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SONY

Sony Cinema Products Corporation

Tech Note

Connections between the DFP-3000 and the Dolby® SA10 Surround EX™ processor.

Product: DFP-D3000.
S/N: All units with firmware version 2.60 and higher; does not apply to v2.10.
Document: **TN99042601-4**, CC/TS
Summary: Describes in brief the connections required to connect an SA10 to a DFP-3000.

This information is provided to users of the DFP-3000 to assist them in connecting to a Dolby SA10. As of April 1999 the specifications of the SA10 were incomplete. See your Dolby representative for up to date details.

Step by step.

The following steps are recommended for setting up the SA10 with a DFP-3000; see the SA10 manual and your Dolby representative for specific details:

1. Set SW1, located on the daughter board of the SA10, to the "CP65" position.
2. Set the outside front panel "Surround" switch to OUT (EX decode mode)
3. Set the Inside front panel "Alignment 602" switch to IN (Normal in Dolby terminology). Note that the SA10 does not have a bypass mode or any form of hard bypass.

Logic connections.

The following connections should be made between the logic connectors of the two units:

DFP-3000 Automation (37-pin D-Sub female)	**SA10 J3, Control Input (25-pin D-Sub female)**
Pin 14; Logic Common	Pin 12; GND
Pin 32; SDDS OK, pulse pulldown	Pin 5; CTRL 4, EX decode mode
Pin 36; SDDS NG, pulse pulldown	Pin 2; CTRL 1, non-decode mode

Cautions and limitations.

These connections from the DFP-3000 will cause the SA10 to go to decode mode when SDDS data is valid and to go to non-decode mode as soon as valid SDDS data is no longer present. Note that these logic outputs will appear no matter which preset is selected, even non-SDDS presets, so long as the film contains SDDS data. Note also that the SA10 has no hard bypass function.

Automation from external digital processors

When external digital processors are installed and a multiple digital fallback structure is utilized (for instance SDDS→DTS→SR-D→NR2), the need for the SA10 to be disabled whenever SDDS data is no longer present is limited, since in practice it is unlikely that three digital systems will fail simultaneously. It is therefore recommended the D3000 be configured with two SDDS presets, one SDDS/FILM non-ex (e.g. Preset 1) and one SDDS/FILM EX (e.g. Preset 8). The SA10 will then be enabled as long as preset 8 is active. This has the advantage that the cinema automation system can distinguish between EX and non-EX encoded films without the need for manual operation of the SA10 from title to title.

To utilize this approach, set the SA10 processor selector switch (SW1) to the "CP500" position, and follow the wiring table below:

DFP-D3000 Automation DB37 Female	**SA10 J3 Control Input DB25 Female**
Pin 4; Preset 1 (SDDS)	Pin 2; Ctrl 1
Pin 5; Preset 2 (NONS)	Pin 3: Ctrl 2
Pin 7; Preset 4 (NR1)	Pin 4; Ctrl 3
Pin 8; Preset 5 (NR2)	Pin 5; Ctrl 4
Pin 9; Preset 6 (AUX 1)	Pin 6; Ctrl 5
Pin 10; Preset 7 (AUX 2)	Pin 7; Ctrl 6
Pin 11; Preset 8 (SDDS-EX) EX mode	Pin 8; Ctrl 7
Pin 16; Tally common	Pin 12; GND

Using playback status of external processors

The second approach is to let all the digital systems trigger the SA10 on and off, depending on the status of the playback of the digital track(s). Note that this strategy may cause unwanted enabling and disabling of the SA10 if more than one digital system is active at a given time.

If the DFP-D3000 has a Dolby Digital processor connected to one of the AUX inputs, which should trigger EX playback according to this approach, an external interface has to be added. This is necessary because the DA20 is configured for level logic in order to interface with the DFP-D3000, whereas the SA10 is designed for pulse logic. Dolby supplies the Cat. 845 adapter, which should be connected as follows:

DFP-D3000 Automation (DB37 female)	**Cat. 845 (to be connected to SA10 J3, control input)**
Pin 34; AUX1 Digital Data OK (AUX2: pin 35)	Red wire (pin 1)

Note that the Cat.845 adapter is not a true level to pulse logic converter (constant levels are still present). As a consequence, output pulses from the DFP-D3000 will be ignored by the SA10, as long as the Cat. 845 adapter is connected to the SA10. As a countermeasure, external switching could be installed to disable the Cat. 845 whenever SDDS or DTS is played back with EX. Contact your Dolby representative for assistance and technical details.

Third party solutions.

Third part solutions are available from a variety of outside vendors and suppliers of cinema equipment, such as Smart Devices Inc (USA), Hasso GmbH (Germany) and others. Contact the vendors directly for the latest information about their available products.

DTS processors. If the D3000 has a DTS 6/6D processor connected to one of the AUX inputs, which should also trigger EX playback, the automation connections below must be added:

DTS 6 "to BS22" connector (IDC 10-pin female)	DTS 6D Automation connector (DB25 female)	SA10 J3, Control Input (DB25 female)
Pin 6: relay common	Pin 13: output com.	Pin 12; GND
Pin 9: Out (N.O.)	Pin 11: logic SR	Pin 2; CTRL 1, non-decode mode
Pin 7: IN (N.O.)	Pin 25: logic DTS	Pin 5; CTRL 4, EX decode mode
	Pin 6: Force SR+ Pin 9: +5V output	
	Pin 19: Force SR- Pin 22: 5V GND	

Audio connections. The audio connections are made from the left and right surround outputs DFP-3000 SYSTEM OUTPUT connector, according to THX® pinout conventions.

DFP-3000 System Output (37-pin D-Sub male)
Pin 9; L Surround GND
Pin 10; L Surround COLD (–)
Pin 11; R Surround COLD (–)
Pin 22; R Surround GND
Pin 23; L Surround HOT (+)
Pin 24; R Surround HOT (+)

Note that these connections are balanced. Sony recommends that these connections not be made directly to equipment with unbalanced inputs. The Dolby SA10 has unbalanced inputs and outputs. Many products are available to interface balanced equipment to unbalanced equipment. See your Dolby representative for assistance with maintaining professionally balanced environments when using the SA10.

Note also that the current SA10 manual requires setting the input levels to the SA10 to 120mV (-16dBu) using the Dolby Cat. No. 69T test film played into the primary cinema processor. With a DFP-D3000, it is instead recommended to activate the internal 1kHz signal generator of the surround channels and adjust the output level to 145 mV.

The DFP-3000 output trims span +/-10dB. This means that if you are using the +4dBu reference level of the DFP-3000, you must construct a pad somewhere in your circuits to reduce the level into the SA10, which has no input trims. Even if a reference level of –10 is selected on the DFP-3000, a pad incorporated in the balanced-to-unbalanced interface is desirable to maintain best signal to noise ratio, which in any case deteriorates by about 12dB (a factor of four) due to the SA10's electrical specifications.

The SA10 Installation Manual also recommends removing all room equalization from equipment feeding the SA10. This means foregoing the 28-band graphic EQ in the DFP-3000 and using the more limited trim-pot type 7-band equalizer in the SA10 for

surround channel equalization. See the SA10 Installation manual and your Dolby representative for specific alignment recommendations.