

# SYNTHESIZING FOUR-CHANNEL

## Dyna-Quad; an improved version

by H. Burrell Hadden

Some months ago I reported on some experiments with the matrixing method suggested by David Hafler, of Dynaco, whereby the four signals for a quadraphonic reproducing system could be obtained using four loudspeakers, but without the necessity of four separate amplifiers. The idea was to derive the rear channels from the difference information available in the normal two channel stereo setup. Dynaco have produced a refined version of this system, and their "Quadaptor" is now available. This device is designed to be connected between the twin outputs of a stereophonic amplifier pair and four loudspeakers, the normal two in front, and two more, placed in the rear of the listening area. Two controls are provided, a three position switch, and a volume control for the two rear speakers. The switch positions give (1) normal two channel stereo, with no change in separation between the channels, and hence no change in 'picture' width (2) four channel quad, and a (3) a spring loaded check position used in setting up the four channel system.

Connections to the unit are simple; three sets of four terminals, one for the two outputs from the amplifier, and one for the front, one for the rear speakers. The circuit is shown below. Almost any loudspeakers can be used, but the front and rear units must be matched pairs. Best results are, of course, achieved when all four speakers are matched. Some care must be taken over the loudspeaker impedances if the loading on the amplifiers is not to be

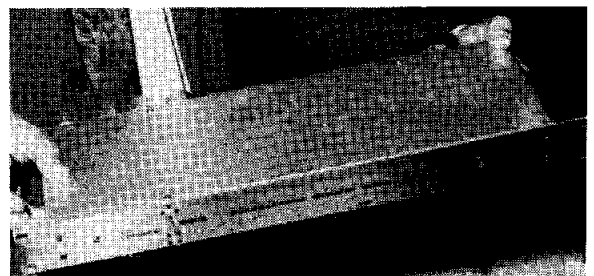
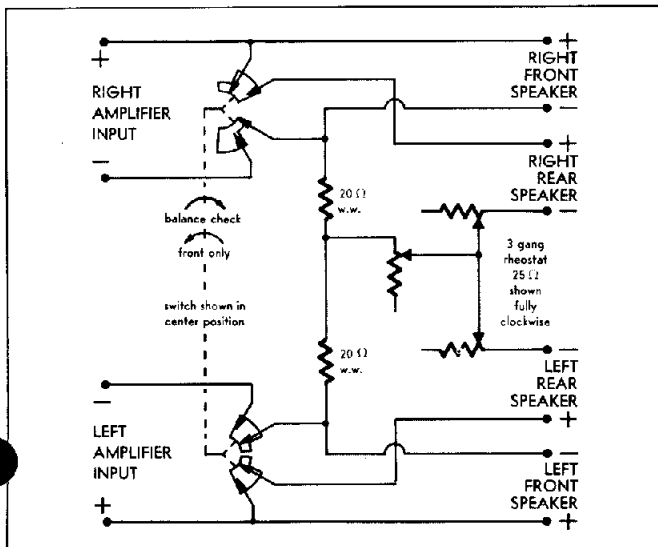
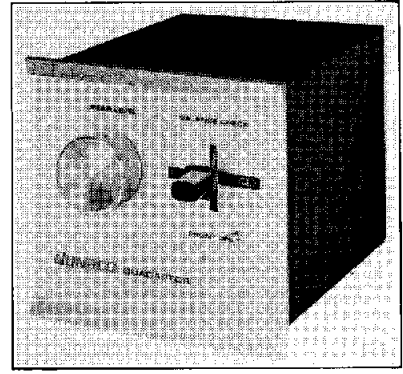
upset; the two rear speakers *must* be 8 ohm units with the Quadaptor as shipped, although Dynaco will supply details on request for modifications to the circuitry for other impedances. Furthermore, the rear units must be so designed that their impedance does not change too much with frequency, or again, the amplifier loading will be incorrect, with undesirable results with some amplifiers.

After the unit is connected, it is necessary to balance the system for proper operation. All that is necessary is to feed the amplifiers with a monophonic signal, switch the adaptor to "Balance Check", and adjust the amplifier balance and tone controls for zero or minimum output. The switch is then returned to normal and the system is ready for operation.

It was with considerable interest that I set up this system, since it is the first that I have tried that does not introduce any crosstalk between the two front channels; indeed when the switch is in the "Front only" position a two channel stereo source is reproduced absolutely normally. This is in contrast to the two other matrixing systems presently available; they both introduce cross coupling between the front channels, degrading the separation, and consequently narrowing the picture width. Dynaco say that the front to rear separation with their system is 10dB, which, while it is nothing like the 30 or 40 dB obtainable with a discrete system, is sufficient to provide a useful effect. (A discrete system is where each channel is completely independent, as in a four channel tape—Ed.)

At the moment there is very little program material available recorded using the Dynaco system, although encoding equipment is now available for this system from Gately Electronics. The only Dyna-Quad disc is the early one that I reported on some time ago. The results from this disc were good, and I also was able to play some disc

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Gately Electronics' encoder for making recordings in the Dyna four-channel matrix.

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produced and now available in the U.S. using the Electro-Voice system of encoding. These gave equally good results, but very much superior results were obtained from the experimental disc produced with the Sansui matrixing encoder. This disc seems to have much better rear definition than any others I have heard so far in the four channel matrixing class. Interestingly, possibly the best four channel effect I have heard yet from any disc is that obtained with the Dynaquad unit from the best selling *switched on Bach*. The sound in this, spectacular in two channel stereo, is incredibly well reproduced. The various lines of Bach's polyphony come from very definite positions all over the room, and the enhancement of the antiphonal effects of the original score is something

I am sure would have met with great approval from the Great Composer himself. I look forward to hearing the first discs specially encoded with the Dynaco system.

So there it is, the most economical of the matrixing decoders yet available the more so because it does not need expenditure on a second pair of amplifiers. It sells for \$29.95 in kit form, and \$44.50 factory wired. Both Dynaco and EV stated publicly at the recent Consumer Electronics Show in Chicago that both their decoders will work with any matrixing system so far proposed except that suggested by CBS. It must be stated, however, that the quadaptor does not, and cannot, give as good quadrasonic reproduction as a discrete system; but as an interim system until a satisfactory discrete method becomes available at an economic price it will serve very well. ❧