

UTAH STUDIO 4 FOUR-CHANNEL ADAPTER (A Hirsch-Houck Lab Report)

The Utah Electronics "Studio 4" Ambience Regenerator is a passive device designed for extracting "ambience" or reverberant sound from 2-channel stereo recordings and broadcasts, reproducing four channels of sound with an additional pair of speaker systems located at the rear of the listening room. In some ways, the Studio 4 resembles other matrix devices for "decoding" specially processed 4-channel material. However, it is not offered as a 4-channel decoder or synthesizer. Rather, it is advertised as a means for enhancing listening pleasure by reproducing some of the sounds not normally heard through a 2-channel stereo system.

The simplified schematic of the Studio 4 shows how this is accomplished. The Ambience Regenerator is connected to the amplifier's left and right speaker outputs, and cables go from it to four speaker systems, two of which are in the traditional front left and right locations and one each in the rear left and rear right. The only special requirement for the amplifier is that its speaker output grounds be internally tied together, which is no real problem since most amplifiers are so constructed.

The common, or ground, lead from the two front speakers returns to the amplifier's common connection through an 8-ohm L-pad, shown in the schematic diagram as



a simple potentiometer. This potentiometer, identified on the front panel of the Studio 4 as RIGHT REAR, controls the level of a *sum* signal ($L + R$) used to drive the right rear speaker. The left rear speaker, with its level controlled by the LEFT REAR L-pad, is connected across two "hot" amplifier outputs and, thus, receives a *difference* signal ($L - R$).

Off hand, it is not easy to imagine the spatial distribution produced by the Studio 4. The left rear difference signal can be expected to supply ambience sounds, as it does with other matrix systems (including the original system proposed by Dynaco some time ago). But the purpose of the sum signal in the right rear is not quite as clearly understood.

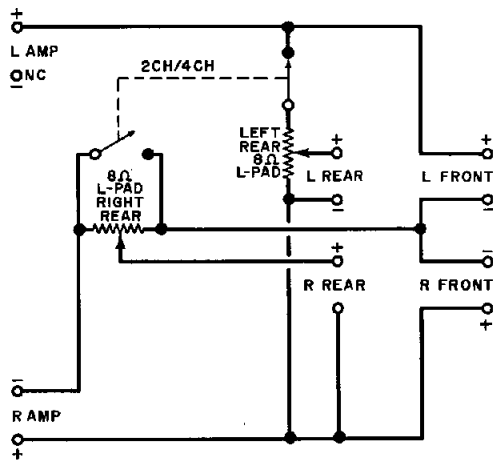
Listening Tests. It was a pleasant surprise

to find that the Utah Studio 4 produced a very listenable and pleasant pseudo-4-channel effect with most stereo program material. At most points in the listening room, one senses a distinctly different sound character from each of the four corners of the room. As an Ambience Regenerator, it must be considered a success, quite

comparable in its subjective qualities to the other matrix decoders we have used on ordinary 2-channel stereo programs.

One could hardly expect the Studio 4 to decode records cut for a specific matrix parameter (such as those used by Dyna, Electro-Voice, Sansui and the like) with any faithfulness to the original intent. We played a number of these records through the Studio 4, and although there was at times a vague sense of directionality, it was random and difficult to define. Certainly, it was not equivalent to the results one obtains with the appropriate decoder. However, the records sounded fine, exhibiting a strong sense of spaciousness, even if directionality was lacking.

One mildly annoying side effect of the Studio 4 was the difference in noise level from the two rear speakers. A large percentage of hiss, hum, rumble, and other unwanted sounds on records and on FM broadcasts seems to be out-of-phase information. It appears to emit from the left rear speaker, often at audible levels. On the other hand, little or no noise comes from the right rear speaker system. Fortunately, the rear speaker systems are normally operated at rather low levels,



Simplified diagram of Utah Ambience Regenerator shows speaker hookup.

preventing this effect from becoming a serious problem.

The Studio 4, besides its rear speaker level controls, has two rocker switches on its front panel. One switch converts the adapter to conventional straight-through stereo operation, a very effective way to convince the user that the Studio 4 is really doing its job. As Utah states, one is unlikely to use this switch much after the initial period of use.

The second switch reconnects the speakers to produce a sound null when the amplifier output levels are perfectly balanced. This output level balancing is a necessity for proper operation of the system (a similar function is part of the Dvnaco "Quadaptor" and other units).

Utah's Studio 4 Ambience Regenerator is housed in a 9 $\frac{1}{4}$ " x 4 $\frac{5}{8}$ " x 4" attractive walnut-finished wood cabinet. Its retail price is listed at \$39.95.

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