

Built-In Audio Sync Lock on the LD-V8000**Application**

Some applications require very precise synchronization of audio when switching between videodisc players. When using the LD-V8000 in such applications, the system integrator must be aware of a particular characteristic of the LD-V8000 that will affect the synchronization timing of the audio signals.

Symptom

When two or more LD-V8000 players are externally synced together, the audio signals from each player are not precisely synchronized to each other.

Explanation

The LD-V8000's digital video memory allows for seamless searches, frame grabs, etc. All video passes through this circuitry which writes data into the video memory and reads data from the video memory. This circuitry operates independently and does not impact the audio signal processing. Therefore, the video output is delayed from 1 millisecond to 12 milliseconds (due to memory processing) as compared to the audio output.

When two or more players are synced together this problem can be compounded since the delay between video and audio can measure anywhere from 1 to 12 milliseconds and will not be constant from player to player. In most applications this delay is not noticeable. However, it is unacceptable to customers who require very precise synchronization of audio tracks between players.

Solution

A hardware modification and control software (EPROM) modification have been designed to reduce the video to audio output delay. With this modification, the timing difference between the audio output from one player to another is less than 1 millisecond.

The "Audio Sync Lock" feature will only work if both the hardware modification and upgraded EPROMs have been implemented in the player.

The hardware modification was implemented as a running change to all players beginning with serial number 3904476. If your player's serial number is lower than 3904476, you must make a special request for the hardware modification.

As part of the October 1990 LD-V8000 version upgrade, all players, beginning with serial number 3906076, contain the software modification within the new EPROMs. If your player's serial number is greater than 3904476 and less than 3906076, it has the hardware modification but you must make a special request for the LD-V8000 EPROM Upgrade Kit. This kit contains EPROMs #DYW1119 and #DYW1120 and a step-by-step EPROM replacement procedure. See "Ordering the LD-V8000 EPROM Upgrade Kit" below.

Prior to the LD-V8000 EPROM Upgrade Kit one had to request a custom EPROM that contained the Audio Sync Lock feature.

Implementation

The Audio Sync Lock feature adds an extra 10 seconds to the spin-up time of the player. Since it is required by few customers, the feature is not automatically implemented in the EPROM. Instead, it is added by putting the player into set-up mode and using the on-screen parameters settings.

To select the Audio Sync Lock feature press the DISPLAY button and simultaneously press the POWER ON button. This brings you to the Key Operation screen. Press the SCAN FORWARD button four times to page 4. Press the STEP FORWARD button until "Video Delay Time" is highlighted. Press the STEP REVERSE button to select "15.2 - 16.2 mSec." This selects the 1 millisecond delay time between video and audio which is the Audio Sync Lock. Choosing this option, however, adds approximately ten seconds to the spin-up time of the player. Unless the Audio Sync Lock option is needed for a specific application, it should not be selected.

The other option, "4.2 - 16.2 mSec", selects the 12 millisecond delay time between video and audio. This option is the default setting of the player and does not implement the Audio Sync Lock.

Checking the LD-V8000's EPROM Version Numbers

To determine which EPROMs are currently installed in your LD-V8000, put the player into Test Mode by using the front panel control keys. (See the attached Technical Bulletin #127 "Determining EPROM Version in Test Mode".)

Ordering the LD-V8000 EPROM Upgrade Kit

PCA and Pioneer Service have created an "LD-V8000 EPROM Upgrade Kit" for customers who want to upgrade their existing LD-V8000 players (players with serial numbers less than KJ3906076) to contain the software enhancements and modifications.

The EPROM Upgrade Kit is Pioneer Part #LDV8EP90. It includes the two new EPROM chips and Technical Bulletin #130, a step-by-step procedure on how to replace the EPROM chips.

Customers who require the Audio Sync Lock feature for LD-V8000 players with serial numbers less than KJ3906076 can obtain the EPROM Upgrade Kit free of charge by contacting Industrial LaserDisc Engineering/Technical Support at (201) 327-6400.

CAUTION: *It is strongly recommended that EPROMs be replaced by a Pioneer Authorized Service Center technician. If you decide to install Upgrade EPROMs yourself, you run the risk of voiding your player's warranty. Call 1-800-872-4159 for your nearest Pioneer Authorized Service Center.*