



DESCRIPTION

Heralding a new era in sound reproduction, the Electro-Voice EVX-4 decoder provides four-channel playback from two-channel media. Electro-Voice professional encoders in recording studios and FM stereo stations reduce four discrete channels of information to a compatible two-channel form called "Electro-Voice STEREO-4™." The two encoded channels can be cut on a record, recorded on tape, or broadcast by conventional FM stereo means. The EVX-4 decoder in your home system then separates the two encoded channels into the four signals which are fed to the four separate amplifier inputs, i.e.; left front, right front, left rear, and right rear. This processing is accomplished with negligible degradation of those factors relating to audio quality, such as frequency response, signal to noise ratio and distortion. The conversion from two channels to four is made possible through use of an advanced electronic network known as a matrix circuit (E-V patents pending).

In addition to the recovering of four channels from a STEREO-4 encoded program, the EVX-4 decoder creates a remarkable enhancement of conventional two-channel program material. While this enhancement is not "real" four-channel, the effect ranges from pleasing to astounding, depending upon the information contained in the stereo signal. If four-channel playback or enhancement is not desired, the decoder is easily bypassed for conventional two-channel system operation.

A complete set of tape jacks is provided on the EVX-4, in addition to the 2-channel input and 4-channel output jacks, thus maintaining the original versatility of your system. A front panel switch selects decoding of the input signals, decoding of a tape recorder output, or playing the tape recorder straight through to the front amplifier.

Overall system volume is varied by the decoder's Master Gain Control. Once proper front-to-rear and left-to-right balance is established, only the Master Gain Control need be adjusted to raise or lower the complete system's loudness.

E-V STEREO-4™ SYSTEM PERMITS:

- Playback of 4-channel phonograph records
- Reception of 4-channel FM broadcasts
- Dramatic enhancement of ordinary 2-channel stereo records, tapes and broadcasts

SPECIFICATIONS

Gain (control maximum):	Unity
Maximum Input Signal:	2.5 V RMS
Frequency Response:	10-100,000 Hz; +0, -0.5 dB
Signal to Noise Ratio:	(referred to .25 V input): Greater than 70 dB, wideband
Total Harmonic Distortion,	
(at .25 V input):	Less than .15%
Intermodulation Distortion,	
(at .25 V input):	Less than .25%
Input Impedance:	50,000 ohms minimum
Output Impedance:	3,000 ohms*
Controls:	Master Gain/Power On-Off, Function Switch
Dimensions:	2½" h., 5-3/16" w., 7" d. overall
Power Requirements:	110-120 V, 50 - 60 Hz; 3 watts

*Impedance of input connected to decoder output should exceed 25,000 ohms.

SYSTEM REQUIREMENTS

For four independent sound channels to exist, there must be four separate power amplifiers (two stereo amplifiers) and four speakers. Happily, there is a simple way to use the preamp and input selector sections of most stereo amplifiers and receivers to feed the decoder, while the power amplifier sections of that amplifier or receiver are used to power the left front and right front speakers of the four channel system. Most stereo electronics today include a tape monitor (also called tape-source) switch, which interrupts the normal signal path through the amplifier and introduces a new signal from outside the unit, independent of the input selector switch. How this is done is detailed in Figures 2 and 3. For the moment, however, if you have a separate control on your unit which permits selection of tape input without disturbing the normal input selector, you can easily connect the EVX-4 decoder.

The EVX-4 decoder can be inserted in your system anywhere ahead of the power amplifier. For example, if you have separate preamp and power amplifier components, the decoder can be inserted between them. However, some flexibility in system operation is lost

using this method of connection, so the tape monitor connection is recommended.

While the choice of equipment for a four-channel system is a concern to many, the criteria for good performance are less severe than for two-channel stereo. As is the case with two-channel stereo, best performance results when all four amplifier channels are the same and all four speakers are the same. However, the results are still totally satisfactory if the rear amplifier is of lower power and the rear speakers have narrower frequency range, because the rear channels are helped out substantially by the front channels, especially at low frequencies. Program material which has ambient information (hall sound) in the rear requires less power and frequency response in the rear channels than does the type of program material in which instruments are all around you. For best results, however, the two front speakers should be closely matched, as should the rear pair.

With the decoder gain control set at maximum, the decoder output can be no higher than the input voltage from the tape jacks of the front amplifier. For this reason, the input sensitivity of the rear amplifier must be high enough that the decoder output will drive it satisfactorily. If the sound level from the rear amplifier is sufficient when it is connected directly to the tape out jacks of the front amplifier, then the decoder will work with it as well.

SYSTEM WIRING

You may be using complete receivers (amplifier with tuner), integrated amplifiers, preamps and power amps, integrated compact systems, consoles, or combinations of the above for your four-channel electronics. To keep the instructions as simple as possible, the electronic unit used to drive the front pair of speakers will be called the Front Amplifier, and the electronic unit used to drive the rear speakers will be called the Rear Amplifier.

First, a few hints for a successful hookup.

1. The unit to which program sources (phono, tuner, etc.) are connected should be considered the Front Amplifier. For this reason, a more complete unit (stereo receiver versus stereo amplifier) should be considered the Front unit. If two similar units are to be used (two amplifiers or two receivers), the better unit in terms of power output, distortion, or whatever should be considered the Front unit.
2. If the two pairs of speakers are not identical, the better pair should be considered the Front Speakers.
3. If the two amplifiers are to be stacked on top of each other, the Front Amplifier should be on top for least confusing operation.
4. Follow the hookup directions slowly and carefully. With so many cables, it is easy to become confused. Observe the left and right channel connections scrupulously. In fact, it may be less confusing to go

through the hookup steps for the left channel only, and then repeat the operation for the right channel. This way there is less chance of interchanging channels.

5. Once you have decided which units are to be Front and Rear amplifiers, make certain in your mind which is which, or even make a note on masking tape and stick it on the rear of the unit for reference while wiring.

CONNECTIONS

1. Using convenient length shielded audio cables, connect the Front Amplifier's tape out jacks to the decoder input jacks.
2. Connect the decoder's Front Output jacks to the Tape In jacks on the Front Amplifier. At this point you should have cables going to and from the Front Amplifier, connected to the decoder's Input and Front Output jacks.
3. Connect the decoder's Rear Output jacks to the Rear Amplifier input. If the Rear Amplifier has Tape In jacks use those. If not, use the auxiliary or other high-level inputs.
4. Connect the four speakers to the appropriate amplifier output terminals. Just as the fenders of a car are identified from the driver's seat, the speaker locations are named while facing the "front" of the four channel system. Thus, the left rear speaker is connected to the left speaker terminals of the rear amplifier. Be sure to connect all speakers "in phase," as outlined in your electronics and speaker instructions.
5. If you have a tape recorder in your system, connect it to the Tape In and Tape Out jacks on the rear of the decoder. These jacks duplicate the jacks previously used on the Front Amplifier, and additionally, allow you to decode the output of your tape recorder into four channels.
6. Connect the AC line cord to a convenient outlet. If a switched AC outlet is available on one of your amplifiers, power will be applied when the amplifier is turned on, and the decoder's Master Gain Control can be left turned up all the time. In fact, if switched AC outlets are available on both the Front and Rear Amplifiers, plugging the Rear Amplifier into the Front Amplifier, and the decoder into the Rear Amplifier, will permit the entire set of electronics to be turned on with the Front Amplifier power switch.

OPERATION

Once the decoder is properly connected, putting the amplifiers' Tape Monitor switches in the Tape position (or the Aux position on the Rear amplifier, if that was used) connects the output of the decoder into all four amplifier channels. Start with the amplifier volume controls turned all the way down, the decoder Master Gain control turned all the way up, and the decoder

function switches in the Source Decode position. Turning up the amplifier volume controls will provide the desired sound level in the room and also permit adjustment of front-to-back balance. If the volume controls are initially set for the loudest sound level you want in the room, with the front and rear sound levels about the same, then the Master Gain control on the decoder will reduce the sound from all four speakers equally as it is turned down. After this initial adjustment, the rear amplifier volume control can be considered the front-to-rear balance control, adjusting the rear sound level up and down slightly to move the balance point forward or backward in the room, and to adjust for best subjective effect. For example, enhancement of a two channel classical work should aim at recreating the ambient sound in the hall. Normally this can be done by reducing the rear amplifier volume somewhat, and perhaps turning down the rear treble control. Feel free to experiment.

The left-right balance controls of both amplifiers work normally, although there will be less need to adjust the left-right balance in either front or rear.

To return to normal, straight-through two channel operation of the Front speakers, (1) return the Front amplifier Tape Monitor switch to the Source position, and (2) on the Rear amplifier, either switch back to Source, or switch out of Aux., depending upon your hookup; or simply turn down the volume control. (This is all much easier to do than to explain.)

If a tape recorder is connected to the decoder as part of the system, you can record conventional two channel tapes, and play tapes through either the two channel or four channel system. The signals going to the tape recorder are identical to those coming from the Tape Out jacks on the Front receiver, where the recorder normally

would be connected. If the decoder function switch is in the Tape Monitor position, the output of the tape recorder will play back through the Front amplifier in normal two-channel fashion. If the function switch is in the Tape Decode position, the output of the two channel tape recorder will be decoded into four-channels, just as a record or FM broadcast is decoded in the Source Decode position.

If a discrete four-channel tape machine is part of the system, the decoder is not required for four-channel tape playback. Normally the four outputs of such a tape recorder are connected to the Auxiliary inputs of the amplifiers.

THREE-YEAR WARRANTY

Electro-Voice electronics are guaranteed to operate properly for three years from date of purchase. Parts will be supplied without charge within the guarantee period. Labor will be supplied without charge during the first year of the guarantee period. Excluded from this guarantee are knobs, panels, and other appearance items; and any other damage caused by neglect, abuse, or operation under conditions not outlined in these instructions. The guarantee is void if the unit is serviced by other than an authorized Electro-Voice service agency. The enclosed Warranty Registration Card should be returned to Electro-Voice within ten days of purchase.

CUSTOMER SERVICE

E-V Electronics are packed to provide maximum protection—well in excess of the shipping requirements of the Interstate Commerce Commission. If shipping damage does occur, contact the carrier immediately, requesting inspection and instructions, or contact the dealer from whom the unit was purchased.

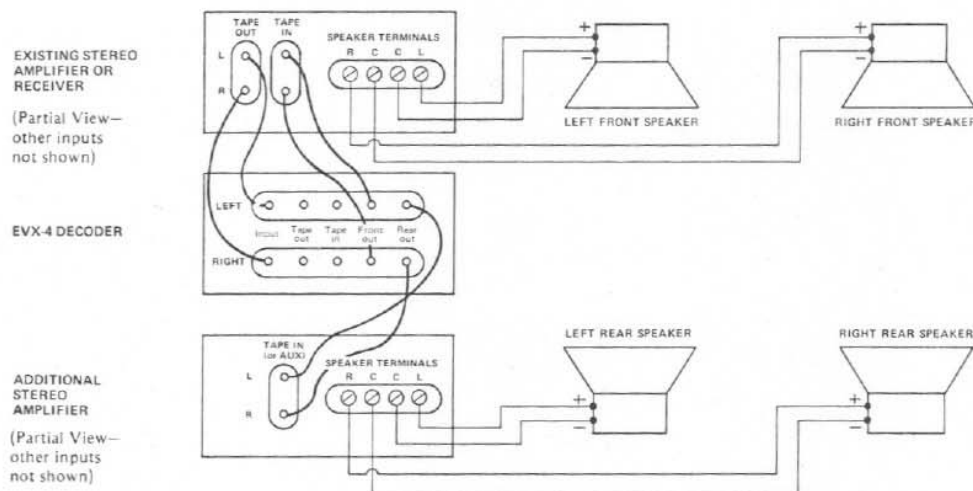
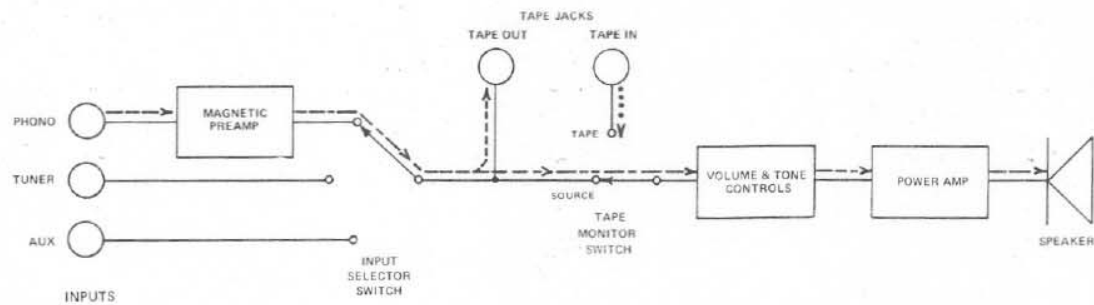
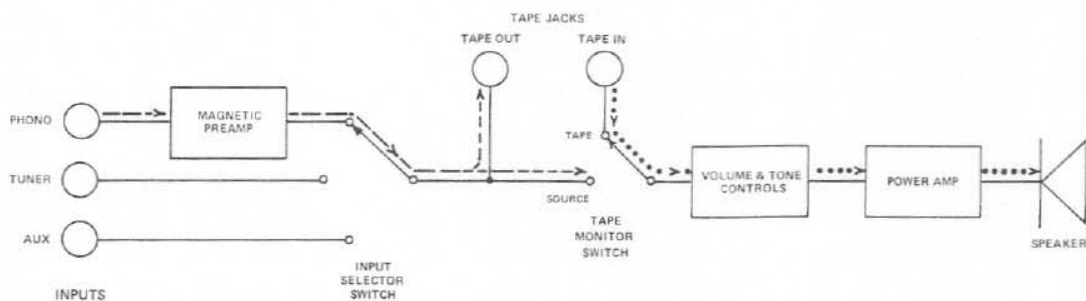


Figure 1—Connecting EVX-4 Decoder



a. With the Tape Monitor switch in the Source position, the source selected by the Input Selector switch plays through the speaker. The source signal also appears at the Tape Out jack.



b. With the Tape Monitor switch in the Tape position, the Tape In signal plays through the speaker. The signal at the Tape Out jack is still the source signal.

Figure 2—Block Diagrams of Typical Amplifier, Showing Tape Monitor Switch Operation

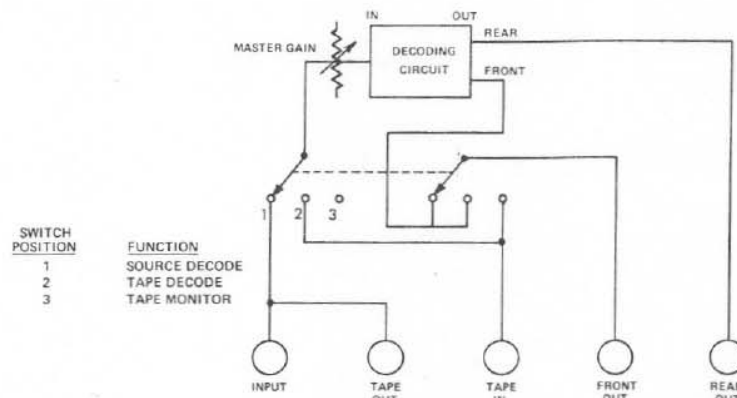


Figure 3—Decoder Block Diagram (one channel shown—both channels identical)