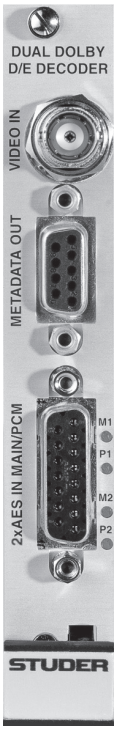
6.3.8 Dolby® E/Digital Decoder Card (VISTA, OnAir, ROUTE 6000) A949.0443/.0444



About Dolby® E

Dolby® E allows encoding of up to 8 mono audio channels and some metadata into a pair of two channels (e.g. AES/EBU) by using 20 audio bits thereof. Both encoding and decoding processes create one video frame of delay. Since the encoded data is packaged in sizes of one video frame it is possible to 'edit' the encoded stream, as long as the edits are synchronized with the video frames and the stream is not modified in any way (e.g. level changes applied). For more details on Dolby® E please refer to www.dolby.com.

The D21m Dolby® E/Digital decoder card is available in 2 versions:

A949.0443xx with one, or

A949.0444xx with two Dolby® E decoder modules.

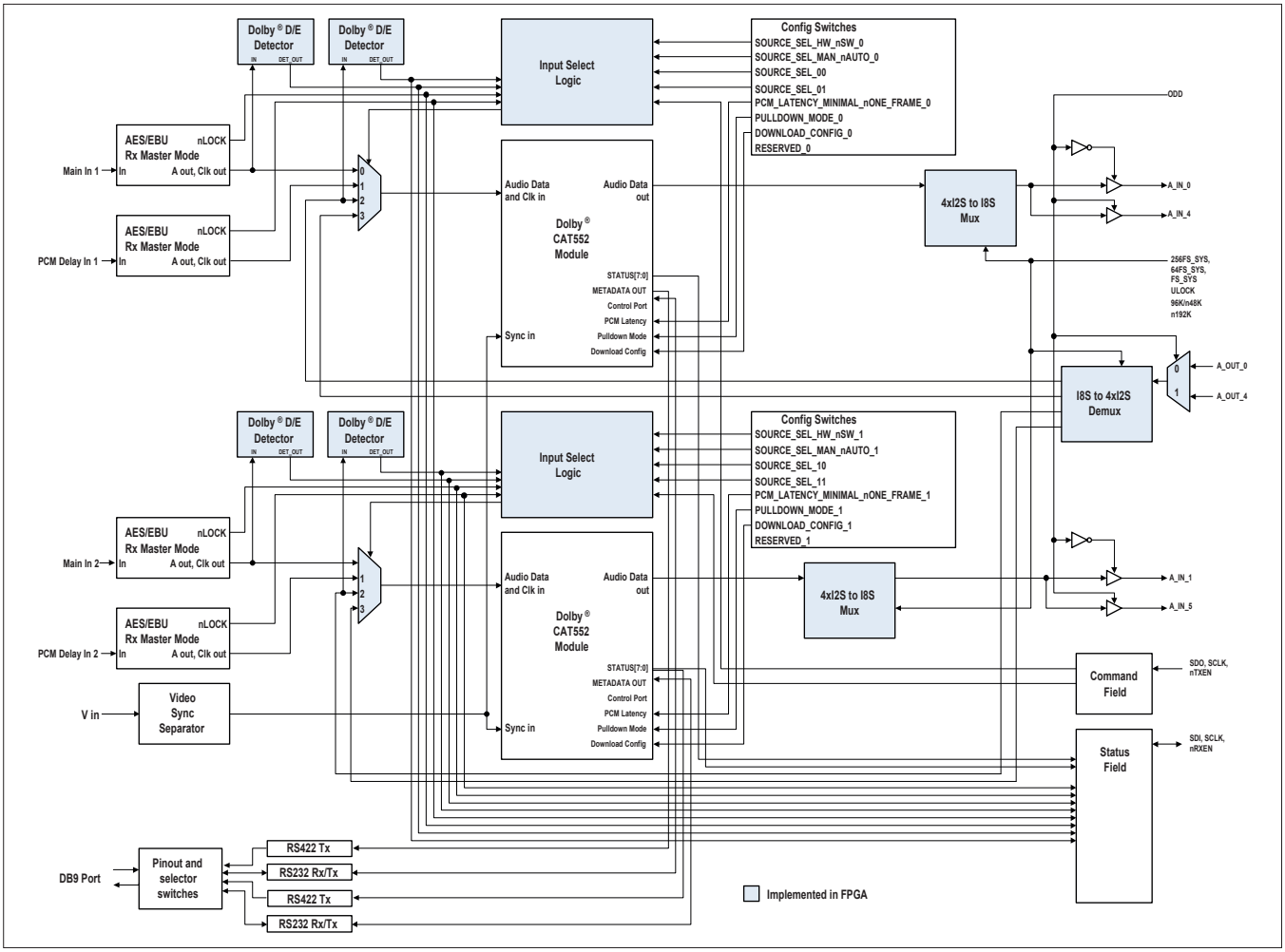
Each one is functionally similar to a Dolby® DP572 decoder. Both are operating independently; the information given below is valid independently for both decoders as well.

The dual-decoder card receives four AES/EBU pairs the front panel input, or eight mono channels from the console-internal patch (patch destinations). Each pair may contain a Dolby E or Dolby Digital encoded signal. The card returns a total of max. 16 channels to the console patch (patch sources).

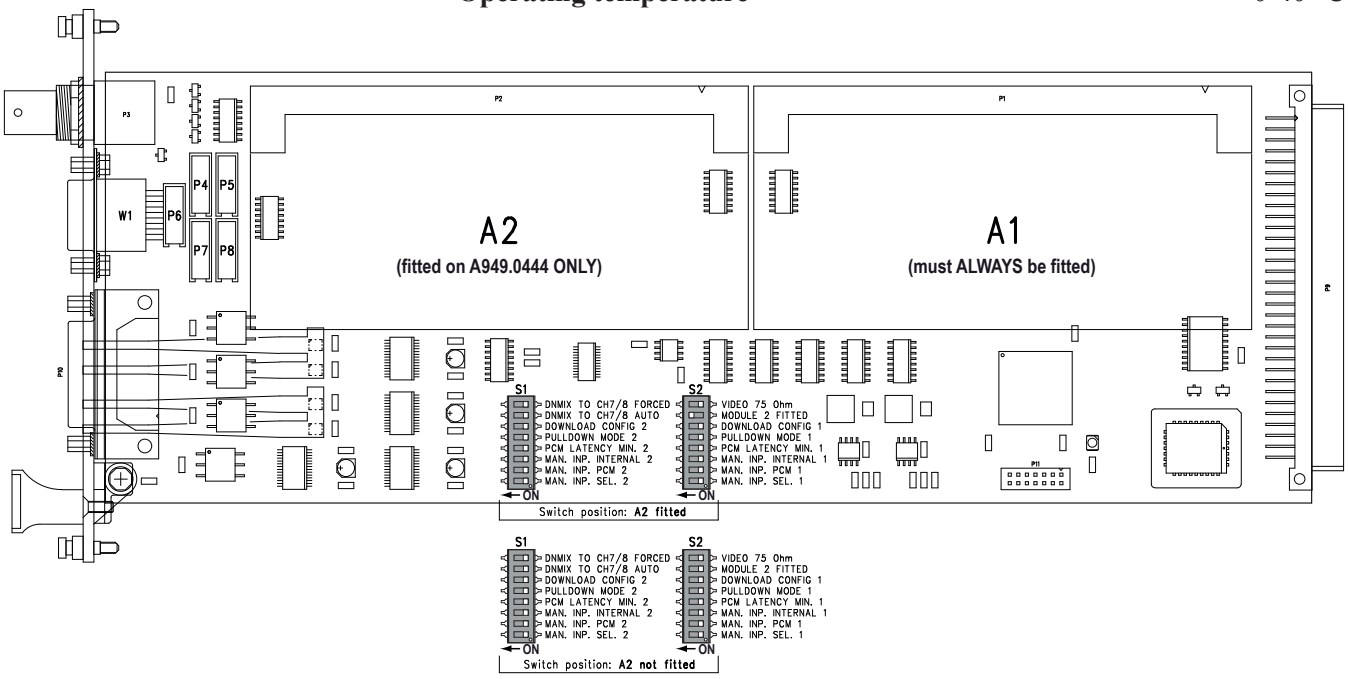
The single-decoder card returns up to eight channels to the console patch (eight sources) and shows eight inputs on the patch. Input channels 5-8 are unused.

Notes

Single-decoder cards only work correctly with the decoder module in position A1. Both cards work at sampling rates of 44.1 or 48 kHz only.



Current consumption	(3.3 V)	0.2 A
	(5 V)	0.8 A (A949.0443); 1.3 A (A949.0444)
Operating temperature		0-40 °C



LEDs

M1 / M2 Indicate that a valid AES/EBU signal is detected on main input 1/2.

P1 / P2 Indicate that a valid AES/EBU signal is detected on fallback input 1/2.

Note These LEDs do not indicate Dolby® E status, but just the lock status of the AES/EBU inputs on the front panel.

DIP Switches **S2.1 - S2.3**

S2.1	S2.2	S2.3	Module 1 Input Select
x	x	OFF	Automatic source selection *(factory default: All OFF)*
OFF	OFF	ON	Front port main
OFF	ON	ON	Front port PCM delay
ON	OFF	ON	Rear (backplane) main
ON	ON	ON	Rear (backplane) PCM delay

While it is possible to manually select individual inputs both from the front panel connectors as well as from the console-internal patch, the card hosts an automatic source selection mode where the inputs are chosen automatically according to the following priorities:

- Whenever a valid AES/EBU signal is detected (‘locked’ status) on the 15-pin front panel connector, this input has priority over the console-internal patch sources. Hence if it is requested to feed the decoder with a console-internal signal selected via the patch window, no valid AES/EBU input signal is allowed on the front panel connector.
- However, if no valid AES/EBU signal is detected on the front panel inputs, the card is getting its inputs from the console-internal patch. These inputs are referred to as ‘Rear/Backplane Inputs’. Selection is as follows:
  - Input 1, 2: Main priority input for Dolby® E signal, decoder 1.
  - Input 3, 4: Backplane input of decoder 1; is automatically selected in case no Dolby® E signal is present on main input (1, 2). Please note that a Dolby® E signal can be fed into this input, too, and it will be decoded correctly. However, if a Dolby® E signal is detected on the main input, this will be taken with higher priority.

S2.4

S2.4	PCM Latency (Module 1 only)
OFF	PCM signal is delayed by 1 video frame *(factory default)*
ON	PCM signal is minimally delayed

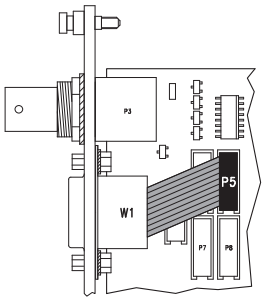
Decoding a Dolby® E stream always causes a delay of one video frame. In case a regular PCM signal is fed to the card, this can be delayed by one video frame, too. If required, this delay may be de-activated in order to pass through a PCM signal with a minimal delay. The front panel VIDEO IN sync input is used to detect video frames in order to delay the PCM signal accordingly. The video sync input does not necessarily have to be connected in case of Dolby® E , since the sync is indicated within the Dolby® E stream.

S2.5

S2.5	Module 1 Pulldown Mode
OFF	Pulldown mode is off *(factory default)*
ON	Pulldown mode is on

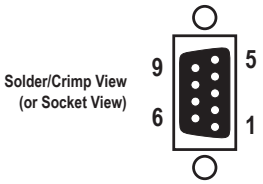
Pulldown mode ON allows the input of audio signals with a 'drop frame' sampling rate of 47.952 kHz instead of 48 kHz. The output, however, always runs at 48 kHz.

S2.6



S2.6	Module 1 Configuration Download
OFF	Standard operation *(factory default)*
ON	Configuration download via RS232

If firmware download to decoder module 1 is required, plug the short flat cable (W1) coming from the **METADATA OUT** front-panel socket to the PCB socket P5 (labeled UPDATE1).
The pin assignment of the **METADATA OUT** socket (9pin D-type, female, UNC 4-40 thread) in this case is as follows:



Pin	Signal	Pin	Signal
1	n.c.	6	n.c.
2	DOUT_1	7	n.c.
3	DIN_1	8	n.c.
4	n.c.	9	n.c.
5	n.c.		

S2.7

S2.7	Module 2 Installed
OFF	No *(factory default if not installed, i.e., for A949.0443)*
ON	Yes *(factory default if installed, i.e., for A949.0444)*

S2.8

S2.8	Video Termination
OFF	Hi-Z *(factory default)*
ON	75 Ω

S1.1 - S1.3

S1.1	S1.2	S1.3	Module 2* Input Select
x	x	OFF	Automatic source selection *(factory default: All OFF)*
OFF	OFF	ON	Front port main
OFF	ON	ON	Front port PCM delay
ON	OFF	ON	Rear (backplane) main
ON	ON	ON	Rear (backplane) PCM delay
			** if installed*

S1.4

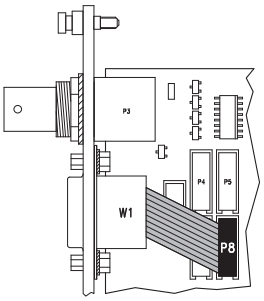
S1.4	PCM Latency (Module 2 only)
OFF	PCM signal is delayed by 1 video frame *(factory default)*
ON	PCM signal is minimally delayed

Same as S2.4 above, but for module 2.

S1.5

S1.5	Module 2 Pulldown Mode
OFF	Pulldown mode is off *(factory default)*
ON	Pulldown mode is on

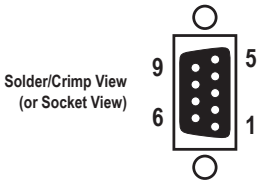
Same as S2.5 above, but for module 2.



S1.6

S1.6	Module 2 Configuration Download
OFF	Standard operation *(factory default)*
ON	Configuration download via RS232

If firmware download to decoder module 2 is required, plug the short flat cable (W1) coming from the **METADATA OUT** front-panel socket to the PCB socket P8 (labeled UPDATE2).
The pin assignment of the **METADATA OUT** socket (9pin D-type, female, UNC 4-40 thread) in this case is as follows:



Pin	Signal	Pin	Signal
1	n.c.	6	n.c.
2	DOUT_2	7	n.c.
3	DIN_2	8	n.c.
4	n.c.	9	n.c.
5	n.c.		

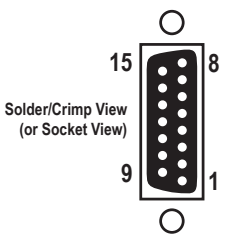
S1.7 / S1.8

S1.7	S1.8	Downmix to Ch 7/8 (or 15/16, resp.)
OFF	OFF	No downmix *(factory default)*
ON	OFF	Automatic downmix
OFF	ON	Forced downmix

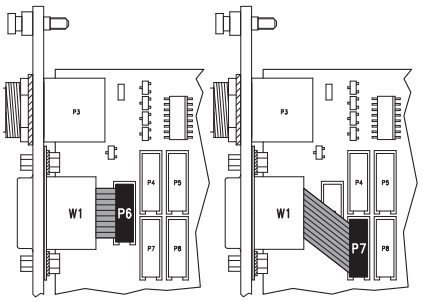
Metadata and Downmixing: A Dolby® E stream contains metadata with various information on the encoded signal. This information can be read out from the front panel connector. The D21m Dolby® E decoder card only uses this information in case a 2-channel stereo downmix is required from a 5.1-channel surround signal within the Dolby® E stream; then the decoder interprets the center and surround channel levels and uses them for the internal downmixer that is activated by the DIP switches S1.7 and S1.8. The downmix can be made constantly available and, subsequently, overwriting any audio data that was contained on these channels beforehand ('forced downmix'), or it is possible to 'fill' the channels 7/8 or 15/16 only if the metadata indicate that these channels are not being used otherwise (automatic downmix).

Connector Pin Assignments

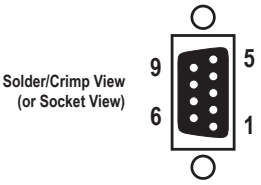
2× AES IN MAIN/PCM (15pin D-type, female, UNC 4-40 thread)



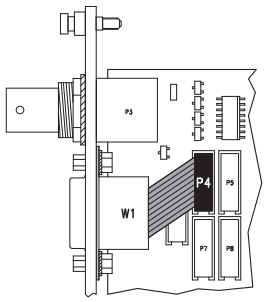
Pin	Signal	Pin	Signal
1	Main In 1 +	9	Main In 1 –
2	Main In 1 Chassis	10	PCM Delay In 1 Chassis
3	PCM Delay In 1 –	11	PCM Delay In 1 +
4	n.c.	12	n.c.
5	Main In 2 +	13	Main In 2 –
6	Main In 2 Chassis	14	PCM Delay In 2 Chassis
7	PCM Delay In 2 –	15	PCM Delay In 2 +
8	n.c.		



METADATA OUT (9-pin D-type, female)
The Metadata Out socket allows sending the meta data of either module or of both modules at once.
If the meta data of either decoder module 1 or 2 is required, plug the short flat cable (W1) coming from the **METADATA OUT** front-panel socket to the PCB socket P6 (labeled META1; *factory default*), or to PCB socket P7 (META2), respectively.
The pin assignment of the **METADATA OUT** socket (9pin D-type, female, UNC 4-40 thread) in this case is as follows:

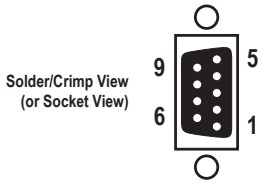


Pin	Signal	Pin	Signal
1	Chassis	6	GND
2	n.c.	7	n.c.
3	META_1+ / META_2+	8	META_1– / META_2–
4	GND	9	Chassis
5	n.c.		



If the meta data of both decoder modules is required, plug the short flat cable (W1) coming from the **METADATA OUT** front-panel socket to the PCB socket P4 (labeled META1+2).

Please note that in this case the pin assignment of the **METADATA OUT** socket (9pin D-type, female, UNC 4-40 thread) is *non-standard*:



Pin	Signal	Pin	Signal
1	Chassis	6	GND
2	n.c.	7	META_2–
3	META_1+	8	META_1–
4	META_2+	9	Chassis
5	n.c.		

Possible Pitfalls with Dolby® E

In order to transmit or record a Dolby® E encoded signal, *the whole signal path must be 100% transparent,* regarding the 20 audio bits contained within the data stream. In case of problems with decoding the Dolby® E signal and possibly getting white noise instead of the decoded signal, the whole signal path should be checked. It may be worthwhile verifying the following points:

- Are there any sampling rate converters (e.g. when using the D21m Dolby® E decoder card together with the D21m SDI card) in the signal chain? If so, they must be bypassed; otherwise the Dolby® E stream is modified and cannot be decoded anymore.
- In case the signal is sourced from a video tape machine: Is the machine set up to be transparent for the recorded audio signals? Several machines require seting the tracks to 'DATA' mode in order to guarantee unity gain while recording or playing back Dolby® E streams.
- Is the card receiving the Dolby® E stream from the console-internal patch? If so, are both tracks patched to the correct two inputs of the card? (Decoder 1 main: channels 1 and 2; decoder 1 PCM: channels 3 and 4; decoder 2 main: channels 5 and 6; decoder 2 PCM: channels 7 and 8).
- If getting a wrong signal or no signal at all: Are any AES/EBU signals present at the front panel while console-internal streams should be decoded? If the card is in 'automatic source selection' mode, the front inputs have top priority, regardless whether a Dolby® E stream is recognized or not.