Film-Tech

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SONY®

SDDS Player System

DIGITAL FILM SOUND READER
DFP-R3000

DIGITAL FILM SOUND DECODER
DFP-D2500

QUICK START GUIDE
1st Edition

Sony DFP-2500 SDDS Player System
Quick Start Guide to Installation and Setup

Outline of Contents

1. Introduction

1.1 About the DFP-2500

The Sony DFP-D2500 Film Sound Decoder has been designed to upgrade existing cinema sound systems to SDDS in a simple and cost effective way, whether your auditorium sound system supports 5.1, or the full 8 channel SDDS sound format. The DFP-D2500 must be combined with a DFP-R3000 Film Sound Reader, which reads the SDDS data on film and sends this bit-stream to the DFP-D2500 for SDDS decoding and audio processing. The audio processing includes complete 8 channel B-chain functions and a calibrated master level control, both using high-power DSP (Digital Signal Processing) for maximum sound quality, reliability and consistency.

The output of the DFP-D2500 is then routed directly to the main crossover networks and power amplifiers (alternate configuration of the DFP-D2500 is also possible – see section 3.1, Configuring the DFP-D2500 as an Input Device).

Additionally, the DFP-D2500 can apply its powerful DSP-based sound processing to the current system's cinema processor, vastly improving the sound performance of existing, or aging equipment. For example, if the existing cinema processor in the sound system is not of current design and technology, the D2500's input can be configured so that the superior B-chain and master level control of the D2500 is applied instead. This effectively upgrades the sound performance of the existing cinema processor to today's state-of-the-art technology and capability, at a much more reasonable cost than discarding and replacing it with a new, higher-priced cinema processor.

1.2 About this guide

To properly install and maintain the DFP-2500 system, the following documentation is available in addition to this guide:

- DFP-D2500 Operation Manual   3-205-080-01   (included in the decoder box)
- DFP-D2500 Maintenance Manual 9-976-894-01   (available upon request)
- DFP-R3000 Installation Manual   9-968-522-02   (available upon request)
- DFP-R3000 Maintenance Manual 9-968-523-01   (available upon request)
- Relevant Technical Notes and Bulletins   see www.sdds.com

2. Equipment and accessories.

Your purchase of a DFP-D2500 system includes the following items in two boxes:
In the Reader box you will find:

Digital Film Sound Reader Unit	1	DFP-R3000
Reader-to-Decoder Cable, 10 meter*	1	1-783-382-11
Adapter EA	1	3-194-819-03
Spacers	4	
Bolt, Hex 3/8"	4	3-185-981-01
Washer 10	4	7-688-000-32
Screw, Hex 4x12	5	7-683-421-04
Washer 4	5	7-688-004-12
Spring Washer 4	5	7-623-210-22

In the Decoder box you will find:

Film Sound Decoder Unit	1	DFP-D2500
Mains cable	1	Varies by country
Operation Manual	1	3-205-080-01

The following additional equipment is available from Sony:

Setup Software	Free	http://www.sdds.com
SDDS Alignment Film		1-759-836-11
#1 JIS screwdriver, cross point type		7-700-749-03
Reader-to-Decoder Cable, 50 meter*		1-783-896-11

*Neither the 10 meter nor 50 meter cable can be cut, spliced, or re-pinned.

Personal equipment you will need:

Personal computer (laptop) running Windows 3.1 or later	486-66 with 32 Mb RAM, Floppy drive, serial port, 20Mb available disk space. Pentium 120+ MHz recommended
Null modem cable, RS232C	With 9-pin male on D3000 end
Real Time Analyzer	With calibrated microphone(s)
Allen wrench set, ANSI	Up to 3/8-inch
Allen wrench set, Metric	Up to 6mm
Tweaker	(small screw driver)

## 3. Site preparation and interconnection.

Before you begin making settings and adjustments to your DFP-2500 system, it is best to confirm some basic conditions. Here is a check list.

3.1 Decide audio signal path

Configuring the DFP-D2500 as an output device

The DFP-D2500 has been primarily designed to be the last link of the audio processing chain before the crossover networks and power amplifiers (in order to facilitate the full 8 channel output capability), very much like the 1st generation SDDS processor, the DFP-D2000. Only by using the DFP-D2500 in this manner will you obtain the full benefit of the D2500, such as its 8 channel capability, its exceptional B-chain performance, its seamless fallback transitions, and the capability to enhance the performance of the existing cinema processor to today's state-of-the-art audio processing.

The illustration below shows this recommended signal path. No automation connections are needed.
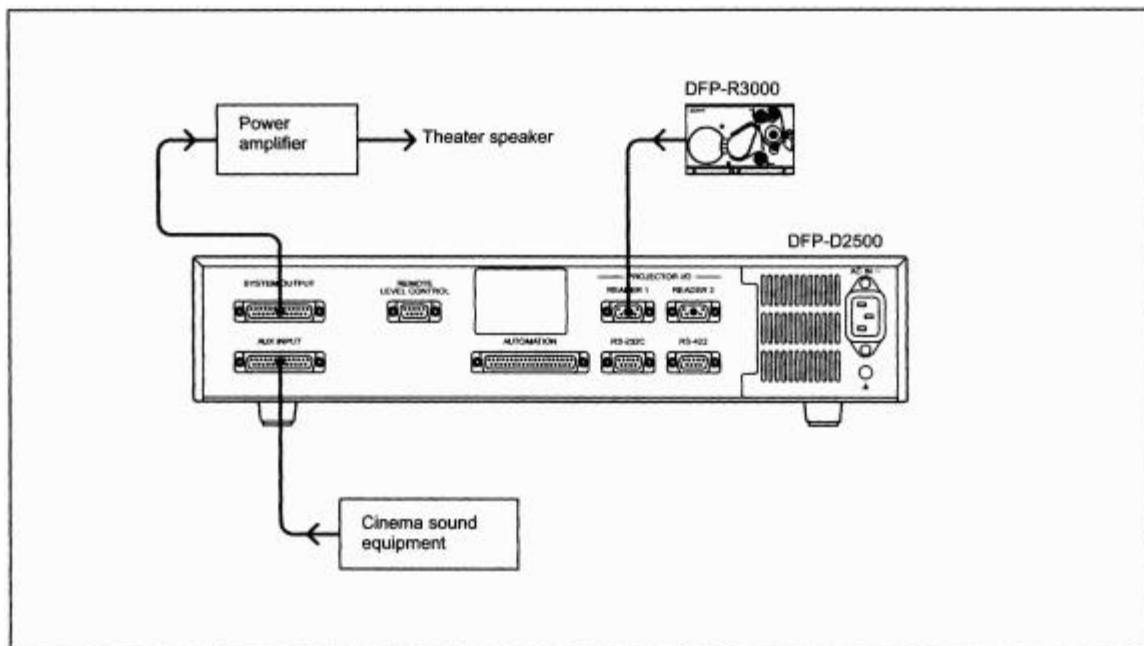
Configuring the DFP-D2500 as an input device

If for some reason the above configuration is not possible, the DFP-D2500 can also be used as an input device to the central cinema processor. The System Output of the DFP-D2500 is then routed to the auxiliary input of the existing cinema processor. Additionally, automation lines need to be connected to allow the DFP-D2500 to switch the central cinema processor in and out of the applicable SDDS preset, depending on the SDDS Playback Status. The necessary logic signals have been integrated into the

Automation connector of the DFP-D2500, making system integration for this configuration simple to achieve.

In this application, connect the signals noted below from the DFP-D2500 automation connector to the control input of the central cinema processor:

Pin #	Function	Signal
32	SDDS Data OK	Output pulse: Low = SDDS OK
36	SDDS Data not OK	Output pulse: Low = SDDS NG

3.2 Check the version of the Setup Software on your computer.

The Setup Software is updated regularly. Be sure you are using the latest version, which will be v3.00, build 3.000 or higher. You can check the SDDS web site at http://www.sdds.com or contact Sony Cinema Products to determine the latest version and to request a free copy. You can check the version of Setup Software you are currently using by launching the program and selecting **Help>About. . .** from the pull down menus at the top of the main screen.

3.3 Confirm proper audio interface wiring.

The Sony DFP-D2500 Decoder unit uses professionally balanced audio interface connectors, pinned according to the THX® convention, for interconnections to amplifiers, crossovers, limiters, booth monitors, and other cinema processors. Unfortunately, many such devices may not employ balanced inputs or outputs. It is essential that proper balanced to unbalanced interface wiring techniques are used when connecting to these devices to ensure optimum operating conditions for the DFP-D2500 and connected equipment. Failure to use proper techniques in your sound rack wiring may result in reduced system headroom, improper theater calibration, and compromised sound performance. For a guide to properly interconnecting balanced and unbalanced audio signals, refer to Tech Note TN99060401.

3.4 Chassis earth ground check.

Most audio grounding schemes require that the chassis of the DFP-D2500 have a solid electrical connection to the rack in which it is mounted. The finish on the rack mounting rails may be very durable. Make sure that the mounting screws cut through the finish of the DFP-D2500 and that the mounting ears make electrical connection through the rack rails' finish to the rack itself. Test this with an ohm meter. Additionally, a screw terminal Technical Ground is available on the back panel of the Decoder, to help make a solid ground connection. Do not remove the line cord safety ground pin in an attempt to avoid ground loops. This precaution is already taken care of in the design of the DFP-D2500 and removing the pin will have no benefit, but doing so will compromise electrical safety and may violate electrical codes.

Note: **Do not "hot plug" the Reader!** The Reader gets its power through the cable that connects it to the Decoder. Do not remove or install this cable while the Decoder AC power is on. Doing so may cause damage to the Reader and void the warranty.

3.5 Decoder environment check.

The DFP-2500 Decoder is intended to be mounted in a rack chassis along with other cinema equipment. However, it should not be mounted in close proximity to power amplifiers or other equipment which may radiate strong magnetic fields or which give off high heat. Observe the ambient temperature limit of 50° C (120° F) and if the interior of the rack is excessively warm, provide more ventilation to lower the temperature.

3.6 Wiring of other equipment.

This following is an illustration of the DFP-D2500 rear panel.
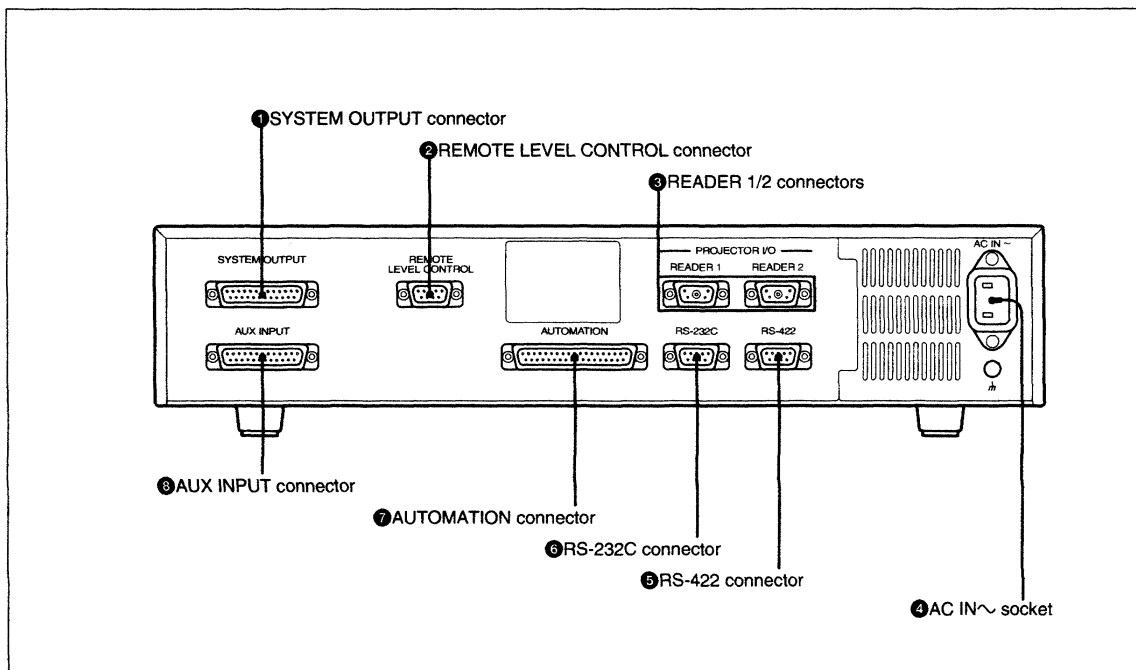
Note that these D-Sub connectors have metric (M2.5x.45) screw receptacles and require mating connectors with metric screws. A kit of metric D-Sub connector screws is readily available from most ordinary electronic part distributors. Avoid using standard D-Sub connectors with 4-40 jscrews.

Cinema processors. Refer to the list of available Tech Notes for instructions on correct audio and logic interconnections to other cinema processors. Note that Sony connectors use the THX® pinout convention, but other equipment may not. Therefore, pre-fabricated cables, or cables made with flat ribbon computer-type cable may not be acceptable for use with the DFP-D2500.

AUX input

The 8 channel AUX input can be used and configured in many ways. Here are some examples:

- It can be used as a straight bypass input for the audio coming from the central cinema processor, such as the Sony DCP-1000 or a cinema sound processor of a different make. If the central cinema processor is of recent design, technology and quality, the AUX input can be configured so that the DFP-2500 B-chain is bypassed. The master level control will still be active.
- It can be used to process the audio from a central cinema processor with a B-chain of inferior audio quality, which is then bypassed. Instead the DFP-2500 B-chain takes care of channel level trim, channel EQ and master level control.
- It can be used to process the audio from an external audio source, such as an electronic cinema playback device. All B-chain processes will then be done in the DFP-D2500

Automation inputs and outputs. All automation logic inputs and outputs are brought to a 37-pin D-Sub connector on the DFP-D2500

RS-232C connector. This 9-pin female D-Sub connector is used to connect an external PC-compatible computer for set-up and alignment using a null-modem cable.

RS-422 connector. This 9-pin female D-Sub connector is used to connect an external automation system to the DFP-D2500. This makes it possible to control all the main operation functions of the DFP-D2500. Contact Sony for details about the protocol of this connector.

Remote level control. Remote control of the Master Volume is possible by connecting a 100k-ohm linear taper potentiometer. The wiring convention of this potentiometer is unique to Sony, so follow the documentation carefully.

**4. Checks of correct DFP-R3000 Reader mounting.**

Do not "hot plug" the Reader! The Reader gets its power through the cable that connects it to the Decoder. Do not remove or install this cable while the Decoder power is on. Doing so may cause damage to the Reader and void the warranty.

Frame offset. Specific installation instructions for mounting the Reader to each type of projector are available in the DFP-R3000 Installation Manual. Following these instructions will ensure a minimum frame offset between the Reader's LEDs and the picture gate. See Step 17 in Section 5, B-Chain Alignment. **The frame offset must be at least 32 frames ahead of the projector gate**. The maximum frame offset possible is 115 frames.

5. B-Chain Alignment.

B-Chain alignment is performed using the DFP-D2500, Setup Software, and your own test equipment. To begin, connect your computer to the Decoder using a null modem cable, run the Setup Software, and "connect" the Setup Software to the DFP-D2500 using the **Config>Connect to DFP…** menus. Set up your microphones and analyzer in the theater. Refer to SMPTE Standard 202M, *B-Chain Electroacoustic Response*, for more detailed information on microphone placement, theatre acoustics, and the "X" curve.

Note that the DFP-D2500 must be set up with the Master Fader nominally set to 0.0 (not 7) and that from this position 10 dB of boost and full cut is available, with an audio/dB fader taper.
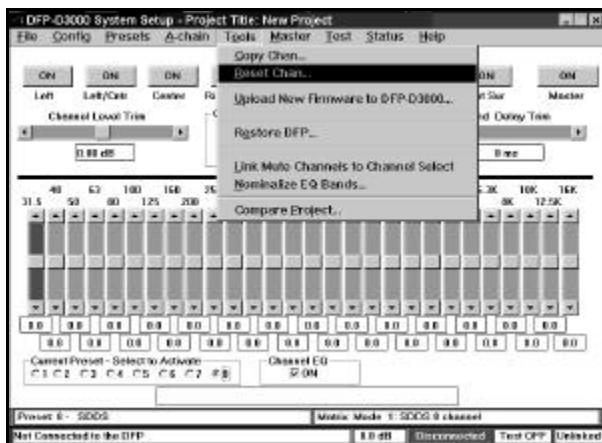

1. Move **all** Channel Level Trims to the center setting (0.0 dB). Center all equalizer sliders at 0.0 dB. To quickly set all EQ levels to 0.0 dB, access the **Reset Channel** function in the **Tools** pull-down menu located in the main screen menu bar. The illustration shows the main screen of the Setup Software in this condition, for the Left output channel.
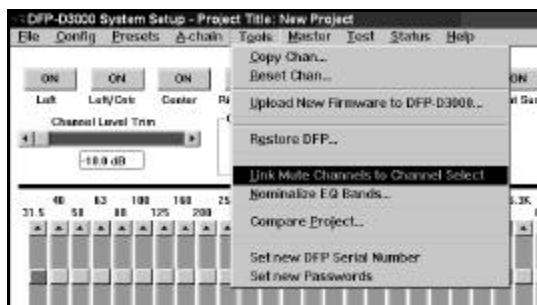
2. Link the channel mutes to the channel selects using the **Tools** selection of the main screen and selecting **Link Mute Channels to Channel Select**.
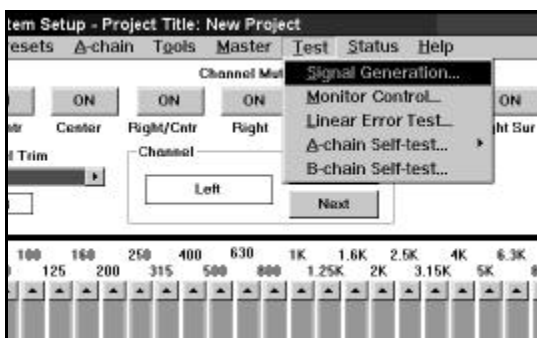
3. To bring up the **DFP Test Signal Generator screen**, select the **Signal Generation** option under the **Test** item on the main screen menu bar.
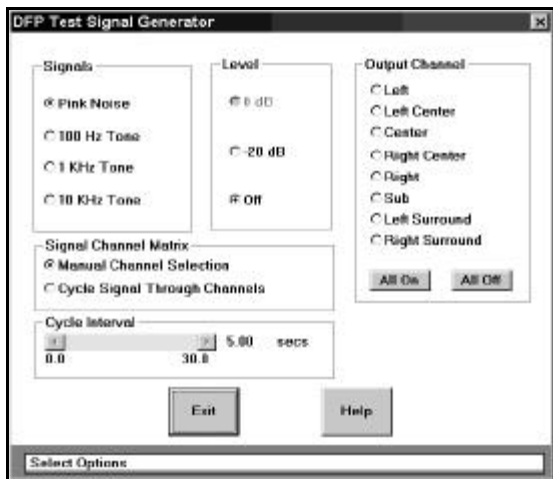
4. Select **Pink Noise** in the **Signals** area. Pink noise can be sent to the outputs only at –20 dBfs. This is handled automatically by the software.

5. Enable all outputs by selecting **All On** in the **Output Channel** area. The software automatically mutes all channels to prevent accidentally sending loud sounds into the theatre.

When **All On** is selected, a warning will appear. Read it carefully and select **Yes** if you wish to continue.

When you finish the setup, return to the main screen by pressing **Exit**.
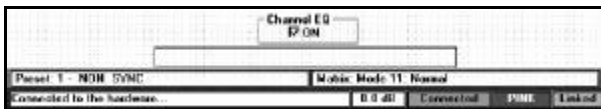
6. Note that the bottom of the main screen now shows PINK to indicate that pink noise is being generated and Linked to show that channel mutes are linked to channel selects.

Function Key	Channel
F1	Left
F2	Left Center
F3	Center
F4	Right Center
F5	Right
F6	Subwoofer, LFE
F7	Left Surround
F8	Right Surround

7. B-Chain alignment is performed on output channels individually. You can use the function keys as an aid in channel selection. Because the channels are linked, pressing a function key selects and un-mutes that channel and also mutes all other output channels.
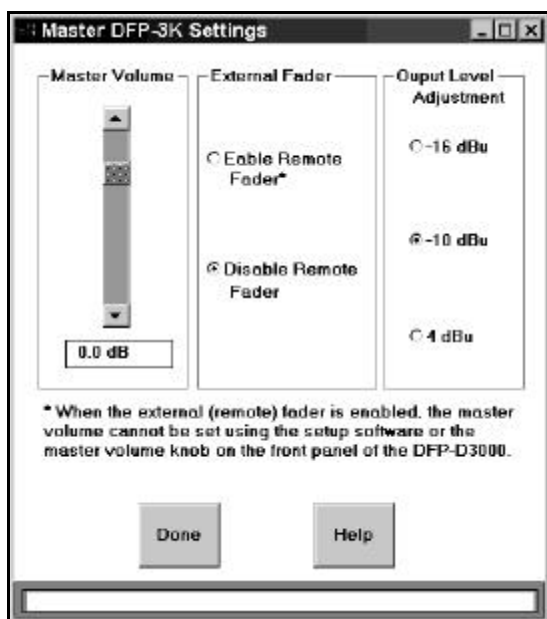
8. Open the **Master DFP-2.5K Settings** screen by selecting **Master DFP-D2500** under the **Master** option in the main screen menu bar.

9. Ensure that the **Master Volume** is set to **0.0 dB**. Select the appropriate output level for the DFP-D2500; this is the absolute signal level that will correspond to the -20 dBfs reference point. In most cases you should chose –10 dBu (145 mV).

Use your real time analyzer (RTA) to check the SPL in the theatre and ensure that it is in the right range when the Master Volume is 0.0 dB.

10. Now select each output channel in succession (use the Function keys), confirm that the noise sound is coming from the correct loudspeaker, and adjust the channel's equalization and level. Start by adjusting the equipment between the System Outputs of the DFP-D2500 and the loudspeakers to achieve about 85 dBC SPL in each screen loudspeaker, measured individually (82 dBC for the surround channels). This equipment may include crossovers and power amplifiers from a number of manufacturers so specific instructions cannot be given here.

11. Adjust the graphic equalizer to achieve the "X" curve of SMPTE 202M, or other frequency response that has been established for your theatre. Do this for each output channel and loudspeaker, except the subwoofer.

Setting the graphic equalizer for best results requires skill and experience, but a few general points can be made. Make **small** adjustments and let the RTA display settle down after each adjustment. **Cutting EQ is always better than boosting EQ**. A band with substantial boost next to a band with substantial cut indicates problems that aren't appropriate for EQ to correct; try to end up with a **smooth** equalizer setting using as little EQ as possible and no more than a few dB difference between adjacent bands. Use even less EQ on the surround loudspeakers. The screen speakers should all have approx. the same EQ settings (if they are the same cabinet type); if they aren't close, there may be problems that EQ should not be used to address.

Don't boost low bands in an attempt to extend the low frequency response; that is mainly determined by the cabinet design. Remember that you can only adjust for the sound that comes directly from the loudspeakers to the measurement microphone; you cannot do much about the sound that is influenced by the auditorium acoustics or resonances and you should avoid the temptation to try to do so.

12. When all loudspeakers except the subwoofer have been EQ'd, make a wide-band adjustment in the equipment between the DFP-D2500 and each of the loudspeakers (such as with a power amplifier gain control) to achieve 85 dBC SPL from each screen loudspeaker. This is a wide-band sound pressure measurement; at this point, the

individual bands of your RTA will each be at about 70 dB SPL. The left and right surround cabinet groups should each be set for 82 dBC.

Note: It is better to achieve this result with an adjustment of amplifier gain than by using a Channel Level Trim, and when using a Channel Level Trim, it is better to preserve full headroom by using attenuation (cut) instead of gain (boost**). Avoid settings of the Channel Level Trim bars to values above 0.0 dB**.
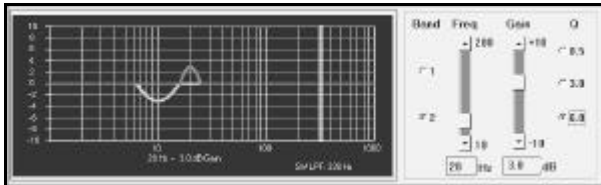

13. To set the equalization for the subwoofer loudspeaker, press F6 to bring up the 2-band parametric equalizer. Verify that sound is coming from the subwoofer loudspeaker cabinet.

Adjusting the subwoofer equalizer is especially difficult and benefits from experience with the particular cabinet model used. Use as little EQ as possible and allow your RTA display extra time to settle between adjustments. Aim for a smooth, rather than extended, response. Note that the higher frequencies are rolled off by the subwoofer low pass filter, whose frequency is shown below the graphic display and is indicated by the vertical yellow line (use 330 Hz for this step and reduce it later).

Recognize that the **SDDS** (and other digital formats) **subwoofer** is an *effects* channel that delivers low frequency sounds designed to enhance certain elements of a particular film. The **analog subwoofer** is derived from the L,C,R channels and is intended to compensate for limitations of the screen speakers being used; modern, full-range screen loudspeakers may need little or no analog subwoofer supplementation.

13. To adjust the Subwoofer Level Trim, the SDDS Preset must be made the active preset.
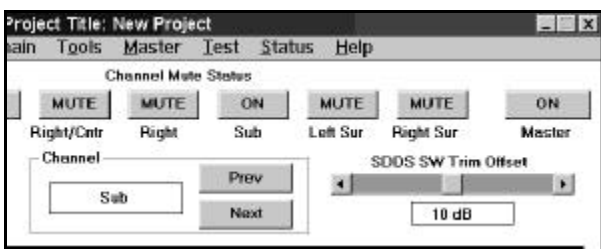
Now use the **SDDS SW Offset** slider control to achieve 10 dB of *in-band gain* of the subwoofer's bands on your real time analyzer (RTA) compared to the previously calibrated Center speaker's bands in the region of its flat frequency response.
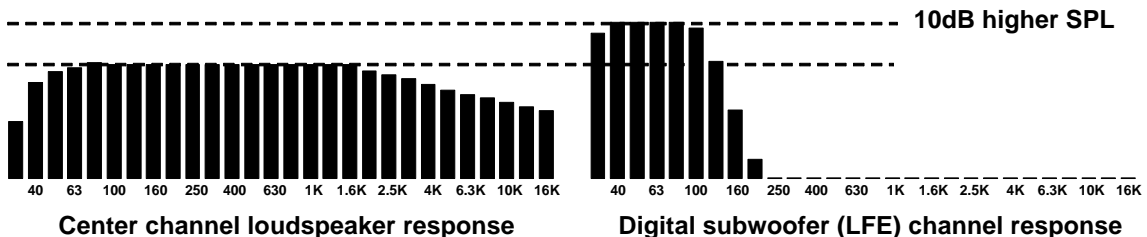

Center channel loudspeaker response   Digital subwoofer (LFE) channel response

This procedure, which requires an RTA, matches the playback gain of the digital subwoofer loudspeaker in the cinema to the playback response of the subwoofer (LFE loudspeaker) on the stage where the film's sound track was mixed. Be sure to allow extra time for the low frequency bands to settle to their final values.

When evaluating the SDDS digital subwoofer (LFE) level, no listening test is entirely definitive, because the amount of energy in the LFE channel is a creative decision made when the soundtrack of each film was mixed. For the same reason, the digital subwoofer (LFE) low pass filter setting has no relationship to the screen loudspeakers' performance. It merely serves to exclude undesirable sound from the subwoofer (LFE) cabinet. The actual sounds reproduced on the digital subwoofer (LFE) channel are determined by what is put there by the film's sound mixer, as long as the filter frequency is not set so low as to remove sounds the mixer intended to be included. Setting the digital subwoofer (LFE) low pass filter frequency to 100 to 200 Hz should be acceptable and should sound the same when actual film is exhibited; start with 160 Hz. Subwoofer manufacturers may have specific recommendations for their cabinets.

Note that the result of a *wideband* SPL measurement of pink noise from the SDDS subwoofer (LFE) will depend on both the level Trim setting and the low pass filter frequency setting. For a LPF frequency setting of 100 Hz, a wideband measurement made with an SPL meter will show *approximately* 91 dB. Such a measurement should only be made to confirm that a correctly calibrated theatre has not drifted, and cannot be used as a primary calibration measurement in place of an RTA. Also remember that the analog subwoofer channel trim is effectively in series with the subwoofer amplifier's input gain control. This means that *an adjustment to the analog subwoofer channel trim also affects the playback level of the digital subwoofer (LFE) signal.*

Note that the graphic and parametric equalizer settings adjust for the frequency response of each of the loudspeakers in the theatre. They are retained in the DFP-D2500's non-volatile memory as a single set of *overall* adjustments to the playback system, unless the EQ/Channel level trim button is un-ticked. Other settings, such as surround speaker delay and preset trim, may be characteristic of one of the presets/inputs, so they are stored individually within each of the two presets.
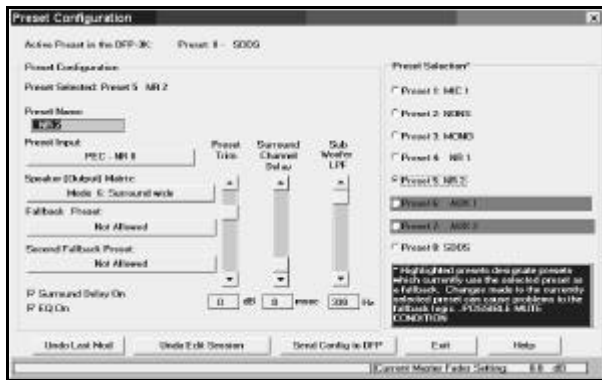
14. To set the surround channel delay and enable it for each input, bring up the **Preset Configuration** screen by selecting the **Preset Configuration** option under the **Presets** item in the main screen menu bar. This screen allows you to select each Preset/Input, make a level trim (to balance the relative level of each Preset), set a surround delay, and set the subwoofer low pass filter (LPF) frequency for that Preset.

The surround channel delay can be set with elaborate science based on SMPTE 202M. However, an easy rule-of-thumb approach is to set the milliseconds of delay for optical sources (via the AUX input) to equal the length of the theatre (in feet) + 10. For digital sources (SDDS) it should be set to 60% of the optical surround delay.

Note: If the surround delay is already activated in the central cinema processor, disable the surround delay for the AUX input.
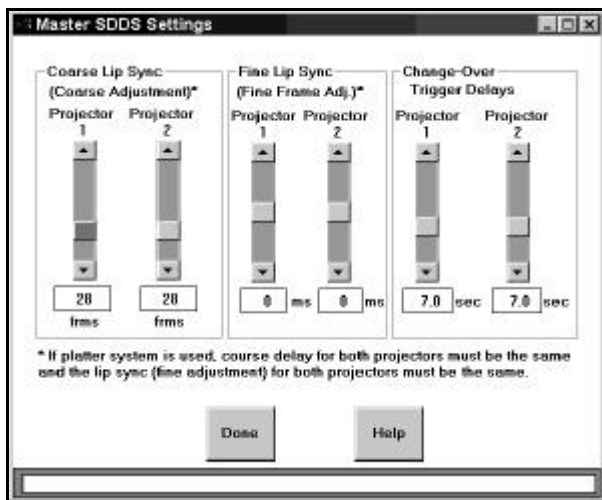
15. To adjust the synchronization between optical and SDDS playback, access the **Master SDDS Settings** screen by selecting **Master SDDS** from the **Master** item on the main screen menu bar.

Set the coarse adjustment of frame offset by counting the actual frames of film between the projector's film gate and the LEDs of the DFP-R3000 Reader. It should be at least 32 frames. The system is temporarily muted if this adjustment is done while the film is running.
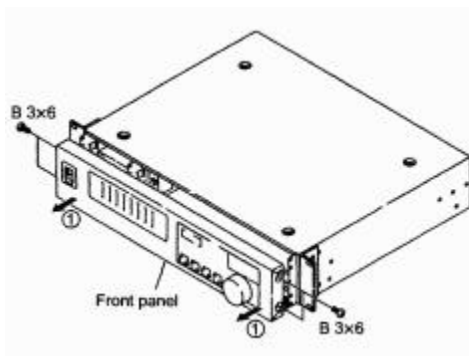
16. Now open the hinged front panel of the DFP-2500 by removing the four screws and then holding the front panel at the right and left, pulling it in the direction indicated by the arrows (1).

Front panel
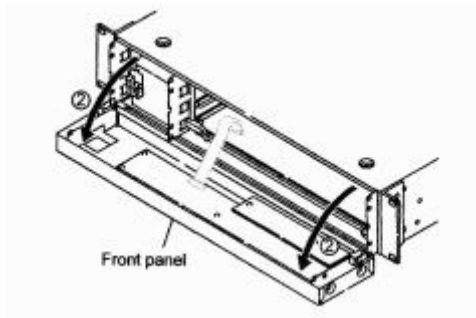
The bottom board is the APR-57 board, where a jack connector for headphones is located on the right hand side. Connect your headphones to this output.

The left output will contain the bypass (AUX) center channel and the right output will contain the SDDS center channel audio.

Adjust the Fine Lip Sync by playing a the SDDS Installation reel or a quality, dialog-heavy feature print (not a trailer, which may have loose sync) and comparing optical and digital dialog, setting fine lip sync to make the two coincident

Verify your setting by watching the film from a mid-audience position and check that the dialog synchronization appears to be correct.
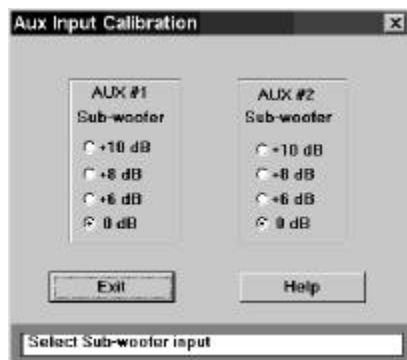
17. If the output of the central cinema processor (which is routed to the DFP-2500 AUX input) requires a different subwoofer level setting than the SDDS playback, go to the AUX Input pulldown menu and select the desired offset.

This does only apply if the B-chain of the DFP-2500 is enabled for the AUX input.
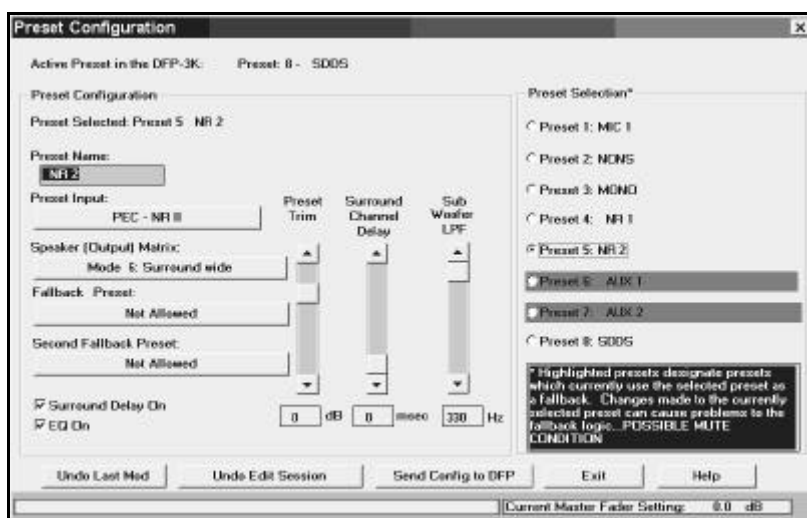
6. Setting up Preset configurations.

A Preset is a set of retained DFP-D2500 Decoder settings that apply to a particular input signal. These settings are associated with the two preset buttons on the front panel, namely SDDS and AUX.

If the bypass button is pressed, none of these preset configuration settings or B-chain processes are carried out.

The following parameters are stored in the DFP-D2500 for these two presets:

> Speaker output matrix
> Fallback preset (for SDDS only)
> Preset trim (fader offset for each Preset)
> EQ/Channel level trim On/Off switch
> Surround delay On/Off switch
> Surround delay
> Sub-woofer low pass filter frequency

To change these parameters, access the **Preset Configuration** screen from the **Preset Configuration** option under the **Presets** item in the main screen menu bar.

To re-configure a Preset, select the candidate Preset from the list of preset configurations in the **Preset Selection** area of the screen. After selecting the Preset, the various fields in the **Preset Configuration** area will change to reflect its current configuration

To change the output format for the selected Preset, click on the **Speaker (Output) Matrix** edit box and select from the list that pops up. This list automatically contains only those matrix formats that are allowed for the type of input signal that you have chosen. Here are all the matrix modes and their meanings:

Mode	Name	Meaning
1	SDDS	Eight inputs sent directly to eight outputs
2	SDDS 7.1CH	#1 except LC and RC mixed into L,C,R; SW to SW, LC, and RC outs
3	SDDS 6CH	#1 except LC and RC mixed into L,C,R; SL+SR to SL out; SW to LC and RC
4	SDDS 5.1CH	#1 except LC and RC mixed into L,C,R; SW in to SW out only
5	SDDS 4CH	#1 except LC and RC mixed into L,C,R; SL+SR to SL out; SW to SW only

For each Preset, graphic and parametric equalization/channel level trim can be switched on or off, surround delay processing can be switched on or off, the number of seconds of surround delay can be set if surround delay processing is switch on, a volume offset for the preset can be specified, and the sub-woofer low pass filter frequency can be set.

To select and set these parameters, use the appropriate control in the **Preset Configuration** area of the screen. If the test signal generator is running, only the preset offset, surround channel delay and EQ on/off switch controls, surround delay setting, and the sub-woofer low pass filter frequency controls are active.

After making modifications to a Preset Configuration, use the **Send Config to DFP** button to send the changes to the DFP-2500 decoder from your connected laptop. Even if the **Send Config to DFP** button is not used, the Setup Software will automatically send the new parameters to the DFP-2500 decoder when the **Exit** button for the **Preset Configuration** screen is clicked.

7. Troubleshooting.

Experienced cinema engineers will have their own methods and styles of troubleshooting. Here are some tips that relate to the SDDS format and the DFP-D2500 system.

Problems with playing SDDS. First, ensure that the film actually has SDDS tracks on it. These tracks are the light blue or cyan areas at the outside of both rows of sprocket holes. The white spots are very small, but you should be able to see a fine granularity in this area.

The DFP-D2500 is furnished with an **SDDS status indicator**, which indicates the error rate of the two tracks of SDDS ("P" for picture-side track, and "S" for sound-side track) on the film print (given that the playback equipment is aligned and set-up properly). See page 6 in the DFP-D2500 Operation Manual for further details.
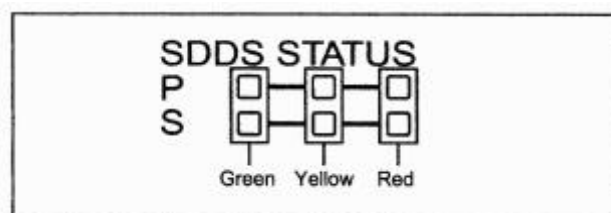
During normal operation, only the green LED's should be illuminated while playing an SDDS encoded film print. This indicates error free condition of the two SDDS tracks.

Occasionally, either P or S track indicators may flash yellow or red momentarily. This indicates some error has been detected.

When one of the track indicators is in the red area for any duration (either momentarily, or for an extended duration), the SDDS system will continue to playback the full eight channel output in SDDS digital sound, by using it's robust digital concealment (DCM) method of 100% data redundancy.

If however both indicators are in the red area simultaneously for a duration of a second or more, it indicates that both SDDS tracks are either corrupted or missing completely. In this event, the decoder will switch to the AUX input seamlessly to conceal the corrupted track.

Report any print problems to your local film print dispatch to get a replacement print or reel and/or to notify the film distributor of prints not complying to the standard.

If the indicators are never out of the red area regardless of the film print, it indicates a potential problem with the DFP-D2500/DFP-R3000 playback hardware or its installation or alignment. See the DFP-R3000 Installation Manual and DFP-R3000 Maintenance Manual, or contact us for further information.

Sony recommends that known good SDDS material is always kept in your cinema so that the condition of the playback hardware can quickly be accessed. This will prove helpful in case there are any doubts about whether poor SDDS playability is caused by print or hardware issues.

The **DATA PRESENT** LED will be off until SDDS data is encountered. It will then flash until a sufficient amount of good SDDS data has been received properly and comes on solidly when SDDS is played back. If uncorrectable errors cause the system to revert to the AUX input, the data present LED will again flash. It will not switch to SDDS again until a significant amount of good SDDS data has been received. Depending on the print errors, you will find that minimum one of the two SDDS status indicators must be solidly out of the red area for up to one minute before SDDS playback is again resumed and the data present LED is again solidly on.

The **REMOTE LED** indicates that the Decoder is being controlled through its serial port.

The Reader will turn on its bright red reader LEDs when the black sprocket roller is turning, as long as it is receiving power through its cable. If the DFP-D2500 is powered and you don't see LEDs on the Reader, check that the Reader cable is plugged in and has not been damaged.

The **EXT FADER** button on the front panel of the DFP-D2500 enables a remote fader. If this function is active (as indicated by its illuminated switch), the MASTER VOLUME control becomes inoperative and the external fader takes over. Don't use this switch unless an external fader is actually connected.

In the event you have difficulty. Sony Cinema Products operates service offices around the world. Contact us for assistance at any of the following locations:

Sony Cinema Products Corporation
Engineering Services Division
   West Coast (USA)
10950 W. Washington Boulevard
 Culver City CA 90232, USA
Phone: +1 310 244-3484
Fax: +1 310 244-0484
Hours: 8:30am to 5:00pm PST
With 24-hour telephone response

Sony Cinema Products Europe
Engineering Services Division
   Europe, Middle East, Africa
25 Golden Square
London W1R 6LU, England
Phone: +44 207 533 1475
Fax: +44 207 533 1590
Hours: 9:00am to 6:00pm GMT

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   East Coast (USA)
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Phone: +1 201 833-5778
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Sony System Service, Tokyo
Tokki Service Center
   Japan
7-22-17 TOC Building 8F
Nishi Gotanda, Shinagawa-ku
Tokyo, 141-0031, Japan
Phone: +81 3 5436 7510
Fax: +81 3 5436 7519
Hours: 9:00am to 6:00pm JST

8. DFP-D2500 Rear Panel Connectors

SYSTEM OUTPUT(25-pin D-Sub Male)
AUX INPUT (25-pin D-Sub Female)
   (all according to the THX™ convention)

Pin	Signal
1	Left GND (ground)
2	Left HOT (+, or in-phase of balanced signal)
3	Left Center COLD (-, or out-of-phase of balanced signal)
4	Center GND (ground)
5	Center HOT (+, or in-phase of balanced signal)
6	Right Center COLD (-, or out-of-phase of balanced signal)
7	Right GND (ground)
8	Right HOT (+, or in-phase of balanced signal)
9	Surround Left GND (ground)
10	Surround Left COLD (-, or out-of-phase of balanced signal)
11	Surround Right COLD (-, or out-of-phase of balanced signal)
12	Subwoofer, LFE, COLD (-, or out-of-phase of balanced signal)
13	Subwoofer, LFE, GND (ground)
14	Left COLD (-, or out-of-phase of balanced signal)
15	Left Center GND (ground)
16	Left Center HOT (+, or in-phase of balanced signal)
17	Center COLD (-, or out-of-phase of balanced signal)
18	Right Center GND (ground)
19	Right Center HOT (+, or in-phase of balanced signal)
20	Right COLD (-, or out-of-phase of balanced signal)
21	No connection
22	Surround Right GND (ground)
23	Surround Left HOT (+, or in-phase of balanced signal)
24	Surround Right HOT (+, or in-phase of balanced signal)
25	Subwoofer, LFE, HOT (+, or in-phase of balanced signal)

REMOTE LEVEL CONTROL (Remote Fader)

Pin	Signal
1	Remote potentiometer ground (min gain end)
2	MAIN FADE (input)
3	No connection
4	No connection
5	No connection
6	Remote potentiometer wiper
7	Remote potentiometer DC drive (max gain end)
8	Remote Tally output for LED
9	GND (ground)

AUTOMATION (37-pin D-Sub Female)

Pin	Function	Signal
1	Chassis Ground	GND
2	Projector 1 Motor Start	Input: Low = MOTOR 1 RUNNING
3	Master Mute command	Input pulse: Low = MUTE or UNMUTE
4	Preset 1 Select (SDDS)	Input pulse: Low = SELECT
5	Preset 2 Select (AUX)	Input pulse: Low = SELECT
6	Reserved	no connections
7	Reserved	no connections
8	Reserved	no connections
9	Reserved	no connections
10	Reserved	no connections
11	Reserved	no connections
12	Motor 1	Output tally: Low = MOTOR 1 RUNNING
13	Motor 2	Output tally: Low = MOTOR 2 RUNNING
14	Logic Common	0 V
16	Tally Common	0 V
18	Reserved	no connections
19	Reserved	no connections
20	Projector 1 Tally	Output tally: Low = SDDS Reader 1
21	Projector 2 Tally	Output tally: Low = SDDS Reader 2
22	Master Mute Tally	Output tally: Low = Master muted
23	Pink Noise Command	Input: Low = ON
24	Reserved	No Connections
30	+5V	Power
31	+5V	Power
32	SDDS Data OK (any preset	Output pulse: Low = SDDS OK
33	Projector 2 Motor Start	Input: Low = MOTOR 2 RUNNING
34	Reserved	no connections
35	Reserved	no connections
36	SDDS Data not OK	Output pulse: Low = SDDS NG
37	EXT FADER Command	Input pulse: Low = ON/OFF