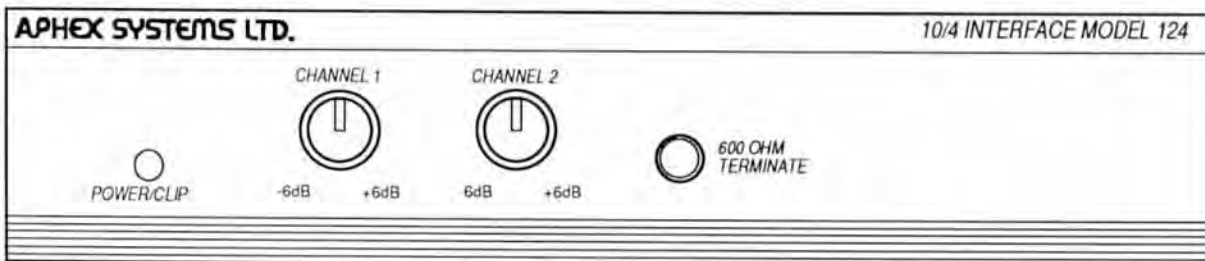


# **-10/+4 AUDIO INTERFACE**

## **MODEL 124**

(covers Model 124A and 124B)



## **OWNER'S GUIDE**

**APHEX<sup>®</sup>**  
MAKING YOUR WORLD SOUND BETTER

## 1.0 INTRODUCTION

The Aphex 10/4 Audio Level Interface, Model 124, is a dual, bi-directional buffer amplifier designed to provide level and impedance matching between consumer hi-fi equipment and professional, as well as industrial, audio systems. Many consumer electronic devices can be very useful in the professional environment, but interconnection is difficult due to differences in operating levels, impedances, and unbalanced line operation. The Model 124 solves these problems through its simple, high-quality interface design without the added noise, distortion and instability that can result from an improper hookup. A block diagram, shown in Fig. 1, illustrates the signal path used in the design of the Model 124.

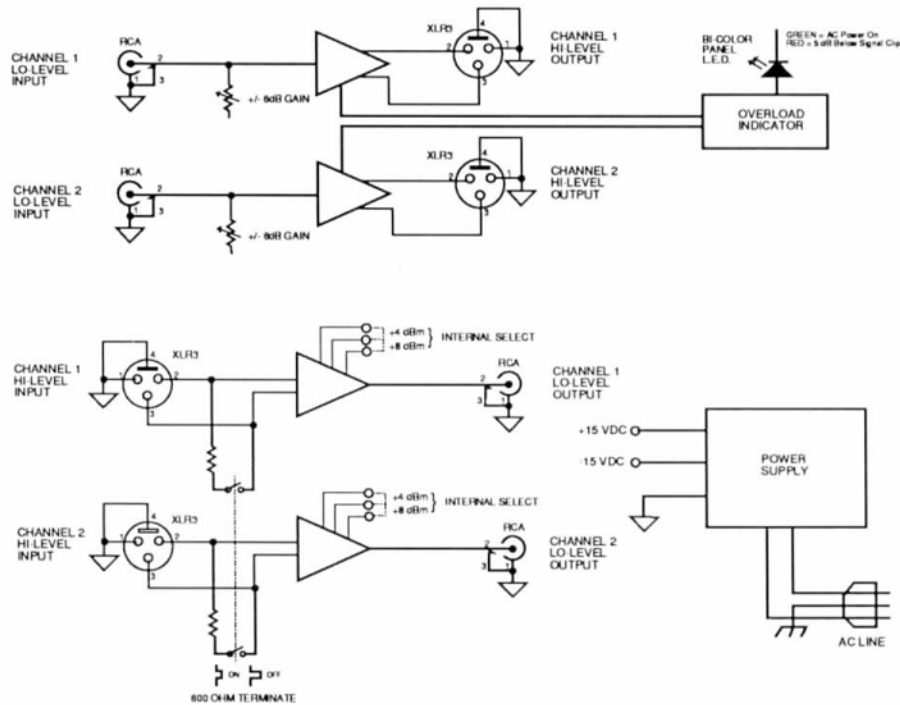


Fig. 1. Block Diagram of Aphex -10/+4 Audio Level Interface, Model 124.

Strict attention to details, such as exceptionally wide bandwidth and dynamic range, flawless square wave response, good common-mode rejection and low distortion, make the Model 124 ideal for interfacing with the new digital disc and tape machines in the studio. Other consumer devices that may be used in the professional environment are video cassette recorders, audio cassette recorders, graphic equalizers, reverb and ambience devices, noise reduction systems, electronic crossovers and power amplifiers.

## 2.0 FUNCTIONAL DESCRIPTION

### 2.1 IHF (Unbalanced) Inputs

The -10 INPUTS, 1 and 2, are designed for a standard IHF Input level of -10 dBV, unbalanced, with headroom of +15 dBV (Ref: 1.0 VAC). These low-level inputs are RF filtered for minimal interference pickup with an impedance of 18 kOhms for minimal loading of the source. Standard RCA type phono connectors are used, as shown in Fig. 2

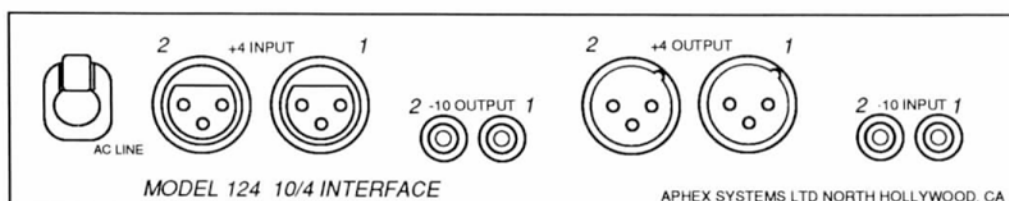


Fig. 2. Rear Panel Layout of Aphex -10/+4 Audio Level Interface, Model 124.

## 2.2 Balanced Outputs

The corresponding +4 OUTPUTS, 1 and 2, are high-level, balanced outputs at a nominal level of +4 dBm. Recessed front panel adjustments, labelled CHANNEL 1 and CHANNEL 2, provide level control of each output over a range of  $\pm 6$  dB, as shown in Fig. 3. These outputs are transformerless for improved transient response with a peak output level of +25 dBm. Because of the servo-balance circuit design, the outputs can be used unbalanced (single-ended) at any time by simply grounding the unused pin, much like a transformer. The circuitry assures there is no 6 dB loss that typically results when other types of balanced outputs are grounded at one pin. However, peak headroom is reduced to +21 dBm when used in this manner. The low output impedance of 65 Ohms perfectly drives 600 Ohm loads with minimal hum and noise pickup and will drive long lines effortlessly. XLR-type connectors are used, with pin 2 in phase with the RCA jack.

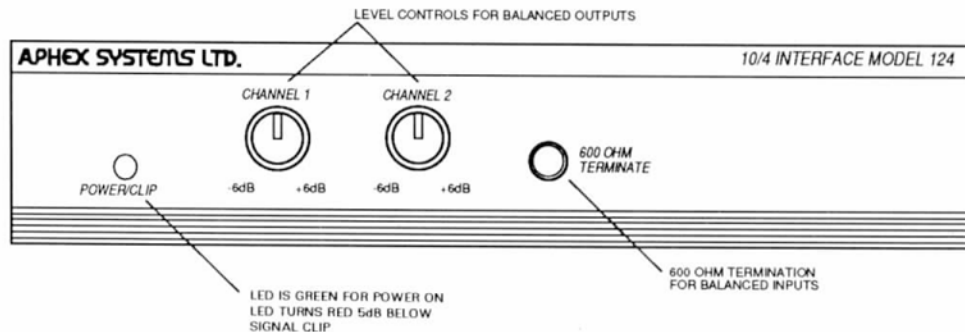


Fig. 3. Front Panel Layout of Aphex -10/+4 Audio Level Interface, Model 124.

## 2.3 Balanced Inputs

The +4 INPUTS, 1 and 2, are high level, balanced differential inputs which are RF filtered and exhibit high common-mode rejection. The input impedance of 100 kOhms allows bridging over 600 Ohm balanced or unbalanced lines with negligible loading effects. When required, the 600 OHM TERMINATE switch (front panel) can be depressed to place a 600 Ohm load across each individual input. Servo-balancing prevents high common-mode voltages from interfering with peak headroom. NOTE: Overload is greater than +30 dBm!

XLR-type connectors are used, with Pin 2 in phase with the RCA jack. For phase integrity, use the same polarity standard for inputs and outputs. The input operating level is factory set at +4 dBm, but may be easily changed to +8 dBm via two jumpers on the printed circuit board.

## 2.4 IHF (Unbalanced) Outputs

The -10 OUTPUTS, 1 and 2, are low level outputs at a nominal level of -10 dBV (Ref: 1.0 VAC), with a peak level of +18 dBV (Ref: 1.0 VAC). Because of the low 150 Ohm impedance, audio signals will not be affected by cable capacitance or loading effects when feeding two or more inputs.

## 3.0 APPLICATIONS

### 3.1 Two-Way Interface Amplifier

The most obvious application of the Aphex Audio Level Interface, Model 124, is to level match consumer IHF equipment to professional audio gear. An unbalanced device (i.e. cassette deck, equalizer or CD player) is connected to the IHF inputs and outputs. The balanced inputs and outputs are connected to the studio console, patchbay or other line level equipment. The different gains and impedances are matched for optimum performance. The Model 124 is compact and inexpensive enough to travel with a dedicated piece of equipment, and may be fastened directly to it for convenience.

### 3.2 Line Driver

The servo-balanced input and output stages of the Model 124 can be used as a very effective line driver for driving long lines. The output stage provides a short circuit proof, low impedance source that is relatively unaffected by the impedance of the cable. If needed, adjust the gain controls (front panel) to boost signal level. In this application either the unbalanced IHF or balanced high-level inputs may be used. For the latter, simply jumper the IHF inputs and outputs with a short phono cord.

### 3.3 Signal Splitter

The Model 124 may be used to provide two high quality balanced outputs from a single unbalanced mono signal. Simply use a "Y" connector to split the incoming signal to each of the IHF unbalanced inputs.

### 3.4 IHF Distribution Amp

The very low output impedance of the Model 124 enables it to drive a considerable number of unbalanced devices such as cassette decks, VTR's, power amps etc. By patching the various inputs and outputs, you can select a balanced or unbalanced input.

## 4.0 INSTALLATION

### 4.1 Unpacking and Mounting

Your Model 124 was carefully packed at the factory, and the container was designed to protect it. Nevertheless, we recommend careful inspection of the box to determine if any damage occurred in transit. Save the box, so the Model 124 can be repacked in case it should ever need repair. Due to its compact size, the Model 124 can be placed almost anywhere. Rack mounting one or two Model 124 units (or other Series 120 unit) is easily accomplished with the optional rack mounting kit, Aphex Part No. 44-008. Complete instructions are included with the kit.

### 4.2 Input Level Set

The Model 124 comes set from the factory to operate at +4 dBm at the balanced inputs. If +8 dBm operation is desired, remove the top cover and locate the two +4/+8 jumpers on the printed circuit board (between the power transformer and female XLR connectors). Note that the center post is jumpered to the +4 post. Remove the jumpers and reposition each one so that the center post is jumpered to the +8 post.

### 4.3 AC Line Voltage and Fuse

The AC line operating voltage on the Model 124 is NOT user-selectable. A desired voltage (100, 120, 220 or 240 VAC) must be specified at time of purchase. Due to the low current draw, the Model 124 uses a thermal fuse built into the power transformer. This should only fail due to a catastrophic problem in the PCB or transformer itself. If failure occurs, the unit must be returned to Aphex or an authorized distributor for repair.

## 5.0 SPECIFICATIONS AND WARRANTY

|                           |  |
|---------------------------|--|
| IHF Inputs                | RCA jacks  |
| IHF Outputs               | RCA jacks  |
| Balanced Inputs           | XLR type   |
| Balanced Outputs          | XLR type   |
| IHF Input Level           | 10 dBV, peak +15 dBV (Ref: 1.0 VAC)                      |
| IHF Input Impedance       | 18 kOhms   |
| IHF Output Level          | 10 dBV, peak +18 dBV (Ref: 1.0 VAC)                      |
| IHF Output Impedance      | 150 ohms   |
| Balanced Input Level      | +4 dBm (+8 dBm via internal jumpers), peak +30 dBm       |
| Balanced Input Impedance  | 100 kOhms (front panel switchable 600 ohm load)          |
| Balanced Output Level     | +4 dBm (front panel adjustable $\pm 6$ dB, peak +25 dBm) |
| Balanced Output Impedance | 65 Ohms  |
| THD                       | 0.005 %  |
| Dynamic Range             | 99 dB  |
| Bandwidth                 | 5 Hz to 100 kHz, +0, -0.5 dB                             |
| Common Mode Rejection     | >45 dB   |
| Power                     | 100, 120, 220 or 240 VAC                                 |
| Fuse                      | Thermal  |
| Dimensions                | 1.75" H x 8.25" W x 7.25" D                              |
| Weight                    | 3.5 lbs  |

Aphex Systems is constantly striving to maintain the highest professional standards. As a result of these efforts, modifications may be made from time to time to existing products without prior notice. Specifications and appearance may differ from those listed or shown. Aphex Systems warrants parts and labor for the Audio Level Interface, Model 124, for a period of one year from the date of purchase. If it becomes necessary to return a unit for repair, repack it in the original carton and packing material, if possible. For warranty repair, enclose a copy of proof of purchase and send package to:

Aphex, 3500 N. San Fernando Blvd., Burbank CA 91505  
818-767-2929