

SECTION 4 SETUP

4.1. STANDARD PROGRAMMING OVERVIEW

Menu # 1

Analog Output Mode:	
<u>N</u> ORMAL	bypass

- Set to NORMAL during setup and all standard operation.
- BYPASS is used for setting surround SPL on the cinema processor or in case of DTS-ES failure. The front panel ES STATUS LED is extinguished while in BYPASS Mode. When the power is off, the DTS-ES automatically switches into the BYPASS Mode.
- The ES STATUS LED will be green for ES Mode, red for STEREO Mode, and extinguished for BYPASS Mode and power off.

Menu # 2

ES Control Mode:	
<u>M</u> ANUAL	auto

- Set “ES Control Mode” to MANUAL for setup of the DTS-ES and when ES Mode is not needed.
- With unit set to “MANUAL”, ES or STEREO decoding is selected by changing Menu #3 “Current Surround Mode” between “ES” and “Stereo”.

Menu # 3

Current Surround Mode:	
<u>E</u> S	stereo

- With the unit set to “AUTO”, ES or STEREO decoding is determined by the input to the TIMECODE IN (via F120 cable) and REMOTE IN (via F115 board) connectors. AUTO can not be selected until Menu #9 “Auto Enable” has been programmed.

Menu # 9 (Auto Enable)

	TC	code A	code B
<u>E</u> XIT	Yes	00	00

- Once unit is set to “AUTO”, ES decoding is activated only when the criteria of the “Auto Enable” menu has been met.
 - ☒ Menu #9, “Auto Enable” has two main choices:
 - ① To monitor *timecode* (TC) by selecting “Yes” or “No”, and
 - ② To monitor the three control lines of the REMOTE IN (P6) connector by selecting a *format code*. See “Format Codes A & B” (page 4-3) for details.
 - ☒ The ES Mode will automatically activate only when the conditions of TC, Code A, and Code B are met.

MENU # 9 “AUTO ENABLE” PROGRAMMING

- **Timecode (TC)** F120 “Y” cable must be used. *DTS-ES auto-enabled only by valid ES (5-digit) timecode.*
To ensure proper performance, the DTS-ES unit must have software V1.1 (or greater).
 - ☒ If “Yes” is selected, the DTS-ES will use “ES” TC serial numbers to determine a valid state.
 - ☒ If “No” is selected, the DTS-ES will ignore the “ES” TC serial numbers.

- **Format Codes A & B.** *DTS-ES auto-enabled only by desired format closures on cinema processor.*
 Selecting a “Format Code” is used in conjunction with REMOTE IN (P6) connector. Control inputs from the cinema processor (CP) are sent to the DTS-ES through P6. There are a total of three control inputs that determine a valid “Auto Enable” state. Format Code numbers range from “0” to “10” on Code A and “0” to “8” on Code B. Two separate “Format Codes” (A & B) allow for two different sound format controls from the CP. This is used if both require DTS-ES decoding.

- **ES automatic decoding** is activated only if Menu #2 is set to AUTO and Menu #9 conditions are met: The goal is to have the DTS-ES automatically start “ES” decoding whenever the CP switches to “digital”. When properly connected and the CP switches to “digital”, that LED line will be driven, activating the opto-coupler on the F115 board, and in turn enabling ES decoding in the DTS-ES unit.
 - ☒ When TC is set to “Yes”, the DTS-ES only uses special DTS timecode to automatically enable ES decoding. The DTS-ES must be in AUTO Mode. When in AUTO, P6 (remote control) is ignored.
 - ☒ When TC is set to “No”, the DTS-ES only uses the conditions set in the “Format Code” to enable ES decoding while in the AUTO Mode. The “Format Code” choices are given below:
 - ☒ If “Format Code A” is set to “0”, then P6 (remote control) will not enable ES decoding until conditions are properly set in “Format Code”. However, if TC is set to “Yes”, then P6 is ignored and decoding will be enabled by special DTS timecode.
 - ☒ The **DTS-6AD** may use two 6-track sound sources: DTS digital and an alternate (Dolby Digital™, 6-track mag., etc.). On the DTS-6AD, the STATUS/CONTROL A & B connectors, pin 19 is used for DTS playback and pin 18 (EXTERNAL) is used for the alternate.
 - See #18 on page 4-9 for Code A and Code B settings. See wiring diagrams in Section 5.
 - ☒ When using with a **Dolby CP45, CP55, CP65** or an **UltraStereo** processor:
 - See #16 on page 4-15 for Code A and Code B settings.
 - On the DTS F115 Interface {“opto” board) connect OC1 “J1 terminals 1 & 2” to the digital format LED output on the CP. See wiring diagrams in Section 5.
 - ☒ **Dolby Model CP500** may use two digital sound sources: DTS and Dolby Digital™.
 - Use Code A for DTS, typically Soft Key 5 (SK5 on the CP500).
 - Use Code B for Dolby Digital, typically Soft Key 8 (SK8 on the CP500).
 - See #16 on page 4-15 for Code A and Code B settings. See wiring diagrams in Section 5

NOTE: Early CP500 do not have the Format Status Bit outputs connected internally. The DTS-ES monitors these outputs to determine what sound format the CP500 is in. Older CP500s require an updated “Dolby Model Cat. No. 684 System Controller Card”, obtained from an equipment dealer.

NOTE: Early CP500 software versions may not provide the proper format status outputs. If the “Format Code” for the soft key being monitored does not work, it may require a software upgrade or another code programmed in on the DTS-ES.

Format Code Choices

- Code 0** No remote operation. If A and B are both set to “0”, the DTS-ES ignores any input to the three control lines of the REMOTE IN connector (P6).

Codes 1 - 8 Sustained contact using Code Truth Table.

NOTE: Format Codes 1 → 8 correspond to SK1 → SK8 on the CP500.

Code 9 Pulse Mode: Pulse to OC 3 (CTRL 1) activates ES Mode

Pulse to OC 2 (CTRL 2) activates Normal Mode

NOTE: Pulse must be a minimum of 100 milliseconds

Code 10 A sustained contact to any of the three inputs activates the ES Mode. Can be used with a Sony DFP-3000 that has 3 digital sound formats that might require DTS-ES decoding.

Code Truth Table

F115 “opto” board			DTS-ES J6 connector (from CP)			
OC 1	OC 2	OC 3		CTRL 3	CTRL 2	CTRL 1
				Pin 5	Pin 4	Pin 3
			FORMAT CODE			
			0	X	X	X
0	0	0	1	1	1	1
0	0	1	2	1	1	0
0	1	0	3	1	0	1
0	1	1	4	1	0	0
1	0	0	5	0	1	1
1	0	1	6	0	1	0
1	1	0	7	0	0	1
1	1	1	8	0	0	0

Opto-coupler: 1 = Voltage present (opto-coupler driven) 0 = No voltage (opto-coupler not driven)

Control (P6) In: 1 = High (FALSE), (control line open) 0 = Low (TRUE), (control line held to ground)

- Code A can be set from “0” to “10”.
- Code B can be set from “0” to “8”, if a second code is required. If Code B is to be used, Code A must be set to something other than “0”.
- Set Code B to “0” when only one code is required.
- If Code A is set to “0”, “9”, or “10”, then ensure that Code B is set to “0”.

NOTE: If Format Code 1 (CTRL 1-1-1) is selected, and no connector is attached to the REMOTE IN connector (P6), then the ES Mode will enable and decode at all times since the inputs are pulled up by internal resistors.

- Direct connection to the REMOTE IN connector (P6) can be made via a dry contact closure.
- The DTS-ES “REMOTE IN” connector (P6) monitors the format indicator LED line of the CP. This allows the DTS-ES to automatically go into the ES Mode when the CP is in a digital sound format.

4.2. SETUP WITH A DTS-6AD CINEMA PROCESSOR

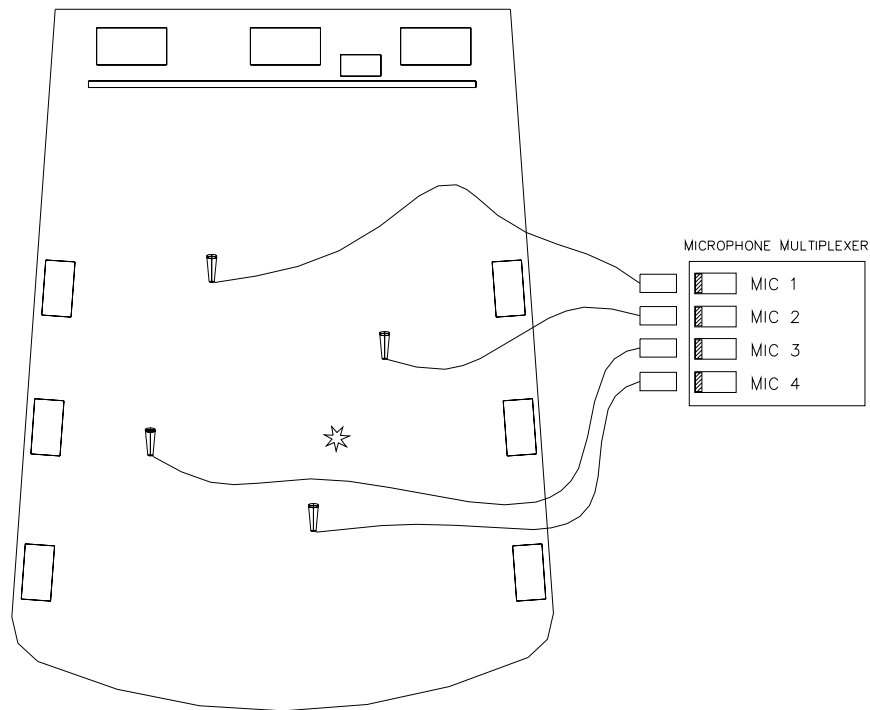
Equipment needed

- SPL meter (set to C-weighting & slow response)
- Multimeter
- RTA
- Calibrated microphones w/multiplexer
- ES Setup Disc
- DTS Technician's kit
- Encoded surround film with DTS timecode and matching DTS disc.

Audio Setup

1. Turn off the Left, Center, Right, and Subwoofer amplifiers. Place multiplexer in auditorium as directed by manufacturer. Or, see diagram below:

SUGGESTED MICROPHONE PLACEMENT



★ MAKE ALL SPL READINGS AT THIS LOCATION.
IF USING A SINGLE CALIBRATED MICROPHONE FOR
ADJUSTING EQ, LOCATE THE MIC AT THIS LOCATION.

THEATER.DWG

2. Power off the DTS-ES.
3. Store the DTS-6AD EQ settings of all channels. In the unlikely event of setup difficulties, these setting may need to be restored. To **store**, press MENU → SYSTEM SETUP → AUDIO → LOAD/STORE.

LOAD/STORE Screen >

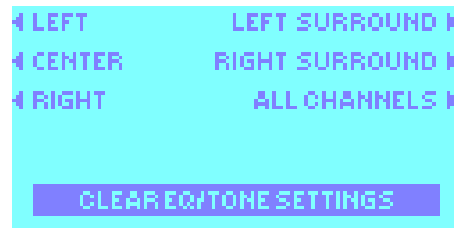


- Save existing settings in an unused “store” file. This will allow saving “normal” 5.1 setup and, in most cases, it will be in Setup #2. Setup #1 can then be kept for saving “ES” Mode. This would be ideal since once the ES is installed, it will most likely be a permanent addition to the B-chain.
- If no vacant “store” file exists, then choose which stored settings to download onto a computer and, once done, delete it from the DTS-6AD Store Setup file. Then, use that emptied setup file to store “ES” Mode settings.

4. On the DTS-6AD, reset the surround channel’s EQ adjustments. Press MENU → SYSTEM SETUP → AUDIO → CLEAR EQ.

CLEAR EQ SETTINGS screen >

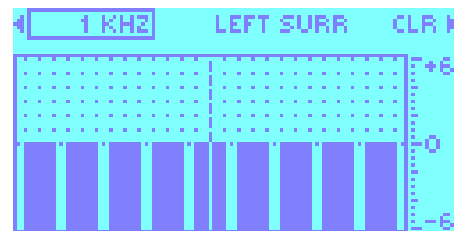
Clear the LEFT SURROUND and RIGHT SURROUND EQ settings.



5. Once cleared, the EQ settings for LEFT SURR and RIGHT SURR should look:

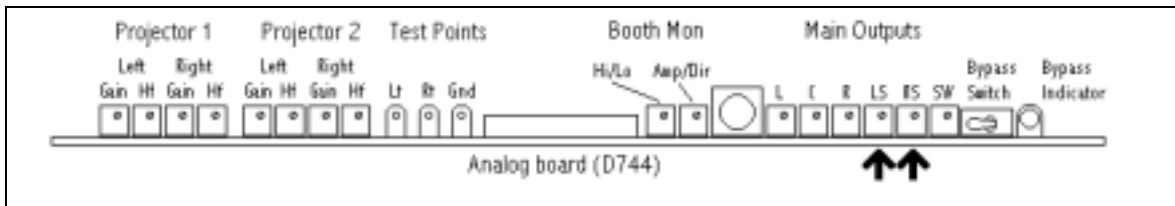
Single octave adjustment screen >

Should look flat, at “0” for both LEFT SURR and RIGHT SURR. Check both channels.



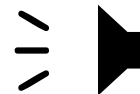
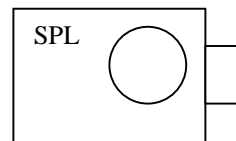
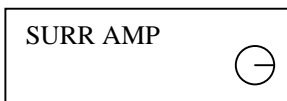
- Press OK to save settings. Press FMT to return to normal operating screen. Surround EQ will be done with ES Setup Disc and DTS-ES unit.

6. Load the ES Setup Disc into the DTS-6AD. Play the **1kHz tone**. Set the LEFT SURROUND and RIGHT SURROUND trim-pots until an output of **300mV** is achieved at P2 “TO POWER AMPS” on the DTS-6AD. Do not adjust the output levels of any other channels.



NOTE: If the output levels were much lower than 300mV initially, then first turn the gain down on the Left Surround and Right Surround amplifiers, and then set the surround levels to 300mV.

7. Power on the DTS-ES and set it to the BYPASS Mode (Menu #1). The DTS-ES STATUS L.E.D. should extinguish.
8. For this stage of **SPL** adjustments, load the **ES Setup Disc** and adjust the **amplifier gain controls** to set levels. Do NOT adjust levels on the DTS-6AD. Disconnect or turn off appropriate amplifiers to ensure that SPL adjustments are set with only the correct speaker arrays.

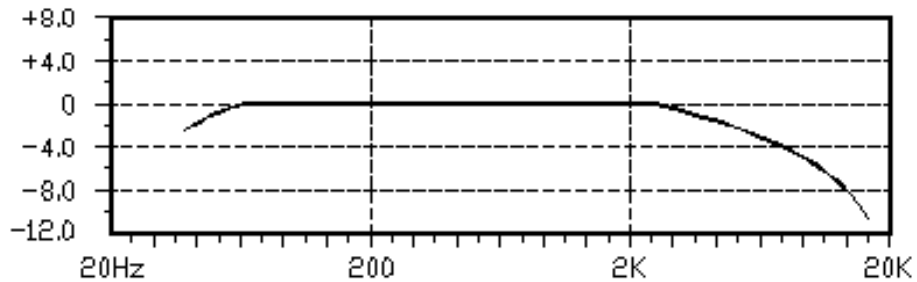


- Play ES disc **LS** pink noise and adjust the **Left Wall Surround** amp for **82 dBC** (SPL) in the theater.
- Play ES disc **LS** pink noise and adjust the **Left Back Surround** amp for **79 dBC** (SPL) in the theater.
- Play ES disc **RS** pink noise and adjust the **Right Wall Surround** amp for **82 dBC** (SPL) in the theater.
- Play ES disc **RS** pink noise and adjust the **Right Back Surround** amp for **79 dBC** (SPL) in the theater.

9. Set DTS-ES to **NORMAL** (Menu #1) and **ES Mode** (Menu #3). DTS-ES STATUS LED should illuminate green.
10. Verify SPL for the Left Wall Surrounds and Right Wall Surrounds outputs have not changed.
- If 1 to 3 dB low, use their amplifier gain controls to bring them up to **82dB**.
 - If amplifier gain is increased, be aware that during BYPASS, the output for that channel will be higher by the amount of the adjustment.
 - If any level is more than 2dB too high, its best to use the DTS-ES Master or individual channel volume **trims** (Audio Setup #1, #2, #3) to attenuate output as needed. This ensures correct playback at normal level during BYPASS Mode.
 - The DTS-ES is designed for unity gain, therefore level differences greater than 3dB between BYPASS and either the ES or Stereo Modes, indicates an error in setup or unit malfunction.
11. Play ES disc **BS** pink noise and verify the **Back Surround** (both the Left Back and Right Back Surrounds) SPL is **82 dBC**.

12. Using the DTS-ES unit, adjust the Bass, Treble, and one-octave EQ for the Left (wall), Right (wall), and Back Surround channels so they achieve the correct pattern on the RTA, as shown below.

Standard X-curve Pattern



- Start with the Left (wall) Surround. Play ES Setup Disc **LS** pink noise. Enter the ES Audio Setup #6 and set the bass and treble coarse EQ adjustments.

ES Audio Setup # 6

```
Left Surround Ch tone:
EXIT ba:+00dB tr:+00dB
```

- Fine tune the Left Surround by going to ES Audio Setup #7.

ES Audio Setup # 7

```
Left Surround Ch EQ:
EXIT +0+0+0+0+0+0+0+0+0
```

- Repeat for the Right (wall) and Back Surround channels. Use ES Setup Disc **RS** pink noise for the Right (wall) Surrounds and the **CS** pink noise for the Back (center) Surrounds.

13. When EQ for all channels is finished, save the ES Mode settings for EQ, Tone, Volume, and Delay by entering the Save Audio Setting screen. Press ENTER to save settings.

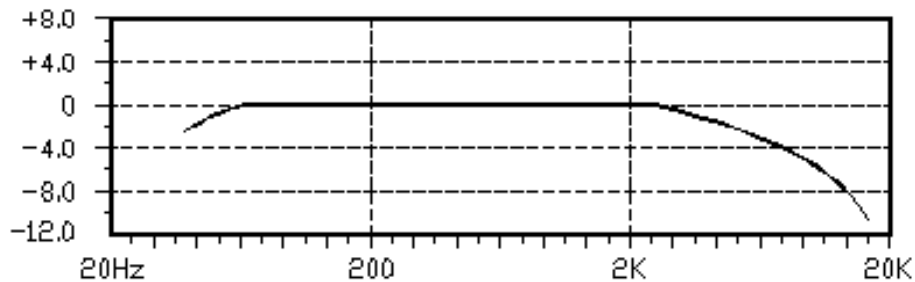
Save ES Audio Settings

```
ENTER to save EQ, Tone &
Vol., Delay for ES mode.
```

14. Set the DTS-ES to **STEREO** Mode (Menu #3).
15. Using the **ES Setup Disc**, set Stereo Mode levels.

- Play **LS** pink noise and verify the Left Surround SPL is **82 dBC**
 - Play **RS** pink noise and verify the Right Surround SPL is **82 dBC**
 - If the level is too high, use the DTS-ES STEREO master or individual level trims to attenuate.
 - If the levels are too low, increase gain at the power amps. Once finished, switch back to the ES Mode and trim those levels (via DTS-ES menu). Re-save the ES settings once completed.
16. After Stereo Mode levels are set, adjust the Tone and EQ for the Left Surround and Right Surround channels so they achieve the correct pattern on the RTA, as shown below:

Standard X-curve pattern



- Start with the Left Surround. Play ES Setup Disc **LS** pink noise. Enter Stereo Setup #4 and set the bass and treble coarse EQ adjustments.

Stereo Setup # 4

```
Left Surround Ch tone:
EXIT ba:+00dB tr:+00dB
```

- Fine-tune the Left Surround EQ by going to Stereo Setup #5.

Stereo Setup # 5

```
Left Surround Ch EQ:
EXIT +0+0+0+0+0+0+0+0+0+0
```

- Repeat for Right Surround. Use the ES Setup Disc **RS** pink noise and the Stereo Setups #6 & #7.

17. When EQ for all channels is finished, save the Stereo settings for EQ, Tone, and Volume by entering the “Save Stereo Settings” screen. Press ENTER to save settings.

Save Stereo Settings

```
ENTER to save EQ, Tone &
Volume for Stereo mode.
```

18. If the **F120 timecode** TC “Y” adapter cable is installed and the **DTS-6AD** is the **ONLY digital sound source**, activate the TC monitoring system. Use the F115 automation interface board and connect it as shown in Section 5.
- Set Analog Output Mode to “MANUAL” (Menu #1) to set menus.
 - Set ES Code to “AUTO” (Menu #2).

- Set Surround Mode to “ES” (Menu #3).
 - If using timecode, set “TC” to “Yes” (Menu #9). Codes A & B are not used.
 - **If not using timecode**, set “TC” to “No” and Menu #9 **Code A to “05”** and **Code B to “00”**.
 - ⊗ Code A monitors STATUS 5 OUT (P15/16, pin 19) on the DTS-6AD and when it (DTS DIGITAL) goes low, the DTS-ES unit should automatically start ES decoding.
 - ⊗ Code B is not used.
 - Set Analog Output Mode to “NORMAL” (Menu #1) for operation.
19. If using Dolby Digital™ **Model DA20** with the DTS-6AD, use the F115 automation interface board. Connect as shown in Section 5.
- Set Analog Output Mode to “MANUAL” (Menu #1) to set menus.
 - Set ES Code to “AUTO” (Menu #2).
 - Set Surround Mode to “ES” (Menu #3).
 - If using timecode, set “TC” to “Yes” (Menu #9). Codes A & B are not used.
 - **If not using timecode**, set “TC” to “No” and Menu #9 **Code A to “05”** and **Code B to “03”**.
 - ⊗ Code A monitors STATUS 5 OUT (P15/16, pin 19) on the DTS-6AD and when it goes low (DTS DIGITAL), the DTS-ES unit should automatically start ES decoding.
 - ⊗ Code B monitors STATUS 4 OUT (P15/16, pin 18) on the DTS-6AD and when it goes low (EXTERNAL for DA20), the DTS-ES unit should automatically start ES decoding.
 - Set Analog Output Mode to “NORMAL” (Menu #1) for operation.
20. **If using the ES-1 Setup disc that lists “BACKDRAFT” and “FAR AND AWAY” on it’s label**, load it into the DTS player. Thread the “BUZZ AND BILL SHOW” film. Turn off the subwoofer amplifier. Only “BACKDRAFT” and “FAR AND AWAY” scenes will play in the ES Mode.
- Play the film. Verify the film plays in DTS DIGITAL (Format 5) on the DTS-6AD. Also verify the DTS-ES unit automatically switches to the ES Mode (the front panel L.E.D. should glow green signifying the ES Mode is enabled).
 - When in the ES Mode, verify dialog is heard in the Back Surrounds with the music playing from the Left (wall) and Right (wall) Surrounds.
 - Switch the DTS-ES to Stereo Mode (Menu #3) and verify the front panel L.E.D. glows red. Listen to verify that music and dialog are heard from both surrounds, and that surround loudness has not changed.
 - Switch the DTS-ES to BYPASS (Menu #1) and verify the front panel L.E.D. extinguishes. Listen to verify that dialog is heard from the front speakers and music in the surrounds. Be aware that when in BYPASS, the EQ and trims are disabled. Therefore, the sound quality and loudness of the surrounds will change slightly. BYPASS is used only in the event of DTS-ES unit failure.
 - Switch the DTS-ES back to NORMAL (Menu #1).
21. If using any **other version ES Setup disc**, thread encoded-surround film (that has DTS timecode) and load the matching disc into the DTS-6AD player. **The film title on the disc must have a 5-digit serial number.**
- Play the film. Verify the film plays in DTS DIGITAL (Format 6) on the DTS-6AD. Also verify the DTS-ES unit automatically switches to the ES Mode (the front panel L.E.D. should glow green signifying the ES Mode is enabled).
 - When in the ES Mode, verify good sound quality and that sound is coming from all the surround speakers.

- Switch the DTS-ES to Stereo Mode (Menu #3) and verify the front panel L.E.D. glows red. Listen to verify that sound is heard from both surrounds and that surround loudness has not changed.
 - Switch the DTS-ES to BYPASS (Menu #1) and verify the front panel L.E.D. extinguishes. Listen to verify that sound is heard in both surrounds and is of good quality. Be aware that when in BYPASS, the EQ and trims are disabled. Therefore, the sound quality and loudness of the surrounds will change slightly. BYPASS is used only in the event of DTS-ES unit failure.
 - Switch the DTS-ES back to NORMAL (Menu #1).
 - If any listening material is listed on the disc, play it.
22. If an external 6-track source (example: Dolby Model DA10/20) is connected to the DTS-6AD at P8, “6-TRACK ANALOG IN”, play the encoded-surround film with the disc removed from the player. **Verify:**
- ☒ the external source enables
 - ☒ the DTS-6AD switches to EXTERNAL (Format 5)
 - ☒ the DTS-ES unit automatically switches to the ES Mode (front panel L.E.D. glows green signifying the ES Mode is enabled).
23. Run the film again while sitting in the theater. Verify balanced, good sound quality from all surrounds. Set DTS-ES to all three modes (ES, Stereo, Bypass). Verify good sound quality and level balance between modes.
24. The DTS-ES may remain powered and left in the NORMAL mode during standard 5.1 playback. If, however, using with a Dolby Model DA10/20, set the mode to MANUAL to prevent the ES Mode automatically enabling during a Dolby Digital™ show.

4.3. SETUP WITH A NON-DTS CINEMA PROCESSOR

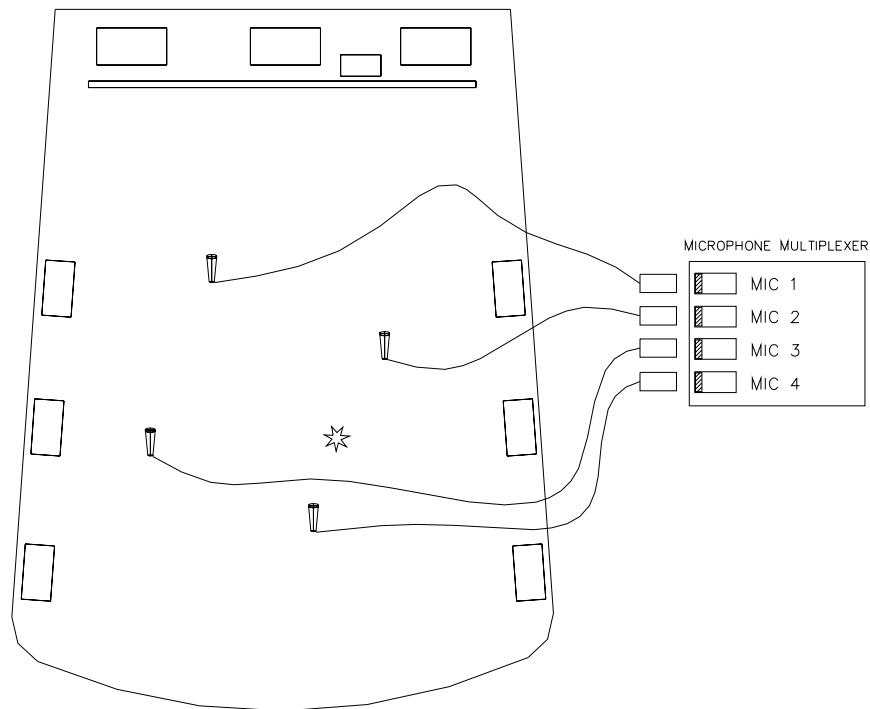
Equipment needed

- SPL meter (set to C-weighting & slow response)
- Multimeter
- RTA
- Encoded surround film with DTS timecode and matching DTS disc
- Pink noise source for cinema processor
- ES Setup Disc
- Calibrated microphones w/multiplexer
- DTS Technician's kit
- DTS audio breakout board (to measure levels)

Audio Setup

1. Turn off the Left, Center, Right, and Subwoofer amplifiers. Place multiplexer in auditorium as directed by manufacturer. Or, see diagram below:

SUGGESTED MICROPHONE PLACEMENT

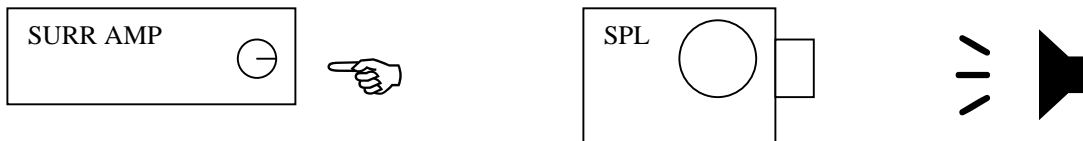


★ MAKE ALL SPL READINGS AT THIS LOCATION.
 IF USING A SINGLE CALIBRATED MICROPHONE FOR
 ADJUSTING EQ, LOCATE THE MIC AT THIS LOCATION.

THEATER.DWG

2. Carefully note the EQ settings of the surround channels. In the unlikely event of setup difficulties, these setting may need to be restored.
3. On the cinema processor (CP), turn **surround channel's EQ adjustment pots** to the middle of their rotation. Do not adjust any other channel's EQ pots.
4. Disconnect the DTS player's audio (breakout) board from the cinema processor (CP). Load the **ES Setup Disc** into the DTS player.
 - Play the 1kHz tone. Connect meter to the breakout board and adjust the DTS player's left and right surround output levels for **300mV**. Do not adjust the output levels of any other channels.
 - Set the left surround and right surround outputs on the CP to **300mV**. Do not adjust the output levels of any other channels.

NOTE: If the output levels were much lower than 300mV initially, then turn the amplifier gain down first and then turn up the output levels on the CP.
5. Reconnect the DTS breakout board to the CP. Set the DTS-ES to the BYPASS Mode.
6. For this stage of **SPL** adjustments, load the **ES Setup Disc** and adjust the **amplifier gain controls** to set levels. Do NOT adjust levels on the DTS player or CP. Disconnect or turn off appropriate amplifiers to ensure that SPL adjustments are set with only the correct speaker arrays.

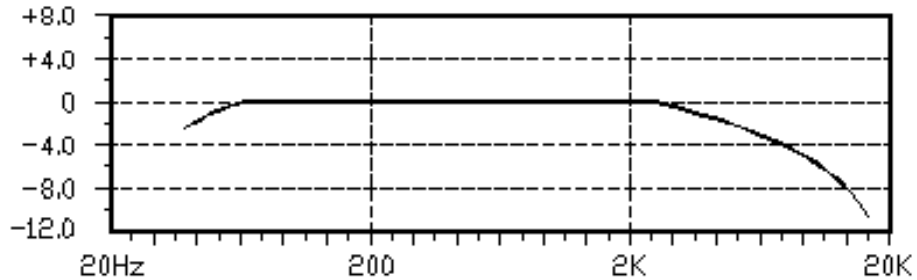


- Play ES disc **LS** pink noise and adjust the **Left Wall Surround** amp for **82 dBC** (SPL) in the theater.
 - Play ES disc **LS** pink noise and adjust the **Left Back Surround** amp for **79 dBC** (SPL) in the theater.
 - Play ES disc **RS** pink noise and adjust the **Right Wall Surround** amp for **82 dBC** (SPL) in the theater.
 - Play ES disc **RS** pink noise and adjust the **Right Back Surround** amp for **79 dBC** (SPL) in the theater.
7. Set DTS-ES to **NORMAL** and **ES Mode**. The ES STATUS L.E.D. should illuminate green.
 8. Play ES disc **LS** pink noise for the Left Wall Surrounds and **RS** for Right Wall Surrounds outputs. Verify no changes in SPL.
 - If 1 to 3 dB low while in ES Mode, use the specific amplifier's gain control to achieve **82dBC**.
 - If amplifier gain is increased, be aware that during BYPASS, the output for that channel will be higher by the amount of the adjustment.
 - If any level is more than 2dB too high, its best to use the DTS-ES Master or individual channel volume **trims** (Audio Setup #1, #2, #3) to attenuate output as needed. This ensures correct playback when switching between BYPASS & ES Modes.
 - The DTS-ES is designed for unity gain, therefore level differences greater than 3dB between BYPASS and either the ES or Stereo Modes, indicates an error in setup or unit malfunction.
 9. Using the ES disc's **BS** pink noise, check the Back Surround Channel (Left and Right Back Surrounds) for **82 dBC** (SPL).

NOTE: If using a Pink Noise Generator, feed pink noise to the CP on both the Left and Right Surround outputs. Level should be **85 dBC** (SPL).

10. While in ES Mode, set the DTS-ES Bass, Treble, and one octave EQ for the Left Wall, Right Wall, and Back Surround channels so they achieve the correct pattern on the RTA, as shown below.

Standard X-curve Pattern



- Start with the Left (wall) Surround. Play ES Setup Disc **LS** pink noise. Enter ES Audio Setup #6 and set the bass and treble coarse EQ adjustments.

ES Audio Setup # 6

Left Surround Ch tone:
EXIT ba:+00dB tr:+00dB

- Fine tune the Left Surround by going to ES Audio Setup #7.

ES Audio Setup # 7

Left Surround Ch EQ:
EXIT +0+0+0+0+0+0+0+0+0

- Repeat for the Right (wall) and Back Surround channels. Use ES Setup Disc **RS** pink noise for the Right (wall) Surrounds and the **CS** pink noise for the Back (center) Surrounds.

11. When EQ for all channels is finished, save the ES Mode settings for EQ, Tone, Volume, and Delay by entering the Save Audio Setting screen. Press ENTER to save settings.

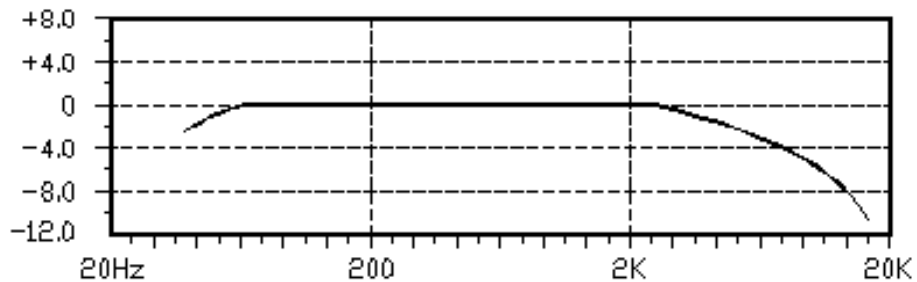
Save ES Audio Settings

ENTER to save EQ, Tone &
 Vol., Delay for **ES** mode.

12. Set the DTS-ES to **STEREO** Mode (Menu #3).
13. Using the **ES Setup Disc**, set Stereo Mode levels.

- Play **LS** pink noise and verify the Left Surround SPL is **82 dBC**
 - Play **RS** pink noise and verify the Right Surround SPL is **82 dBC**
 - If the level is too high, use the STEREO master or individual level trims to attenuate as necessary.
 - If the levels are too low, increase gain at the power amps. Once finished, switch back to the ES Mode and trim those levels. Re-save the ES settings once completed.
14. After Stereo Mode levels are set, adjust the Tone and EQ for the Left Surround and Right Surround channels so they achieve the correct pattern on the RTA, as shown below.

Standard X-curve pattern



- Start with the Left Surround. Play ES Setup Disc **LS** pink noise. Enter Stereo Setup #4 and set the bass and treble coarse EQ adjustments

Stereo Setup # 4

```
Left Surround Ch tone:
EXIT ba:+00dB tr:+00dB
```

- Fine-tune the Left Surround EQ by going to Stereo Setup #5.

Stereo Setup # 5

```
Left Surround Ch EQ:
EXIT +0+0+0+0+0+0+0+0+0
```

- Repeat for Right Surround. Use the ES Setup Disc **RS** pink noise and the Stereo Setups #6 & #7.

15. When EQ for all channels is finished, save the Stereo settings for EQ, Tone, and Volume by entering the “Save Stereo Settings” screen. Press ENTER to save settings.

Save Stereo Settings

```
ENTER to save EQ, Tone &
Volume for Stereo mode.
```

16. If the **F120 timecode** TC “Y” adapter cable is installed and the **DTS system is the SOLE digital sound** source, activate the TC monitoring system. Use the F115 automation interface board and connect it as shown in Section 5.
- Set Analog Output Mode to “MANUAL” (Menu #1) to set menus.
 - Set ES Code to “AUTO” (Menu #2).

- Set Surround Mode to “ES” (Menu #3).
- Since the **CP50** and **CP100** do not have stereo surrounds, their use with the DTS-ES is not recommended.

For CP45, CP55 (modified for stereo surrounds), CP65, and UltraStereo, on Menu #9:

- ✧ If using timecode, set “TC” to “Yes” (Menu #9). Codes A & B are not used.
- ✧ If **not** using timecode, set “TC” to “No”. **Code A** monitors the automation LED lines and is set so that when the “digital” format line goes low, the DTS-ES starts automatically ES decoding. The DA20 and DTS player use the same format on the cinema processors named above. Set Code A to “05”. **Code B** is not used, set it to “00”.

For CP200, on Menu #9:

- ✧ If using timecode, set “TC” to “Yes”. Codes A & B are not used.
- ✧ If **not** using timecode, set “TC” to “No”. **Code A** monitors the relay key signal from DTS-6D unit to DTS-D567 interface board. Set Code A to “10”. **Code B** is not used, set it to “00”.

For CP500, on Menu #9:

- ✧ If using timecode, set “TC” to “Yes”: Codes A & B are not used.
- ✧ If **not** using timecode, set “TC” to “No”. **Codes A & B** are used to monitor the automation LED lines and are set so that when a “digital” line goes low, the DTS-ES automatically starts ES decoding.
 - **Code A** should be used to monitor the Dolby “digital” status LED. Typically SK4 is assigned to “Dolby Digital” (format 10) on the CP500.
 - **Code B** should be used to monitor DTS “digital” status LED. Typically, SK5 is assigned to “external 6-track”, the CP500 External 6-track Analog Input connector = where the DTS player connects.

Because the format lines can be reprogrammed by the user, the correct code for each “digital” line must be determined by a process of elimination.

- ☒ Start by setting **Code A** for “01”. Push on the CP500 sound format button that controls DTS. If the DTS-ES’ STATUS L.E.D. illuminates green then try other format keys. If no other key starts the DTS-ES decoding (green L.E.D.), then keep that setting.
 - ☒ Repeat procedure until the one code is found that corresponds to one (CP500) format button that controls Dolby “digital”.
 - ☒ Repeat for **Code B** for DTS “digital”.
 - ☒ Once code is set, verify pushing other sound format buttons switches the DTS-ES to STEREO (red LED). Make a note of the correct code setting (in case of accidental reset).
- Set Analog Output Mode to “NORMAL” (Menu #1) for automatic ES operation. Leave set to “MANUAL” when automatic operation is not preferred.

17. If the **F120 timecode “Y”** adapter cable is installed and the **DTS system is ONE of the digital sound** sources, activate the TC monitoring system. Use the F115 automation interface board and connect it as shown in Section 5.
- Set Analog Output Mode to “MANUAL” (Menu #1) to set menus.
 - Set ES Code to “AUTO” (Menu #2).
 - Set Surround Mode to “ES” (Menu #3).
- For **CP45, CP55, CP65** and **UltraStereo**: Codes A & B are used by the DTS-ES unit to monitor the CP automation LED lines. When the “digital” format line goes low, the DTS-ES automatically starts ES decoding.
 - ✧ If using timecode, set “TC” to “Yes”. Codes A & B are not used.
 - ✧ If **not** using timecode, set “TC” to “No”. Code A monitors the sound format line for “digital”. Both DTS digital and Dolby digital use the same format. **Set Code A to “05”**. Code B monitors the sound format line for another 6-track digital source requiring ES decoding. **Set Code B to “00”**.
 - The **CP50** and **CP100** require modification to function with the DTS-ES unit. Contact DTS.
 - **CP200** requires special wiring. See Section 5.
 - For **CP500**
 - ✧ If using timecode, set “TC” to “Yes” (Menu #9). Codes A & B are not used.
 - ✧ If **not** using timecode, set “TC” to “No”. Codes A & B must be set so the DTS-ES can monitor the digital format automation LED lines. Code A is used to monitor the DTS Digital line. When it goes low, the DTS-ES unit should automatically start ES decoding. Typically, SK5 is assigned to the CP500 external “6-channel Analog Input” connector where the DTS player is connected. The correct code for this line must be determined and it is a process of elimination. **Code B** is used to monitor the Dolby Digital™ line. When it goes low, the DTS-ES unit should automatically start ES decoding. Typically, SK4 (Format 10) is assigned to the CP500 “digital”.
 - ☒ Start by setting **Code A** for “01”. Push on the CP500 sound format button that controls DTS. If the DTS-ES’s STATUS L.E.D. illuminates green, then try other format keys. If no other key starts the DTS-ES decoding (green L.E.D.), then keep that setting.
 - ☒ Once code is set, verify pushing other sound format buttons switches the DTS-ES to STEREO (red LED). Make a note of the correct code setting (in case of accidental reset).
 - ☒ Repeat procedure code selection for **Code B**, Dolby Digital™.
 - Set Analog Output Mode to “NORMAL” (Menu #1) for operation.
18. If **no “Y” cable** is installed, connect the F115 automation interface board as shown in Section 5. Program “TC” to “No” in Menu # 9.

19. If using the **ES-1 Setup disc**, load it into the DTS player and thread the “BUZZ AND BILL SHOW” film. Turn off the subwoofer amplifier. Be aware that only “BACKDRAFT” and “FAR AND AWAY” scenes will play in the ES Mode.
- Play the film. Verify the film plays in DTS DIGITAL (Format 5) on the DTS-6AD. Also verify the DTS-ES unit automatically switches to the ES Mode (the front panel L.E.D. should glow green signifying the ES Mode is enabled).
 - When in the ES Mode, verify dialog is heard in the Back Surrounds with the music playing from the Left (wall) and Right (wall) Surrounds.
 - Switch the DTS-ES to Stereo Mode (Menu #3) and verify the front panel L.E.D. glows red. Listen to verify that music and dialog are heard from both surrounds, and that surround loudness has not changed.
 - Switch the DTS-ES to BYPASS (Menu #1) and verify the front panel L.E.D. extinguishes. Listen to verify that dialog is heard from the front speakers and music in the surrounds. Be aware that when in BYPASS, the EQ and trims are disabled. Therefore, the sound quality and loudness of the surrounds will change slightly. BYPASS is used only in the event of DTS-ES unit failure.
 - Switch the DTS-ES back to NORMAL (Menu #1).
20. If using any **other version ES Setup disc**, thread encoded surround film (that has DTS timecode) and load the matching disc into the DTS-6AD player. The film title on the disc must have a 5-digit serial number.
- Play the film. Verify the film plays in DTS DIGITAL (Format 6) on the DTS-6AD. Also verify the DTS-ES unit automatically switches to the ES Mode (the front panel L.E.D. should glow green signifying the ES Mode is enabled).
 - When in the ES Mode, verify good sound quality and that sound is coming from all the surround speakers.
 - Switch the DTS-ES to Stereo Mode (Menu #3) and verify the front panel L.E.D. glows red. Listen to verify that sound is heard from both surrounds and that surround loudness has not changed.
 - Switch the DTS-ES to BYPASS (Menu #1) and verify the front panel L.E.D. extinguishes. Listen to verify that sound is heard in both surrounds and is of good quality. Be aware that when in BYPASS, the EQ and trims are disabled. Therefore, the sound quality and loudness of the surrounds will change slightly. BYPASS is used only in the event of DTS-ES unit failure.
 - Switch the DTS-ES back to NORMAL (Menu #1).
21. If using with external 6-track source is connected to P8, “6-TRACK ANALOG IN”, on the DTS-6AD, play the encoded surround film with the disc removed from the player. Verify:
- ① the external source enables
 - ② the DTS-6AD switches to EXTERNAL (Format 5)
 - ③ the DTS-ES unit automatically switches to the ES Mode (front panel L.E.D. glows green signifying the ES Mode is enabled).

22. Run the film again while sitting in the theater. Verify balanced, good sound quality from all surrounds. Set DTS-ES to all three modes (ES, Stereo, Bypass). Verify good sound quality and level balance between surround modes.
23. The DTS-ES may remain powered and left in the NORMAL mode during standard 5.1 playback. If, however, using with a Dolby Model DA10, set the mode to MANUAL to prevent the ES Mode automatically enabling during a Dolby Digital™ show.

4.4. COM (RS232) CONNECTOR

This connector is used to download/upload settings from the DTS-ES unit to a laptop computer. Special software, available from DTS, is required. When done, a “standard” null modem cable will have to be modified. The pin-out of this connector given in Section 5.

4.5. EVENT OUT CONNECTOR (after year 2000, this feature available via special order only)

This is used to connect to special effects such as key contacts to lasers or strobes.

To test, connect the DTS-ES to the effects and do a run-through of the show. If effects are not available, connect an ohmmeter and check the program contact closures.

- A closure will occur as programmed on the show disc or by the user. Timecode is used as the marker of when an event will occur. The program on the disc determines the length of time a closure is held. Or, if events are programmed by the user, the user may modify the closure time.