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Logic 7® vs. 5-Channel Stereo

Logic 7

Logic 7 is a Harman International proprietary technology that was developed and introduced by Lexicon, Harman Kardon's sister company. Unlike other DSP surround modes (hall, theater, stadium and 5-channel stereo), this technology provides a truly unique and realistic reproduction of surround sound, and is exclusive to Harman International brands. This year, Harman Kardon has incorporated this advanced technology into the AVR 500 and AVR 7000.

Logic 7 has two distinct modes: "M" for music and "C" for cinema/movies. Logic 7 "C" processes analog or digital sources in the digital domain, producing a multichannel mix. The Cinema mode is designed for use with matrix/Dolby® surround-encoded source material found on VHS, television programming, satellite and cable programming, and many DVDs not encoded in 5.1. It is designed to enhance the impact of pans, left and right passing signals, steering and intelligibility of center-channel dialogue. The soundstage is vastly increased, enveloping listeners and placing them in the middle of the action. The Cinema mode attempts to create the impact of a dedicated low-frequency-effects channel by steering low-frequency information to the subwoofer output when a sub is selected. This design greatly improves dynamic impact while preserving realism.

The Logic 7 "M" mode delivers multichannel audio from two-channel sources. Consumers who have large libraries of two-channel CDs will now be able to listen to their CDs as if they were originally recorded in a 5.1 mix. How is this possible? Logic 7 music re-creates a soundstage similar to that of a live concert. On James Taylor's *Live at the Beacon Theater* you hear Taylor (lead vocal) centered in front of you (center channel) with the band spread across the three front speakers, while the audience is located behind you (rear speakers). When this DVD is played in its Dolby Digital 5.1 mix, the soundstage is created in the same fashion, maintaining the realism of performers in front and audience behind. In both mixes, every nuance of the band, the singers and the audience is decoded into the rear channel to further enhance the live experience.

What if the two-channel source material is not a live recording?

Logic 7 music will steer information (such as background singers and musical effects) to the rear channels and main channels, while preserving the realism of the original performance with vocals in the center and instruments spread across a more natural, wider soundstage. Logic 7 employs a discrete pathway, meaning that all channels, just like 5.1 digital sources, are stereo-capable (front/rear), and decoded source material is unlimited in its ability to be steered. Therefore, not only can pans be moved left to right and front to back, but they can be steered diagonally. With the inclusion of its simulated .1 LFE channel, Logic 7 can rival the low-frequency impact of Digital 5.1 encoded sources.

Try this comparison. Take any two-channel CD and play it back in stereo mode, Pro Logic® mode, and then Logic 7 "M" mode. Logic 7 will more accurately reproduce the stereo imaging of the original recording, enveloping the listener in the music.

5-Channel Stereo

A 5-channel stereo mode may now be found on various receiver brands. This simulated surround mode attempts to create a multichannel mix from stereo-encoded CDs without using reverberation or delay, as do conventional hall, theater, and stadium modes. Instead, 5-channel stereo groups the stereo signal and plays it through all five speakers, allowing all speakers in a multichannel system to play. It does not, however, offer any true steering.

5-Channel stereo simply plays the same information through all five speakers, meaning that pans (front to back), flyovers and precise localization are impossible. If, for example, James Taylor's *Live at the Beacon Theater* were played through the 5-channel stereo mode, Taylor, his band and the audience would be heard simultaneously through all five speakers. The easiest way to duplicate the experience of 5-channel stereo would be to play your A and B speakers simultaneously with a center channel. This limitation does not allow 5-channel stereo to be relied on as an enhancement over Pro Logic when watching matrix/Dolby surround-encoded software, because it won't be able to steer dialogue to the center, action across the main channels, and effects to the rear. Unlike Logic 7, 5-channel stereo does not attempt to create a ".1" LFE channel, thus limiting its dynamic impact.

5-Channel stereo basically plays the same signal through the front left/rights and surround left/rights, with an L+R mono signal for the center, without any DSP processing. In actuality, 5-channel stereo is pretty much like playing Dolby 3 through the front speakers and then having the left/right surround speakers wired in parallel with the left/right front speakers.

Comparison Chart

Attribute	Logic 7®	5-Channel Stereo	Dolby® Pro Logic®
Customized modes for Music and Cinema	YES	NO	NO
Plays same material in all speakers simultaneously	NO	YES	NO
Preserves wide soundstage of stereo recordings	YES	NO	NO
Re-creates panning and steering like Dolby Digital 5.1	YES	NO	NO – recognizes 4 discrete channels
Digitally simulates low-frequency-effects channel	YES	NO	NO – does not recognize discrete effects channel
Proprietary technology	YES	NO	YES
Preserves the original matrix/Pro-Logic-encoded material	YES	NO	YES
Enhances intelligibility of center-channel dialogue in "Cinema" mode	YES	NO	YES – at expense of stereo imaging and wide soundstage
Developed by engineers who design sound processors for the professional recording industry	YES	NO	YES

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