

# FILM-TECH

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DEPARTMENT Engineering	CREATED BY: Dale Krasnow	EFFECTIVE DATE December 20, 2006	APPROVED BY: Joe Klebanoff		

This technical notice explains the Digital Delay Feature for the XD10P and describes how to set it up. The feature is available in XD10P Setup Software Version 1.00.26 and works with XD10P Cinema Audio Processors with serial number 2300 and above or with older units that contain an upgraded Digital Out module.

To upgrade the Digital Out module, please contact DTS Technical Service at [techsupport@dts.com](mailto:techsupport@dts.com) or (818) 706-3525 (within US) or (800) 959-4109 (outside US).

To download the XD10P Setup Software, go to the free DTS Online TechCenter located at <http://www.dts.com/tech-center.html>.

### Introduction: The Digital Delay Feature

The digital delay feature allows you to make adjustments for D-cinema video playback using XD10P format EXT 2.

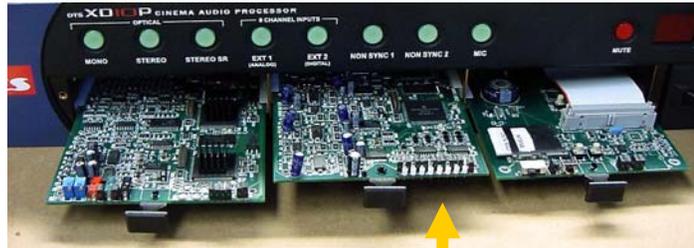
- The “Digital Input” adjusts the overall time delay required to compensate for various video projectors. A typical DLP projector, for example, requires about 80 ms sound delay. Consult the manual for your video projector to determine the exact delay required so that the digital video sound plays in sync with the (digital video) picture projected.
- The “Digital Surround” is used to adjust the surround delay to something other than zero when the EXT 2 format is used for D-cinema (digital video) playback on EXT 2. However, when a XD10 player’s “digital out” is connected to the XD10P “digital in” and the XD10 is used for feature/trailer film-based DTS soundtrack playback, EXT 2 digital surround delay should be set to 0ms.



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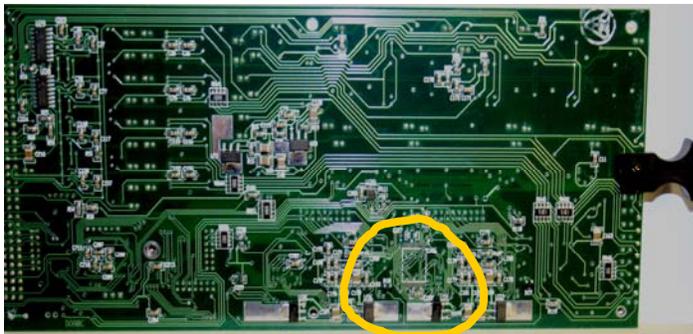
### Check Digital Out Module Board DO-80

The Input Module is in the middle of the XD10P and behind the front panel removable plate, as shown in the photograph below.



DO-80 Output Module

1. Power off the XD10P.
2. Using a grounding wrist strap, remove the Output Module.
3. Look on the under side of the board to determine its version. The photo on the left shows an XD10P with a DO-80 board without digital delay capabilities. The photo on the right shows an XD10P with a DO-80T board with the digital delay circuitry.
4. Once inspected, return the module to the XD10P unit.



DO-80 Board without digital delay



DO-80T Board with digital delay circuitry

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## Install Setup Software and Configure System

### Step 1: Check Connection

Verify that your computer is connected to the XD10P in one of these two ways:

- The RS-232 port on the computer is connected to the XD10P with a serial cable
  - A serial-to-USB adapter connects the USB port on the computer to the XD10P RS-232 port.
- Note: When the computer is connected to the XD10P, the Setup Software controls the system. The buttons and fader knob on the front panel of the XD10P will not respond to user interaction.

### Step 2: Load and Open Setup Software

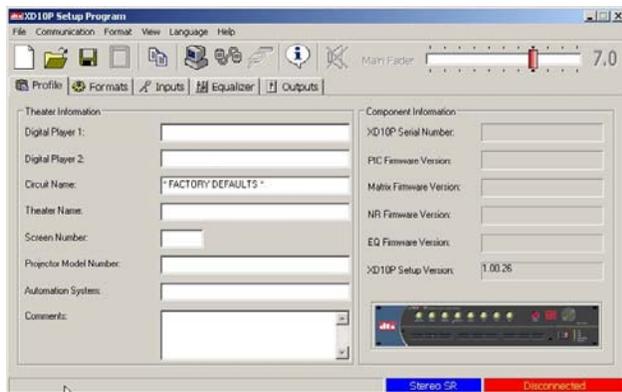
- a. Load the XD10P Setup Software Version 1.00.26 (or later) onto your computer.

- Note: You can download the software from the free DTS Online TechCenter at <http://www.dts.com/tech-center.html>.



- b. Open the XD10P Setup Software by clicking the icon, shown at right, on your desktop or click on **Start ->Programs ->DTS -> XD10P**.

The opening screen, shown below, appears.



### Step 3: Check Version

Check the setup software version number in the XD10P Setup Version field to verify that it is V1.00.26 (or above).

You can also check the version number by clicking on **Help** on the menu toolbar at the top of the screen.

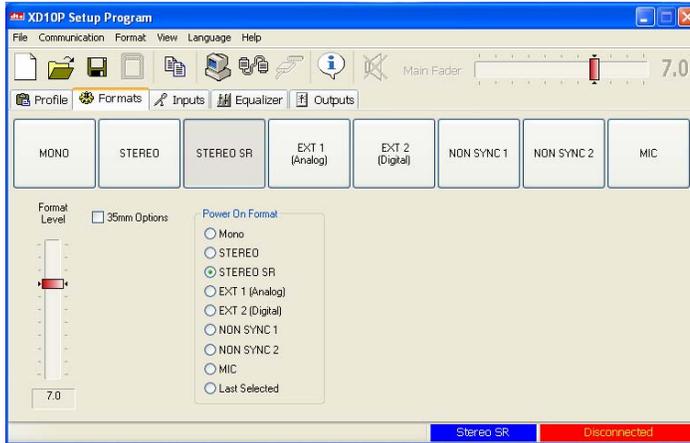
The screen shown at right will appear, displaying the version number.



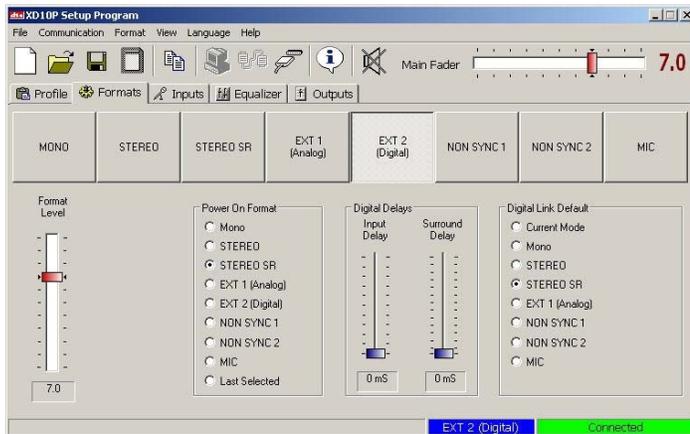
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### Step 4: Select Format

Select the **Format** tab. The following screen will display.



Select **EXT2 (Digital)**. The following screen will display, adding two panels to the Format tab screen: Digital Delays and Digital Link Default.



### Step 5: Adjust Format Level

Use the Format Level fader on the left side of the screen to adjust the format level for the EXT 2 Digital format. This pre-sets the level for this format.

The Main Fader at the top of the screen will move as you adjust the Format Level fader. The system will retain this setting until you change it.

### Step 6: Select Power On Format

Select the default startup format (Power On Format) from the list shown on the screen above. This determines the format the XD10P will start in when it is powered on.

Stereo SR is the default Power On Format. When you select Last Selected, the XD10P will restart with the last format used before it was powered on.

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## Step 7: Set Digital Delays

Use the Input Delay slider and the Surround Delay slider, shown at right, to align the digital video sound with the digital video picture projected.

### a. Set Input Delay

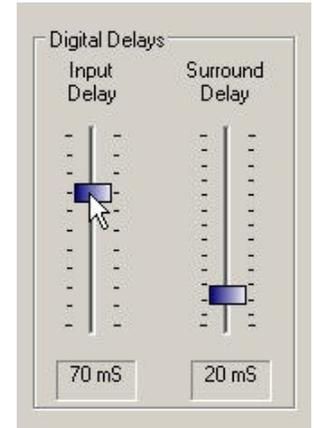
Use the **Input Delay** slider to set the time delay needed to compensate for the video projector you are using. The slider ranges from 0 ms to 100 ms. Consult the manual for the video projector you are using to get the exact delay recommended.

Adjust this number if necessary.

- Note:** Most DLP projectors require a delay of approximately 80 ms.

### b. Set Surround Delay

Use the Surround Delay slider to set the delay for the surround channels when EXT 2 is being used for D-cinema (digital video). The slider ranges from 0 to 127 ms. The formula to determine the correct delay is:  $(D2 - D1) + 20 = \text{surround delay in milliseconds}$



1. Measure the distance (D1) from a selected **rear seat** to the nearest **surround speaker** (in feet). Note: If you are calculating in meters, multiply by 3 (m X 3) to convert to feet.
2. Measure the distance (D2) from the **same rear seat** to the nearest **screen speaker** (in feet). Note: If you are calculating in meters, multiply by 3 (m X 3) to convert to feet.
3. Subtract the two measurements to find the difference, then add 20 to that number. The result is the Digital Surround Delay value in milliseconds (mS). Using the digital slider, adjust the digital surround delay to that number.

- Note:** When an XD10 player's "digital out" is connected to the XD10P's "digital in" and the XD10 is being used for film-based feature/trailer (DTS) soundtrack playback, the Surround Delay should be set to 0ms.

## Step 8: Select Digital Link Default

You need to select a default format from the list on the panel when using the XD10P digital IN. This presets the format the XD10P will switch to if the digital link fails.

When using the XD10 and XD10P, in most cases the audio connection will be from the XD10 "analog OUT" to the XD10P "analog IN". However, if the XD10 has the digital output card installed, the connection can be from the XD10 "digital OUT" to the XD10P "digital IN".

- Note:** If you are not sure whether the XD10 has the optional digital output card and audio connection is made to the XD10P digital input, then when you select the EXT 2 format on the XD10P, the EXT 2 button will flash, indicating there is no digital link (because no digital card is installed in the XD10). If this happens you must use the analog input on the XD10P. Contact DTS for further information if you wish to upgrade to a digital output card in the XD10.

Traditionally with DTS products if timecode is lost, the DTS player will pulse the cinema processor to a default sound format. This is still true, but when using the digital input there is a chance for a digital link failure. If the digital link between the DTS player and XD10P is broken, but the DTS player is still receiving good timecode, the player will not trigger a fallback format, so the XD10P will experience a loss of audio. Therefore, it is necessary to set a fallback option in case of digital link failure.

Configure the default to one of the choices. In most cases, Stereo SR is correct. Also, the standard fallback must be set (on the external DTS player) for timecode failure. This is done on the XD10 through menu selection, or through the logic interface board on the DTS-6 and -6D. Refer to those product manuals for more information.

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