



User Manual

Product IQMUX42-49

HD/SD – SDI 10/16 Channel AES/EBU
Remultiplexer with Audio Processing

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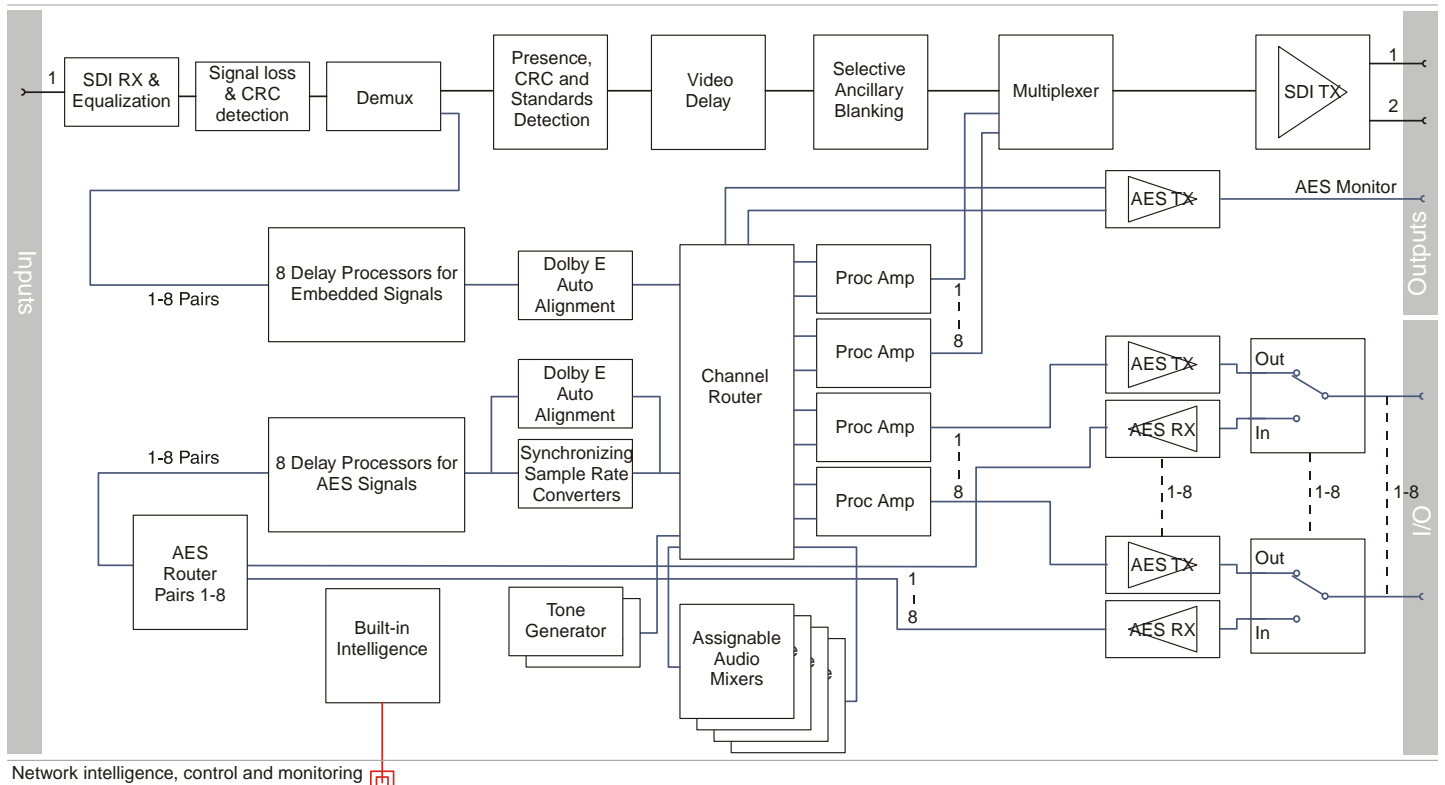
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Module Description

The IQMUX42-49 family of modules provides a highly flexible solution for all HD-SDI 1.5 Gbps or SD-SDI 270 Mbps multiplexing/demultiplexing operations. Handling up to 16 audio channels (eight AES/EBU streams) makes them ideal for both multi-lingual and discrete surround sound applications. Fully compatible with Dolby E compressed audio the IQMUX46-49 includes a 'Dolby E mode' for automatic synchronization to the video frame boundary, whether already embedded in the incoming SDI or on discrete AES inputs. Additional audio processing features include tracking audio delay, gain, phase invert, channel level routing, and audio mixing. Video features include proc. amp controls, HANC/VANC blanking and up to 12 frames of delay.



The sophisticated audio processing features include comprehensive audio delays, gain control, phase inversion and mixing. Both AES input pair routing and separate channel level routing are included. The module is fully Dolby E™ compatible and can handle other non-PCM audio streams including Dolby AC3 (Dolby Digital) passed as AES data. The module has 16 channels of standard AES I/O and also provides an additional pair (one AES stream) for monitoring or other basic output functions providing a total of 18 channels of audio access on one module.

Unlike other audio processing modules these units also have dedicated video control features that include video ProcAmp controls and up to 12 frames of video delay. This allows the IQMUX42-49 to be employed as the prime control unit in a processing chain providing all audio and video controls required to prepare signals.

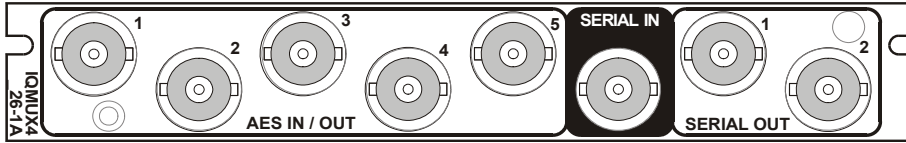
Video capabilities extend to a large 12-frame video delay that can work in conjunction with the sophisticated delay features available for the audio channels. Delay can be inserted in the video path to compensate for audio processing. It can also be inserted in the audio path to compensate for video processing. It can be inserted in both to simply re-time the complete signal. The audio delays can be both fixed and can track video synchronizers to keep sound in perfect sync with the pictures. The audio delay capability can be used for non PCM audio so that Dolby E sources can be delayed either to match the video or to re-time the Dolby blocks to realign with the video frames if necessary.

Also as the AES signals can be both input and output at the same time this means that these audio delay features like the other audio capabilities can be used in an AES to AES role as well as when embedding or de-embedding.

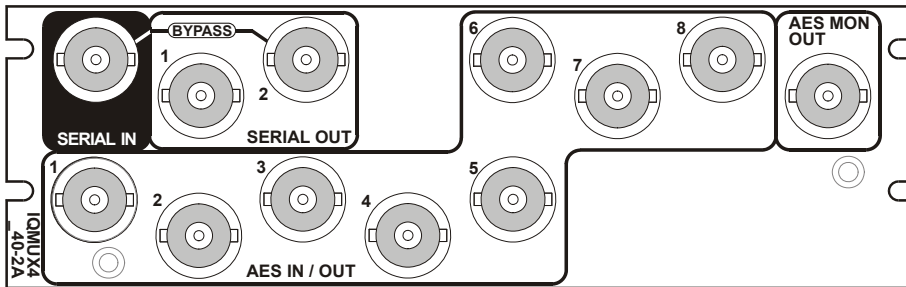
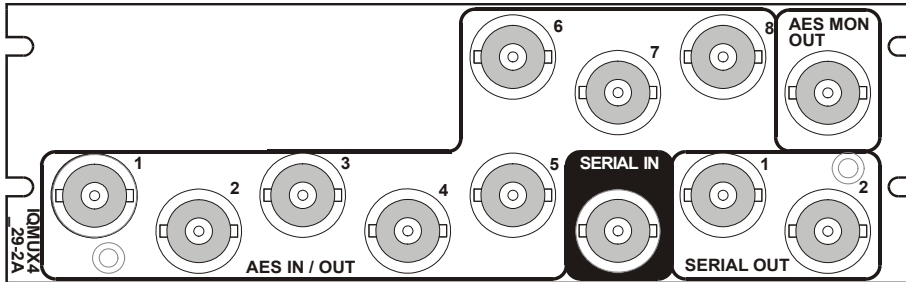
Dolby E and Dolby Digital are registered trademarks of Dolby Laboratories, Inc.

Rear Panel Views

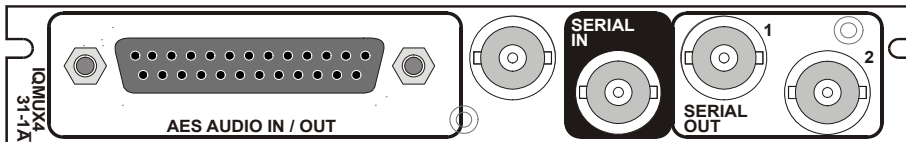
IQMUX42/46



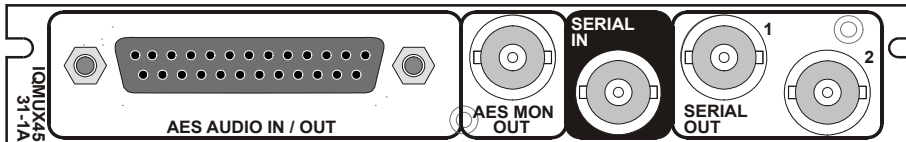
IQMUX43/47



IQMUX44/48



IQMUX45/49



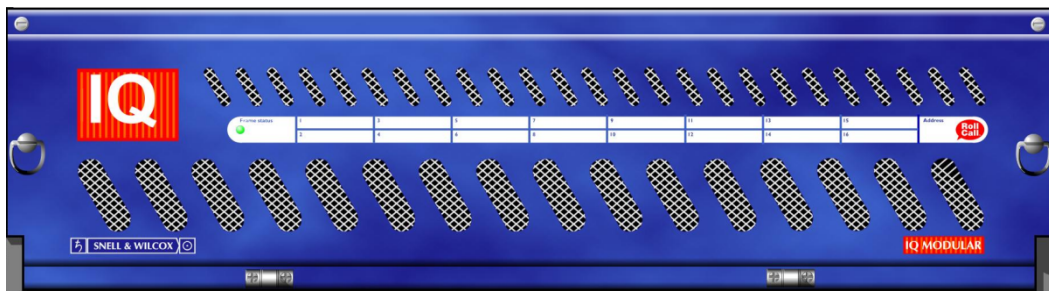
Enclosures

These modules can only be fitted into 'A' style enclosures as shown below.

Enclosure order codes IQH3A-S-0, IQH3A-S-P



Enclosure order codes IQH3A-E-0, IQH3A-E-P, IQH3A-0-0, IQH3A-0-P



Enclosure order code IQH1A-S-P



Module Versions

The following versions of this module are available:

- IQMUX4226-1A** HD/SD-SDI 10 Channel Remultiplexer:
- 2 HD/SD-SDI outputs
 - 5 AES/EBU unbalanced inputs/outputs
- IQMUX4329-2A** HD/SD-SDI 16 Channel Remultiplexer:
- 2 HD/SD-SDI outputs
 - 8 AES/EBU unbalanced inputs/outputs
 - 1 AES monitor output
- IQMUX4340-2A** HD/SD-SDI 16 Channel Remultiplexer with relay input bypass:
- 2 HD/SD-SDI outputs
 - 8 AES/EBU unbalanced inputs/outputs
 - 1 AES monitor output
- The relay bypass exists between the Serial Input and Output 2 only. In the event of module removal, power failure, or certain types of module failure, the signal from Serial In to Output 2 will be able to bypass the module.
- IQMUX4431-1A** HD/SD-SDI 10 Channel Remultiplexer:
- 2 HD/SD-SDI outputs
 - 5 AES/EBU balanced inputs/outputs
- IQMUX4531-1A** HD/SD-SDI 16 Channel Remultiplexer:
- 2 HD/SD-SDI outputs
 - 8 AES/EBU balanced inputs/outputs
 - 1 AES/EBU unbalanced monitor output
- IQMUX4626-1A** HD/SD-SDI 10 Channel Remultiplexer with Dolby E Handling.
- 2 HD/SD-SDI outputs
 - 5 AES/EBU unbalanced inputs/outputs.
- IQMUX4729-2A** HD/SD-SDI 16 Channel Remultiplexer with Dolby E Handling.
- 2 HD/SD-SDI outputs
 - 8 AES/EBU unbalanced inputs/outputs
 - 1 AES monitor output.
- IQMUX4740-2A** HD/SD-SDI 16 Channel Remultiplexer with relay input bypass:
- 2 HD/SD-SDI outputs
 - 8 AES/EBU unbalanced inputs/outputs
 - 1 AES monitor output.
- The relay bypass exists between the Serial Input and Output 2 only. In the event of module removal, power failure, or certain types of module failure, the signal from Serial In to Output 2 will be able to bypass the module.
- IQMUX4831-1A** HD/SD-SDI 10 Channel Remultiplexer with Dolby E Handling.
- 2 HD/SD-SDI outputs
 - 5 AES/EBU balanced inputs/outputs
- IQMUX4931-1A** HD/SD-SDI 16 Channel Remultiplexer with Dolby E Handling.
- 2 HD/SD-SDI outputs
 - 8 AES/EBU balanced inputs/outputs
 - 1 AES/EBU unbalanced monitor output.

Features

- Multiplex unbalanced or balanced AES audio onto HD/SD-SDI video streams with channel-level control
- Demultiplex existing audio channels and output them to unbalanced or balanced AES
- Dolby E support – pair routing and automatic re-alignment and synchronization to the video frame boundary
- Standards supported:
 - HD-SDI to SMPTE292M/274M/296M
 - SD-SDI to SMPTE259M-C
- Capable of processing up to 16 input audio channels to 24-bits at rates of 32 kHz, 44.1 kHz and 48 kHz both synchronous and asynchronous to the video stream
- Channel-level control allows up to 16 individual embedded audio channels to be swapped-over or swapped out
- 4 off 4 channel assignable audio mixers
- Audio proc-amp and delay
- 2 independent audio delay controls including selectable fixed delay and tracking delays for each (either selectable for any pair)
- Tracking audio delay that tracks the video delay or external RollTrack inputs
- Any group of embedded audio may be passed unchanged
- Video delay feature, up to 12 frames
- Video controls including video gain and offset
- Input SDI, CRC, EDH and ANC data checking and reporting
- Independent horizontal and vertical ancillary data blanking
- In-built test pattern generator
- Input loss detection – input pass through or black/pattern/freeze
- 16 x user memories
- Naming for audio input, mixer and output channels for easy identification
- Why should you choose this module?
- Suitable for synchronous or asynchronous multiplexing and demultiplexing HD/SD-SDI applications using AES audio
- Ideal for handling Dolby E compressed audio applications as advanced Dolby E alignment functions enable accurate timing to be maintained throughout the signal path
- Suitable for multi-lingual audio applications thanks to channel-level control and up to sixteen channel operation

Technical Profile

Inputs & Outputs

Video Signal Inputs

Digital Video.....	1 x Serial Digital Input
Electrical	1.5 Gbps HD-SDI, SMPTE 292M, SMPTE 299M 270 Mbps SDI, SMPTE 259M-C
Connector / Format.....	BNC/ 75 Ohm panel jack on standard S&W connector panel
Input Cable Length.....	Up to 140 m Belden 1694A @ 1.5 Gbps Up to 350 m Belden 1694A @ 270 Mbps
Return loss.....	> -15 dB

Video Signal Outputs

Digital Video.....	2 x Serial Digital Outputs
Electrical	1.5 Gbps HD-SDI, SMPTE 292M 270 Mbps SDI, SMPTE 259M-C
Connector / Format.....	BNC/ 75 Ohm panel jack on standard S&W connector panel

Audio Signal Inputs/Outputs (software selectable)

IQMUX42/43/46/47 Unbalanced AES/EBU

AES Audio.....	5/8 Unbalanced
AES Audio Monitor Output..	1 Unbalanced (IQMUX43/47 only)
Connector / Format.....	BNC/ 75 Ohm panel jack
Resolution.....	Inputs: 32 kHz/ 44.1 kHz/48 kHz synchronous or asynchronous to video stream. Outputs: 48kHz synchronous to the video stream. Up to 24-bit, (20 MSBs embedded in SD-SDI stream).
Audio Delay.....	Minimum: 0.75 ms for data signals and embedded input pairs; 3 ms for AES pairs Maximum 2.5 s

IQMUX44/45/47/48 Balanced AES/EBU

AES Audio.....	5/8 balanced
Connector / Format	25 Way D-Type / 110 Ohm panel mounted
AES Audio Monitor Output .	1 Unbalanced (IQMUX45/49 only)
Connector / Format	BNC/ 75 Ohm panel jack
Resolution	Inputs: 32 kHz/ 44.1 kHz/48 kHz synchronous or asynchronous to video stream. Outputs: 48kHz synchronous to the video stream. Up to 24-bit, (20 MSBs embedded in SD-SDI stream).
Audio Delay	Minimum: 0.75 ms for data signals and embedded input pairs; 3 ms for AES pairs Maximum 2.5 s

Controls

Indicators

Power	OK (Green)
CPU.....	OK (Green flashing)
FPGA.....	OK (Orange flashing)
Status	OK (Green) Warning (Orange) Error (Red)
Lock.....	OK (Green)
SDI Error	Error (Red)

RollCall Features**Audio Controls**

Embedded Audio Types.....PCM (to AES3)/
Data (SMPTE 337M inc. Dolby E)/
Mixed (Passes any channel status
information present)

Channel routingOutput channels routed from AES
inputs 1 to 8, SDI 16 embedded
channels from any group, test tone
and silence

Embedder PriorityNormal distribution/Audio
Prioritized

Embedded Group.....Pass/Blank/Embed

Channel Status handling and checking

Dolby E Auto Line selection Define Dolby E embed line for
each video standard

Output side control proc. - gain and polarity
Independent Gain, Mute, &
Polarity control over embedded
output channels. +12 dB to -66 dB
in 0.1 dB steps.

Channel 1 Delay sources

Coarse Manual delay 1 & 2.Up to +2 s in 0.25 ms steps,
common to any selected pairs.

Fine Manual delay 1 & 2Up to ± 0.25 ms in 5 μ s steps,
common to any selected pairs.

Smooth Delay Limit.....0ms to 80ms.

Dolby E delay (alignment)...Auto/Manual

Variable audio delay control source
Up to 0.5 s from RollTrack + Video
Delay

Channel 2 Delay sources

Coarse Manual delay 1 & 2.Up to +2 s in 0.25 ms steps,
common to any selected pairs.

Fine Manual delay 1 & 2Up to ± 0.25 ms in 5 μ s steps,
common to any selected pairs.

Smooth Delay Limit.....0ms to 80ms.

Dolby E delay (alignment)...Auto/Manual

Variable audio delay control source
Up to 0.5 s from RollTrack + Video
Delay

Channel Status handling and checking

Tone Setup:

Frequency 1 kHz, 2 kHz, 4 kHz, mute @ -20
dBFS or -18 dBFS

Video Controls

Output Standard Select, Follow Input

Standards List Select video standards for
automatic follow

Black Level ± 200 mV in steps of 1 mV

Master Video Gain ± 6 dB in steps of 0.1 dB.

Y Gain ± 6 dB in steps of 0.1 dB.

Cb/Cr Gain ± 6 dB in steps of 0.1 dB.

Pattern Select..... 100% Color Bars, 75% Color Bars
SMPTE Bars, Tartan Bars, Pluge
Ramp, H Sweep, Pulse & Bar,
Burst

Blank Ancillary Data Blank All, Blank HANC, Pass All,
Pass when Output Standard
equals Input Standard

VBI Line Blank..... Individual lines for each video
standard

Manual Freeze On/Off

Freeze Field/Frame

Video Channel Control Y On/Off, C On/Off

Default Video Output Pattern / freeze/ black / run
through

Other Controls

User Memories 16 x Save / Recall / Rename

Input/Output Names User configurable naming of the
input and output AES/EBU,
embedded audio and mixer
channels

RollCall Features

Logging	Video Status Emb(edded) Audio Status O/P Audio Status O/P Audio Level Status O/P Dolby E Status AES Input Status AES Output Status Embedded audio output status, level & type (pairs 1-8) Embedded Dolby E output timing status (pairs 1-8) Misc
RollTrack Controls	Source, Address, Command, Status, Sending.
RollTrack Sources.....	Unused, Video Delay, Input Present, Input Loss, Output Freeze, Output Unfreeze, Embedded Audio (Pairs 1-8) AES Audio (Pairs 1-8), Output:1080, Output:720, Output:576(625), Output:480(525)

Specifications**Video Standards**

750(720)/60p, 1125(1080)/30i	
750(720)/59p, 1125(1080)/30sF	
750(720)/50p, 1125(1080)/29i	
1125(1080)/30p, 1125(1080)/29sF	
1125(1080)/29p, 1125(1080)/25i	
1125(1080)/25p, 1125(1080)/25sF	
1125(1080)/24p, 1125(1080)/24sF	
1125(1080)/23p, 1125(1080)/23sF	
1125(1035)/30i	
1125(1035)/29i	
525(480)/29i, 625(576)/25i	
Horizontal Timing	0 to 1 output line in steps of 1 pixel.
Delay Adjustment.....	Horizontal and Vertical timing
Vertical Timing	0 to 1 output frame in steps of 1 line.
Minimum Delay	HD – 15 μ s SD – 42 μ s
Video Delay.....	HD - 1120 pixels to 11 Frames + 820 pixels SD - 570 pixels to 11 Frames + 420 pixels
Internal audio processing....	32 channels @ 24-bit
Embedded audio handling ..	HD - 24-bit synchronous 48 kHz to SMPTE 299M SD - 20-bit synchronous 48 kHz to SMPTE 272M-A

Power Consumption

Module Power Consumption	11.2 W Max
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Connections

This section describes the physical input and output connections used by the IQMUX42-49 modules.

Input Connections

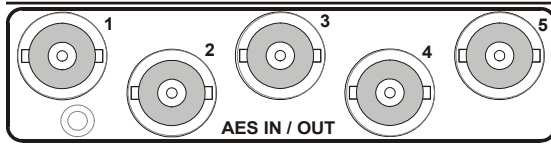
Serial In

Serial digital input connection to the module is made by means of a BNC connector, which terminates in 75 Ohms.



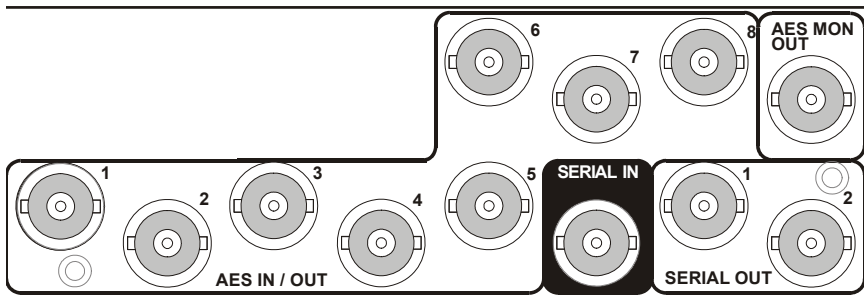
AES Unbalanced IN/OUT (IQMUX42/46)

Connections 1 to 5 can be configured as either AES unbalanced inputs or outputs.



AES Unbalanced IN/OUT (IQMUX43/47)

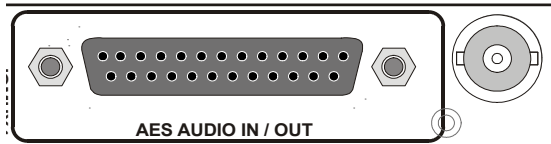
Connectors 1 to 8 can be configured as either AES unbalanced inputs or outputs. The AES MON OUT (monitor) connector is always configured as an output.



AES Balanced IN/OUT (IQMUX44/48)

All five AES input/output connections are made via a 25-way D type connector. They may be configured as either AES balanced inputs or outputs.

For connection details please see page 17.

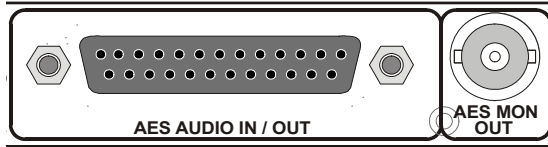


AES Balanced IN/OUT (IQMUX45/49)

All eight AES input/output connections are made via a 25-way D type connector. They may be configured as either AES balanced inputs or outputs.

For connection details please see page 17.

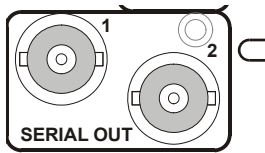
The AES MON OUT (monitor) connector is always configured as an AES unbalanced output.



Output Connections

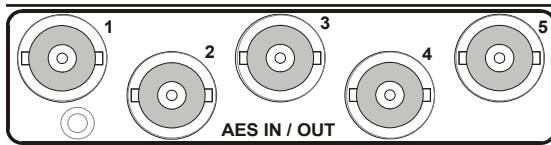
Serial Digital Video Outputs

The unit has two serial digital video output connections, made by means of BNC connectors for 75 Ohms.



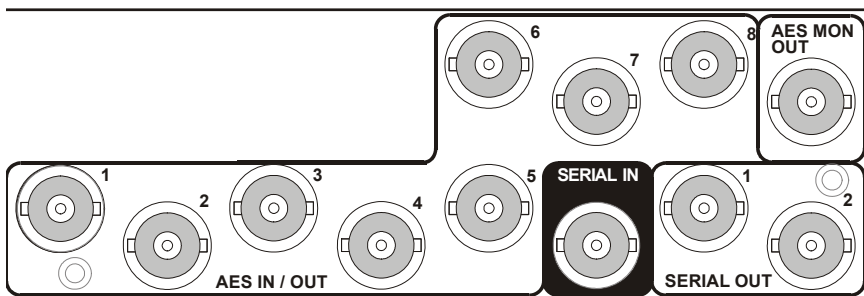
AES Unbalanced IN/OUT (IQMUX42/46)

Connections 1 to 5 can be configured as either AES unbalanced inputs or outputs.



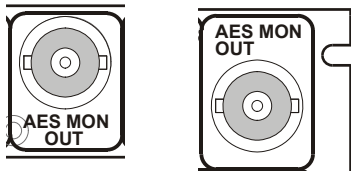
AES Unbalanced IN/OUT (IQMUX43/47)

Connectors 1 to 8 can be configured as either AES unbalanced inputs or outputs. The AES MON OUT (monitor) connector is always configured as an output.



AES MON OUT (IQMUX 43/45/47/48 only)

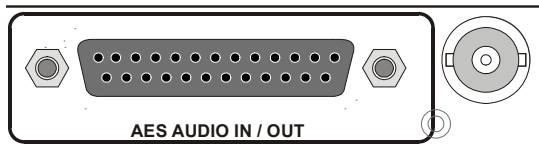
This is an AES monitoring output via a BNC connector for 75 Ohms.



AES Balanced IN/OUT (IQMUX44/48)

All five AES input/output connections are made via a 25-way D-type connector. They may be configured as either AES balanced inputs or outputs.

For connection details please see page 17.

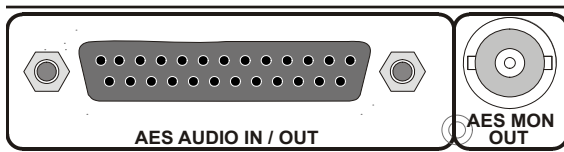


AES Balanced IN/OUT (IQMUX45/49)

All eight AES input/output connections are made via a 25-way D-type connector. They may be configured as either AES balanced inputs or outputs.

For connection details please see page 17.

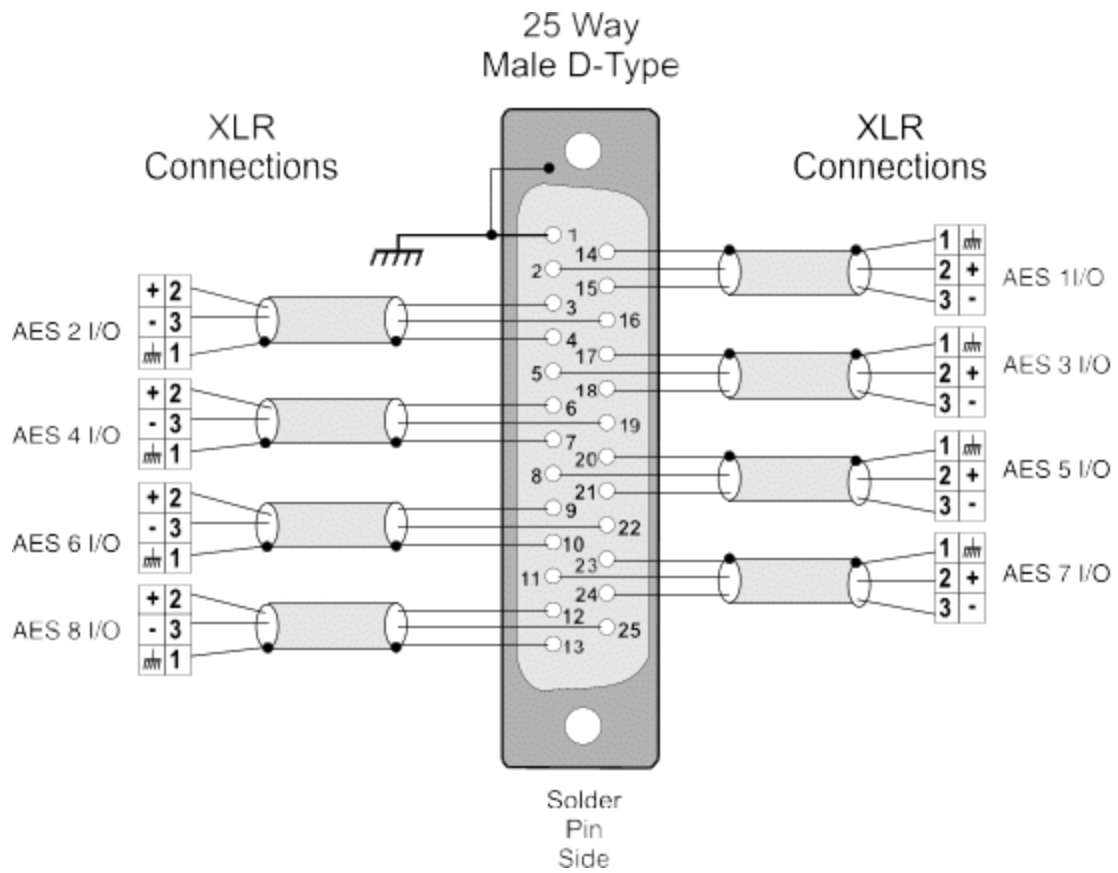
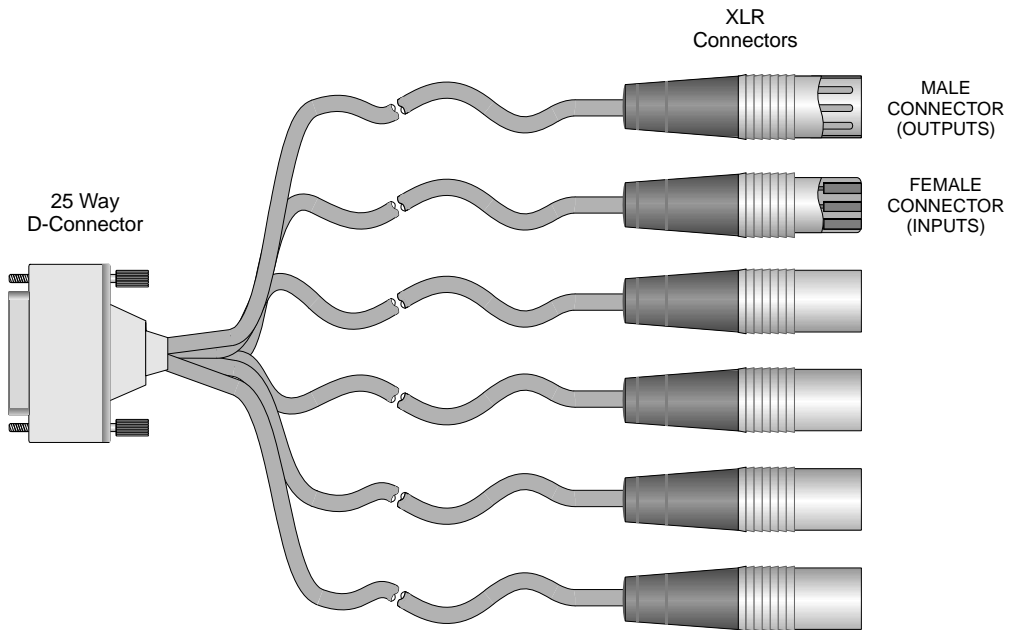
The AES MON OUT (monitor) connector is always configured as an AES unbalanced output.



25-Way D-Type Connection Details

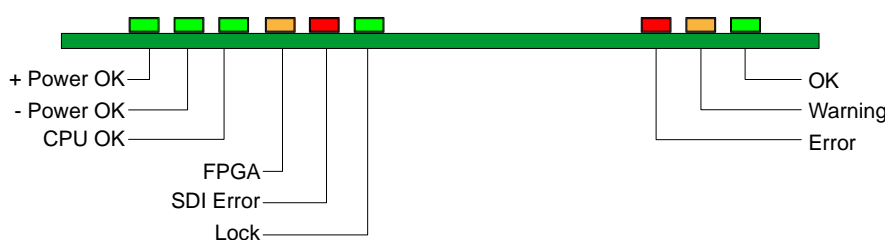
By Pin Number			By Function		
Pin No	Description	Connection	Pin No	Description	Connection
1	Chassis Ground	Ground	1	Chassis Ground	Ground
2	Channel 1 +	AES 1+	2	Channel 1 +	AES 1+
3	Channel 2 +	AES 2+	15	Channel 1 –	AES 1-
4	Ground (2)	Screen 2	14	Ground (1)	Screen 1
5	Channel 3 +	AES 3+	3	Channel 2 +	AES 2+
6	Channel 4 +	AES 4+	16	Channel 2 –	AES 2-
7	Ground (4)	Screen 4	4	Ground (2)	Screen 2
8	Channel 5 +	AES 5+	5	Channel 3 +	AES 3+
9	Channel 6 +	AES 6+	18	Channel 3 –	AES 3-
10	Ground (6)	Screen 6	17	Ground (3)	Screen 3
11	Channel 7 +	AES 7+	6	Channel 4 +	AES 4+
12	Channel 8 +	AES 8+	19	Channel 4 –	AES 4-
13	Ground (8)	Screen 8	7	Ground (4)	Screen 4
14	Ground (1)	Screen 1	8	Channel 5 +	AES 5+
15	Channel 1 –	AES 1-	21	Channel 5 –	AES 5-
16	Channel 2 –	AES 2-	20	Ground (5)	Screen 5
17	Ground (3)	Screen 3	9	Channel 6 +	AES 6+
18	Channel 3 –	AES 3-	22	Channel 6 –	AES 6-
19	Channel 4 –	AES 4-	10	Ground (6)	Screen 6
20	Ground (5)	Screen 5	11	Channel 7 +	AES 7+
21	Channel 5 –	AES 5-	24	Channel 7 –	AES 7-
22	Channel 6 –	AES 6-	23	Ground (7)	Screen 7
23	Ground (7)	Screen 7	12	Channel 8 +	AES 8+
24	Channel 7 –	AES 7-	25	Channel 8 –	AES 8-
25	Channel 8 –	AES 8-	13	Ground (8)	Screen 8

Example of Connection to XLR Connectors



Note: A line with a dot at the end (●—) indicates a connection to the cable screen.

Card Edge Indicators



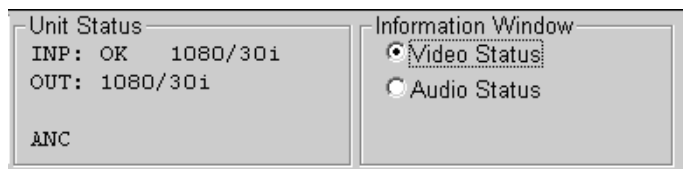
The LEDs on the edge of the IQMUX42 - 49 indicate the operating status of the module.

+ Power OK (Green)	Indicates that a positive power supply is present.
- Power OK (Green)	Indicates that a negative power supply is present.
CPU OK (Green)	Indicates that the CPU is running.
FPGA (Orange)	Flashes when the FPGA has been loaded.
SDI Error (Red)	This will become illuminated if any CRC, EDH or TRS errors are detected on the SDI input. It is also illuminated when the input is lost.
Lock (Green)	This LED is continuously illuminated when the unit is locked to its input. When the input is lost and the default output is selected as Input , this LED is extinguished and the Warning LED will illuminate.
Error (Red)	Indicates that there is a board internal fault and a service is required.
Warning (Orange)	When illuminated, this will indicate that there is an operational problem that could affect the output picture. This could be: <ul style="list-style-type: none"> • Embedder Status - ANC overflow. The embedder has run out of ancillary space over quite a few lines. Due to heavy use of ancillary space on the video input, particularly in SD. • Input Video - Incompatible input standard. Detected input standard is invalid. • Input Video - SDI problem. CRC or other SDI errors detected on selected input in the last whole field. • Reference - Lock Failure. Genlock failed to lock. Will generally become illuminated in transitional states like standard changes, but continuous illumination indicates a problem. More information is available in the status window.
OK (Green)	Indicates that the module is operating correctly.

Controlling the IQMUX from the RollCall Control Panel

The Information Window

The information window appears in the upper-right corner of each screen and displays basic information about the audio and video status of the unit.



Select either **Video Status** or **Audio Status** to display the corresponding information.

The following **Video Status** information is displayed:

Line One Displays the status of the video input, followed by the standard of the input, or last valid signal.	
INP:OK	The unit is receiving a valid input signal of a recognized standard.
INP:LOST	The unit is not receiving an input signal.
INP:FAIL	The unit is receiving an input signal, but the signal is not valid. For example, the frame rate differs between the input and output standards.
MISM	The unit is receiving a valid input signal, but in a different format to the selected output standard. For example, in 1080/29i, out 1080/29p.
Line Two Displays the operating standard of the unit.	
Unknown	The input signal standard is not recognized.
1080/29i (For example)	The operating standard
Line Three Displays the status of the ancillary data and the output picture,	
ANC	Ancillary present.
FRZ	Output frozen.
PAT	Output pattern.
MON	Monochrome.
HBL	Horizontal ancillary data is being blanked.
BLK	Output black.

When **Audio Status** is selected, the status of the embedded audio input is displayed where:

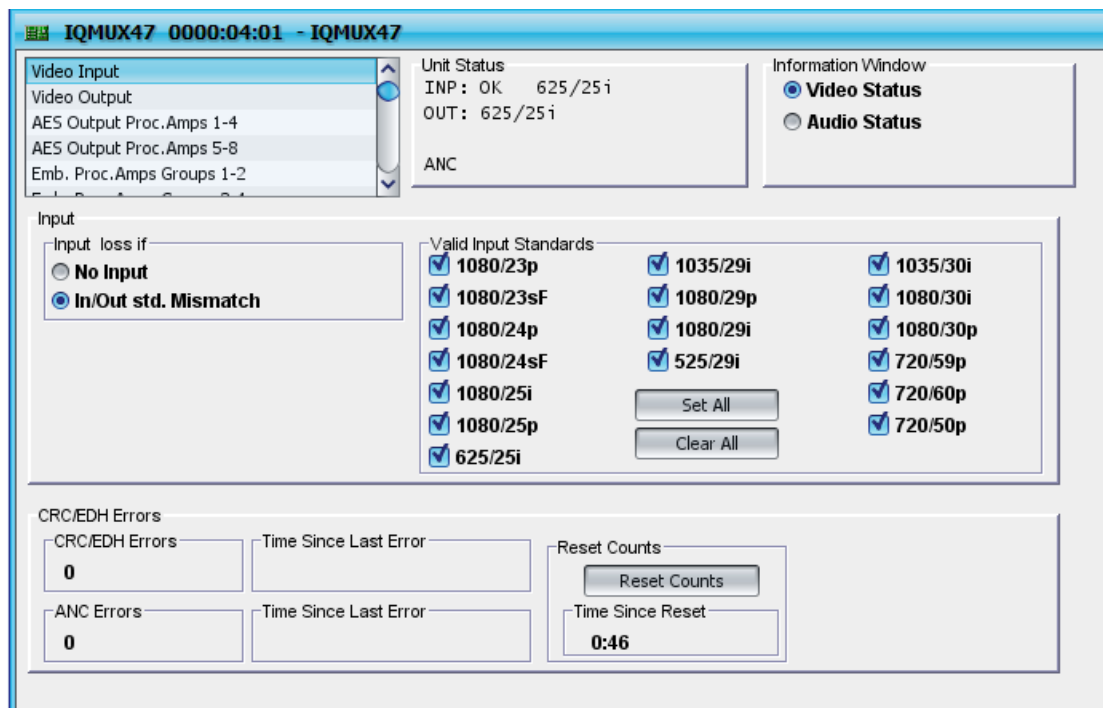
P	Indicates that the channel is a PCM audio input.
o	Indicates that the AES port is designated as an output.
–	Indicates that no audio input is detected
D	Indicates that the signal is data (non-pcm, Dolby, etc...)
CLIP	The word Clip will appear if any audio level reaches the 0dBFD point, i.e. the digital limit. The fader level should be reduced to prevent this occurring.
ANC FULL	Indicates the embedder / ancillary formatter has run out of ancillary space over quite a few lines and has thus lost data. Due to heavy use of ancillary space on the video input, particularly in SD.

Video Input Settings

Use the settings on the Video Input screen to specify the:

- Input standards that the unit will accept as valid.
- Condition that must exist in order for the unit to consider input to have been lost.

Additionally, this screen displays information about CRC/EDH.



Specifying Valid Input Standards

The input signal standards to be considered valid are defined on this screen.

To specify valid input standards:

In the **Valid Input Standards** section, select the input standards that will be accepted as valid.

To select all available standards, click **Set All**.

To deselect all available standards, click **Clear All**.

Note: *If any standards, other than those listed on this page are detected, they will be considered to be invalid.*

Specifying Input Loss Conditions

The module can be configured to take automatic action if the input signal is lost. The conditions that the module considers to be a loss of input are defined on this screen.

To specify the condition that will be considered an input loss:

In the **Input Loss if** section, select either:

- **No Input:** No input of any type is considered a loss of input.
- **In/Out std. Mismatch:** Input signal not matching the output standard is considered a loss of input.

Viewing CRC and EDH Errors

The **Video Input** screen also displays Cyclic Redundancy Checksum and Error Detection Handling errors.

The following CRC and EDH Error information is displayed in the **CRC/EDH Errors section**:

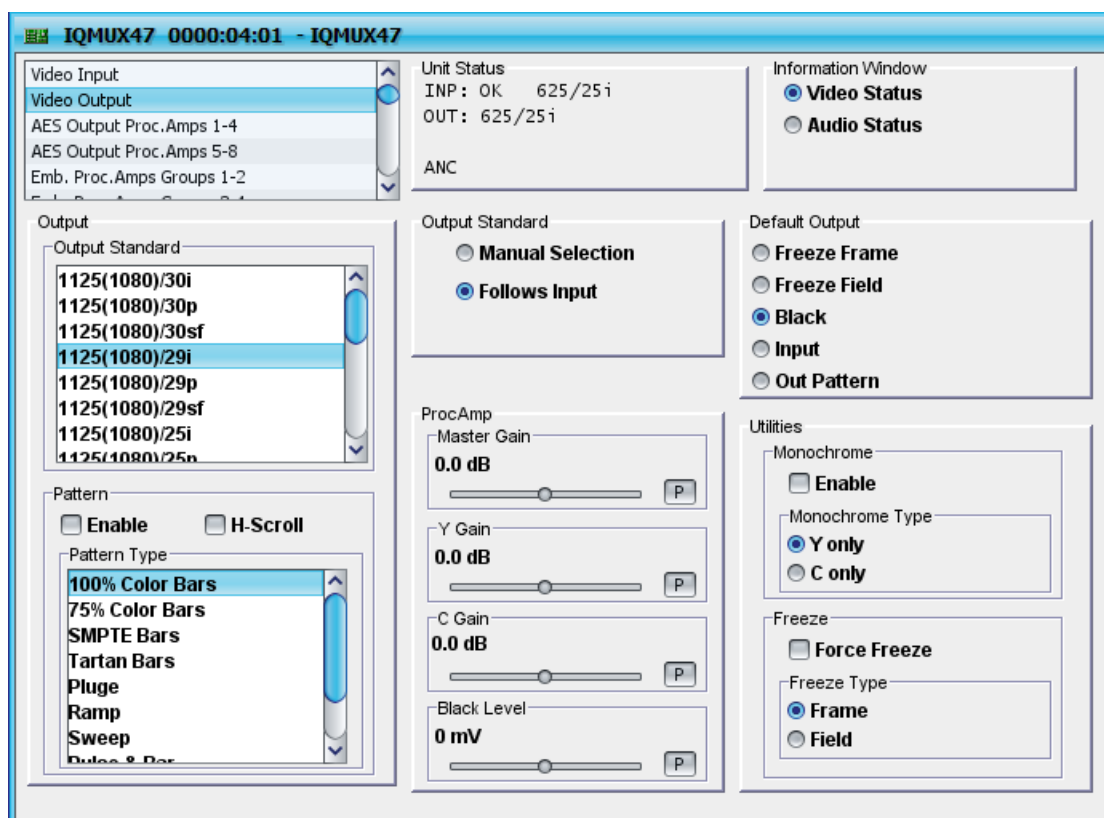
- **CRC/EDH Errors**: Displays the number of CRC and EDH errors that have occurred since the last reset.
- **Time Since Last Error**: Displays the time (in seconds) since the last CRC or EDH error was detected.
- **ANC Errors**: This displays the number of ANC errors since the last reset.

To reset the error counts to zero, click **Reset Counts**. **Time Since Reset** displays the time since the error counts were last reset.

Video Output Settings

Use the settings on the **Video Output** screen to:

- Specify the video output standard.
- Set up the test pattern, if any, to be generated.
- Specify the default output to be generated in response to a loss of input.
- Adjust the signal gain and black levels.
- Control the unit's monochrome functions.
- Control the unit's picture freeze function.



Specifying the Video Output Standard

There are two ways to specify the video output standard to be used by the unit. The video output can be set to follow the input, so that the output standard will always be the same as the input standard, or manually selected. When manually selected, the output standard will always be the one specified, regardless of the input signal.

To allow the output standard to follow the input standard:

In the **Output Standard** section, select **Follows Input**.

To manually specify the output standard:

1. In the **Output Standard** section, select **Manual Selection**.
2. From the **Output Standard** list, select the output standard to be used. The available output standards are:

1125(1080)/30i	1125(1080)/25p	1125(1035)/29i
1125(1080)/30p	1125(1080)/25sf	750(720)/60p
1125(1080)/30sf	1125(1080)/24p	750(720)/59p
1125(1080)/29i	1125(1080)/24sf	750(720)/50p
1125(1080)/29p	1125(1080)/23p	525(480)/29i

1125(1080)/29sf	1125(1080)/23sf	625(576)/25i
1125(1080)/25i	1125(1035)/30i	

Specifying a Test Pattern

The **Video Output** screen also controls the test pattern. The test pattern options are to:

- Enable or disable the test pattern.
- Use a horizontal scrolling test pattern.
- Specify the test pattern to be used.

To enable or disable the test pattern:

In the **Test Pattern** section:

- Select **Enable** to enable the test pattern function.
- Clear **Enable** to disable the test pattern function.

To use a horizontal scrolling test pattern:

In the **Test Pattern** section, select **H-Scroll**.

When selected, the specified test pattern will scroll from left to right at a fixed rate. This mode is useful for differentiating between an input test pattern signal that has become a frozen picture (caused by loss of the input signal) and a test pattern that has been chosen as the output.

To specify the test pattern to be used:

From the **Pattern Type** list, select the pattern. The following pattern types are available:

100% Color Bars	75% Color Bars	SMPTE Bars
Tartan Bars	Pluge	Ramp
Sweep	Pulse & Bar	Burst

Specifying the Video Output

The **Default Output** setting defines the output that the unit generates in response to a loss of video input as specified by the **Input Loss If** setting on the **Video Input** screen.

To specify the default output:

In the **Default Output** section, select one of the following:

- **Freeze Frame:** On loss of input, the output becomes a non-interpolated frozen frame picture. All HANC and VANC are blanked.
- **Freeze Field:** On loss of input, the output becomes a frozen field one picture. All HANC and VANC are blanked.
- **Black:** On loss of input, the picture cuts to black.
- **Input:** The incoming signal will be displayed whenever possible.
- **Out Pattern:** On loss of signal, the specified test pattern is displayed.

Adjusting Gain and Black Levels

Use the **ProcAmp** functions to adjust the gain and black levels of the signal.

To adjust the gain and black levels:

In the **ProcAmp** section, adjust the following settings as required:

- **Master Gain:** Adjusts the overall gain (Y and Cb/Cr) over a range of ± 6 dB in steps of 0.1 dB. The preset value is 0.0 dB.
- **Y Gain:** Adjusts the Y (luminance) gain over a range of ± 6 dB in steps of 0.1 dB. The preset value is 0.0 dB.

- **C Gain:** Adjusts the Cb/Cr (color difference) gain over a range of ± 6 dB in steps of 0.1 dB. The preset value is 0.0 dB.

Note: *The total range of both Master + Y and Master + C controls is +6dB in steps of 0.1 dB. Preset value is 0dB.*

- **Black Level:** Adjusts the black level over a range of ± 200 mV in steps of 1 mV. The preset value is 0 mV.

Controlling Monochrome Functions

The unit can be set so that the output picture becomes monochrome using either the Y or Cb/Cr components of the signal.

To output a monochrome signal:

1. In the **Monochrome Section**, select one of the following:
 - **Y only:** The output picture becomes monochrome using only the Y component of the signal.
 - **C only:** the output picture becomes monochrome using only the Cb/Cr component of the signal.
2. Select **Enable**.

Force Freezing the Picture

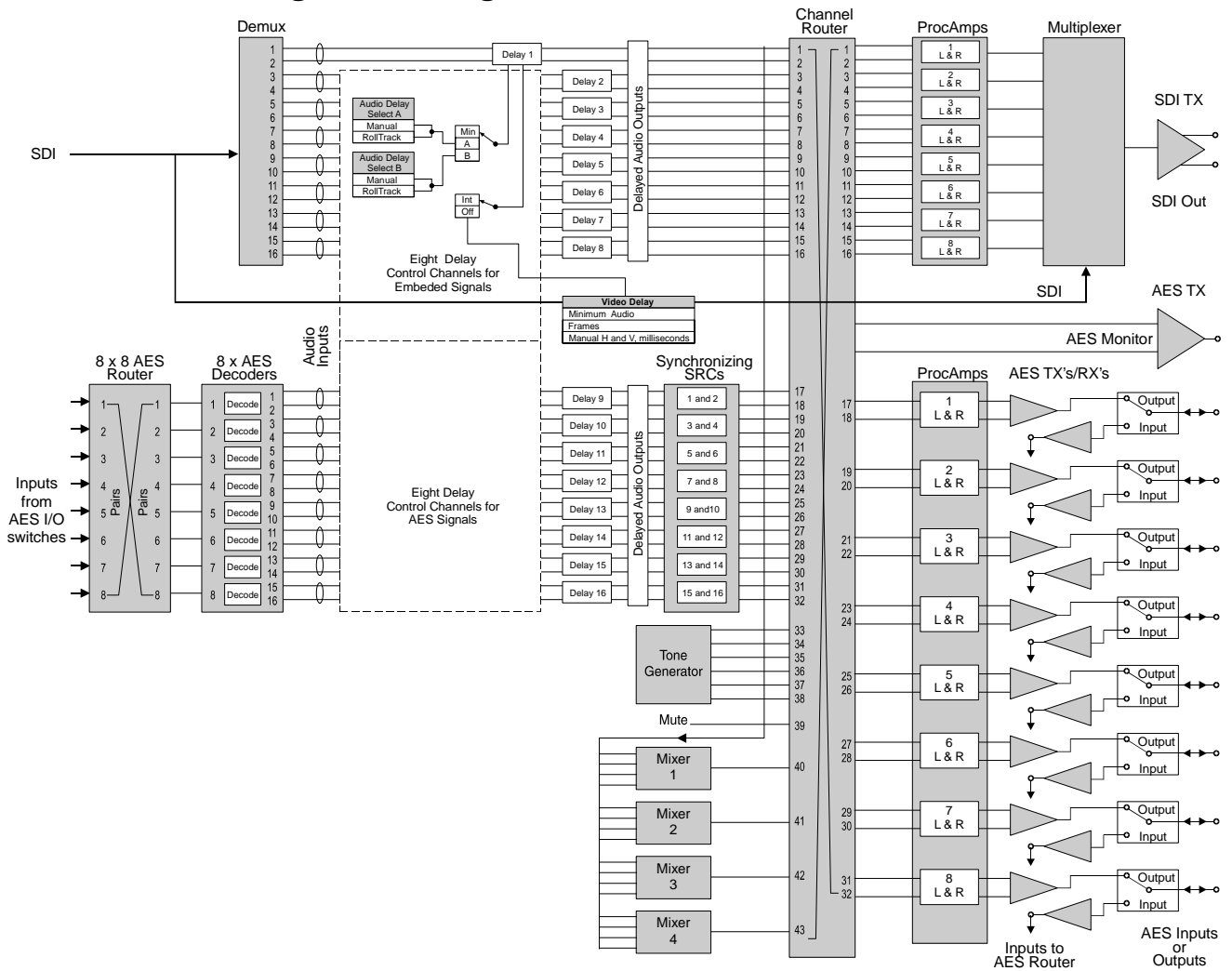
The unit can impose a force freeze on the picture. When this is done, the output becomes a frozen frame or frozen field.

To force freeze the output:

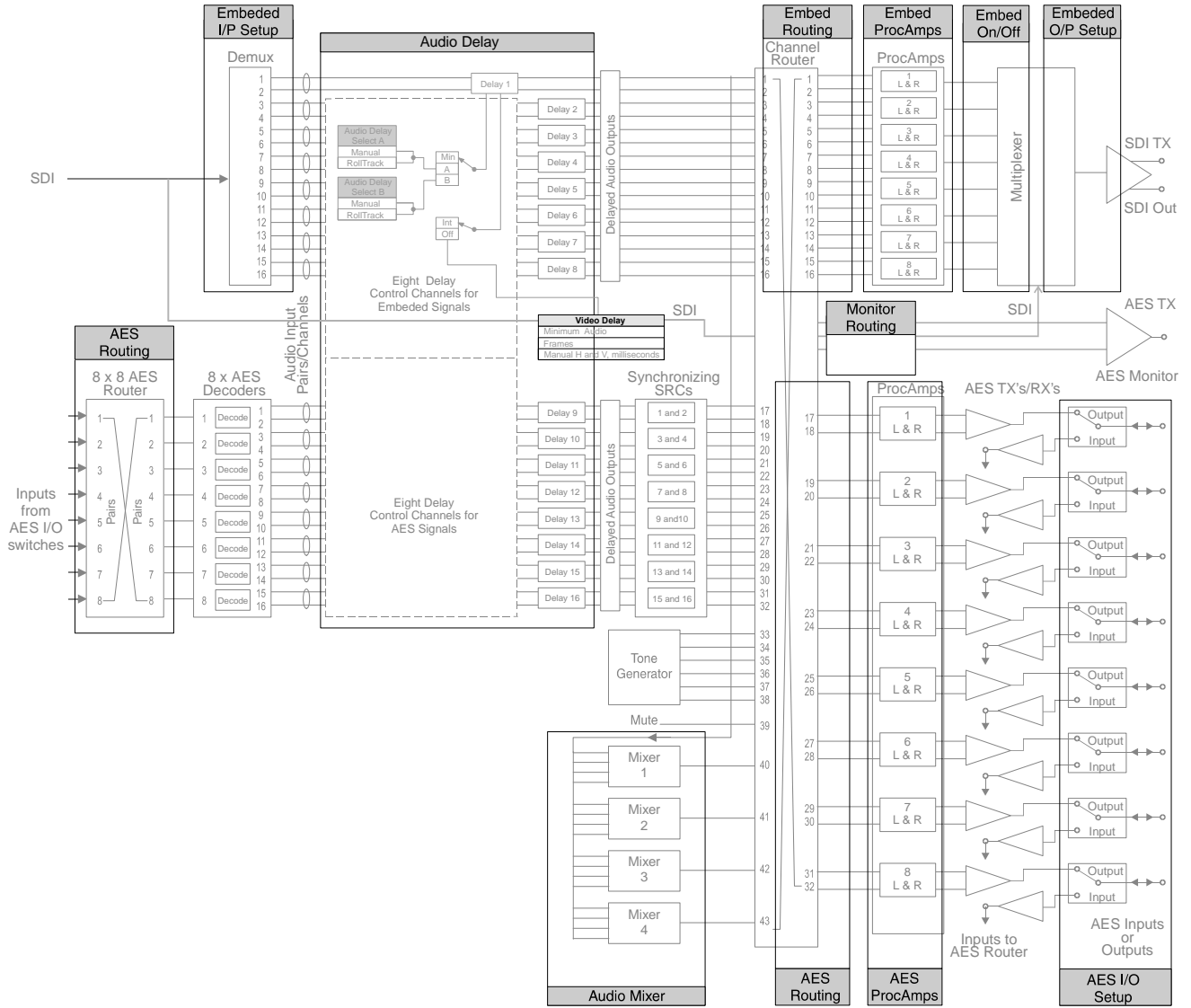
1. In the **Freeze Type** section select either
 - **Frame:** The picture becomes a frozen frame.
 - **Field:** The picture becomes a frozen field.
2. Select **Force Freeze**.

Audio Processing Overview

Audio Processing Block Diagram



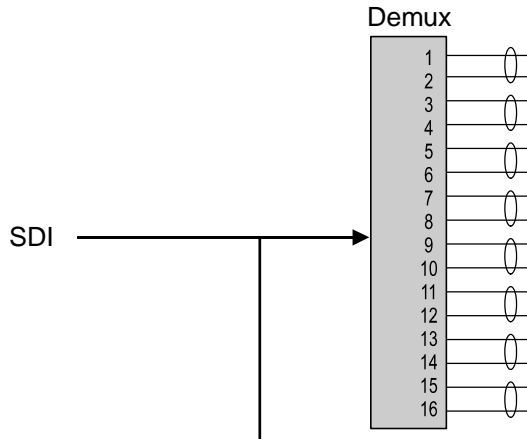
Audio Processing Block Diagram (showing Control Panel Screens)



SDI Demultiplexer

The audio channels are demultiplexed from the SDI signal as eight 2-channel pairs that are feed to the audio delay processor.

Note: *Note that embedded audio handling for HD is 24 bit synchronous 48 kHz to SMPTE 299 and SD is 20-bit synchronous 48 kHz to SMPTE 272M-A.*

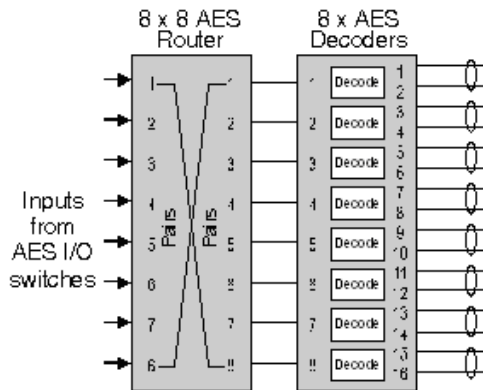


AES Processing

The AES ports may be configured as Inputs or Outputs. When a port is configured as an input the AES signal is passed to one of the inputs of the 8 x 8 AES router.

The router allows any of the 8 input pairs to be selected to appear on any of the 8 outputs.

The 8 pairs from the router are then fed to 8 decoders to produce eight 2 channel pairs.



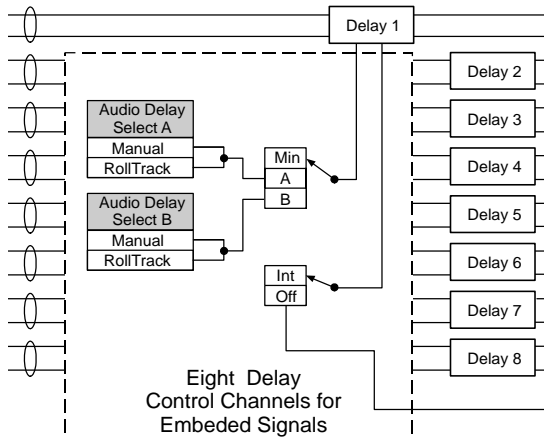
Audio Delay Processor

The SDI de-multiplexed and decoded AES signals (sixteen 2 channel pairs) are fed to sixteen separate delay blocks. Each block processes one audio pair (2 channels) at the same time, the delay time being the same for both channels.

The delay time may be set to Min (the minimum audio delay of approx. 0.75 ms or 3.0 ms if via a SRC) or to a time set by one of two (A and B) Audio Delay Selectors. A delay equal to the unit’s video delay may also be added by selecting Int.

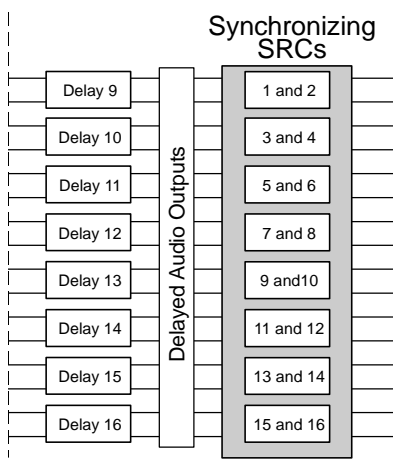
The delay time set by each of these selectors is controlled by a combination of the following:

- Manual** A delay set by the Manual Delay control will be applied.
- RollTrack** A delay set by external RollTrack commands will be applied.



Synchronizing SRCs

The outputs of delay blocks 1 to 8 (SDI de-multiplexed) are connected directly to inputs 1 to 16 of the channel router. The outputs of delay blocks 9 to 16 (Decoded AES) are passed through eight 2 channel synchronizing Sample Rate Converters to the inputs of the channel router.

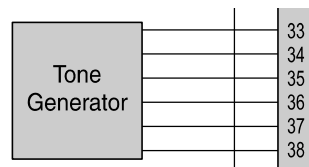


Tone Generator

A tone generator provides the following signals to the channel router.

- 1 kHz at 20 dBFS
- 2 kHz at 20 dBFS
- 4 kHz at 20 dBFS
- 1 kHz at 18 dBFS
- 2 kHz at 18 dBFS
- 4 kHz at 18 dBFS

Note: *The frequency and level of these signals is not adjustable.*



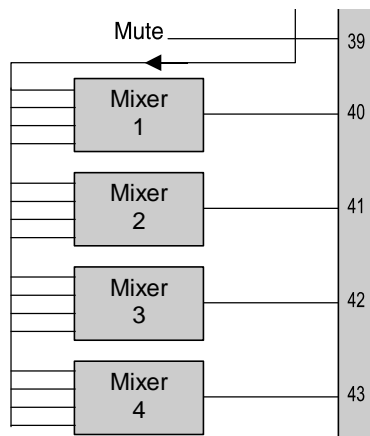
Mixers 1 to 4

There are four separate 4 input, 1 output audio mixers available.

Each mixer has four inputs with individual gain controls that allow the mixing levels for each of the input signals, to be adjusted.

The inputs may be any of the following:

- Mute
- Disembed 1 to 8 Left/Right
- AES Bus 1 to 8 Left/Right
- Tone Generator outputs

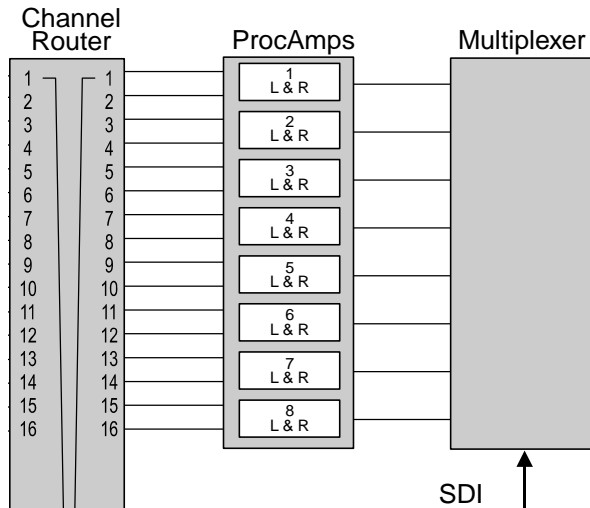


Embedder ProcAmps

There are eight 2 channel ProcAmps that receive their inputs from the output of the channel router.

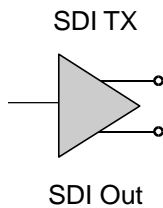
The two channels are processed as Left and Right with control of Gain, Inversion, Muting and a Stereo mode.

The outputs are configured as eight 2 channel signals in four groups and these are fed to the Multiplexer where they are embedded onto the SDI signal.



SDI TX

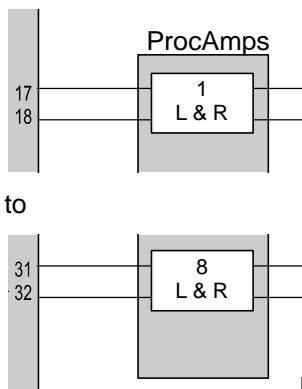
The embedded SDI signal is fed to the output amplifier that provides two SDI outputs.



AES ProcAmps

There are eight 2 channel ProcAmps that receive their inputs from the output of the channel router.

The two channels are processed as Left and Right with control of Gain, Inversion, Muting and a Stereo mode.



AES TX/RXs

There are eight AES transmitters and eight AES receivers.

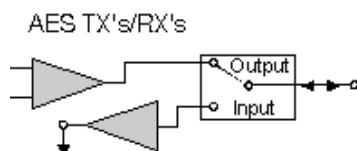
The AES ports may be configured as inputs or outputs by setting the Input/Output switch.

When an AES Port is configured as an Output:

- The outputs from the AES ProcAmps are fed to the AES transmitter to provide an AES output.

When an AES Port is configured as an Input:

- The AES input signal is passed through an AES receiver and fed to an input of the AES router.

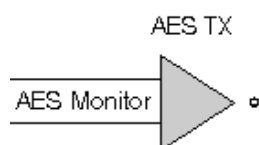


AES Monitor

An AES monitoring output is provided on the IQMUX47 and the IQMUX49. This is an unprocessed signal derived from the output of the channel router.

Signal selections are as follows:

- Mute
- Disembled 1 to 8 Left/Right
- Mixer 1 to 4 output
- AES Bus 1 to 8 Left/Right
- 1 kHz -20 dBFS Tone
- 2 kHz -20 dBFS Tone
- 4 kHz -20 dBFS Tone
- 1 kHz -18 dBFS Tone
- 2 kHz -18 dBFS Tone
- 4 kHz -18 dBFS Tone



Dolby E Audio Handling

This section describes how the IQMUX handles Dolby E audio. For a more general description of Dolby E and AC-3, see page 127.

Dolby E and Dolby Digital are registered trademarks of Dolby Laboratories, Inc.

Dolby E audio achieves compatibility with a digital video stream by virtue of a few fundamental features:

- The compressed audio data is broken into frame-duration packets to match the video frames it will be embedded in.
- Each frame is separated from neighboring frames by a guardband, which allows for clean video-type switching.

- Concealment of switches is possible at a decoder, based on redundant audio and block counts in each frame.

However, there is a burden in dealing with a number of parallel frame-based carriers (such as Dolby E) alongside, and often within, the video. Namely:

- Each Dolby E stream, within an AES-3 / SMPTE-337 data pair, must be synchronous and aligned with the video to allow a video stream to be switched or recorded cleanly. Incorrect alignment can lead to muting, or even high amplitude noise bursts.

As with SMPTE RP-168 switching, there is a small alignment tolerance. Upstream switched, or externally provided sources can present problematic deviations from the preferred Dolby E frame position.

- Each video standard has its own specified Dolby E frame alignment point. Thus, a standards-agile broadcast environment must arrange for correct referencing and delay adjustment in each standard.
- The embedding of audio within the video stream adds considerable timing uncertainty, and increases susceptibility to external factors such as loading of ancillary space and audio sample distribution produced by equipment in the video chain. In particular, standard definition is more prone to these issues than high definition.

The IQMUX is well equipped to deal with issues of carrying Dolby E audio within a broadcast environment. It has the tools required for the correct and easy handling of Dolby E in the following features:

- Transport enablers such as SMPTE-337 aware routing and channel status passing.
- Monitoring and logging of Dolby E frame timing for both passed and newly-embedded audio.
- Manual alignment facilities for consistently arranged environments.
- Automatic realignment of Dolby E frames to preferred or non-standard positions.

For more information about the Dolby E controls, refer to the following sections:

- Embed On/Off on page 51.
- Video Delay/Dolby E on page 42.
- O/P Dolby E Logging on page 65.

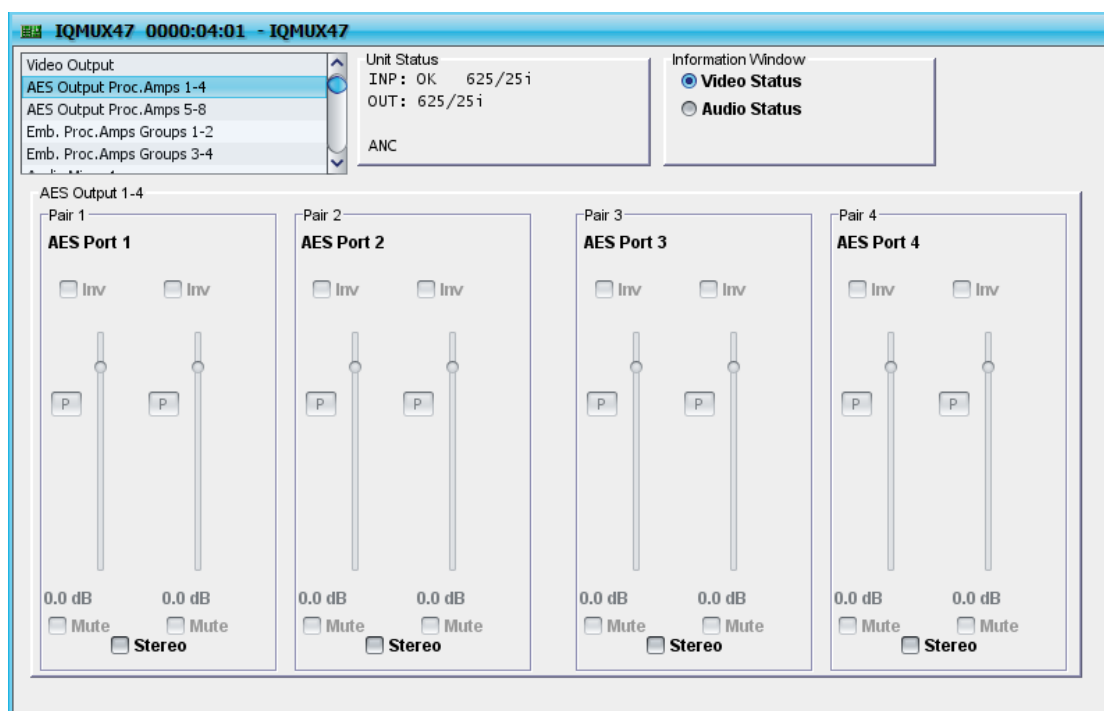
AES Output ProcAmp Settings

Use the settings on the **AES Output ProcAmps 1-4** and **AES Output ProcAmps 5-8** screens to control the units AES audio output. The channels are grouped into eight output pairs.

Note: *The ProcAmps are not available when the AES port is set as an input, or when the audio routed to that port is data.*

For both AES and embedded audio, the unit will either recognize the input as data only, or the input channels can be forced to act as data if they are data. The channels that have these inputs routed to their inputs will have their ProcAmp menus disabled.

For more information about how audio is processed by the module, refer to the Audio Processing Overview on page 27.



Controlling AES Output

To adjust the AES output:

For each pair in use, specify the following settings as required:

- **Inv:** Select this option to invert the signal polarity of the channel.
- **Mute:** Select this option to mute the channel.
- **Stereo:** Select this option to link the two channels in the pair together, as a stereo pair. Any adjustments made to one channel in the pair will be applied to the other.
- **Gain Controls:** The gain controls adjust the gain of each channel, or stereo pair, over a range of +12 dB to -66 dB in 0.1 dB steps. The preset value is 0 dB.

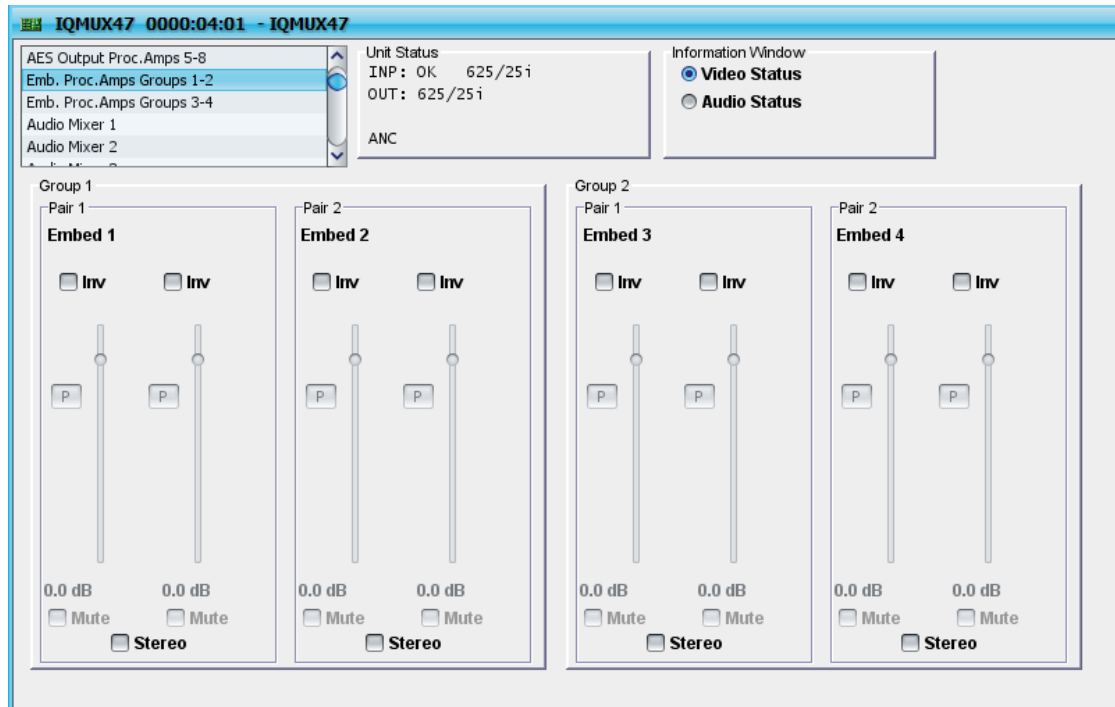
Embedded ProcAmp Group Settings

The 16 embedded audio channels are arranged into four channel groups, of two channel pairs each.

Use the settings on the **Embedded ProcAmps Groups 1-2** and **Embedded ProcAmps Groups 3-4** pages to adjust the gain, apply phase inversion, or mute any of the 16 embedded audio channels.

Note: *These controls are not available when an output is defined as data, the input is data, or the audio embedder is disabled.*

For more information about how audio is processed by the module, refer to the Audio Processing Overview on page 27.



Adjusting Embedded Audio Settings

To adjust embedded audio settings:

For each channel in use, specify the following settings as required:

- **Inv:** Select this option to invert the signal polarity.
- **Mute:** Select this option to mute the channel.
- **Stereo:** Select this option to link the two channels in the pair together, as a stereo pair. Any adjustments made to one channel in the pair will be applied to the other.
- **Gain Controls:** The gain controls adjust the gain of each channel, or stereo pair, over a range of +12 dB to -66 dB in 0.1 dB steps. The preset value is 0 dB.

Audio Mixer Settings

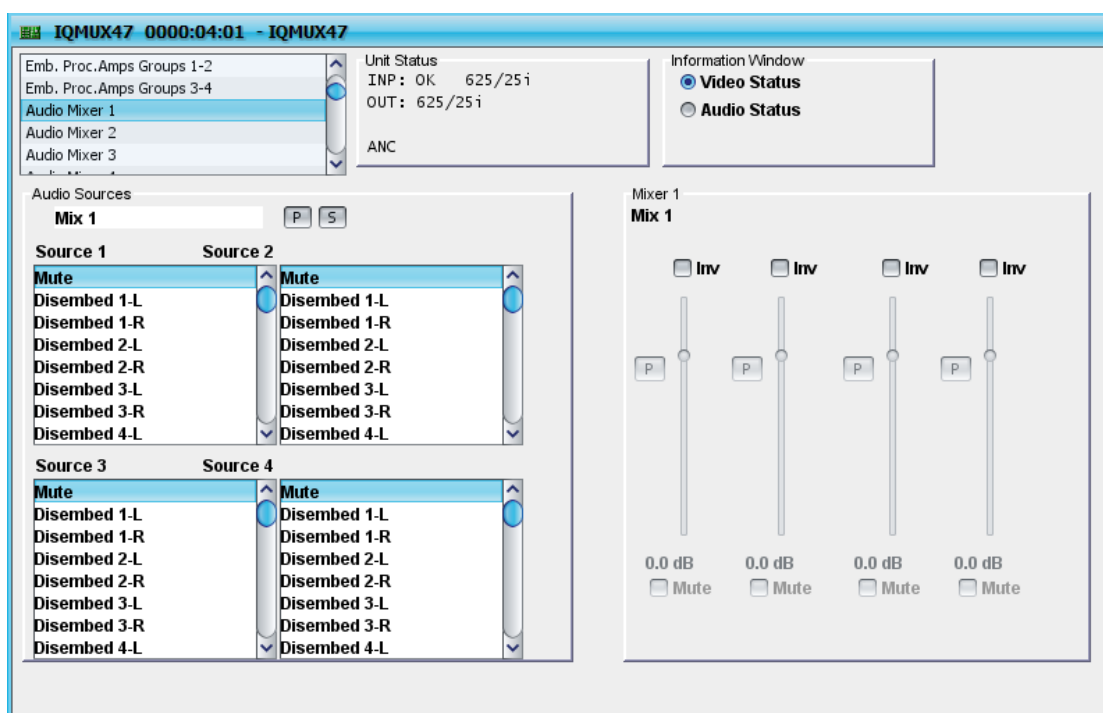
The audio mixers create new, mixed audio feeds from the incoming channels. This is useful when, for example, incoming stereo feeds are required in mono, or discrete surround sound feeds are required in stereo.

Not only can the incoming feeds be mixed together, but the exact balance can be set using the faders. This allows finer control over the resulting sound than a simple mono function.

Additional applications include mixing together incoming audio with local foreground, such as adding commentary to a sports feed. The invert function can be applied to a channel, to create a mix-minus channel for foldback.

For more information about how audio is processed by the module, refer to the Audio Processing Overview on page 27.

To access these settings, select **Audio Mixer 1**, **Audio Mixer 2**, **Audio Mixer 3**, or **Audio Mixer 4** from the function list.



Adjusting Audio Mix

Each of the four mixers has four inputs, with individual gain controls that allow the mixing level of each input signal to be adjusted. The settings for each mixer are the same, and as such, are only described once.

To adjust the audio mix

1. From the **Source** lists, select an input source.

Note: *If mute or one of the test tones is selected as the source, the corresponding gain control is disabled.*

2. Adjust the mix as follows:
 - **Inv:** Select this option to invert the signal.
 - **Mute:** Select this option to mute the channel.
 - **Gain Controls:** The gain controls adjust the gain of each channel, or stereo pair, over a range of +12 dB to -66 dB in 0.1 dB steps. The preset value is 0dB.

Changing a Mixer Name

- To change the name of a mixer: Type the new mixer name and then click **S**.
- To return to the default mixer name, click **P**.

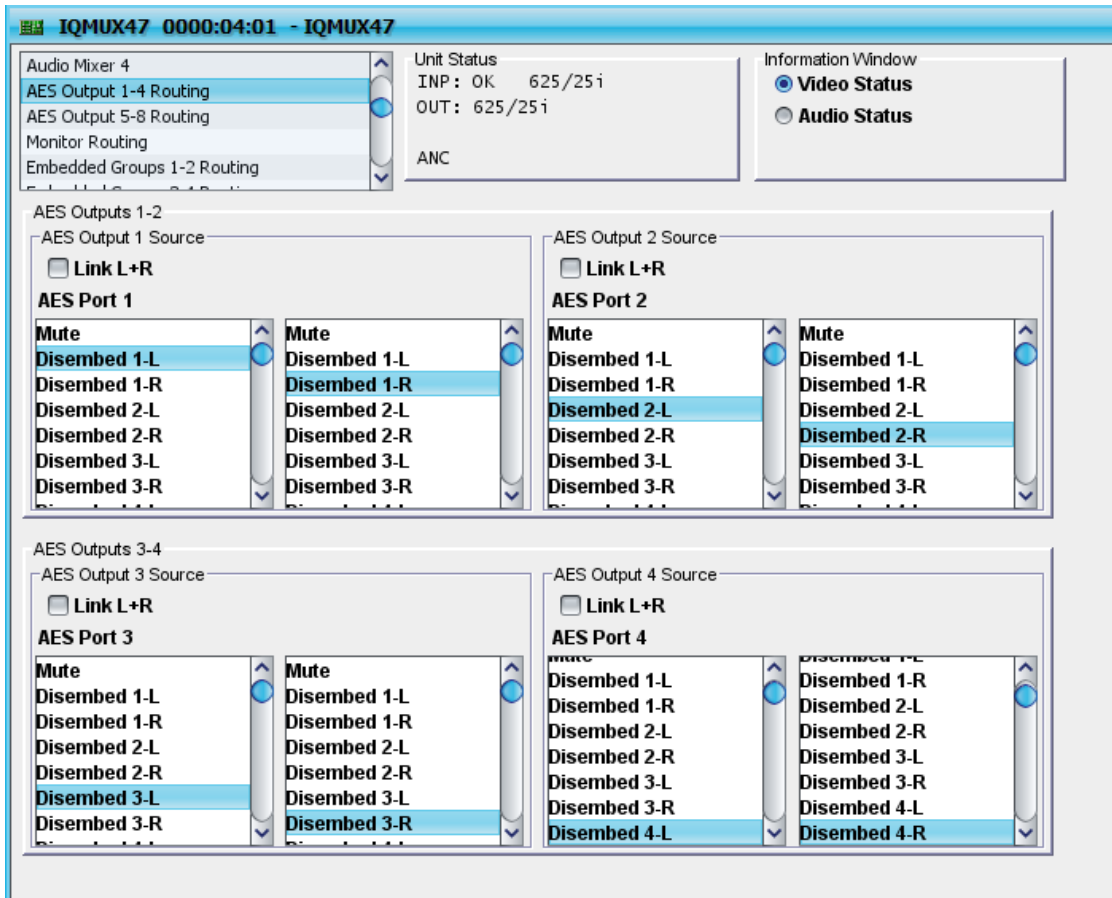
Clip Indicators

At the top of each fader the word **Clip** appears briefly if the audio level reaches the 0 dBFS point – reduce the fader level to prevent this from happening.

AES Routing Settings

The **AES Routing 1-4** and **AES Routing 5-8** screens select the signal sources for the eight AES outputs.

For more information about how audio is processed by the module, refer to the Audio Processing Overview on page 27.



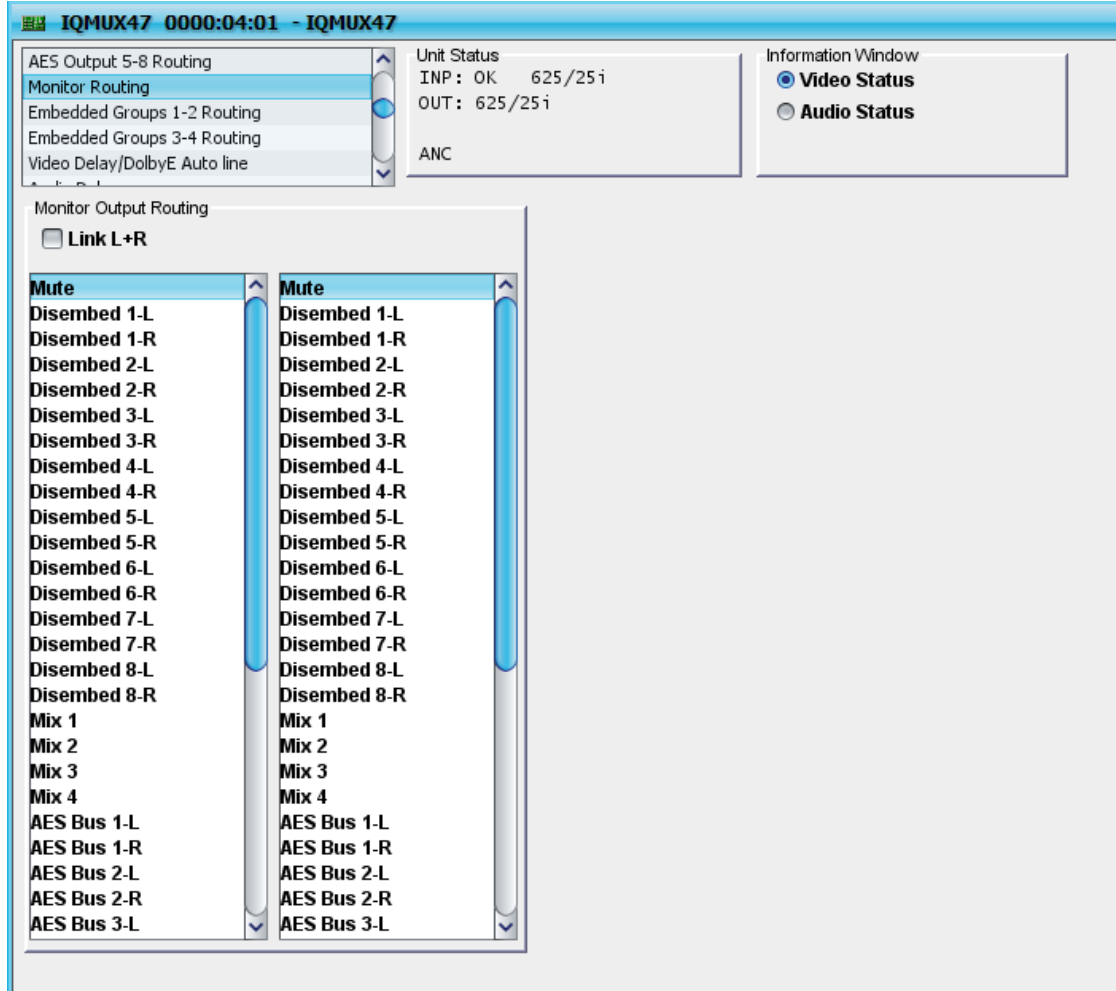
Specifying AES Routing

For each channel within each pair, select the appropriate source. Select **Link L+R** to automatically pair a selected source with its corresponding left/right source, creating a stereo pair. This enables rapid selection in a stereo environment.

Monitor Routing Settings (MUX43/45/47/49 only)

Use **Monitor Routing** to select the signal sources for the additional AES output on the MUX43/45/47/49. This output can be used as an extra feed or a monitoring feed. Mute and audio tones can also be selected.

For more information about how audio is processed by the module, refer to the Audio Processing Overview on page 27.



Specifying Monitor Routing

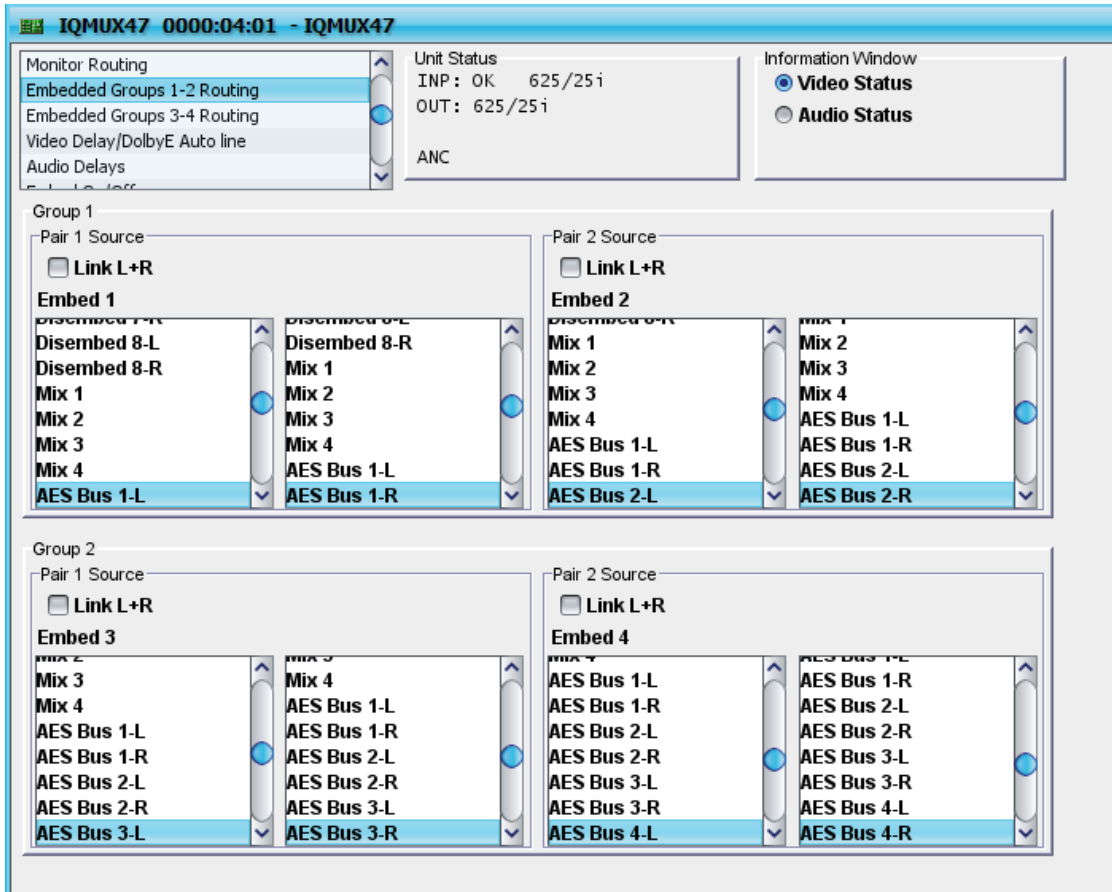
The procedure for specifying monitor routing is the same as for AES routing, described on the previous page.

Embedded Routing Groups Settings

Use settings on the **Embedded Routing Groups 1-2** and the **Embedded Routing Groups 3-4** screens to specify the signal sources for the SDI embedder. As well, mute and audio tones can be selected.

By default, there is a 1:1 relationship between the input source and the output. For example, channel one input is matched with channel one output, channel two input is matched with channel two output, and so on.

For more information about how audio is processed by the module, refer to the Audio Processing Overview on page 27.



Specifying Signal Sources

The settings for each source pair are the same, and as such, are only described once.

To specify a signal source:

For each source pair, select the required source; to configure the pair as stereo, select **Link L+R**.

Note: *A corresponding left/right source will be automatically chosen when available.*

If a mixer output is selected as a source, a different mixer output will automatically be chosen for the other channel. Mix 1 and 2, or mix 3 and 4 are paired.

If a tone is selected as the source, the same tone will automatically be chosen for the other channel.

When an input pair is defined as data or mixed, an automatic pairing is established, similar to the Link L+R function. If either channel of a data pair is selected, the other half will automatically follow in the correct L+R order.

Video Delay/DolbyE Auto Line

Use the Video Delay function to delay the video so that it is timed into the system, compensating for audio processing, or any other required delay. The delay can be defined in frames, lines and pixels. The total delay is cumulative, so that an accurate delay can be created. The total delay is displayed in the **Internal Delay** box in the **Video Delay / Dolby E** screen.

The screenshot displays the configuration interface for the Video Delay/DolbyE Auto Line function. The top navigation pane includes 'Monitor Routing', 'Embedded Groups 1-2 Routing', 'Embedded Groups 3-4 Routing', 'Video Delay/DolbyE Auto line', and 'Audio Delays'. The 'Unit Status' shows 'INP: LOST' and 'OUT: 1080/29i'. The 'Information Window' has 'Video Status' selected. The 'Delay' section is set to 'Manual H and V' mode, with an 'Internal Delay' of 0.00ms. The 'Delay Timing' section shows 'Delay Frames' at 1 frame, 'Vertical Delay' at 0 lines, and 'Horizontal Delay' at 0 pixels. The 'Dolby E Auto Line' section shows a list of lines with '1125(1080)/29i' selected, 'Dolby E Auto Line No' set to 22, and 'Use Embedded Reader' checked. The 'Dolby E Timing' section shows 'Audio Pair' set to 1. The 'Relative Timing' section shows 'Relative to Standard Line' as NONE and 'User Dolby-E Line' with radio buttons for User and Standard for pairs 1 through 8.

Video Delay Modes

There is one method by which video delay is specified:

- **Manual H and V:** Delays the video by changing the horizontal and vertical timing.

Internal Delay: Displays the total video delay applied.

Note: When embedded audio is set to **Pass** or respective groups are not active on the **Embed On/Off** screen, the timing of the video to embedded audio will not be affected.

Manual H and V

The **Manual H and V** delay mode adjusts the video delay by changing the horizontal (H) and vertical (V) timing. When a delay is required to be defined in terms of video lines, for example to round up to the next frame boundary, this method can be used. However, it can introduce complications on changes of video standard and the minimum delay can go below the 0.75 ms (3 ms for AES PCM pairs) audio minimum delay, which would prevent audio delay matching. Settings for H and V are, therefore, stored per video standard.

Delay Timing

The range of adjustment for Delay Frames is 0-12 frames. The preset (P) value is 1 frame.

The range of adjustment for Vertical Delay is 0-1 frame in 1 line steps. The preset (P) value is 0 lines.

The range of adjustment for Horizontal Delay is 0-1 line in 1 pixel steps. The (P) value is 0 pixels.

The total delay equals the sum of Delay Frames + Vertical Timing + Horizontal Timing.

Notes: *The minimum video delay through the product is 1 line.*

Minimum audio delay to sync the video and audio is 3 ms. Please set vertical and horizontal delay to set the internal delay to 3 ms.

The table below lists the number of lines required for different video standards to match the minimum audio delay through the product.

Video Standard	Vertical Delay (lines)
625	47 lines
525	47 lines
720p50	113 lines
720p59	135 lines
1080i25	84 lines
1080i29	101 lines

Delay Timing per Standard

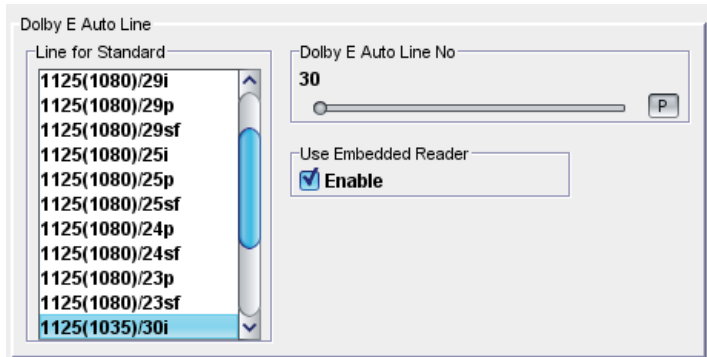
Settings for H and V are stored per standard. The settings for each standard are only accessible as per the current output standard.

E.g. If you want to set H and V settings for standards 625 and 1080i25; change the output standard to 625, set H and V, then change output standard to 1080i25 and adjust H and V again.

These settings are also stored in user memories (also per output standard).

Dolby E Auto Line (IQMUX46-49 Only)

Use the settings in the Dolby E Auto Line section to specify a video line for Dolby E header alignment. For any pair with Auto DE enabled, the audio delay will attempt to align the output audio guardband on this video line, while keeping the delay within ± 0.5 frame of nominal. Each video standard may have its own line specified, so that a change of standard will automatically call up the appropriate line for alignment to.



Line for Standard / Dolby E Auto Line No

This allows access for defining and viewing the table of user specified lines for Dolby E auto alignment, status reporting and logging. Defaults for each standard are the published 525/29i and 625/25i positions mapped onto the supported standards, i.e. assuming the encoders / decoders are referenced to SD.

From the **Line for Standard** list, select the input video standard, this will automatically adjust the **Dolby E Auto Line No**, which can also be manually adjusted by means of the slider bar. The default Dolby E line numbers for the supported video standards are shown in the following table.

Line for Standard	Dolby E Auto Line No
1125(1080)/29i	22
1125(1080)/29p	22
1125(1080)/29sf	22
1125(1080)/25i	20
1125(1080)/25p	20
1125(1080)/25sf	20

Line for Standard	Dolby E Auto Line No
1125(1035)/29i	22
525(480)/29i	14
625(576)/25i	11

Use Embedded Reader

This option allows the automatic Dolby E alignment adjustment to be made using the actual embedded data to improve the accuracy of the correction, and ensure the requested line is achieved. If Use Embedded Reader is not enabled, the correction is applied at the audio delay output, before the embedder and, as such, may not be as accurate. It is enabled by default.

Dolby E Timing

An indication of Dolby E header phasing at the outputs helps in making corrections and avoids clicking or other corruption on downstream switching due to the 5% inter-frame guardband being misaligned with the video switch point.

Each of the eight output embedded pairs, including passed input audio groups, can be selected for display and logging. The display will report (for both the standard and the user-defined line) a line offset or indicate a missing Dolby E header, for example, indicating PCM audio.

Use the **Audio Pair** slider bar to select one of the eight embedded audio pairs.

Line Number reports the actual line number on which the Dolby E header occurs. Note that, depending on audio packet distribution, this may differ slightly from the expected line number. For example, if the expected line number is 22, line 21 or 23 may periodically be reported. This is a normal occurrence and does not necessarily indicate an error condition.

Sample Number reports the current audio sample number.

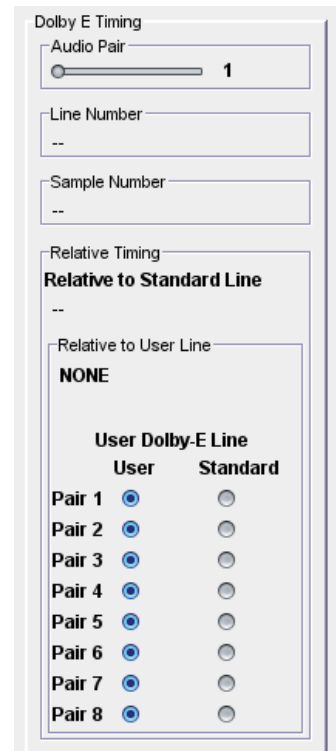
Relative Timing (IQMUX46-49 Only)

Dolby E position is reported Early, Late, or OK within the limits for each output standard as shown below. 'Frame ?' is reported if the video frame rate is at twice the audio frame rate. In this situation, the audio aligns to the nearest video frame. Since the number of video frames will be double the number of audio frames, the audio delay may require adjustment in order to align with the correct video frame.

There are two levels of limits for status and logging. For safe and reliable operation, the OK limit is ± 3 samples from the specified point, with WARN indications for up to the table limits, and ERROR indications beyond (this will definitely cause packet corruption on switching).

Standard	Switch Point	Early Line	Normal Line	Late Line
625/25i	6	<9	11	>30
525/29.97i	10	<12	14	>29
1080/25i 1080/25sf 1080/25p	7	<16	20	>55
1080/29.97i 1080/29.97sf 1080/29.97p 1035/29.97i	7	<17	22	>55
720/50p	7	<22	27	>73
720/59.94p	7	<23	29	>73

Note: All HD standards use line 7 for the frame switching line.
Unsupported frame rates are: 23.98, 24, 30, 60 in i or p or sf types



User Dolby-E Line (IQMUX46-49 Only)

If the Dolby E delay has been manually configured, select **User** next to corresponding audio pairs to specify which of the eight audio pairs will monitor the user line for status and logging. Alternatively, select **Standard** to monitor the standard Dolby E line.

Audio Delay Settings

The IQMUX42 - 49 audio delay control system comprises 16 separate delay blocks. Each block processes a pair of PCM audio channels or one non-PCM data feed. The delay blocks can be controlled by one of two composite control feeds for external adjustment, or by an internal matching delay option. Each control feed can be driven by combination of both tracking and fixed delays. Tracking delays are those that can follow a variable timing value, such as the delay through a video synchronizer.

The selection of audio delay control A or B allows audio to be timed to, or synchronized with, one of two separate timing planes. Delays can be configured such that:

- A minimum of delay is applied.
- All audio is delayed together.
- Some audio is delayed, while some is not.
- Audio pairs have differing amounts of delay applied.

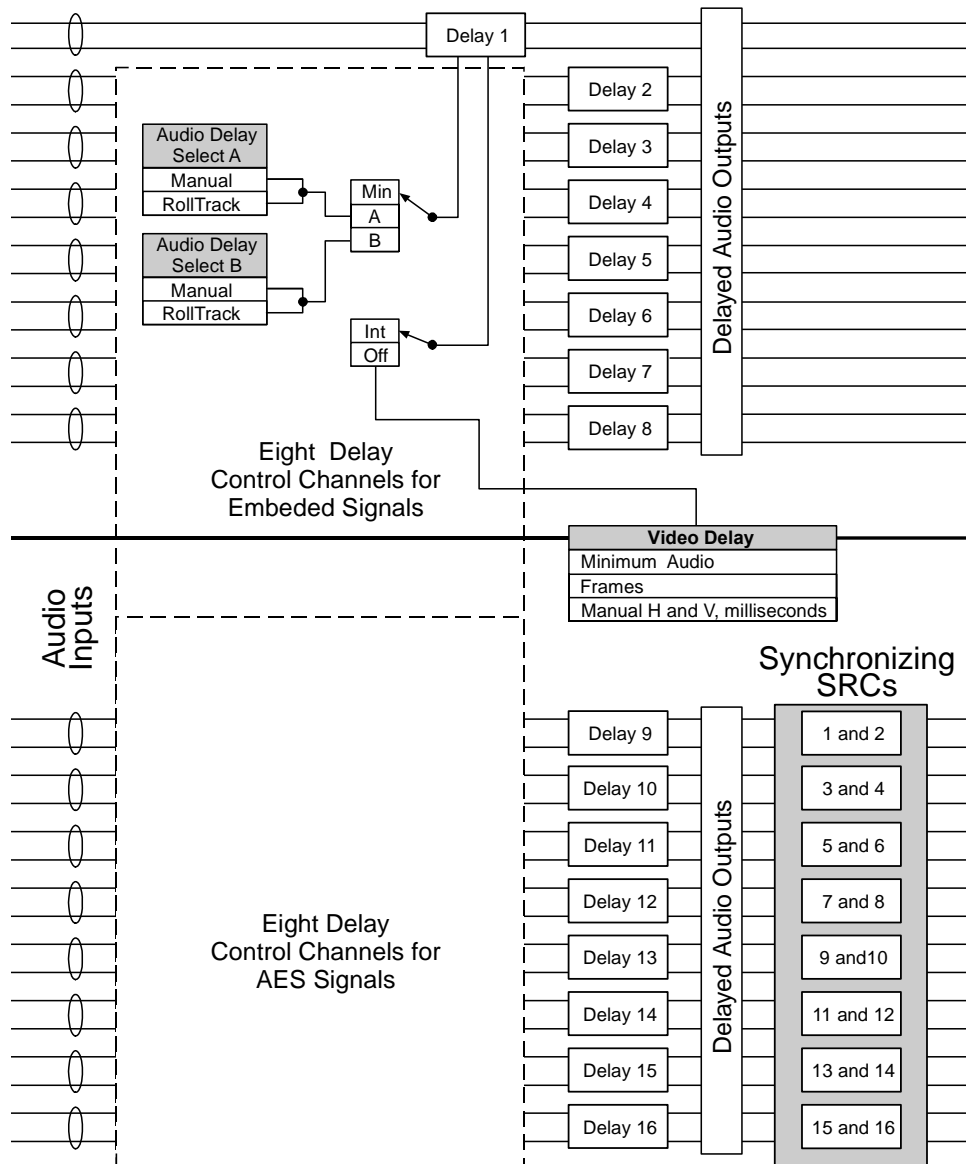
The delays are SMPTE-337 data aware, and as such will attempt to track any changes during the guardbands to avoid corrupting any data packets. This limits response to changes to a rate similar to the SRC filtered case, which is entirely adequate for tracking while synchronizing video.

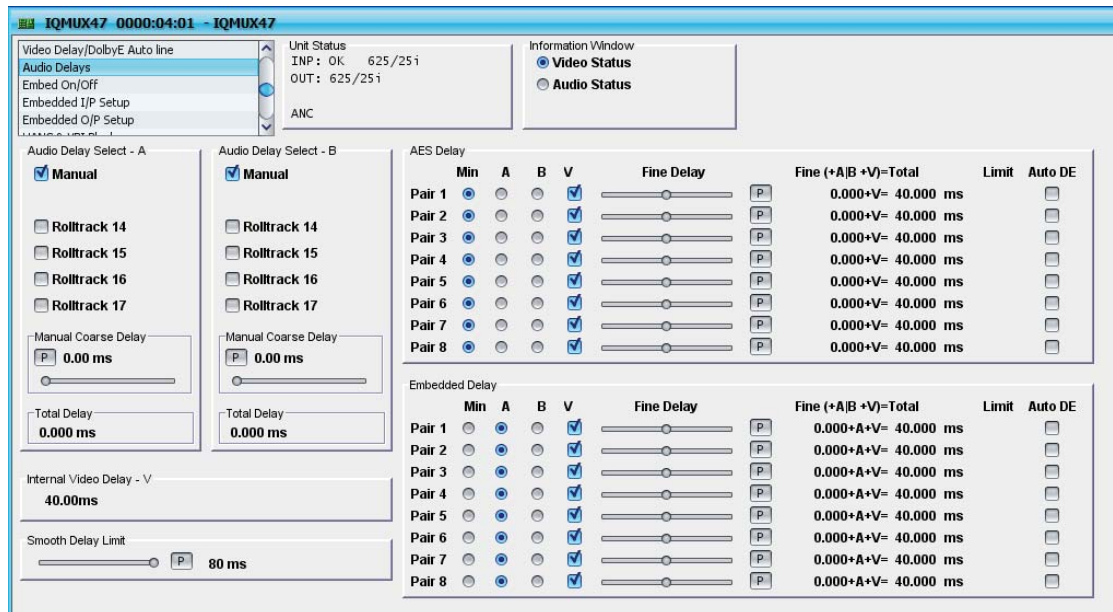
For each delay block then the delay can be derived from one of the following settings:

Min	Effectively zero delay but when no Internal delay is added it is limited to the minimum audio delay of approx. 0.75 ms or 3 ms if via a SRC.
A	The delay time for this audio pair is the value set by the Audio Delay Select-A control.
B	The delay time for this audio pair is the value set by the Audio Delay Select-B control.
V	Adds an audio delay equal to the unit's video Internal Delay setting when enabled.
Auto DE (MUX46- 49 only)	When selected, the unit alters the audio delay by up to half a frame to automatically place the Dolby E header on the same line as specified by the Dolby E Auto Line No control on the Dolby E Auto Line page.

RollTrack and GPI inputs must be static when contributing to delay controls using Auto DE.

This diagram illustrates the audio delay processes.





For each audio delay control, **Audio Delay Select-A** and **Audio Delay Select-B**, a combination of the following delay drivers are used to set the value of the delay:

- **Manual:** Manually adjusts the delay.
- **RollTrack:** A delay set by external RollTracks will be applied. Delay values can be applied via RollTracks 14 to 17 inclusive.

RollTracks are signals sent between pieces of equipment so that they can work together in concert. Two modules can exchange delay values through the RollTrack system. For example, the delay used for audio passing through this remultiplexer could be set by the delay specified on a video synchronizer. For more information, see the RollTrack Audio Delay processing section.

Audio Delay Select-A/B

This function allows delay times (A and B) to be applied to the delay processor block.

For both Audio Delay A and Audio Delay B, you can use the following delay methods:

Manual Coarse Delay

To specify a manual delay, select the Manual Delay check box, and use the slider bar to specify the value of the delay. The delay range is -40.0 ms to 2000.00 ms, adjusted in 0.25 ms steps. For finer adjustments, use the Manual Fine Delay control, which is described below. The preset value is 0.00 ms.

RollTrack

RollTracks are signals sent between pieces of equipment so that they can work together in concert. For example two modules can exchange delay values through the RollTrack system. The delay used for the audio passing through this remultiplexer module could be set for example, by the delay through a video synchronizer.

Audio Delay values can be applied via RollTracks 14, 15, 16 and 17.

For more details please see the RollTrack Audio Delay Tracking section.

Total Delay

This indicator shows the total delay value that the control (A or B) is currently set. Any delay block being controlled by that control (A or B) will be set to this value plus the video Internal Delay (if selected). It is a useful check that the right combination of delays has been applied. It only indicates delays applied at this stage of the processing and not individual pair delays

applied to the audio inputs. One of the useful features is being able to see whether tracking delays are changing their value.

The minimum amount of total delay shown here will be 3.0 ms, which is the system minimum delay in PCM. Data mode is made consistent with PCM by adding 88 samples worth of delay.

Smooth Delay Limit

Under normal circumstances, when audio tracks video, it slowly creeps up to track with video. Sometimes however, it may be preferable to have the audio immediately jump to the tracking point. The **Smooth Delay Limit** control adjusts the time that it takes for the audio to sync with the video. The range of this control is 0ms to 80ms. The preset value is 80ms.

AES Delay 1 to 8 and Embed Delay 1 to 8

These display the controls for each of the 8 AES and 8 Embedded delay blocks.

For each delay block the delay can be derived from one of the following settings:

- Min** Effectively zero delay but when no Internal delay is added it is limited to the minimum audio delay of approx. 0.75 ms or 3 ms if via a SRC.
- A** The delay time for this audio pair is the value set by the Audio Delay Select-A control.
- B** The delay time for this audio pair is the value set by the Audio Delay Select-B control.
- V** Adds an audio delay equal to the unit's video Internal Delay setting when enabled.
- Fine Delay** Use the Manual Fine Delay control to specify manual delays finer than 0.25 ms (the adjustment increment of the Manual Coarse Delay control). The delay specified by this control is added to the value set with the Manual Coarse Delay control. The delay range is ± 0.244 ms in 5 ms to 6 ms steps. The preset value is 0.00 ms.

Fine (+A|B +V)=Total

This displays the total of the A or B delay time, plus any manual fine delay, plus the internal video delay.

Limit

If **LO** appears to the right of the check boxes, the delay set is lower than the minimum delay (0.75 ms or 3.0 ms).

**Auto DE
(IQMUX46-
49 only)**

When selected, the unit alters the audio delay by up to half a frame to automatically place the Dolby E header on the same line as specified by the Dolby E Auto Line No control on the Video Delay/Dolby E Auto Line page. For more information, see page 42

When an IQMUX is used as a post-switch firewall in an agile setting. Use of Mixed mode, whilst disabling procamps, provides for clean switching between PCM and Data such as Dolby E. Provided that the decoder can change modes cleanly it is possible to have a "hot" switch between types without any mute or disturbance. Since PCM has no alignment requirement the Auto DE controller will allow the audio delay to drift to the actual requested delay when PCM is detected, and a switch back to a Dolby E source will give some misalignment error during the Auto DE recovery time - and probably a decoder mute. For this reason it is essential that a pre-switch alignment firewall is used on the Dolby E source(s), and that the PCM delay is set to the nominal delay for correct alignment - probably an integer number of frames.

There are additional controls which should be selected for reliable operation in the presence of other ancillary data, in particular for standard definition video:

- **Embedder Priority (Embed On/Off page)** should be set to **Audio**. This will prioritize audio packet insertion so the requested line is always available.
- **Use Embedded Reader (Dolby E Auto Line page)** should be enabled. This allows the automatic alignment adjustment to be made using the actual embedded data to ensure the requested line is achieved.

Embed On/Off Settings

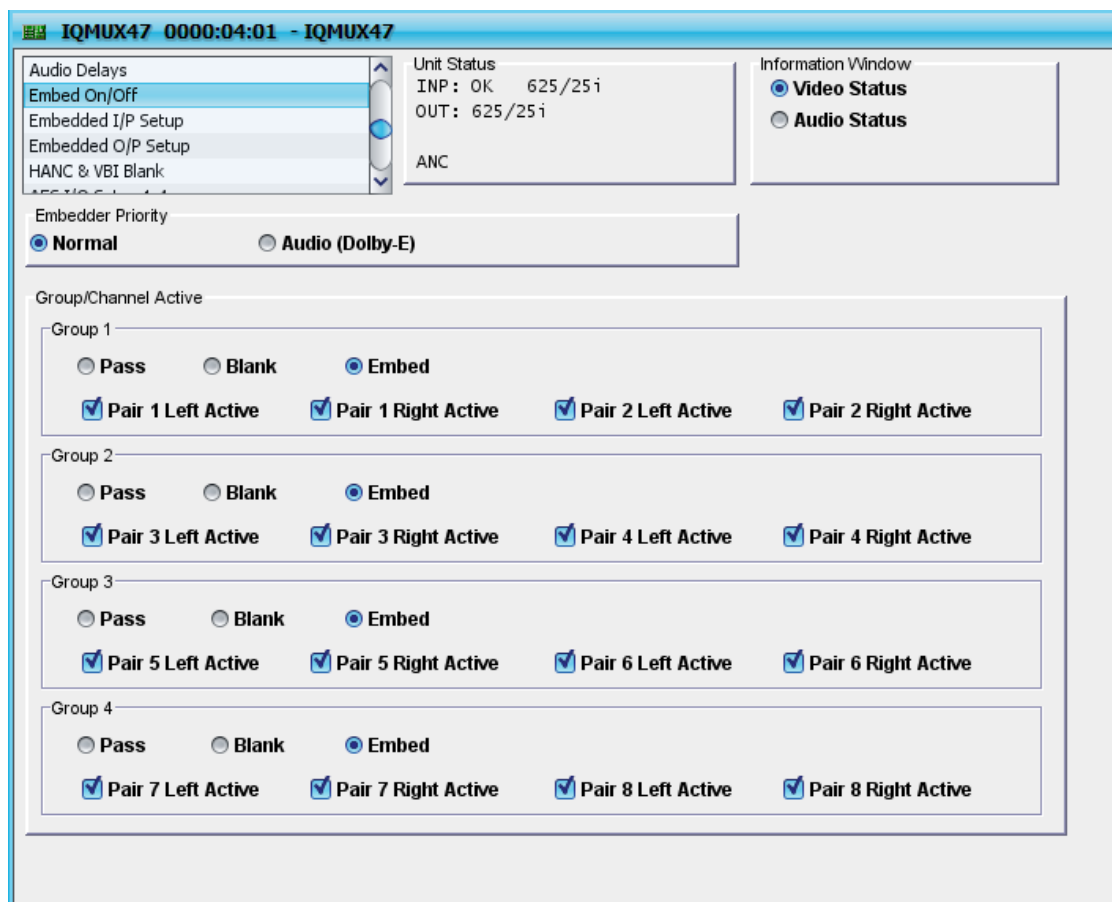
Use the Embed On/Off functions to specify how the module handles the embedding of audio into the output HD-SDI or SD-SDI video stream. The audio inputs are arranged into four groups, comprising two channel pairs each.

For each group, the module can be configured to:

- Pass audio unchanged.
- Remove audio data from the stream.
- Embed audio data into the stream.

By default, audio data is embedded in each group.

Within each group, specify whether each channel, for example, Pair 1 Left or Pair 1 Right, is active or disabled. A disabled channel is muted and flagged as absent, with the channel status indicating 48 kHz synchronous audio. This does not change the group behavior.



Embedder Priority

Selecting Audio (Dolby E) causes audio to be embedded first. This ensures that audio data, such as Dolby E is on a specific line. If processing Dolby E, it is recommended that this option is selected.

Group/Channel Active

For each Group (Group 1 to Group 4):

- To allow audio data to pass through the unit unchanged, select Pass.
- To remove audio data from the incoming stream, select Blank.
- To embed audio data into the stream, select Embed.

For each channel within each group:

- To activate the channel, select the corresponding check box.
- To disable the channel, clear the corresponding check box.

For more information about Audio Embedding, see Ancillary Passing and Audio Embedding on page 129.

Embedded I/P Setup

Use the Embedded I/P Setup screen to specify whether an input audio pair should be treated as:

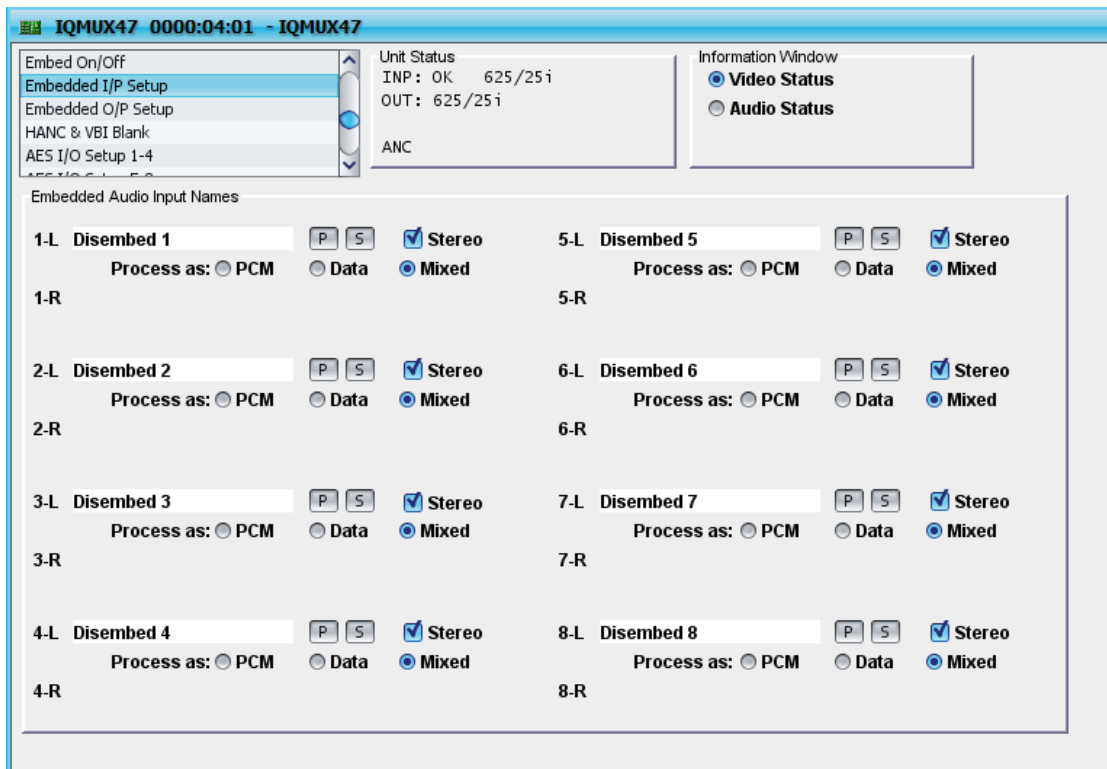
- PCM audio
- Data
- Mixed mode

This screen also allows the names of the disembedded audio inputs to be changed from the default names (Disembed 1 etc.).

The input embedded audio must be sampled at 48 kHz Up to 20-bit resolution is supported in SD video standards, and up to 24 bit resolution is supported in all HD video standards.

The mixer, routing, and ProcAmp functions are channel-based and can pass or process on either channel. However, audio delays are pair-based and it is not possible to apply a different delay to the two channels of an input audio pair.

Embedded audio is a pair based system. This means that they carry the sound as two channels and it is not possible to carry just one channel. Of course, the unit can pass and process either channel as well as both. This is because the module is channel-based internally. When an embedded feed is used to carry non-PCM data then the whole data space is allocated to that function. In this mode the feed has to be treated together, it has to be treated as the equivalent of a pair. For example a non PCM feed at the input will occupy the same space as two audio channels and must be passed to the output as two channels of data.



PCM

If **PCM** mode is selected, the pair will be treated as PCM audio by the module. PCM processing can be either channel-based or stereo based. By default, channels are configured as stereo pairs. To switch to channel-based processing, clear the **Stereo** check box. PCM mode allows audio-specific operations, such as gain and tracking delay, to be adjusted by means of the Mixers and Proc Amps. In PCM mode, channel status is overwritten with filtered channel status from the input, and is assumed to be steady state 48 kHz synchronous professional, with audio or data type as indicated on the source. If Data is flagged by channel status the unit will still respond by disabling processing operations including forcing pair-based routing, thus giving a data-compatible audio path.

Data

If **Data** mode is selected, the pair will be treated as a non-PCM data feed through the circuitry within the module. This mode also protects the feed from PCM audio-specific operations such as gain and tracking delay. It also ensures that the audio is routed as a pair. In Data mode, channel status is overwritten with filtered channel status from the input, and is assumed to be steady state 48 kHz synchronous professional, with audio or data type as indicated on the source. One stream is equivalent to two PCM audio channels so in this mode there are no operations that can split the data. PCM audio will still be passed, and the channel status will follow the input type.

Mixed

If **Mixed** mode is selected, processing occurs as with Data mode; however, the channel status overwrite mechanism is bypassed and set to 'pass through' on a channel by channel basis. One stream is equivalent to two PCM audio channels so in this mode there are no operations that can split the data. This mode is suitable for processing Dolby E and Dolby AC3 (Dolby Digital) data, when transitions between data and PCM audio will be passed cleanly with the source channel status, allowing decoders the best chance of handling the transition.

Embedded Audio Input Names

By default, channels are designated as stereo pairs. To name each channel individually, clear the **Stereo** check box.

- To change a disembedded audio input name, type the new name in the field, and click **S**.
- To return to the default name, click **P**.

Note: *When a channel is designated as a stereo signal, the corresponding left/right channel does not appear.*

Names are stored in the Memory function so that a new set of names can be recalled by memory.

These names are used in the lists for the following functions:

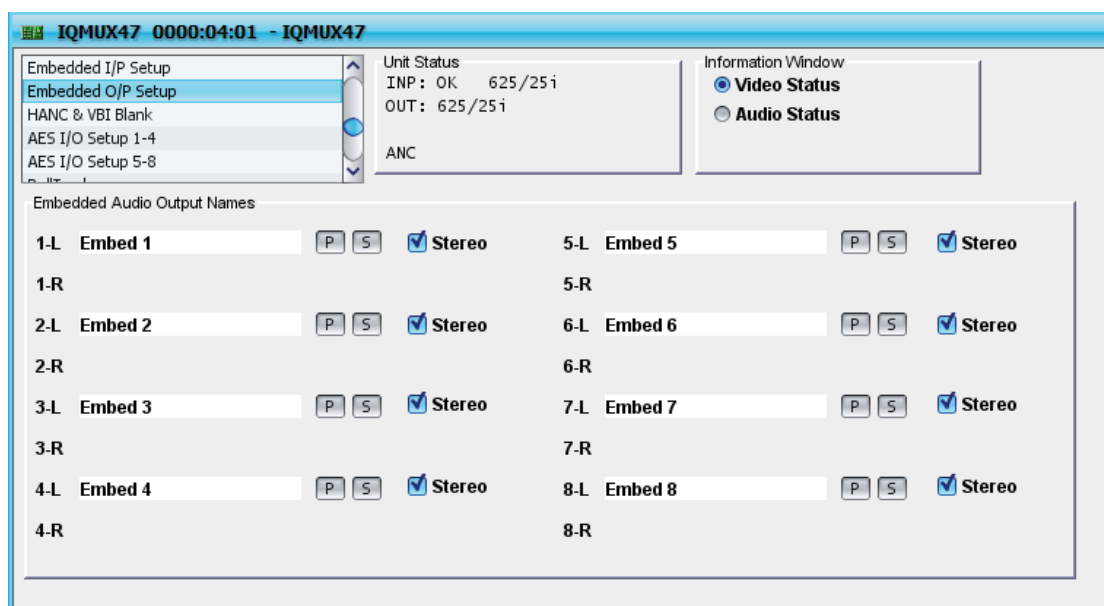
- Audio Mixer Inputs
- AES Routing
- Monitoring Routing
- Embedded Routing
- Embedded Input Setup

Embedded O/P Setup

Use the **Embedded O/P Setup** settings to change the names of the embedded audio outputs and designate stereo pairs.

The output embedded audio is always sampled at 48 kHz and synchronized to the output video. Up to 20-bit resolution is supported in SD video standards, and up to 24-bit resolution is supported in all HD video standards.

To access these settings, select **Embedded O/P Setup** from the function list.



Setting up Embedded Output

By default, channels are designated as stereo pairs. To name each channel individually, clear the **Stereo** check box.

- To change an embedded audio output name, type the new name in the field, and click **S**.
- To return to the default name, click **P**.

Note: *When a channel is designated as a stereo signal, the corresponding left/right channel does not appear.*

Names are stored in the Memory function so that a new set of names can be recalled by memory.

These names are used in the lists for the following functions:

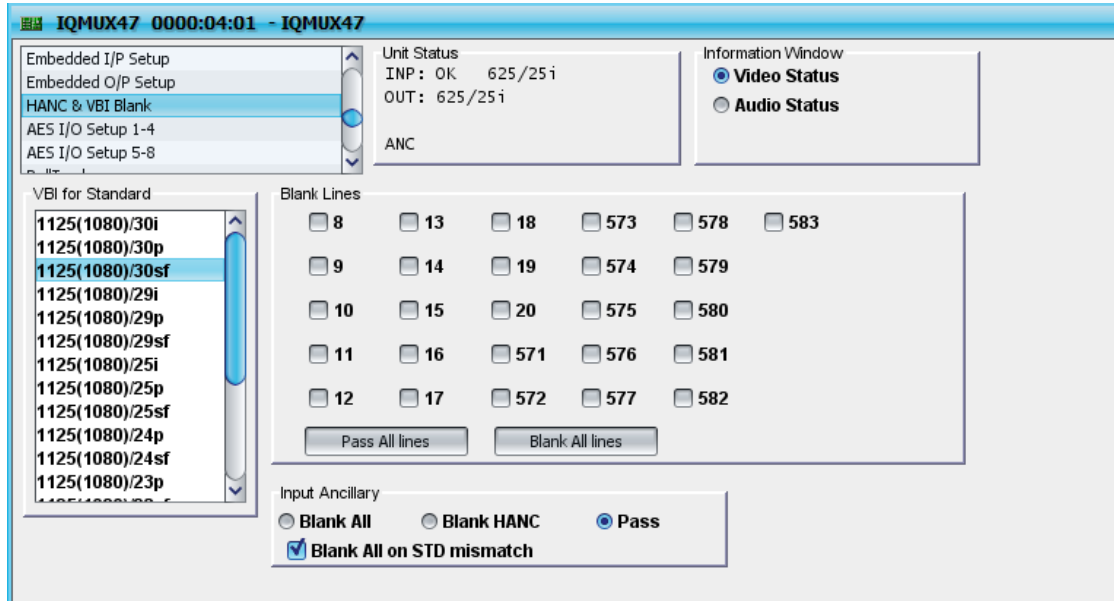
- Embedded Routing
- Embedded ProcAmps

HANC and VBI Blanking Settings

The settings on the **HANC & VBI blank** screen:

- Specify whether vertical interval data (VBI), is blanked or passed through the module. Note that the **Input Ancillary Blank All**, **Blank HANC**, and **Pass** settings allow ancillary blanking to be globally defined and do not change with output standard.
- Blanking can be applied to all lines or to specific lines, depending on the selected standard. Each standard can have different blanking applied.
- Specify whether, and under what circumstances, horizontal ancillary data is blanked or passed through the module.

To access these settings, select **HANC & VBI blank** from the function list.



Specifying Vertical Interval Data (VBI) Blanking Settings

Vertical Interval Data contained in the input stream can be blanked or passed through the module. To do this, specify the input standard and then select the lines to blank. Alternatively, you can choose to pass all lines, or blank all lines.

The input standards, for the purpose of VBI blanking, are:

1125(1080)/30i	1125(1080)/29sf	1125(1080)/24sf	750(720)/60p
1125(1080)/30p	1125(1080)/25i	1125(1080)/23p	750(720)/59p
1125(1080)/30sf	1125(1080)/25p	1125(1080)/23sf	750(720)/50p
1125(1080)/29i	1125(1080)/25sf	1125(1035)/30i	525(480)/29i
1125(1080)/29p	1125(1080)/24p	1125(1035)/29i	625(576)/25i

To configure VBI blanking settings:

1. In the **VBI for Standard** list, select the standard for which to configure VBI blanking.
2. Do one of the following:
 - In the **Blank Lines** section, select the lines to blank. The selected lines will not be passed to the output signal.
 - Click **Blank All Lines**. This selects all the check boxes in the **Blank Lines** section. All displayed vertical interval lines will be blanked.
 - Click **Pass All Lines**. This clears all the check boxes in the **Blank Lines** section. All displayed vertical interval lines will be passed.

Specifying Horizontal Ancillary Data (HANC) Blanking Settings

The **Input Ancillary Controls** specify whether to:

- Remove all ancillary data.
- Remove only horizontal ancillary data.
- Allow ancillary data to pass unaltered.
- Remove all ancillary data, if the input signal fails to match the output standard.

Note: *Embedded audio (as enabled for embedding) and EDH controls are not affected by these controls.*

To remove all ancillary data:

- In the **Input Ancillary** section, select **Blank All**.

This setting overrides the **VBI Blank Lines** control.

To remove only horizontal ancillary data (HANC);

- In the **Input Ancillary** section, select **Blank HANC**.

To allow ancillary data to pass unaltered:

- In the **Input Ancillary** section, select **Pass**.

When **Pass** is selected, pass-through operations will not alter audio packets for groups that are not selected for embedding.

To remove all ancillary data if the input signal fails to match the output standard:

- In the **Input Ancillary** section, select **Blank All on STD mismatch**.

AES I/O Setup

Use these settings to:

- Configure AES ports.
- Configure AES sources.

The module's AES inputs can accept a wide range of signal types. Sampling rates from 32 kHz, 44.1 kHz and 48 kHz can be accommodated because each input pair has a built in sample rate converter. PCM signals do not need to be synchronous to the output video because the input circuitry performs synchronization. Signals of 16-bit, 20-bit, or 24-bit resolution can be processed and embedded. Both standard professional AES signals and the consumer protocol IEC-958 type II (sometimes referred to as SPDIF) signals are accepted. Regardless of the signal, the AES outputs always operate at the standard 48 kHz sampling rate and are synchronized to the output video.

In addition to accepting a wide range of PCM signals, the AES ports accept non-PCM data, such as Dolby E and Dolby AC3 (Dolby Digital) feeds. Note that non-PCM data feeds must be synchronous to the video. In the case of Dolby E, this not only means that the data clock must be synchronized, but also that the Dolby E blocks must align to the video boundaries, otherwise, the signal becomes liable to corruption on video switching and recording.

Note: *The IQMUX42-1A, IQMUX44-1A, IQMUX46-1A, and IQMUX48-1A only have five ports. Although ports 6 – 8 appear on the setup screens, they cannot be configured.*

To access these settings, select **AES I/O Setup 1-4** or **AES I/O Setup 5-8** from the function list.

The screenshot displays the IQMUX47 AES I/O Setup interface. At the top, the unit status shows 'INP: OK 625/25i' and 'OUT: 625/25i'. The left sidebar contains a menu with 'AES I/O Setup 1-4' selected. The main display area is organized into two rows of four columns each. The top row, labeled 'AES Port 1' through 'AES Port 4', shows each port configured as an 'Output' with 'Stereo Name' checked. The bottom row, labeled 'AES Source 1' through 'AES Source 4', shows each source configured as 'Mixed'. Below the source settings are four lists of AES ports (1-8) for each source, with the selected source's port highlighted in blue.

Each AES port can be configured as either an input or an output.

As well, each port can be renamed, for example, to reflect the signal that it is carrying. By default The AES ports are designated as stereo sources. However, each channel can be named individually. These names are used for the following functions:

- AES ProcAmp
- AES Routing

To specify whether the port is an input or an output:

- To designate the port as an output, select the **Output** check box.
- To designate the port as an input, clear the **Output** check box.

When a port is configured as an input, the AES port appears in the router listings at the bottom of the screen. This can be used to specify a different port routing if necessary.

- To rename a port, type the name of the port in the text field and click **S**. To name each channel individually, clear the **Stereo** check box.
- To return the port to its default name, click **P**.

Configure each AES port to handle PCM audio, non-PCM data, or both. This selection is essential if Dolby E or Dolby AC3 (Dolby Digital) is being passed through an AES port.

Note: *In data and mixed modes, the Sample Rate Converter (SRC) is bypassed.*

AES channel status (audio/non-audio) is used to detect non-PCM.

PCM

If **PCM** mode is selected, the pair will be treated as PCM audio by the module. PCM processing can be either channel-based or stereo based. By default, channels are configured as stereo pairs. To switch to channel-based processing, clear the **Stereo** check box. PCM mode allows audio-specific operations, such as gain and tracking delay, to be adjusted by means of the Mixers and Proc Amps. In PCM mode, channel status is overwritten with filtered channel status from the input, and is assumed to be steady state 48 kHz synchronous professional, with audio or data type as indicated on the source. If Data is flagged by channel status the unit will still respond by disabling processing operations including sample rate conversion, and forcing pair-based routing, thus giving a data-compatible audio path.

Data

If **Data** mode is selected, the pair will be treated as a non-PCM data feed through the circuitry within the module. This mode also protects the feed from PCM audio-specific operations such as gain and tracking delay. It also ensures that the audio is routed as a pair. In Data mode, channel status is overwritten with filtered channel status from the input, and is assumed to be steady state 48 kHz synchronous professional, with audio or data type as indicated on the source. One stream is equivalent to two PCM audio channels so in this mode there are no operations that can split the data. PCM audio will still be passed, and the channel status will follow the input type.

Mixed

If **Mixed** mode is selected, processing occurs as with Data mode; however, the channel status overwrite mechanism is bypassed and set to 'pass through' on a channel by channel basis. One stream is equivalent to two PCM audio channels so in this mode there are no operations that can split the data. This mode is suitable for processing Dolby E and Dolby AC3 (Dolby Digital) data, when transitions between data and PCM audio will be passed cleanly with the source channel status, allowing decoders the best chance of handling the transition.

As well, each source can be renamed. By default, the AES sources are designated as stereo sources. However, each channel can be named individually. These names are used for the following functions:

- Audio Mixer inputs

- AES Routing
- Monitor Routing
- Embedded Routing.

To rename a source:

Type the name of the source in the text field and click **S**.

To name each channel individually, clear the **Stereo** check box.

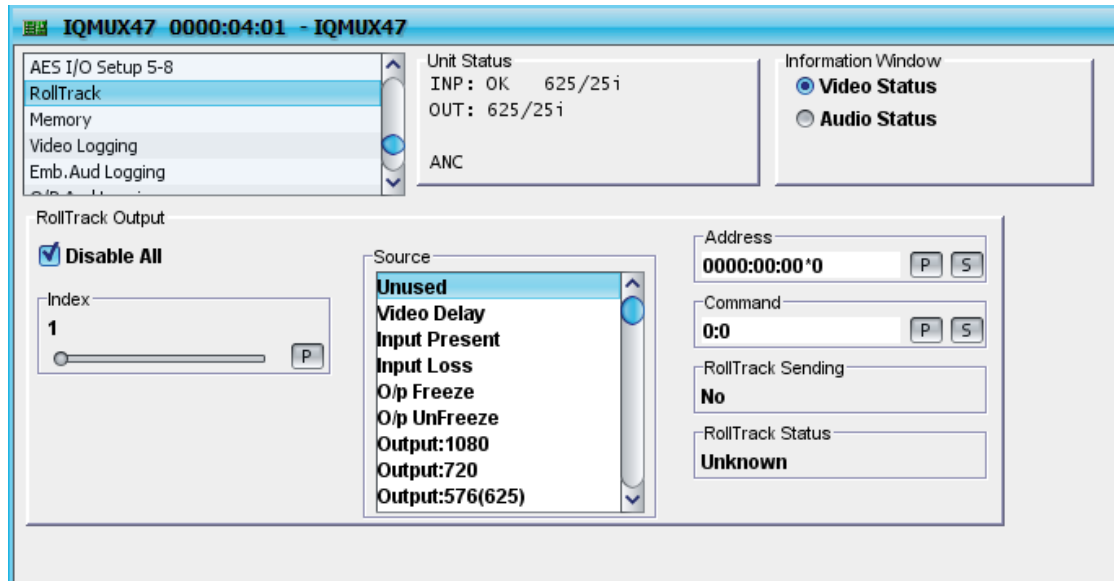
To return the source to its default name, click the preset button (**P**).

RollTrack Settings

The RollTrack settings allow information to be sent, by means of the RollCall network, to other compatible units on the same network.

Use the settings on the **RollTrack** screen to:

- Enable or disable the RollTrack functions.
- Configure up to 16 RollTrack outputs.
- Specify the conditions that trigger RollTrack data transmission.
- Set RollTrack destinations.
- Specify the RollTrack commands to be sent.



RollTrack Sources

The RollTrack Source specifies the source of the information that triggers the transmission of data.

The options are:

Unused	Video Delay	Input Present
Input Loss	O/p Freeze	O/p UnFreeze
De-embed 1-8 Data	De-embed 1-8 PCM	De-embed 1-8 Lost
AES 1-8 Data	AES 1-8 PCM	AES 1-8 Lost
Output: 1080	Output: 720	Output: 576(625)
Output: 480(525)		

RollTrack Addresses

The full RollTrack Address comprises four sets of numbers. For example, 0000:10:01*99.

The first set, 0000 in the example, is the network segment code number.

The second set, 10 in the example, identifies the enclosure/mainframe unit.

The third set, 01 in the example, identifies the slot number in the unit.

The fourth set, 99 in the example, is a user-configured number that uniquely identifies the destination unit in a multi-unit system. This ensures that only the correct unit responds to commands. If left at 00, an incorrectly fitted unit may respond inappropriately.

RollTrack Commands

Each RollTrack command comprises two sets of numbers, for example, 33039 : 3.

The first set, 33039 in the example, is the RollTrack command number, which identifies the command.

The second set, 3 in the example, is the value that is sent with the command.

Using RollTracks

To enable or disable RollTrack functions:

- To enable the RollTrack functions, clear the **Disable All** check box.
- To disable RollTrack functions, select the **Disable All** check box.

To configure a RollTrack action:

1. Select the **Index** number. This identifies the RollTrack action being configured. Up to 16 RollTrack actions can be created.
2. From the **Source** list, select the source of the information that will trigger RollTrack transmission.
3. Enter the RollTrack **Address** and click **S**. To return the address to its default value, click **P**.
4. Enter the RollTrack **Command** and click **S**. To return the value to its default, click **P**.

Viewing RollTrack Information

RollTrack Sending and **RollTrack Status** display information about the status of RollTracks.

RollTrack Sending displays the information when the unit is actively sending a RollTrack command:

- **String**: A string value is being sent.
- **Number**: A number value is being sent.
- **No**: The command is not being sent.
- **Yes**: The command is being sent.
- **Internal Type Error**: Inconsistent behavior. Contact your local Snell agent.

RollTrack Status displays the status of the currently selected RollTrack Index:

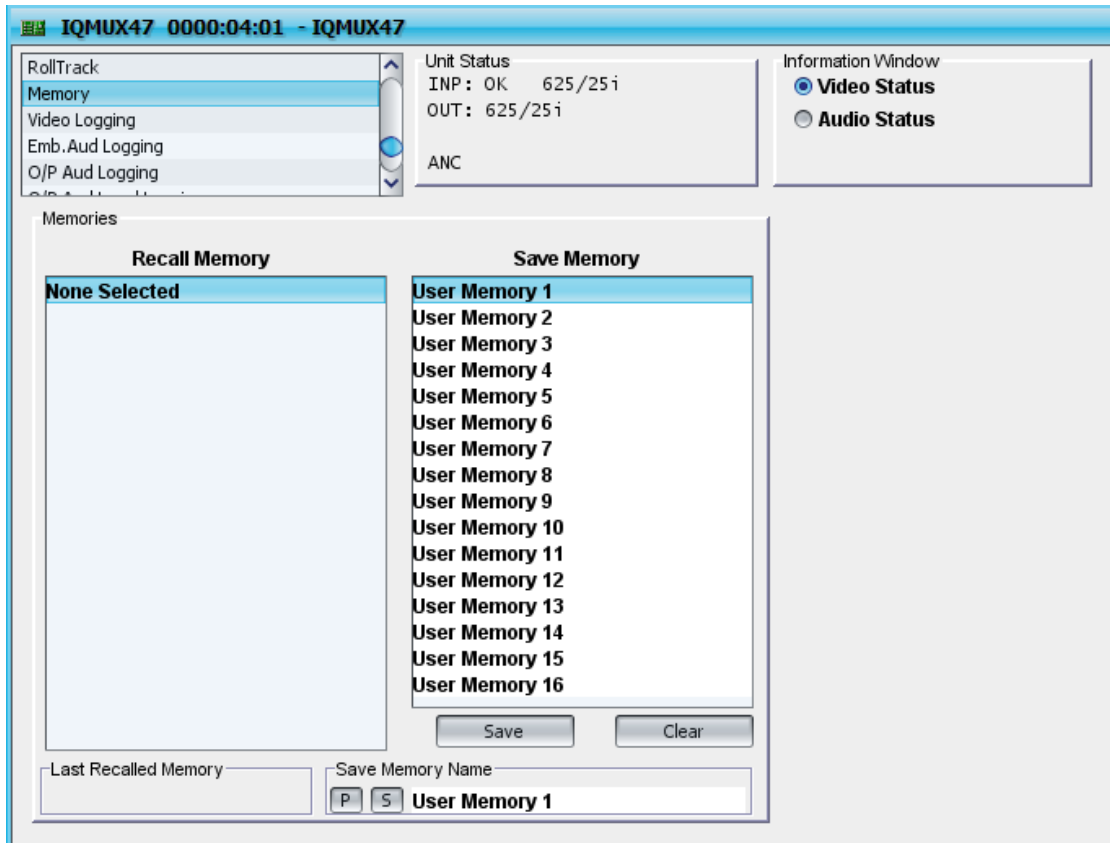
- **OK**: RollTrack message sent and received OK.
- **Unknown**: RollTrack message has been sent but has not yet completed.
- **Timeout**: RollTrack message sent, but acknowledgement not received. This could be because the destination unit is not at the specified location.
- **Bad**: RollTrack message has not been sent correctly, acknowledged at the destination unit. This could be because the destination unit is not of the type specified.
- **Disabled**: RollTrack sending is disabled.

Memory Settings

Use the **Memory** function to save up to 16 setups to be recalled later.

All of the module's controls are classed as either system or user. In general, system controls are the controls that are seldom changed once set up, and user controls are those controls that are likely to be changed frequently.

The **Memory** page is intended to store only user memories. On the other hand, a RollCall Saveset stores both the user memories and system memories. For more information about Savesets, refer to the RollCall Control Panel manual.



Saving to Memory

The **Memory Function** can save the settings of all items to memory. Default memory names can be changed to provide more meaningful descriptions.

To save settings:

- In the **Save Memory** column, select a memory location, and then click **Save**. The settings are saved and the memory appears the **Recall Memory** column.

To change a memory name:

- In the **Save Memory Name** field, type the new memory name, and then click **S**. To return the memory to its default value, click **P**.

Recalling Memory

Use the **Recall Memory** function to recall the settings saved in a memory location. **Last Recalled Memory** displays the most recently recalled memory.

An asterisk (*) appears after the last recalled memory name if adjustments have been made to any of the settings after it has been recalled.

If no memory choice has been made, or if the previous choice has been invalidated (because of a control change), **None Selected** is displayed.

To recall a memory:

- In the **Recall Memory** column, select the memory to recall. The recalled settings will be applied and the memory name will appear in the **Last Recalled Memory** section.

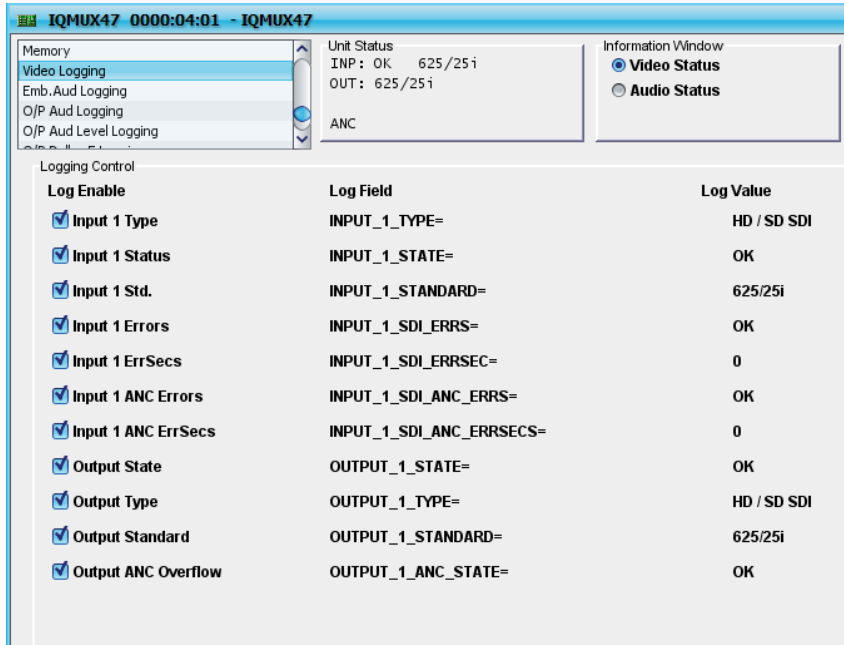
Logging

Information about several parameters can be made available to a logging device that is connected to the RollCall network.

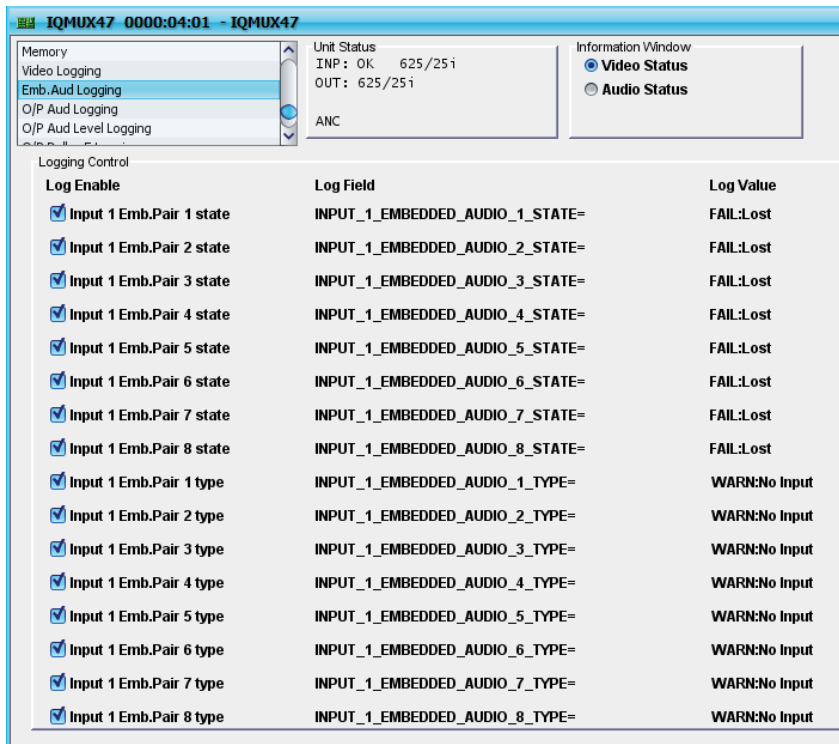
Each logging screen comprises three columns:

- **Log Enable:** Select the check boxes that correspond to the parameters for which log information should be collected.
- **Log Field:** Displays the name of the logging field.
- **Log Value:** Displays the current log value.

Video Logging records the status of video inputs and outputs.



Embedded Aud Logging records the status of the Embedded Audio inputs.



O/P Aud Logging records the status of the embedded audio outputs.

Unit Status
INP : OK 625/25i
OUT : 625/25i
ANC

Information Window
● Video Status
○ Audio Status

Log Enable	Log Field	Log Value
<input checked="" type="checkbox"/> Output Emb.Pair 1 state	OUTPUT_1_EMBEDDED_AUDIO_1_STATE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 2 state	OUTPUT_1_EMBEDDED_AUDIO_2_STATE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 3 state	OUTPUT_1_EMBEDDED_AUDIO_3_STATE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 4 state	OUTPUT_1_EMBEDDED_AUDIO_4_STATE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 5 state	OUTPUT_1_EMBEDDED_AUDIO_5_STATE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 6 state	OUTPUT_1_EMBEDDED_AUDIO_6_STATE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 7 state	OUTPUT_1_EMBEDDED_AUDIO_7_STATE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 8 state	OUTPUT_1_EMBEDDED_AUDIO_8_STATE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 1 type	OUTPUT_1_EMBEDDED_AUDIO_1_TYPE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 2 type	OUTPUT_1_EMBEDDED_AUDIO_2_TYPE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 3 type	OUTPUT_1_EMBEDDED_AUDIO_3_TYPE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 4 type	OUTPUT_1_EMBEDDED_AUDIO_4_TYPE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 5 type	OUTPUT_1_EMBEDDED_AUDIO_5_TYPE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 6 type	OUTPUT_1_EMBEDDED_AUDIO_6_TYPE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 7 type	OUTPUT_1_EMBEDDED_AUDIO_7_TYPE=	WARN:No Input
<input checked="" type="checkbox"/> Output Emb.Pair 8 type	OUTPUT_1_EMBEDDED_AUDIO_8_TYPE=	WARN:No Input

O/P Aud Level Logging records the level of the embedded audio outputs.

Unit Status
INP : OK 625/25i
OUT : 625/25i
ANC

Information Window
● Video Status
○ Audio Status

Log Enable	Log Field	Log Value
<input checked="" type="checkbox"/> Output Emb.Audio 1-L Level	OUTPUT_1_EMBEDDED_AUDIO_1_1_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 1-R Level	OUTPUT_1_EMBEDDED_AUDIO_1_2_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 2-L Level	OUTPUT_1_EMBEDDED_AUDIO_2_1_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 2-R Level	OUTPUT_1_EMBEDDED_AUDIO_2_2_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 3-L Level	OUTPUT_1_EMBEDDED_AUDIO_3_1_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 3-R Level	OUTPUT_1_EMBEDDED_AUDIO_3_2_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 4-L Level	OUTPUT_1_EMBEDDED_AUDIO_4_1_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 4-R Level	OUTPUT_1_EMBEDDED_AUDIO_4_2_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 5-L Level	OUTPUT_1_EMBEDDED_AUDIO_5_1_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 5-R Level	OUTPUT_1_EMBEDDED_AUDIO_5_2_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 6-L Level	OUTPUT_1_EMBEDDED_AUDIO_6_1_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 6-R Level	OUTPUT_1_EMBEDDED_AUDIO_6_2_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 7-L Level	OUTPUT_1_EMBEDDED_AUDIO_7_1_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 7-R Level	OUTPUT_1_EMBEDDED_AUDIO_7_2_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 8-L Level	OUTPUT_1_EMBEDDED_AUDIO_8_1_LEVEL=	OK
<input checked="" type="checkbox"/> Output Emb.Audio 8-R Level	OUTPUT_1_EMBEDDED_AUDIO_8_2_LEVEL=	OK

O/P Dolby E Logging records the presence of Dolby E signals, and their timing, with respect to the video.

IQMUX47 0000:04:01 - IQMUX47

Unit Status
INP: OK 625/25i
OUT: 625/25i
ANC

Information Window
 Video Status
 Audio Status

Log Enable	Log Field	Log Value
<input checked="" type="checkbox"/> Emb DolbyE 1	OUTPUT_1_EMBEDDED_AUDIO_1_DOLBY=	NONE
<input checked="" type="checkbox"/> Emb DolbyE 2	OUTPUT_1_EMBEDDED_AUDIO_2_DOLBY=	NONE
<input checked="" type="checkbox"/> Emb DolbyE 3	OUTPUT_1_EMBEDDED_AUDIO_3_DOLBY=	NONE
<input checked="" type="checkbox"/> Emb DolbyE 4	OUTPUT_1_EMBEDDED_AUDIO_4_DOLBY=	NONE
<input checked="" type="checkbox"/> Emb DolbyE 5	OUTPUT_1_EMBEDDED_AUDIO_5_DOLBY=	NONE
<input checked="" type="checkbox"/> Emb DolbyE 6	OUTPUT_1_EMBEDDED_AUDIO_6_DOLBY=	NONE
<input checked="" type="checkbox"/> Emb DolbyE 7	OUTPUT_1_EMBEDDED_AUDIO_7_DOLBY=	NONE
<input checked="" type="checkbox"/> Emb DolbyE 8	OUTPUT_1_EMBEDDED_AUDIO_8_DOLBY=	NONE

AES Input Logging records the status of the AES audio inputs.

IQMUX47 0000:04:01 - IQMUX47

Unit Status
INP: OK 625/25i
OUT: 625/25i
ANC

Information Window
 Video Status
 Audio Status

Log Enable	Log Field	Log Value
<input checked="" type="checkbox"/> AES Input 1 state	AES_INPUT_1_STATE=	WARN:Off
<input checked="" type="checkbox"/> AES Input 2 state	AES_INPUT_2_STATE=	WARN:Off
<input checked="" type="checkbox"/> AES Input 3 state	AES_INPUT_3_STATE=	WARN:Off
<input checked="" type="checkbox"/> AES Input 4 state	AES_INPUT_4_STATE=	WARN:Off
<input checked="" type="checkbox"/> AES Input 5 state	AES_INPUT_5_STATE=	WARN:Off
<input checked="" type="checkbox"/> AES Input 6 state	AES_INPUT_6_STATE=	FAIL:Lost
<input checked="" type="checkbox"/> AES Input 7 state	AES_INPUT_7_STATE=	FAIL:Lost
<input checked="" type="checkbox"/> AES Input 8 state	AES_INPUT_8_STATE=	FAIL:Lost
<input checked="" type="checkbox"/> AES Input 1 type	AES_INPUT_1_TYPE=	WARN:Unknown
<input checked="" type="checkbox"/> AES Input 2 type	AES_INPUT_2_TYPE=	WARN:Unknown
<input checked="" type="checkbox"/> AES Input 3 type	AES_INPUT_3_TYPE=	WARN:Unknown
<input checked="" type="checkbox"/> AES Input 4 type	AES_INPUT_4_TYPE=	WARN:Unknown
<input checked="" type="checkbox"/> AES Input 5 type	AES_INPUT_5_TYPE=	WARN:Unknown
<input checked="" type="checkbox"/> AES Input 6 type	AES_INPUT_6_TYPE=	WARN:Unknown
<input checked="" type="checkbox"/> AES Input 7 type	AES_INPUT_7_TYPE=	WARN:Unknown
<input checked="" type="checkbox"/> AES Input 8 type	AES_INPUT_8_TYPE=	WARN:Unknown

AES Output Logging records the status of the AES audio outputs.

Log Enable	Log Field	Log Value
<input checked="" type="checkbox"/> AES Output 1 state	AES_OUTPUT_1_STATE=	FAIL:Lost
<input checked="" type="checkbox"/> AES Output 2 state	AES_OUTPUT_2_STATE=	FAIL:Lost
<input checked="" type="checkbox"/> AES Output 3 state	AES_OUTPUT_3_STATE=	FAIL:Lost
<input checked="" type="checkbox"/> AES Output 4 state	AES_OUTPUT_4_STATE=	FAIL:Lost
<input checked="" type="checkbox"/> AES Output 5 state	AES_OUTPUT_5_STATE=	FAIL:Lost
<input checked="" type="checkbox"/> AES Output 6 state	AES_OUTPUT_6_STATE=	WARN:Off
<input checked="" type="checkbox"/> AES Output 7 state	AES_OUTPUT_7_STATE=	WARN:Off
<input checked="" type="checkbox"/> AES Output 8 state	AES_OUTPUT_8_STATE=	WARN:Off
<input checked="" type="checkbox"/> AES Output 1 type	AES_OUTPUT_1_TYPE=	WARN:No Input
<input checked="" type="checkbox"/> AES Output 2 type	AES_OUTPUT_2_TYPE=	WARN:No Input
<input checked="" type="checkbox"/> AES Output 3 type	AES_OUTPUT_3_TYPE=	WARN:No Input
<input checked="" type="checkbox"/> AES Output 4 type	AES_OUTPUT_4_TYPE=	WARN:No Input
<input checked="" type="checkbox"/> AES Output 5 type	AES_OUTPUT_5_TYPE=	WARN:No Input
<input checked="" type="checkbox"/> AES Output 6 type	AES_OUTPUT_6_TYPE=	WARN:Unknown
<input checked="" type="checkbox"/> AES Output 7 type	AES_OUTPUT_7_TYPE=	WARN:Unknown
<input checked="" type="checkbox"/> AES Output 8 type	AES_OUTPUT_8_TYPE=	WARN:Unknown

Misc. Logging record miscellaneous information about the unit.

Log Enable	Log Field	Log Value
<input checked="" type="checkbox"/> OS Version	OS_VERSION=	V115 Release
<input checked="" type="checkbox"/> Build No.	BUILD_NUMBER=	2001420336
<input checked="" type="checkbox"/> Hardware Ver.	HARDWARE_VERSION=	RDAUD1Z.002
<input checked="" type="checkbox"/> Firmware Ver.	FIRMWARE_VERSION=	2.195
<input checked="" type="checkbox"/> Up Time	UPTIME=	000:01:01:00

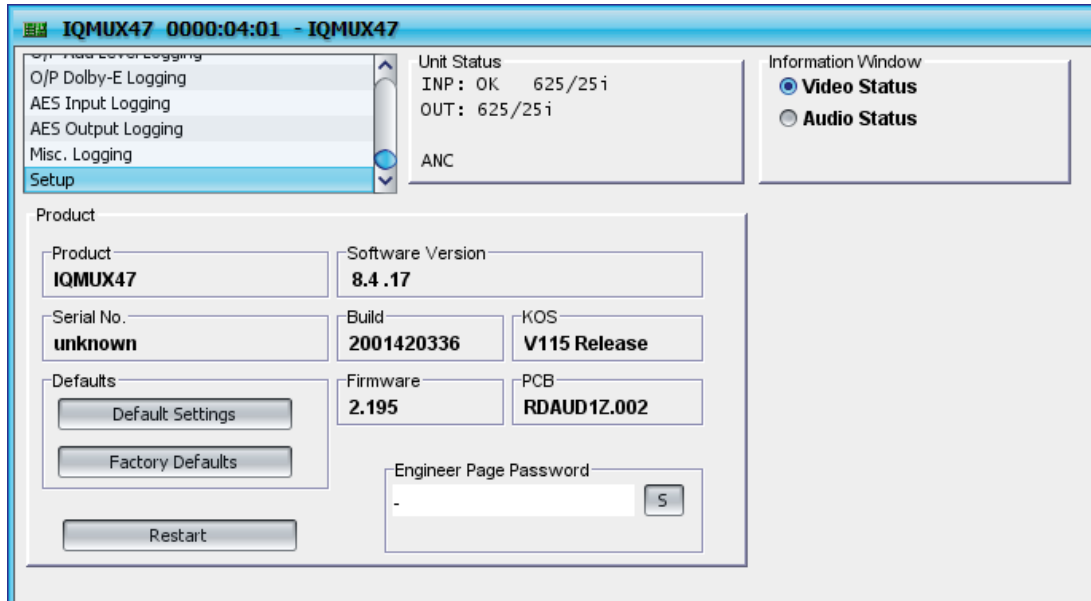
RollCall Log Fields

Log Field	Log Value
INPUT_1_TYPE	HD / SD SDI
INPUT_1_STATE	FAIL:Lost, OK, FAIL:Error
INPUT_1_STANDARD	Unknown, 1035/30i, 1035/29i, 1080/60p, 1080/59p, 1080/50p, 1080/30i, 1080/29i, 1080/25i, 1080/30p, 1080/29p, 1080/25p, 1080/24p, 1080/23p, 1080/50p, 1080/25i, 720/60p, 720/59p, 525/59p, 525/29i, 625/25i, 525/29i, 625/25i, 1080/24sF, 1080/23sF, 480/60p, 480/59p, 625/24sF, 625/23sF, 1152/25i, 720/50p, 576/50p, 480/60p, 480/59p, 1080/30sF, 1080/29sF, 1080/25sF, 720/30p, 720/29p, 720/25p, 720/24p, 720/23p, Invalid
INPUT_1_SDI_ERRS	NONE, OK, WARN
INPUT_1_SDI_ERRSEC	NUM
INPUT_1_SDI_ANC_ERRS	NONE, OK, WARN
INPUT_1_SDI_ANC_ERRSECS	NUM
OUTPUT_1_STATE	OK, FAIL, BLACK, PATTERN, FREEZE
OUTPUT_1_TYPE	HD / SD SDI
OUTPUT_1_STANDARD	Unknown, 1035/30i, 1035/29i, 1080/60p, 1080/59p, 1080/50p, 1080/30i, 1080/29i, 1080/25i, 1080/30p, 1080/29p, 1080/25p, 1080/24p, 1080/23p, 1080/50p, 1080/25i, 720/60p, 720/59p, 525/59p, 525/29i, 625/25i, 525/29i, 625/25i, 1080/24sF, 1080/23sF, 480/60p, 480/59p, 625/24sF, 625/23sF, 1152/25i, 720/50p, 576/50p, 480/60p, 480/59p, 1080/30sF, 1080/29sF, 1080/25sF, 720/30p, 720/29p, 720/25p, 720/24p, 720/23p, Invalid
OUTPUT_1_ANC_STATE	<Blank>, ANC FULL, OK
INPUT_1_EMBEDDED_AUDIO_1_STATE to INPUT_1_EMBEDDED_AUDIO_8_STATE	OK, FAIL:Lost, WARN:Unknown
INPUT_1_EMBEDDED_AUDIO_1_TYPE to INPUT_1_EMBEDDED_AUDIO_8_TYPE	PCM, NONPCM, WARN:Unknown, WARN: No Input
OUTPUT_1_EMBEDDED_AUDIO_1_STATE to OUTPUT_1_EMBEDDED_AUDIO_8_STATE	FAIL:Lost, OK, WARN:Off, WARN:Unknown, WARN:No Input
OUTPUT_1_EMBEDDED_AUDIO_1_TYPE to OUTPUT_1_EMBEDDED_AUDIO_8_TYPE	PCM, NONPCM, WARN:Unknown, WARN:No Input
OUTPUT_1_EMBEDDED_AUDIO_1_1_LEVEL OUTPUT_1_EMBEDDED_AUDIO_1_2_LEVEL to OUTPUT_1_EMBEDDED_AUDIO_8_1_LEVEL OUTPUT_1_EMBEDDED_AUDIO_8_2_LEVEL	OK, WARN:Overflow
OUTPUT_1_EMBEDDED_AUDIO_1_DOLBY to OUTPUT_1_EMBEDDED_AUDIO_8_DOLBY	NONE, OK, WARN:Early, WARN:Late, FAIL:Early, FAIL:Late
AES_INPUT_1_STATE to AES_INPUT_8_STATE	FAIL:Lost, OK, LOST, WARN:Unknown

Log Field	Log Value
AES_INPUT_1_TYPE to AES_INPUT_8_TYPE	PCM, NONPCM, WARN:Unknown, WARN:No Input
AES_OUTPUT_1_STATE to AES_OUTPUT_8_STATE	FAIL:Lost, OK, Warn:Off, WARN:Unknown, WARN:No Input
AES_OUTPUT_1_TYPE to AES_OUTPUT_8_TYPE	PCM, NONPCM, WARN:Unknown, WARN:No Input
SN	<Serial number>
OS_VERSION	<Operating system version>
BUILD_NUMBER	<Software build number>
HARDWARE_VERSION	<Hardware version>
FIRMWARE_VERSION	<Firmware version>
UPTIME	<Uptime>

The Setup Screen

The **Setup** screen displays basic information about the unit. Use the **Setup** screen to reset the unit to factory defaults, and to reboot the unit.



The following information is displayed:

- **Product:** Displays the name of the module.
- **Software Version:** Displays the current software version.
- **Serial No.:** Displays the module's serial number.
- **Build:** Displays the factory build number. This number identifies all parameters of the unit (software version, build level, etc...).
- **Firmware:** Displays the version of the firmware system.
- **KOS:** Displays the version of the operating system.
- **PCB:** displays the PCB revision number.

To reset the all of the unit's adjustments to their factory defaults, leaving all User Memories intact, click **Default Settings**.

Click **Factory Defaults** to reset the all of the unit's adjustments to their factory default setting. **Note: this selection will delete all User Memories.**

To reboot the unit, simulating a power-up/power-down cycle, click **Restart**.

Note: *The **Engineer Page Password** provides access to the Engineer page. Access to this page is reserved for the use of Snell staff.*

Diagnositics

Warning: *Running these tests affects the video output signal.*

Use the diagnostic functions to run a number of tests to determine how the unit is functioning. Tests can be performed as either a single test, or continuously in a loop.

Note: *Only one test can be run at a time. When a test is running, all other options become unavailable.*

*The **All tests** display, has no function at the operating level and is reserved for factory use only.*

Diagnostic Test Descriptions

Video Memory Test

The **Video Memory Test** is a detailed test of the SDRAM video store.

Note: *This test might take in excess of 30 minutes to complete.*

SDI Loopback Test

The **SDI Loopback Test** tests the input/output path between input 1 and output 1 when connected together.

AES Loopback Test

The **AES Loopback Test** tests the input/output path between AES 1 and AES 2, AES 3 and AES 4, AES 5 and AES 6, AES 7 and AES 8 when connected together.

An AES port is set up to transmit a tone signal and the connected input is checked for the presence of an error-free signal. The test is then performed both with and without the sample rate converter in circuit. Each test is performed twice – once in each direction.

SRC Test

The **SRC Test** verifies that the Sample Rate Converter is connected and working.

Running Diagnostic Tests

To run any of the diagnostic tests once, click **Run Test**.

To run any of the diagnostic tests in a continuous loop, click **Loop Test**.

To stop tests, click **STOP TESTS**.

Operation from an Active Control Panel

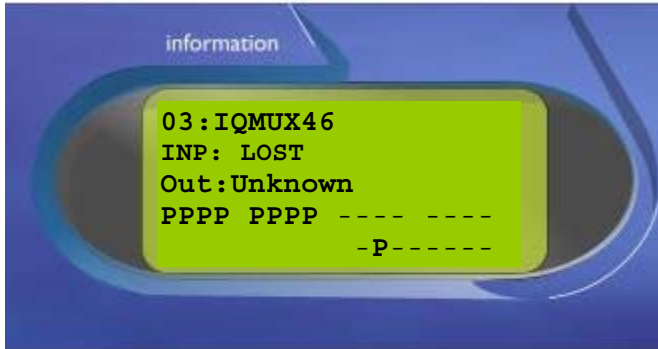
The card can be operated from an active control panel via the RollCall network.



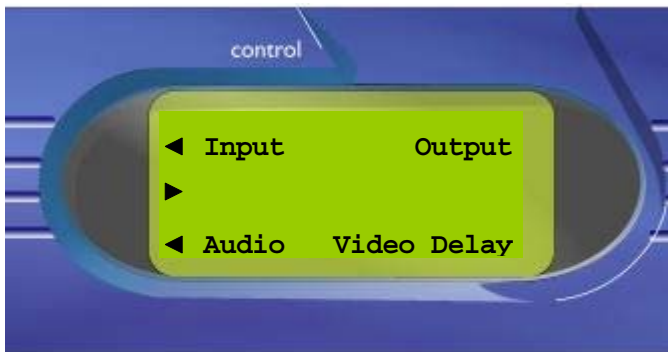
All operational parameters and selections are made using a system of menus displayed in two LCD windows. These menus duplicate the functions that are available via the RollCall control panel screens.

Operational details for the remote control panel can be found in the Modular System Operator's Manual.

The Information window has four lines of text indicating the current state of the unit.



The Control window displays all Selection Menus and sub-menus. Selections are made by pressing the button adjacent to the required item.



The main or top level menu allows various sub-menus to be selected by pressing the button adjacent to the required text line.

Note that where a menu item is followed by three dots (...) this indicates that a further sub-menu may be selected.

Whenever a menu item is selected the parameters of that selection will be displayed in the Information window of the front panel. Where the selection is purely a mode selection and does not enable a sub-menu, the text will become reversed (white-on-black) indicating that the mode is active. If the mode is not available for selection the text will remain normal.

RollCall Commands

Supervisor Level

Command Name	Hex	Decimal	Values
User Memories			
COM_OUT_GAINM	80e8	33000	Video Master Gain Default=0 Min=-600 Max=600 Divisor=100
COM_OUT_GAINY	80e9	33001	Video Luminance gain Default=0 Min=-600 Max=600 Divisor=100
COM_OUT_OFFY	80ea	33002	Video Black Level Default=0 Min=-200 Max=200 Divisor=1
COM_OUT_GAINBCR	80eb	33003	Video CbCr Gain Default=0 Min=-600 Max=600 Divisor=100
COM_OUT_STD	80f2	33010	Select output standard Default=7 1125(1080)/30i=6 1125(1080)/30p=9 1125(1080)/30sf=34 1125(1080)/29i=7 1125(1080)/29p=10 1125(1080)/29sf=35 1125(1080)/25i=8 1125(1080)/25p=11 1125(1080)/25sf=36 1125(1080)/24p=12 1125(1080)/24sf=23 1125(1080)/23p=13 1125(1080)/23sf=24 1125(1035)/30i=1 1125(1035)/29i=2 750(720)/60p=16 750(720)/59p=17 750(720)/50p=30 525(480)/29i=19 625(576)/25i=20
COM_FOLLOW_STD	80f3	33011	Output follows std: Man/Input/Ext.Reference Default=1 Manual=0 Follows Input=1
COM_DELAY_FRAMES	8100	33024	Set video delay in frames Default=1 Min=0 Max=11 Divisor=1
COM_VIDEO_REFERENCE_MODE	8102	33026	Video Reference Mode source: Free Run/LockRef/LockRef(Delay Mismatch)/Minimum/Frames/Manual/Manual ms Default=4 Minimum Audio=3 Frames=4 Manual H/V=5 Manual ms=6
COM_VIDEO_DELAY_MS	8103	33027	Video delay set in 0.01 ms Default=0 Min=-48000 Max=48000 Divisor=100
COM_FRZ_ENB	8108	33032	Freeze output picture Default=0
COM_FRZ_TYPE	8109	33033	Type of Frozen output: Frame/Field Default=0 Frame=0 Field=1
COM_MONO_ENB	810a	33034	Monochrome enable Default=0
COM_MONO_TYPE	810b	33035	Type of Monochrome output Default=0 Y only=0 C only=1
COM_BLANK_MISMATCH	810c	33036	Blank ANC if standard mismatch Default=1
COM_ANC_BLANK	810d	33037	Blank ANC on output Default=0 Pass Input ANC=0 Blank HANC=2 Blank All ANC=1
COM_PAT_ENB	810e	33038	TPG pattern enable Default=0
COM_PAT_TYPE	810f	33039	TPG pattern type Default=1 100olor Bars=1 75olor Bars=2 SMPTE Bars=3 Tartan Bars=4 Pluge=5 Ramp=6 Sweep=7 Pulse & Bar=8 Burst=9

COM_PATTERN_SCROLL	8110	33040	Scroll test pattern horizontally Default=0
COM_AUDIO_SOURCE_GRP1_PAIR_1L	91b4	37300	Embedded audio source select Default=1 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled 3-L=5
			Disembled 3-R=6 Disembled 4-L=7 Disembled 4-R=8 Disembled 5-L=9 Disembled 5-R=10 Disembled 6-L=11 Disembled 6-R=12 Disembled 7-L=13 Disembled 7-R=14 Disembled 8-L=15 Disembled 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27 AES Bus 1-R=28 AES Bus 2-L=29 AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34 AES Bus 5-L=35 AES Bus 5-R=36 AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41 AES Bus 8-R=42 1kHz -20dBFS Tone=17 2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20 2kHz -18dBFS Tone=21 4kHz -18dBFS Tone=22
COM_AUDIO_SOURCE_GRP1_PAIR_1R	91b5	37301	Embedded audio source select Default=2 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled 3-L=5
			Disembled 3-R=6 Disembled 4-L=7 Disembled 4-R=8 Disembled 5-L=9 Disembled 5-R=10 Disembled 6-L=11 Disembled 6-R=12 Disembled 7-L=13 Disembled 7-R=14 Disembled 8-L=15 Disembled 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27 AES Bus 1-R=28 AES Bus 2-L=29 AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34 AES Bus 5-L=35 AES Bus 5-R=36 AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41 AES Bus 8-R=42 1kHz -20dBFS Tone=17 2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20 2kHz -18dBFS Tone=21 4kHz -18dBFS Tone=22
COM_AUDIO_SOURCE_GRP1_PAIR_2L	91b6	37302	Embedded audio source select Default=3 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled 3-L=5
			Disembled 3-R=6 Disembled 4-L=7 Disembled 4-R=8 Disembled 5-L=9 Disembled 5-R=10 Disembled 6-L=11 Disembled 6-R=12 Disembled 7-L=13 Disembled 7-R=14 Disembled 8-L=15 Disembled 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27 AES Bus 1-R=28 AES Bus 2-L=29 AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34 AES Bus 5-L=35 AES Bus 5-R=36 AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41 AES Bus 8-R=42 1kHz -20dBFS Tone=17 2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20 2kHz -18dBFS Tone=21 4kHz -18dBFS Tone=22
COM_AUDIO_SOURCE_GRP1_PAIR_2R	91b7	37303	Embedded audio source select Default=4 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled 3-L=5
			Disembled 3-R=6 Disembled 4-L=7 Disembled 4-R=8 Disembled 5-L=9 Disembled 5-R=10 Disembled 6-L=11 Disembled 6-R=12 Disembled 7-L=13 Disembled 7-R=14 Disembled 8-L=15 Disembled 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27 AES Bus 1-R=28 AES Bus 2-L=29 AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34 AES Bus 5-L=35 AES Bus 5-R=36 AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41 AES Bus 8-R=42 1kHz -20dBFS Tone=17 2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20 2kHz -18dBFS Tone=21 4kHz -18dBFS Tone=22
COM_AUDIO_SOURCE_GRP2_PAIR_1L	91b8	37304	Embedded audio source select Default=5 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled 3-L=5
			Disembled 3-R=6 Disembled 4-L=7 Disembled 4-R=8 Disembled 5-L=9 Disembled 5-R=10 Disembled 6-L=11 Disembled 6-R=12 Disembled 7-L=13 Disembled 7-R=14 Disembled 8-L=15 Disembled 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27 AES Bus 1-R=28 AES Bus 2-L=29 AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34 AES Bus 5-L=35 AES Bus 5-R=36 AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41 AES Bus 8-R=42 1kHz -20dBFS Tone=17 2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20 2kHz -18dBFS Tone=21 4kHz -18dBFS Tone=22
COM_AUDIO_SOURCE_GRP2_PAIR_1R	91b9	37305	Embedded audio source select Default=6 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled 3-L=5
			Disembled 3-R=6 Disembled 4-L=7 Disembled 4-R=8 Disembled 5-L=9 Disembled 5-R=10 Disembled 6-L=11 Disembled 6-R=12 Disembled 7-L=13 Disembled 7-R=14 Disembled 8-L=15 Disembled 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27 AES Bus 1-R=28 AES Bus 2-L=29 AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34 AES Bus 5-L=35 AES Bus 5-R=36 AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41 AES Bus 8-R=42 1kHz -20dBFS Tone=17 2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20 2kHz -18dBFS Tone=21 4kHz -18dBFS Tone=22

COM_AUDIO_SOURCE_GRP2_PAIR_2L	91ba	37306	Embedded audio source select Default=7 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled
3-L=5	Disembled 3-R=6	Disembled 4-L=7	Disembled 4-R=8 Disembled 5-L=9 Disembled 5-R=10 Disembled 6-L=11 Disembled 6-R=12
	Disembled 7-L=13	Disembled 7-R=14	Disembled 8-L=15 Disembled 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27
	AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34
	AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41
	AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20
	2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22	
COM_AUDIO_SOURCE_GRP2_PAIR_2R	91bb	37307	Embedded audio source select Default=8 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled
3-L=5	Disembled 3-R=6	Disembled 4-L=7	Disembled 4-R=8 Disembled 5-L=9 Disembled 5-R=10 Disembled 6-L=11 Disembled 6-R=12
	Disembled 7-L=13	Disembled 7-R=14	Disembled 8-L=15 Disembled 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27
	AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34
	AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41
	AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20
	2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22	
COM_AUDIO_SOURCE_GRP3_PAIR_1L	91bc	37308	Embedded audio source select Default=9 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled
3-L=5	Disembled 3-R=6	Disembled 4-L=7	Disembled 4-R=8 Disembled 5-L=9 Disembled 5-R=10 Disembled 6-L=11 Disembled 6-R=12
	Disembled 7-L=13	Disembled 7-R=14	Disembled 8-L=15 Disembled 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27
	AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34
	AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41
	AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20
	2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22	
COM_AUDIO_SOURCE_GRP3_PAIR_1R	91bd	37309	Embedded audio source select Default=10 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled
3-L=5	Disembled 3-R=6	Disembled 4-L=7	Disembled 4-R=8 Disembled 5-L=9 Disembled 5-R=10 Disembled 6-L=11 Disembled 6-R=12
	Disembled 7-L=13	Disembled 7-R=14	Disembled 8-L=15 Disembled 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27
	AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34
	AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41
	AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20
	2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22	
COM_AUDIO_SOURCE_GRP3_PAIR_2L	91be	37310	Embedded audio source select Default=11 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled
3-L=5	Disembled 3-R=6	Disembled 4-L=7	Disembled 4-R=8 Disembled 5-L=9 Disembled 5-R=10 Disembled 6-L=11 Disembled 6-R=12
	Disembled 7-L=13	Disembled 7-R=14	Disembled 8-L=15 Disembled 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27
	AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34
	AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41
	AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20
	2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22	
COM_AUDIO_SOURCE_GRP3_PAIR_2R	91bf	37311	Embedded audio source select Default=12 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled
3-L=5	Disembled 3-R=6	Disembled 4-L=7	Disembled 4-R=8 Disembled 5-L=9 Disembled 5-R=10 Disembled 6-L=11 Disembled 6-R=12
	Disembled 7-L=13	Disembled 7-R=14	Disembled 8-L=15 Disembled 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27
	AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34
	AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41
	AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20
	2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22	
COM_AUDIO_SOURCE_GRP4_PAIR_1L	91c0	37312	Embedded audio source select Default=13 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled

3-L=5		Disembled 3-R=6 Disembled 7-L=13 AES Bus 1-R=28 AES Bus 5-L=35 AES Bus 8-R=42 2kHz -18dBFS Tone=21	Disembled 4-L=7 Disembled 7-R=14 AES Bus 2-L=29 AES Bus 5-R=36 1kHz -20dBFS Tone=17 4kHz -18dBFS Tone=22	Disembled 4-R=8 Disembled 8-L=15 AES Bus 2-R=30 AES Bus 6-L=37 2kHz -20dBFS Tone=18	Disembled 5-L=9 Disembled 8-R=16 AES Bus 3-L=31 AES Bus 6-R=38	Disembled 5-R=10 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 3-R=32 AES Bus 7-L=39 4kHz -20dBFS Tone=19	Disembled 6-L=11 Mix 3=25 Mix 4=26 AES Bus 4-L=33 AES Bus 7-R=40 1kHz -18dBFS Tone=20	Disembled 6-R=12 AES Bus 1-L=27 AES Bus 4-R=34 AES Bus 8-L=41
COM_AUDIO_SOURCE_GRP4_PAIR_1R	91c1	37313	Embedded audio source select Default=14 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled					
3-L=5		Disembled 3-R=6 Disembled 7-L=13 AES Bus 1-R=28 AES Bus 5-L=35 AES Bus 8-R=42 2kHz -18dBFS Tone=21	Disembled 4-L=7 Disembled 7-R=14 AES Bus 2-L=29 AES Bus 5-R=36 1kHz -20dBFS Tone=17 4kHz -18dBFS Tone=22	Disembled 4-R=8 Disembled 8-L=15 AES Bus 2-R=30 AES Bus 6-L=37 2kHz -20dBFS Tone=18	Disembled 5-L=9 Disembled 8-R=16 AES Bus 3-L=31 AES Bus 6-R=38	Disembled 5-R=10 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 3-R=32 AES Bus 7-L=39 4kHz -20dBFS Tone=19	Disembled 6-L=11 Mix 3=25 Mix 4=26 AES Bus 4-L=33 AES Bus 7-R=40 1kHz -18dBFS Tone=20	Disembled 6-R=12 AES Bus 1-L=27 AES Bus 4-R=34 AES Bus 8-L=41
COM_AUDIO_SOURCE_GRP4_PAIR_2L	91c2	37314	Embedded audio source select Default=15 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled					
3-L=5		Disembled 3-R=6 Disembled 7-L=13 AES Bus 1-R=28 AES Bus 5-L=35 AES Bus 8-R=42 2kHz -18dBFS Tone=21	Disembled 4-L=7 Disembled 7-R=14 AES Bus 2-L=29 AES Bus 5-R=36 1kHz -20dBFS Tone=17 4kHz -18dBFS Tone=22	Disembled 4-R=8 Disembled 8-L=15 AES Bus 2-R=30 AES Bus 6-L=37 2kHz -20dBFS Tone=18	Disembled 5-L=9 Disembled 8-R=16 AES Bus 3-L=31 AES Bus 6-R=38	Disembled 5-R=10 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 3-R=32 AES Bus 7-L=39 4kHz -20dBFS Tone=19	Disembled 6-L=11 Mix 3=25 Mix 4=26 AES Bus 4-L=33 AES Bus 7-R=40 1kHz -18dBFS Tone=20	Disembled 6-R=12 AES Bus 1-L=27 AES Bus 4-R=34 AES Bus 8-L=41
COM_AUDIO_SOURCE_GRP4_PAIR_2R	91c3	37315	Embedded audio source select Default=16 Mute=-1 Disembled 1-L=1 Disembled 1-R=2 Disembled 2-L=3 Disembled 2-R=4 Disembled					
3-L=5		Disembled 3-R=6 Disembled 7-L=13 AES Bus 1-R=28 AES Bus 5-L=35 AES Bus 8-R=42 2kHz -18dBFS Tone=21	Disembled 4-L=7 Disembled 7-R=14 AES Bus 2-L=29 AES Bus 5-R=36 1kHz -20dBFS Tone=17 4kHz -18dBFS Tone=22	Disembled 4-R=8 Disembled 8-L=15 AES Bus 2-R=30 AES Bus 6-L=37 2kHz -20dBFS Tone=18	Disembled 5-L=9 Disembled 8-R=16 AES Bus 3-L=31 AES Bus 6-R=38	Disembled 5-R=10 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 3-R=32 AES Bus 7-L=39 4kHz -20dBFS Tone=19	Disembled 6-L=11 Mix 3=25 Mix 4=26 AES Bus 4-L=33 AES Bus 7-R=40 1kHz -18dBFS Tone=20	Disembled 6-R=12 AES Bus 1-L=27 AES Bus 4-R=34 AES Bus 8-L=41
COM_AUDIO_GAIN_GRP1_PAIR_1L	91c8	37320	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10					
COM_AUDIO_GAIN_GRP1_PAIR_1R	91c9	37321	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10					
COM_AUDIO_GAIN_GRP1_PAIR_2L	91ca	37322	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10					
COM_AUDIO_GAIN_GRP1_PAIR_2R	91cb	37323	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10					
COM_AUDIO_GAIN_GRP2_PAIR_1L	91cc	37324	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10					
COM_AUDIO_GAIN_GRP2_PAIR_1R	91cd	37325	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10					
COM_AUDIO_GAIN_GRP2_PAIR_2L	91ce	37326	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10					
COM_AUDIO_GAIN_GRP2_PAIR_2R	91cf	37327	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10					
COM_AUDIO_GAIN_GRP3_PAIR_1L	91d0	37328	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10					

COM_AUDIO_GAIN_GRP3_PAIR_1R	91d1	37329	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10
COM_AUDIO_GAIN_GRP3_PAIR_2L	91d2	37330	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10
COM_AUDIO_GAIN_GRP3_PAIR_2R	91d3	37331	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10
COM_AUDIO_GAIN_GRP4_PAIR_1L	91d4	37332	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10
COM_AUDIO_GAIN_GRP4_PAIR_1R	91d5	37333	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10
COM_AUDIO_GAIN_GRP4_PAIR_2L	91d6	37334	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10
COM_AUDIO_GAIN_GRP4_PAIR_2R	91d7	37335	Embedded audio gain Default=0 Min=-360 Max=120 Divisor=10
COM_AUDIO_MUTE_GRP1_PAIR_1L	91dc	37340	Embedded audio mute Default=0
COM_AUDIO_MUTE_GRP1_PAIR_1R	91dd	37341	Embedded audio mute Default=0
COM_AUDIO_MUTE_GRP1_PAIR_2L	91de	37342	Embedded audio mute Default=0
COM_AUDIO_MUTE_GRP1_PAIR_2R	91df	37343	Embedded audio mute Default=0
COM_AUDIO_MUTE_GRP2_PAIR_1L	91e0	37344	Embedded audio mute Default=0
COM_AUDIO_MUTE_GRP2_PAIR_1R	91e1	37345	Embedded audio mute Default=0
COM_AUDIO_MUTE_GRP2_PAIR_2L	91e2	37346	Embedded audio mute Default=0
COM_AUDIO_MUTE_GRP2_PAIR_2R	91e3	37347	Embedded audio mute Default=0
COM_AUDIO_MUTE_GRP3_PAIR_1L	91e4	37348	Embedded audio mute Default=0
COM_AUDIO_MUTE_GRP3_PAIR_1R	91e5	37349	Embedded audio mute Default=0
COM_AUDIO_MUTE_GRP3_PAIR_2L	91e6	37350	Embedded audio mute Default=0
COM_AUDIO_MUTE_GRP3_PAIR_2R	91e7	37351	Embedded audio mute Default=0
COM_AUDIO_MUTE_GRP4_PAIR_1L	91e8	37352	Embedded audio mute Default=0
COM_AUDIO_MUTE_GRP4_PAIR_1R	91e9	37353	Embedded audio mute Default=0
COM_AUDIO_MUTE_GRP4_PAIR_2L	91ea	37354	Embedded audio mute Default=0

COM_AUDIO_MUTE_GRP4_PAIR_2R	91eb	37355	Embedded audio mute Default=0
COM_AUDIO_PHASE_GRP1_PAIR_1L	91f0	37360	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP1_PAIR_1R	91f1	37361	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP1_PAIR_2L	91f2	37362	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP1_PAIR_2R	91f3	37363	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP2_PAIR_1L	91f4	37364	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP2_PAIR_1R	91f5	37365	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP2_PAIR_2L	91f6	37366	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP2_PAIR_2R	91f7	37367	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP3_PAIR_1L	91f8	37368	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP3_PAIR_1R	91f9	37369	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP3_PAIR_2L	91fa	37370	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP3_PAIR_2R	91fb	37371	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP4_PAIR_1L	91fc	37372	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP4_PAIR_1R	91fd	37373	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP4_PAIR_2L	91fe	37374	Embedded audio phase invert Default=0
COM_AUDIO_PHASE_GRP4_PAIR_2R	91ff	37375	Embedded audio phase invert Default=0
COM_AUDIO_LINK_GRP1_PAIR_1	9204	37380	Embedded audio stereo link gain controls Default=0
COM_AUDIO_LINK_GRP1_PAIR_2	9205	37381	Embedded audio stereo link gain controls Default=0
COM_AUDIO_LINK_GRP2_PAIR_1	9206	37382	Embedded audio stereo link gain controls Default=0
COM_AUDIO_LINK_GRP2_PAIR_2	9207	37383	Embedded audio stereo link gain controls Default=0
COM_AUDIO_LINK_GRP3_PAIR_1	9208	37384	Embedded audio stereo link gain controls Default=0

COM_AUDIO_LINK_GRP3_PAIR_2	9209	37385	Embedded audio stereo link gain controls Default=0
COM_AUDIO_LINK_GRP4_PAIR_1	920a	37386	Embedded audio stereo link gain controls Default=0
COM_AUDIO_LINK_GRP4_PAIR_2	920b	37387	Embedded audio stereo link gain controls Default=0
COM_AUDIO_SEL_LINK_GRP1_PAIR_1	920e	37390	Embedded audio stereo link source selectors Default=0
COM_AUDIO_SEL_LINK_GRP1_PAIR_2	920f	37391	Embedded audio stereo link source selectors Default=0
COM_AUDIO_SEL_LINK_GRP2_PAIR_1	9210	37392	Embedded audio stereo link source selectors Default=0
COM_AUDIO_SEL_LINK_GRP2_PAIR_2	9211	37393	Embedded audio stereo link source selectors Default=0
COM_AUDIO_SEL_LINK_GRP3_PAIR_1	9212	37394	Embedded audio stereo link source selectors Default=0
COM_AUDIO_SEL_LINK_GRP3_PAIR_2	9213	37395	Embedded audio stereo link source selectors Default=0
COM_AUDIO_SEL_LINK_GRP4_PAIR_1	9214	37396	Embedded audio stereo link source selectors Default=0
COM_AUDIO_SEL_LINK_GRP4_PAIR_2	9215	37397	Embedded audio stereo link source selectors Default=0
COM_STEREO_IP_NAME_1	9218	37400	Embedded input pair names are stereo Default=1
COM_STEREO_IP_NAME_2	9219	37401	Embedded input pair names are stereo Default=1
COM_STEREO_IP_NAME_3	921a	37402	Embedded input pair names are stereo Default=1
COM_STEREO_IP_NAME_4	921b	37403	Embedded input pair names are stereo Default=1
COM_STEREO_IP_NAME_5	921c	37404	Embedded input pair names are stereo Default=1
COM_STEREO_IP_NAME_6	921d	37405	Embedded input pair names are stereo Default=1
COM_STEREO_IP_NAME_7	921e	37406	Embedded input pair names are stereo Default=1
COM_STEREO_IP_NAME_8	921f	37407	Embedded input pair names are stereo Default=1
COM_STEREO_OP_NAME_1	9222	37410	Embedded output pair names are stereo Default=1
COM_STEREO_OP_NAME_2	9223	37411	Embedded output pair names are stereo Default=1
COM_STEREO_OP_NAME_3	9224	37412	Embedded output pair names are stereo Default=1

COM_STEREO_OP_NAME_4	9225	37413	Embedded output pair names are stereo Default=1
COM_STEREO_OP_NAME_5	9226	37414	Embedded output pair names are stereo Default=1
COM_STEREO_OP_NAME_6	9227	37415	Embedded output pair names are stereo Default=1
COM_STEREO_OP_NAME_7	9228	37416	Embedded output pair names are stereo Default=1
COM_STEREO_OP_NAME_8	9229	37417	Embedded output pair names are stereo Default=1
COM_EMB_SRC_BYPASS_1	922c	37420	Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_EMB_SRC_BYPASS_2	922d	37421	Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_EMB_SRC_BYPASS_3	922e	37422	Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_EMB_SRC_BYPASS_4	922f	37423	Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_EMB_SRC_BYPASS_5	9230	37424	Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_EMB_SRC_BYPASS_6	9231	37425	Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_EMB_SRC_BYPASS_7	9232	37426	Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_EMB_SRC_BYPASS_8	9233	37427	Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_CHAN_ACTIVE_1	9237	37431	Embedded output audio channel enabled Default=1
COM_CHAN_ACTIVE_2	9238	37432	Embedded output audio channel enabled Default=1
COM_CHAN_ACTIVE_3	9239	37433	Embedded output audio channel enabled Default=1
COM_CHAN_ACTIVE_4	923a	37434	Embedded output audio channel enabled Default=1
COM_CHAN_ACTIVE_5	923b	37435	Embedded output audio channel enabled Default=1
COM_CHAN_ACTIVE_6	923c	37436	Embedded output audio channel enabled Default=1
COM_CHAN_ACTIVE_7	923d	37437	Embedded output audio channel enabled Default=1
COM_CHAN_ACTIVE_8	923e	37438	Embedded output audio channel enabled Default=1
COM_CHAN_ACTIVE_9	923f	37439	Embedded output audio channel enabled Default=1

COM_CHAN_ACTIVE_10	9240	37440	Embedded output audio channel enabled Default=1
COM_CHAN_ACTIVE_11	9241	37441	Embedded output audio channel enabled Default=1
COM_CHAN_ACTIVE_12	9242	37442	Embedded output audio channel enabled Default=1
COM_CHAN_ACTIVE_13	9243	37443	Embedded output audio channel enabled Default=1
COM_CHAN_ACTIVE_14	9244	37444	Embedded output audio channel enabled Default=1
COM_CHAN_ACTIVE_15	9245	37445	Embedded output audio channel enabled Default=1
COM_CHAN_ACTIVE_16	9246	37446	Embedded output audio channel enabled Default=1
COM_GRP_ACTIVE_1	924a	37450	Embedded output audio group enabled Default=1 Pass=0 Blank=2 Embed=1
COM_GRP_ACTIVE_2	924b	37451	Embedded output audio group enabled Default=1 Pass=0 Blank=2 Embed=1
COM_GRP_ACTIVE_3	924c	37452	Embedded output audio group enabled Default=1 Pass=0 Blank=2 Embed=1
COM_GRP_ACTIVE_4	924d	37453	Embedded output audio group enabled Default=1 Pass=0 Blank=2 Embed=1
COM_EMB_INP_RENAME1L	927c	37500	Embedded audio input name
COM_EMB_INP_RENAME1R	927d	37501	Embedded audio input name
COM_EMB_INP_RENAME2L	927e	37502	Embedded audio input name
COM_EMB_INP_RENAME2R	927f	37503	Embedded audio input name
COM_EMB_INP_RENAME3L	9280	37504	Embedded audio input name
COM_EMB_INP_RENAME3R	9281	37505	Embedded audio input name
COM_EMB_INP_RENAME4L	9282	37506	Embedded audio input name
COM_EMB_INP_RENAME4R	9283	37507	Embedded audio input name
COM_EMB_INP_RENAME5L	9284	37508	Embedded audio input name
COM_EMB_INP_RENAME5R	9285	37509	Embedded audio input name
COM_EMB_INP_RENAME6L	9286	37510	Embedded audio input name

COM_EMB_INP_RENAME6R	9287	37511	Embedded audio input name
COM_EMB_INP_RENAME7L	9288	37512	Embedded audio input name
COM_EMB_INP_RENAME7R	9289	37513	Embedded audio input name
COM_EMB_INP_RENAME8L	928a	37514	Embedded audio input name
COM_EMB_INP_RENAME8R	928b	37515	Embedded audio input name
COM_EMB_OUT_RENAME1L	9290	37520	Embedded audio output name
COM_EMB_OUT_RENAME1R	9291	37521	Embedded audio output name
COM_EMB_OUT_RENAME2L	9292	37522	Embedded audio output name
COM_EMB_OUT_RENAME2R	9293	37523	Embedded audio output name
COM_EMB_OUT_RENAME3L	9294	37524	Embedded audio output name
COM_EMB_OUT_RENAME3R	9295	37525	Embedded audio output name
COM_EMB_OUT_RENAME4L	9296	37526	Embedded audio output name
COM_EMB_OUT_RENAME4R	9297	37527	Embedded audio output name
COM_EMB_OUT_RENAME5L	9298	37528	Embedded audio output name
COM_EMB_OUT_RENAME5R	9299	37529	Embedded audio output name
COM_EMB_OUT_RENAME6L	929a	37530	Embedded audio output name
COM_EMB_OUT_RENAME6R	929b	37531	Embedded audio output name
COM_EMB_OUT_RENAME7L	929c	37532	Embedded audio output name
COM_EMB_OUT_RENAME7R	929d	37533	Embedded audio output name
COM_EMB_OUT_RENAME8L	929e	37534	Embedded audio output name
COM_EMB_OUT_RENAME8R	929f	37535	Embedded audio output name
COM_MIXER1_SOURCE1	92e0	37600	Mixer sources Default=-1 Mute=-1 Disembed 1-L=1 Disembed 1-R=2 Disembed 2-L=3 Disembed 2-R=4 Disembed 3-L=5 Disembed 3-R=6 Disembed 4-L=7 Disembed 4-R=8 Disembed 5-L=9 Disembed 5-R=10 Disembed 6-L=11 Disembed 6-R=12

Tone=17	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41	AES Bus 8-R=42	1kHz -20dBFS		
Tone=22	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19		1kHz -18dBFS Tone=20	2kHz -18dBFS Tone=21		4kHz -18dBFS		
COM_MIXER2_SOURCE4	92e7	37607	Mixer sources						
			Default=-1	Mute=-1	Disembd 1-L=1	Disembd 1-R=2	Disembd 2-L=3	Disembd 2-R=4	Disembd
3-L=5	Disembd 3-R=6	Disembd 4-L=7	Disembd 4-R=8	Disembd 5-L=9	Disembd 5-R=10	Disembd 6-L=11	Disembd 6-R=12		
	Disembd 7-L=13	Disembd 7-R=14	Disembd 8-L=15	Disembd 8-R=16	AES Bus 1-L=27	AES Bus 1-R=28	AES Bus 2-L=29		
	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34	AES Bus 5-L=35	AES Bus 5-R=36		
	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41	AES Bus 8-R=42	1kHz -20dBFS		
Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19		1kHz -18dBFS Tone=20	2kHz -18dBFS Tone=21		4kHz -18dBFS		
Tone=22									
COM_MIXER3_SOURCE1	92e8	37608	Mixer sources						
			Default=-1	Mute=-1	Disembd 1-L=1	Disembd 1-R=2	Disembd 2-L=3	Disembd 2-R=4	Disembd
3-L=5	Disembd 3-R=6	Disembd 4-L=7	Disembd 4-R=8	Disembd 5-L=9	Disembd 5-R=10	Disembd 6-L=11	Disembd 6-R=12		
	Disembd 7-L=13	Disembd 7-R=14	Disembd 8-L=15	Disembd 8-R=16	AES Bus 1-L=27	AES Bus 1-R=28	AES Bus 2-L=29		
	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34	AES Bus 5-L=35	AES Bus 5-R=36		
	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41	AES Bus 8-R=42	1kHz -20dBFS		
Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19		1kHz -18dBFS Tone=20	2kHz -18dBFS Tone=21		4kHz -18dBFS		
Tone=22									
COM_MIXER3_SOURCE2	92e9	37609	Mixer sources						
			Default=-1	Mute=-1	Disembd 1-L=1	Disembd 1-R=2	Disembd 2-L=3	Disembd 2-R=4	Disembd
3-L=5	Disembd 3-R=6	Disembd 4-L=7	Disembd 4-R=8	Disembd 5-L=9	Disembd 5-R=10	Disembd 6-L=11	Disembd 6-R=12		
	Disembd 7-L=13	Disembd 7-R=14	Disembd 8-L=15	Disembd 8-R=16	AES Bus 1-L=27	AES Bus 1-R=28	AES Bus 2-L=29		
	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34	AES Bus 5-L=35	AES Bus 5-R=36		
	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41	AES Bus 8-R=42	1kHz -20dBFS		
Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19		1kHz -18dBFS Tone=20	2kHz -18dBFS Tone=21		4kHz -18dBFS		
Tone=22									
COM_MIXER3_SOURCE3	92ea	37610	Mixer sources						
			Default=-1	Mute=-1	Disembd 1-L=1	Disembd 1-R=2	Disembd 2-L=3	Disembd 2-R=4	Disembd
3-L=5	Disembd 3-R=6	Disembd 4-L=7	Disembd 4-R=8	Disembd 5-L=9	Disembd 5-R=10	Disembd 6-L=11	Disembd 6-R=12		
	Disembd 7-L=13	Disembd 7-R=14	Disembd 8-L=15	Disembd 8-R=16	AES Bus 1-L=27	AES Bus 1-R=28	AES Bus 2-L=29		
	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34	AES Bus 5-L=35	AES Bus 5-R=36		
	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41	AES Bus 8-R=42	1kHz -20dBFS		
Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19		1kHz -18dBFS Tone=20	2kHz -18dBFS Tone=21		4kHz -18dBFS		
Tone=22									
COM_MIXER3_SOURCE4	92eb	37611	Mixer sources						
			Default=-1	Mute=-1	Disembd 1-L=1	Disembd 1-R=2	Disembd 2-L=3	Disembd 2-R=4	Disembd
3-L=5	Disembd 3-R=6	Disembd 4-L=7	Disembd 4-R=8	Disembd 5-L=9	Disembd 5-R=10	Disembd 6-L=11	Disembd 6-R=12		
	Disembd 7-L=13	Disembd 7-R=14	Disembd 8-L=15	Disembd 8-R=16	AES Bus 1-L=27	AES Bus 1-R=28	AES Bus 2-L=29		
	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34	AES Bus 5-L=35	AES Bus 5-R=36		
	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41	AES Bus 8-R=42	1kHz -20dBFS		
Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19		1kHz -18dBFS Tone=20	2kHz -18dBFS Tone=21		4kHz -18dBFS		
Tone=22									
COM_MIXER4_SOURCE1	92ec	37612	Mixer sources						
			Default=-1	Mute=-1	Disembd 1-L=1	Disembd 1-R=2	Disembd 2-L=3	Disembd 2-R=4	Disembd
3-L=5	Disembd 3-R=6	Disembd 4-L=7	Disembd 4-R=8	Disembd 5-L=9	Disembd 5-R=10	Disembd 6-L=11	Disembd 6-R=12		
	Disembd 7-L=13	Disembd 7-R=14	Disembd 8-L=15	Disembd 8-R=16	AES Bus 1-L=27	AES Bus 1-R=28	AES Bus 2-L=29		
	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34	AES Bus 5-L=35	AES Bus 5-R=36		
	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41	AES Bus 8-R=42	1kHz -20dBFS		

Tone=17 Tone=22	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20	2kHz -18dBFS Tone=21	4kHz -18dBFS
COM_MIXER4_SOURCE2	92ed	37613	Mixer sources Default=-1	Mute=-1 Disembd 1-L=1	Disembd 1-R=2 Disembd 2-L=3 Disembd 2-R=4 Disembd
3-L=5	Disembd 3-R=6	Disembd 4-L=7	Disembd 4-R=8	Disembd 5-L=9	Disembd 5-R=10 Disembd 6-L=11 Disembd 6-R=12
	Disembd 7-L=13	Disembd 7-R=14	Disembd 8-L=15	Disembd 8-R=16	AES Bus 1-L=27 AES Bus 1-R=28 AES Bus 2-L=29
	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34 AES Bus 5-L=35 AES Bus 5-R=36
	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41 AES Bus 8-R=42 1kHz -20dBFS
Tone=17 Tone=22	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20	2kHz -18dBFS Tone=21	4kHz -18dBFS
COM_MIXER4_SOURCE3	92ee	37614	Mixer sources Default=-1	Mute=-1 Disembd 1-L=1	Disembd 1-R=2 Disembd 2-L=3 Disembd 2-R=4 Disembd
3-L=5	Disembd 3-R=6	Disembd 4-L=7	Disembd 4-R=8	Disembd 5-L=9	Disembd 5-R=10 Disembd 6-L=11 Disembd 6-R=12
	Disembd 7-L=13	Disembd 7-R=14	Disembd 8-L=15	Disembd 8-R=16	AES Bus 1-L=27 AES Bus 1-R=28 AES Bus 2-L=29
	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34 AES Bus 5-L=35 AES Bus 5-R=36
	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41 AES Bus 8-R=42 1kHz -20dBFS
Tone=17 Tone=22	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20	2kHz -18dBFS Tone=21	4kHz -18dBFS
COM_MIXER4_SOURCE4	92ef	37615	Mixer sources Default=-1	Mute=-1 Disembd 1-L=1	Disembd 1-R=2 Disembd 2-L=3 Disembd 2-R=4 Disembd
3-L=5	Disembd 3-R=6	Disembd 4-L=7	Disembd 4-R=8	Disembd 5-L=9	Disembd 5-R=10 Disembd 6-L=11 Disembd 6-R=12
	Disembd 7-L=13	Disembd 7-R=14	Disembd 8-L=15	Disembd 8-R=16	AES Bus 1-L=27 AES Bus 1-R=28 AES Bus 2-L=29
	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34 AES Bus 5-L=35 AES Bus 5-R=36
	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41 AES Bus 8-R=42 1kHz -20dBFS
Tone=17 Tone=22	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20	2kHz -18dBFS Tone=21	4kHz -18dBFS
COM_MIXER1_SOURCE1_GAIN	9308	37640	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10	
COM_MIXER1_SOURCE2_GAIN	9309	37641	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10	
COM_MIXER1_SOURCE3_GAIN	930a	37642	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10	
COM_MIXER1_SOURCE4_GAIN	930b	37643	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10	
COM_MIXER2_SOURCE1_GAIN	930c	37644	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10	
COM_MIXER2_SOURCE2_GAIN	930d	37645	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10	
COM_MIXER2_SOURCE3_GAIN	930e	37646	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10	
COM_MIXER2_SOURCE4_GAIN	930f	37647	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10	
COM_MIXER3_SOURCE1_GAIN	9310	37648	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10	
COM_MIXER3_SOURCE2_GAIN	9311	37649	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10	

COM_MIXER3_SOURCE3_GAIN	9312	37650	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10
COM_MIXER3_SOURCE4_GAIN	9313	37651	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10
COM_MIXER4_SOURCE1_GAIN	9314	37652	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10
COM_MIXER4_SOURCE2_GAIN	9315	37653	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10
COM_MIXER4_SOURCE3_GAIN	9316	37654	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10
COM_MIXER4_SOURCE4_GAIN	9317	37655	Mixer source gain Default=0	Min=-360 Max=120 Divisor=10
COM_MIXER1_SOURCE1_MUTE	9330	37680	Mixer source mutes Default=0	
COM_MIXER1_SOURCE2_MUTE	9331	37681	Mixer source mutes Default=0	
COM_MIXER1_SOURCE3_MUTE	9332	37682	Mixer source mutes Default=0	
COM_MIXER1_SOURCE4_MUTE	9333	37683	Mixer source mutes Default=0	
COM_MIXER2_SOURCE1_MUTE	9334	37684	Mixer source mutes Default=0	
COM_MIXER2_SOURCE2_MUTE	9335	37685	Mixer source mutes Default=0	
COM_MIXER2_SOURCE3_MUTE	9336	37686	Mixer source mutes Default=0	
COM_MIXER2_SOURCE4_MUTE	9337	37687	Mixer source mutes Default=0	
COM_MIXER3_SOURCE1_MUTE	9338	37688	Mixer source mutes Default=0	
COM_MIXER3_SOURCE2_MUTE	9339	37689	Mixer source mutes Default=0	
COM_MIXER3_SOURCE3_MUTE	933a	37690	Mixer source mutes Default=0	
COM_MIXER3_SOURCE4_MUTE	933b	37691	Mixer source mutes Default=0	
COM_MIXER4_SOURCE1_MUTE	933c	37692	Mixer source mutes Default=0	
COM_MIXER4_SOURCE2_MUTE	933d	37693	Mixer source mutes Default=0	
COM_MIXER4_SOURCE3_MUTE	933e	37694	Mixer source mutes Default=0	
COM_MIXER4_SOURCE4_MUTE	933f	37695	Mixer source mutes Default=0	

COM_MIXER1_SOURCE1_PHASE	9358	37720	Mixer source phase invert Default=0
COM_MIXER1_SOURCE2_PHASE	9359	37721	Mixer source phase invert Default=0
COM_MIXER1_SOURCE3_PHASE	935a	37722	Mixer source phase invert Default=0
COM_MIXER1_SOURCE4_PHASE	935b	37723	Mixer source phase invert Default=0
COM_MIXER2_SOURCE1_PHASE	935c	37724	Mixer source phase invert Default=0
COM_MIXER2_SOURCE2_PHASE	935d	37725	Mixer source phase invert Default=0
COM_MIXER2_SOURCE3_PHASE	935e	37726	Mixer source phase invert Default=0
COM_MIXER2_SOURCE4_PHASE	935f	37727	Mixer source phase invert Default=0
COM_MIXER3_SOURCE1_PHASE	9360	37728	Mixer source phase invert Default=0
COM_MIXER3_SOURCE2_PHASE	9361	37729	Mixer source phase invert Default=0
COM_MIXER3_SOURCE3_PHASE	9362	37730	Mixer source phase invert Default=0
COM_MIXER3_SOURCE4_PHASE	9363	37731	Mixer source phase invert Default=0
COM_MIXER4_SOURCE1_PHASE	9364	37732	Mixer source phase invert Default=0
COM_MIXER4_SOURCE2_PHASE	9365	37733	Mixer source phase invert Default=0
COM_MIXER4_SOURCE3_PHASE	9366	37734	Mixer source phase invert Default=0
COM_MIXER4_SOURCE4_PHASE	9367	37735	Mixer source phase invert Default=0
COM_MIXER_RENAME1L	93b2	37810	Mixer names
COM_MIXER_RENAME1R	93b3	37811	Mixer names
COM_MIXER_RENAME2L	93b4	37812	Mixer names
COM_MIXER_RENAME2R	93b5	37813	Mixer names
COM_AUDIO_DELAY_A_MAN	9499	38041	Use manual delay select Default=1
COM_AUDIO_DELAY_A_PWM	949a	38042	Use GPIO PWM for delay Default=0

COM_AUDIO_DELAY_A_SET	949b	38043	Set Manual delay Default=0 Min=-4000 Max=200000 Divisor=100	
COM_AUDIO_DELAY_A_TRACK14	949c	38044	Use rolltrack14 data for delay Default=0	
COM_AUDIO_DELAY_A_TRACK15	949d	38045	Use rolltrack15 data for delay Default=0	
COM_AUDIO_DELAY_A_TRACK16	949e	38046	Use rolltrack16 data for delay Default=0	
COM_AUDIO_DELAY_A_TRACK17	949f	38047	Use rolltrack17 data for delay Default=0	
COM_AUDIO_DELAY_B_MAN	94ad	38061	Use manual delay select Default=1	
COM_AUDIO_DELAY_B_PWM	94ae	38062	Use GPIO PWM for delay Default=0	
COM_AUDIO_DELAY_B_SET	94af	38063	Set Manual delay Default=0 Min=-4000 Max=200000 Divisor=100	
COM_AUDIO_DELAY_B_TRACK14	94b0	38064	Use rolltrack14 data for delay Default=0	
COM_AUDIO_DELAY_B_TRACK15	94b1	38065	Use rolltrack15 data for delay Default=0	
COM_AUDIO_DELAY_B_TRACK16	94b2	38066	Use rolltrack16 data for delay Default=0	
COM_AUDIO_DELAY_B_TRACK17	94b3	38067	Use rolltrack17 data for delay Default=0	
COM_DELAY_01_SEL	94c0	38080	Embedded Audio Delay A/B/Off Default=1 Min=0 Delay A=1	Delay B=2
COM_DELAY_02_SEL	94c1	38081	Embedded Audio Delay A/B/Off Default=1 Min=0 Delay A=1	Delay B=2
COM_DELAY_03_SEL	94c2	38082	Embedded Audio Delay A/B/Off Default=1 Min=0 Delay A=1	Delay B=2
COM_DELAY_04_SEL	94c3	38083	Embedded Audio Delay A/B/Off Default=1 Min=0 Delay A=1	Delay B=2
COM_DELAY_05_SEL	94c4	38084	Embedded Audio Delay A/B/Off Default=1 Min=0 Delay A=1	Delay B=2
COM_DELAY_06_SEL	94c5	38085	Embedded Audio Delay A/B/Off Default=1 Min=0 Delay A=1	Delay B=2
COM_DELAY_07_SEL	94c6	38086	Embedded Audio Delay A/B/Off Default=1 Min=0 Delay A=1	Delay B=2
COM_DELAY_08_SEL	94c7	38087	Embedded Audio Delay A/B/Off Default=1 Min=0 Delay A=1	Delay B=2
COM_DELAY_01_INTERNAL	94d4	38100	Embedded Audio Delay includes video delay Default=1	
COM_DELAY_02_INTERNAL	94d5	38101	Embedded Audio Delay includes video delay Default=1	

COM_DELAY_03_INTERNAL	94d6	38102	Embedded Audio Delay includes video delay Default=1
COM_DELAY_04_INTERNAL	94d7	38103	Embedded Audio Delay includes video delay Default=1
COM_DELAY_05_INTERNAL	94d8	38104	Embedded Audio Delay includes video delay Default=1
COM_DELAY_06_INTERNAL	94d9	38105	Embedded Audio Delay includes video delay Default=1
COM_DELAY_07_INTERNAL	94da	38106	Embedded Audio Delay includes video delay Default=1
COM_DELAY_08_INTERNAL	94db	38107	Embedded Audio Delay includes video delay Default=1
COM_AES_SOURCE_GRP1_PAIR_1L	9538	38200	AES output select source Default=1 Mute=-1 Disembd 1-L=1 Disembd 1-R=2 Disembd 2-L=3 Disembd 2-R=4 Disembd 3-L=5 Disembd 3-R=6 Disembd 4-L=7 Disembd 4-R=8 Disembd 5-L=9 Disembd 5-R=10 Disembd 6-L=11 Disembd 6-R=12 Disembd 7-L=13 Disembd 7-R=14 Disembd 8-L=15 Disembd 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27 AES Bus 1-R=28 AES Bus 2-L=29 AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34 AES Bus 5-L=35 AES Bus 5-R=36 AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41 AES Bus 8-R=42 1kHz -20dBFS Tone=17 2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20 2kHz -18dBFS Tone=21 4kHz -18dBFS Tone=22
COM_AES_SOURCE_GRP1_PAIR_1R	9539	38201	AES output select source Default=2 Mute=-1 Disembd 1-L=1 Disembd 1-R=2 Disembd 2-L=3 Disembd 2-R=4 Disembd 3-L=5 Disembd 3-R=6 Disembd 4-L=7 Disembd 4-R=8 Disembd 5-L=9 Disembd 5-R=10 Disembd 6-L=11 Disembd 6-R=12 Disembd 7-L=13 Disembd 7-R=14 Disembd 8-L=15 Disembd 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27 AES Bus 1-R=28 AES Bus 2-L=29 AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34 AES Bus 5-L=35 AES Bus 5-R=36 AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41 AES Bus 8-R=42 1kHz -20dBFS Tone=17 2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20 2kHz -18dBFS Tone=21 4kHz -18dBFS Tone=22
COM_AES_SOURCE_GRP1_PAIR_2L	953a	38202	AES output select source Default=3 Mute=-1 Disembd 1-L=1 Disembd 1-R=2 Disembd 2-L=3 Disembd 2-R=4 Disembd 3-L=5 Disembd 3-R=6 Disembd 4-L=7 Disembd 4-R=8 Disembd 5-L=9 Disembd 5-R=10 Disembd 6-L=11 Disembd 6-R=12 Disembd 7-L=13 Disembd 7-R=14 Disembd 8-L=15 Disembd 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27 AES Bus 1-R=28 AES Bus 2-L=29 AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34 AES Bus 5-L=35 AES Bus 5-R=36 AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41 AES Bus 8-R=42 1kHz -20dBFS Tone=17 2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20 2kHz -18dBFS Tone=21 4kHz -18dBFS Tone=22
COM_AES_SOURCE_GRP1_PAIR_2R	953b	38203	AES output select source Default=4 Mute=-1 Disembd 1-L=1 Disembd 1-R=2 Disembd 2-L=3 Disembd 2-R=4 Disembd 3-L=5 Disembd 3-R=6 Disembd 4-L=7 Disembd 4-R=8 Disembd 5-L=9 Disembd 5-R=10 Disembd 6-L=11 Disembd 6-R=12 Disembd 7-L=13 Disembd 7-R=14 Disembd 8-L=15 Disembd 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27 AES Bus 1-R=28 AES Bus 2-L=29 AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34 AES Bus 5-L=35 AES Bus 5-R=36 AES Bus 6-L=37 AES Bus 6-R=38 AES Bus 7-L=39 AES Bus 7-R=40 AES Bus 8-L=41 AES Bus 8-R=42 1kHz -20dBFS Tone=17 2kHz -20dBFS Tone=18 4kHz -20dBFS Tone=19 1kHz -18dBFS Tone=20 2kHz -18dBFS Tone=21 4kHz -18dBFS Tone=22
COM_AES_SOURCE_GRP2_PAIR_1L	953c	38204	AES output select source Default=5 Mute=-1 Disembd 1-L=1 Disembd 1-R=2 Disembd 2-L=3 Disembd 2-R=4 Disembd 3-L=5 Disembd 3-R=6 Disembd 4-L=7 Disembd 4-R=8 Disembd 5-L=9 Disembd 5-R=10 Disembd 6-L=11 Disembd 6-R=12 Disembd 7-L=13 Disembd 7-R=14 Disembd 8-L=15 Disembd 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27 AES Bus 1-R=28 AES Bus 2-L=29 AES Bus 2-R=30 AES Bus 3-L=31 AES Bus 3-R=32 AES Bus 4-L=33 AES Bus 4-R=34

		AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41
		AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20		
		2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22					
COM_AES_SOURCE_GRP2_PAIR_1R	953d	38205	AES output select source					
			Default=6	Mute=-1	Disembded 1-L=1	Disembded 1-R=2	Disembded 2-L=3	Disembded 2-R=4
3-L=5			Disembded 3-R=6	Disembded 4-L=7	Disembded 4-R=8	Disembded 5-L=9	Disembded 5-R=10	Disembded 6-L=11
			Disembded 7-L=13	Disembded 7-R=14	Disembded 8-L=15	Disembded 8-R=16	Mix 1=23	Mix 2=24
			AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33
			AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40
			AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20	
			2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22				
COM_AES_SOURCE_GRP2_PAIR_2L	953e	38206	AES output select source					
			Default=7	Mute=-1	Disembded 1-L=1	Disembded 1-R=2	Disembded 2-L=3	Disembded 2-R=4
3-L=5			Disembded 3-R=6	Disembded 4-L=7	Disembded 4-R=8	Disembded 5-L=9	Disembded 5-R=10	Disembded 6-L=11
			Disembded 7-L=13	Disembded 7-R=14	Disembded 8-L=15	Disembded 8-R=16	Mix 1=23	Mix 2=24
			AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33
			AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40
			AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20	
			2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22				
COM_AES_SOURCE_GRP2_PAIR_2R	953f	38207	AES output select source					
			Default=8	Mute=-1	Disembded 1-L=1	Disembded 1-R=2	Disembded 2-L=3	Disembded 2-R=4
3-L=5			Disembded 3-R=6	Disembded 4-L=7	Disembded 4-R=8	Disembded 5-L=9	Disembded 5-R=10	Disembded 6-L=11
			Disembded 7-L=13	Disembded 7-R=14	Disembded 8-L=15	Disembded 8-R=16	Mix 1=23	Mix 2=24
			AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33
			AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40
			AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20	
			2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22				
COM_AES_SOURCE_GRP3_PAIR_1L	9540	38208	AES output select source					
			Default=9	Mute=-1	Disembded 1-L=1	Disembded 1-R=2	Disembded 2-L=3	Disembded 2-R=4
3-L=5			Disembded 3-R=6	Disembded 4-L=7	Disembded 4-R=8	Disembded 5-L=9	Disembded 5-R=10	Disembded 6-L=11
			Disembded 7-L=13	Disembded 7-R=14	Disembded 8-L=15	Disembded 8-R=16	Mix 1=23	Mix 2=24
			AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33
			AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40
			AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20	
			2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22				
COM_AES_SOURCE_GRP3_PAIR_1R	9541	38209	AES output select source					
			Default=10	Mute=-1	Disembded 1-L=1	Disembded 1-R=2	Disembded 2-L=3	Disembded 2-R=4
3-L=5			Disembded 3-R=6	Disembded 4-L=7	Disembded 4-R=8	Disembded 5-L=9	Disembded 5-R=10	Disembded 6-L=11
			Disembded 7-L=13	Disembded 7-R=14	Disembded 8-L=15	Disembded 8-R=16	Mix 1=23	Mix 2=24
			AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33
			AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40
			AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20	
			2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22				
COM_AES_SOURCE_GRP3_PAIR_2L	9542	38210	AES output select source					
			Default=11	Mute=-1	Disembded 1-L=1	Disembded 1-R=2	Disembded 2-L=3	Disembded 2-R=4
3-L=5			Disembded 3-R=6	Disembded 4-L=7	Disembded 4-R=8	Disembded 5-L=9	Disembded 5-R=10	Disembded 6-L=11
			Disembded 7-L=13	Disembded 7-R=14	Disembded 8-L=15	Disembded 8-R=16	Mix 1=23	Mix 2=24
			AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33
			AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40
			AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20	
			2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22				

		AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20					
		2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22								
COM_AES_SOURCE_GRP3_PAIR_2R	9543	38211	AES output select source								
			Default=12	Mute=-1	Disembed 1-L=1	Disembed 1-R=2	Disembed 2-L=3	Disembed 2-R=4	Disembed		
3-L=5			Disembed 3-R=6	Disembed 4-L=7	Disembed 4-R=8	Disembed 5-L=9	Disembed 5-R=10	Disembed 6-L=11	Disembed 6-R=12		
			Disembed 7-L=13	Disembed 7-R=14	Disembed 8-L=15	Disembed 8-R=16	Mix 1=23	Mix 2=24	Mix 3=25	Mix 4=26	AES Bus 1-L=27
			AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34		
			AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41		
			AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20				
			2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22							
COM_AES_SOURCE_GRP4_PAIR_1L	9544	38212	AES output select source								
			Default=13	Mute=-1	Disembed 1-L=1	Disembed 1-R=2	Disembed 2-L=3	Disembed 2-R=4	Disembed		
3-L=5			Disembed 3-R=6	Disembed 4-L=7	Disembed 4-R=8	Disembed 5-L=9	Disembed 5-R=10	Disembed 6-L=11	Disembed 6-R=12		
			Disembed 7-L=13	Disembed 7-R=14	Disembed 8-L=15	Disembed 8-R=16	Mix 1=23	Mix 2=24	Mix 3=25	Mix 4=26	AES Bus 1-L=27
			AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34		
			AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41		
			AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20				
			2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22							
COM_AES_SOURCE_GRP4_PAIR_1R	9545	38213	AES output select source								
			Default=14	Mute=-1	Disembed 1-L=1	Disembed 1-R=2	Disembed 2-L=3	Disembed 2-R=4	Disembed		
3-L=5			Disembed 3-R=6	Disembed 4-L=7	Disembed 4-R=8	Disembed 5-L=9	Disembed 5-R=10	Disembed 6-L=11	Disembed 6-R=12		
			Disembed 7-L=13	Disembed 7-R=14	Disembed 8-L=15	Disembed 8-R=16	Mix 1=23	Mix 2=24	Mix 3=25	Mix 4=26	AES Bus 1-L=27
			AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34		
			AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41		
			AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20				
			2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22							
COM_AES_SOURCE_GRP4_PAIR_2L	9546	38214	AES output select source								
			Default=15	Mute=-1	Disembed 1-L=1	Disembed 1-R=2	Disembed 2-L=3	Disembed 2-R=4	Disembed		
3-L=5			Disembed 3-R=6	Disembed 4-L=7	Disembed 4-R=8	Disembed 5-L=9	Disembed 5-R=10	Disembed 6-L=11	Disembed 6-R=12		
			Disembed 7-L=13	Disembed 7-R=14	Disembed 8-L=15	Disembed 8-R=16	Mix 1=23	Mix 2=24	Mix 3=25	Mix 4=26	AES Bus 1-L=27
			AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34		
			AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41		
			AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20				
			2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22							
COM_AES_SOURCE_GRP4_PAIR_2R	9547	38215	AES output select source								
			Default=16	Mute=-1	Disembed 1-L=1	Disembed 1-R=2	Disembed 2-L=3	Disembed 2-R=4	Disembed		
3-L=5			Disembed 3-R=6	Disembed 4-L=7	Disembed 4-R=8	Disembed 5-L=9	Disembed 5-R=10	Disembed 6-L=11	Disembed 6-R=12		
			Disembed 7-L=13	Disembed 7-R=14	Disembed 8-L=15	Disembed 8-R=16	Mix 1=23	Mix 2=24	Mix 3=25	Mix 4=26	AES Bus 1-L=27
			AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34		
			AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41		
			AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20				
			2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22							
COM_AES_GAIN_GRP1_PAIR_1L	9560	38240	AES audio gain								
			Default=0	Min=-360	Max=120	Divisor=10					
COM_AES_GAIN_GRP1_PAIR_1R	9561	38241	AES audio gain								
			Default=0	Min=-360	Max=120	Divisor=10					
COM_AES_GAIN_GRP1_PAIR_2L	9562	38242	AES audio gain								
			Default=0	Min=-360	Max=120	Divisor=10					

COM_AES_GAIN_GRP1_PAIR_2R	9563	38243	AES audio gain Default=0	Min=-360 Max=120 Divisor=10
COM_AES_GAIN_GRP2_PAIR_1L	9564	38244	AES audio gain Default=0	Min=-360 Max=120 Divisor=10
COM_AES_GAIN_GRP2_PAIR_1R	9565	38245	AES audio gain Default=0	Min=-360 Max=120 Divisor=10
COM_AES_GAIN_GRP2_PAIR_2L	9566	38246	AES audio gain Default=0	Min=-360 Max=120 Divisor=10
COM_AES_GAIN_GRP2_PAIR_2R	9567	38247	AES audio gain Default=0	Min=-360 Max=120 Divisor=10
COM_AES_GAIN_GRP3_PAIR_1L	9568	38248	AES audio gain Default=0	Min=-360 Max=120 Divisor=10
COM_AES_GAIN_GRP3_PAIR_1R	9569	38249	AES audio gain Default=0	Min=-360 Max=120 Divisor=10
COM_AES_GAIN_GRP3_PAIR_2L	956a	38250	AES audio gain Default=0	Min=-360 Max=120 Divisor=10
COM_AES_GAIN_GRP3_PAIR_2R	956b	38251	AES audio gain Default=0	Min=-360 Max=120 Divisor=10
COM_AES_GAIN_GRP4_PAIR_1L	956c	38252	AES audio gain Default=0	Min=-360 Max=120 Divisor=10
COM_AES_GAIN_GRP4_PAIR_1R	956d	38253	AES audio gain Default=0	Min=-360 Max=120 Divisor=10
COM_AES_GAIN_GRP4_PAIR_2L	956e	38254	AES audio gain Default=0	Min=-360 Max=120 Divisor=10
COM_AES_GAIN_GRP4_PAIR_2R	956f	38255	AES audio gain Default=0	Min=-360 Max=120 Divisor=10
COM_AES_MUTE_GRP1_PAIR_1L	9588	38280	AES audio mute Default=0	
COM_AES_MUTE_GRP1_PAIR_1R	9589	38281	AES audio mute Default=0	
COM_AES_MUTE_GRP1_PAIR_2L	958a	38282	AES audio mute Default=0	
COM_AES_MUTE_GRP1_PAIR_2R	958b	38283	AES audio mute Default=0	
COM_AES_MUTE_GRP2_PAIR_1L	958c	38284	AES audio mute Default=0	
COM_AES_MUTE_GRP2_PAIR_1R	958d	38285	AES audio mute Default=0	
COM_AES_MUTE_GRP2_PAIR_2L	958e	38286	AES audio mute Default=0	
COM_AES_MUTE_GRP2_PAIR_2R	958f	38287	AES audio mute Default=0	
COM_AES_MUTE_GRP3_PAIR_1L	9590	38288	AES audio mute Default=0	

COM_AES_MUTE_GRP3_PAIR_1R	9591	38289	AES audio mute Default=0
COM_AES_MUTE_GRP3_PAIR_2L	9592	38290	AES audio mute Default=0
COM_AES_MUTE_GRP3_PAIR_2R	9593	38291	AES audio mute Default=0
COM_AES_MUTE_GRP4_PAIR_1L	9594	38292	AES audio mute Default=0
COM_AES_MUTE_GRP4_PAIR_1R	9595	38293	AES audio mute Default=0
COM_AES_MUTE_GRP4_PAIR_2L	9596	38294	AES audio mute Default=0
COM_AES_MUTE_GRP4_PAIR_2R	9597	38295	AES audio mute Default=0
COM_AES_PHASE_PAIR_1L	95b0	38320	AES output phase invert Default=0
COM_AES_PHASE_PAIR_1R	95b1	38321	AES output phase invert Default=0
COM_AES_PHASE_PAIR_2L	95b2	38322	AES output phase invert Default=0
COM_AES_PHASE_PAIR_2R	95b3	38323	AES output phase invert Default=0
COM_AES_PHASE_PAIR_3L	95b4	38324	AES output phase invert Default=0
COM_AES_PHASE_PAIR_3R	95b5	38325	AES output phase invert Default=0
COM_AES_PHASE_PAIR_4L	95b6	38326	AES output phase invert Default=0
COM_AES_PHASE_PAIR_4R	95b7	38327	AES output phase invert Default=0
COM_AES_PHASE_PAIR_5L	95b8	38328	AES output phase invert Default=0
COM_AES_PHASE_PAIR_5R	95b9	38329	AES output phase invert Default=0
COM_AES_PHASE_PAIR_6L	95ba	38330	AES output phase invert Default=0
COM_AES_PHASE_PAIR_6R	95bb	38331	AES output phase invert Default=0
COM_AES_PHASE_PAIR_7L	95bc	38332	AES output phase invert Default=0
COM_AES_PHASE_PAIR_7R	95bd	38333	AES output phase invert Default=0
COM_AES_PHASE_PAIR_8L	95be	38334	AES output phase invert Default=0

COM_AES_PHASE_PAIR_8R	95bf	38335	AES output phase invert Default=0
COM_AES_LINK_1	95d8	38360	AES stereo gain Default=0
COM_AES_LINK_2	95d9	38361	AES stereo gain Default=0
COM_AES_LINK_3	95da	38362	AES stereo gain Default=0
COM_AES_LINK_4	95db	38363	AES stereo gain Default=0
COM_AES_LINK_5	95dc	38364	AES stereo gain Default=0
COM_AES_LINK_6	95dd	38365	AES stereo gain Default=0
COM_AES_LINK_7	95de	38366	AES stereo gain Default=0
COM_AES_LINK_8	95df	38367	AES stereo gain Default=0
COM_AES_SEL_LINK_1	95ec	38380	AES port stereo link source selectors Default=0
COM_AES_SEL_LINK_2	95ed	38381	AES port stereo link source selectors Default=0
COM_AES_SEL_LINK_3	95ee	38382	AES port stereo link source selectors Default=0
COM_AES_SEL_LINK_4	95ef	38383	AES port stereo link source selectors Default=0
COM_AES_SEL_LINK_5	95f0	38384	AES port stereo link source selectors Default=0
COM_AES_SEL_LINK_6	95f1	38385	AES port stereo link source selectors Default=0
COM_AES_SEL_LINK_7	95f2	38386	AES port stereo link source selectors Default=0
COM_AES_SEL_LINK_8	95f3	38387	AES port stereo link source selectors Default=0
COM_AES_SRC_BYPASS_1	9600	38400	AES Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_AES_SRC_BYPASS_2	9601	38401	AES Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_AES_SRC_BYPASS_3	9602	38402	AES Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_AES_SRC_BYPASS_4	9603	38403	AES Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_AES_SRC_BYPASS_5	9604	38404	AES Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2

COM_AES_SRC_BYPASS_6	9605	38405	AES Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_AES_SRC_BYPASS_7	9606	38406	AES Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_AES_SRC_BYPASS_8	9607	38407	AES Sample rate converter bypass (Data mode) Default=0 PCM=0 Data=1 Mixed=2
COM_AES_STEREO_NAME1	9628	38440	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME2	9629	38441	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME3	962a	38442	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME4	962b	38443	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME5	962c	38444	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME6	962d	38445	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME7	962e	38446	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME8	962f	38447	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME9	9630	38448	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME10	9631	38449	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME11	9632	38450	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME12	9633	38451	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME13	9634	38452	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME14	9635	38453	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME15	9636	38454	AES input pair names are stereo Default=1
COM_AES_STEREO_NAME16	9637	38455	AES input pair names are stereo Default=1
COM_AES_OUT_RENAME1L	9650	38480	AES audio input name
COM_AES_OUT_RENAME1R	9651	38481	AES audio input name
COM_AES_OUT_RENAME2L	9652	38482	AES audio input name

COM_AES_OUT_RENAME2R	9653	38483	AES audio input name
COM_AES_OUT_RENAME3L	9654	38484	AES audio input name
COM_AES_OUT_RENAME3R	9655	38485	AES audio input name
COM_AES_OUT_RENAME4L	9656	38486	AES audio input name
COM_AES_OUT_RENAME4R	9657	38487	AES audio input name
COM_AES_OUT_RENAME5L	9658	38488	AES audio input name
COM_AES_OUT_RENAME5R	9659	38489	AES audio input name
COM_AES_OUT_RENAME6L	965a	38490	AES audio input name
COM_AES_OUT_RENAME6R	965b	38491	AES audio input name
COM_AES_OUT_RENAME7L	965c	38492	AES audio input name
COM_AES_OUT_RENAME7R	965d	38493	AES audio input name
COM_AES_OUT_RENAME8L	965e	38494	AES audio input name
COM_AES_OUT_RENAME8R	965f	38495	AES audio input name
COM_AES_OUT_RENAME9L	9660	38496	AES audio input name
COM_AES_OUT_RENAME9R	9661	38497	AES audio input name
COM_AES_OUT_RENAME10L	9662	38498	AES audio input name
COM_AES_OUT_RENAME10R	9663	38499	AES audio input name
COM_AES_OUT_RENAME11L	9664	38500	AES audio input name
COM_AES_OUT_RENAME11R	9665	38501	AES audio input name
COM_AES_OUT_RENAME12L	9666	38502	AES audio input name
COM_AES_OUT_RENAME12R	9667	38503	AES audio input name
COM_AES_OUT_RENAME13L	9668	38504	AES audio input name

COM_AES_OUT_RENAME13R	9669	38505	AES audio input name		
COM_AES_OUT_RENAME14L	966a	38506	AES audio input name		
COM_AES_OUT_RENAME14R	966b	38507	AES audio input name		
COM_AES_OUT_RENAME15L	966c	38508	AES audio input name		
COM_AES_OUT_RENAME15R	966d	38509	AES audio input name		
COM_AES_OUT_RENAME16L	966e	38510	AES audio input name		
COM_AES_OUT_RENAME16R	966f	38511	AES audio input name		
COM_AES_DELAY_01_SEL	96c8	38600	AES audio delay A/B/Off Default=0 Min=0	Delay A=1	Delay B=2
COM_AES_DELAY_02_SEL	96c9	38601	AES audio delay A/B/Off Default=0 Min=0	Delay A=1	Delay B=2
COM_AES_DELAY_03_SEL	96ca	38602	AES audio delay A/B/Off Default=0 Min=0	Delay A=1	Delay B=2
COM_AES_DELAY_04_SEL	96cb	38603	AES audio delay A/B/Off Default=0 Min=0	Delay A=1	Delay B=2
COM_AES_DELAY_05_SEL	96cc	38604	AES audio delay A/B/Off Default=0 Min=0	Delay A=1	Delay B=2
COM_AES_DELAY_06_SEL	96cd	38605	AES audio delay A/B/Off Default=0 Min=0	Delay A=1	Delay B=2
COM_AES_DELAY_07_SEL	96ce	38606	AES audio delay A/B/Off Default=0 Min=0	Delay A=1	Delay B=2
COM_AES_DELAY_08_SEL	96cf	38607	AES audio delay A/B/Off Default=0 Min=0	Delay A=1	Delay B=2
COM_AES_DELAY_01_INTERNAL	96dc	38620	Default=1		
COM_AES_DELAY_02_INTERNAL	96dd	38621	Default=1		
COM_AES_DELAY_03_INTERNAL	96de	38622	Default=1		
COM_AES_DELAY_04_INTERNAL	96df	38623	Default=1		
COM_AES_DELAY_05_INTERNAL	96e0	38624	Default=1		
COM_AES_DELAY_06_INTERNAL	96e1	38625	Default=1		
COM_AES_DELAY_07_INTERNAL	96e2	38626	Default=1		
COM_AES_DELAY_08_INTERNAL	96e3	38627	Default=1		
COM_MONITOR_SEL_LINK	96f0	38640	Monitor stereo link source selectors Default=0		
COM_MONITOR_SOURCE_L	96f1	38641	Monitor source select Default=-1 Mute=-1	Disembed 1-L=1	Disembed 1-R=2 Disembed 2-L=3 Disembed 2-R=4 Disembed 3-L=5
			Disembed 3-R=6	Disembed 4-L=7	Disembed 4-R=8 Disembed 5-L=9 Disembed 5-R=10 Disembed 6-L=11 Disembed 6-R=12
			Disembed 7-L=13	Disembed 7-R=14	Disembed 8-L=15 Disembed 8-R=16 Mix 1=23 Mix 2=24 Mix 3=25 Mix 4=26 AES Bus 1-L=27

		AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33	AES Bus 4-R=34
		AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40	AES Bus 8-L=41
		AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20		
		2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22					
COM_MONITOR_SOURCE_R	96f2	38642	Monitor source select					
			Default=-1	Mute=-1	Disembed 1-L=1	Disembed 1-R=2	Disembed 2-L=3	Disembed 2-R=4
3-L=5			Disembed 3-R=6	Disembed 4-L=7	Disembed 4-R=8	Disembed 5-L=9	Disembed 5-R=10	Disembed 6-L=11
			Disembed 7-L=13	Disembed 7-R=14	Disembed 8-L=15	Disembed 8-R=16	Mix 1=23	Mix 2=24
			AES Bus 1-R=28	AES Bus 2-L=29	AES Bus 2-R=30	AES Bus 3-L=31	AES Bus 3-R=32	AES Bus 4-L=33
			AES Bus 5-L=35	AES Bus 5-R=36	AES Bus 6-L=37	AES Bus 6-R=38	AES Bus 7-L=39	AES Bus 7-R=40
			AES Bus 8-R=42	1kHz -20dBFS Tone=17	2kHz -20dBFS Tone=18	4kHz -20dBFS Tone=19	1kHz -18dBFS Tone=20	
			2kHz -18dBFS Tone=21	4kHz -18dBFS Tone=22				
COM_DOLBY_E_PAIR_SELECT	96fa	38650	Default=1	Min=1	Max=8	Divisor=1		
COM_DELAY_01_AUTO_DOLBY_E	94de	38110	Embedded Audio Delay Auto DolbyE adjust					
			Default=0					
COM_DELAY_02_AUTO_DOLBY_E	94df	38111	Embedded Audio Delay Auto DolbyE adjust					
			Default=0					
COM_DELAY_03_AUTO_DOLBY_E	94e0	38112	Embedded Audio Delay Auto DolbyE adjust					
			Default=0					
COM_DELAY_04_AUTO_DOLBY_E	94e1	38113	Embedded Audio Delay Auto DolbyE adjust					
			Default=0					
COM_DELAY_05_AUTO_DOLBY_E	94e2	38114	Embedded Audio Delay Auto DolbyE adjust					
			Default=0					
COM_DELAY_06_AUTO_DOLBY_E	94e3	38115	Embedded Audio Delay Auto DolbyE adjust					
			Default=0					
COM_DELAY_07_AUTO_DOLBY_E	94e4	38116	Embedded Audio Delay Auto DolbyE adjust					
			Default=0					
COM_DELAY_08_AUTO_DOLBY_E	94e5	38117	Embedded Audio Delay Auto DolbyE adjust					
			Default=0					
COM_AUDIO_FINE_DELAY_A_SET	94a1	38049	Set Manual delay					
			Default=0	Min=0	Max=2450	Divisor=10000		
COM_AUDIO_FINE_DELAY_B_SET	94b5	38069	Set Manual delay					
			Default=0	Min=0	Max=2450	Divisor=10000		
COM_AES_DELAY_01_AUTO_DOLBY_E	94e6	38118	Embedded Audio Delay Auto DolbyE adjust					
			Default=0					
COM_AES_DELAY_02_AUTO_DOLBY_E	94e7	38119	Embedded Audio Delay Auto DolbyE adjust					
			Default=0					
COM_AES_DELAY_03_AUTO_DOLBY_E	94e8	38120	Embedded Audio Delay Auto DolbyE adjust					
			Default=0					
COM_AES_DELAY_04_AUTO_DOLBY_E	94e9	38121	Embedded Audio Delay Auto DolbyE adjust					
			Default=0					
COM_AES_DELAY_05_AUTO_DOLBY_E	94ea	38122	Embedded Audio Delay Auto DolbyE adjust					
			Default=0					
COM_AES_DELAY_06_AUTO_DOLBY_E	94eb	38123	Embedded Audio Delay Auto DolbyE adjust					
			Default=0					

COM_AES_DELAY_07_AUTO_DOLBY_E	94ec	38124	Embedded Audio Delay Auto DolbyE adjust Default=0
COM_AES_DELAY_08_AUTO_DOLBY_E	94ed	38125	Embedded Audio Delay Auto DolbyE adjust Default=0
COM_DOLBY_E_LINE_PAIR1_ENABLE	970e	38670	Use user defined Dolby-E Line no rather than standard one Default=1
COM_DOLBY_E_LINE_PAIR2_ENABLE	970f	38671	Use user defined Dolby-E Line no rather than standard one Default=1
COM_DOLBY_E_LINE_PAIR3_ENABLE	9710	38672	Use user defined Dolby-E Line no rather than standard one Default=1
COM_DOLBY_E_LINE_PAIR4_ENABLE	9711	38673	Use user defined Dolby-E Line no rather than standard one Default=1
COM_DOLBY_E_LINE_PAIR5_ENABLE	9712	38674	Use user defined Dolby-E Line no rather than standard one Default=1
COM_DOLBY_E_LINE_PAIR6_ENABLE	9713	38675	Use user defined Dolby-E Line no rather than standard one Default=1
COM_DOLBY_E_LINE_PAIR7_ENABLE	9714	38676	Use user defined Dolby-E Line no rather than standard one Default=1
COM_DOLBY_E_LINE_PAIR8_ENABLE	9715	38677	Use user defined Dolby-E Line no rather than standard one Default=1
COM_ENGINEER_USE_EMB_DELAY_FEEDBACK	8501	34049	Default=1
System Memories			
COM_DISPLAY_TYPE	8005	32773	Select Info display to show Default=0 Video Status=0 Audio Status=1
COM_VALID_1080_25I	808e	32910	Select valid input standards Default=1
COM_VALID_1080_25P	808f	32911	Select valid input standards Default=1
COM_VALID_1080_30I	8090	32912	Select valid input standards Default=1
COM_VALID_1080_30P	8091	32913	Select valid input standards Default=1
COM_VALID_1080_24P	8092	32914	Select valid input standards Default=1
COM_VALID_1080_23P	8093	32915	Select valid input standards Default=1
COM_VALID_1080_23SF	8094	32916	Select valid input standards Default=1
COM_VALID_1080_24SF	8095	32917	Select valid input standards Default=1
COM_VALID_1080_29P	8096	32918	Select valid input standards Default=1

COM_VALID_1080_29I	8097	32919	Select valid input standards Default=1
COM_VALID_1035_30I	8098	32920	Select valid input standards Default=1
COM_VALID_1035_29I	8099	32921	Select valid input standards Default=1
COM_VALID_720_50P	809a	32922	Select valid input standards Default=1
COM_VALID_720_60P	809b	32923	Select valid input standards Default=1
COM_VALID_720_59P	809c	32924	Select valid input standards Default=1
COM_VALID_625_25I	809d	32925	Select valid input standards Default=1
COM_VALID_525_29I	809e	32926	Select valid input standards Default=1
COM_OUT_DEFAULT_STD	80f4	33012	Out Std Default=7 1125(1080)/30i=6 1125(1080)/30p=9 1125(1080)/30sf=34 1125(1080)/29sf=35 1125(1080)/25i=8 1125(1080)/25p=11 1125(1080)/25sf=36 1125(1080)/23sf=24 1125(1035)/30i=1 1125(1035)/29i=2 750(720)/60p=16 750(720)/59p=17 750(720)/50p=30 525(480)/29i=19 625(576)/25i=20
COM_REF_HTIM	80fd	33021	Reference horizontal timing Default=0 Min=-3000 Max=3000 Divisor=1
COM_REF_VTIM	80fe	33022	Reference vertical timing Default=0 Min=-1500 Max=1500 Divisor=1
COM_INP_LOSS	8106	33030	Input loss on standard mismatch enable Default=1 No Input=0 In/Out Std.Mismatch=1
COM_ON_LOSS	8107	33031	What to do on input loss Default=2 Freeze Frame=1 Freeze Field=5 Black=2 Input=3 Out Pattern=4
COM_LOG_ENABLE_INPUT_1_SDI_ANC_ERRS	88b8	35000	Enable/Disable logging for Input 1 ANC Errors Default=1
COM_LOG_ENABLE_INPUT_1_SDI_ANC_ERRSECS	88b9	35001	Enable/Disable logging for Input 1 ANC ErrSecs Default=1
COM_LOG_ENABLE_INPUT_1_SDI_ERRS	88ba	35002	Enable/Disable logging for Input 1 Errors Default=1
COM_LOG_ENABLE_INPUT_1_SDI_ERRSEC	88bb	35003	Enable/Disable logging for Input 1 ErrSecs Default=1
COM_LOG_ENABLE_INPUT_1_STATE	88bd	35005	Enable/Disable logging for Input 1 Status Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_1_STATE	88be	35006	Enable/Disable logging for Input 1 Emb.Pair 1 state Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_2_STATE	88bf	35007	Enable/Disable logging for Input 1 Emb.Pair 2 state Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_3_STATE	88c0	35008	Enable/Disable logging for Input 1 Emb.Pair 3 state Default=1

COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_4_STATE	88c1	35009	Enable/Disable logging for Input 1 Emb.Pair 4 state Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_5_STATE	88c2	35010	Enable/Disable logging for Input 1 Emb.Pair 5 state Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_6_STATE	88c3	35011	Enable/Disable logging for Input 1 Emb.Pair 6 state Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_7_STATE	88c4	35012	Enable/Disable logging for Input 1 Emb.Pair 7 state Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_8_STATE	88c5	35013	Enable/Disable logging for Input 1 Emb.Pair 8 state Default=1
COM_LOG_ENABLE_SN	88c7	35015	Enable/Disable logging for Serial No. Default=1
COM_LOG_ENABLE_INPUT_1_STANDARD	88c8	35016	Enable/Disable logging for Input 1 Std. Default=1
COM_LOG_ENABLE_INPUT_1_TYPE	88c9	35017	Enable/Disable logging for Input 1 Type Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_1_TYPE	88ca	35018	Enable/Disable logging for Input 1 Emb.Pair 1 type Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_2_TYPE	88cb	35019	Enable/Disable logging for Input 1 Emb.Pair 2 type Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_3_TYPE	88cc	35020	Enable/Disable logging for Input 1 Emb.Pair 3 type Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_4_TYPE	88cd	35021	Enable/Disable logging for Input 1 Emb.Pair 4 type Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_5_TYPE	88ce	35022	Enable/Disable logging for Input 1 Emb.Pair 5 type Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_6_TYPE	88cf	35023	Enable/Disable logging for Input 1 Emb.Pair 6 type Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_7_TYPE	88d0	35024	Enable/Disable logging for Input 1 Emb.Pair 7 type Default=1
COM_LOG_ENABLE_INPUT_1_EMBEDDED_AUDIO_8_TYPE	88d1	35025	Enable/Disable logging for Input 1 Emb.Pair 8 type Default=1
COM_LOG_ENABLE_AES_INPUT_1_STATE	8b10	35600	Enable/Disable logging for AES Input 1 state Default=1
COM_LOG_ENABLE_AES_INPUT_2_STATE	8b11	35601	Enable/Disable logging for AES Input 2 state Default=1
COM_LOG_ENABLE_AES_INPUT_3_STATE	8b12	35602	Enable/Disable logging for AES Input 3 state Default=1
COM_LOG_ENABLE_AES_INPUT_4_STATE	8b13	35603	Enable/Disable logging for AES Input 4 state Default=1
COM_LOG_ENABLE_AES_INPUT_5_STATE	8b14	35604	Enable/Disable logging for AES Input 5 state Default=1
COM_LOG_ENABLE_AES_INPUT_6_STATE	8b15	35605	Enable/Disable logging for AES Input 6 state Default=1

COM_LOG_ENABLE_AES_INPUT_7_STATE	8b16	35606	Enable/Disable logging for AES Input 7 state Default=1
COM_LOG_ENABLE_AES_INPUT_8_STATE	8b17	35607	Enable/Disable logging for AES Input 8 state Default=1
COM_LOG_ENABLE_AES_OUTPUT_1_STATE	8b24	35620	Enable/Disable logging for AES Output 1 state Default=1
COM_LOG_ENABLE_AES_OUTPUT_2_STATE	8b25	35621	Enable/Disable logging for AES Output 2 state Default=1
COM_LOG_ENABLE_AES_OUTPUT_3_STATE	8b26	35622	Enable/Disable logging for AES Output 3 state Default=1
COM_LOG_ENABLE_AES_OUTPUT_4_STATE	8b27	35623	Enable/Disable logging for AES Output 4 state Default=1
COM_LOG_ENABLE_AES_OUTPUT_5_STATE	8b28	35624	Enable/Disable logging for AES Output 5 state Default=1
COM_LOG_ENABLE_AES_OUTPUT_6_STATE	8b29	35625	Enable/Disable logging for AES Output 6 state Default=1
COM_LOG_ENABLE_AES_OUTPUT_7_STATE	8b2a	35626	Enable/Disable logging for AES Output 7 state Default=1
COM_LOG_ENABLE_AES_OUTPUT_8_STATE	8b2b	35627	Enable/Disable logging for AES Output 8 state Default=1
COM_LOG_ENABLE_AES_INPUT_1_TYPE	8b38	35640	Enable/Disable logging for AES Input 1 type Default=1
COM_LOG_ENABLE_AES_INPUT_2_TYPE	8b39	35641	Enable/Disable logging for AES Input 2 type Default=1
COM_LOG_ENABLE_AES_INPUT_3_TYPE	8b3a	35642	Enable/Disable logging for AES Input 3 type Default=1
COM_LOG_ENABLE_AES_INPUT_4_TYPE	8b3b	35643	Enable/Disable logging for AES Input 4 type Default=1
COM_LOG_ENABLE_AES_INPUT_5_TYPE	8b3c	35644	Enable/Disable logging for AES Input 5 type Default=1
COM_LOG_ENABLE_AES_INPUT_6_TYPE	8b3d	35645	Enable/Disable logging for AES Input 6 type Default=1
COM_LOG_ENABLE_AES_INPUT_7_TYPE	8b3e	35646	Enable/Disable logging for AES Input 7 type Default=1
COM_LOG_ENABLE_AES_INPUT_8_TYPE	8b3f	35647	Enable/Disable logging for AES Input 8 type Default=1
COM_LOG_ENABLE_AES_OUTPUT_1_TYPE	8b4c	35660	Enable/Disable logging for AES Output 1 type Default=1
COM_LOG_ENABLE_AES_OUTPUT_2_TYPE	8b4d	35661	Enable/Disable logging for AES Output 2 type Default=1
COM_LOG_ENABLE_AES_OUTPUT_3_TYPE	8b4e	35662	Enable/Disable logging for AES Output 3 type Default=1
COM_LOG_ENABLE_AES_OUTPUT_4_TYPE	8b4f	35663	Enable/Disable logging for AES Output 4 type Default=1

COM_LOG_ENABLE_AES_OUTPUT_5_TYPE	8b50	35664	Enable/Disable logging for AES Output 5 type Default=1
COM_LOG_ENABLE_AES_OUTPUT_6_TYPE	8b51	35665	Enable/Disable logging for AES Output 6 type Default=1
COM_LOG_ENABLE_AES_OUTPUT_7_TYPE	8b52	35666	Enable/Disable logging for AES Output 7 type Default=1
COM_LOG_ENABLE_AES_OUTPUT_8_TYPE	8b53	35667	Enable/Disable logging for AES Output 8 type Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_1_1_LEVEL	8c3c	35900	Enable/Disable logging for Output Emb.Audio 1-L Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_1_2_LEVEL	8c3d	35901	Enable/Disable logging for Output Emb.Audio 1-R Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_2_1_LEVEL	8c3e	35902	Enable/Disable logging for Output Emb.Audio 2-L Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_2_2_LEVEL	8c3f	35903	Enable/Disable logging for Output Emb.Audio 2-R Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_3_1_LEVEL	8c40	35904	Enable/Disable logging for Output Emb.Audio 3-L Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_3_2_LEVEL	8c41	35905	Enable/Disable logging for Output Emb.Audio 3-R Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_4_1_LEVEL	8c42	35906	Enable/Disable logging for Output Emb.Audio 4-L Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_4_2_LEVEL	8c43	35907	Enable/Disable logging for Output Emb.Audio 4-R Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_5_1_LEVEL	8c44	35908	Enable/Disable logging for Output Emb.Audio 5-L Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_5_2_LEVEL	8c45	35909	Enable/Disable logging for Output Emb.Audio 5-R Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_6_1_LEVEL	8c46	35910	Enable/Disable logging for Output Emb.Audio 6-L Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_6_2_LEVEL	8c47	35911	Enable/Disable logging for Output Emb.Audio 6-R Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_7_1_LEVEL	8c48	35912	Enable/Disable logging for Output Emb.Audio 7-L Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_7_2_LEVEL	8c49	35913	Enable/Disable logging for Output Emb.Audio 7-R Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_8_1_LEVEL	8c4a	35914	Enable/Disable logging for Output Emb.Audio 8-L Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_8_2_LEVEL	8c4b	35915	Enable/Disable logging for Output Emb.Audio 8-R Level Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_1_STATE	8c50	35920	Enable/Disable logging for Output Emb.Pair 1 state Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_2_STATE	8c51	35921	Enable/Disable logging for Output Emb.Pair 2 state Default=1

COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_3_STATE	8c52	35922	Enable/Disable logging for Output Emb.Pair 3 state Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_4_STATE	8c53	35923	Enable/Disable logging for Output Emb.Pair 4 state Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_5_STATE	8c54	35924	Enable/Disable logging for Output Emb.Pair 5 state Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_6_STATE	8c55	35925	Enable/Disable logging for Output Emb.Pair 6 state Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_7_STATE	8c56	35926	Enable/Disable logging for Output Emb.Pair 7 state Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_8_STATE	8c57	35927	Enable/Disable logging for Output Emb.Pair 8 state Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_1_TYPE	8c5a	35930	Enable/Disable logging for Output Emb.Pair 1 type Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_2_TYPE	8c5b	35931	Enable/Disable logging for Output Emb.Pair 2 type Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_3_TYPE	8c5c	35932	Enable/Disable logging for Output Emb.Pair 3 type Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_4_TYPE	8c5d	35933	Enable/Disable logging for Output Emb.Pair 4 type Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_5_TYPE	8c5e	35934	Enable/Disable logging for Output Emb.Pair 5 type Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_6_TYPE	8c5f	35935	Enable/Disable logging for Output Emb.Pair 6 type Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_7_TYPE	8c60	35936	Enable/Disable logging for Output Emb.Pair 7 type Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_8_TYPE	8c61	35937	Enable/Disable logging for Output Emb.Pair 8 type Default=1
COM_LOG_ENABLE_OUTPUT_1_STANDARD	8c64	35940	Enable/Disable logging for Output Standard Default=1
COM_LOG_ENABLE_OUTPUT_1_STATE	8c65	35941	Enable/Disable logging for Output State Default=1
COM_LOG_ENABLE_OUTPUT_1_TYPE	8c66	35942	Enable/Disable logging for Output Type Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_1_DOLBY_E	8c6e	35950	Enable/Disable logging for Emb DolbyE 1 Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_2_DOLBY_E	8c6f	35951	Enable/Disable logging for Emb DolbyE 2 Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_3_DOLBY_E	8c70	35952	Enable/Disable logging for Emb DolbyE 3 Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_4_DOLBY_E	8c71	35953	Enable/Disable logging for Emb DolbyE 4 Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_5_DOLBY_E	8c72	35954	Enable/Disable logging for Emb DolbyE 5 Default=1

COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_6_DOLBY_E	8c73	35955	Enable/Disable logging for Emb DolbyE 6 Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_7_DOLBY_E	8c74	35956	Enable/Disable logging for Emb DolbyE 7 Default=1
COM_LOG_ENABLE_OUTPUT_1_EMBEDDED_AUDIO_8_DOLBY_E	8c75	35957	Enable/Disable logging for Emb DolbyE 8 Default=1
COM_LOG_ENABLE_BUILD_NUMBER	8c96	35990	Enable/Disable logging for Build No. Default=1
COM_LOG_ENABLE_FIRMWARE_VERSION	8c97	35991	Enable/Disable logging for Firmware Ver. Default=1
COM_LOG_ENABLE_HARDWARE_VERSION	8c98	35992	Enable/Disable logging for Hardware Ver. Default=1
COM_LOG_ENABLE_OS_VERSION	8c99	35993	Enable/Disable logging for OS Version Default=1
COM_LOG_ENABLE_UPTIME	8c9a	35994	Enable/Disable logging for Up Time Default=1
COM_RT_DISABLED	8d08	36104	Disable all rolltrack outputs Default=1
COM_SEL_MEMORY	90ed	37101	Default=1 User Memory 1=1 User Memory 2=2 User Memory 3=3 User Memory 4=4 User Memory 5=5 User Memory 6=6 User Memory 7=7 User Memory 8=8 User Memory 9=9 User Memory 10=10 User Memory 11=11 User Memory 12=12 User Memory 13=13 User Memory 14=14 User Memory 15=15 User Memory 16=16
COM_LAST_MEMORY	90f0	37104	Default=0 Divisor=1
COM_VBI_STD	9150	37200	Select std for VBI blank display/set Default=7 1125(1080)/30i=6 1125(1080)/30p=9 1125(1080)/30sf=34 1125(1080)/29i=7 1125(1080)/29p=10 1125(1080)/29sf=35 1125(1080)/25i=8 1125(1080)/25p=11 1125(1080)/25sf=36 1125(1080)/24p=12 1125(1080)/24sf=23 1125(1080)/23p=13 1125(1080)/23sf=24 1125(1035)/30i=1 1125(1035)/29i=2 750(720)/60p=16 750(720)/59p=17 750(720)/50p=30 525(480)/29i=19 625(576)/25i=20
COM_AES_PORT_DIRECTION_1	9614	38420	Set direction of AES port Default=0
COM_AES_PORT_DIRECTION_2	9615	38421	Set direction of AES port Default=0
COM_AES_PORT_DIRECTION_3	9616	38422	Set direction of AES port Default=0
COM_AES_PORT_DIRECTION_4	9617	38423	Set direction of AES port Default=0
COM_AES_PORT_DIRECTION_5	9618	38424	Set direction of AES port Default=0
COM_AES_PORT_DIRECTION_6	9619	38425	Set direction of AES port Default=1
COM_AES_PORT_DIRECTION_7	961a	38426	Set direction of AES port Default=1
COM_AES_PORT_DIRECTION_8	961b	38427	Set direction of AES port Default=1

COM_AES_SOURCE_PAIR_1	96a0	38560	Select AES port for AES source Default=1 AES Port 1=1 AES Port 6=6 AES Port 7=7 AES Port 8=8	AES Port 2=2	AES Port 3=3	AES Port 4=4	AES Port 5=5
COM_AES_SOURCE_PAIR_2	96a1	38561	Select AES port for AES source Default=2 AES Port 1=1 AES Port 6=6 AES Port 7=7 AES Port 8=8	AES Port 2=2	AES Port 3=3	AES Port 4=4	AES Port 5=5
COM_AES_SOURCE_PAIR_3	96a2	38562	Select AES port for AES source Default=3 AES Port 1=1 AES Port 6=6 AES Port 7=7 AES Port 8=8	AES Port 2=2	AES Port 3=3	AES Port 4=4	AES Port 5=5
COM_AES_SOURCE_PAIR_4	96a3	38563	Select AES port for AES source Default=4 AES Port 1=1 AES Port 6=6 AES Port 7=7 AES Port 8=8	AES Port 2=2	AES Port 3=3	AES Port 4=4	AES Port 5=5
COM_AES_SOURCE_PAIR_5	96a4	38564	Select AES port for AES source Default=5 AES Port 1=1 AES Port 6=6 AES Port 7=7 AES Port 8=8	AES Port 2=2	AES Port 3=3	AES Port 4=4	AES Port 5=5
COM_AES_SOURCE_PAIR_6	96a5	38565	Select AES port for AES source Default=6 AES Port 1=1 AES Port 6=6 AES Port 7=7 AES Port 8=8	AES Port 2=2	AES Port 3=3	AES Port 4=4	AES Port 5=5
COM_AES_SOURCE_PAIR_7	96a6	38566	Select AES port for AES source Default=7 AES Port 1=1 AES Port 6=6 AES Port 7=7 AES Port 8=8	AES Port 2=2	AES Port 3=3	AES Port 4=4	AES Port 5=5
COM_AES_SOURCE_PAIR_8	96a7	38567	Select AES port for AES source Default=8 AES Port 1=1 AES Port 6=6 AES Port 7=7 AES Port 8=8	AES Port 2=2	AES Port 3=3	AES Port 4=4	AES Port 5=5
COM_ENGINEER_CHECK_1	84de	34014	Default=0				
COM_ENGINEER_CHECK_2	84df	34015	Default=0				
COM_ENGINEER_CHECK_3	84e0	34016	Default=0				
COM_ENGINEER_CHECK_4	84e1	34017	Default=0				
COM_ENGINEER_CHECK_5	84e2	34018					
COM_ENGINEER_CHECK_6	84e3	34019					
COM_ENGINEER_EDIT_1	84e4	34020					
COM_ENGINEER_EDIT_2	84e5	34021					
COM_ENGINEER_EDIT_3	84e6	34022					
COM_ENGINEER_EDIT_4	84e7	34023					
COM_ENGINEER_EDIT_5	84e8	34024					
COM_ENGINEER_EDIT_6	84e9	34025					
COM_DOLBY_E_AUTO_LINE_STD	96ff	38655	Select standard to display Dolby E Auto-Line for Default=7 1125(1080)/30i=6 1125(1080)/30p=9 1125(1080)/30sf=34 1125(1080)/29sf=35 1125(1080)/25i=8 1125(1080)/25p=11 1125(1080)/25sf=36 1125(1080)/23sf=24 1125(1035)/30i=1 1125(1035)/29i=2 750(720)/60p=16 750(720)/59p=17 750(720)/50p=30 525(480)/29i=19 625(576)/25i=20				
COM_LOG_ENABLE_OUTPUT_1_ANC_STATE	8c6a	35946	Enable/Disable logging for Output ANC embedder state Default=1				
COM_EMBEDDER_PRIORITY	9254	37460	Set priority of ANC embedded data Default=0 Normal=0 Audio (Dolby-E)=1				

Commands Not Stored anywhere

COM_SERIAL	0001	00001	Unit serial number Default=0 Divisor=1
COM_RELEASE	0002	00002	Unit version number Default=0 Divisor=1
COM_RESTART	0004	00004	Restart unit Default=0
COM_BUILDNO	0005	00005	Unit build number Default=0 Divisor=1
COM_ROLLTRACK_IN_14	000e	00014	Rolltrack input command for delays Default=0 Min=0 Max=200000 Divisor=1
COM_ROLLTRACK_IN_15	000f	00015	Rolltrack input command for delays Default=0 Min=0 Max=200000 Divisor=1
COM_ROLLTRACK_IN_16	0010	00016	Rolltrack input command for delays Default=0 Min=0 Max=200000 Divisor=1
COM_ROLLTRACK_IN_17	0011	00017	Rolltrack input command for delays Default=0 Min=0 Max=200000 Divisor=1
COM_VHDL_REVISION	8001	32769	Display firmware version Default=0 Divisor=1
COM_PCB_REVISION	8002	32770	Display PCB revision Default=0 Divisor=1
COM_PRODUCT	8003	32771	Product Default=0 Divisor=1
COM_KOS	8004	32772	KOS Default=0 Divisor=1
COM_VALID_ALL	8084	32900	All input standards valid Default=0
COM_VALID_NONE	8085	32901	NO input standards valid Default=0
COM_CURRENT_DELAY	8101	33025	Internal Video Delay for Synchroniser based modules Default=0 Divisor=100
COM_CRC_ERRORS	811a	33050	CRC error count Default=0 Min=0 Max=70000 Divisor=1
COM_CRC_SECS	811b	33051	CRC Error Seconds Default=0 Divisor=1
COM_CRC_RESET	811c	33052	CRCReset Default=0
COM_ANC_ERRORS	811d	33053	ANC error count Default=0 Min=0 Max=70000 Divisor=1
COM_ANC_SECS	811e	33054	ANC Error Seconds Default=0 Divisor=1
COM_RESET_SECS	811f	33055	Secs since reset Default=0 Divisor=1

COM_LOG_DISPLAY_INPUT_1_SDI_ANC_ERRS	8ca0	36000	Logging state for Input 1 ANC Errors Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_SDI_ANC_ERRSECS	8ca1	36001	Logging state for Input 1 ANC ErrSecs Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_SDI_ERRS	8ca2	36002	Logging state for Input 1 Errors Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_SDI_ERRSEC	8ca3	36003	Logging state for Input 1 ErrSecs Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_STATE	8ca5	36005	Logging state for Input 1 Status Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_1_STATE	8ca6	36006	Logging state for Input 1 Emb.Pair 1 state Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_2_STATE	8ca7	36007	Logging state for Input 1 Emb.Pair 2 state Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_3_STATE	8ca8	36008	Logging state for Input 1 Emb.Pair 3 state Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_4_STATE	8ca9	36009	Logging state for Input 1 Emb.Pair 4 state Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_5_STATE	8caa	36010	Logging state for Input 1 Emb.Pair 5 state Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_6_STATE	8cab	36011	Logging state for Input 1 Emb.Pair 6 state Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_7_STATE	8cac	36012	Logging state for Input 1 Emb.Pair 7 state Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_8_STATE	8cad	36013	Logging state for Input 1 Emb.Pair 8 state Default=0 Divisor=1
COM_LOG_DISPLAY_SN	8caf	36015	Logging state for Serial No. Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_STANDARD	8cb0	36016	Logging state for Input 1 Std. Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_TYPE	8cb1	36017	Logging state for Input 1 Type Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_1_TYPE	8cb2	36018	Logging state for Input 1 Emb.Pair 1 type Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_2_TYPE	8cb3	36019	Logging state for Input 1 Emb.Pair 2 type Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_3_TYPE	8cb4	36020	Logging state for Input 1 Emb.Pair 3 type Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_4_TYPE	8cb5	36021	Logging state for Input 1 Emb.Pair 4 type Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_5_TYPE	8cb6	36022	Logging state for Input 1 Emb.Pair 5 type Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_6_TYPE	8cb7	36023	Logging state for Input 1 Emb.Pair 6 type Default=0 Divisor=1

COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_7_TYPE	8cb8	36024	Logging state for Input 1 Emb.Pair 7 type Default=0 Divisor=1
COM_LOG_DISPLAY_INPUT_1_EMBEDDED_AUDIO_8_TYPE	8cb9	36025	Logging state for Input 1 Emb.Pair 8 type Default=0 Divisor=1
COM_RT_INDEX	8d04	36100	Select rolltrack to edit Default=1 Min=1 Max=16 Divisor=1
COM_RT_SOURCE	8d05	36101	Source for Rolltrack Default=-1 Unused=-1 Video Delay=0 Input Present=1 Input Loss=2 O/p Freeze=3 O/p UnFreeze=4 De-embed 1 Present=5 De-embed 1 Lost=6 De-embed 2 Present=7 De-embed 2 Lost=8 De-embed 3 Present=9 De-embed 3 Lost=10 De-embed 4 Present=11 De-embed 4 Lost=12 De-embed 5 Present=13 De-embed 5 Lost=14 De-embed 6 Present=15 De-embed 6 Lost=16 De-embed 7 Present=17 De-embed 7 Lost=18 De-embed 8 Present=19 De-embed 8 Lost=20 AES 1 Present=21 AES 1 Lost=22 AES 2 Present=23 AES 2 Lost=24 AES 3 Present=25 AES 3 Lost=26 AES 4 Present=27 AES 4 Lost=28 AES 5 Present=29 AES 5 Lost=30 AES 6 Present=31 AES 6 Lost=32 AES 7 Present=33 AES 7 Lost=34 AES 8 Present=35 AES 8 Lost=36
COM_RT_ADDR	8d06	36102	Unit address for Rolltrack message
COM_RT_CMD	8d07	36103	Command to send for Rolltrack message
COM_RT_STATUS	8d09	36105	Rolltrack status Default=0 Divisor=1
COM_RT_SENDING	8d0a	36106	Rolltrack sending status: true/false Default=0 Divisor=1
COM_TEST_STOP	8e96	36502	Abort current diagnostic test Default=0
COM_TEST_ALL	8e97	36503	Run all diagnostic tests Default=0
COM_HEATSOAK	8e98	36504	Run all tests for heatsoak Default=0
COM_TEST_PROGRESS	8e99	36505	Show Progress of current test Default=0 Divisor=1
COM_TEST_DESCRIPTION	8e9a	36506	Display current test name Default=0 Divisor=1
COM_TEST_LAST_ERROR	8e9b	36507	Display last diagnostic error message Default=0 Divisor=1
COM_TEST_VIDRAM_ERRORS	8eb5	36533	Display Diagnostic errors for Video memory Default=0 Min=0 Max=5000 Divisor=1
COM_TEST_SDI1_ERRORS	8ea6	36518	Display Diagnostic errors for SDI o/p 1 Default=0 Min=0 Max=5000 Divisor=1
COM_TEST_LOOP_COUNT	8eae	36526	Display number of loops that a test has run Default=0 Min=0 Max=5000 Divisor=1
COM_TEST_AES_ERRORS	8eb9	36537	Display Diagnostic errors for AES ports Default=0 Min=0 Max=5000 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_1_STATE	8ef8	36600	Logging state for AES Input 1 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_2_STATE	8ef9	36601	Logging state for AES Input 2 state Default=0 Divisor=1

COM_LOG_DISPLAY_AES_INPUT_3_STATE	8efa	36602	Logging state for AES Input 3 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_4_STATE	8efb	36603	Logging state for AES Input 4 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_5_STATE	8efc	36604	Logging state for AES Input 5 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_6_STATE	8efd	36605	Logging state for AES Input 6 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_7_STATE	8efe	36606	Logging state for AES Input 7 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_8_STATE	8eff	36607	Logging state for AES Input 8 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_1_STATE	8f0c	36620	Logging state for AES Output 1 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_2_STATE	8f0d	36621	Logging state for AES Output 2 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_3_STATE	8f0e	36622	Logging state for AES Output 3 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_4_STATE	8f0f	36623	Logging state for AES Output 4 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_5_STATE	8f10	36624	Logging state for AES Output 5 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_6_STATE	8f11	36625	Logging state for AES Output 6 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_7_STATE	8f12	36626	Logging state for AES Output 7 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_8_STATE	8f13	36627	Logging state for AES Output 8 state Default=0 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_1_TYPE	8f20	36640	Logging state for AES Input 1 type Default=0 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_2_TYPE	8f21	36641	Logging state for AES Input 2 type Default=0 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_3_TYPE	8f22	36642	Logging state for AES Input 3 type Default=0 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_4_TYPE	8f23	36643	Logging state for AES Input 4 type Default=0 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_5_TYPE	8f24	36644	Logging state for AES Input 5 type Default=0 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_6_TYPE	8f25	36645	Logging state for AES Input 6 type Default=0 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_7_TYPE	8f26	36646	Logging state for AES Input 7 type Default=0 Divisor=1
COM_LOG_DISPLAY_AES_INPUT_8_TYPE	8f27	36647	Logging state for AES Input 8 type Default=0 Divisor=1

COM_LOG_DISPLAY_AES_OUTPUT_1_TYPE	8f34	36660	Logging state for AES Output 1 type Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_2_TYPE	8f35	36661	Logging state for AES Output 2 type Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_3_TYPE	8f36	36662	Logging state for AES Output 3 type Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_4_TYPE	8f37	36663	Logging state for AES Output 4 type Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_5_TYPE	8f38	36664	Logging state for AES Output 5 type Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_6_TYPE	8f39	36665	Logging state for AES Output 6 type Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_7_TYPE	8f3a	36666	Logging state for AES Output 7 type Default=0 Divisor=1
COM_LOG_DISPLAY_AES_OUTPUT_8_TYPE	8f3b	36667	Logging state for AES Output 8 type Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_1_1_LEVEL		9024 36900	Logging state for Output Emb.Audio 1-L Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_1_2_LEVEL		9025 36901	Logging state for Output Emb.Audio 1-R Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_2_1_LEVEL		9026 36902	Logging state for Output Emb.Audio 2-L Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_2_2_LEVEL		9027 36903	Logging state for Output Emb.Audio 2-R Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_3_1_LEVEL		9028 36904	Logging state for Output Emb.Audio 3-L Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_3_2_LEVEL		9029 36905	Logging state for Output Emb.Audio 3-R Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_4_1_LEVEL		902a 36906	Logging state for Output Emb.Audio 4-L Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_4_2_LEVEL		902b 36907	Logging state for Output Emb.Audio 4-R Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_5_1_LEVEL		902c 36908	Logging state for Output Emb.Audio 5-L Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_5_2_LEVEL		902d 36909	Logging state for Output Emb.Audio 5-R Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_6_1_LEVEL		902e 36910	Logging state for Output Emb.Audio 6-L Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_6_2_LEVEL		902f 36911	Logging state for Output Emb.Audio 6-R Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_7_1_LEVEL		9030 36912	Logging state for Output Emb.Audio 7-L Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_7_2_LEVEL		9031 36913	Logging state for Output Emb.Audio 7-R Level Default=0 Divisor=1

COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_8_1_LEVEL	9032	36914	Logging state for Output Emb.Audio 8-L Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_8_2_LEVEL	9033	36915	Logging state for Output Emb.Audio 8-R Level Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_1_STATE	9038	36920	Logging state for Output Emb.Pair 1 state Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_2_STATE	9039	36921	Logging state for Output Emb.Pair 2 state Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_3_STATE	903a	36922	Logging state for Output Emb.Pair 3 state Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_4_STATE	903b	36923	Logging state for Output Emb.Pair 4 state Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_5_STATE	903c	36924	Logging state for Output Emb.Pair 5 state Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_6_STATE	903d	36925	Logging state for Output Emb.Pair 6 state Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_7_STATE	903e	36926	Logging state for Output Emb.Pair 7 state Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_8_STATE	903f	36927	Logging state for Output Emb.Pair 8 state Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_1_TYPE	9042	36930	Logging state for Output Emb.Pair 1 type Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_2_TYPE	9043	36931	Logging state for Output Emb.Pair 2 type Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_3_TYPE	9044	36932	Logging state for Output Emb.Pair 3 type Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_4_TYPE	9045	36933	Logging state for Output Emb.Pair 4 type Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_5_TYPE	9046	36934	Logging state for Output Emb.Pair 5 type Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_6_TYPE	9047	36935	Logging state for Output Emb.Pair 6 type Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_7_TYPE	9048	36936	Logging state for Output Emb.Pair 7 type Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_8_TYPE	9049	36937	Logging state for Output Emb.Pair 8 type Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_STANDARD	904c	36940	Logging state for Output Standard Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_STATE	904d	36941	Logging state for Output State Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_TYPE	904e	36942	Logging state for Output Type Default=0 Divisor=1
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_1_DOLBY_E		9056 36950	Logging state for Emb DolbyE 1 Default=0 Divisor=1

COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_2_DOLBY_E	9057	36951	Logging state for Emb DolbyE 2 Default=0	Divisor=1															
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_3_DOLBY_E	9058	36952	Logging state for Emb DolbyE 3 Default=0	Divisor=1															
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_4_DOLBY_E	9059	36953	Logging state for Emb DolbyE 4 Default=0	Divisor=1															
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_5_DOLBY_E	905a	36954	Logging state for Emb DolbyE 5 Default=0	Divisor=1															
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_6_DOLBY_E	905b	36955	Logging state for Emb DolbyE 6 Default=0	Divisor=1															
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_7_DOLBY_E	905c	36956	Logging state for Emb DolbyE 7 Default=0	Divisor=1															
COM_LOG_DISPLAY_OUTPUT_1_EMBEDDED_AUDIO_8_DOLBY_E	905d	36957	Logging state for Emb DolbyE 8 Default=0	Divisor=1															
COM_LOG_DISPLAY_BUILD_NUMBER	907e	36990	Logging state for Build No. Default=0	Divisor=1															
COM_LOG_DISPLAY_FIRMWARE_VERSION	907f	36991	Logging state for Firmware Ver. Default=0	Divisor=1															
COM_LOG_DISPLAY_HARDWARE_VERSION	9080	36992	Logging state for Hardware Ver. Default=0	Divisor=1															
COM_LOG_DISPLAY_OS_VERSION	9081	36993	Logging state for OS Version Default=0	Divisor=1															
COM_LOG_DISPLAY_UPTIME	9082	36994	Logging state for Up Time Default=0	Divisor=1															
COM_MEM_FACTORY	908a	37002	Recall factory defaults Default=0																
COM_RECALL_MEMORY	90ec	37100	Default=0	User Memory 1=1	User Memory 2=2	User Memory 3=3	User Memory 4=4	User Memory 5=5	User Memory 6=6	User Memory 7=7	User Memory 8=8	User Memory 9=9	User Memory 10=10	User Memory 11=11	User Memory 12=12	User Memory 13=13	User Memory 14=14	User Memory 15=15	User Memory 16=16
COM_SAVE_MEMORY	90ee	37102	Default=0																
COM_MEMORY_NAME	90ef	37103																	
COM_VBI_BLANK_ALL	9151	37201	Blank all valid lines Default=0																
COM_VBI_BLANK_NONE	9152	37202	Blank no lines Default=0																
COM_VBI_BLANK_01	915a	37210	VBI Blank checkbox - depends on standard selected Default=0																
COM_VBI_BLANK_02	915b	37211	VBI Blank checkbox - depends on standard selected Default=0																
COM_VBI_BLANK_03	915c	37212	VBI Blank checkbox - depends on standard selected Default=0																
COM_VBI_BLANK_04	915d	37213	VBI Blank checkbox - depends on standard selected Default=0																
COM_VBI_BLANK_05	915e	37214	VBI Blank checkbox - depends on standard selected Default=0																

COM_VBI_BLANK_06	915f	37215	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_07	9160	37216	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_08	9161	37217	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_09	9162	37218	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_10	9163	37219	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_11	9164	37220	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_12	9165	37221	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_13	9166	37222	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_14	9167	37223	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_15	9168	37224	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_16	9169	37225	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_17	916a	37226	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_18	916b	37227	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_19	916c	37228	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_20	916d	37229	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_21	916e	37230	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_22	916f	37231	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_23	9170	37232	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_24	9171	37233	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_25	9172	37234	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_26	9173	37235	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_27	9174	37236	VBI Blank checkbox - depends on standard selected Default=0

COM_VBI_BLANK_28	9175	37237	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_29	9176	37238	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_30	9177	37239	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_31	9178	37240	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_32	9179	37241	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_33	917a	37242	VBI Blank checkbox - depends on standard selected Default=0
COM_VBI_BLANK_34	917b	37243	VBI Blank checkbox - depends on standard selected Default=0
COM_EMB_CLIP_GROUP1_PAIR_1L	92a4	37540	Embedded audio output clip Default=0 Divisor=1
COM_EMB_CLIP_GROUP1_PAIR_1R	92a5	37541	Embedded audio output clip Default=0 Divisor=1
COM_EMB_CLIP_GROUP1_PAIR_2L	92a6	37542	Embedded audio output clip Default=0 Divisor=1
COM_EMB_CLIP_GROUP1_PAIR_2R	92a7	37543	Embedded audio output clip Default=0 Divisor=1
COM_EMB_CLIP_GROUP2_PAIR_1L	92a8	37544	Embedded audio output clip Default=0 Divisor=1
COM_EMB_CLIP_GROUP2_PAIR_1R	92a9	37545	Embedded audio output clip Default=0 Divisor=1
COM_EMB_CLIP_GROUP2_PAIR_2L	92aa	37546	Embedded audio output clip Default=0 Divisor=1
COM_EMB_CLIP_GROUP2_PAIR_2R	92ab	37547	Embedded audio output clip Default=0 Divisor=1
COM_EMB_CLIP_GROUP3_PAIR_1L	92ac	37548	Embedded audio output clip Default=0 Divisor=1
COM_EMB_CLIP_GROUP3_PAIR_1R	92ad	37549	Embedded audio output clip Default=0 Divisor=1
COM_EMB_CLIP_GROUP3_PAIR_2L	92ae	37550	Embedded audio output clip Default=0 Divisor=1
COM_EMB_CLIP_GROUP3_PAIR_2R	92af	37551	Embedded audio output clip Default=0 Divisor=1
COM_EMB_CLIP_GROUP4_PAIR_1L	92b0	37552	Embedded audio output clip Default=0 Divisor=1
COM_EMB_CLIP_GROUP4_PAIR_1R	92b1	37553	Embedded audio output clip Default=0 Divisor=1
COM_EMB_CLIP_GROUP4_PAIR_2L	92b2	37554	Embedded audio output clip Default=0 Divisor=1

COM_EMB_CLIP_GROUP4_PAIR_2R	92b3	37555	Embedded audio output clip Default=0 Divisor=1
COM_MIXER1_SOURCE1_CLIP	9380	37760	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER1_SOURCE2_CLIP	9381	37761	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER1_SOURCE3_CLIP	9382	37762	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER1_SOURCE4_CLIP	9383	37763	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER2_SOURCE1_CLIP	9384	37764	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER2_SOURCE2_CLIP	9385	37765	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER2_SOURCE3_CLIP	9386	37766	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER2_SOURCE4_CLIP	9387	37767	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER3_SOURCE1_CLIP	9388	37768	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER3_SOURCE2_CLIP	9389	37769	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER3_SOURCE3_CLIP	938a	37770	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER3_SOURCE4_CLIP	938b	37771	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER4_SOURCE1_CLIP	938c	37772	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER4_SOURCE2_CLIP	938d	37773	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER4_SOURCE3_CLIP	938e	37774	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER4_SOURCE4_CLIP	938f	37775	Audio Mixer source clipped Default=0 Divisor=1
COM_MIXER1_MIX_CLIP	93a8	37800	Audio Mixer output clipped Default=0 Divisor=1
COM_MIXER2_MIX_CLIP	93a9	37801	Audio Mixer output clipped Default=0 Divisor=1
COM_MIXER3_MIX_CLIP	93aa	37802	Audio Mixer output clipped Default=0 Divisor=1
COM_MIXER4_MIX_CLIP	93ab	37803	Audio Mixer output clipped Default=0 Divisor=1
COM_AUDIO_DELAY_A	94a0	38048	Current Value for Audio Delay A Default=0 Divisor=100

COM_AUDIO_DELAY_B	94b4	38068	Current Value for Audio Delay A Default=0	Divisor=100
COM_AES_DELAY_01_LIMIT	959c	38300	Default=0	Divisor=1
COM_AES_DELAY_02_LIMIT	959d	38301	Default=0	Divisor=1
COM_AES_DELAY_03_LIMIT	959e	38302	Default=0	Divisor=1
COM_AES_DELAY_04_LIMIT	959f	38303	Default=0	Divisor=1
COM_AES_DELAY_05_LIMIT	95a0	38304	Default=0	Divisor=1
COM_AES_DELAY_06_LIMIT	95a1	38305	Default=0	Divisor=1
COM_AES_DELAY_07_LIMIT	95a2	38306	Default=0	Divisor=1
COM_AES_DELAY_08_LIMIT	95a3	38307	Default=0	Divisor=1
COM_DELAY_01_LIMIT	95a4	38308	Default=0	Divisor=1
COM_DELAY_02_LIMIT	95a5	38309	Default=0	Divisor=1
COM_DELAY_03_LIMIT	95a6	38310	Default=0	Divisor=1
COM_DELAY_04_LIMIT	95a7	38311	Default=0	Divisor=1
COM_DELAY_05_LIMIT	95a8	38312	Default=0	Divisor=1
COM_DELAY_06_LIMIT	95a9	38313	Default=0	Divisor=1
COM_DELAY_07_LIMIT	95aa	38314	Default=0	Divisor=1
COM_DELAY_08_LIMIT	95ab	38315	Default=0	Divisor=1
COM_AES_CLIP_1L	9678	38520	AES audio output clip Default=0	Divisor=1
COM_AES_CLIP_1R	9679	38521	AES audio output clip Default=0	Divisor=1
COM_AES_CLIP_2L	967a	38522	AES audio output clip Default=0	Divisor=1
COM_AES_CLIP_2R	967b	38523	AES audio output clip Default=0	Divisor=1
COM_AES_CLIP_3L	967c	38524	AES audio output clip Default=0	Divisor=1
COM_AES_CLIP_3R	967d	38525	AES audio output clip Default=0	Divisor=1
COM_AES_CLIP_4L	967e	38526	AES audio output clip Default=0	Divisor=1
COM_AES_CLIP_4R	967f	38527	AES audio output clip Default=0	Divisor=1
COM_AES_CLIP_5L	9680	38528	AES audio output clip Default=0	Divisor=1
COM_AES_CLIP_5R	9681	38529	AES audio output clip Default=0	Divisor=1
COM_AES_CLIP_6L	9682	38530	AES audio output clip Default=0	Divisor=1
COM_AES_CLIP_6R	9683	38531	AES audio output clip Default=0	Divisor=1

COM_AES_CLIP_7L	9684	38532	AES audio output clip Default=0 Divisor=1			
COM_AES_CLIP_7R	9685	38533	AES audio output clip Default=0 Divisor=1			
COM_AES_CLIP_8L	9686	38534	AES audio output clip Default=0 Divisor=1			
COM_AES_CLIP_8R	9687	38535	AES audio output clip Default=0 Divisor=1			
COM_DOLBY_E_LINE_NUMBER	96fb	38651	Default=0 Divisor=1			
COM_DOLBY_E_STATUS	96fc	38652	Default=0 Divisor=1			
COM_DOLBY_E_TIMING	96fd	38653	Default=0 Divisor=100			
COM_DOLBY_E_ERROR	96fe	38654	Default=0 Divisor=1			
COM_PRODUCT_TYPE_EDIT	8008	32776	Edit product type (On Factory Test Only) Default=462 IQMUX46=389 IQMUX47=390 IQMUX48=472 IQMUX49=473			
COM_SERIAL_NO_EDIT	8006	32774	Edit serial number (On Factory Test Only)			
COM_SAVE_SERIAL_BOARD	8007	32775	Save serial number/board type (On Factory Test Only) Default=0			
COM_TEST_VIDRAM_LOOP	8eb3	36531	Run Logo SDRam diagnostic test in a loop until manually stopped Default=0			
COM_TEST_VIDRAM_RUN	8eb4	36532	Run Logo SDRam diagnostic test Default=0			
COM_TEST_SDI1_LOOP	8ea4	36516	Run SDI o/p 1 to i/p 1 diagnostic test in a loop until manually stopped Default=0			
COM_TEST_SDI1_RUN	8ea5	36517	Run SDI o/p 1 to i/p 1 diagnostic test Default=0			
COM_TEST_AES_LOOP	8eb7	36535	Run SDI o/p 2 to i/p 1 diagnostic test in a loop until manually stopped Default=0			
COM_TEST_AES_RUN	8eb8	36536	Run SDI o/p 2 to i/p 1 diagnostic test Default=0			
COM_TEST_SRC_ERRORS	8ebc	36540	Display Diagnostic errors for SDI o/p 2 Default=0 Min=0 Max=5000 Divisor=1			
COM_TEST_SRC_RUN	8ebb	36539	Run SDI o/p 2 to i/p 1 diagnostic test Default=0			
COM_TEST_SRC_LOOP	8eba	36538	Run SDI o/p 2 to i/p 1 diagnostic test in a loop until manually stopped Default=0			
COM_XILINX_ADDRESS	84d1	34001	Default=0 Min=0 Max=255 Divisor=1			
COM_XILINX_BLOCK	84d0	34000	Default=0 Min=0 Max=4 Divisor=1			
COM_XILINX_DATA_LSB	84d4	34004	Default=0 Min=0 Max=255 Divisor=1			
COM_XILINX_EDIT_DATA_BINARY	84d6	34006				
COM_XILINX_DATA_READ	84d3	34003	Default=0 Divisor=1			
COM_XILINX_WRITE_REG_NAME	84d2	34002	Default=0 Divisor=1			
COM_XILINX_EDIT_DATA	84d7	34007				

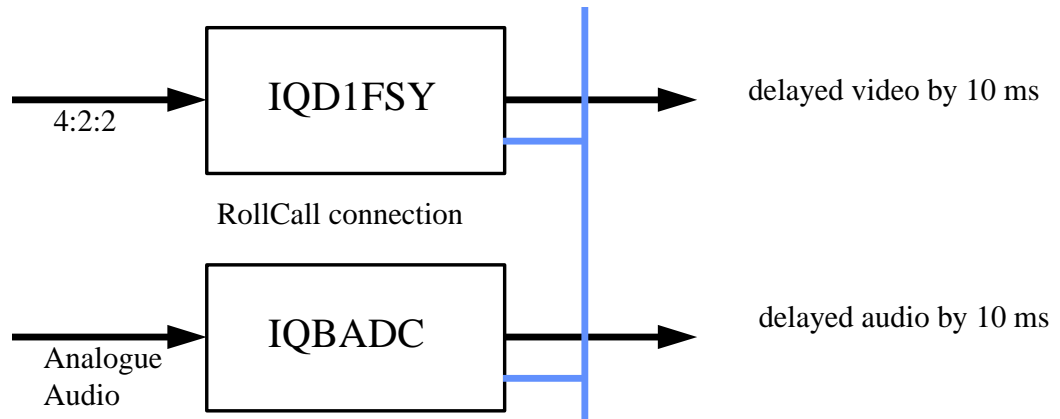
COM_XILINX_READ_REG_NAME	84d8	34008	Default=0	Divisor=1
COM_XILINX_WATCH_REG	84d9	34009	set true to watch specified xilinx register Default=0	
COM_XILINX_DATA_MSB	84d5	34005	Default=0	Min=0 Max=255 Divisor=1
COM_XILINX_DATA	84da	34010	16 bit combination of MSB and LSB data Default=0 Divisor=1	
COM_XILINX_ENGINEER_PASSWORD	84db	34011		
COM_XILINX_SHOW_ENGINEER_PAGE	84dc	34012	Default=0	
COM_XILINX_ENGINEER_UNDO_ALL	84dd	34013	Default=0	
COM_XILINX_SHOW_ENGINEER_PAGE2	8502	34050	Default=0	
COM_CLEAR_MEMORY	90f1	37105	Delete User Memory	
COM_DOLBY_E_AUTO_LINE	9700	38656	Select standard to display Dolby E Auto-Line for Default=1 Min=1 Max=10000 Divisor=1	
COM_LOG_DISPLAY_OUTPUT_1_ANC_STATE	9052	36946	Logging state for Output ANC embedder state Default=0 Divisor=1	
COM_DOLBY_E_SAMPLE_NUMBER	9701	38657	Displays sample value for Dolby-E Timing Default=0 Divisor=1	

RollTrack Audio Delay Tracking

RollTrack is a feature of RollCall™ (Snell's proprietary remote control system), that allows devices to communicate across the RollCall network with no direct user intervention.

RollTrack Audio Delay Tracking enables Snell RollCall™ compatible audio delay products to track delay introduced by RollCall™ compatible video processing products.

The simplest configuration is a single video unit and a single audio delay in a RollCall™ system. The audio delay will have the same delay as through the video path. If the delay changes the audio delay will track.



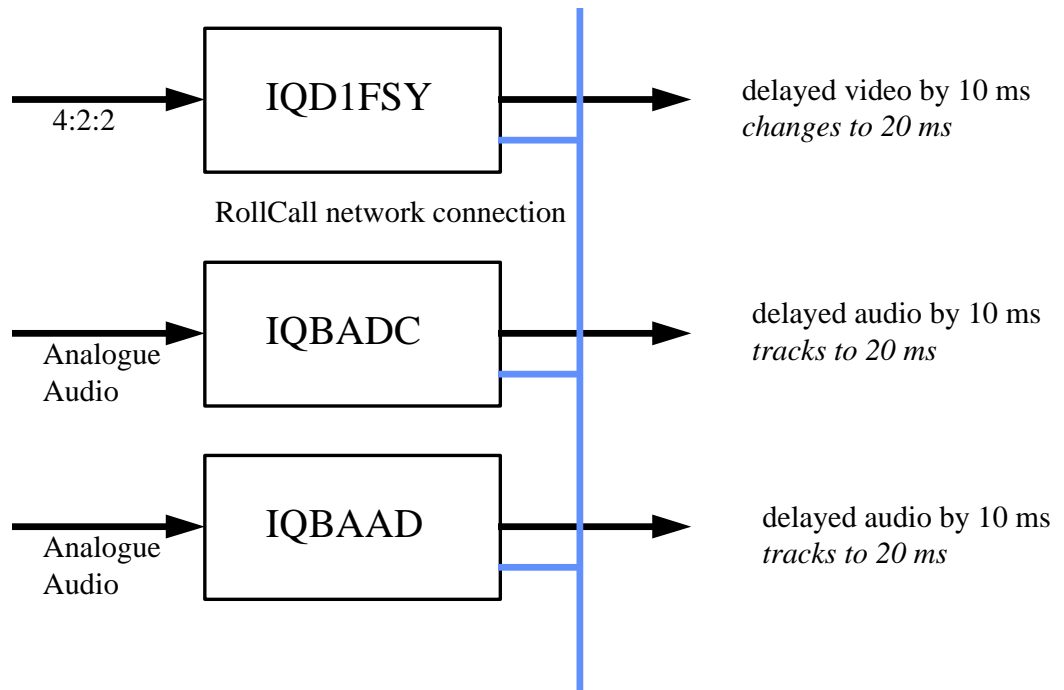
The next level of configuration is where there are multiple Frame Synchronizers (for example) each connected through RollCall™ to their own tracking Audio Delay. (It is worth stating that the synchronizers and audio delays do not have to be in the same enclosure; the addressing scheme, discussed later, allows for the units to be positioned anywhere in the RollCall™ domain.)

The maximum number of video units and audio delays in a RollCall™ system is set by the maximum limit of the number of modules in a RollCall™ network and is currently 3840 on a single network without bridges.

The unique identification of the destination unit (a decimal number) for various modules is as follows:

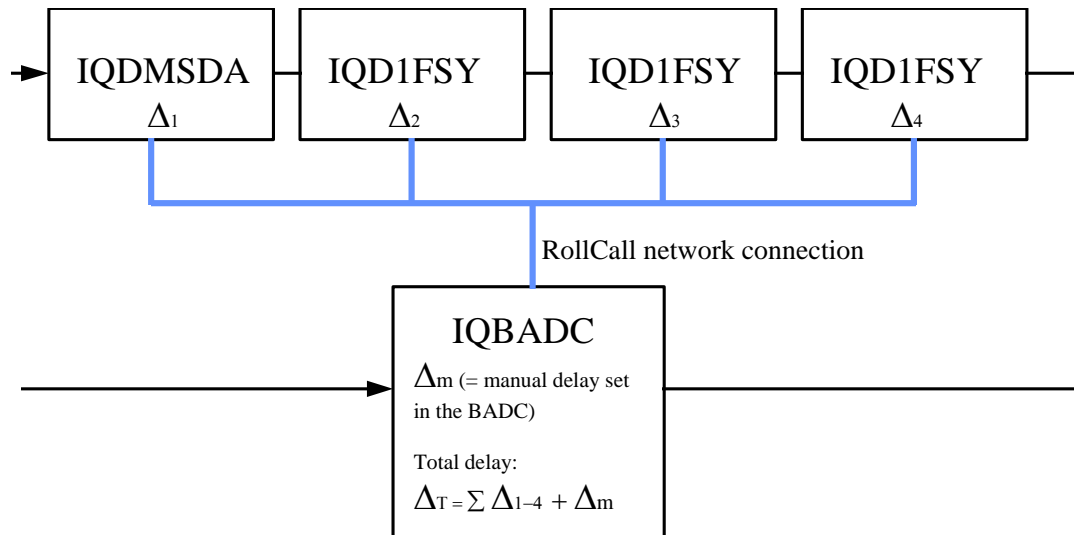
Module	ID
IQBADC	51
IQBDAC	52
IQBAAD	53
IQBDAD	54
IQBSYN	89
IQBADCD	107

The next level of complexity is a *vertical delay cluster* where a video unit can have up to eight audio delays tracking - of the same or different types.



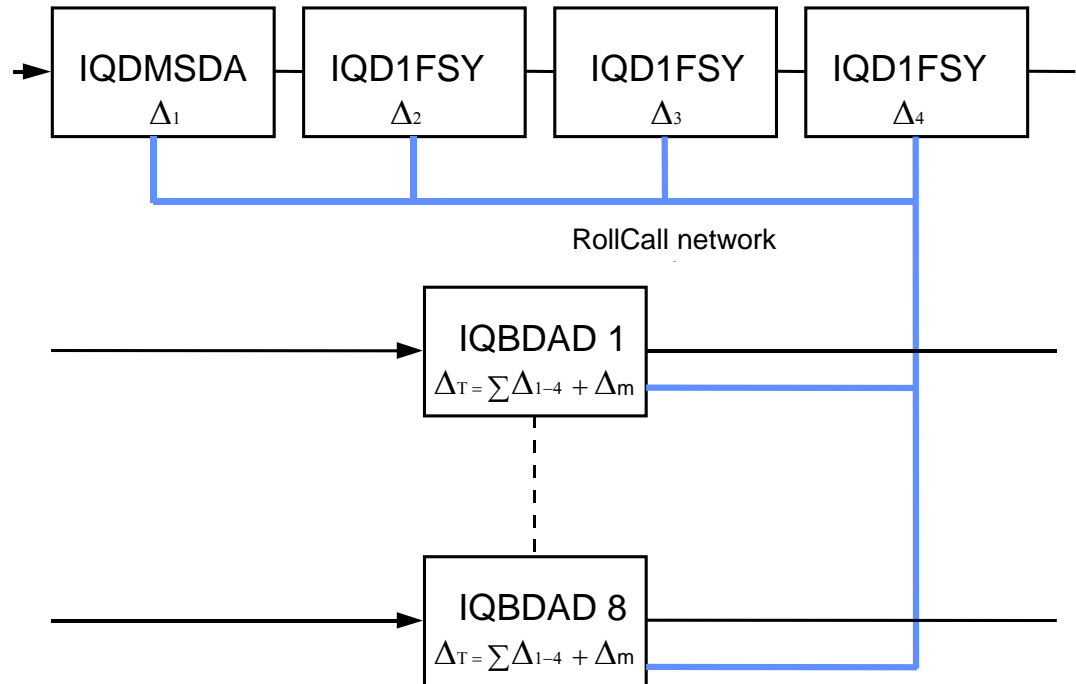
From one to eight audio delay products can be connected via RollCall™ to a single frame synchronizer, for example. If the synchronizer delay changes, then however many audio delays are connected will track the delay. The audio delays can also have a manual delay which will be added to the RollTrack delay.

The next level of complexity is a *horizontal delay cluster* where an audio delay can track up to four video units.



The total delay time through the audio delay is then the sum of the individual delays introduced by the video units plus the manual delay of the audio unit. The manual delay can be set to compensate for any fixed propagation delay in the video path or may be set to zero.

The next level of complexity is a *matrix delay cluster* where each audio delay (up to eight) can track up to four video units. This configuration is in effect a four by eight matrix of video units and audio delay units. The total delay time through the audio delay units is then the sum of the individual delays introduced by the video units plus the manual delay of the audio unit.



As any of the delay times change in the video path so will the audio delay time track this delay.

A virtual connection is made between from, say, an IQD1FSY to an IQBDAD by:

selecting the *Setup...* Menu of the IQD1FSY

then selecting the *Audio_Delay...* Menu

then choosing from *Unit_1* to *Unit_8*

then entering the unique network address of the IQBDAD in the form $n\text{nnn}:x\text{x}:y\text{y}*z*d$

where $n\text{nnn}$ = network address and in most cases will be 0000(hex);

$x\text{x}$ = IQ enclosure address (hex);

$y\text{y}$ = slot address of the IQBDAD (hex)

z = the connection (or channel) number (decimal) - see table below.

d = the unique identification of the destination unit (decimal) The ID entered must match the receiving units own ID or else the command will be ignored. If the ID value is set to 00, the receiving unit does not perform an ID match and will always accept the incoming command

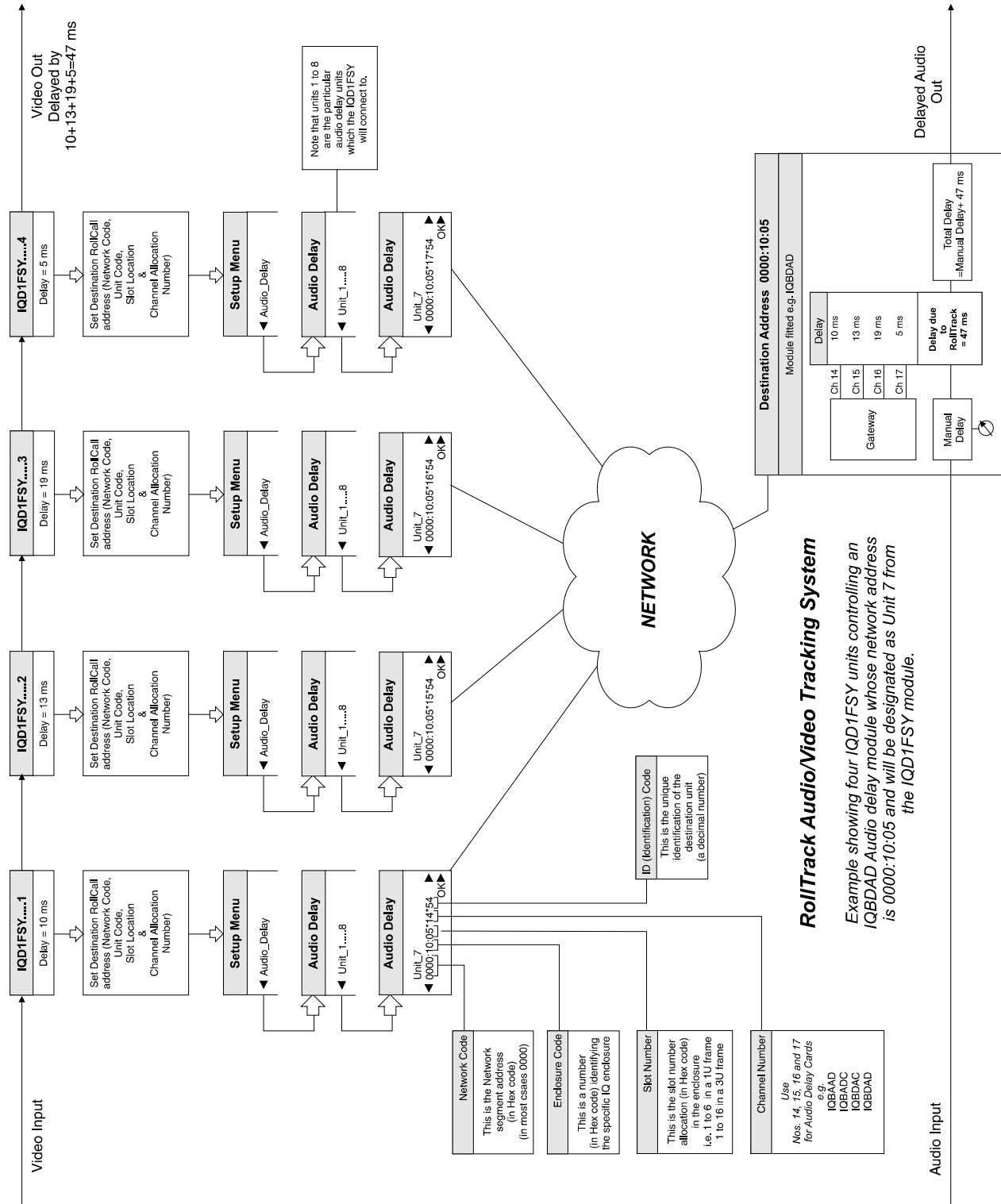
then selecting the *Delay...* Menu of the IQBDAD

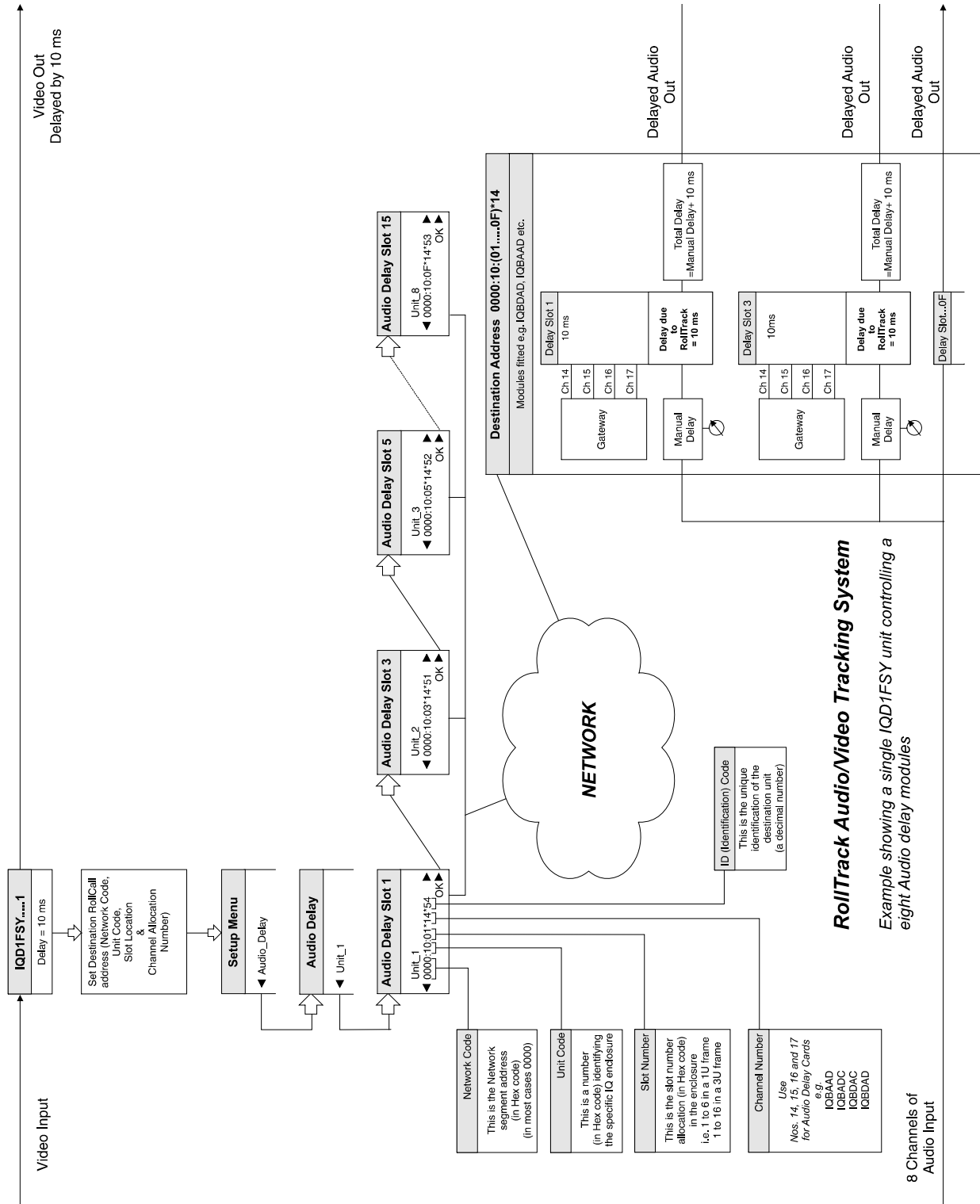
then selecting *RollTrack*

Example of Network Addresses with Channel Numbers and ID Numbers

	D1FSY 1	D1FSY 2	D1FSY 3	D1FSY 4
Audio delay 1	0000:10:01*14*54	0000:10:01*15*54	0000:10:01*16*54	0000:10:01*17*54
Audio delay 2	0000:10:03*14*54	0000:10:03*15*54	0000:10:03*16*54	0000:10:03*17*54
Audio delay 3	0000:10:05*14*54	0000:10:05*15*54	0000:10:05*16*54	0000:10:05*17*54
Audio delay 4	0000:10:07*14*54	0000:10:07*15*54	0000:10:07*16*54	0000:10:07*17*54
Audio delay 5	0000:10:09*14*54	0000:10:09*15*54	0000:10:09*16*54	0000:10:09*17*54
Audio delay 6	0000:10:0B*14*54	0000:10:0B*15*54	0000:10:0B*16*54	0000:10:0B*17*54
Audio delay 7	0000:10:0D*14*54	0000:10:0D*15*54	0000:10:0D*16*54	0000:10:0D*17*54
Audio delay 8	0000:10:0F*14*54	0000:10:0F*15*54	0000:10:0F*16*54	0000:10:0F*17*54

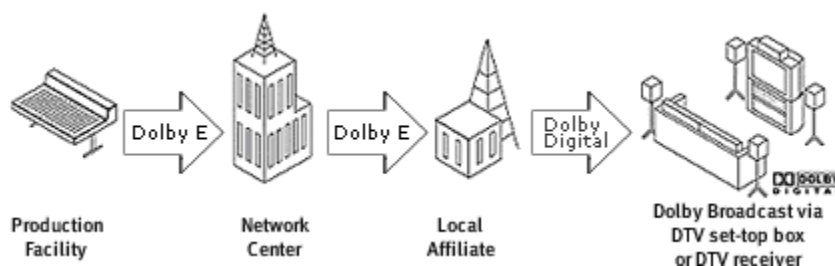
The most complex system would be an array of matrix delay clusters





Dolby-E

What is Dolby E?



Dolby E is a digital audio technology optimized for the distribution of surround and multichannel audio through digital two-channel postproduction and broadcasting infrastructures.

The Dolby E signal does not reach viewers at home. It is decoded back to baseband audio just prior to the final DTV transmission and then re-encoded into the final audio format specified by the various DTV emission systems (for example, Dolby Digital in ATSC, DVB, satellite, and cable systems; and AAC for ISDB in Japan).

With Dolby E, up to eight channels of audio, plus consumer and professional metadata, can be distributed via any stereo (AES/EBU) channel or recorded onto two audio tracks of conventional digital video tapes, video servers, communication links, switchers, and routers. Because the frame rate of Dolby E matches that of the video it accompanies, programs can be effortlessly switched, edited, and successfully encoded and decoded many times throughout the various stages of the broadcast chain. Audio/video synchronization is also simplified, with exactly one frame of delay added per Dolby E encode or decode stage.

Dolby E and Metadata

Metadata allows content providers unprecedented control over how a program will be reproduced in the home. Dolby E conveniently transports both consumer and professional metadata created during program production. Consumer parameters (transferred as a serial data stream from Dolby E to Dolby Digital codecs during the final audio encode, just prior to multiplexing with the digital video for final DTV transmission) are carried in both the Dolby E and the Dolby Digital bitstreams, while professional parameters are carried only in Dolby E and never reach viewers. All metadata parameters can pass unchanged through the various broadcast distribution stages.

Dolby E Partner Program

The Dolby E Partner Program provides broadcasters and systems designers with information about Dolby E compatibility of professional broadcast products. This information will help you plan your product purchase and system design decisions to create a clear path in your facility for the benefits and advantages of Dolby E technology.

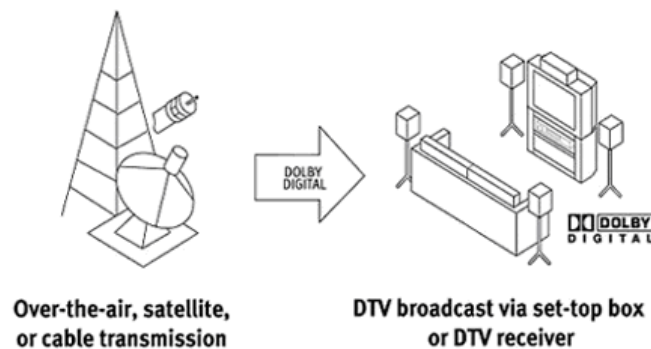
16 and 20-bit Dolby E

Any signal path that can carry a 16- or 20-bit audio signal, SMPTE 302M compatible, can carry Dolby E.

If the supported word length is 16 bits, the two channels together will offer a bandwidth of 1.536 Mbps, which Dolby E can use to carry six discrete audio channels plus metadata (descriptive and playback-control data related to the audio).

If 20-bit word length is available, the two channels will yield a combined bit rate of 1.92 kbps, which Dolby E uses to carry up to eight channels (perhaps a 6-channel surround mix plus a separate stereo mix), as well as metadata. A 24-bit mode is also specified for the Dolby E format but not yet implemented in encoders and decoders.

Dolby Digital and AC3



Also known as AC-3, Dolby Digital delivers up to 5.1 discrete channels of surround sound and is applied to the final broadcast transmission signal, just prior to multiplexing with the digital video. It is used extensively today on digital satellite (DBS), cable, and DTV and HDTV terrestrial services (including ATSC and DVB).

The flexibility of Dolby Digital enables broadcasters to deliver any number of audio channels, from all encompassing 5.1 surround sound down to mono audio, plus multiple-language programs and other specialized services. In the home, the Dolby Digital signal adapts to the viewer's playback system, delivering the best possible sound to all viewers, regardless of their equipment.

To enjoy the full 5.1 surround experience, viewers simply connect any DTV set-top box with a Dolby Digital output to a Dolby Digital home theater receiver.

Metadata

The key to the adaptability of Dolby Digital is metadata, "data about the audio data." Metadata is created during the production of DTV programming and is carried in the Dolby Digital bitstream. Metadata parameters maintain the "vision" of the audio created by a program's producer, make life easier for broadcasters, and give viewers the best audio DTV has to offer, whether viewers own mono, stereo, or 5.1-channel audio system

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Ancillary Passing and Audio Embedding

The SMPTE 272M and 299M standard specifications allow for up to four groups of AES/EBU digital audio to be embedded in a component digital video SD or HD stream respectively. Each group consists of two stereo pairs, comprising four channels, resulting in a total of sixteen audio channels for all four groups. This horizontal ancillary (HANC) data increasingly shares space with other types of ancillary data such as EDH, timecode and UMID labels making the insertion and passing a complex process.

Processing of audio by the module requires the reinsertion of the audio into the passed ancillary data. This is essentially separate from the extraction of audio from the input video, and allows the embedded audio to be firewalled when input disturbances force blanking of ancillary space.

For 625-line (or other 25 Hz) video, 1920 audio samples occur in each frame. Whereas for 525-line (or other 29.97 Hz) video, 8008 audio samples occur over five video frames. Audio data is distributed evenly throughout each video frame, situated in the non-active picture regions between the end of one line and the start of the next. In SD, most lines contain three or four audio samples per active group. In HD, most lines contain one or two samples per active group. Additional lines are reserved after the SMPTE RP-168 switch points, which contain no samples. This is in contrast to most ancillary data, which resides in a fairly fixed HANC or VANC (vertical ancillary) space.

Audio Control and Extended Data packets, as defined in SMPTE 272M (SD), are not inserted by the module. Instead, they are handled by the 'passing' and 'blanking' functions. Audio Control packets, as defined in SMPTE 299M (HD), are always inserted. Block numbering as defined in SMPTE 291M is supported.

The SMPTE 291M standard defines the structure and space formatting for ancillary data within digital video streams. Within HANC data space, ancillary packets follow immediately after the end of active video (EAV) marker, including line numbers in HD. They are contiguous with each other until either the end of the last packet or the start of active video (SAV) marker. Unused space is filled with black level blanking. Likewise, VANC data space follows from the SAV to the EAV markers throughout vertical blanking, which is in principal similar to vertical blanking interval (VBI) use in legacy SD environments for typically analogue data waveforms.

The module allows separate blanking of HANC and VBI line spaces to completely remove data stored within those spaces for when specific applications demand it.

Complying with SMPTE 291M, the embedder uses a two-stage process, as follows:

- The embedder reformats the incoming ancillary to remove unwanted data which is already marked as deleted or audio packets that are marked for removal here, for example, when blanking or reinserting. Additional packets that are always removed are EDH packets (which are always reinserted) and Start and End Marker packets (which are never reinserted). This makes for the most efficient use of the data space and gives priority to passed data.
- The new audio data and control packets are appended in the remaining space.

The ancillary formatter passes any data space with no recognizable ancillary packets unchanged, but will operate when it finds a packet after EAV or SAV. Data packets for passing are buffered while deleted packets are dropped. This requires a holding buffer and a delay so that all passed packets can be shuffled up earlier in the data space without gaps.

The following embed control section looks for the first free space after EAV. Once found, the embedding process is initiated with the first enabled group inserter. However, before starting the embedding for any of the inserter streams the remaining data space is checked to ensure that there is enough room for the ancillary packet. If not, the inserter is disabled to prevent corruption of the video format or generation of invalid ancillary data packets. This situation is a sample overflow which simply causes the data to be delayed until the following line. If this is repeated over many lines, there will be a full embed overflow, which is reported in the Audio Status window, on the card edge yellow Warning LED, and is logged.

Embedded ancillary data that does not conform to the space formatting requirements of SMPTE 291M may not be recognized, and so could be destroyed by the module. For example, if the data packets do not start immediately following the EAV marker the inserter

will overwrite the packets. Similarly, if a data packet does start in the correct place but a second packet does not immediately follow the first one the second packet will be overwritten.

To summarize:

- Marked for Deletion and audio packets to be replaced, are removed from the ancillary data space for most efficient and clean use of data space.
- Ancillary packets are shuffled up within the data space during reformatting.
- Incoming ancillary data must be SMPTE 291M compliant.