# IQDEC01
Composite Decoder, Synchronizer, Audio Embedder with Noise Reduction– 12 bit

$C\epsilon$

## Table of Contents

## Module Description

**The IQDEC01 provides a** complete analog front-end with 12-bit composite decoding, synchronization and analog audio ingest in one compact module. It is ideal for providing the bridge between analog legacy operations and digital environments. When paired with an upconverter this module completes the bridge between analog and HD domains. What makes the IQDEC01 so powerful for these applications are using adaptive 2D filtering. The IQDEC01 handles most composite analog signal formats including PAL, NTSC-M, NTSC-J, PALN, N4.43, PAL60, PALM and SECAM. The full frame synchronizer with horizontal and vertical phasing controls allows the output to be timed to your house or studio reference. In addition to its awesome video performance, the IQDEC01 can digitize up to 4 channels of analog audio for both embedding into the SDI stream and outputting as two AES streams. Proc. amp controls and a powerful built-in noise reducer complete the specification. The noise reduction is targeted at preserving the original content while eliminating the objectionable artifacts of analog working. The noise reduction algorithms are tuned to ensure optimum quality and lowest bit-rates if the signal is subsequently compressed.

## Rear Panel View

IQDEC0115-A
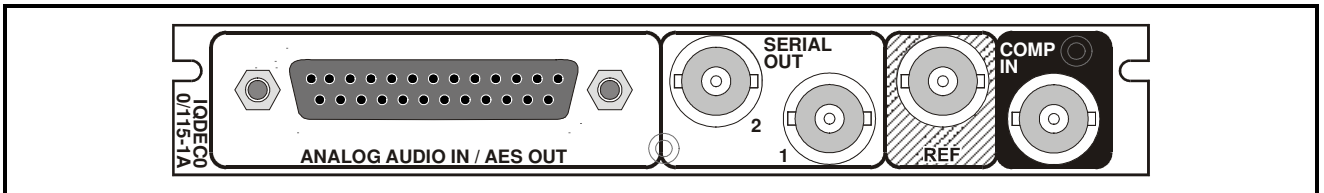


IQDEC0116-2
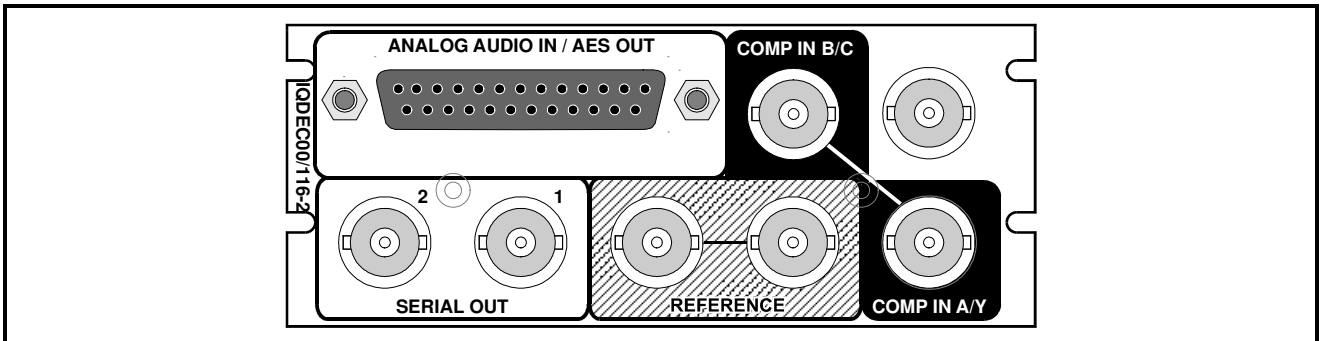


IQDEC0118-2A
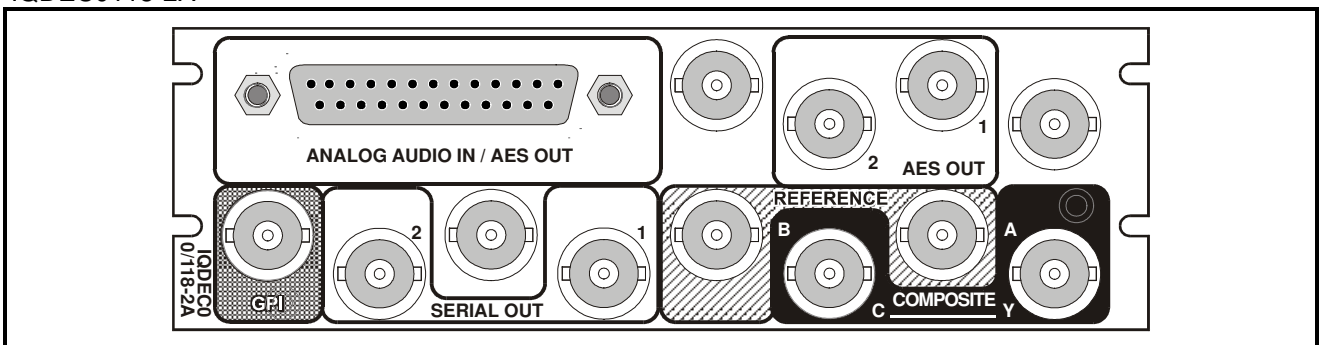
This manual covers the following products:

**IQDEC0118-2A         12 bit decoder with** synchronizer, analog audio embedder and noise reduction. 2 composite, 1 Y/C inputs, 2 SDI outputs, 4 analog audio inputs, 2 AES outputs (balanced, on 25D, and unbalanced on 25D and BNC)

**IQDEC0115-1A         12 bit decoder with** synchronizer, analog audio embedder and noise reduction. single composite input, 2 SDI outputs, 4 analog audio inputs, 2 AES outputs (balanced and unbalanced on 25D)

**IQDEC0116-2   12 bit decoder with** synchronizer, analog audio embedder and noise reduction. 2 composite, 1 Y/C inputs, 2 SDI outputs, 4 analog audio inputs, 2 AES outputs (balanced and unbalanced on 25D)

**Product Comparison**

| Product | CVBS Inputs | Y/C Inputs | Analog Inputs | | AES Outputs | | SDI Outputs | GPI | Genlock | Width & Style |
|---|---|---|---|---|---|---|---|---|---|---|
| IQDEC0118-2A | 2 | 1 | 4 | BAL | 2 2+2 | BAL U/B | 2 | 1 | Loop-through | Double A |
| IQDEC0115-1A | 1 | 1 | 4 | BAL | 2 2 | BAL U/B | 2 | No | 1 | Single A |
| IQDEC0116-2 | 2 | 1 | 4 | BAL | 2 2 | BAL U/B | 2 | No | Loop-through | Double 0 |

*Note that there are two styles of rear panels available. They are not interchangeable between the two styles of enclosures. However, the cards may be fitted into any style of enclosure.*

### 'A' Style Enclosure

Rear panels **with** the suffix A may only be fitted into the 'A' style enclosure shown below.
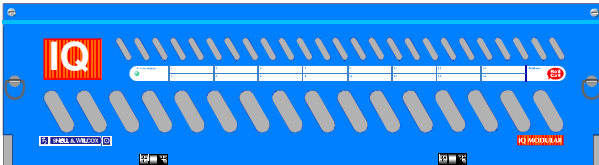


(Enclosure order codes IQH3A-E-0, IQH3A-E-P, IQH3A-0-0, IQH3A-0-P)



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

### 'O' Style Enclosures

Rear panels **without** the suffix A may only be fitted into the '0' style enclosures shown below.
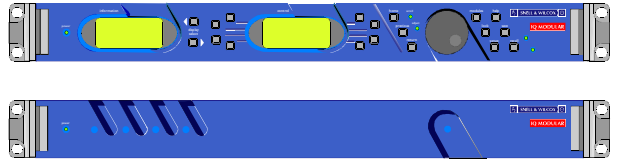


(Enclosure order codes IQH1S-RC-0, IQH1S-RC-AP, IQH1U-RC-0, IQH1U-RC-AP, Kudos Plus Products)
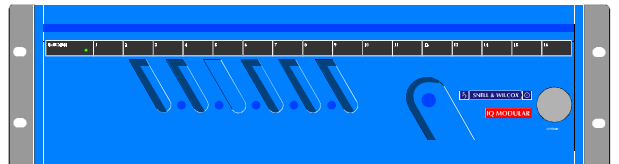


(Enclosure order codes IQH3N-0, IQH3N-P)



(Enclosure order codes IQH3U-RC-0, IQH3U-RC-P)

## Block Diagram
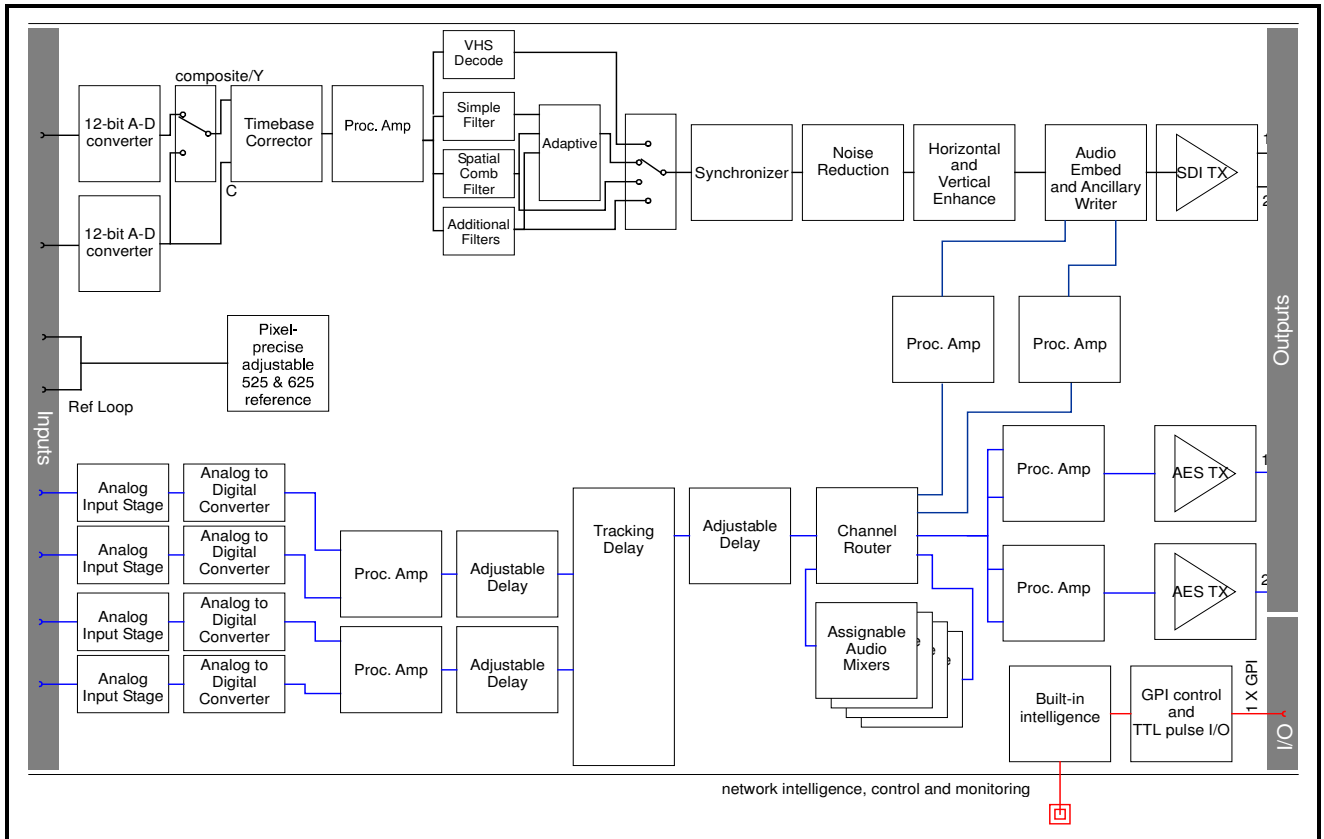


## Features

- 12-bit multi-standard decoder with frame synchronizer
- Adaptive line comb decoding
- Input standards – PAL*, NTSC*, NTSC-J, N4.43, PAL60, PALN*, PALM* or SECAM*
- *Auto detection of input standards
- Minimal delay through the unit - < 7 lines (lock to input, decoder and noise reducer in minimum delay mode)
- Motion adaptive recursive noise reducer with automatic noise floor measurement
- Horizontal and vertical enhancer
- VHS mode: Rugged sync and clock recovery ensures reliable operation for VHS playback and other noisy or unstable inputs
- Y/C and composite inputs available
- SECAM adaptive notch and chroma median filters
- Selectable default output on loss of input - Frame freeze, pattern or input pass

- Selectable VBI pass through (pass flat or blank for each VITS line)
- Adjustment of video gain, black level, chroma gain, NTSC hue, horizontal Y/C timing and picture position
- 4 x assignable 8 channel audio mixers
- Flexible audio delay features including:
- Tracking audio delay to keep audio in perfect sync with its associated video
- Up to 1.5s of audio delay for each external audio input pair
- Additional variable audio delay offset of up to 2.5s, common to all processed audio
- Full audio proc-amp including - gain, mute, polarity invert, and channel routing

## Technical Profile

### Signal Inputs

Composite Video ................2 via BNC connectors, isolated

Y-C....................................1 via BNC connectors

Analog Audio ....................4 Channels (2 Stereo Pairs) via 25D connector

Standards...........................PAL/NTSC//NTSC-J/PAL-M /PAL-N/SECAM/N4.43

Reference...........................1 analog loop through via BNC connectors

### Signal Outputs

Serial Digital ...................... 2 x SDI via BNC connectors

AES Audio ......................... 2 pairs (4 channels) balanced and unbalanced via 25D and unbalanced via BNC connectors (Note: Compatible with PCM embedded audio sources only)

Standards .......................... SMPTE 259M-C–1997, SMPTE 272M-A-1994, AES3-1992

### Control Interface

GPI/O ................................Closing contact input/output via BNC connector

### Card Edge Controls

None

### Card Edge Indicators

CPU running/Power............Flashing = OK

Analog Video Present.........Lost = Off, Good = On (Green)

Analog Video Error ............Good = Off, Error = On (Yellow)

Reference Present .............Lost = Off, Good = On (Green)

Reference Error .................Good = Off, Error = On (Yellow)

### Functions Available via RollCall Only

### Audio Controls

Line Up Tone Level ............-24 dBu to +10 dBu in 0.5 dB steps

Headroom...........................+4 to +24 dB in 0.5 dB steps (subject to a max input level of +24 dBu)

Set Audio Monitor Thresholds
High and low levels, time delay

External Input Audio Delay .Up to 1.5 s additional delay in 1ms steps

Input Side Control Proc.......Independent Gain, Mute, Polarity & Mono control over analog input channels

Digital Input Gain................±18 dB

Analog Input Gain...............±34 dB (subject to Line up and Headroom levels)

Channel Routing ...............Output channels routed from analog pair 1, analog pair 2, test tone and audio mixers

Channel Mixing...................Mixer channels routed from analog pair 1, analog pair 2 and test tone.

Output Side Control Proc ... Independent Gain, Mute, Polarity & Mono control over embedded and AES output channels.

Digital Output Gain ............ ±18 dB

Global Delay Offset............ Up to +2.5 s in 1ms steps, common to all processed audio.

Variable Audio Delay Control Source
Up to 1 s from RollTrack + GPI + video synchronizer

Audio Level Slew Rate....... Instant, fast, medium, slow

Validity Bit......................... Clear or set

Tone Frequency, Amplitude & Ident
2-channel tone generator.

Tone Frequency................. 100 Hz to 15 kHz in 100 Hz steps

Tone Channel Ident ........... 0.5 s interruption every 2 s

### Video Controls

Input Select....................... Composite A / B, YC

Composite Input Standard . Auto [PAL, NTSC, PALM, PALN, SECAM] / Manual [PAL, NTSC, NTSC-J, PALM, PALN, SECAM, N4.43]

Freeze ............................... Off / On

Luma Gain......................... ±6 dB

Chroma Gain ..................... ±6 dB

Black Level ........................ ±120 mV

NTSC Hue ......................... ±45°

Y/C Timing ........................ +592 ns in 148 ns steps

Picture Position.................. ±592 ns in 148 ns steps

Blanking............................. Left, right, top, bottom, color

Noise Reducer Mode & Noise Measurement
Auto / Manual noise measurement
Normal / Minimum delay

Noise Threshold................. Auto Bias [±7] / Manual [0 to 15]

Noise Reducer Strength..... Luma [0 to 31], Chroma [0 to 31]

H Enhance......................... Off / [On – low, medium, high]

H Enhance Frequency ....... 2.25 MHz or 3.375 MHz

V Enhance..........................Off / [On – low, medium, high]

Decoder Mode....................Simple, Studio, VHS/Unstable

SECAM Notch ....................Adaptive/Controllable

SECAM Luma Bandwidth ...Wide/Medium/Narrow

SECAM Bottles...................Auto/On/Off

Color Killer..........................Chroma ON / Chroma OFF / Auto [QAM standards: Chroma off = chroma mute + Y notch SECAM: Chroma off = chroma mute only]

Genlock H Phase................± ½ line in 1 pixel steps

Genlock V Phase................±262/312 lines in 1 line steps

Genlock Mode ....................Free-run / Lock to reference / Lock to input (minimum delay)

H Delay .............................1 line in 1 pixel steps

V Delay..............................524/624 lines in 1 line steps

Additional Video Delay........0, 1 or 2 frames of delay

NTSC lines 11 to 20 and 274 to 282
Blank, pass as VBI, decode VBI

NTSC line 22, 283 and 285 Blank, pass as data, pass as picture

NTSC line 21 and 284 Blank, pass as data, pass as picture, pass as closed captions

PAL lines 7 to22 & 320 to 335
Blank, pass as VBI, decode VBI

PAL line 23 Blank, pass as WSS, pass as picture

## Other Controls

Pattern Enable....................Off / On

Pattern Select.....................Black / EBU Color Bars / 100% Color Bars / Ramp / Multi-Burst / Pulse & Bar / Animated Bar

Caption Enable ..................Off / On

Caption Generator ..............Programmable up to 19 characters

GPI Action .........................Memories 1 to 8 / Pattern / Freeze / Audio delay

GPI Polarity ......................High / Low

GPO Action........................Input loss / Standard / Video delay

GPO Polarity.....................High / Low

User Memories .................Name, clear, save and recall 8 user memories

Default Video Output .........Pass Video / Freeze / Pattern / Pattern and Caption

Default Audio Output .........Silence

Preset Unit........................Returns all settings to default

## Reporting * also Logged

Input Status  .....................*Input present, *Input line standard, *Composite color standard

Input Error.........................One or more inputs have unselected line standard

Reference Status...............*Ref present, *Ref standard

Reference Error ................Standard different to selected input

Audio Bus Monitor ............*Silence, *High Level, *Low Level, *Overflow for processed audio channels

Analog Audio Input Monitor *Silence, *High Level, *Low Level, *Overflow for analog audio input channels

## RollTrack Input

Delay ...............................Audio delay – Fixed, RollTrack + Fixed, Internal Sync + Fixed

## RollTrack Output

Delay ...............................Current video / audio delay

Input State ........................Present / line standard

Reference State................Present / error

## Technical Profile (continued)

### Specifications

#### Video Specifications

Video Internal Processing...4:2:2 with 10 bit data paths

Frequency Response (Studio Mode)

Y........................................5.75 MHz ±0.1dB

PbPr ...................................1.5 MHz -3dB

Frequency Response (VHS Mode)

Y........................................5 MHz +0.2 dB, -0.5 dB

PbPr ...................................1.5MHz -3dB typ

Composite Input Return Loss

Better than 35 dB to 5 MHz

Composite level/impedance1 V pk-pk typ. Into 75 Ohm

Serial Output Level .............800 mV ±5%

Output Overshoot ...............< 70 mV

Output Return Loss ............Better than 15 dB to 270 MHz

Output Jitter........................< 0.2 UI (with 10 Hz High pass filter selected on 601 monitor)

Reference Return Loss.......Better than 35 dB to 5.8 MHz

Reference Input Level.........1 Vp-p ± 3 dB

Sync Level..........................0.3 V ± 6 dB into 10k Ohms

#### Delay through the unit

Decoder Delay....................<2 lines

Synchronizer Delay.............16 µs (Lock to Input)

1 frame + 16 µs (Lock to Reference)

Additional Processing Delay<100 µs

Noise Reducer Delay..........<1 frame (Normal)

<3 lines (Minimum Delay)

Total Minimum Delay ..........<7 lines

Total Maximum Delay ........>5 frames (including optional video delay)

#### Audio Specifications

Input Impedance................ >30 K Ohms, balanced, line to line >15 K Ohms line to earth (600 Ohm link selectable)

Max Input Level ................ +24 dBu, balanced

Frequency Response......... +0.1/-0.25 dB, 20 Hz – 20 kHz wrt 1 kHz

THD+N ............................ <-94 dB typical at –1 dBFS, 1 kHz, 22 Hz - 20 kHz, 'A' weighted, unity gain

Sampling .......................... 24 bits @ 48 kHz,

Dynamic Range ................ >100 dB wrt –1 dBFS, 20 Hz to 20 kHz, 'A' weighted

CMMR .............................. >50 dB typical at 60 Hz

Cross Talk ........................ < -100 dB, 20-20 kHz, +24 dBu, channel to channel

Channel Gain Mismatch..... < ±0.2 dB

Max Output Level.............. 0 dBFS

Output Sampling................ 48 kHz

#### Power Consumption

Module Power Consumption13 W

INPUT CONNECTIONS

**COMP IN (-1A version)**

This is the composite video input to the module via a BNC connector. Nominal input level is 1 V p-p terminated in 75 Ohms.
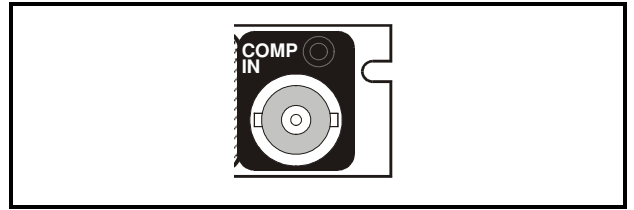
**COMPOSITE A and B (-2 and -2A versions)**

These are the two composite video inputs to the module via BNC connectors. Nominal input level is 1 V p-p terminated in 75 Ohms.
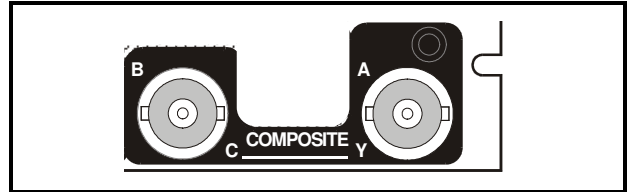
**Separated Y C (-2 and -2A versions)**

A Y-C (S-VHS, Hi-8 etc.) input signal may be connected to the unit via two BNC connectors marked Y and C.

Y input level is a nominal 1V p-p into 75 Ohms. C input is nominal color burst level into 75 Ohms.
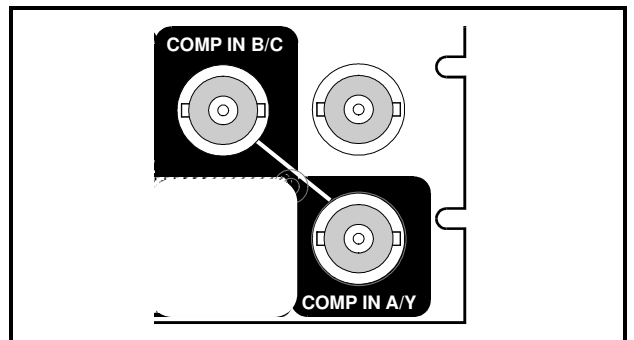
**ANALOG AUDIO IN**

Four balanced analog inputs are made to the unit via a 25 way D Type connector.

*For connection details please see pages 11 & 12.*

The input Impedance is >30 k Ohms (line to line). This may be changed to 600 Ohms using the on-board link as shown below.
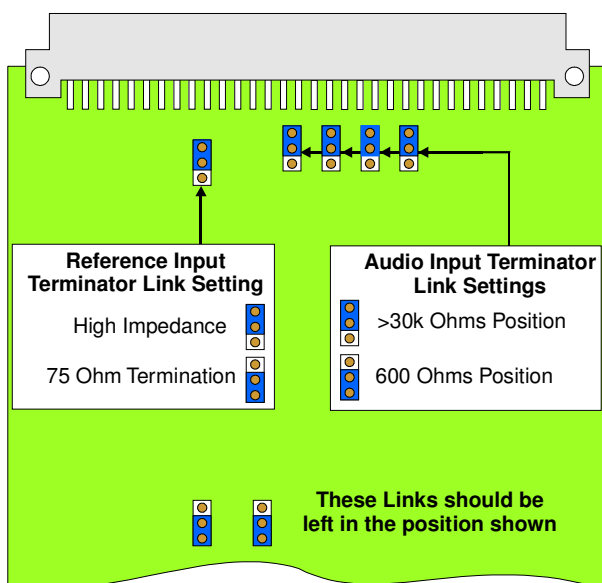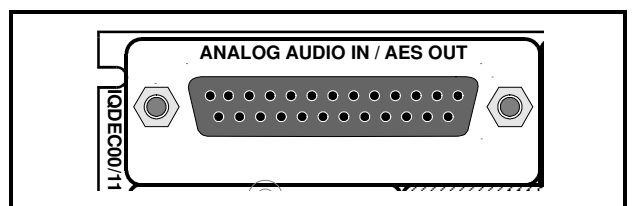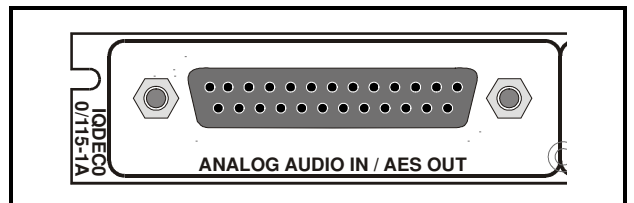
## REFERENCE

The analog reference input to the unit is made via the passive loop-through BNC connectors for 75 Ohms.

The signal may be black burst or composite video at standard levels.

*Note that if the loop-through facility is not used the unused BNC socket must be fitted with a 75 Ohm terminator or the Reference Input Termination link on the card set to the 75 ohm position as shown below.*



**Reference Input Terminator Link Setting**

High Impedance

75 Ohm Termination

**Audio Input Terminator Link Settings**

>30k Ohms Position

600 Ohms Position

**These Links should be left in the position shown**
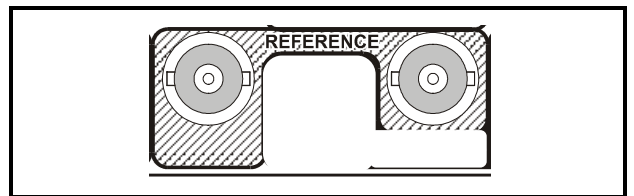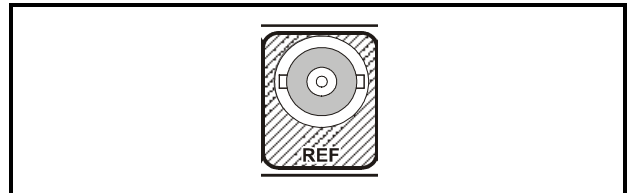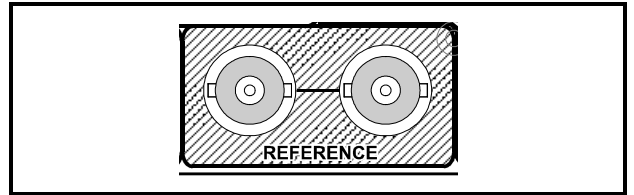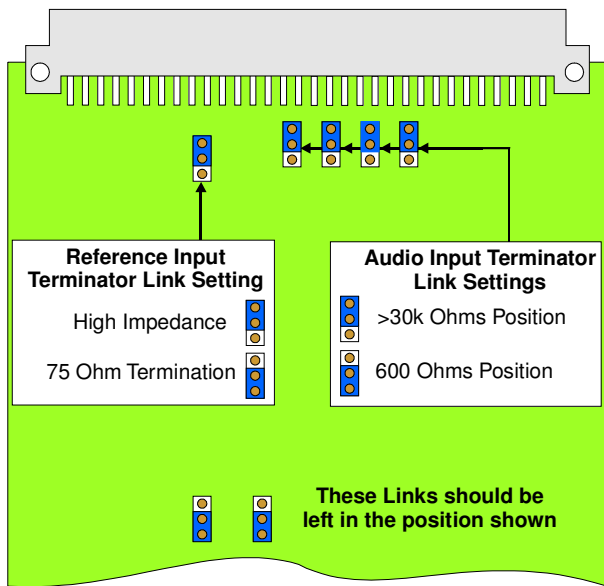
## GPI (-2A only)

This connector is used for accepting GPI information (from mechanical switch contacts, relay contacts etc.) The resulting action that the unit takes may be programmed via RollCall.

It may also be configured as an output.



GPI Port as an input

+5V

Signal

GPI

Return

GPI Port as an output

+V$_{DD}$

+5V

Signal

GPI

Return
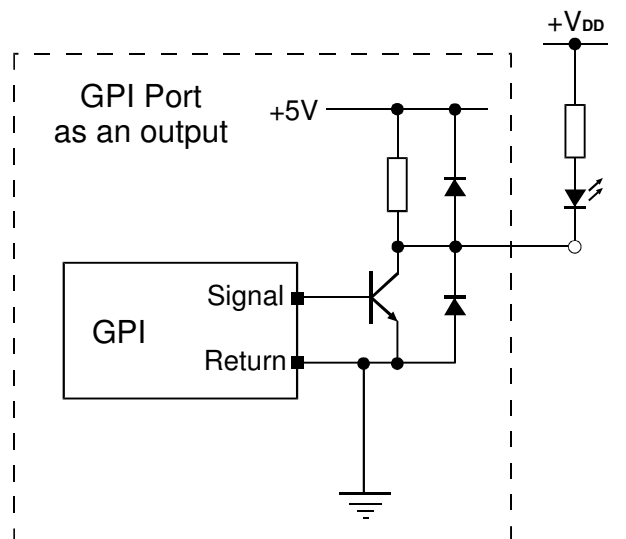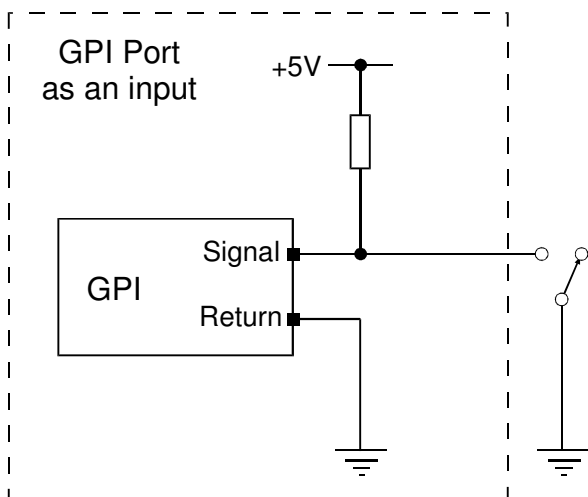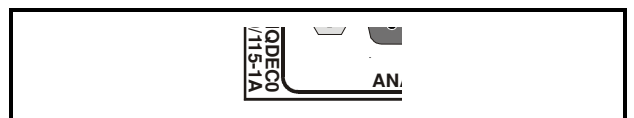
OUTPUTS

**Serial Digital Video Outputs**

These are the two Serial Digital outputs of the unit
via BNC connectors for 75 Ohms.
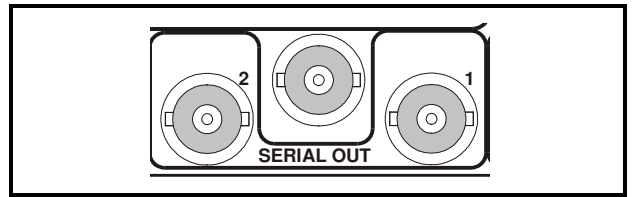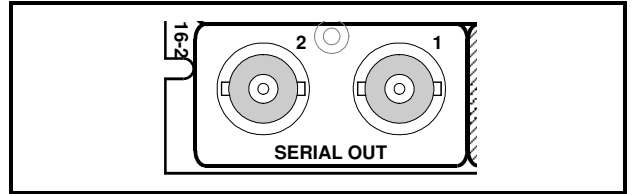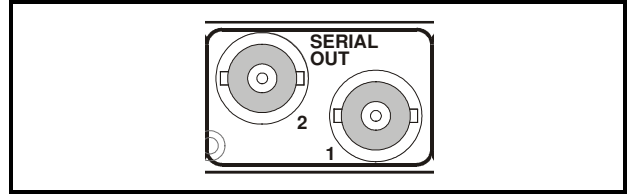
**AES OUT (-2 version)**

Balanced and unbalanced AES outputs are
available via the 25 way D type connector.

*For connection details please see pages 12 & 13.*
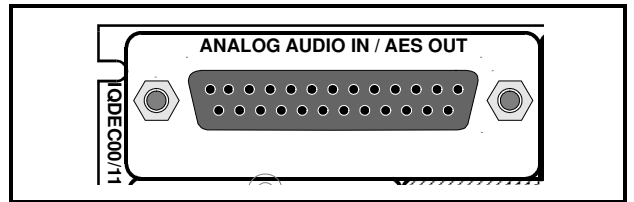
**AES OUT (-2A version)**

Balanced and unbalanced AES outputs are
available via the 25 way D type connector; two
unbalanced AES outputs are also available via
BNC connectors for 75 Ohms.

*For connection details please see pages 12 & 13.*
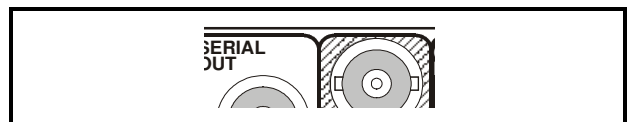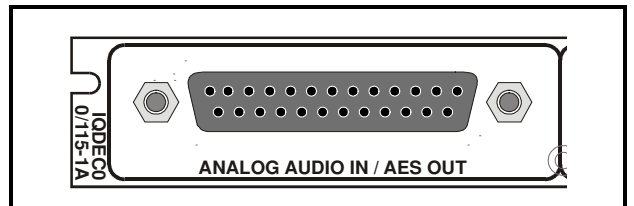
## 25 Way D Type Connection Details

By Pin Number

| Pin No | Description | Connection |
|--------|-------------|------------|
| 1 | Chassis Ground | Ground |
| 2 | Channel 1 + | Analog  Audio In 1L + |
| 3 | Channel 2 + | Analog Audio In 1R + |
| 4 | Ground (2) | Ground |
| 5 | Channel 3 + | Analog Audio In 2L + |
| 6 | Channel 4 + | Analog Audio In 2R + |
| 7 | Ground (4) | Ground |
| 8 | Channel 5 + | AES 1 Out (Unbalanced) + |
| 9 | Channel 6 + | AES 1 Out (Balanced) + |
| 10 | Ground (6) | Ground |
| 11 | Channel 7 + | AES 2 Out (Balanced) + |
| 12 | Channel 8 + | AES 2 Out (Unbalanced) + |
| 13 | Ground (8) | Ground |
| 14 | Ground (1) | Ground |
| 15 | Channel 1 – | Analog Audio In 1L – |
| 16 | Channel 2 – | Analog Audio In 1R – |
| 17 | Ground (3) | Ground |
| 18 | Channel 3 – | Analog Audio In 2L – |
| 19 | Channel 4 – | Analog Audio In 2R – |
| 20 | Ground (5) | Ground |
| 21 | Channel 5 – | AES1 Out (Unbalanced) – |
| 22 | Channel 6 – | AES 1 Out (Balanced) – |
| 23 | Ground (7) | Ground |
| 24 | Channel 7 – | AES2 Out (Balanced) – |
| 25 | Channel 8 – | AES2 Out (Unbalanced) – |

By Function

| Pin No | Description | Connection |
|--------|-------------|------------|
| 1 | Chassis Ground | Ground |
| 2 | Channel 1 + | Analog  Audio In 1L + |
| 15 | Channel 1 – | Analog Audio In 1L – |
| 14 | Ground (1) | Ground |
| 3 | Channel 2 + | Analog Audio In 1R + |
| 16 | Channel 2 – | Analog Audio In 1R – |
| 4 | Ground (2) | Ground |
| 5 | Channel 3 + | Analog Audio In 2L + |
| 18 | Channel 3 – | Analog Audio In 2L – |
| 17 | Ground (3) | Ground |
| 6 | Channel 4 + | Analog Audio In 2R + |
| 19 | Channel 4 – | Analog Audio In 2R – |
| 7 | Ground (4) | Ground |
| 8 | Channel 5 + | AES 1 Out (Unbalanced) + |
| 21 | Channel 5 – | AES1 Out (Unbalanced) – |
| 20 | Ground (5) | Ground |
| 9 | Channel 6 + | AES 1 Out (Balanced) + |
| 22 | Channel 6 – | AES 1 Out (Balanced) – |
| 10 | Ground (6) | Ground |
| 11 | Channel 7 + | AES 2 Out (Balanced) + |
| 24 | Channel 7 – | AES2 Out (Balanced) – |
| 23 | Ground (7) | Ground |
| 12 | Channel 8 + | AES 2 Out (Unbalanced) + |
| 25 | Channel 8 – | AES2 Out (Unbalanced) – |
| 13 | Ground (8) | Ground |

Example of Connection to XLR Connectors

XLR
Connectors

25 Way
D-Connector

25 Way
Male D-Type

XLR
Connections

XLR
Connections

| + | 2 |
| - | 3 |
| ⏚ | 1 |

Analog Audio
Input 1 Right

| + | 2 |
| - | 3 |
| ⏚ | 1 |

Analog Audio
Input 1 Right 2

| + | 2 |
| - | 3 |
| ⏚ | 1 |

AES Output 1
(balanced)

| + | 2 |
| - | 3 |
| ⏚ | 1 |

AES Output 2
(unbalanced)

1
14
2
15
3      16
4
17
5
18
6
7      19
20
8
21
9
10      22
11
23
24
12
13      25

| 1 | ⏚ |
| 2 | + |
| 3 | - |

Analog Audio
Input 1 Left

| 1 | ⏚ |
| 2 | + |
| 3 | - |

Analog Audio
Input 2 Left

| 1 | ⏚ |
| 2 | + |
| 3 | - |

AES Output 1
(unbalanced)

| 1 | ⏚ |
| 2 | + |
| 3 | - |

AES Output 2
(balanced)

Solder
Pin
Side

CARD EDGE INDICATORS
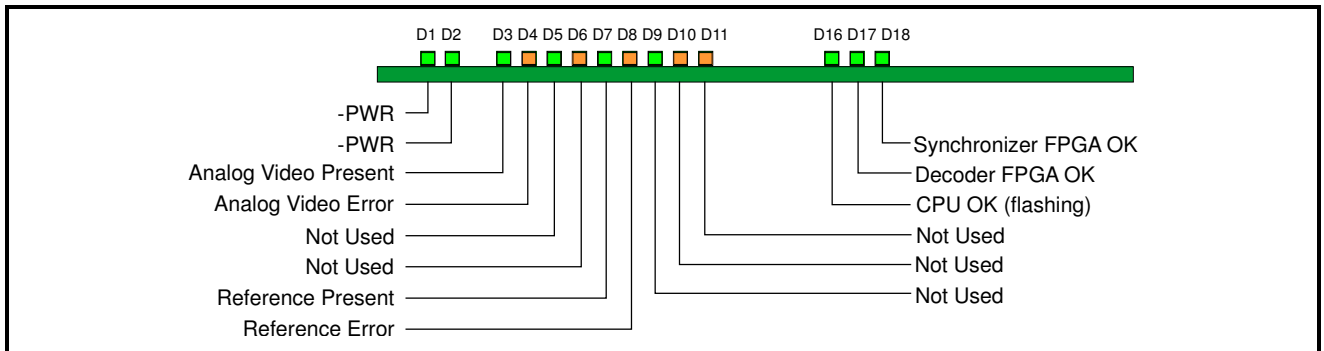


LED INDICATORS

**D1: -PWR (Green)**

When illuminated this indicates that the negative power supply is operating.

**D2: +PWR (Green)**

When illuminated this indicates that the positive power supply is operating.

**D3: Analog Video Present (Green)**

When illuminated this indicates that there is a valid signal at the composite input.

**D4: Analog Video Error (Amber)**

When illuminated this indicates that there is an invalid signal at the composite input.

**D5: Not used**

**D6: Not used**

**D7: Reference Present (Green)**

When illuminated this will indicate that a valid reference signal is present.

**D8: Reference Error (Amber)**

When illuminated this will indicate that an invalid reference signal is present.

**D9: Not used**

**D10: Not used**

**D11: Not used**

**D16: CPU OK (flashing) (Green)**

This LED will flash to indicate that the CPU is running.

**D17: Decoder FPGA OK (Green)**

This will illuminate when the Decoder FPGA has been loaded.

**D18: Synchronizer FPGA OK (Green)**

This will illuminate when the Decoder FPGA has been loaded.

## RollCall PC Control Panel Screens

### Video
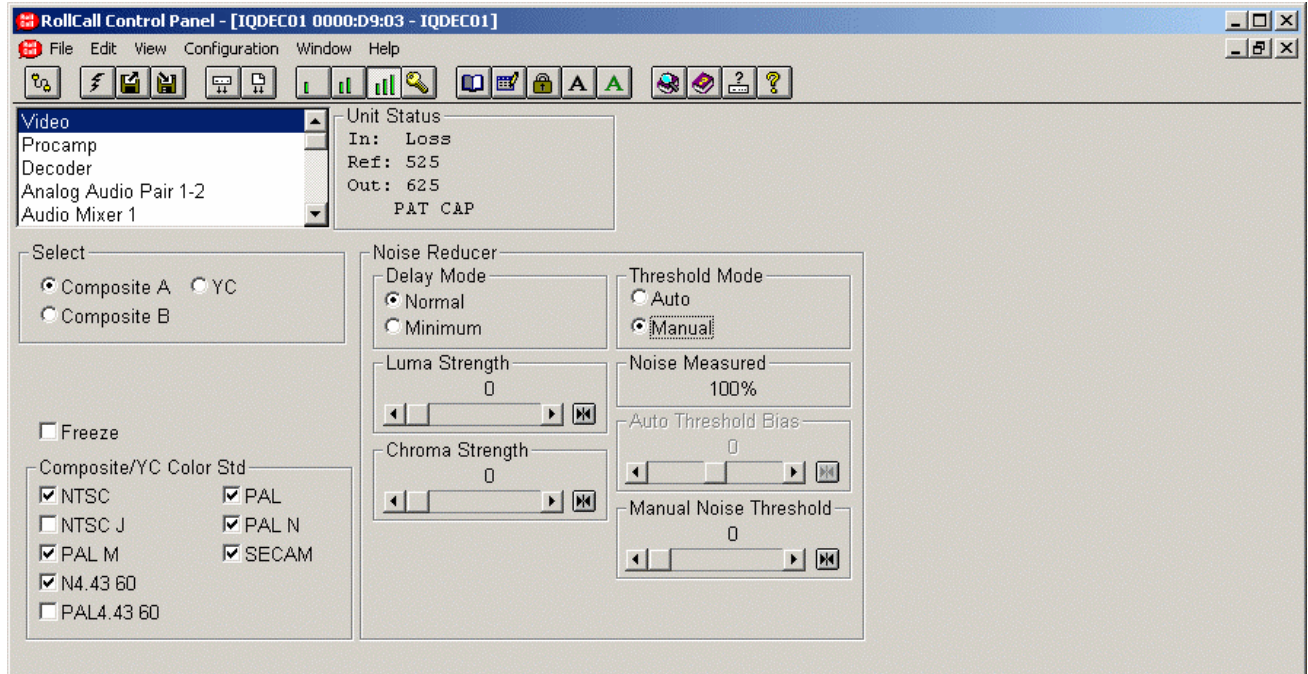


**Select**

This allows either the **Composite A, Composite B or YC** input to be selected for processing.

**Composite/YC Color Standard**

This allows the automatic detection of the color standard(s) for the composite/YC input.

The module will automatically detect any of the color standards that have been checked.
In the screen example above the unit will automatically detect PAL, NTSC, PAL-M, PAL-N, N4.43 60 and SECAM but will not detect NTSC-J or PAL4.43 60.

*Note that when selecting and deselecting SECAM the output picture and audio may suffer some disruption.*

**Freeze**

When checked the output picture will become a frozen frame.

**Video (continued)**
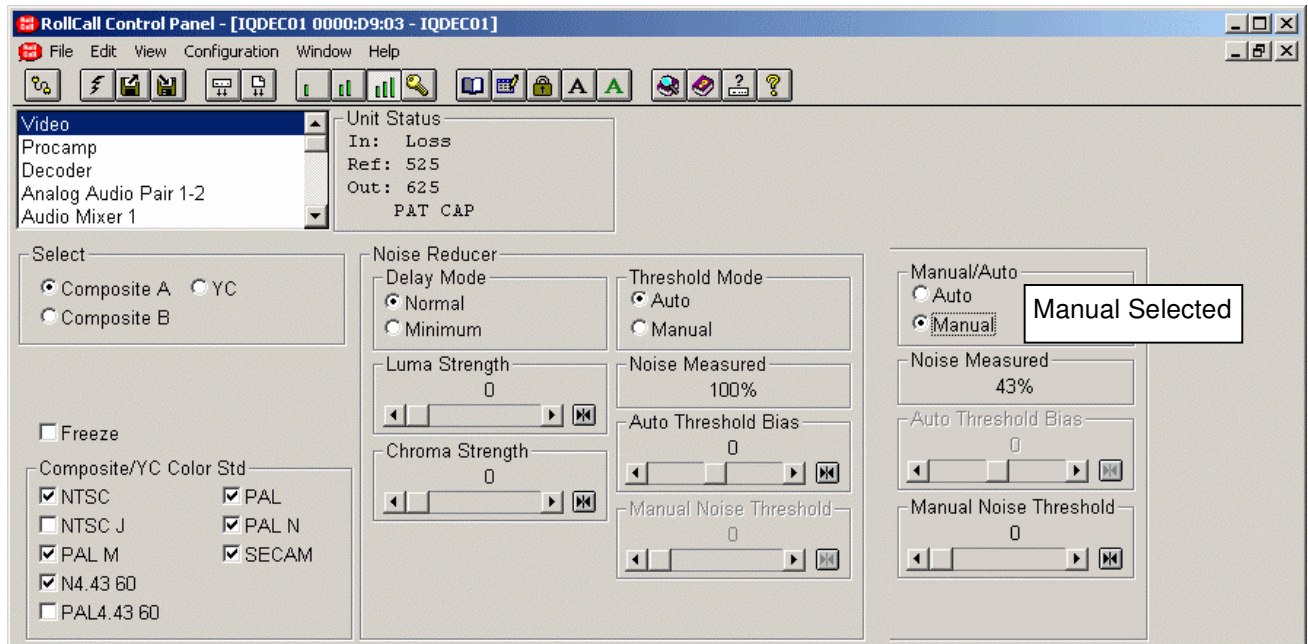


**Noise Reducer**

This allows settings and adjustments to be made to the noise reducer.

Delay Mode

This allows the delay of the noise reducer to be selected.

Normal

In this mode the delay will be < 1 Frame

Minimum

This mode produces the minimum input/output delay and may be used where audio delay problems may exist and cannot be compensated for. In this mode the delay will be < 3 Lines

Manual/Auto

Manual

In this mode the noise floor may be adjusted manually using the **Manual Noise Threshold** control.

Noise Measured

This provides an indication of how much noise there is in the signal. A clean signal will give low figures and a noisy signal high figures.

Auto

In this mode the noise floor is automatically measured and the threshold is adjusted dynamically set to an appropriate value for the current input noise level. The noise detection algorithm may be given a subjective bias using the **Auto Threshold Bias** control to give more or less noise reduction. Modification of the bias should not be necessary under normal circumstances.

Luma Strength

This control changes the amount of noise reduction for the luminance by limiting the maximum level of noise reduction, where 31 is maximum and 0 is minimum. Preset is to 0. The actual level of noise reduction is dynamically adjusted on a pixel-by-pixel basis with regard to the noise reduction setting for the same pixel in the previous frame.

Chroma Strength

This control changes the amount of noise reduction for the chrominance by limiting the maximum level of noise reduction, where 31 is maximum and 0 is minimum. Preset is to 0. The actual level of noise reduction is dynamically adjusted on a pixel-by-pixel basis with regard to the noise reduction setting for the same pixel in the previous frame.

## ProcAmp
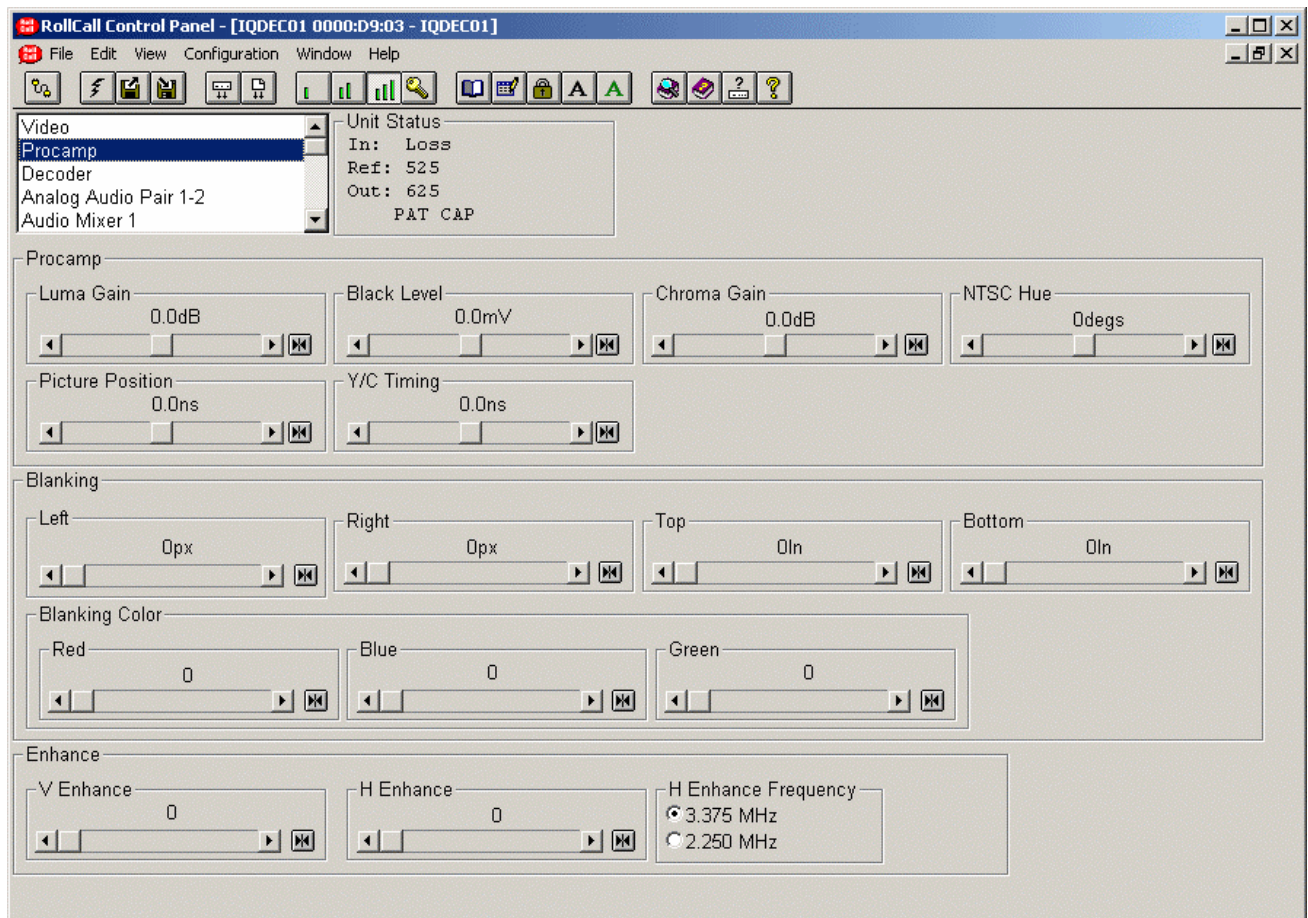


These items allow various signal parameters to be adjusted.

---

*Note that for this and other screens the following applies to the scroll bars:*

The ◀ and ▶ symbols at the ends of the scroll bar allow the value to be adjusted in discrete steps.

The numerical value will be shown above the scroll bars and selecting Preset ⏮ will return the setting to the calibrated value for that item.

---

### Luma Gain

This allows the Y (luminance) gain to be adjusted by ±6 dB in steps of 0.1 dB. Preset value is 0.0 dB.
*Note that the maximum input level is +3 dB.*

### Black Level

This allows the black level to be adjusted by ±120 mV in 0.5mV steps. Preset value is 0.

### Chroma Gain

This allows the U/V (color difference) gain to be adjusted by ±6 dB in steps of 0.1 dB. Preset value is 0.0 dB.
*Note that the maximum input level is +3 dB.*

### NTSC Hue

This item allows the Hue of an NTSC signal to be adjusted.

The range of adjustment is ±45 degrees. Preset is to 0 degrees.

### Picture Position

This item allows the timing of the picture position relative to the normal value, to be adjusted.
The timing may be adjusted by ±592ns in 148ns steps. Preset value is 0.

### Y/C Timing

This item allows the timing of the chrominance signal relative to the luminance signal to be adjusted, (i.e. Y to Cb/Cr timing) in nanoseconds.
The timing may be adjusted by ±592ns in 148ns steps. Preset value is 0.

---

## ProcAmp (continued)
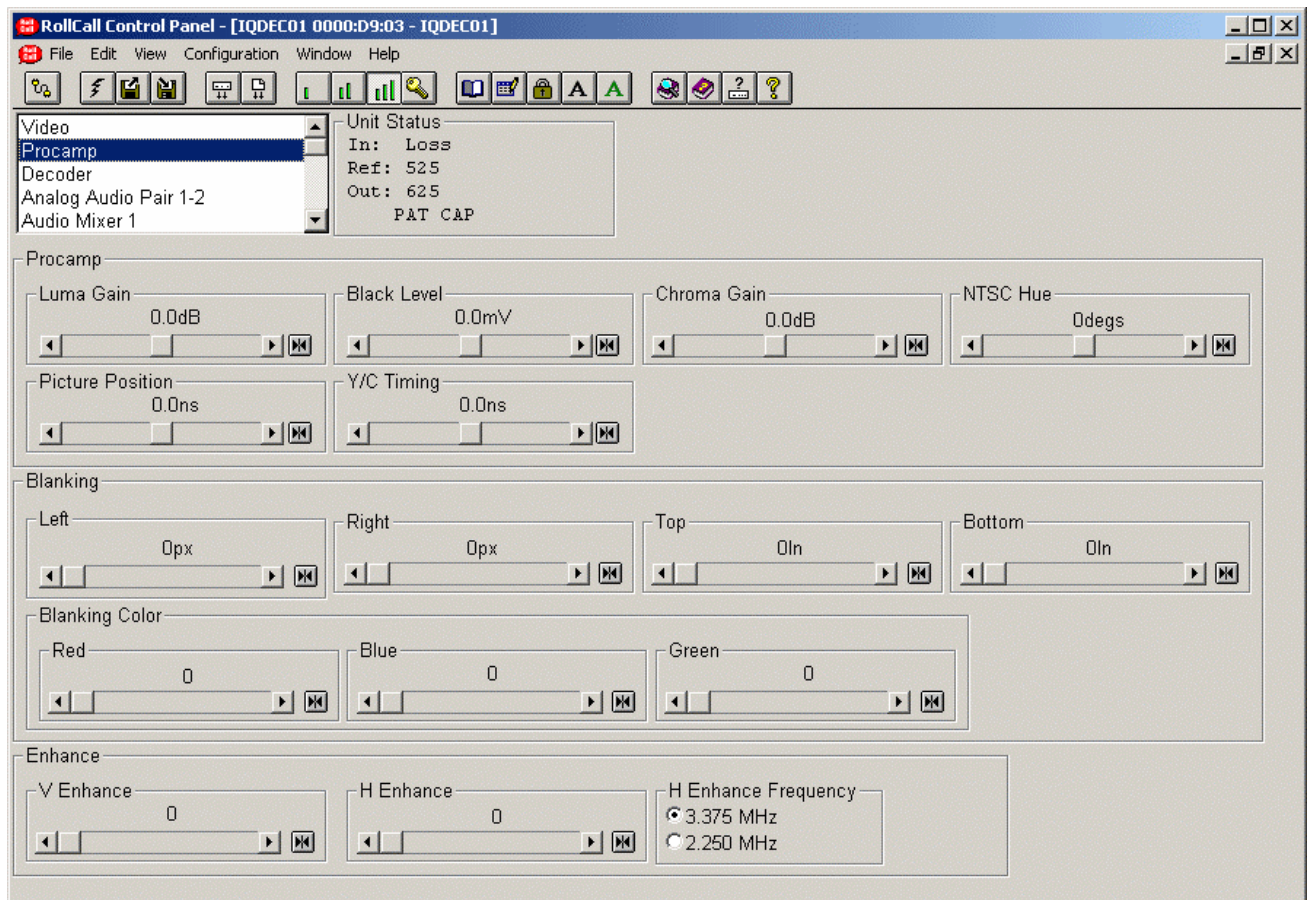


**Blanking**

This allows the active picture to be blanked out or cropped on each of the four sides.

Left/Right

The range of adjustment is from 0 to 200 pixels in steps of 2 pixels. Preset is to 0 pixels.

Top/Bottom

The range of adjustment is from 0 to 200 lines. Preset is to 0 lines.

The color of the blanked area may be set using the **Red**, **Blue** and **Green** controls. The range of adjustment is from 0 to 255 units. Preset is to 0, 0, 0 units (Black).

**Enhance**

This allows Vertical and Horizontal enhancement to be applied to the picture.

**V Enhance**

This allows vertical enhancement to be applied to the processed signal.

The level of enhancement may set to 0 (Off), 1 (Low), 2 (Medium) and 3 (High). Preset is to 0.

**H Enhance**

This allows Horizontal enhancement to be applied to the processed signal. The non-linear process prevents enhancement of low amplitude signals typical of noise.

The level of enhancement may set to 0 (Off), 1 (Low), 2 (Medium) and 3 (High). Preset is to 0.

**H Enhance Frequency**

The frequency at which the horizontal enhancement is applied may be set to either 3.375 MHz or 2.250 MHz. Preset is to 3.375 MHz.

## Decoder

**RollCall Control Panel - [IQDEC01 0000:D9:03 - IQDEC01]**

File Edit View Configuration Window Help

Video
Procamp
Decoder
Analog Audio Pair 1-2
Audio Mixer 1

Unit Status
In: Loss
Ref: 525
Out: 625
PAT CAP

Decoder
○ Studio
○ Simple
○ VHS/Unstable

Color Killer
○ Chroma Off
○ Chroma On
● Auto

SECAM Studio
Notch
● Adaptive
○ Controllable

Luma Bandwidth
● Wide
○ Medium
○ Narrow

SECAM VHS
Luma Bandwidth
● Wide
○ Medium
○ Narrow

This screen allows the decoder functions to be set up.

**Decoder**

This allows the type of decoding to selected.

Studio

The composite input is sampled with 12-bit resolution and decoded using adaptive line filters to ensure optimum decoding performance.

Simple

This simple decode mode incorporates a wide bandwidth subcarrier notch filter. This mode is for reference only and should not be used for normal composite material.

VHS/Unstable

In this mode the decoder will cope with sources with unstable time-bases but the decoding is of a lower quality and the frequency response is reduced.

**Color Killer**

This function controls the color content of the picture.

Chroma Off

When selected the color content of the picture will be removed. The luma signal is produced using a narrow bandwidth notch filter.

Chroma On

When selected the color content of the picture will be maintained regardless of the level of the color burst.
Auto

When this item is enabled the picture will become monochrome if the input color burst disappears or the level drops below a critical amplitude. The picture will return to color when the burst level reappears.

**Minimum Delay**

This mode produces the minimum input/output delay and may be used where audio delay problems may exist and cannot be compensated for. It uses the same adaption technique as the Studio mode but has asymmetric frame stores.

**Decoder (continued)**
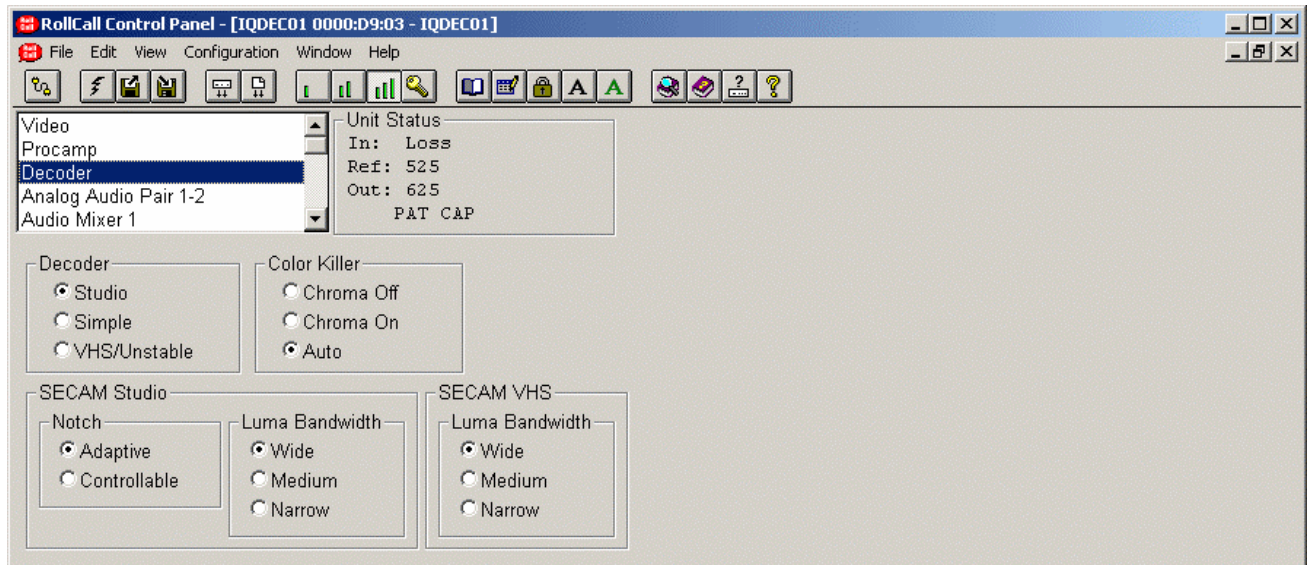


**SECAM Studio**

This function allows adjustments to decoding parameters for a SECAM signal of studio (stable) quality.

Notch

Either the Adaptive or the Controllable luminance notch filter may be enabled with this item.

Luma Bandwidth

This function allows the bandwidth of the decoded luminance to be adjusted.

Wide         The signal will be processed at full bandwidth (3.4 MHz).

Medium      The signal will be processed with a bandwidth of approximately 2.6 MHz.

Narrow      The signal will be processed with a bandwidth of approximately 1.7 MHz.

**SECAM VHS**

This function allows adjustments to decoding parameters for a SECAM signal of VHS (unstable) quality.

Luma Bandwidth

This function allows the bandwidth of the decoded luminance to be adjusted.

Wide         The signal will be processed at full bandwidth (3.4 MHz).

Medium      The signal will be processed with a bandwidth of approximately 2.6 MHz.

Narrow      The signal will be processed with a bandwidth of approximately 1.7 MHz.

**Analog Audio Pair 1-2**
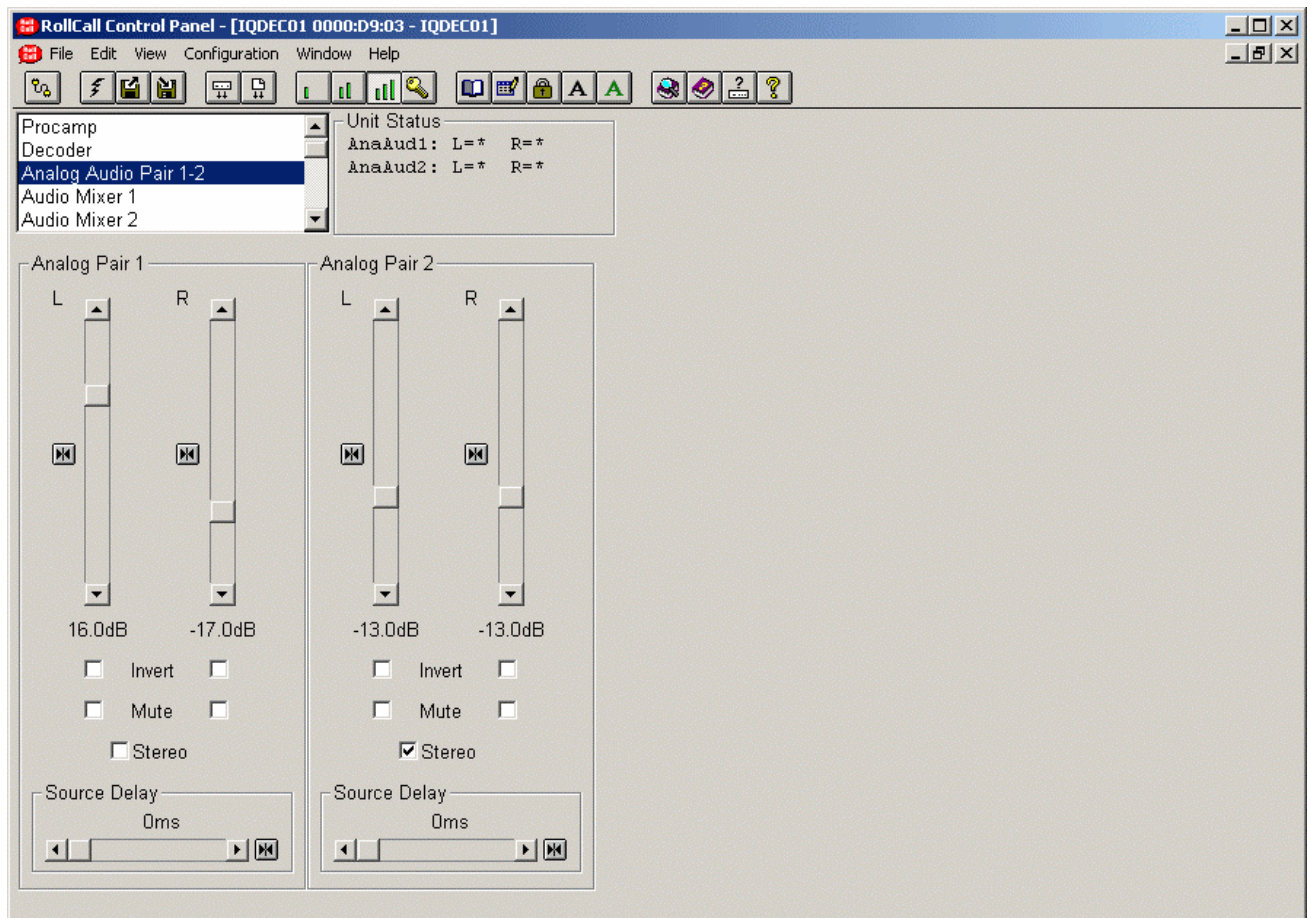


This allows control of Gain, Mute, and Polarity over the analog channel pairs and the introduction of delay.

**L and R**

These scrollbars allow the gain of the Left and Right channels to be adjusted over a range of ±34 dB (depending on line-up and headroom settings) in 0.5dB steps. Preset is to 0 dB.

**Invert**

When checked the signal polarity will be inverted.

**Mute**

When checked the signal will be muted.

**Stereo**

When checked the left and right channels will be configured as a stereo pair and any adjustments made to one channel will automatically be applied to both channels.

**Source Delay**

This control allows an analog audio pair signal to be delayed.

The range of control is from 0 to 1500 ms in 1 ms steps.

**Audio Mixer 1, 2, 3 and 4**
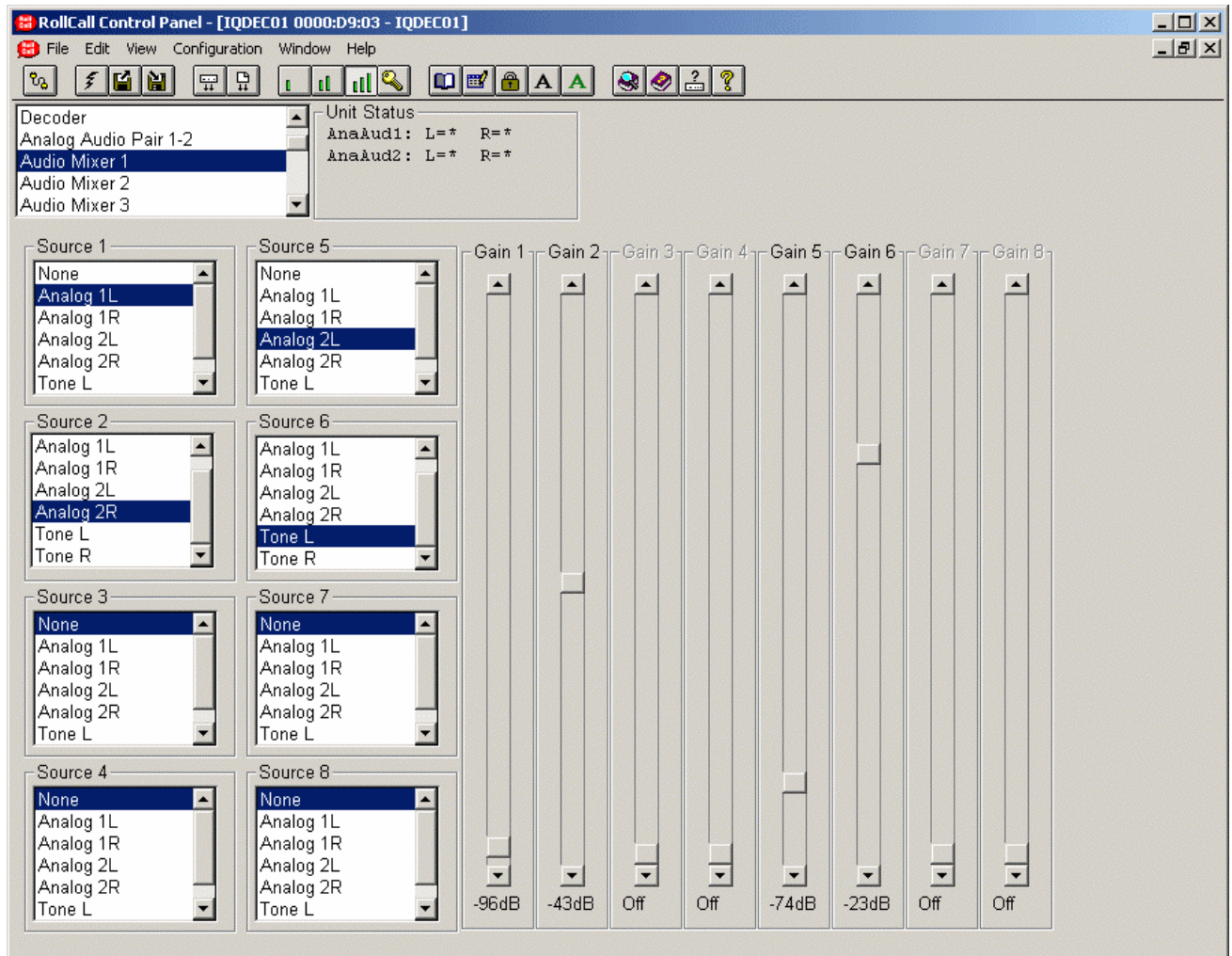


There are four separate audio mixers Mix 1, 2, 3 and 4.

Each mixer has eight inputs with individual gain controls that allow the mixing levels for each of the input signals, to be adjusted. The range of adjustment is from 0 to –96 dB and to Off.
0 to -60 dB is in steps of 1 dB, -60 dB to -96 dB is in steps of 3 dB.

The inputs can be selected from the **Source 1 to 8** lists.

The outputs of these mixers provide eight extra input selections for the Channel Router.

Source Inputs available for selection are:

None
Analog 1L
Analog 1R
Analog 2L
Analog 2R
Tone L
Tone R

**Audio Bus A and B**
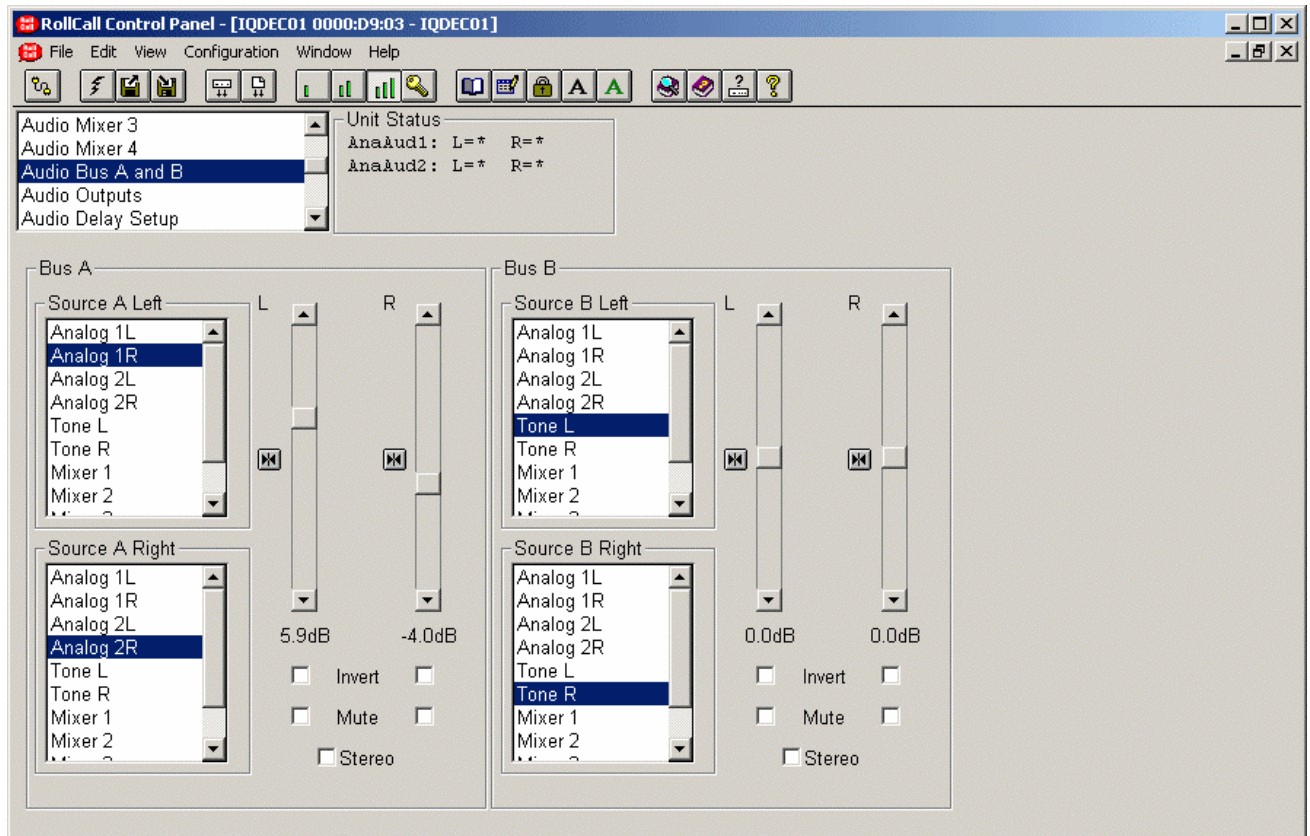


This function allows the inputs for the four audio buses of the router to be selected.

For each bus any source may be selected from the list for the left and right channels.

**L and R**

These scrollbars allow the gain to be adjusted over a range of ±18 dB in 0.1dB steps. Preset is to 0 dB.

Invert

When checked the signal polarity will be inverted.

Mute

When checked the signal will be muted.

Stereo

When checked the left and right channels will be configured as a stereo pair and any adjustments made to one channel will automatically be applied to both channels.

Bus A & B Source left and right inputs available for selection are:

Analog 1L
Analog 1R
Analog 2L
Analog 2R
Tone L
Tone R
Mixer 1
Mixer 2
Mixer 3
Mixer 4

**Audio Outputs**
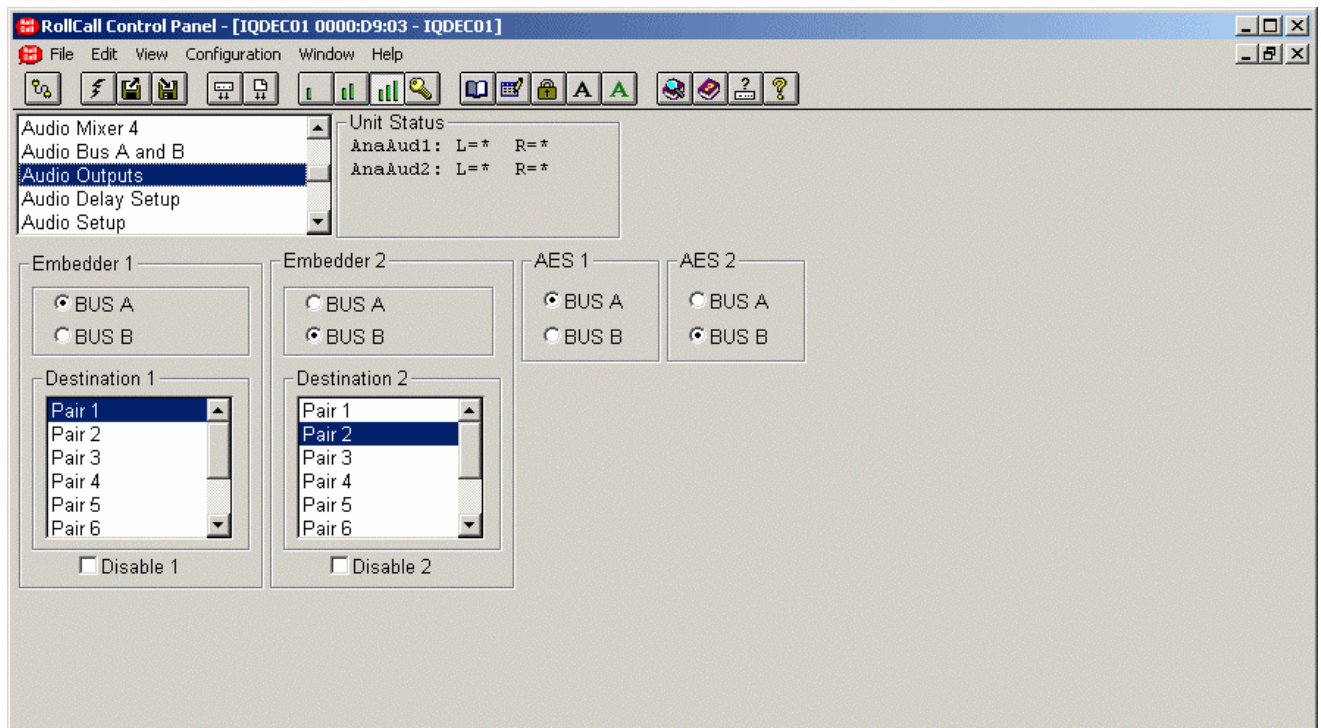


This function sets up the embedder sources and destinations. Higher number embedders have priority, so if the same destination pair is selected on two embedders, the highest embedder will be the one that is active.

**Embedder 1 and 2**

The source of the signal for the embedder may be from Bus A or Bus B.

*Note that when the output embedders are enabled, the packet distribution is as follows:*

*625 ........... Lines 5, 6, 318, 319 have no introduced samples on them*

*525 ........... Lines 9, 10, 272, 273 have no introduced samples on them*

**Destination 1 and 2**

The destination for the embedded signal may be selected from the list (Pair 1 to 8).

**Disable 1 and 2**

When checked the embedding for that destination will be turned off.

**AES 1 and 2**

This allows the signal source for the AES output to be selected from either from Bus A or Bus B.

**Audio Delay Setup**
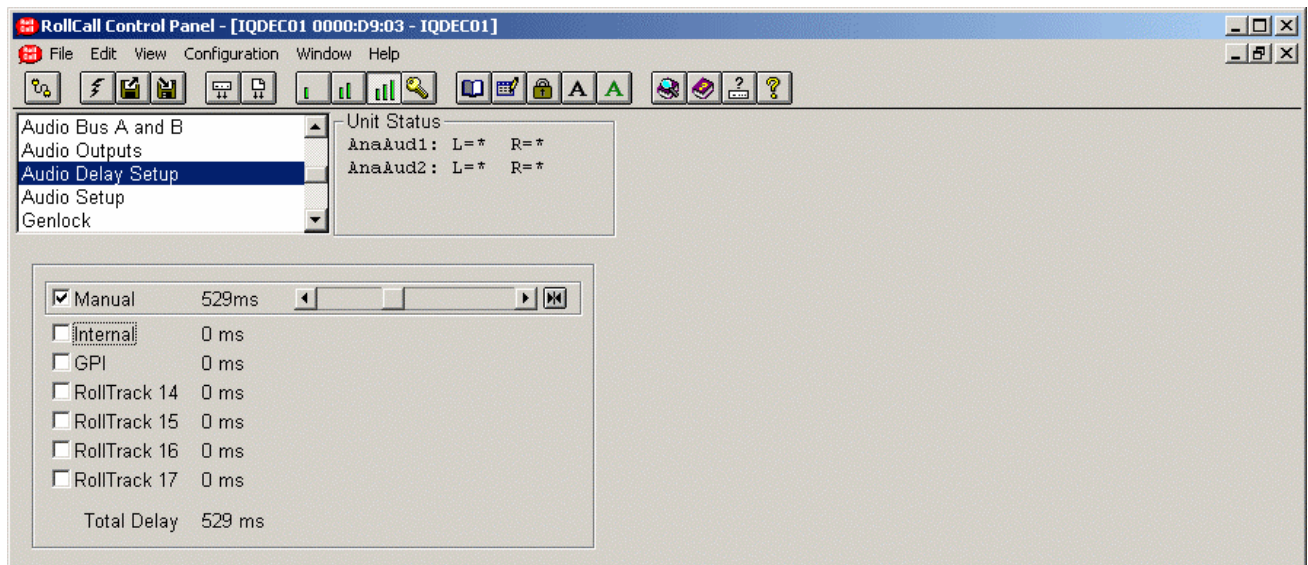


This screen allows the amount of delay to be set and type of audio delay mechanism to be selected.

**Manual Delay**

This will affect all processed audio signals equally.

The delay may be set to up to +1.5 s in 1ms steps.

**Delay Select**

This allows the type of audio delay mechanism to be selected. One or more of the types may be checked. The amount of delay applied will be the sum of the delay from the enabled delay mechanisms.

*Note that up to 1 s of delay may be applied from the sum of the **Internal** + **GPI** + **RollTrack** delay inputs.*

Internal

When checked, an audio delay equal to the video delay in the unit will be applied.

Manual

When checked an audio delay set by the **Manual Delay** control will be applied.

GPI

When checked an audio delay will be applied that is equal to the width of the pulse arriving at the GPI connector.

*Note that the GPI must be configured correctly for this function to operate. Please see page 34 or details.*

RollTrack 14, 15, 16 and 17

The selected source(s) of the RollTrack input signal(s) will apply an audio delay.

**Total Delay**

This will show the audio total delay (due to all delay mechanisms) through the unit in ms.

## Audio Setup
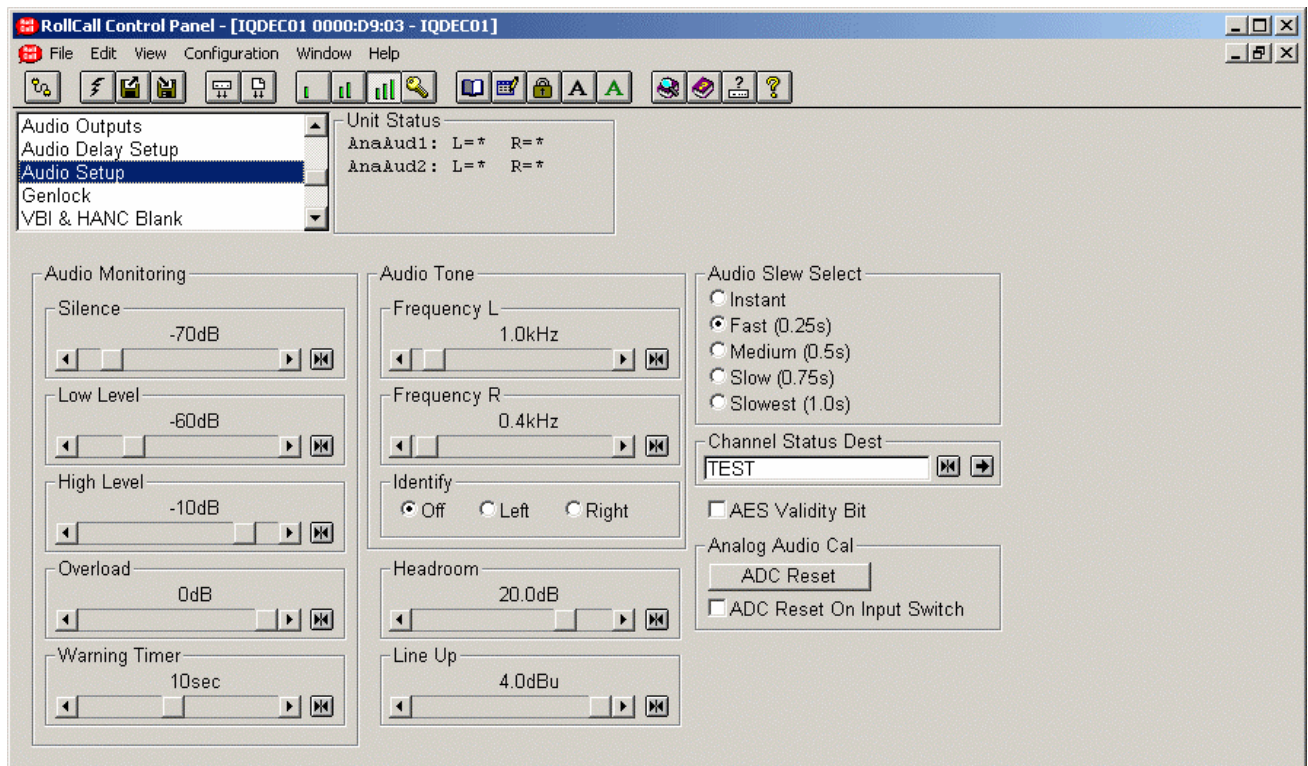


### Audio Monitoring

The four audio buses are monitored and level detectors provide status information and logging data.

Silence

The level at which the signal is considered to have dropped to silence may be set with this control.

The range is from -80 dB to 0 dB in steps of 1 dB. Preset is to -70 dB.

Low Level

The level at which the signal is considered to have dropped to a Low Level may be set with this control.

The range is from -80 dB to 0 dB in steps of 1 dB. Preset is to -60 dB.

High Level

The level at which the signal is considered to have risen to a High Level may be set with this control.

The range is from -80 dB to 0 dB in steps of 1 dB. Preset is to -10 dB.

Overload

The level at which the signal is considered to have risen to an Overload condition may be set with this control.

The range is from -80 dB to 0 dB in steps of 1 dB. Preset is to 0 dB.

Warning Timer

All the above monitoring facilities will only operate after a time interval set by this control. A valid signal is reported immediately.
The range is from 1 to 20 seconds. Preset is to 10 seconds.

### Audio Tone

The frequency of the Audio Test Tone may be set using this control. Left and right channels may be set independently.

Frequency L and R

The range is from 100 Hz to 15 kHz in steps of 100 Hz. Preset is to 100 Hz.

## Audio Setup (continued)

### Identify

When the left or right channel is selected it will be identified by the signal being muted for 0.5 second every 2.5 seconds.

### Headroom

This allows the headroom to be set. The range is from 4 dB to 24dB in 1 dB steps. Preset is to 18 dB.

Note that in this product headroom is defined as:

```
- - - - - - - - - ┬ - - - - -   Clipping Level
                  │              (0 dBFS)
                  │
      Headroom    │
                  │
- - - - - - - - - │ - - - - -   Peak Level
                  │              (Operational)
                  │
                  │
                  │
- - - - - - - - - ┴ - - - - -   Line-up Level
                                 (0dBu)
```
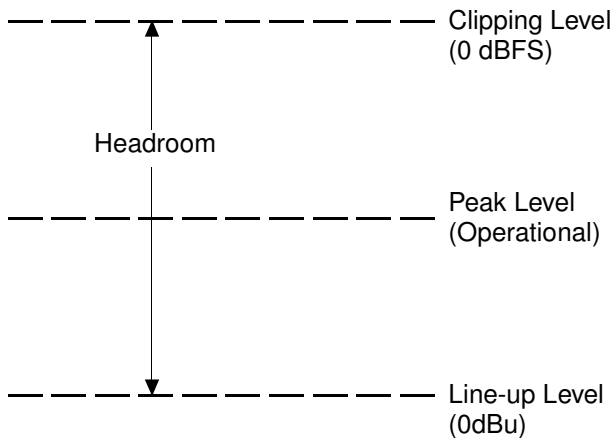
Headroom = Clipping Level – Line-up level

### Definitions of Terms

Line-up Level

The line-up level is the voltage corresponding to the RMS value of a sine wave signal used to line up analog circuitry. In this product the line-up level is set in dBu which is decibels relative to 0.775V RMS. The line-up level should be set to match the analog line-up level of your system.

Headroom

The headroom is the level difference in dB between the line-up level and the clip level of the circuit. In other words it defines how much larger than line-up a signal can be before it clips. The headroom should be set to match the maximum headroom required by your system.

The chart below shows what line-up levels are available at each headroom setting and then what gain is available once the other two settings have been made.
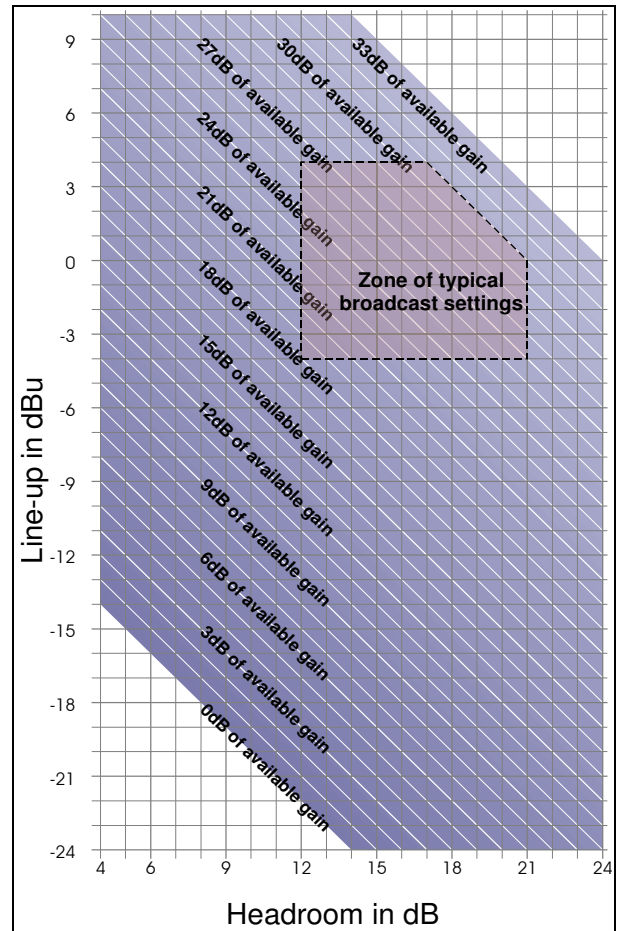


Example 1

*Line-up level = +4dBu, Headroom = 18dB*
Test signals in this system are expected to be at +4dBu or 1.23V RMS.
The peak signal allowed in this system must not exceed that generated by a sine wave at +22dBu (4dBu + 18dB) or 27.32V pk-pk.
From the chart you can see that the available gain is 32dB.

Example 2

*Line-up level = 0dBu, Headroom = 20dB*
Test signals in this system are expected to be at 0dBu or 0.775V RMS.
The peak signal allowed in this system must not exceed that generated by a sine wave at +20dBu (0dBu + 20dB) or 21.92V pk-pk.
From the chart you can see that the available gain is 30dB.

## Audio Setup (continued)

### Audio Slew Select

This is the time taken for the audio to slew when the audio mixing and routing controls have changed.

The options are:

Instant .... The response is immediate

Slowest .. Change takes approximately one second

Slow ....... Change takes 75% of Slowest time

Medium .. Change takes 50% of Slowest time

Fast ........ Change takes 25% of Slowest time

### Channel Status Dest(ination)

This will set the four character name used in the destination field of the audio channel status.

To change the text, type the new text in the text area and then select ![return] (return).

Selecting Preset ![preset] will return the text to the default text (TEST).

*Note that the Channel Status Origin data is automatically set by the module to DEC0 and cannot be changed.*

### AES Validity Bit

When checked the AES validity Bit will be set; when unchecked it will be cleared.

### Analog Audio Cal

This function allows the audio ADC'c to be re-calibrated for 0 dBfs.

ADC Reset

When selected the audio ADC's will be re-calibrated for 0 dBfs.

ADC Reset On Input Switch

When checked the audio ADC's will be re-calibrated for 0 dBfs whenever a different video input is selected.

It is recommended that this function is left unchecked as it may disturb the audio output signal.
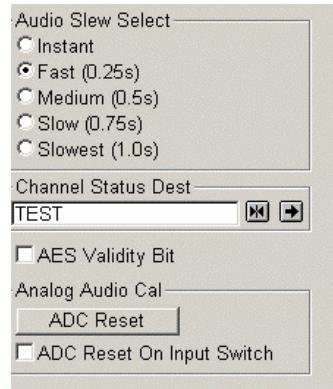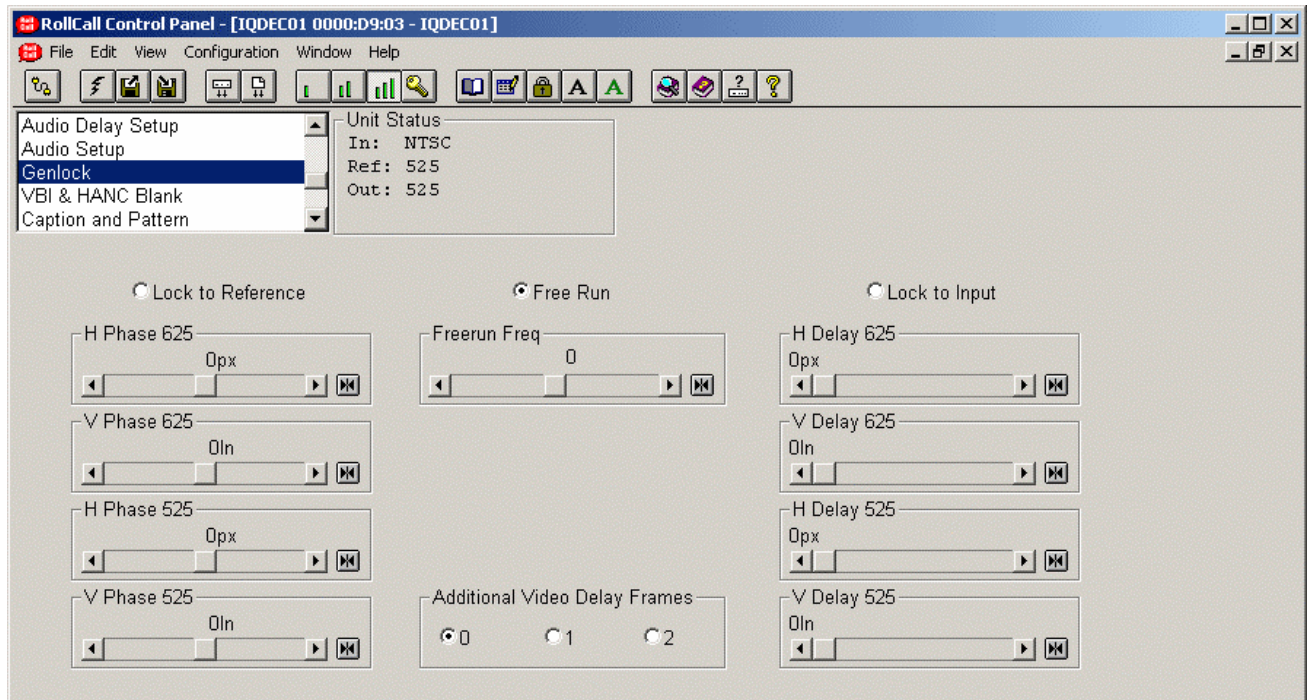
**Genlock**



This allows the genlock and delay options to be selected.

**Lock to Reference**

When selected and the unit will lock to the external reference signal.

**Free Run**

When selected the unit will not be locked to any input signals and the unit will free run.

**Lock to Input**

When selected and the unit will lock to the input video signal.

*Note that this selection is not available when the Decoder is set to the VHS/Unstable mode.*

**H(oriziontal) Phase (625/525)**

This item allows the horizontal timing of the output signal relative to the reference sync signal to be adjusted using the scrollbar by ± ½ line in 1 pixel steps.

*Note that picture disturbance may occur while this setting is adjusted.*

Selecting Preset returns the setting to zero. (Output coincident with reference)

**V(ertical) Phase (625/525)**

This item allows the vertical timing of the output signal relative to the reference sync signal to be adjusted, in TV lines. The scrollbar will adjust this value. Range is ±262 lines (525 standard) or ±312 lines (625 standard) in 1 line steps.
*Note that picture disturbance may occur while this setting is adjusted.*

Selecting Preset returns the setting to zero. (Output coincident with reference)

**Freerun Freq(uency)**

This allows the freerun frequency of the internal sync generator to be adjusted in steps of arbitrary units. Preset is to 0.

**Genlock (continued)**
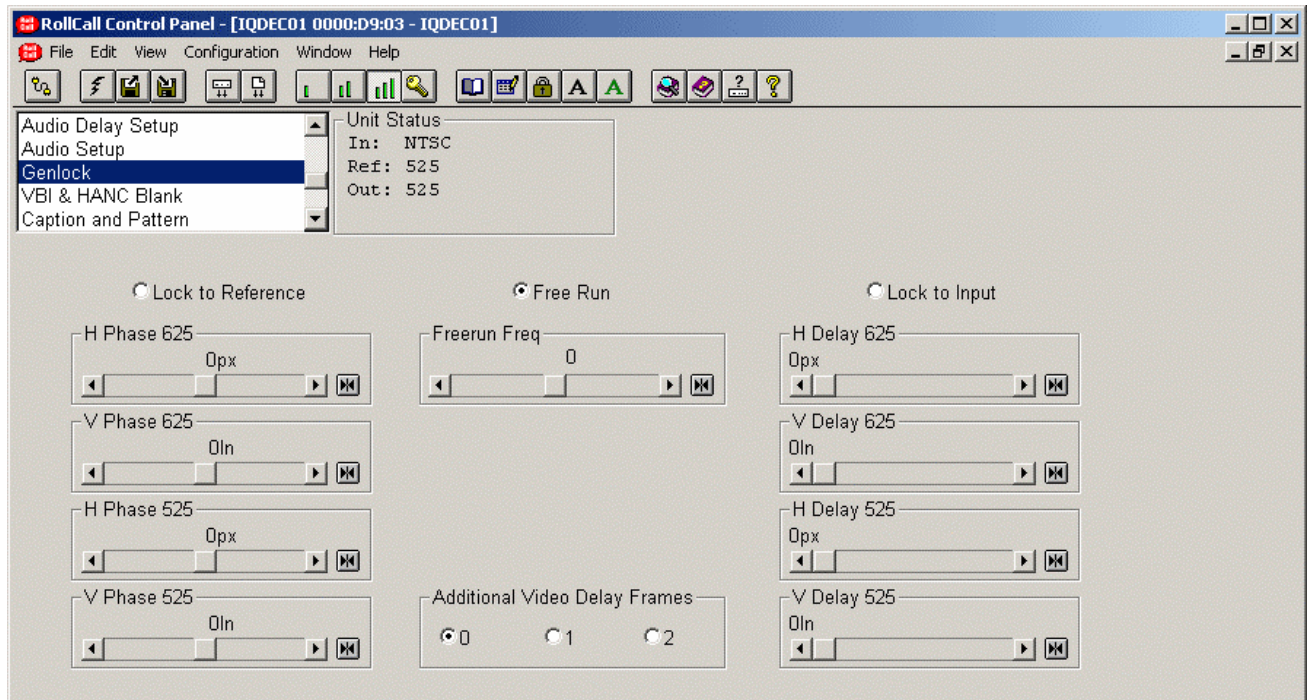


**Delay (625/525)**

When these controls are used the output signal will appear after the input signal with a time delay. When not used the module will operate in the synchronize mode.

*Note that the H and V delay functions are only active when the **Lock to Input** mode is selected.*

**H(orizontal) Delay (625/525)**

This item allows the horizontal timing of the output signal relative to the input signal to be adjusted by up to 1 line in 1 pixel steps. The scrollbar will adjust this value.
Selecting Preset returns the setting to the minimum horizontal delay.

**V(ertical) Delay**

This item allows the vertical timing of the output signal relative to the input signal to be adjusted, in TV lines. The scrollbar will adjust this value. Range is from 0 to 624 or 524 lines in 1 line steps.

Selecting Preset returns the setting to the minimum vertical delay.

**Video Delay Frames**

The number of frames that the output signal will appear after the input signal may be set with this item.
*Note that this function is available in any genlock mode and will add to any other delay settings.*

## VBI & HANC Blank(ing)
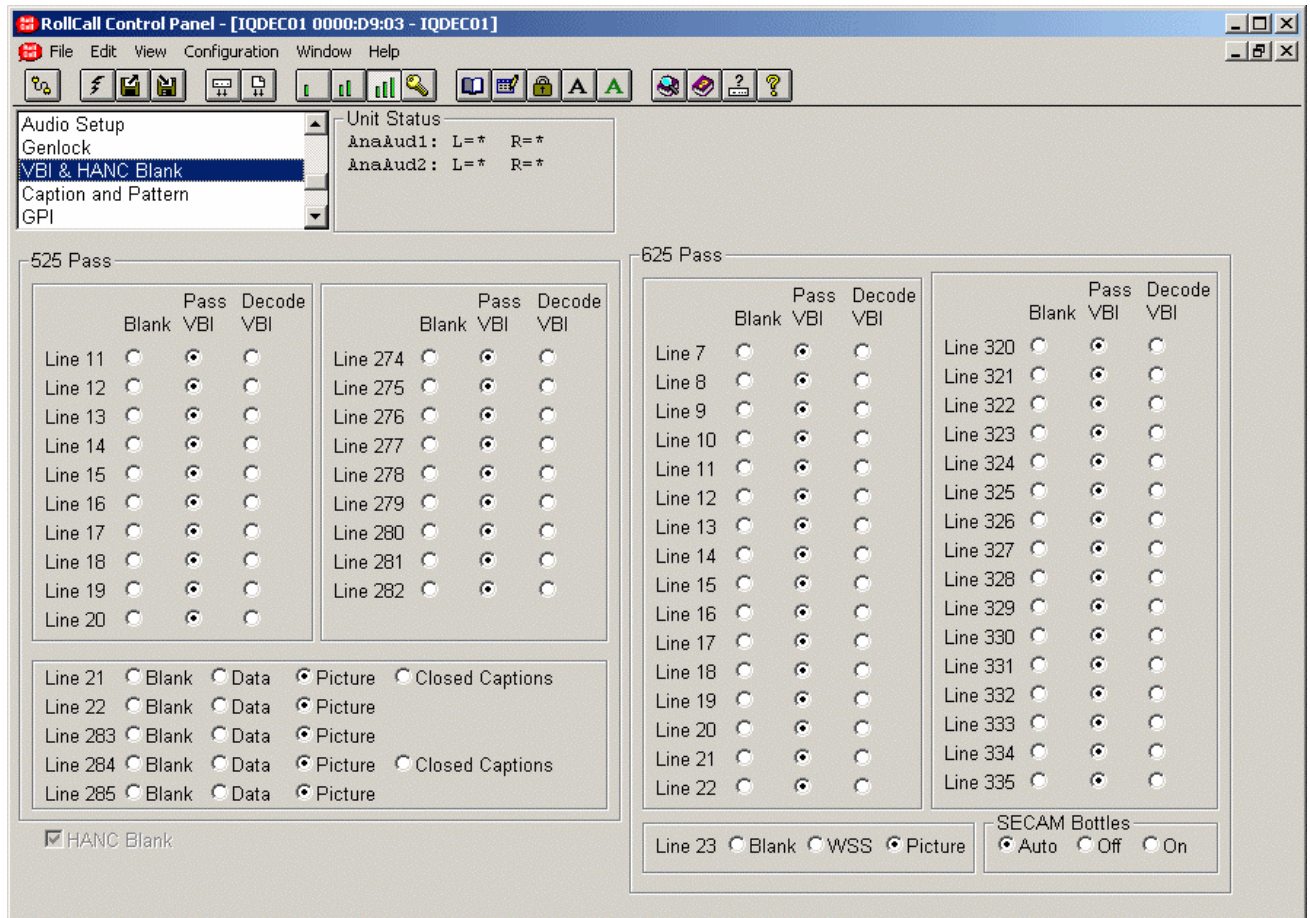


This item allows the selection of Vertical Interval lines contained in the input signal to be blanked or passed through the module as data or as a VITS.

Specific lines may be blanked, passed through as data, passed through as a picture (video), decoded or closed captions by checking the appropriate button.

Definitions:

| | |
|---|---|
| Blank | Line content is blanked by synchronizer |
| Data | Line is processed by decoder as data, chroma is blanked, Closed Caption disabled. |
| Pass as VBI | Line is decoded and chroma passed |
| Picture | Line is processed by the decoder as video |
| Decode VBI | The line is decoded and processed by the ProcAmp |
| Closed Captions | Line is processed by decoder as data, chroma is blanked, Closed Caption enabled |

**HANC Blank**

When checked all horizontal data will be blanked on the input.

When unchecked HANC will be passed uncorrupted as long as the Bus audio embedders are disabled. If the synchronizer is synchronizing then frames (including the HANC) might be dropped or repeated.

*Note that he HANC Blank control will always be checked (and grayed out) if the audio embedders are enabled.*

Line 23

The options for this line are:

| | |
|---|---|
| Blank | Line content is blanked by synchronizer |
| WSS | 1st half of line is processed as data, chroma blanked, 2nd half of line is processed as video |
| Picture | 1st half of line is blanked by decoder, 2nd half of line is processed as video |

## Caption & Pattern
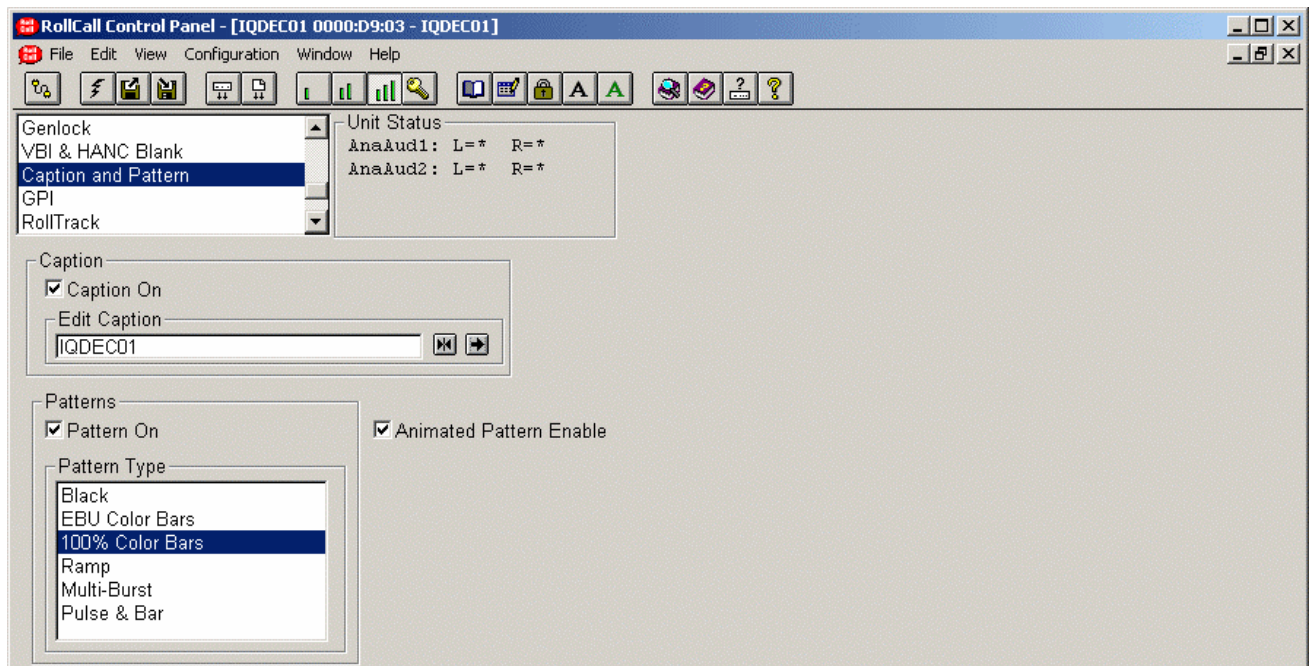


This function will allow a caption to be edited and selected and various patterns to be used as the output signal when the Pattern On function is selected.

### Caption

This function allows control of the caption (white text on a black background) which may contain a maximum of 19 characters (including spaces).

The caption will appear in the lower section of the picture.

Edit caption

To change the caption, type the new text in the text area and then select ➡ (return).

Selecting Preset ⧓ will return the text to the default text (IQDEC01).

### Select Caption

⊙ Caption Off The caption will not appear on the screen

⊙ Caption On The caption will appear on screen



**Caption Text**

## Caption & Pattern (continued)
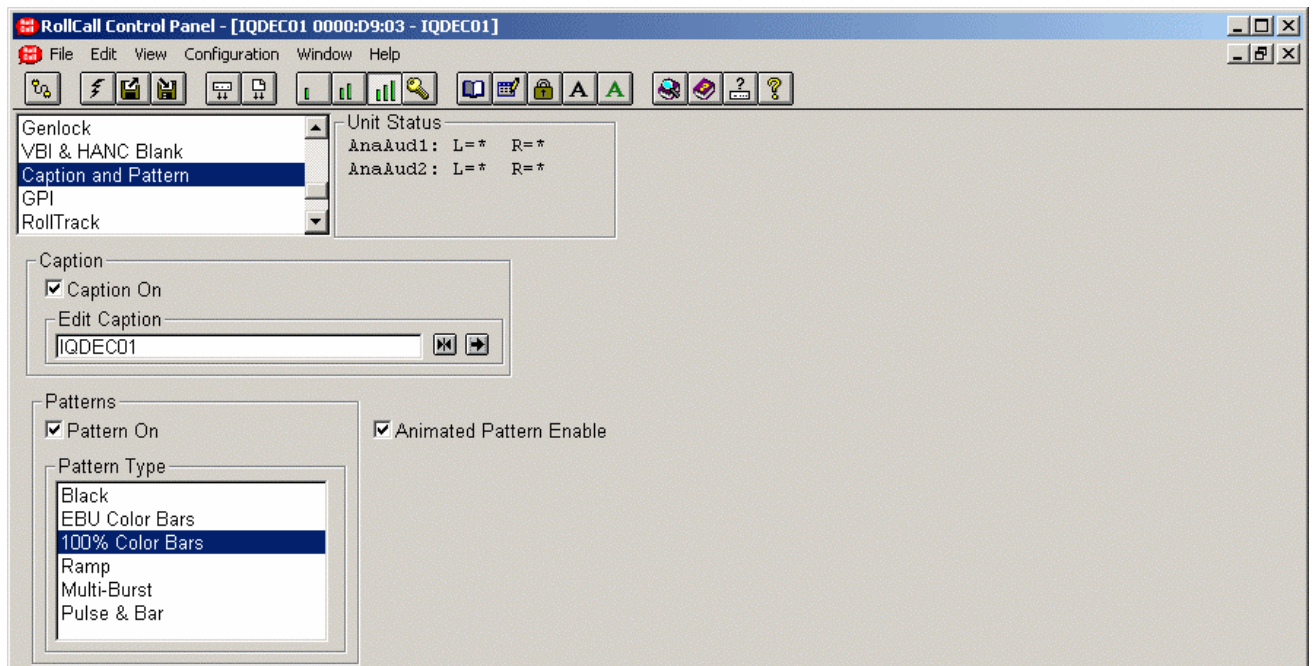


### Patterns

⊙  Pattern On

When selected the output will become the pattern selected from the **Pattern Type** list.

Pattern Type

One of the patterns (including Black) may be selected from the list.

⊙  **Animated Pattern**

When selected, a monochrome rectangular area will appear on the output picture as shown opposite. The brightness of this rectangle will ramp from black, through gray to white and then directly to black over a period of about one second. This action will then be repeated continuously.

This pattern is useful for checking active video paths. Down stream equipment can see that video has not been frozen.



**Animated Pattern**

Animated Pattern Brightness
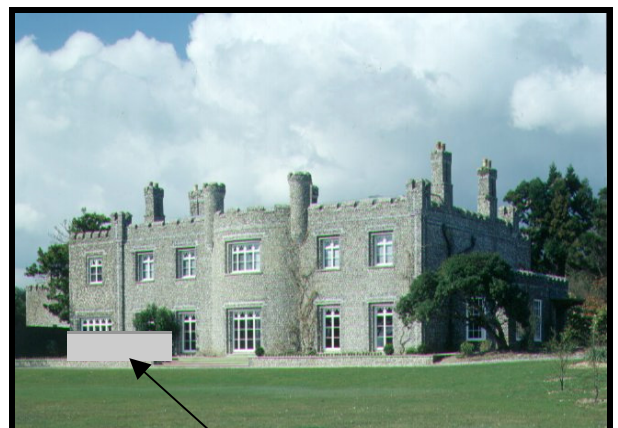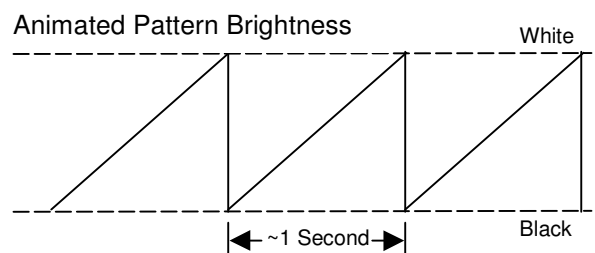
## GPI
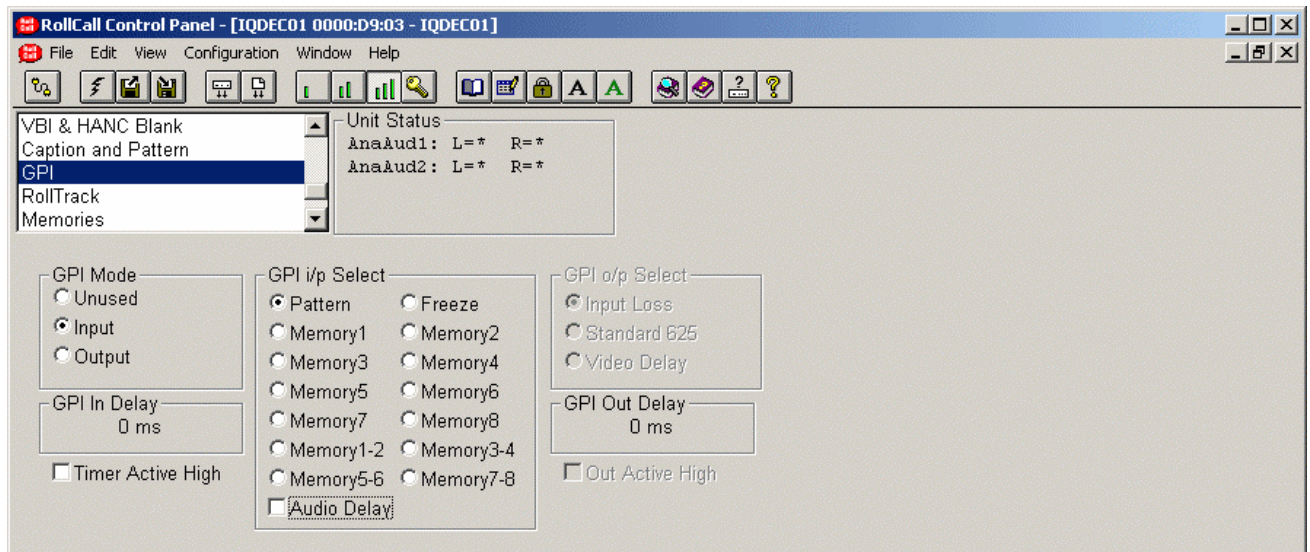


This screen allows the GPI functions to be configured and their actions defined.

**GPI Mode**

This allows the GPI port to be configured as an **Input**, an **Output** or **Unused**. If **Unused** is selected the **GPI i/p Select** and **GPI o/p Select** items will be grayed out.

**GPI i/p Select**

When configured as an input the GPI connection may be used for accepting GPI information (from mechanical switch contacts, relay contacts etc.) The resulting action that the unit takes may be selected using this item.

The GPI input functions that may be selected are as follows:

Pattern      The unit will produce a pattern chosen from the Pattern menu when the input changes from open to closed.

Freeze       The output picture will become a frozen frame when the input changes from open to closed.

Memory 1 to 8
                The unit will use the settings in the selected memory location when the input changes from open to closed.

Mem1-2      The unit will toggle between the settings of memory locations 1 and 2.
Open to Closed = Memory 1 settings
Closed to Open =  Memory 2 settings

Mem 3-4     The unit will toggle between the settings of memory locations 3 and 4.
Open to Closed = Memory 3 settings
Closed to Open =  Memory 4 settings

Mem 5-6     The unit will toggle between the settings of memory locations 5 and 6.
Open to Closed = Memory 5 settings
Closed to Open =  Memory 6 settings

Mem 7-8     The unit will toggle between the settings of memory locations 7 and 8.
Open to Closed = Memory 7 settings
Closed to Open =  Memory 8 settings

Audio Delay The audio delay may be controlled by the width of a pulse on the GPI input. *Note that when checked the other input functions will not be available.*
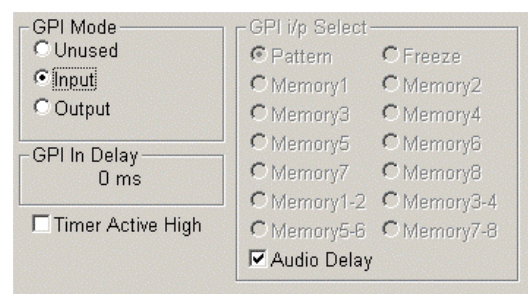
## GPI (continued)
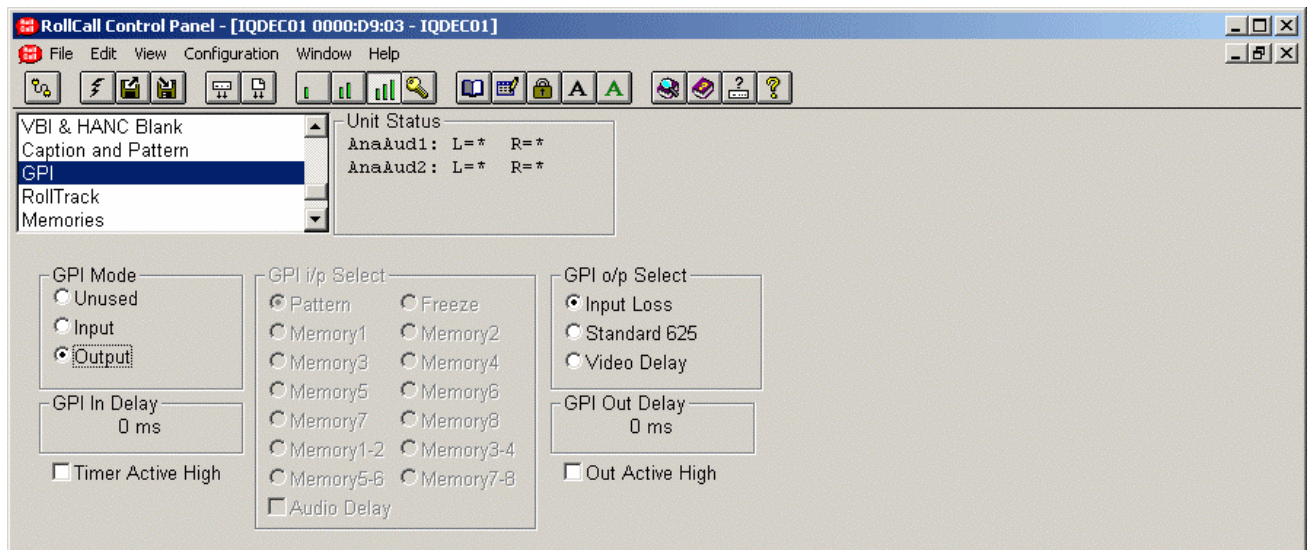


### GPI o/p Select

The GPIO may be configured to produce an output corresponding to one of the following conditions:

- Input Loss
- Standard 625
- Video Delay

The preset setting is to Input Loss.

When the condition is not true the output will float but when the condition is true the output is closed to ground via a transistor.

*Note that when video delay is selected the output is a negative going TTL pulse. The width of the pulse represents the delay through the unit to the nearest millisecond.*

### GPI Out Delay

This will show the current video delay through the unit and hence the width of the GPI output TTL pulse.

### Out Active High

This determines the sense of the GPI output signal. When checked the GPI is active high. When unchecked the GPI is active low.
*Note this will also set the polarity of the TTL output signal.*

## RollTrack
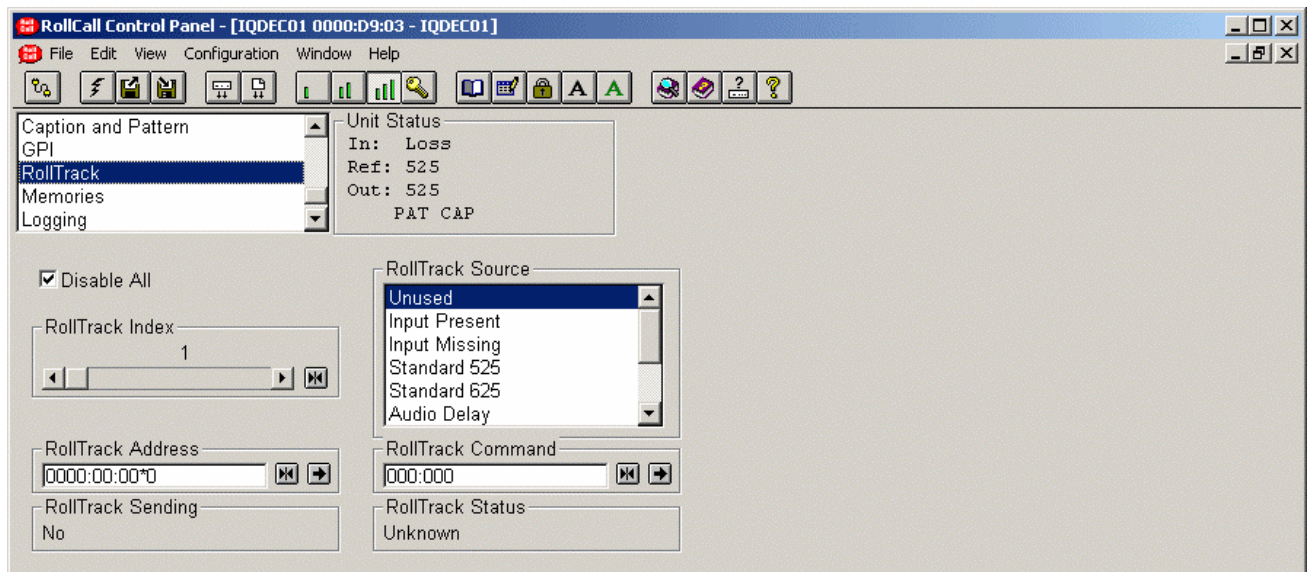


This function allows information to be sent, via the RollCall™ network, to other compatible units connected on the same network.

For example, it can enable compatible audio delay units to produce an audio delay dependent on this and other similar units. The audio delay unit will dynamically follow or track the received delay-time information. This allows processed video signals to be timed correctly with audio signals. This automatic tracking system via the RollCall™ network is call **RollTrack**.

*For more detailed information, see the RollTrack section (Appendix) at the end of this manual.*

### RollTrack Index

This item allows up to 16 destinations to be selected.

### RollTrack Source

This allows the source of information that triggers the transmission of data to be selected. Options are:

| Unused | De-embed 2 Present |
|---|---|
| Input Present | De-embed 3 Lost |
| Input Missing | De-embed 3 Present |
| Standard 525 | De-embed 4 Lost |
| Standard 625 | De-embed 4 Present |
| Audio Delay | De-embed 5 Lost |
| Video Delay | De-embed 5 Present |
| Ref. Lost | De-embed 6 Lost |
| Ref. Present | De-embed 6 Present |
| Ref. Error | De-embed 7 Lost |
| De-embed 1 Lost | De-embed 7 Present |
| De-embed 1 Present | De-embed 8 Lost |
| De-embed 2 Lost | De-embed 8 Present |

The destination for the information is set by the network code address as follows:

### Network Address

This item allows the address of the selected destination unit to be set.

To change the address, type the new destination in the text area and then select ![return icon] (return).

![Preset icon] (Preset) returns to the default destination

The full **RollTrack** address has four sets of numbers

For example: 0000:10:01*99

The first set (0000) is the network segment code number

The second set (10) is the number identifying the (enclosure/mainframe) unit.

The third set (01) is the slot number in the unit

The fourth set (99) is a user settable number that is a unique identification number for the destination unit in a multi-unit system. This ensures that only the correct unit will respond to the command. If left at 00 an incorrectly fitted unit may respond inappropriately.

## RollTrack (continued)
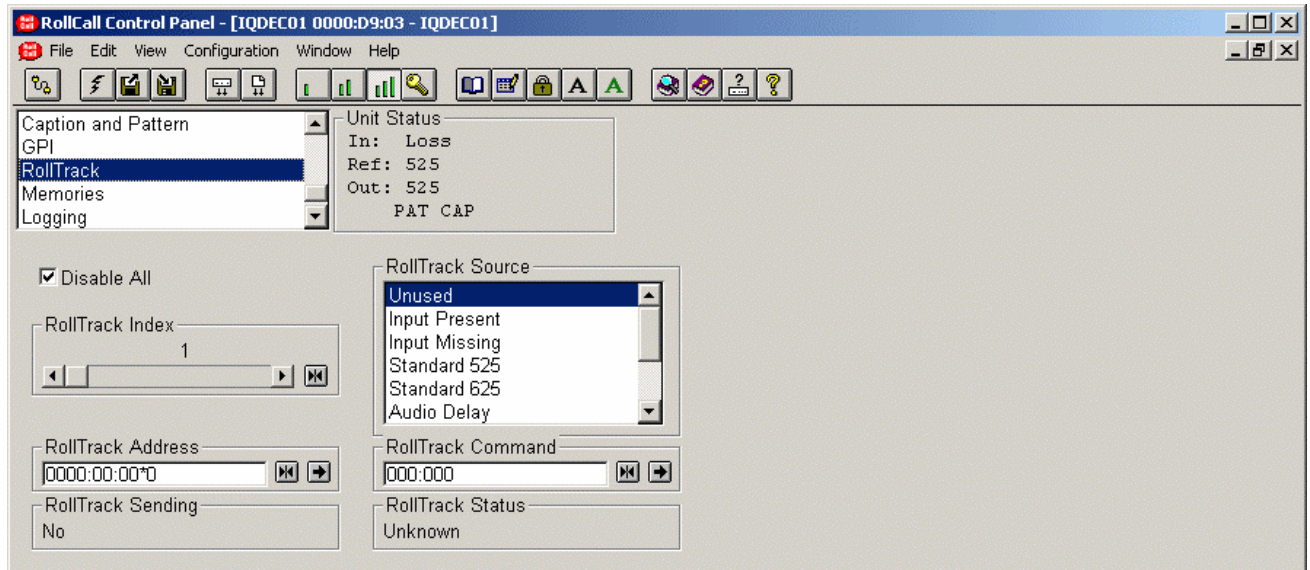


### RollTrack Command

The full **RollTrack** command has two sets of numbers

For example: 84*156

The first set (84) is the **RollTrack** command number.

*Note that only command numbers 14,15,16 and 17 should be used for audio delay*

The second set (156) is the value sent with the **RollTrack** command number.

*Note that when video delay is selected as the* **RollTrack** *source the value sent with the* **RollTrack** *command is the video delay value not the value set.*

*For details of the RollCall command values for specific units please contact your local Snell & Wilcox agent.*

### Disable All

When this item is checked all RollTrack items will be disabled.

### RollTrack Sending

This item shows when the unit is actively sending the RollTrack command.

This may show:

| | |
|---|---|
| String | A string value is always being sent. |
| Number | A number value is always being sent. |
| No | The message is not being sent. |
| Yes | The message is being sent. |
| Internal Type Error | Inconsistent behavior; please contact your local Snell & Wilcox agent. |

### RollTrack Status

This item will show the status of the currently selected RollTrack index.

This may show:

| | |
|---|---|
| OK | RollTrack message sent and received OK. |
| Unknown | Rolltrack message has been sent but it has not yet completed. |
| Timeout | RollTrack message sent but acknowledgement not received. This could be because the destination unit is not at the location specified. |
| Error | This indicates a broken RollCall state. |
| Bad | This indicates a broken RollCall packet. |

**Memories**
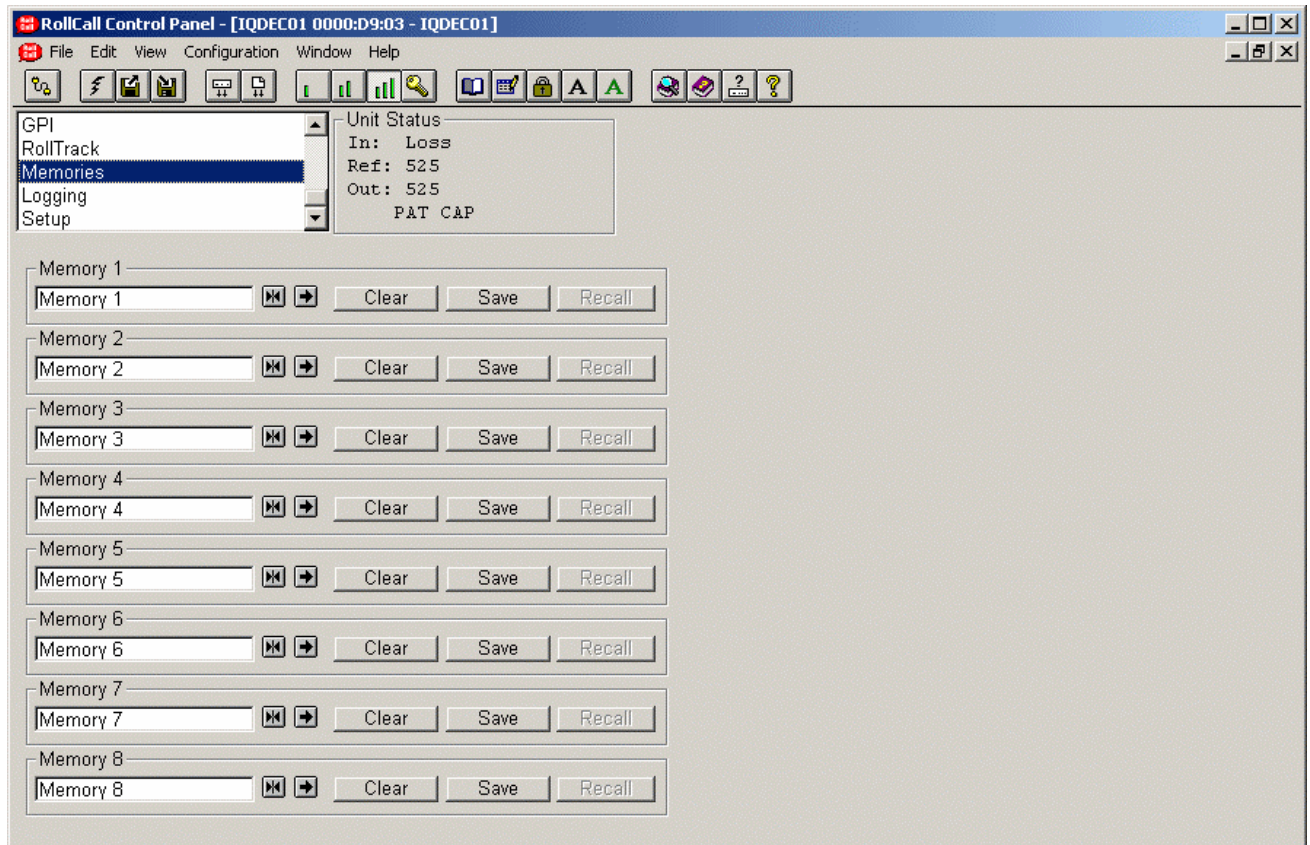


This function allows a number of particular setups of the unit to be saved and recalled. There are 8 memory locations available.

To change the memory name, type the new name in the text area and then select ➡ (return).

Selecting Preset [⧐⧐] will return the text to the default name.
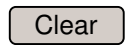
**Clear**

This function will clear the contents of the memory location.
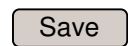
**Save**

This function allows the settings of all items to be saved at the memory location.
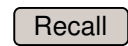
**Recall**

This function allows the settings saved at the memory location to be recalled. When this button appears grayed out it indicates that the memory location is empty and therefore cannot be recalled.

## Logging
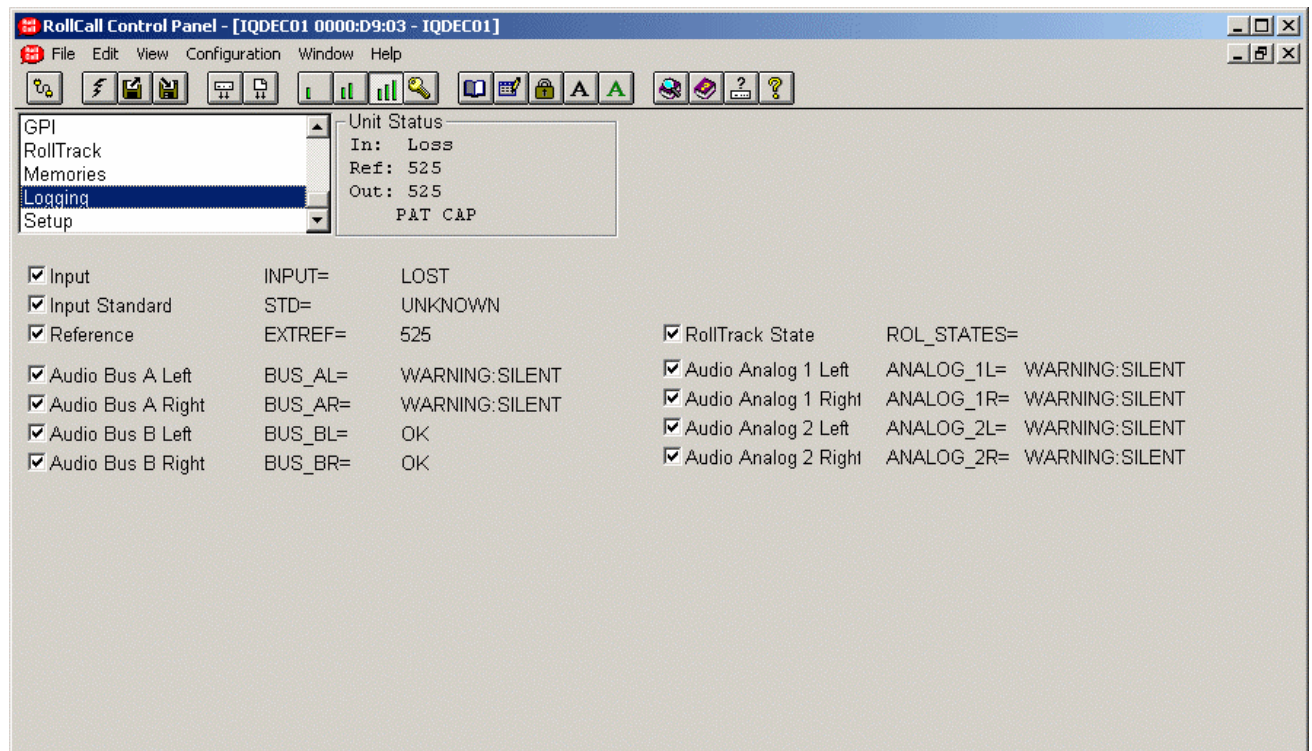


Information about various parameters can be made available to a logging device that is attached to the RollCall™ network by checking the appropriate box.

The status is shown to the right of the item.

Any of the items may be selected from the list.

**ROLLCALL LOG FIELDS**

(where applicable)

| Log Field | Log Value | Description |
|---|---|---|
| INPUT= | OK | Valid input signal |
|  | ERR | Invalid input signal |
|  | LOST | Input signal lost |
| STD= | UNKNOWN | Input signal standard not recognized or no signal |
|  | STDERR | Not a selected input standard |
|  | 525 | SDI input standard 525 |
|  | 625 | SDI input standard 625 |
|  | PAL | PAL composite input |
|  | NTSC | NTSC composite input |
|  | NTSC_J | NTSC J composite input |
|  | PAL_M | PAL M composite input |
|  | PAL_N | PAL N composite input |
|  | SECAM | SECAM composite input |
|  | N443_60 | N4.43 60  composite input |
|  | PAL443_60 | PAL4.43 60 composite input |
|  | ERROR: 525 | SDI input standard 525, 525 standard not valid |
|  | ERROR: 625 | SDI input standard 625, 625 standard not valid |
|  | ERROR: PAL | Composite input standard invalid, decoding as PAL |
|  | ERROR: NTSC | Composite input standard invalid, decoding as NTSC |
|  | ERROR: NTSC_J | Composite input standard invalid, decoding as NTSC J |
|  | ERROR: PAL_M | Composite input standard invalid, decoding as PAL M |
|  | ERROR: PAL_N | Composite input standard invalid, decoding as PAL N |
|  | ERROR: SECAM | Composite input standard invalid, decoding as SECAM |
|  | ERROR: N443_60 | Composite input standard invalid, decoding as N4.43 60 |
|  | ERROR: PAL443_60 | Composite input standard invalid, decoding as PAL4.43 60 |
| EXTREF= | 525 | 525 reference, input 525 or lost |
|  | 625 | 625 reference, input 625 or lost |
|  | ERROR: 525 | 525 reference, input 625, trying to lock to reference |
|  | ERROR: 625 | 625 reference, input 525, trying to lock to reference |
|  | WARNING: LOSS | Reference lost, trying to lock to reference |
|  | WARNING:525_N/A | 525 reference, input 625, not trying to lock to reference |
|  | WARNING:625_N/A | 625 reference, input 525, not trying to lock to reference |
|  | NONE | Reference lost, not trying to lock to reference |
| ROL_STATES= | OK | RollTrack message sent and received OK |
|  | FAIL | RollTrack message not acknowledged |
| ANALOG_1L | OK | Analog Input 1 Left channel has valid signal selected |
|  | WARNING: SILENT | Analog Input 1 Left channel is receiving silence |
|  | WARNING: QUIET | Analog Input 1 Left channel is receiving low level signal |
|  | WARNING: HIGH | Analog Input 1 Left channel is receiving high level signal |
|  | WARNING: OVERLOAD | Analog Input 1 Left channel is receiving overload signal |
| ANALOG_1R | OK | Analog Input 1 Right channel has valid signal selected |
|  | WARNING: SILENT | Analog Input 1 Right channel is receiving silence |
|  | WARNING: QUIET | Analog Input 1 Right channel is receiving low level signal |
|  | WARNING: HIGH | Analog Input 1 Right channel is receiving high level signal |
|  | WARNING: OVERLOAD | Analog Input 1 Right channel is receiving overload signal |
| ANALOG_2L | OK | Analog Input 2 Left channel has valid signal selected |
|  | WARNING: SILENT | Analog Input 2 Left channel is receiving silence |
|  | WARNING: QUIET | Analog Input 2 Left channel is receiving low level signal |
|  | WARNING: HIGH | Analog Input 2 Left channel is receiving high level signal |
|  | WARNING: OVERLOAD | Analog Input 2 Left channel is receiving overload signal |
| ANALOG_2R | OK | Analog Input 2 Right channel has valid signal selected |
|  | WARNING: SILENT | Analog Input 2 Right channel is receiving silence |
|  | WARNING: QUIET | Analog Input 2 Right channel is receiving low level signal |
|  | WARNING: HIGH | Analog Input 2 Right channel is receiving high level signal |
|  | WARNING: OVERLOAD | Analog Input 2 Right channel is receiving overload signal |
| BUS_AL= | OK | Router BUS A Left channel has valid signal selected |

| Log Field | Log Value | Description |
|---|---|---|
|  | WARNING: SILENT | Router BUS A Left channel is receiving silence |
|  | WARNING: QUIET | Router BUS A Left channel is receiving low level signal |
|  | WARNING: HIGH | Router BUS A Left channel is receiving high level signal |
|  | WARNING: OVERLOAD | Router BUS A Left channel is receiving overload signal |
| BUS_AR= | OK | Router BUS A Right channel has valid signal selected |
|  | WARNING: SILENT | Router BUS A Right channel is receiving silence |
|  | WARNING: QUIET | Router BUS A Right channel is receiving low level signal |
|  | WARNING: HIGH | Router BUS A Right channel is receiving high level signal |
|  | WARNING: OVERLOAD | Router BUS A Right channel is receiving overload signal |
| BUS_BL= | OK | Router BUS B Left channel has valid signal selected |
|  | WARNING: SILENT | Router BUS B Left channel is receiving silence |
|  | WARNING: QUIET | Router BUS B Left channel is receiving low level signal |
|  | WARNING: HIGH | Router BUS B Left channel is receiving high level signal |
|  | WARNING: OVERLOAD | Router BUS B Left channel is receiving overload signal |
| BUS_BR= | OK | Router BUS B Right channel has valid signal selected |
|  | WARNING: SILENT | Router BUS B Right channel is receiving silence |
|  | WARNING: QUIET | Router BUS B Right channel is receiving low level signal |
|  | WARNING: HIGH | Router BUS B Right channel is receiving high level signal |
|  | WARNING: OVERLOAD | Router BUS B Right channel is receiving overload signal |
| SN= | Runtime string | Serial number of unit |

**Setup**



## Information Window

The type if information that appears in the Information Window may be chosen with this item.

Input Status
EDH & ANC Status
Audio Input Status

Input Status
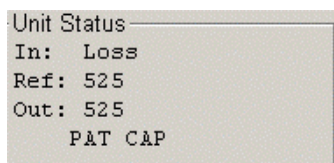


**In:** This shows the standard of the input and can show the color standard for composite inputs.

**Ref:** This will show the standard of the reference signal.

**Out:** This shows the standard of the output signal.

Audio Input Status
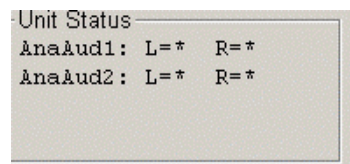


**AnaAud1(2)** This shows the status of the Left and Right analog audio inputs showing the results of the audio monitoring detectors. Where:
Ov = Overload detected
OK = Levels within monitoring limits
* = Silence, no signal detected
Lo = Low level signal detected
Hi = High level detected

## Setup (continued)
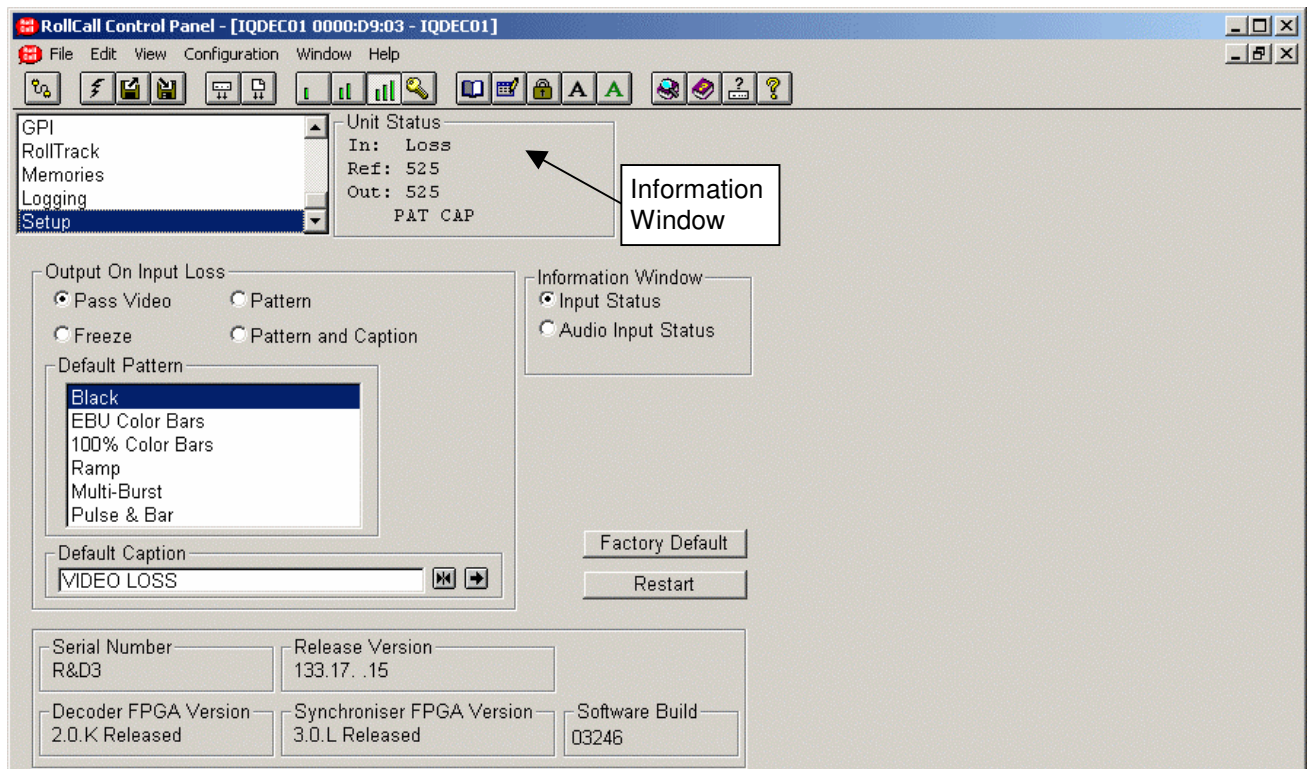


### Output on Input Loss

If the input signal fails or is of poor quality this function will determine what the output signal will become under such conditions.

Pass Video   The input signal will be passed to the output.

Freeze   The output will become a frozen frame picture.

Pattern   The output will become the pattern chosen from the **Default Pattern** list.

Pattern and   The output will become the pattern
Caption   chosen from the **Default Pattern** list plus the **Default Caption**.

### Default Pattern

If Pattern is chosen in the **Default Output** item the output will become the pattern chosen from this list.

### Default Caption

This is the caption that will appear if **Pattern and Caption** is chosen from the **Output on Input Loss** function.

To change the caption, type the new text in the text area and then select ➡ (return).

Selecting Preset ⏮ will return the text to the default text (VIDEO LOSS).

**Setup (continued)**
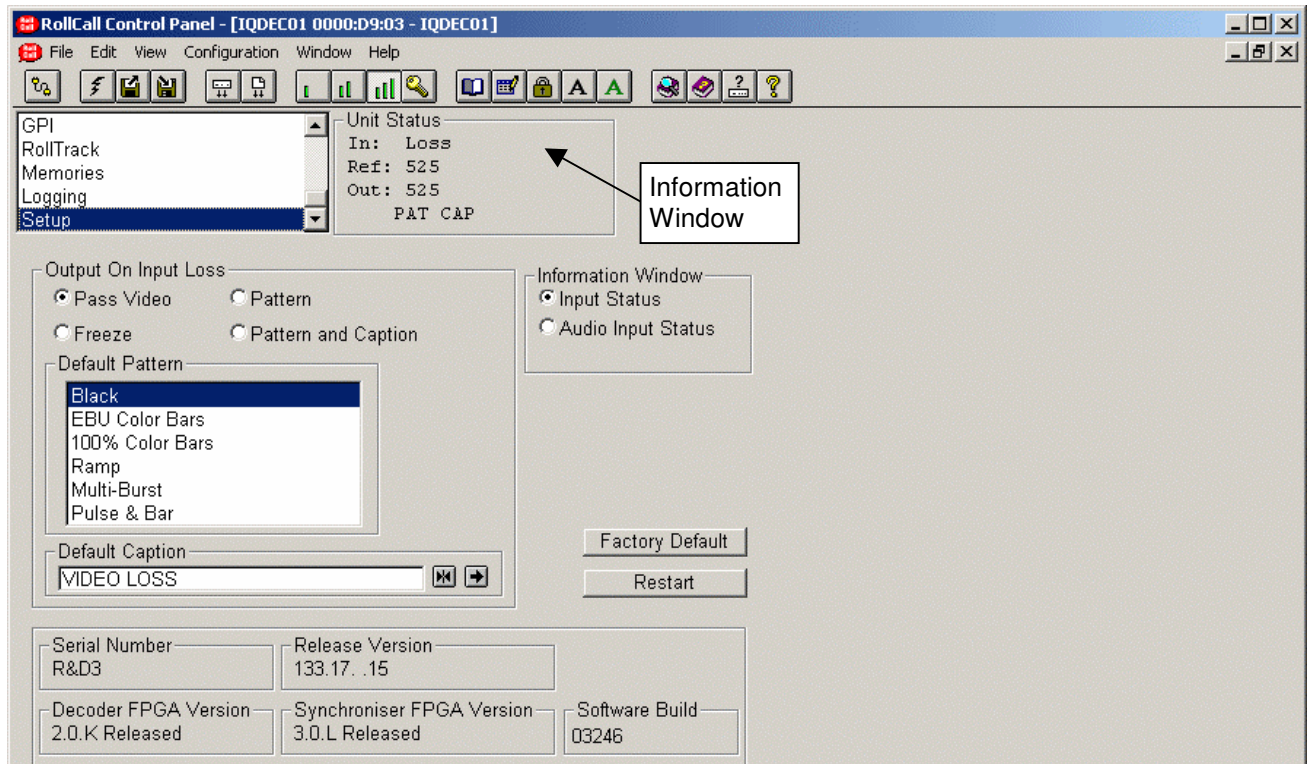


**Factory Default**

Selecting this item sets all adjustment functions that include a preset facility, to their factory default values.

**Restart**

This will reboot the unit simulating a power-down power-up cycle restoring power-up settings.

**Serial Number**

This item shows the serial number of the module

**Release Version**

This item shows the version of the software fitted in the module.

**Software Build**

This will indicate the factory build number. This number defines all parameters of the unit (software versions, build level etc.) for identification purposes.

**Decoder FPGA Version**

This will display the version number of the Decoder
FPGA fitted to the unit.

**Synchronizer FPGA Version**

This will display the version number of the Synchronizer FPGA fitted to the unit.

### Operation from an Active Control Panel

The card may be operated from an active control panel via the RollCall™ network.
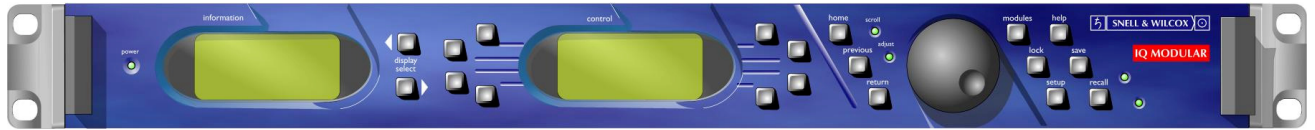
All operational parameters and selections are made using a system of menus displayed in two LCD windows.

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

### Information Window

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

For details of the abbreviations used please see page 42.

```
information

03:IQDEC01
In: 625
Out:625
```

### Control Window

The **Control** window displays all Selection Menus and sub-menus.

The selection is made by pressing the button adjacent to the required item.

The menu structure is detailed in the following pages.

```
control

◄ Video…      Audio…►
◄ Freeze… Genlock…►
◄ User Mem… Setup…►
```

**IQDEC01 MENU**
- ◄ Video...        Audio... ►
- ◄ Decoder...      Genlock... ►
- ◄ Setup...        User Mem...... ►
- ◄ Freeze...

See Page 47

See Page 46

**Input**
- ◄ Select...
- ◄ Composite Std...

**Composite Std**
- ◄ PAL
- ◄ NTSC
- ◄ NTSC J
- ◄ PAL M
- ◄ PAL N
- ◄ SECAM
- ◄ N4.43 60
- ◄ PAL4.43 60

**Select**
- ◄ Composite A
- ◄ Composite B
- ◄ YC

**Video**
- ◄ Input...
- ◄ ProcAmp...
- ◄ Noise Reducer...

**Noise Reducer**
- ◄ Luma Strength
- ◄ Chroma Strength
- ◄ Threshold Mode
- ◄ Manual Threshold
- ◄ Auto Bias
- ◄ Delay Mode...
- ◄ Noise Measured

**Noise Measured**

Noise measured

00

OK ►

**Delay Mode**
- ◄ Normal Delay
- ◄ Minimum Delay

**Auto Bias**

Auto Bias

0.0

◄ Preset

**Manual Threshold**

Manual Threshold

0.0

◄ Preset

**Threshold Mode**
- ◄ Auto
- ◄ Manual

**Luma/Chroma Strength**

Luma/Chroma Strength

0.0

◄ Preset

**Decoder**
- ◄ Decoder...
- ◄ Color Killer...
- ◄ SECAM Studio...
- ◄ SECAM VHS...

**SECAM VHS**
- ◄ Luma Bandwidth...

**Luma Bandwidth**
- ◄ Wide
- ◄ Medium
- ◄ Narrow

**SECAM Studio**
- ◄ Notch...
- ◄ Luma Bandwidth...

**Luma Bandwidth**
- ◄ Wide
- ◄ Medium
- ◄ Narrow

**Notch**
- ◄ Adaptive
- ◄ Controllable

**Color Killer**
- ◄ Chroma Off
- ◄ Chroma On
- ◄ Auto

**Decoder**
- ◄ Studio
- ◄ Simple
- ◄ VHS/Unstable

**User Mem**
- ◄ Memory 1...
- to
- ◄ Memory 8...

**Memory 1 to 8**
- ◄ Recall1-8      Clear 1-8 ►
- ◄ Name 1-8      Save 1-8 ►

**Name Memory 1-8**

Name Memory 1-8
*memory_name*                ►
- ◄ Clear
- ◄ Preset        OK ►

**ProcAmp**
- ◄ Luma Gain
- ◄ Black Level
- ◄ Chroma Gain
- ◄ NTSC Hue
- ◄ VEnhance
- ◄ H Enhance
- ◄ H Enhance Freq...
- ◄ Picture Position
- ◄ Y/C Timing
- ◄ Borders...

**Luma Gain**

Luma Gain

0.0 dB

◄ Preset

**Black Level**

Black Level

0.0 mV

◄ Preset

**Chroma Gain**

Chroma Gain

0.0 dB

◄ Preset

**NTSC Hue**

NTSC Hue

0

◄ Preset

**V Enhance**

V Enhance

0

◄ Preset

**H Enhance**

H Enhance

0

◄ Preset

**H Enhance Freq**
- ◄ 3.375 MHz
- ◄ 2.250 MHz

**Borders**
- ◄ Left       Red ►
- ◄ Right      Green ►
- ◄ Top        Blue ►
- ◄ Bottom

**Top/Bottom**

Top/Bottom

10 Lines

◄ Preset

**Left/Right**

Left/Right

100 Pixels

◄ **Preset**

**Red/Green/Blue**

Red/Green/Blue

127

◄ Preset

**Y/C Timing**

Y/C Timing

0.0ns

◄ Preset

**Picture Position**

Picture Position

0.0ns

◄ Preset

**Genlock**
- ◄ Reference Src...
- ◄ Reference Time...
- ◄ Freerun Frequency
- ◄ Frame Delay...

**Frame Delay**
- ◄ 0 Frame Delay
- ◄ 1 Frame Delay
- ◄ 2 Frame Delay

**Freerun Freq**

Freerun Freq

20

◄ Preset

**Reference Time**
- ◄ H Phase 625
- ◄ V Phase 625
- ◄ H Phase 525
- ◄ V Phase 525
- ◄ H Delay 625
- ◄ V Delay 625
- ◄ H Delay 525
- ◄ V Delay 525

**V Phase/Delay 625/525**

V Phase/Delay 625/525

2 Lines

◄ Preset

**H Phase/Delay 625/525**

H Phase/Delay 625/525

204px

◄ Preset

**Reference Src**
- ◄ Free Run
- ◄ External Reference
- ◄ Input Video

*IQDEC01  Menu System*

**Setup**
- ◄ Pattern...
- ◄ Caption...
- ◄ VBI & HANC Blank...
- ◄ GPI I/O...
- ◄ RollTrack...
- ◄ Logging...
- ◄ Default Output..
- ◄ Information Window... .
- ◄ Software Version
- ◄ Serial Number
- ◄ Build Number
- ◄ FPGA Sync Version
- ◄ FPGA Dec Version
- ◄ Factory Default

**Pattern**
- ◄ Pattern Type
- ◄ Pattern Enable
- ◄ Animated Pattern

**Pattern Type**
- ◄ Black
- ◄ EBU Color Bars
- ◄ 100% Color Bars
- ◄ Ramp
- ◄ Multi-burst
- ◄ Pulse & Bar

**Caption**
- ◄ Edit Caption
- ◄ Caption Select

**Caption Select**
- ◄ Caption On
- ◄ Caption Off

**Edit Caption**
Edit Caption
- ◄ IQDEC01          ►
- ◄ Clear
- ◄ Preset           OK ►

**525 Pass**
- ◄ 525 Lines 11-22
- ◄ 525 Lines 274-285

**525 Lines 274-285**
- ◄ Line 274
- ◄ Line 275
- ◄ Line 276
- ◄ Line 277
- ◄ Line 278
- ◄ Line 279
- ◄ Line 280
- ◄ Line 281
- ◄ Line 282
- ◄ Line 283
- ◄ Line 284
- ◄ Line 285

**Line 283 & 285**
- ◄ Blank
- ◄ Pass as Data
- ◄ Picture

**Line 284**
- ◄ Blank
- ◄ Pass as Data
- ◄ Picture
- ◄ Pass as Closed Capt

**Line 274-282**
- ◄ Blank
- ◄ Pass VBI
- ◄ Decode VBI

**525 Lines 11-22**
- ◄ Line 11
- ◄ Line 12
- ◄ Line 13
- ◄ Line 14
- ◄ Line 15
- ◄ Line 16
- ◄ Line 17
- ◄ Line 18
- ◄ Line 19
- ◄ Line 20
- ◄ Line 21
- ◄ Line 22

**Line 22**
- ◄ Blank
- ◄ Pass as Data
- ◄ Picture

**Line 21**
- ◄ Blank
- ◄ Pass as Data
- ◄ Picture
- ◄ Pass as Closed Capt

**Line 11-20**
- ◄ Blank
- ◄ Pass VBI
- ◄ Decode VBI

**VBI & HANC Blank**
- ◄ 525 Pass...
- ◄ 625 Pass...
- ◄ HANC Blank
- ◄ SECAM Bottles...

**SECAM Bottles**
- ◄ Auto
- ◄ Off
- ◄ On

**625 Pass**
- ◄ 625 Lines 7-23
- ◄ 625 Lines 320-335

**625 Lines 320-335**
- ◄ Line 320...
- ◄ Line 321...
- ◄ Line 322...
- ◄ Line 323...
- ◄ Line 324...
- ◄ Line 325...
- ◄ Line 326...
- ◄ Line 327...
- ◄ Line 328...
- ◄ Line 329...
- ◄ Line 330...
- ◄ Line 331...
- ◄ Line 332...
- ◄ Line 333...
- ◄ Line 334...
- ◄ Line 335...

**Line 320-335**
- ◄ Blank
- ◄ Pass VBI
- ◄ Decode VBI

**625 Lines 7-23**
- ◄ Line 7...
- ◄ Line 8...
- ◄ Line 9...
- ◄ Line 10...
- ◄ Line 11...
- ◄ Line 12...
- ◄ Line 13...
- ◄ Line 14...
- ◄ Line 15...
- ◄ Line 16...
- ◄ Line 17...
- ◄ Line 18...
- ◄ Line 19...
- ◄ Line 20...
- ◄ Line 21...
- ◄ Line 22...
- ◄ Line 23...

**Line 23**
- ◄ Blank
- ◄ WSS
- ◄ Picture

**Line 7-22**
- ◄ Blank
- ◄ Pass VBI
- ◄ Decode VBI

**GPI I/O**
- ◄ GPI Mode...
- ◄ GPI i/p Select...
- ◄ GPI o/p Select...
- ◄ Out Active High
- ◄ Timer Active High
- ◄ Audio Delay
- ◄ GPI In Delay
- ◄ GPI Out Delay

**GPI In/Out Delay**
GPI In/Out Delay
5.5ms
OK ►

**GPI o/p Select**
- ◄ Input Present
- ◄ Standard 625
- ◄ Video Delay

**GPI i/p Select**
- ◄ Pattern
- ◄ Freeze
- ◄ Memory1
- ◄ Memory2
- ◄ Memory3
- ◄ Memory4
- ◄ Memory5
- ◄ Memory6
- ◄ Memory7
- ◄ Memory8
- ◄ Memory 1-2
- ◄ Memory 3-4
- ◄ Memory 5-6
- ◄ Memory 7-8

**GPI Mode**
- ◄ Unused
- ◄ Input
- ◄ Output

**RollTrack**
- ◄ Diable All
- ◄ RollTrack Index
- ◄ RollTrack Source...
- ◄ RollTrack Address
- ◄ RollTrack Command
- ◄ RollTrack Status
- ◄ RollTrack Sending

**RollTrack Sending/Status**
RollTrack Sending/Status
YES
OK ►

**RollTrack Command**
RollTrack Command
- ◄ 0               ►
- ◄ Clear
- ◄ Preset          OK ►

**RollTrack Address**
RollTrack Address
- ◄ 0               ►
- ◄ Clear
- ◄ Preset          OK ►

**RollTrack Source**
- ◄ Unused
- ◄ Input Present
- ◄ Input Missing
- ◄ Standard 525
- ◄ Standard 625
- ◄ Audio Delay
- ◄ Video Delay
- ◄ Ref. Lost
- ◄ Ref. Present
- ◄ Ref. Error

**RollTrack Index**
RollTrack Index
10
- ◄ Preset

**FPGA Dec Version**
FPGA Dec Version
xxxxxxx
OK ►

**FPGA Sync Version**
FPGA Sync Version
xxxxxxx
OK ►

**Build No**
Build No
xxxxxxx
OK ►

**Serial No**
Serial No
xxxxxxx
OK ►

**Software Version**
Software Version
x.x.x
OK ►

**Information Window**
- ◄ Input Status
- ◄ Audio Input Status

**Default Output**
- ◄ Default Output...
- ◄ Default Pattern...
- ◄ Default Caption

**Default Caption**
Default Caption
- ◄ VIDEO LOSS        ►
- ◄ Clear
- ◄ Preset           OK ►

**Default Pattern**
- ◄ Black
- ◄ EBU Color Bars
- ◄ 100% Color Bars
- ◄ Ramp
- ◄ Multi-burst
- ◄ Pulse & Bar

**Default Output**
- ◄ Pass Video
- ◄ Freeze
- ◄ Pattern
- ◄ Pattern&Caption

**Logging**
- ◄ Input
- ◄ Std
- ◄ Reference
- ◄ EDH
- ◄ EDH Err
- ◄ RollTrack
- ◄ ANALOG 1L
- ◄ ANALOG 1R
- ◄ ANALOG 2L
- ◄ ANALOG 2R
- ◄ BUS AL
- ◄ BUS AR
- ◄ BUS BL
- ◄ BUS BR

*IQDEC01 Menu*
*System*

**Audio**
- ◄ Analog Audio Pair 1...
- ◄ Audio Mix 1...
- ◄ Audio Mix 2...
- ◄ Audio Mix 3...
- ◄ Audio Mix 4...
- ◄ Mixer Gain Displays...
- ◄ Audio Bus A and B...
- ◄ Audio Outputs...
- ◄ Audio Delay Setup...
- ◄ Audio Setup...

**Analog Audio Pair 1**
- ◄ Analog Pair 1...
- ◄ Analog Pair 2...

**Analog Pair 1, 2**
- ◄ L-Gain          Gain-R ►
- ◄ L-Invert       Invert-R ►
- ◄ L-Mute         Mute-R ►
- ◄ Stereo           Delay ►

**Delay**

Delay
## 98 ms
◄ Preset

**Gain L/R**

Gain 1-8
## -2dB
◄ Preset

**Mixer Gain Displays**
- ◄ Mix-1 to 4, Gain-1 to 8 Disp

**Mix-1 to 4, Gain-1 to 8**

Mix-1 to 4, Gain-1 to 8
## -2dB
◄ Preset

**Audio Setup**
- ◄ Headroom
- ◄ Line Up
- ◄ Audio Slew Select…
- ◄ Audio Tone…
- ◄ Audio Monitoring…
- ◄ Channel Status…
- ◄ Calibrate Audio
- ◄ Cal on Video IP Sel

**Channel Status**
- ◄ Channel Status Dest
- ◄ AES Validity Bit

**Channel Status Dest**

Channel Status Dest
xxxxxxx
OK ►

**Audio Monitoring**
- ◄ Silence          Low Level ►
- ◄ High level       Overload ►
- ◄ Warning Timer.

**Warning Timer**

Warning Timer
## 10 sec
◄ Preset

**Levels**

Levels
## -20dB
◄ Preset

**Audio Tone**
- ◄ Frequency Left
- ◄ Frequency Right
- ◄ Identify Tone...

**Identify Tone**
- ◄ Off
- ◄ Left
- ◄ Right

**Frequency Left/Right**

Frequency Left/Right
## 100Hz
◄ Preset

**Audio Slew Select**
- ◄ Instant
- ◄ Fast
- ◄ Medium
- ◄ Slow
- ◄ Slowest

**Headroom/Line Up**

Headroom/LineUp
## 10dB
◄ Preset

**Audio Bus A and B**
- ◄ Bus A...          Bus B... ►

**Bus A/B**
- ◄ L-Src...          Src-R... ►
- ◄ L-Gain           Gain-R ►
- ◄ L-Invert        Invert-R ►
- ◄ L-Mute          Mute-R ►
- ◄ Stereo

**L-Gain and Gain-R**

L-Gain and Gain-R
## -2dB
◄ Preset

**L-Src and Src-R**
- ◄ Analog 1L
- ◄ Analog 1R
- ◄ Analog 2L
- ◄ Analog 2R
- ◄ Tone L
- ◄ Tone R
- ◄ Mixer 1
- ◄ Mixer 2
- ◄ Mixer 3
- ◄ Mixer 4

**Audio Mix 1,2,3,4**
- ◄ Source 1...      Source 2... ►
- ◄ Source 3...      Source 4... ►
- ◄ Source 5...      Source 6... ►
- ◄ Source 7...      Source 8... ►
- ◄ Gain...

**Gain**
- ◄ Gain 1
- ◄ Gain 2
- ◄ Gain 3
- ◄ Gain 4
- ◄ Gain 5
- ◄ Gain 6
- ◄ Gain 7
- ◄ Gain 8

**Gain 1-8**

Gain 1-8
## -2dB
◄ Preset

**Source 1-8**
- ◄ None
- ◄ Analog 1L
- ◄ Analog 1R
- ◄ Analog 2L
- ◄ Analog 2R
- ◄ Tone L
- ◄ Tone R

**Audio Outputs**
- ◄ Embedder 1...
- ◄ Embedder 2...
- ◄ AES 1...
- ◄ AES 2...

**AES 1, AES 2**
- ◄ Source...

**Source**
- ◄ BUS A
- ◄ BUS B

**Embedder 1, 2**
- ◄ Source...
- ◄ Destination...
- ◄ Disable

**Destination**
- ◄ Pair 1
- ◄ Pair 2
- ◄ Pair 3
- ◄ Pair 4
- ◄ Pair 5
- ◄ Pair 6
- ◄ Pair 7
- ◄ Pair 8

**Source**
- ◄ BUS A
- ◄ BUS B

**Audio Delay Setup**
- ◄ Set Manual
- ◄ Include Manual
- ◄ Include Internal
- ◄ Include GPI
- ◄ Include RTrack14
- ◄ Include RTrack15
- ◄ Include RTrack16
- ◄ Include RTrack17
- ◄ Total Delay

**Total Delay**

Total Delay
## 473ms
OK ►

**Set Manual**

Set Manual
## 63ms
◄ Preset

*IQDEC01 Menu*
*System*

**MENU DETAILS**
(see IQDEC01 Menu System on previous pages)

MAIN MENU

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.

*Also refer to the block diagram on page 5 for more information.*

**MAIN MENU**

| IQDEC01 MENU |
| --- |
| ◄ Video...          Audio... ► |
| ◄ Decoder...     Genlock... ► |
| ◄ Setup...     User Mem...... ► |
| ◄ Freeze... |
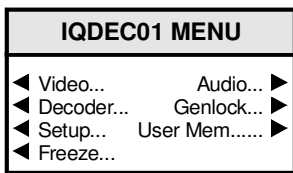
**Video**

This item allows the input signal to be selected and adjustments to be made.

| Video |
| --- |
| ◄ Input... |
| ◄ ProcAmp... |
| ◄ Noise Reducer... |
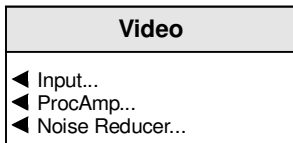
**Input**

This item allows the input signal and its standard to be selected.
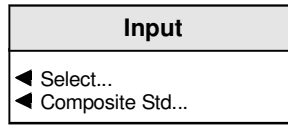
| Input |
| --- |
| ◄ Select... |
| ◄ Composite Std... |

Select

This allows either the **Composite A, Composite B or YC** input to be selected for processing.

| Select |
| --- |
| ◄ Composite A |
| ◄ Composite B |
| ◄ YC |
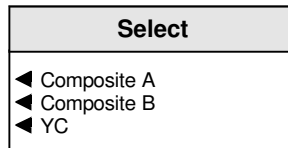
Composite Standard

This allows the automatic detection of the color standard(s) for the composite and Y/C input.

| Composite Std |
| --- |
| ◄ PAL |
| ◄ NTSC |
| ◄ NTSC J |
| ◄ PAL M |
| ◄ PAL N |
| ◄ SECAM |
| ◄ N4.43 60 |
| ◄ PAL4.43 60 |
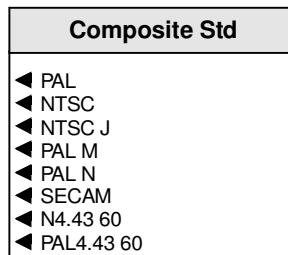
The module will automatically detect any of the color standards that have been selected.

*Note that when selecting and deselecting SECAM the output picture and audio may suffer some disruption.*

**ProcAmp**

These items allow signal levels and timings to be adjusted.

```
┌─────────────────────────────┐
│         ProcAmp             │
├─────────────────────────────┤
│ ◄ Luma Gain                 │
│ ◄ Black Level               │
│ ◄ Chroma Gain               │
│ ◄ NTSC Hue                  │
│ ◄ VEnhance                  │
│ ◄ H Enhance                 │
│ ◄ H Enhance Freq...         │
│ ◄ Picture Position          │
│ ◄ Y/C Timing                │
│ ◄ Borders...                │
└─────────────────────────────┘
```
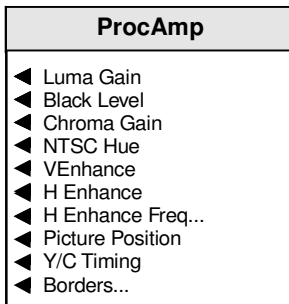
All the values below may be adjusted using the spinwheel.

Luma Gain

```
┌─────────────────────────────┐
│        Luma Gain            │
├─────────────────────────────┤
│ Luma Gain                   │
│ 0.0 dB                      │
│ ◄ Preset                    │
└─────────────────────────────┘
```

This allows the Y (luminance) gain to be adjusted by ±6 dB in steps of 0.1 dB. Preset value is 0.0 dB. *Note that the maximum input level is +3 dB.*

Black Level

```
┌─────────────────────────────┐
│        Black Level          │
├─────────────────────────────┤
│ Black Level                 │
│ 00.0 mV                     │
│ ◄ Preset                    │
└─────────────────────────────┘
```

This allows the black level to be adjusted by ±120mV in 0.5mV steps. Preset value is 0.

Chroma Gain

```
┌─────────────────────────────┐
│        Chroma Gain          │
├─────────────────────────────┤
│ Chroma Gain                 │
│ 0.0 dB                      │
│ ◄ Preset                    │
└─────────────────────────────┘
```

This allows the U/V (color difference) gain to be adjusted by ±6 dB in steps of 0.1 dB. Preset value is 0.0 dB.
*Note that the maximum input level is +3 dB.*

NTSC Hue

This item allows the Hue of an NTSC signal to be adjusted.

```
┌─────────────────────────────┐
│         NTSC Hue            │
├─────────────────────────────┤
│ NTSC Hue                    │
│ 0                           │
│ ◄ Preset                    │
└─────────────────────────────┘
```
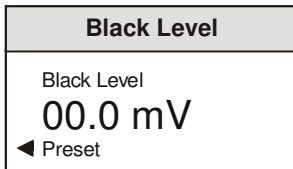
The range of adjustment is ±45 degrees. Preset is to 0 degrees.

V Enhance

This allows vertical enhancement to be applied to the processed signal.

```
┌─────────────────────────────┐
│         V Enhance           │
├─────────────────────────────┤
│ V Enhance                   │
│ 0                           │
│ ◄ Preset                    │
└─────────────────────────────┘
```

The level of enhancement may set to 0 (Off), 1 (Low), 2 (Medium) and 3 (High). Preset is to 0.

H Enhance

This allows Horizontal enhancement to be applied to the processed signal. The non-linear process prevents enhancement of low amplitude signals typical of noise.

```
┌─────────────────────────────┐
│         H Enhance           │
├─────────────────────────────┤
│ H Enhance                   │
│ 0                           │
│ ◄ Preset                    │
└─────────────────────────────┘
```

The level of enhancement may set to 0 (Off), 1 (Low), 2 (Medium) and 3 (High). Preset is to 0.

H Enhance Frequency

```
┌─────────────────────────────┐
│      H Enhance Freq         │
├─────────────────────────────┤
│ ◄ 3.375 MHz                 │
│ ◄ 2.250 MHz                 │
└─────────────────────────────┘
```
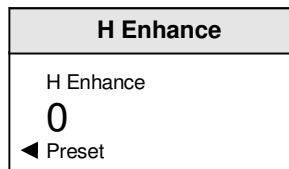
The frequency at which the horizontal enhancement is applied may be set to either 3.375 MHz or 2.250 MHz. Preset is to 3.375 MHz.

Picture Position

| **Picture Position** |
| --- |
| Picture Position |
| 0ns |
| ◄ Preset |

This item allows the timing of the picture position relative to the normal value, to be adjusted.
The timing may be adjusted by ±592ns in 148ns steps.

Y/C Timing

| **Y/C Timing** |
| --- |
| Y/C Timing |
| 0ns |
| ◄ Preset |

This item allows the timing of the chrominance signal relative to the luminance signal to be adjusted, (i.e. Y to Cb/Cr timing) in nanoseconds. The timing may be adjusted by ±592ns in 148ns steps.

**Borders**

This allows the active picture to be blanked out or cropped on each of the four sides.

| **Borders** | |
| --- | --- |
| ◄ Left | Red ► |
| ◄ Right | Green ► |
| ◄ Top | Blue ► |
| ◄ Bottom | |

Left/Right

| **Left/Right** |
| --- |
| Left/Right |
| 100 Pixels |
| ◄ Preset |

The range of adjustment is from 0 to 200 pixels in steps of 2 pixels. Preset is to 0 pixels.

Top/Bottom

| **Top/Bottom** |
| --- |
| Top/Bottom |
| 10 Lines |
| ◄ Preset |

The range of adjustment is from 0 to 200 lines. Preset is to 0 lines.

Red/Green/Blue

The color of the blanked area may be set using the **Red**, **Blue** and **Green** controls

| **Red/Green/Blue** |
| --- |
| Red/Green/Blue |
| 127 |
| ◄ Preset |

The range of adjustment is from 0 to 255 units. Preset is to 0, 0, 0 units (Black).

**Noise Reducer**

This allows settings and adjustments to be made to the noise reducer.

```
┌─────────────────────────────┐
│      Noise Reducer          │
├─────────────────────────────┤
│ ◄ Luma Strength             │
│ ◄ Chroma Strength           │
│ ◄ Auto/Manual Thresh...     │
│ ◄ Manual Threshold          │
│ ◄ Auto Bias                 │
│ ◄ Delay Mode...             │
│ ◄ Noise Measured            │
└─────────────────────────────┘
```
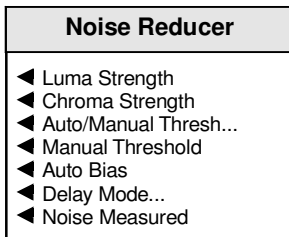
Luma Strength and Chrome Strength

These controls changes the amount of noise reduction for the luminance/chrominance by limiting the maximum level of noise reduction, where 31 is maximum and 0 is minimum. Preset is to 0.

```
┌─────────────────────────────┐
│   Luma/Chroma Strength      │
├─────────────────────────────┤
│   Luma/Chroma Strength      │
│   0.0                       │
│ ◄ Preset                    │
└─────────────────────────────┘
```
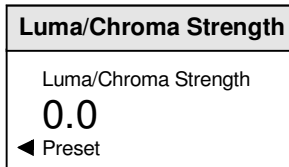
The actual level of noise reduction is dynamically adjusted on a pixel-by-pixel basis with regard to the noise reduction setting for the same pixel in the previous frame.

Auto/Manual (Noise) Threshold

The noise floor may be adjusted automatically or manually using the **Manual Threshold** control.

```
┌─────────────────────────────┐
│    Auto/Manual Thresh       │
├─────────────────────────────┤
│ ◄ Auto                      │
│ ◄ Manual                    │
└─────────────────────────────┘
```

Auto

In this mode the noise floor is automatically measured and the threshold is adjusted dynamically set to an appropriate value for the current input noise level.
The noise detection algorithm may be given a subjective bias using the **Auto (Threshold) Bias** control to give more or less noise reduction.

```
┌─────────────────────────────┐
│        Auto Bias            │
├─────────────────────────────┤
│   Auto Bias                 │
│   0.0                       │
│ ◄ Preset                    │
└─────────────────────────────┘
```
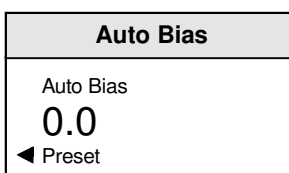
Modification of the bias should not be necessary under normal circumstances.

Manual

In this mode the noise floor may be adjusted manually using the **Manual (Noise) Threshold** control.

```
┌─────────────────────────────┐
│    Manual Threshold         │
├─────────────────────────────┤
│   Manual Threshold          │
│   0.0                       │
│ ◄ Preset                    │
└─────────────────────────────┘
```

Delay Mode

This allows the delay of the noise reducer to be selected.

```
┌─────────────────────────────┐
│      Delay Mode             │
├─────────────────────────────┤
│ ◄ Normal Delay              │
│ ◄ Minimum Delay             │
└─────────────────────────────┘
```
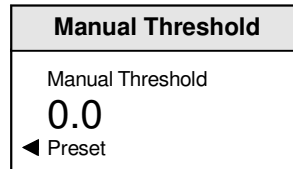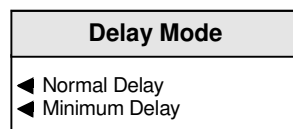
Normal

In this mode the delay will be < 1 Frame

Minimum

This mode produces the minimum input/output delay and may be used where audio delay problems may exist and cannot be compensated for. In this mode the delay will be < 3 Lines

Noise Measured

This provides an indication (as a percentage) of how much noise there is in the signal.

```
┌─────────────────────────────┐
│     Noise Measured          │
├─────────────────────────────┤
│   Noise measured            │
│   00                        │
│                    OK ►     │
└─────────────────────────────┘
```
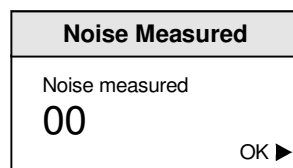
A clean signal will give low figures and a noisy signal high figures.

## Decoder…

This menu allows the decoder functions to be set up.
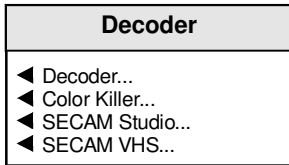
```
        Decoder

◄ Decoder...
◄ Color Killer...
◄ SECAM Studio...
◄ SECAM VHS...
```

### Decoder

This allows the type of decoding to selected.

```
        Decoder

◄ Studio
◄ Simple
◄ VHS/Unstable
```

Studio

The composite input is sampled with 12-bit resolution and decoded using adaptive line filters to ensure optimum decoding performance.

Simple

This simple decode mode incorporates a wide bandwidth subcarrier notch filter. This mode is for reference only and should not be used for normal composite material.

VHS/Unstable

In this mode the decoder will cope with sources with unstable time-bases but the decoding is of a lower quality and the frequency response is reduced.

*Note that in this mode the decoder will automatically be set to **Minimum Delay** operation.*

### Color Killer

This function controls the color content of the picture.

```
      Color Killer

◄ Chroma Off
◄ Chroma On
◄ Auto
```

Chroma Off

When selected the color content of the picture will be removed. The luma signal is produced using a narrow bandwidth notch filter.

Chroma On

When selected the color content of the picture will be maintained regardless of the level of the color burst.

Auto

When this item is enabled the picture will become monochrome if the input color burst disappears or the level drops below a critical amplitude. The picture will return to color when the burst level reappears.

SECAM Studio

This function allows adjustments to decoding parameters for a SECAM signal of studio (stable) quality.

```
     SECAM Studio

◄ Notch...
◄ Luma Bandwidth...
```

Notch

```
         Notch

◄ Adaptive
◄ Controllable
```

Either the Adaptive or the Controllable luminance notch filter may be enabled with this item.

Luma Bandwidth

This function allows the bandwidth of the decoded luminance to be adjusted.

```
    Luma Bandwidth

◄ Wide
◄ Medium
◄ Narrow
```

| | |
|---|---|
| Wide | The signal will be processed at full bandwidth (3.4 MHz). |
| Medium | The signal will be processed with a bandwidth of approximately 2.6 MHz. |
| Narrow | The signal will be processed with a bandwidth of approximately 1.7 MHz. |

SECAM VHS

This function allows adjustments to decoding parameters for a SECAM signal of VHS (unstable) quality.

| SECAM VHS |
|---|
| ◄ Luma Bandwidth... |

Luma Bandwidth

This function allows the bandwidth of the decoded luminance to be adjusted.

| Luma Bandwidth |
|---|
| ◄ Wide |
| ◄ Medium |
| ◄ Narrow |

Wide        The signal will be processed at full bandwidth (3.4 MHz).

Medium      The signal will be processed with a bandwidth of approximately 2.6 MHz.

Narrow      The signal will be processed with a bandwidth of approximately 1.7 MHz.

**Freeze**

When selected the output picture will become a frozen frame.

### Audio

This menu allows the audio processing functions to be set up.

```
           Audio

◄ Analog Audio Pair 1...
◄ Audio Mix 1...
◄ Audio Mix 2...
◄ Audio Mix 3...
◄ Audio Mix 4...
◄ Mixer Gain Displays...
◄ Audio Bus A and B...
◄ Audio Outputs...
◄ Audio Delay Setup...
◄ Audio Setup...
```
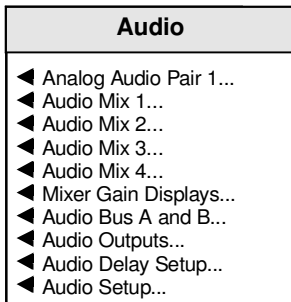
### Analog Audio Pair 1

This allows the pair to be selected for processing.

```
     Analog Audio Pair 1

◄ Analog Pair 1...
◄ Analog Pair 2...
```

Analog Pair 1, Pair 2

This allows control of Gain, Mute, and Polarity over the analog channel pairs and the introduction of delay.

```
       Analog Pair 1, 2

◄ L-Gain          Gain-R ►
◄ L-Invert       Invert-R ►
◄ L-Mute          Mute-R ►
◄ Stereo           Delay ►
```
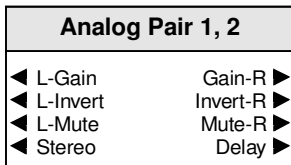
L-Gain, Gain-R

This allows the gain of the Left and Right channels to be adjusted over a range of ±18 dB in 0.1dB steps. Preset is to 0 dB.

```
          Gain L/R

   Gain L/R
   -2dB
◄ Preset
```
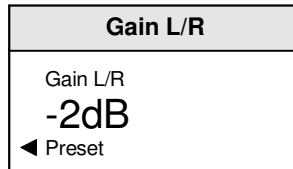
L-Invert, Invert-R…When selected the signal polarity will be inverted.

L-Mute, Mute-R .....When selected the signal will be muted.

Stereo ................. When selected the left and right channels will be configured as a stereo pair and any adjustments made to one channel will automatically be applied to both channels.

Delay

This control allows an analog audio pair signal to be delayed.

```
           Delay

   Delay
   98 ms
◄ Preset
```
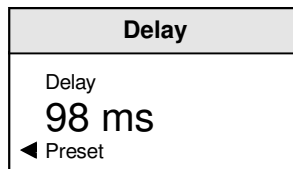
The range of control is from 0 to 1500 ms in 1 ms steps.

**Audio Mix 1, 2, 3, 4**

There are four separate audio mixers Mix 1, 2, 3 and 4. The outputs of these mixers provide eight extra input selections for the Channel Router.

| Audio Mix 1,2,3,4 |
| --- |
| ◄ Source 1...      Source 2... ► |
| ◄ Source 3...      Source 4... ► |
| ◄ Source 5...      Source 6... ► |
| ◄ Source 7...      Source 8... ► |
| ◄ Gain... |
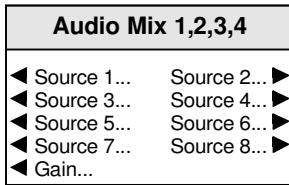
This menu allows the mixer inputs to be selected.

Source 1 to 8

This menu allows the source signals for the mixer inputs to be selected.

| Source 1-8 |
| --- |
| ◄ None |
| ◄ Analog 1L |
| ◄ Analog 1R |
| ◄ Analog 2L |
| ◄ Analog 2R |
| ◄ Tone L |
| ◄ Tone R |
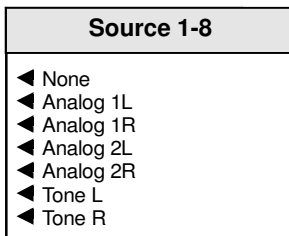
None

No signal selected.

Analog 1L, 1R, 2L and 2R

Any of the analog input channels may be selected.

Tone L, Tone R

An audio tone, set up via the

**Audio Setup/Audio/Tone** function, may be selected as an input.

Mixer Gain Displays

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

| Mixer Gain Displays |
| --- |
| ◄ Mix-1 to 4, Gain-1 to 8 Disp |
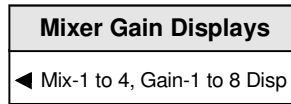
This allows the mixer channels to be selected.

Mix-1 to 4, Gain-1 to 8

This allows the gain of the selected channel to be adjusted.
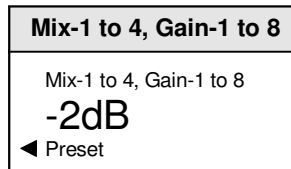
| Mix-1 to 4, Gain-1 to 8 |
| --- |
| Mix-1 to 4, Gain-1 to 8 |
| -2dB |
| ◄ Preset |

The range of adjustment is from 0 to –96 dB and to Off.
0 to -60 dB is in steps of 1 dB, -60 dB to -96 dB is in steps of 3  dB. Preset is to Off.

**Audio Bus A and B**

This menu allows the inputs for the two audio buses of the router to be selected and adjusted.

| Audio Bus A and B |
|---|
| ◄ Bus A...          Bus B... ► |
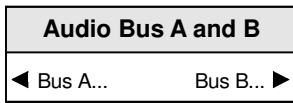
Bus A/B

This allows the bus signals to be adjusted and configured.

| Bus A/B |
|---|
| ◄ L-Src...          Src-R... ► |
| ◄ L-Gain          Gain-R ► |
| ◄ L-Invert         Invert-R ► |
| ◄ L-Mute          Mute-R ► |
| ◄ Stereo |
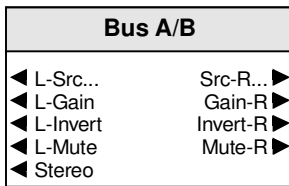
L-Src and Src-R

This menu allows the source signals for the bus inputs to be selected.
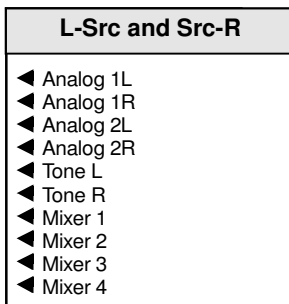
| L-Src and Src-R |
|---|
| ◄ Analog 1L |
| ◄ Analog 1R |
| ◄ Analog 2L |
| ◄ Analog 2R |
| ◄ Tone L |
| ◄ Tone R |
| ◄ Mixer 1 |
| ◄ Mixer 2 |
| ◄ Mixer 3 |
| ◄ Mixer 4 |

Analog 1L, 1R, 2L and 2R

Any of the analog input channels may be selected.

Tone L, Tone R

An audio tone, set up via the **Audio Setup/Audio/Tone** function, may be selected as an input.

Mixer 1, 2, 3, 4

Any of the mixer outputs may be selected.

L-Gain, Gain-R
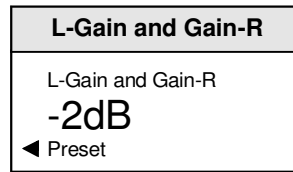
| L-Gain and Gain-R |
|---|
| L-Gain and Gain-R |
| -2dB |
| ◄ Preset |

This allows the gain of the Left and Right channels to be adjusted over a range of ±18 dB in 0.1dB steps. Preset is to 0 dB.

L-Invert, Invert-R…When selected the signal polarity will be inverted.

L-Mute, Mute-R .....When selected the signal will be muted.

Stereo ..................When selected the left and right channels will be configured as a stereo pair and any adjustments made to one channel will automatically be applied to both channels.

**Audio Outputs**
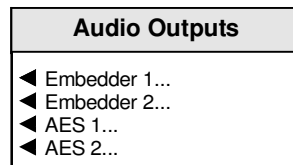
| Audio Outputs |
|---|
| ◄ Embedder 1... |
| ◄ Embedder 2... |
| ◄ AES 1... |
| ◄ AES 2... |

This function sets up the embedder sources and destinations. Higher number embedders have priority, so if the same destination pair is selected on two embedders, the highest embedder will be the one that is active.

Embedder 1, 2

This allows the embedder to be configured.

| Embedder 1, 2 |
|---|
| ◄ Source... |
| ◄ Destination... |
| ◄ Disable |
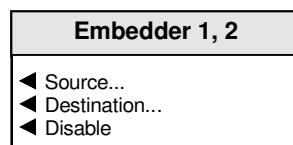
Source

This allows the bus source for embeddingto be selected.

| Source |
|---|
| ◄ BUS A |
| ◄ BUS B |
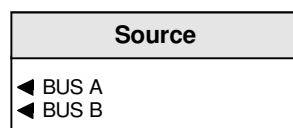
Either BUS A or Bus B may be selected.

Destination

This allows destination for the embedded signal to be selected (Pair 1 to 8).

| Destination |
| --- |
| ◄ Pair 1 |
| ◄ Pair 2 |
| ◄ Pair 3 |
| ◄ Pair 4 |
| ◄ Pair 5 |
| ◄ Pair 6 |
| ◄ Pair 7 |
| ◄ Pair 8 |

Disable

When selected the embedding for the selected destination will be turned off.

AES 1, 2

This allows the AES outputs to be configured.

| AES 1, AES 2 |
| --- |
| ◄ Source... |

Source

This allows the bus source for the AES output to be selected.

| Source |
| --- |
| ◄ BUS A |
| ◄ BUS B |

Either BUS A or Bus B may be selected.

**Audio Delay Setup**

This menu allows the amount of delay to be set and type of audio delay mechanism to be selected.

| Audio Delay Setup |
| --- |
| ◄ Set Manual |
| ◄ Include Manual |
| ◄ Include Internal |
| ◄ Include GPI |
| ◄ Include RTrack14 |
| ◄ Include RTrack15 |
| ◄ Include RTrack16 |
| ◄ Include RTrack17 |
| ◄ Total Delay |

*Note that up to 1 s of delay may be applied from the sum of the **Internal** + **GPI** + **RollTrack** delay inputs.*

Set Manual

This sets the manual delay and will affect all processed audio signals equally.

| Set Manual |
| --- |
| Set Manual |
| 63ms |
| ◄ Preset |

The delay may be set to up to +1.5 s in 1ms steps. Preset is to 0 ms.

Internal

When checked, an audio delay equal to the video delay in the unit will be applied.

Include Manual

When selected an audio delay set by the **Manual Delay** control will be applied.

Include GPI

When selected an audio delay will be applied that is equal to the width of the pulse arriving at the GPI connector.

*Note that the GPI must be configured correctly for this function to operate. Please see page 34 or details.*

Include RollTrack 14, 15, 16 and 17

The selected source(s) of the RollTrack input signal(s) will apply an audio delay.

**Total Delay**

| Total Delay |
| --- |
| Total Delay |
| 473ms |
| OK ► |

This will show the audio total delay (due to all delay mechanisms) through the unit in ms.

## Audio Setup

This allows various audio functions to be configured. For definitions of the terms please refer to page 27.
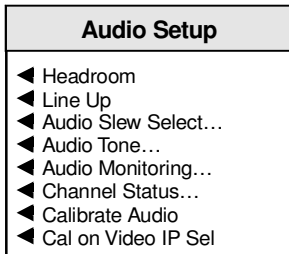
```
┌─────────────────────────────┐
│        Audio Setup          │
├─────────────────────────────┤
│ ◄ Headroom                  │
│ ◄ Line Up                   │
│ ◄ Audio Slew Select…        │
│ ◄ Audio Tone…               │
│ ◄ Audio Monitoring…         │
│ ◄ Channel Status…           │
│ ◄ Calibrate Audio           │
│ ◄ Cal on Video IP Sel       │
└─────────────────────────────┘
```

Headroom

```
┌─────────────────────────────┐
│      Headroom/Line Up       │
├─────────────────────────────┤
│   Headroom/LineUp           │
│   10dB                      │
│ ◄ Preset                    │
└─────────────────────────────┘
```
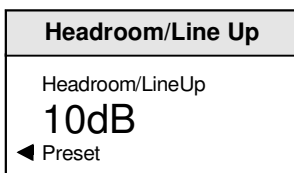
This allows the headroom to be set. The range is from 4 dB to 24dB in 1 dB steps. Preset is to 20 dB.

Note that in this product headroom is defined as:

```
─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─   Clipping Level
        ▲                    (0 dBFS)
        │
 Headroom
        │
─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─   Peak Level
        │                    (Operational)
        │
        ▼
─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─   Line-up Level
                             (0dBu)
```
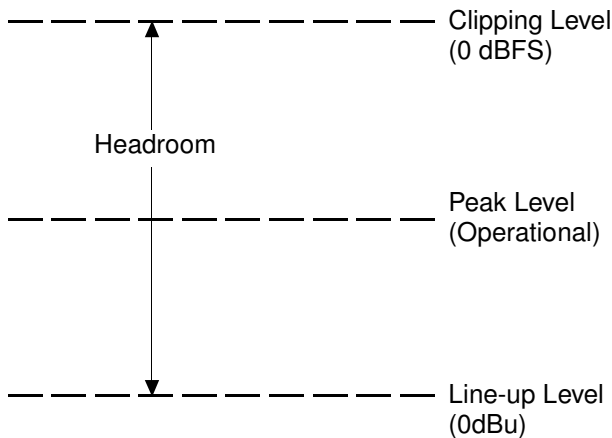
Headroom = Clipping Level – Line-up level

Line Up

```
┌─────────────────────────────┐
│      Headroom/Line Up       │
├─────────────────────────────┤
│   Headroom/LineUp           │
│   10dB                      │
│ ◄ Preset                    │
└─────────────────────────────┘
```
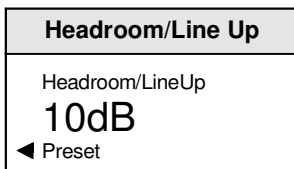
This allows the Line Up level to be set. The range is from 4 dB to 24dB in 1 dB steps. Preset is to 4dBu dB.
For more details please refer to page 27.

Audio Slew Select

This is the time taken for the audio to slew when the audio mixing and routing controls have changed.

```
┌─────────────────────────────┐
│     Audio Slew Select       │
├─────────────────────────────┤
│ ◄ Instant                   │
│ ◄ Fast                      │
│ ◄ Medium                    │
│ ◄ Slow                      │
│ ◄ Slowest                   │
└─────────────────────────────┘
```
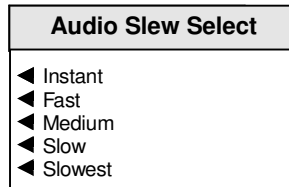
The options are:

Instant .... The response is immediate
Fast ........ Change takes 25% of Slowest time
Medium .. Change takes 50% of Slowest time
Slow ....... Change takes 75% of Slowest time
Slowest .. Change takes approximately one second

Audio Tone

The frequency of the Audio Test Tone may be set using this control.

```
┌─────────────────────────────┐
│         Audio Tone          │
├─────────────────────────────┤
│ ◄ Frequency Left            │
│ ◄ Frequency Right           │
│ ◄ Identify Tone...          │
└─────────────────────────────┘
```
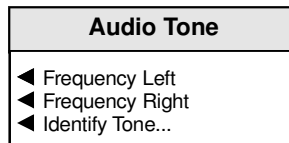
Left and right channels may be set independently.

Frequency Left and Right

This sets the frequency of the test tone.

```
┌─────────────────────────────┐
│    Frequency Left/Right      │
├─────────────────────────────┤
│   Frequency Left/Right      │
│   100Hz                     │
│ ◄ Preset                    │
└─────────────────────────────┘
```
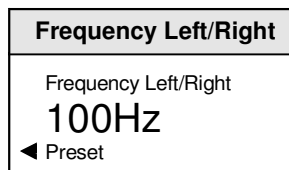
The range is from 100 Hz to 15 kHz in steps of 100 Hz. Preset is to 400 Hz.

Identify Tone

This allows the left or right channel to be identified by a special tone.
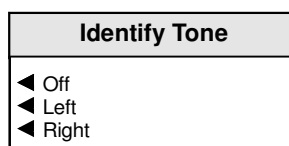
```
┌─────────────────────────────┐
│        Identify Tone        │
├─────────────────────────────┤
│ ◄ Off                       │
│ ◄ Left                      │
│ ◄ Right                     │
└─────────────────────────────┘
```

When the left or right channel is selected it will be identified by the signal being muted for 0.5 second every 2.5 seconds.

**Audio Monitoring**

The four audio buses are monitored and level detectors provide status information and logging data.

```
┌─────────────────────────────┐
│      Audio Monitoring       │
├─────────────────────────────┤
│ ◄ Silence      Low Level ►  │
│ ◄ High level   Overload ►   │
│ ◄ Warning Timer.            │
└─────────────────────────────┘
```

Silence

The level at which the signal is considered to have dropped to silence may be set with this control.

```
┌─────────────────────────────┐
│            Levels           │
├─────────────────────────────┤
│ Levels                      │
│ -20dB                       │
│ ◄ Preset                    │
└─────────────────────────────┘
```

The range is from -80 dB to 0 dB in steps of 1 dB. Preset is to -70 dB.

Low Level

The level at which the signal is considered to have dropped to a Low Level may be set with this control.

The range is from -80 dB to 0 dB in steps of 1 dB. Preset is to -60 dB.

High Level

The level at which the signal is considered to have risen to a High Level may be set with this control.

The range is from -80 dB to 0 dB in steps of 1 dB. Preset is to -10 dB.

Overload

The level at which the signal is considered to have risen to an Overload condition may be set with this control.

The range is from -80 dB to 0 dB in steps of 1 dB. Preset is to 0 dB.

Warning Timer

All the above monitoring facilities will only operate after a time interval set by this control. A valid signal is reported immediately.

```
┌─────────────────────────────┐
│        Warning Timer        │
├─────────────────────────────┤
│ Warning Timer               │
│ 10 sec                      │
│ ◄ Preset                    │
└─────────────────────────────┘
```

The range is from 1 to 20 seconds. Preset is to 10 seconds.

**Channel Status**

```
┌─────────────────────────────┐
│       Channel Status        │
├─────────────────────────────┤
│ ◄ Channel Status Dest       │
│ ◄ AES Validity Bit          │
└─────────────────────────────┘
```

This allows the Channel Status Destination name to be displayed and the AES validity bit set.

Channel Stautus Dest(ination)

```
┌─────────────────────────────┐
│     Channel Status Dest     │
├─────────────────────────────┤
│ Channel Status Dest         │
│ xxxxxxx                     │
│                    OK ►     │
└─────────────────────────────┘
```

This will display the four character name used in the destination field of the audio channel status.

AES Validity Bit

When selected the AES validity Bit will be set; when deselected it will be cleared.

**Calibrate Audio**

When selected the audio ADC's will be re-calibrated for 0 dBfs.

**Cal on Video IP Sel**

When selected the audio ADC's will be re-calibrated for 0 dBfs whenever a different video input is selected.

It is recommended that this function is left unselected as it may disturb the audio output signal.

**Genlock…**

This allows the genlock and delay options to be selected.

```
┌─────────────────────────────────┐
│         Genlock                 │
├─────────────────────────────────┤
│ ◄ Reference Src...              │
│ ◄ Reference Time...             │
│ ◄ Freerun Frequency            │
│ ◄ Frame Delay...               │
└─────────────────────────────────┘
```
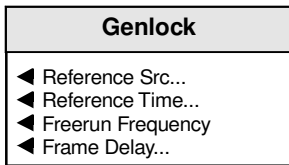
### Reference Src (Source)

This allows the source of genlocking signal to be selected.
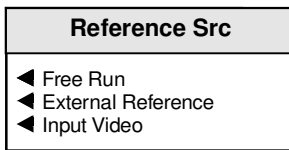
```
┌─────────────────────────────────┐
│         Reference Src           │
├─────────────────────────────────┤
│ ◄ Free Run                      │
│ ◄ External Reference            │
│ ◄ Input Video                   │
└─────────────────────────────────┘
```

Free Run

When selected the unit will not be locked to any input signals and the unit will free run.

External Reference

When selected and the unit will lock to the external reference signal.

Input Video

When selected and the unit will lock to the input video signal.

*Note that this selection is not available when the Decoder is set to the VHS/Unstable mode.*

### Reference Time(ing)

This item allows the timing of the output signal relative to the reference signal to be adjusted.

```
┌─────────────────────────────────┐
│         Reference Time          │
├─────────────────────────────────┤
│ ◄ H Phase 625                   │
│ ◄ V Phase 625                   │
│ ◄ H Phase 525                   │
│ ◄ V Phase 525                   │
│ ◄ H Delay 625                   │
│ ◄ V Delay 625                   │
│ ◄ H Delay 525                   │
│ ◄ V Delay 525                   │
└─────────────────────────────────┘
```
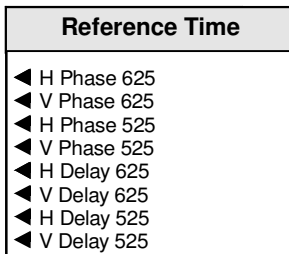
H(Horizontal) Phase 625/525

This item allows the horizontal timing of the output signal relative to the reference sync signal to be adjusted.

```
┌─────────────────────────────────┐
│   H Phase/Delay 625/525         │
├─────────────────────────────────┤
│   H Phase/Delay 625/525         │
│   204px                         │
│ ◄ Preset                        │
└─────────────────────────────────┘
```
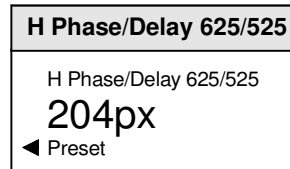
By using the spinwheel the phase may be adjusted by ± ½ line in 1 pixel steps.

*Note that picture disturbance may occur while this setting is adjusted.*

Selecting Preset returns the setting to zero. (Output coincident with reference)

V(Vertical) Phase 625/525

This item allows the vertical timing of the output signal relative to the reference sync signal to be adjusted, in TV lines.

```
┌─────────────────────────────────┐
│   V Phase/Delay 625/525         │
├─────────────────────────────────┤
│   V Phase/Delay 625/525         │
│   2 Lines                       │
│ ◄ Preset                        │
└─────────────────────────────────┘
```

The spinwheel will adjust this value. Range is ±262 lines (525 standard) or ±312 lines (625 standard) in 1 line steps.

*Note that picture disturbance may occur while this setting is adjusted.*

Selecting Preset returns the setting to zero. (Output coincident with reference)

### Freerun Frequency

```
┌─────────────────────────────────┐
│         Freerun Freq            │
├─────────────────────────────────┤
│   Freerun Freq                  │
│   20                            │
│ ◄ Preset                        │
└─────────────────────────────────┘
```

This allows the freerun frequency of the internal sync generator to be adjusted in steps of arbitrary units. Preset is to 0.

### H and V Delay 525/625

When these controls are used the output signal will appear after the input signal with a time delay. When not used the module will operate in the synchronize mode.

*Note that the delay functions are only active when the **Lock to Input** mode is selected.*

H Delay 525/625

This item allows the horizontal timing of the output signal relative to the input signal to be adjusted.

```
┌──────────────────────────────┐
│ H Phase/Delay 625/525        │
├──────────────────────────────┤
│  H Phase/Delay 625/525       │
│  204px                       │
│ ◄ Preset                     │
└──────────────────────────────┘
```
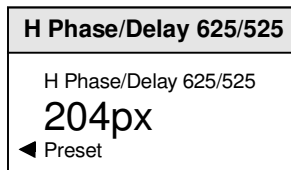
By using the spinwheel the delay may be adjusted by 1 line in 1 pixel steps.

Selecting Preset returns the setting to the minimum horizontal delay.

V(Vertical) Delay 625/525

This item allows the vertical timing of the output signal relative to the input signal to be adjusted, in TV lines.

```
┌──────────────────────────────┐
│ V Phase/Delay 625/525        │
├──────────────────────────────┤
│  V Phase/Delay 625/525       │
│  2 Lines                     │
│ ◄ Preset                     │
└──────────────────────────────┘
```
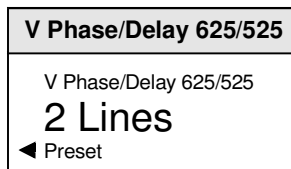
The spinwheel will adjust this value. Range is ±262 lines (525 standard) or ±312 lines (625 standard) in 1 line steps.

Selecting Preset returns the setting to the minimum vertical delay.

### Frame Delay

### 0, 1, 2 Frame Delay

The number of frames that the output signal will appear after the input signal may be set with these items.
*Note that this function is available in any genlock mode and will add to any other delay settings.*

### Setup…

This allows various functions to be setup.

| Setup |
| --- |
| ◀ Pattern... |
| ◀ Caption... |
| ◀ VBI & HANC Blank... |
| ◀ GPI I/O... |
| ◀ RollTrack... |
| ◀ Logging... |
| ◀ Default Output.. |
| ◀ Information Window... . |
| ◀ Software Version |
| ◀ Serial Number |
| ◀ Build Number |
| ◀ FPGA Sync Version |
| ◀ FPGA Dec Version |
| ◀ Factory Default |

### Pattern

This function will allow various patterns to be used as the output signal.

| Pattern |
| --- |
| ◀ Pattern Type |
| ◀ Pattern Enable |
| ◀ Animated Pattern |

Pattern Type

This allows a pattern to be chosen as the output signal when **Pattern Enable** is selected.

| Pattern Type |
| --- |
| ◀ Black |
| ◀ EBU Color Bars |
| ◀ 100% Color Bars |
| ◀ Ramp |
| ◀ Multi-burst |
| ◀ Pulse & Bar |

One of the patterns (including Black) may be selected from the list.

Pattern Enable

When selected the output will become the pattern selected from the **Pattern Type** list.

Animated Pattern

When selected, a monochrome rectangular area will appear on the output picture as shown opposite. The brightness of this rectangle will ramp from black, through gray to white and then directly to black over a period of about one second. This action will then be repeated continuously.

This pattern is useful for checking active video paths. Down stream equipment can see that video has not been frozen.



**Animated Pattern**
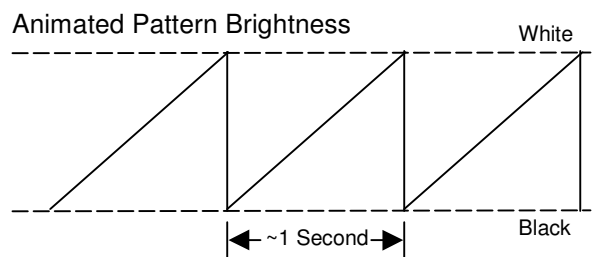
**Caption**

This function allows control of the caption which may contain a maximum of 19 characters (white text on a black background).

```
┌─────────────────────────────┐
│          Caption            │
├─────────────────────────────┤
│ ◄ Edit Caption              │
│ ◄ Caption Select            │
└─────────────────────────────┘
```
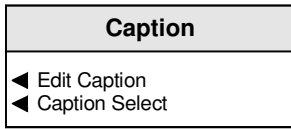
The caption will appear in the lower section of the picture.

Edit Caption

This allows a caption to be edited.
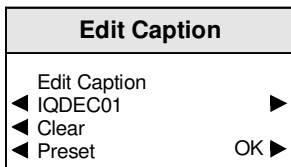
```
┌─────────────────────────────┐
│        Edit Caption         │
├─────────────────────────────┤
│   Edit Caption              │
│ ◄ IQDEC01              ►    │
│ ◄ Clear                     │
│ ◄ Preset            OK ►    │
└─────────────────────────────┘
```

To compile/edit the text the right ► and left buttons adjacent to the upper text line in the menu should be used to select the character position in the text and the spinwheel used to select the character.

The **Clear** function blanks the selected character.

The **Preset** function loads the default text, for example, **IQDEC01.**

**O.K.** ► saves the memory name text and returns to the main menu.

Caption Select

This allows the caption to be turned on and off.

```
┌─────────────────────────────┐
│       Caption Select        │
├─────────────────────────────┤
│ ◄ Caption On                │
│ ◄ Caption Off               │
└─────────────────────────────┘
```

Caption On

When selected the caption will be turned on.

Caption Off

When selected the caption will be turned off.



**Caption Text**

**VBI & HANC Blank(ing)**

This menu allows the selection of Vertical Interval lines contained in the input signal to be blanked or passed through the module as data or as a VITS.

Specific lines may be blanked, passed through as data, VITS, passed through as a picture or closed captions by selecting the appropriate line.

```
┌─────────────────────────────┐
│      VBI & HANC Blank        │
├─────────────────────────────┤
│ ◄ 525 Pass...               │
│ ◄ 625 Pass...               │
│ ◄ HANC Blank                │
│ ◄ SECAM Bottles...          │
└─────────────────────────────┘
```

525 Pass

```
┌─────────────────────────────┐
│          525 Pass            │
├─────────────────────────────┤
│ ◄ 525 Lines 11-22           │
│ ◄ 525 Lines 274-285         │
└─────────────────────────────┘
```
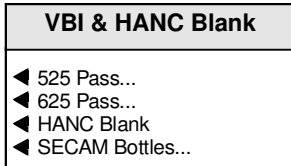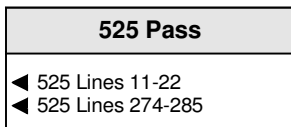
This item allows the selection of 525 standard Vertical Interval lines contained in the input signal to be blanked or passed through the module as data or as a VITS.

Specific lines may be blanked, passed through as data, passed through as a picture (video) or closed captions.

525 Lines 11-22

This allows the selection of lines in field 1.
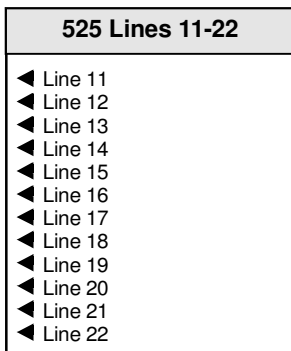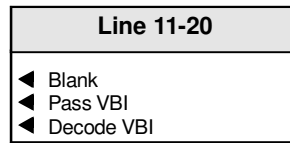
```
┌─────────────────────────────┐
│       525 Lines 11-22        │
├─────────────────────────────┤
│ ◄ Line 11                   │
│ ◄ Line 12                   │
│ ◄ Line 13                   │
│ ◄ Line 14                   │
│ ◄ Line 15                   │
│ ◄ Line 16                   │
│ ◄ Line 17                   │
│ ◄ Line 18                   │
│ ◄ Line 19                   │
│ ◄ Line 20                   │
│ ◄ Line 21                   │
│ ◄ Line 22                   │
└─────────────────────────────┘
```

Lines 11-20

```
┌─────────────────────────────┐
│          Line 11-20          │
├─────────────────────────────┤
│ ◄ Blank                     │
│ ◄ Pass VBI                  │
│ ◄ Decode VBI                │
└─────────────────────────────┘
```

The options for these lines are:

| | |
|---|---|
| Blank | Line content is blanked by synchronizer |
| Pass as data | Line is processed by decoder as data, chroma is blanked, Closed Caption disabled. |
| Pass as VITS | Line is decoded and chroma passed |

Line 21
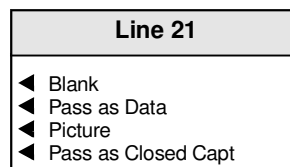
```
┌─────────────────────────────┐
│           Line 21            │
├─────────────────────────────┤
│ ◄ Blank                     │
│ ◄ Pass as Data              │
│ ◄ Picture                   │
│ ◄ Pass as Closed Capt       │
└─────────────────────────────┘
```

The options for this line are:

| | |
|---|---|
| Blank | Line content is blanked by synchronizer |
| Pass as data | Line is processed by decoder as data, chroma is blanked, Closed Caption disabled. |
| Picture | Line is processed by the decoder as video |
| Pass as Closed Caption | Line is processed by decoder as data, chroma is blanked, Closed Caption enabled |

Line 22

```
┌─────────────────────────────┐
│           Line 22            │
├─────────────────────────────┤
│ ◄ Blank                     │
│ ◄ Pass as Data              │
│ ◄ Picture                   │
└─────────────────────────────┘
```
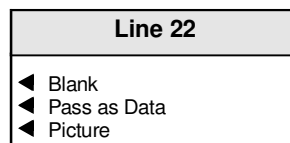
The options for this line is:

| | |
|---|---|
| Blank | Line content is blanked by synchronizer |
| Pass as data | Line is processed by decoder as data, chroma is blanked, Closed Caption disabled. |
| Picture | Line is processed by the decoder as video |

525 Lines 274-285

This allows the selection of lines in field 2.

```
┌─────────────────────────────────┐
│      525 Lines 274-285          │
├─────────────────────────────────┤
│ ◄ Line 274                      │
│ ◄ Line 275                      │
│ ◄ Line 276                      │
│ ◄ Line 277                      │
│ ◄ Line 278                      │
│ ◄ Line 279                      │
│ ◄ Line 280                      │
│ ◄ Line 281                      │
│ ◄ Line 282                      │
│ ◄ Line 283                      │
│ ◄ Line 284                      │
│ ◄ Line 285                      │
└─────────────────────────────────┘
```

Line 274-282

```
┌─────────────────────────────────┐
│        Line 274-282             │
├─────────────────────────────────┤
│ ◄ Blank                         │
│ ◄ Pass VBI                      │
│ ◄ Decode VBI                    │
└─────────────────────────────────┘
```

The options for these lines are:

Blank           Line content is blanked by
                synchronizer
Pass as VITS    Line is decoded and chroma
                passed
Picture         Line is processed by the decoder
                as video

Line 284

```
┌─────────────────────────────────┐
│           Line 284              │
├─────────────────────────────────┤
│ ◄ Blank                         │
│ ◄ Pass as Data                  │
│ ◄ Picture                       │
│ ◄ Pass as Closed Capt           │
└─────────────────────────────────┘
```

The options for these lines are:

Blank           Line content is blanked by
                synchronizer
Pass as data    Line is processed by decoder as
                data, chroma is blanked, Closed
                Caption disabled.
Picture         Line is processed by the decoder
                as video
Pass as Closed Caption
                Line is processed by decoder as
                data, chroma is blanked, Closed
                Caption enabled

Line 283 & 285

```
┌─────────────────────────────────┐
│         Line 283 & 285          │
├─────────────────────────────────┤
│ ◄ Blank                         │
│ ◄ Pass as Data                  │
│ ◄ Picture                       │
└─────────────────────────────────┘
```

The options for this line are:

Blank           Line content is blanked by
                synchronizer
Pass as data    Line is processed by decoder as
                data, chroma is blanked, Closed
                Caption disabled.
Picture         Line is processed by the decoder
                as video

625 Pass

```
┌─────────────────────────────────┐
│           625 Pass              │
├─────────────────────────────────┤
│ ◄ 625 Lines 7-23                │
│ ◄ 625 Lines 320-335             │
└─────────────────────────────────┘
```

This item allows the selection of 625 standard
Vertical Interval lines contained in the input signal
to be blanked or passed through the module as
data or as a VITS.

Specific lines may be blanked, passed through as
data, passed through as a picture (video) or closed
captions.

625 Lines 7-23

This allows the selection of lines in field 1.

```
┌─────────────────────────────────┐
│        625 Lines 7-23           │
├─────────────────────────────────┤
│ ◄ Line 7...                     │
│ ◄ Line 8...                     │
│ ◄ Line 9...                     │
│ ◄ Line 10...                    │
│ ◄ Line 11...                    │
│ ◄ Line 12...                    │
│ ◄ Line 13...                    │
│ ◄ Line 14...                    │
│ ◄ Line 15...                    │
│ ◄ Line 16...                    │
│ ◄ Line 17...                    │
│ ◄ Line 18...                    │
│ ◄ Line 19...                    │
│ ◄ Line 20...                    │
│ ◄ Line 21...                    │
│ ◄ Line 22...                    │
│ ◄ Line 23...                    │
└─────────────────────────────────┘
```

Lines 7-22

| Line 7-22 |
|-----------|
| ◄ Blank |
| ◄ Pass VBI |
| ◄ Decode VBI |

The options for these lines are:

Blank           Line content is blanked by
                synchronizer
Pass VBI        Line is decoded and chroma
Decode VBI      The line is decoded and
                processed by the ProcAmp

Line 23

| Line 23 |
|---------|
| ◄ Blank |
| ◄ WSS |
| ◄ Picture |

The options for this line are:

Blank           Line content is blanked by
                synchronizer
WSS             1st half of line is processed as
                data, chroma blanked, 2nd half of
                line is processed as video
Picture         1st half of line is blanked by
                decoder, 2nd half of line is
                processed as video

625 Lines 320-335

This allows the selection of lines in field 2.

| 625 Lines 320-335 |
|-------------------|
| ◄ Line 320... |
| ◄ Line 321... |
| ◄ Line 322... |
| ◄ Line 323... |
| ◄ Line 324... |
| ◄ Line 325... |
| ◄ Line 326... |
| ◄ Line 327... |
| ◄ Line 328... |
| ◄ Line 329... |
| ◄ Line 330... |
| ◄ Line 331... |
| ◄ Line 332... |
| ◄ Line 333... |
| ◄ Line 334... |
| ◄ Line 335... |

Lines 320-335

| Line 320-335 |
|--------------|
| ◄ Blank |
| ◄ Pass VBI |
| ◄ Decode VBI |

The options for these lines are:

Blank           Line content is blanked by
                synchronizer
Pass VBI        Line is decoded and chroma
Decode VBI      The line is decoded and
                processed by the ProcAmp

Hanc Blank

When checked all horizontal data will be blanked
on the input.

When unchecked HANC will be passed
uncorrupted as long as the Bus audio embedders
are disabled. If the synchronizer is synchronizing
then frames (including the HANC) might be
dropped or repeated.

*Note that he HANC Blank control will always be
selected if the audio embedders are enabled.*

SECAM Bottles

This allows the processing of the Bottle lines to be selected.

| SECAM Bottles |
|---|
| ◄ Auto |
| ◄ Off |
| ◄ On |
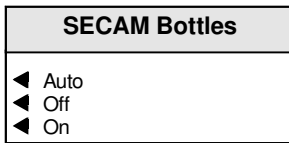
Auto

In this mode Bottles are automatically detected, a Bottle line is passed and will be correctly decoded.

*Note that auto Bottle detection is not available in VHS mode.*

Off

In this mode Bottle lines will not be detected.

On

In this mode a Bottle line is passed and will be correctly decoded.

**GPI I/O**

This function allows the GPI functions to be configured and their actions defined.

| GPI I/O |
|---|
| ◄ GPI Mode... |
| ◄ GPI i/p Select... |
| ◄ GPI o/p Select... |
| ◄ Out Active High |
| ◄ Timer Active High |
| ◄ Audio Delay |
| ◄ GPI In Delay |
| ◄ GPI Out Delay |

GPI Mode

This allows the GPI port to be configured.
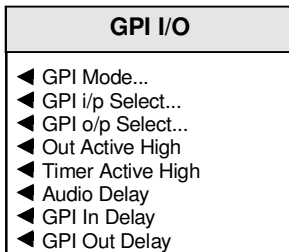
| GPI Mode |
|---|
| ◄ Unused |
| ◄ Input |
| ◄ Output |
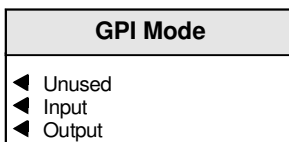
The options are:

Unused ..The GPI port is disabled
Input .......The port is configured as an Input
Output ....The port is configured as an Output

GPI i/p Select

When configured as an input the GPI connection may be used for accepting GPI information (from mechanical switch contacts, relay contacts etc.).

| GPI i/p Select |
|---|
| ◄ Pattern |
| ◄ Freeze |
| ◄ Memory1 |
| ◄ Memory2 |
| ◄ Memory3 |
| ◄ Memory4 |
| ◄ Memory5 |
| ◄ Memory6 |
| ◄ Memory7 |
| ◄ Memory8 |
| ◄ Memory 1-2 |
| ◄ Memory 3-4 |
| ◄ Memory 5-6 |
| ◄ Memory 7-8 |
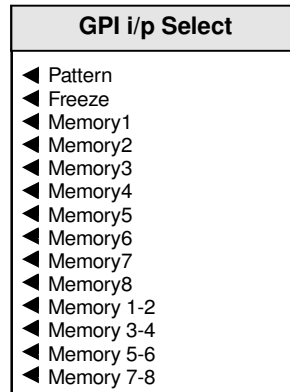
The resulting action that the unit takes may be selected using this item.

The GPI input functions that may be selected are as follows:

Pattern       The unit will produce a pattern chosen from the Pattern menu when the input changes from open to closed.

Freeze        The output picture will be frozen frame when the input changes from open to closed.

Memory       The unit will use the settings in
1 to 8        the selected memory location when the input changes from open to closed.

Memory 1-2 The unit will toggle between the settings of memory locations 1 and 2.
Open to Closed = Memory 1 settings
Closed to Open =  Memory 2 settings

Memory 3-4 The unit will toggle between the settings of memory locations 3 and 4.
Open to Closed = Memory 3 settings
Closed to Open =  Memory 4 settings

Memory 5-6 The unit will toggle between the settings of memory locations 5 and 6.
Open to Closed = Memory 5 settings
Closed to Open =  Memory 6 settings

Memory 7-8 The unit will toggle between the settings of memory locations 7 and 8.
Open to Closed = Memory 7 settings
Closed to Open =  Memory 8 settings

GPI o/p Select

This item allows the GPI output functions to be configured.

```
┌─────────────────────────────────┐
│        GPI o/p Select           │
├─────────────────────────────────┤
│  ◄  Input Present               │
│  ◄  Standard 625                │
│  ◄  Video Delay                 │
└─────────────────────────────────┘
```

The GPO may be configured to produce an output corresponding to one of the conditions highlighted in the list.

When the condition is not true the output will float but when the condition is true the output is closed to ground via a transistor.

*Note that when video delay mode is selected the output is a negative going TTL pulse. The width of the pulse represents the video delay through the unit to the nearest millisecond.*

Out Active High

When selected (highlighted) the GPI output is active high; when deselected the GPI output is active low.
*Note this will also set the polarity of the TTL output signal.*

Timer Active High

When checked the **GPI Delay** measurement will respond to a positive going pulse; when unchecked it will respond to a negative going pulse.

Audio Delay

The audio delay may be controlled by the width of a pulse on the GPI input when this item is selected.

*Note that when selected the input functions in the **GPI i/p Select** menu will not be available.*

GPI In Delay

```
┌─────────────────────────────────┐
│        GPI In/Out Delay         │
├─────────────────────────────────┤
│  GPI In/Out Delay               │
│  5.5ms                          │
│                         OK ►    │
└─────────────────────────────────┘
```

If the GPI port is receiving a pulse input this will show the length of the pulse in milliseconds.

GPI Out Delay

```
┌─────────────────────────────────┐
│        GPI In/Out Delay         │
├─────────────────────────────────┤
│  GPI In/Out Delay               │
│  5.5ms                          │
│                         OK ►    │
└─────────────────────────────────┘
```

This will show the current video delay through the unit and hence the width of the GPI output TTL pulse.

## RollTrack

This function allows information to be sent, via the RollCall™ network, to other compatible units connected on the same network.

For example, it can enable compatible audio delay units to produce an audio delay dependent on this and other similar units. The audio delay unit will dynamically follow or track the received delay-time information. This allows processed video signals to be timed correctly with audio signals. This automatic tracking system via the RollCall™ network is call **RollTrack**.

```
┌─────────────────────────────┐
│         RollTrack           │
├─────────────────────────────┤
│ ◄ Diable All                │
│ ◄ RollTrack Index           │
│ ◄ RollTrack Source...       │
│ ◄ RollTrack Address         │
│ ◄ RollTrack Command         │
│ ◄ RollTrack Status          │
│ ◄ RollTrack Sending         │
└─────────────────────────────┘
```

*For more detailed information, see the RollTrack section (Appendix) at the end of this manual.*

RollTrack Index

```
┌─────────────────────────────┐
│      RollTrack Index        │
├─────────────────────────────┤
│ RollTrack Index             │
│ 10                          │
│ ◄ Preset                    │
└─────────────────────────────┘
```
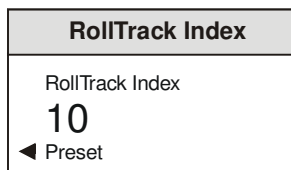
This item is used to select which RollTrack Index is set up using the RollTrack Source, RollTrack Address and RollTrack Command functions.

RollTrack Source
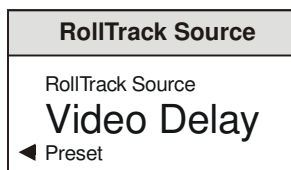
```
┌─────────────────────────────┐
│     RollTrack Source        │
├─────────────────────────────┤
│ RollTrack Source            │
│ Video Delay                 │
│ ◄ Preset                    │
└─────────────────────────────┘
```

This allows the source of information that triggers the transmission of data to be selected. Options are:

| |
|---|
| Unused |
| Input Present |
| Input Missing |
| Standard 525 |
| Standard 625 |
| Audio Delay |
| Video Delay |
| Ref. Lost |
| Ref. Present |
| Ref. Error |

The destination for the information is set by the network code address.

## RollTrack Disable

When this item is selected all RollTrack items will be disabled.

RollTrack Address

This item allows the address of the selected destination unit to be set.
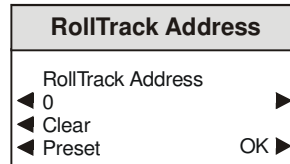
```
┌─────────────────────────────┐
│     RollTrack Address        │
├─────────────────────────────┤
│ RollTrack Address            │
│ ◄ 0                        ► │
│ ◄ Clear                      │
│ ◄ Preset              OK ►   │
└─────────────────────────────┘
```

To compile/edit the text the right ► and left buttons adjacent to the upper text line in the menu should be used to select the character position in the text and the spinwheel used to select the character.

The **Clear** function blanks the selected character.

The **Preset** function loads the default address.

**O.K.** ► saves the address and returns to the main menu.

The full **RollTrack** address has four sets of numbers

For example: 0000:10:01*99

The first set (0000) is the network segment code number

The second set (10) is the number identifying the (enclosure/mainframe) unit.

The third set (01) is the slot number in the unit

The fourth set (99) is a user settable number that is a unique identification number for the destination unit in a multi-unit system. This ensures that only the correct unit will respond to the command. If left at 00 an incorrectly fitted unit may respond inappropriately.

RollTrack Command
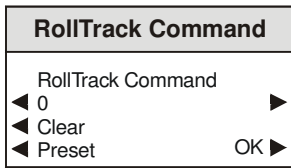
```
┌─────────────────────────────┐
│    RollTrack Command        │
├─────────────────────────────┤
│   RollTrack Command         │
│ ◄ 0                       ► │
│ ◄ Clear                     │
│ ◄ Preset              OK ►  │
└─────────────────────────────┘
```

The full **RollTrack** command has two sets of numbers

For example: 84*156

The first set (84) is the **RollTrack** command number

*Note that only command numbers 14, 15, 16 and 17 should be used for audio delay*

The second set (156) is the value sent with the **RollTrack** command number.

*Note that when video delay or audio delay is selected as the **RollTrack** source the value sent with the **RollTrack** command is the video delay value not the value set.*

*For details of the RollCall command values for specific units please contact your local Snell & Wilcox agent.*

RollTrack Sending

This item shows when the unit is actively sending the RollTrack command.

```
┌─────────────────────────────┐
│  RollTrack Sending/Status   │
├─────────────────────────────┤
│   RollTrack Sending/Status  │
│   YES                       │
│                      OK ►   │
└─────────────────────────────┘
```

This may show:

| | |
|---|---|
| String | A string value is always being sent. |
| Number | A number value is always being sent. |
| No | The message is not being sent. |
| Yes | The message is being sent. |
| Internal Type Error | Inconsistent behavior; please contact your local Snell & Wilcox agent. |

RollTrack Status

This item will show the status of the currently selected RollTrack index.

This may show:

| | |
|---|---|
| OK | RollTrack message sent and received OK. |
| Unknown | Rolltrack message has been sent but it has not yet completed. |
| Timeout | RollTrack message sent but acknowledgement not received. This could be because the destination unit is not at the location specified. |
| Error | This indicates a broken RollCall state. |
| Bad | This indicates a broken RollCall packet. |

**Logging**

Information about various parameters can be
made available to a logging device that is attached
to the RollCall™ network by selecting the
appropriate item.

| Logging |
| --- |
| ◄ Input |
| ◄ Std |
| ◄ Reference |
| ◄ RollTrack |
| ◄ ANALOG 1L |
| ◄ ANALOG 1R |
| ◄ ANALOG 2L |
| ◄ ANALOG 2R |
| ◄ BUS AL |
| ◄ BUS AR |
| ◄ BUS BL |
| ◄ BUS BR |

Any of the items may be selected from the list.

## ROLLCALL LOG FIELDS

(where applicable)

| Log Field | Log Value | Description |
|---|---|---|
| INPUT= | OK | Valid input signal |
| | ERR | Invalid input signal |
| | LOST | Input signal lost |
| STD= | UNKNOWN | Input signal standard not recognized or no signal |
| | STDERR | Not a selected input standard |
| | 525 | SDI input standard 525 |
| | 625 | SDI input standard 625 |
| | PAL | PAL composite input |
| | NTSC | NTSC composite input |
| | NTSC_J | NTSC J composite input |
| | PAL_M | PAL M composite input |
| | PAL_N | PAL N composite input |
| | SECAM | SECAM composite input |
| | N443_60 | N4.43 60  composite input |
| | PAL443_60 | PAL4.43 60 composite input |
| | ERROR: 525 | SDI input standard 525, 525 standard not valid |
| | ERROR: 625 | SDI input standard 625, 625 standard not valid |
| | ERROR: PAL | Composite input standard invalid, decoding as PAL |
| | ERROR: NTSC | Composite input standard invalid, decoding as NTSC |
| | ERROR: NTSC_J | Composite input standard invalid, decoding as NTSC J |
| | ERROR: PAL_M | Composite input standard invalid, decoding as PAL M |
| | ERROR: PAL_N | Composite input standard invalid, decoding as PAL N |
| | ERROR: SECAM | Composite input standard invalid, decoding as SECAM |
| | ERROR: N443_60 | Composite input standard invalid, decoding as N4.43 60 |
| | ERROR: PAL443_60 | Composite input standard invalid, decoding as PAL4.43 60 |
| EXTREF= | 525 | 525 reference, input 525 or lost |
| | 625 | 625 reference, input 625 or lost |
| | ERROR: 525 | 525 reference, input 625, trying to lock to reference |
| | ERROR: 625 | 625 reference, input 525, trying to lock to reference |
| | WARNING: LOSS | Reference lost, trying to lock to reference |
| | WARNING:525_N/A | 525 reference, input 625, not trying to lock to reference |
| | WARNING:625_N/A | 625 reference, input 525, not trying to lock to reference |
| | NONE | Reference lost, not trying to lock to reference |
| ROL_STATES= | OK | RollTrack message sent and received OK |
| | FAIL | RollTrack message not acknowledged |
| ANALOG_1L | OK | Analog Input 1 Left channel has valid signal selected |
| | WARNING: SILENT | Analog Input 1 Left channel is receiving silence |
| | WARNING: QUIET | Analog Input 1 Left channel is receiving low level signal |
| | WARNING: HIGH | Analog Input 1 Left channel is receiving high level signal |
| | WARNING: OVERLOAD | Analog Input 1 Left channel is receiving overload signal |
| ANALOG_1R | OK | Analog Input 1 Right channel has valid signal selected |
| | WARNING: SILENT | Analog Input 1 Right channel is receiving silence |
| | WARNING: QUIET | Analog Input 1 Right channel is receiving low level signal |
| | WARNING: HIGH | Analog Input 1 Right channel is receiving high level signal |
| | WARNING: OVERLOAD | Analog Input 1 Right channel is receiving overload signal |
| ANALOG_2L | OK | Analog Input 2 Left channel has valid signal selected |
| | WARNING: SILENT | Analog Input 2 Left channel is receiving silence |
| | WARNING: QUIET | Analog Input 2 Left channel is receiving low level signal |
| | WARNING: HIGH | Analog Input 2 Left channel is receiving high level signal |
| | WARNING: OVERLOAD | Analog Input 2 Left channel is receiving overload signal |
| ANALOG_2R | OK | Analog Input 2 Right channel has valid signal selected |
| | WARNING: SILENT | Analog Input 2 Right channel is receiving silence |
| | WARNING: QUIET | Analog Input 2 Right channel is receiving low level signal |
| | WARNING: HIGH | Analog Input 2 Right channel is receiving high level signal |
| | WARNING: OVERLOAD | Analog Input 2 Right channel is receiving overload signal |
| BUS_AL= | OK | Router BUS A Left channel has valid signal selected |

| Log Field | Log Value | Description |
|---|---|---|
|  | WARNING: SILENT | Router BUS A Left channel is receiving silence |
|  | WARNING: QUIET | Router BUS A Left channel is receiving low level signal |
|  | WARNING: HIGH | Router BUS A Left channel is receiving high level signal |
|  | WARNING: OVERLOAD | Router BUS A Left channel is receiving overload signal |
| BUS_AR= | OK | Router BUS A Right channel has valid signal selected |
|  | WARNING: SILENT | Router BUS A Right channel is receiving silence |
|  | WARNING: QUIET | Router BUS A Right channel is receiving low level signal |
|  | WARNING: HIGH | Router BUS A Right channel is receiving high level signal |
|  | WARNING: OVERLOAD | Router BUS A Right channel is receiving overload signal |
| BUS_BL= | OK | Router BUS B Left channel has valid signal selected |
|  | WARNING: SILENT | Router BUS B Left channel is receiving silence |
|  | WARNING: QUIET | Router BUS B Left channel is receiving low level signal |
|  | WARNING: HIGH | Router BUS B Left channel is receiving high level signal |
|  | WARNING: OVERLOAD | Router BUS B Left channel is receiving overload signal |
| BUS_BR= | OK | Router BUS B Right channel has valid signal selected |
|  | WARNING: SILENT | Router BUS B Right channel is receiving silence |
|  | WARNING: QUIET | Router BUS B Right channel is receiving low level signal |
|  | WARNING: HIGH | Router BUS B Right channel is receiving high level signal |
|  | WARNING: OVERLOAD | Router BUS B Right channel is receiving overload signal |
| SN= | Runtime string | Serial number of unit |

**Default Output**

If the input signal fails or is of poor quality this function will determine what the output signal will become under such conditions.

| Default Output |
|---|
| ◄ Default Output... |
| ◄ Default Pattern... |
| ◄ Default Caption |
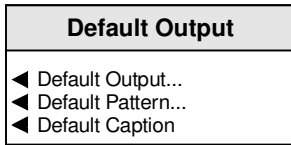
Default Output

This allows the default output mode to be selected.

| Default Output |
|---|
| ◄ Pass Video |
| ◄ Freeze |
| ◄ Pattern |
| ◄ Pattern&Caption |

Pass Video   The input signal will be passed to the output.

Freeze       The output will become a frozen frame picture.

Pattern      The output will become the pattern chosen from the **Default Pattern** list.

Pattern and  The output will become the pattern
Caption      chosen from the **Default Pattern** list plus the **Default Caption**.

Default Pattern

| Default Pattern |
|---|
| ◄ Black |
| ◄ EBU Color Bars |
| ◄ 100% Color Bars |
| ◄ Ramp |
| ◄ Multi-burst |
| ◄ Pulse & Bar |
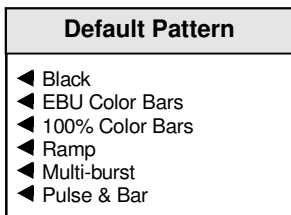
If Pattern is chosen in the **Default Output** menu the output will become the pattern chosen from this list.

Default Caption

| Default Caption |
|---|
| Default Caption |
| ◄ VIDEO LOSS          ► |
| ◄ Clear |
| ◄ Preset        OK ► |
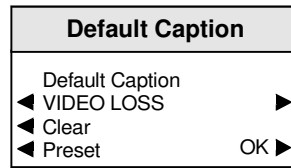
This is the caption that will appear if **Pattern and Caption** is chosen from the **Default Output** menu.

To compile/edit the text the right ► and left buttons adjacent to the upper text line in the menu should be used to select the character position in the text and the spinwheel used to select the character.
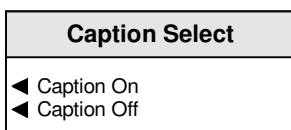
The **Clear** function blanks the selected character.

The **Preset** function loads the default text, for example, **VIDEO LOSS.**

**O.K.** ► saves the text and returns to the main menu.

**Information Window**
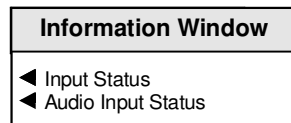
| Information Window |
|---|
| ◄ Input Status |
| ◄ Audio Input Status |

The type if information that appears in the Information Window may be chosen with this item.

**Software Version**

This item reveals a display showing the version of the software fitted in the module.

```
┌─────────────────────────────┐
│      Software Version       │
├─────────────────────────────┤
│ Software Version            │
│ x.x.x                       │
│                      OK ▶   │
└─────────────────────────────┘
```

Select OK to return to the Setup Menu.

**Serial No**

This item reveals a display showing the serial number of the module.

```
┌─────────────────────────────┐
│         Serial No           │
├─────────────────────────────┤
│ Serial No                   │
│ xxxxxxx                     │
│                      OK ▶   │
└─────────────────────────────┘
```

Select OK to return to the Setup Menu.

**Build No**

This will indicate the factory build number. This number defines all parameters of the unit (software versions, build level etc.) for identification purposes.

```
┌─────────────────────────────┐
│          Build No           │
├─────────────────────────────┤
│ Build No                    │
│ xxxxxxx                     │
│                      OK ▶   │
└─────────────────────────────┘
```

Select OK to return to the Setup Menu.

FPGA Sync Version

This will display the version number of the Synchronizer FPGA fitted to the unit.

```
┌─────────────────────────────┐
│     FPGA Sync Version       │
├─────────────────────────────┤
│ FPGA Sync Version           │
│ xxxxxxx                     │
│                      OK ▶   │
└─────────────────────────────┘
```

Select OK to return to the Setup Menu.

FPGA Dec Version

This will display the version number of the Decoder FPGA fitted to the unit.

```
┌─────────────────────────────┐
│      FPGA Dec Version       │
├─────────────────────────────┤
│ FPGA Dec Version            │
│ xxxxxxx                     │
│                      OK ▶   │
└─────────────────────────────┘
```

Select OK to return to the Setup Menu.

Error Seconds Reset

Selecting this function will reset the EDH error count and the timer shown in the information window, to zero.

**Factory Default**

Selecting this item sets all adjustment functions that include a preset facility, to their factory default values.

*Note that this is a momentary action.*

**Restart**

This will reboot the unit simulating a power-down power-up cycle restoring power-up settings.

## User Mem(ories)

This function allows a number of particular setups of the IQDEC01 to be saved and recalled. There are 8 memory locations available.

This item allows any of the 8 memory locations to be selected.

```
┌─────────────────────────────┐
│        User Mem             │
├─────────────────────────────┤
│ ◄ Memory 1...               │
│     to                      │
│ ◄ Memory 8...               │
└─────────────────────────────┘
```

**Memory 1 to 8**
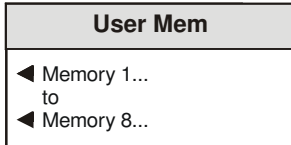
```
┌─────────────────────────────┐
│       Memory 1 to 8         │
├─────────────────────────────┤
│ ◄ Save 1-8      Recall 1-8 ►│
│ ◄ Clear 1-8       Name 1-8 ►│
└─────────────────────────────┘
```
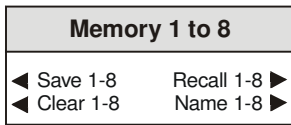
When a memory location has been selected this item allows it to be saved, recalled, cleared or renamed.

Save 1-8

When selected the current settings will be saved at this location.

Recall 1-8 ►

When selected the settings will be recalled from this location and applied to the unit.

Clear 1-8

When selected the memory location will be cleared and returned to the default (preset) setting.

Name 1-8 ►

The selected memory location may be renamed with this function.

To compile/edit the text the right ► and left buttons adjacent to the upper text line in the menu should be used to select the character position in the text and the spinwheel used to select the character.

```
┌─────────────────────────────┐
│      Name Memory 1-8        │
├─────────────────────────────┤
│   Name Memory 1-8           │
│ ◄ memory_name             ► │
│ ◄ Clear                     │
│ ◄ Preset             OK ►   │
└─────────────────────────────┘
```
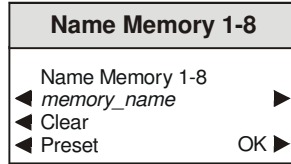
The **Clear** function blanks the selected character.

The **Preset** function loads the default text, for example, **Memory 1.**

**O.K.** ► saves the memory name text and returns to the main menu.

## IQDEC01 RollCall Commands

**Supervisor Level**

```
Command No.
Hex    Dec    Command Name                                            Values
000E    14    RollTrack14            min=-2147483648 max=2147483647 Step=1
000F    15    RollTrack15            min=-2147483648 max=2147483647 Step=1
0010    16    RollTrack16            min=-2147483648 max=2147483647 Step=1
0011    17    RollTrack17            min=-2147483648 max=2147483647 Step=1
03EA  1002    <Select>                0=Composite A    1=Composite B    2=YC            3=SDI
044C  1100    525                    clear=0 set=1 (toggle=2)
044D  1101    625                    clear=0 set=1 (toggle=2)
0578  1400    Left                   min=0     max=200     Step=2
0579  1401    Right                  min=0     max=200     Step=2
057A  1402    Top                    min=0     max=200     Step=1
057B  1403    Bottom                 min=0     max=200     Step=1
057C  1404    Red                    min=0     max=255     Step=1
057D  1405    Green                  min=0     max=255     Step=1
057E  1406    Blue                   min=0     max=255     Step=1
0640  1600    Luma Gain              min=-60   max=60      Step=1      Div=10
0641  1601    Black Level            min=-1200 max=1200    Step=5      Div=10
0642  1602    Chroma Gain            min=-60   max=60      Step=1      Div=10
0643  1603    V Enhance              min=0     max=3       Step=1
0644  1604    H Enhance              min=0     max=3       Step=1
0645  1605    <H Enhance Freq>        0=3.375 MHz     1=2.250 MHz
0646  1606    Picture Position       min=-592  max=592     Step=148
0647  1607    Y/C Timing             min=-592  max=592     Step=148
07D0  2000    <Reference Src>         0=Free Run      1=External Reference    2=Input Video
07D1  2001    H Phase 625            min=0     max=1727    Step=1
07D2  2002    V Phase 625            min=0     max=624     Step=1
07D3  2003    H Phase 525            min=0     max=1715    Step=1
07D4  2004    V Phase 525            min=0     max=524     Step=1
07D5  2005    H Delay 625            min=0     max=1727    Step=1
07D6  2006    V Delay 625            min=0     max=624     Step=1
07D7  2007    H Delay 525            min=0     max=1715    Step=1
07D8  2008    V Delay 525            min=0     max=524     Step=1
0838  2104    Freerun Frequency      min=-60   max=60      Step=1
083A  2106    <Frame Delay>           0=0 Frame Delay    1=1 Frame Delay    2=2 Frame Delay
0898  2200    HANC Blank             clear=0 set=1 (toggle=2)
0899  2201    <Line 11>               0=Blank          1=Pass VBI       2=Decode VBI
089A  2202    <Line 12>               0=Blank          1=Pass VBI       2=Decode VBI
089B  2203    <Line 13>               0=Blank          1=Pass VBI       2=Decode VBI
089C  2204    <Line 14>               0=Blank          1=Pass VBI       2=Decode VBI
089D  2205    <Line 15>               0=Blank          1=Pass VBI       2=Decode VBI
089E  2206    <Line 16>               0=Blank          1=Pass VBI       2=Decode VBI
089F  2207    <Line 17>               0=Blank          1=Pass VBI       2=Decode VBI
08A0  2208    <Line 18>               0=Blank          1=Pass VBI       2=Decode VBI
08A1  2209    <Line 19>               0=Blank          1=Pass VBI       2=Decode VBI
08A2  2210    <Line 20>               0=Blank          1=Pass VBI       2=Decode VBI
08A3  2211    <Line 21>               0=Blank          1=Data           2=Picture        3=Closed Captions
08A4  2212    <Line 22>               0=Blank          1=Data           2=Picture
08A5  2213    <Line 274>              0=Blank          1=Pass VBI       2=Decode VBI
08A6  2214    <Line 275>              0=Blank          1=Pass VBI       2=Decode VBI
08A7  2215    <Line 276>              0=Blank          1=Pass VBI       2=Decode VBI
08A8  2216    <Line 277>              0=Blank          1=Pass VBI       2=Decode VBI
08A9  2217    <Line 278>              0=Blank          1=Pass VBI       2=Decode VBI
08AA  2218    <Line 279>              0=Blank          1=Pass VBI       2=Decode VBI
08AB  2219    <Line 280>              0=Blank          1=Pass VBI       2=Decode VBI
08AC  2220    <Line 281>              0=Blank          1=Pass VBI       2=Decode VBI
08AD  2221    <Line 282>              0=Blank          1=Pass VBI       2=Decode VBI
08AE  2222    <Line 283>              0=Blank          1=Data           2=Picture
08AF  2223    <Line 284>              0=Blank          1=Data           2=Picture        3=Closed Captions
08B0  2224    <Line 285>              0=Blank          1=Data           2=Picture
08B6  2230    <Line 7>                0=Blank          1=Pass VBI       2=Decode VBI
08B7  2231    <Line 8>                0=Blank          1=Pass VBI       2=Decode VBI
08B8  2232    <Line 9>                0=Blank          1=Pass VBI       2=Decode VBI
08B9  2233    <Line 10>               0=Blank          1=Pass VBI       2=Decode VBI
08BA  2234    <Line 11>               0=Blank          1=Pass VBI       2=Decode VBI
08BB  2235    <Line 12>               0=Blank          1=Pass VBI       2=Decode VBI
08BC  2236    <Line 13>               0=Blank          1=Pass VBI       2=Decode VBI
08BD  2237    <Line 14>               0=Blank          1=Pass VBI       2=Decode VBI
08BE  2238    <Line 15>               0=Blank          1=Pass VBI       2=Decode VBI
08BF  2239    <Line 16>               0=Blank          1=Pass VBI       2=Decode VBI
08C0  2240    <Line 17>               0=Blank          1=Pass VBI       2=Decode VBI
08C1  2241    <Line 18>               0=Blank          1=Pass VBI       2=Decode VBI
08C2  2242    <Line 19>               0=Blank          1=Pass VBI       2=Decode VBI
08C3  2243    <Line 20>               0=Blank          1=Pass VBI       2=Decode VBI
08C4  2244    <Line 21>               0=Blank          1=Pass VBI       2=Decode VBI
08C5  2245    <Line 22>               0=Blank          1=Pass VBI       2=Decode VBI
08C6  2246    <Line 23>               0=Blank          1=WSS            2=Picture
08C7  2247    <Line 320>              0=Blank          1=Pass VBI       2=Decode VBI
08C8  2248    <Line 321>              0=Blank          1=Pass VBI       2=Decode VBI
08C9  2249    <Line 322>              0=Blank          1=Pass VBI       2=Decode VBI
08CA  2250    <Line 323>              0=Blank          1=Pass VBI       2=Decode VBI
08CB  2251    <Line 324>              0=Blank          1=Pass VBI       2=Decode VBI
08CC  2252    <Line 325>              0=Blank          1=Pass VBI       2=Decode VBI
08CD  2253    <Line 326>              0=Blank          1=Pass VBI       2=Decode VBI
08CE  2254    <Line 327>              0=Blank          1=Pass VBI       2=Decode VBI
08CF  2255    <Line 328>              0=Blank          1=Pass VBI       2=Decode VBI
08D0  2256    <Line 329>              0=Blank          1=Pass VBI       2=Decode VBI
08D1  2257    <Line 330>              0=Blank          1=Pass VBI       2=Decode VBI
08D2  2258    <Line 331>              0=Blank          1=Pass VBI       2=Decode VBI
08D3  2259    <Line 332>              0=Blank          1=Pass VBI       2=Decode VBI
08D4  2260    <Line 333>              0=Blank          1=Pass VBI       2=Decode VBI
08D5  2261    <Line 334>              0=Blank          1=Pass VBI       2=Decode VBI
08D6  2262    <Line 335>              0=Blank          1=Pass VBI       2=Decode VBI
08DB  2267    <SECAM Bottles>         0=Auto           1=Off            2=On
0960  2400    Freeze                 clear=0 set=1 (toggle=2)
```

```
0961   2401   <Pattern Type>       0=Black        1=EBU Color Bars   2=100% Color Bars   3=Ramp
                                   4=Multi-Burst    5=Pulse & Bar
0962   2402   Pattern Enable       clear=0 set=1 (toggle=2)
0B54   2900   Caption Select       clear=0 set=1 (toggle=2)
0B55   2901   Edit Caption         Edit String
0BB8   3000   RollTrack Index      min=1        max=16        Step=1
0BB9   3001   <RollTrack Source>   -1=Unused    0=Input Present    1=Input Missing    2=Standard 525
                                   3=Standard 625    4=Audio Delay    5=Video Delay    6=Ref. Lost
                                   7=Ref. Present    8=Ref. Error    9=De-embed 1 Lost   10=De-embed 1 Present
                                   11=De-embed 2 Lost   12=De-embed 2 Present   13=De-embed 3 Lost   14=De-embed
                                   3 Present   15=De-embed 4 Lost   16=De-embed 4 Present   17=De-embed 5 Lost
                                   18=De-embed 5 Present   19=De-embed 6 Lost   20=De-embed 6 Present   21=De-embed 7
                                   Lost   22=De-embed 7 Present 23=De-embed 8 Lost   24=De-embed 8 Present
0BBA   3002   RollTrack Address    Edit String
0BBB   3003   RollTrack Command    Edit String
0BBC   3004   Disable All          clear=0 set=1 (toggle=2)
0BBD   3005   RollTrack Status     Static Display (no control)
0BBE   3006   RollTrack Sending    Static Display (no control)
0C80   3200   <GPI Mode>           0=Unused        1=Input        2=Output
0C82   3202   <GPI i/p Select>     0=Pattern      1=Freeze      2=Memory1      3=Memory2
                                   4=Memory3      5=Memory4      6=Memory5      7=Memory6
                                   8=Memory7      9=Memory8      10=Memory 1-2   11=Memory 3-4
                                   12=Memory 5-6   13=Memory 7-8
0C84   3204   <GPI o/p Select>     0=Input Present    1=Standard 625    2=Video Delay
0C85   3205   GPI Out Delay        Static Display (no control)
0C86   3206   Out Active High      clear=0 set=1 (toggle=2)
0C87   3207   Timer Active High    clear=0 set=1 (toggle=2)
0C88   3208   GPI In Delay         Static Display (no control)
0C89   3209   Audio Delay          clear=0 set=1 (toggle=2)
0FA0   4000   L-Gain               min=-180     max=180       Step=1       Div=10
0FA1   4001   Gain-R               min=-180     max=180       Step=1       Div=10
0FA2   4002   L-Invert             clear=0 set=1 (toggle=2)
0FA3   4003   Invert-R             clear=0 set=1 (toggle=2)
0FA4   4004   L-Mute               clear=0 set=1 (toggle=2)
0FA5   4005   Mute-R               clear=0 set=1 (toggle=2)
0FA6   4006   Stereo               clear=0 set=1 (toggle=2)
0FA7   4007   Delay                min=0        max=1500      Step=1
0FAA   4010   L-Gain               min=-180     max=180       Step=1       Div=10
0FAB   4011   Gain-R               min=-180     max=180       Step=1       Div=10
0FAC   4012   L-Invert             clear=0 set=1 (toggle=2)
0FAD   4013   Invert-R             clear=0 set=1 (toggle=2)
0FAE   4014   L-Mute               clear=0 set=1 (toggle=2)
0FAF   4015   Mute-R               clear=0 set=1 (toggle=2)
0FB0   4016   Stereo               clear=0 set=1 (toggle=2)
0FB1   4017   Delay                min=0        max=1500      Step=1
0FB4   4020   L-Gain               min=-180     max=180       Step=1       Div=10
0FB5   4021   Gain-R               min=-180     max=180       Step=1       Div=10
0FB6   4022   L-Invert             clear=0 set=1 (toggle=2)
0FB7   4023   Invert-R             clear=0 set=1 (toggle=2)
0FB8   4024   L-Mute               clear=0 set=1 (toggle=2)
0FB9   4025   Mute-R               clear=0 set=1 (toggle=2)
0FBA   4026   Stereo               clear=0 set=1 (toggle=2)
0FBB   4027   Delay                min=0        max=1500      Step=1
0FBE   4030   L-Gain               min=-180     max=180       Step=1       Div=10
0FBF   4031   Gain-R               min=-180     max=180       Step=1       Div=10
0FC0   4032   L-Invert             clear=0 set=1 (toggle=2)
0FC1   4033   Invert-R             clear=0 set=1 (toggle=2)
0FC2   4034   L-Mute               clear=0 set=1 (toggle=2)
0FC3   4035   Mute-R               clear=0 set=1 (toggle=2)
0FC4   4036   Stereo               clear=0 set=1 (toggle=2)
0FC5   4037   Delay                min=0        max=1500      Step=1
0FC8   4040   L-Gain               min=-180     max=180       Step=1       Div=10
0FC9   4041   Gain-R               min=-180     max=180       Step=1       Div=10
0FCA   4042   L-Invert             clear=0 set=1 (toggle=2)
0FCB   4043   Invert-R             clear=0 set=1 (toggle=2)
0FCC   4044   L-Mute               clear=0 set=1 (toggle=2)
0FCD   4045   Mute-R               clear=0 set=1 (toggle=2)
0FCE   4046   Stereo               clear=0 set=1 (toggle=2)
0FCF   4047   Delay                min=0        max=1500      Step=1
0FD2   4050   L-Gain               min=-180     max=180       Step=1       Div=10
0FD3   4051   Gain-R               min=-180     max=180       Step=1       Div=10
0FD4   4052   L-Invert             clear=0 set=1 (toggle=2)
0FD5   4053   Invert-R             clear=0 set=1 (toggle=2)
0FD6   4054   L-Mute               clear=0 set=1 (toggle=2)
0FD7   4055   Mute-R               clear=0 set=1 (toggle=2)
0FD8   4056   Stereo               clear=0 set=1 (toggle=2)
0FD9   4057   Delay                min=0        max=1500      Step=1
0FDC   4060   L-Gain               min=-180     max=180       Step=1       Div=10
0FDD   4061   Gain-R               min=-180     max=180       Step=1       Div=10
0FDE   4062   L-Invert             clear=0 set=1 (toggle=2)
0FDF   4063   Invert-R             clear=0 set=1 (toggle=2)
0FE0   4064   L-Mute               clear=0 set=1 (toggle=2)
0FE1   4065   Mute-R               clear=0 set=1 (toggle=2)
0FE2   4066   Stereo               clear=0 set=1 (toggle=2)
0FE3   4067   Delay                min=0        max=1500      Step=1
0FE6   4070   L-Gain               min=-180     max=180       Step=1       Div=10
0FE7   4071   Gain-R               min=-180     max=180       Step=1       Div=10
0FE8   4072   L-Invert             clear=0 set=1 (toggle=2)
0FE9   4073   Invert-R             clear=0 set=1 (toggle=2)
0FEA   4074   L-Mute               clear=0 set=1 (toggle=2)
0FEB   4075   Mute-R               clear=0 set=1 (toggle=2)
0FEC   4076   Stereo               clear=0 set=1 (toggle=2)
0FED   4077   Delay                min=0        max=1500      Step=1
1004   4100   L-Gain               min=-68      max=68        Step=1       Div=2
1005   4101   Gain-R               min=-68      max=68        Step=1       Div=2
1006   4102   L-Invert             clear=0 set=1 (toggle=2)
1007   4103   Invert-R             clear=0 set=1 (toggle=2)
1008   4104   L-Mute               clear=0 set=1 (toggle=2)
1009   4105   Mute-R               clear=0 set=1 (toggle=2)
100A   4106   Stereo               clear=0 set=1 (toggle=2)
100B   4107   Delay                min=0        max=1500      Step=1
100E   4110   L-Gain               min=-68      max=68        Step=1       Div=2
100F   4111   Gain-R               min=-68      max=68        Step=1       Div=2
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1010   4112   L-Invert            clear=0 set=1 (toggle=2)
1011   4113   Invert-R            clear=0 set=1 (toggle=2)
1012   4114   L-Mute              clear=0 set=1 (toggle=2)
1013   4115   Mute-R              clear=0 set=1 (toggle=2)
1014   4116   Stereo              clear=0 set=1 (toggle=2)
1015   4117   Delay               min=0       max=1500    Step=1
1022   4130   Headroom            min=8       max=48      Step=1       Div=2
1023   4131   Line Up             min=-48     max=20      Step=1       Div=2
1068   4200   <L-Src >            0=Analog 1L     1=Analog 1R     2=Analog 2L     3=Analog 2R
                                  4=SDI DeEmbed 1L    5=SDI DeEmbed 1R    6=SDI DeEmbed 2L    7=SDI DeEmbed 2R
                                  8=SDI DeEmbed 3L    9=SDI DeEmbed 3R   10=SDI DeEmbed 4L   11=SDI DeEmbed 4R
                                  12=SDI DeEmbed 5L   13=SDI DeEmbed 5R  14=SDI DeEmbed 6L   15=SDI DeEmbed 6R
                                  16=SDI DeEmbed 7L   17=SDI DeEmbed 7R  18=SDI DeEmbed 8L   19=SDI DeEmbed 8R
                                  20=Tone L       21=Tone R       22=Mixer 1      23=Mixer 2
                                  24=Mixer 3      25=Mixer 4
1069   4201   <Src-R>             0=Analog 1L     1=Analog 1R     2=Analog 2L     3=Analog 2R
                                  4=SDI DeEmbed 1L    5=SDI DeEmbed 1R    6=SDI DeEmbed 2L    7=SDI DeEmbed 2R
                                  8=SDI DeEmbed 3L    9=SDI DeEmbed 3R   10=SDI DeEmbed 4L   11=SDI DeEmbed 4R
                                  12=SDI DeEmbed 5L   13=SDI DeEmbed 5R  14=SDI DeEmbed 6L   15=SDI DeEmbed 6R
                                  16=SDI DeEmbed 7L   17=SDI DeEmbed 7R  18=SDI DeEmbed 8L   19=SDI DeEmbed 8R
                                  20=Tone L       21=Tone R       22=Mixer 1      23=Mixer 2
                                  24=Mixer 3      25=Mixer 4
106A   4202   L-Gain              min=-180    max=180     Step=1       Div=10
106B   4203   Gain-R              min=-180    max=180     Step=1       Div=10
106C   4204   L-Invert            clear=0 set=1 (toggle=2)
106D   4205   Invert-R            clear=0 set=1 (toggle=2)
106E   4206   L-Mute              clear=0 set=1 (toggle=2)
106F   4207   Mute-R              clear=0 set=1 (toggle=2)
1070   4208   Stereo              clear=0 set=1 (toggle=2)
1071   4209   <L-Src>             0=Analog 1L     1=Analog 1R     2=Analog 2L     3=Analog 2R
                                  4=SDI DeEmbed 1L    5=SDI DeEmbed 1R    6=SDI DeEmbed 2L    7=SDI DeEmbed 2R
                                  8=SDI DeEmbed 3L    9=SDI DeEmbed 3R   10=SDI DeEmbed 4L   11=SDI DeEmbed 4R
                                  12=SDI DeEmbed 5L   13=SDI DeEmbed 5R  14=SDI DeEmbed 6L   15=SDI DeEmbed 6R
                                  16=SDI DeEmbed 7L   17=SDI DeEmbed 7R  18=SDI DeEmbed 8L   19=SDI DeEmbed 8R
                                  20=Tone L       21=Tone R       22=Mixer 1      23=Mixer 2
                                  24=Mixer 3      25=Mixer 4
1072   4210   <Src-R>             0=Analog 1L     1=Analog 1R     2=Analog 2L     3=Analog 2R
                                  4=SDI DeEmbed 1L    5=SDI DeEmbed 1R    6=SDI DeEmbed 2L    7=SDI DeEmbed 2R
                                  8=SDI DeEmbed 3L    9=SDI DeEmbed 3R   10=SDI DeEmbed 4L   11=SDI DeEmbed 4R
                                  12=SDI DeEmbed 5L   13=SDI DeEmbed 5R  14=SDI DeEmbed 6L   15=SDI DeEmbed 6R
                                  16=SDI DeEmbed 7L   17=SDI DeEmbed 7R  18=SDI DeEmbed 8L   19=SDI DeEmbed 8R
                                  20=Tone L       21=Tone R       22=Mixer 1      23=Mixer 2
                                  24=Mixer 3      25=Mixer 4
1073   4211   L-Gain              min=-180    max=180     Step=1       Div=10
1074   4212   Gain-R              min=-180    max=180     Step=1       Div=10
1075   4213   L-Invert            clear=0 set=1 (toggle=2)
1076   4214   Invert-R            clear=0 set=1 (toggle=2)
1077   4215   L-Mute              clear=0 set=1 (toggle=2)
1078   4216   Mute-R              clear=0 set=1 (toggle=2)
1079   4217   Stereo              clear=0 set=1 (toggle=2)
10CD   4301   <Source>            0=BUS A        1=BUS B
10CE   4302   <Destination>       0=Pair 1       1=Pair 2        2=Pair 3        3=Pair 4
                                  4=Pair 5       5=Pair 6        6=Pair 7        7=Pair 8
10CF   4303   Disable             clear=0 set=1 (toggle=2)
10D0   4304   <Source>            0=BUS A        1=BUS B
10D1   4305   <Destination>       0=Pair 1       1=Pair 2        2=Pair 3        3=Pair 4
                                  4=Pair 5       5=Pair 6        6=Pair 7        7=Pair 8
10D2   4306   Disable             clear=0 set=1 (toggle=2)
10D3   4307   <Source>            0=BUS A        1=BUS B
10D5   4309   <Source>            0=BUS A        1=BUS B
1130   4400   Set Manual          min=-40     max=1500    Step=1
1131   4401   Include Internal    clear=0 set=1 (toggle=2)
1132   4402   Include Manual      clear=0 set=1 (toggle=2)
1133   4403   Include GPI         clear=0 set=1 (toggle=2)
1134   4404   Include RTrack14    clear=0 set=1 (toggle=2)
1135   4405   Include RTrack15    clear=0 set=1 (toggle=2)
1136   4406   Include RTrack16    clear=0 set=1 (toggle=2)
1137   4407   Include RTrack17    clear=0 set=1 (toggle=2)
1141   4417   Total Delay         Static Display (no control)
1142   4418   Internal            Static Display (no control)
1143   4419   Manual              Static Display (no control)
1144   4420   GPI                 Static Display (no control)
1145   4421   RTrack14            Static Display (no control)
1146   4422   RTrack15            Static Display (no control)
1147   4423   RTrack16            Static Display (no control)
1148   4424   RTrack17            Static Display (no control)
1194   4500   Silence             min=-80     max=0       Step=1
1195   4501   Low Level           min=-80     max=0       Step=1
1196   4502   High Level          min=-80     max=0       Step=1
1197   4503   Overload            min=-80     max=0       Step=1
1198   4504   Warning Timer       min=1       max=20      Step=1
11F9   4601   Frequency Left      min=100     max=15000   Step=100     Div=1000
11FA   4602   Frequency Right     min=100     max=15000   Step=100     Div=1000
11FB   4603   <Identify Tone>     0=Off          1=Left          2=Right
11FD   4605   <Audio Slew Select> 0=Instant      1=Fast          2=Medium        3=Slow
                                  4=Slowest
11FE   4606   Channel Status Dest Edit String
11FF   4607   AES Validity Bit    clear=0 set=1 (toggle=2)
1202   4610   <Channel Status>     1=Calibrate Audio
1203   4611   Cal on Video IP Sel clear=0 set=1 (toggle=2)
125C   4700   <Source 1>          0=None         1=Analog 1L     2=Analog 1R     3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L    6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R    9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R   21=Tone L       22=Tone R
125D   4701   <Source 2>          0=None         1=Analog 1L     2=Analog 1R     3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L    6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R    9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R   21=Tone L       22=Tone R
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125E   4702   <Source 3>          0=None         1=Analog 1L     2=Analog 1R      3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R  13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R  17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R  21=Tone L      22=Tone R
125F   4703   <Source 4>          0=None         1=Analog 1L     2=Analog 1R      3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R  13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R  17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R  21=Tone L      22=Tone R
1260   4704   <Source 5>          0=None         1=Analog 1L     2=Analog 1R      3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R  13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R  17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R  21=Tone L      22=Tone R
1261   4705   <Source 6>          0=None         1=Analog 1L     2=Analog 1R      3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R  13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R  17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R  21=Tone L      22=Tone R
1262   4706   <Source 7>          0=None         1=Analog 1L     2=Analog 1R      3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R  13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R  17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R  21=Tone L      22=Tone R
1263   4707   <Source 8>          0=None         1=Analog 1L     2=Analog 1R      3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R  13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R  17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R  21=Tone L      22=Tone R
1266   4710   Gain 1              min=-85    max=0      Step=1
1267   4711   Gain 2              min=-85    max=0      Step=1
1268   4712   Gain 3              min=-85    max=0      Step=1
1269   4713   Gain 4              min=-85    max=0      Step=1
126A   4714   Gain 5              min=-85    max=0      Step=1
126B   4715   Gain 6              min=-85    max=0      Step=1
126C   4716   Gain 7              min=-85    max=0      Step=1
126D   4717   Gain 8              min=-85    max=0      Step=1
1270   4720   Mix-1 Gain-1 Disp   Static Display (no control)
1271   4721   Mix-1 Gain-2 Disp   Static Display (no control)
1272   4722   Mix-1 Gain-3 Disp   Static Display (no control)
1273   4723   Mix-1 Gain-4 Disp   Static Display (no control)
1274   4724   Mix-1 Gain-5 Disp   Static Display (no control)
1275   4725   Mix-1 Gain-6 Disp   Static Display (no control)
1276   4726   Mix-1 Gain-7 Disp   Static Display (no control)
1277   4727   Mix-1 Gain-8 Disp   Static Display (no control)
127A   4730   <Source 1>          0=None         1=Analog 1L     2=Analog 1R      3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R  13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R  17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R  21=Tone L      22=Tone R
127B   4731   <Source 2>          0=None         1=Analog 1L     2=Analog 1R      3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R  13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R  17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R  21=Tone L      22=Tone R
127C   4732   <Source 3>          0=None         1=Analog 1L     2=Analog 1R      3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R  13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R  17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R  21=Tone L      22=Tone R
127D   4733   <Source 4>          0=None         1=Analog 1L     2=Analog 1R      3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R  13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R  17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R  21=Tone L      22=Tone R
127E   4734   <Source 5>          0=None         1=Analog 1L     2=Analog 1R      3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R  13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R  17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R  21=Tone L      22=Tone R
127F   4735   <Source 6>          0=None         1=Analog 1L     2=Analog 1R      3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R  13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R  17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R  21=Tone L      22=Tone R
1280   4736   <Source 7>          0=None         1=Analog 1L     2=Analog 1R      3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R  13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R  17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R  21=Tone L      22=Tone R
1281   4737   <Source 8>          0=None         1=Analog 1L     2=Analog 1R      3=Analog 2L
                                  4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                  8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                  12=SDI DeEmbed 4R  13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                  16=SDI DeEmbed 6R  17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                  20=SDI DeEmbed 8R  21=Tone L      22=Tone R
1284   4740   Gain 1              min=-85    max=0      Step=1
1285   4741   Gain 2              min=-85    max=0      Step=1
1286   4742   Gain 3              min=-85    max=0      Step=1
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1287   4743   Gain 4                    min=-85     max=0      Step=1
1288   4744   Gain 5                    min=-85     max=0      Step=1
1289   4745   Gain 6                    min=-85     max=0      Step=1
128A   4746   Gain 7                    min=-85     max=0      Step=1
128B   4747   Gain 8                    min=-85     max=0      Step=1
128E   4750   Mix-2 Gain-1 Disp         Static Display (no control)
128F   4751   Mix-2 Gain-2 Disp         Static Display (no control)
1290   4752   Mix-2 Gain-3 Disp         Static Display (no control)
1291   4753   Mix-2 Gain-4 Disp         Static Display (no control)
1292   4754   Mix-2 Gain-5 Disp         Static Display (no control)
1293   4755   Mix-2 Gain-6 Disp         Static Display (no control)
1294   4756   Mix-2 Gain-7 Disp         Static Display (no control)
1295   4757   Mix-2 Gain-8 Disp         Static Display (no control)
1298   4760   <Source 1>                0=None          1=Analog 1L     2=Analog 1R     3=Analog 2L
                                         4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R   7=SDI DeEmbed 2L
                                         8=SDI DeEmbed 2R    9=SDI DeEmbed 3L    10=SDI DeEmbed 3R    11=SDI DeEmbed 4L
                                         12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                         16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                         20=SDI DeEmbed 8R   21=Tone L     22=Tone R
1299   4761   <Source 2>                0=None          1=Analog 1L     2=Analog 1R     3=Analog 2L
                                         4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R   7=SDI DeEmbed 2L
                                         8=SDI DeEmbed 2R    9=SDI DeEmbed 3L    10=SDI DeEmbed 3R    11=SDI DeEmbed 4L
                                         12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                         16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                         20=SDI DeEmbed 8R   21=Tone L     22=Tone R
129A   4762   <Source 3>                0=None          1=Analog 1L     2=Analog 1R     3=Analog 2L
                                         4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R   7=SDI DeEmbed 2L
                                         8=SDI DeEmbed 2R    9=SDI DeEmbed 3L    10=SDI DeEmbed 3R    11=SDI DeEmbed 4L
                                         12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                         16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                         20=SDI DeEmbed 8R   21=Tone L     22=Tone R
129B   4763   <Source 4>                0=None          1=Analog 1L     2=Analog 1R     3=Analog 2L
                                         4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R   7=SDI DeEmbed 2L
                                         8=SDI DeEmbed 2R    9=SDI DeEmbed 3L    10=SDI DeEmbed 3R    11=SDI DeEmbed 4L
                                         12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                         16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                         20=SDI DeEmbed 8R   21=Tone L     22=Tone R
129C   4764   <Source 5>                0=None          1=Analog 1L     2=Analog 1R     3=Analog 2L
                                         4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R   7=SDI DeEmbed 2L
                                         8=SDI DeEmbed 2R    9=SDI DeEmbed 3L    10=SDI DeEmbed 3R    11=SDI DeEmbed 4L
                                         12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                         16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                         20=SDI DeEmbed 8R   21=Tone L     22=Tone R
129D   4765   <Source 6>                0=None          1=Analog 1L     2=Analog 1R     3=Analog 2L
                                         4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R   7=SDI DeEmbed 2L
                                         8=SDI DeEmbed 2R    9=SDI DeEmbed 3L    10=SDI DeEmbed 3R    11=SDI DeEmbed 4L
                                         12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                         16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                         20=SDI DeEmbed 8R   21=Tone L     22=Tone R
129E   4766   <Source 7>                0=None          1=Analog 1L     2=Analog 1R     3=Analog 2L
                                         4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R   7=SDI DeEmbed 2L
                                         8=SDI DeEmbed 2R    9=SDI DeEmbed 3L    10=SDI DeEmbed 3R    11=SDI DeEmbed 4L
                                         12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                         16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                         20=SDI DeEmbed 8R   21=Tone L     22=Tone R
129F   4767   <Source 8>                0=None          1=Analog 1L     2=Analog 1R     3=Analog 2L
                                         4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R   7=SDI DeEmbed 2L
                                         8=SDI DeEmbed 2R    9=SDI DeEmbed 3L    10=SDI DeEmbed 3R    11=SDI DeEmbed 4L
                                         12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                         16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                         20=SDI DeEmbed 8R   21=Tone L     22=Tone R
12A2   4770   Gain 1                    min=-85     max=0      Step=1
12A3   4771   Gain 2                    min=-85     max=0      Step=1
12A4   4772   Gain 3                    min=-85     max=0      Step=1
12A5   4773   Gain 4                    min=-85     max=0      Step=1
12A6   4774   Gain 5                    min=-85     max=0      Step=1
12A7   4775   Gain 6                    min=-85     max=0      Step=1
12A8   4776   Gain 7                    min=-85     max=0      Step=1
12A9   4777   Gain 8                    min=-85     max=0      Step=1
12AC   4780   Mix-3 Gain-1 Disp         Static Display (no control)
12AD   4781   Mix-3 Gain-2 Disp         Static Display (no control)
12AE   4782   Mix-3 Gain-3 Disp         Static Display (no control)
12AF   4783   Mix-3 Gain-4 Disp         Static Display (no control)
12B0   4784   Mix-3 Gain-5 Disp         Static Display (no control)
12B1   4785   Mix-3 Gain-6 Disp         Static Display (no control)
12B2   4786   Mix-3 Gain-7 Disp         Static Display (no control)
12B3   4787   Mix-3 Gain-8 Disp         Static Display (no control)
12B6   4790   <Source 1>                0=None          1=Analog 1L     2=Analog 1R     3=Analog 2L
                                         4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R   7=SDI DeEmbed 2L
                                         8=SDI DeEmbed 2R    9=SDI DeEmbed 3L    10=SDI DeEmbed 3R    11=SDI DeEmbed 4L
                                         12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                         16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                         20=SDI DeEmbed 8R   21=Tone L     22=Tone R
12B7   4791   <Source 2>                0=None          1=Analog 1L     2=Analog 1R     3=Analog 2L
                                         4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R   7=SDI DeEmbed 2L
                                         8=SDI DeEmbed 2R    9=SDI DeEmbed 3L    10=SDI DeEmbed 3R    11=SDI DeEmbed 4L
                                         12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                         16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                         20=SDI DeEmbed 8R   21=Tone L     22=Tone R
12B8   4792   <Source 3>                0=None          1=Analog 1L     2=Analog 1R     3=Analog 2L
                                         4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R   7=SDI DeEmbed 2L
                                         8=SDI DeEmbed 2R    9=SDI DeEmbed 3L    10=SDI DeEmbed 3R    11=SDI DeEmbed 4L
                                         12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                         16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                         20=SDI DeEmbed 8R   21=Tone L     22=Tone R
12B9   4793   <Source 4>                0=None          1=Analog 1L     2=Analog 1R     3=Analog 2L
                                         4=Analog 2R     5=SDI DeEmbed 1L   6=SDI DeEmbed 1R   7=SDI DeEmbed 2L
                                         8=SDI DeEmbed 2R    9=SDI DeEmbed 3L    10=SDI DeEmbed 3R    11=SDI DeEmbed 4L
                                         12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                         16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                         20=SDI DeEmbed 8R   21=Tone L     22=Tone R
```

```
12BA   4794   <Source 5>        0=None          1=Analog 1L      2=Analog 1R      3=Analog 2L
                                 4=Analog 2R      5=SDI DeEmbed 1L    6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                 8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                 12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                 16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                 20=SDI DeEmbed 8R   21=Tone L       22=Tone R
12BB   4795   <Source 6>        0=None          1=Analog 1L      2=Analog 1R      3=Analog 2L
                                 4=Analog 2R      5=SDI DeEmbed 1L    6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                 8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                 12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                 16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                 20=SDI DeEmbed 8R   21=Tone L       22=Tone R
12BC   4796   <Source 7>        0=None          1=Analog 1L      2=Analog 1R      3=Analog 2L
                                 4=Analog 2R      5=SDI DeEmbed 1L    6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                 8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                 12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                 16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                 20=SDI DeEmbed 8R   21=Tone L       22=Tone R
12BD   4797   <Source 8>        0=None          1=Analog 1L      2=Analog 1R      3=Analog 2L
                                 4=Analog 2R      5=SDI DeEmbed 1L    6=SDI DeEmbed 1R    7=SDI DeEmbed 2L
                                 8=SDI DeEmbed 2R   9=SDI DeEmbed 3L   10=SDI DeEmbed 3R   11=SDI DeEmbed 4L
                                 12=SDI DeEmbed 4R   13=SDI DeEmbed 5L   14=SDI DeEmbed 5R   15=SDI DeEmbed 6L
                                 16=SDI DeEmbed 6R   17=SDI DeEmbed 7L   18=SDI DeEmbed 7R   19=SDI DeEmbed 8L
                                 20=SDI DeEmbed 8R   21=Tone L       22=Tone R
12C0   4800   Gain 1            min=-85     max=0      Step=1
12C1   4801   Gain 2            min=-85     max=0      Step=1
12C2   4802   Gain 3            min=-85     max=0      Step=1
12C3   4803   Gain 4            min=-85     max=0      Step=1
12C4   4804   Gain 5            min=-85     max=0      Step=1
12C5   4805   Gain 6            min=-85     max=0      Step=1
12C6   4806   Gain 7            min=-85     max=0      Step=1
12C7   4807   Gain 8            min=-85     max=0      Step=1
12CA   4810   Mix-4 Gain-1 Disp  Static Display (no control)
12CB   4811   Mix-4 Gain-2 Disp  Static Display (no control)
12CC   4812   Mix-4 Gain-3 Disp  Static Display (no control)
12CD   4813   Mix-4 Gain-4 Disp  Static Display (no control)
12CE   4814   Mix-4 Gain-5 Disp  Static Display (no control)
12CF   4815   Mix-4 Gain-6 Disp  Static Display (no control)
12D0   4816   Mix-4 Gain-7 Disp  Static Display (no control)
12D1   4817   Mix-4 Gain-8 Disp  Static Display (no control)
1326   4902   Minimum Delay     clear=0 set=1 (toggle=2)
1327   4903   <Color Killer>    0=Chroma Off    1=Chroma On      2=Auto
1328   4904   <Decoder>         0=Studio        1=Simple         6=VHS/Unstable
1329   4905   <Luma Bandwidth>  0=Wide          1=Medium         2=Narrow
132A   4906   <Notch>           0=Adaptive      1=Controllable
132B   4907   <Luma Bandwidth>  0=Wide          1=Medium         2=Narrow
132C   4908   NTSC Hue          min=-45     max=45      Step=1
1330   4912   PAL               clear=0 set=1 (toggle=2)
1331   4913   NTSC              clear=0 set=1 (toggle=2)
1332   4914   NTSC J            clear=0 set=1 (toggle=2)
1333   4915   PAL M             clear=0 set=1 (toggle=2)
1334   4916   PAL N             clear=0 set=1 (toggle=2)
1335   4917   SECAM             clear=0 set=1 (toggle=2)
1336   4918   N4.43 60          clear=0 set=1 (toggle=2)
1337   4919   PAL4.43 60        clear=0 set=1 (toggle=2)
1388   5000   <Memory 8>        0=Recall        1=Recall         2=Recall         3=Recall
                                 4=Recall        5=Recall         6=Recall         7=Recall
                                 8=
1389   5001   <Memory 8>        0=Save          1=Save           2=Save           3=Save
                                 4=Save          5=Save           6=Save           7=Save
                                 8=
138A   5002   Name              Edit String
138B   5003   Name              Edit String
138C   5004   Name              Edit String
138D   5005   Name              Edit String
138E   5006   Name              Edit String
138F   5007   Name              Edit String
1390   5008   Name              Edit String
1391   5009   Name              Edit String
1392   5010   <Memory 8>        0=Clear         1=Clear          2=Clear          3=Clear
                                 4=Clear         5=Clear          6=Clear          7=Clear
                                 8=
1393   5011                     min=0       max=65535  Step=1
1770   6000   Input             clear=0 set=1 (toggle=2)
1771   6001   Std               clear=0 set=1 (toggle=2)
1772   6002   Reference         clear=0 set=1 (toggle=2)
1773   6003   EDH               clear=0 set=1 (toggle=2)
1774   6004   EDH Err           clear=0 set=1 (toggle=2)
1775   6005   RollTrack         clear=0 set=1 (toggle=2)
1776   6006   De-emb 1          clear=0 set=1 (toggle=2)
1777   6007   De-emb 2          clear=0 set=1 (toggle=2)
1778   6008   De-emb 3          clear=0 set=1 (toggle=2)
1779   6009   De-emb 4          clear=0 set=1 (toggle=2)
177A   6010   De-emb 5          clear=0 set=1 (toggle=2)
177B   6011   De-emb 6          clear=0 set=1 (toggle=2)
177C   6012   De-emb 7          clear=0 set=1 (toggle=2)
177D   6013   De-emb 8          clear=0 set=1 (toggle=2)
177E   6014   nPCM 1            clear=0 set=1 (toggle=2)
177F   6015   nPCM 2            clear=0 set=1 (toggle=2)
1780   6016   nPCM 3            clear=0 set=1 (toggle=2)
1781   6017   nPCM 4            clear=0 set=1 (toggle=2)
1782   6018   nPCM 5            clear=0 set=1 (toggle=2)
1783   6019   nPCM 6            clear=0 set=1 (toggle=2)
1784   6020   nPCM 7            clear=0 set=1 (toggle=2)
1785   6021   nPCM 8            clear=0 set=1 (toggle=2)
1786   6022   ANALOG 1L         clear=0 set=1 (toggle=2)
1787   6023   ANALOG 1R         clear=0 set=1 (toggle=2)
1788   6024   ANALOG 2L         clear=0 set=1 (toggle=2)
1789   6025   ANALOG 2R         clear=0 set=1 (toggle=2)
178A   6026   BUS AL            clear=0 set=1 (toggle=2)
178B   6027   BUS AR            clear=0 set=1 (toggle=2)
178C   6028   BUS BL            clear=0 set=1 (toggle=2)
178D   6029   BUS BR            clear=0 set=1 (toggle=2)
```

```
1838   6200   Input                 Static Display (no control)
1839   6201   Std                   Static Display (no control)
183A   6202   Reference             Static Display (no control)
183B   6203   EDH                   Static Display (no control)
183C   6204   EDH Err               Static Display (no control)
183D   6205   RollTrack             Static Display (no control)
183E   6206   De-emb 1              Static Display (no control)
183F   6207   De-emb 2              Static Display (no control)
1840   6208   De-emb 3              Static Display (no control)
1841   6209   De-emb 4              Static Display (no control)
1842   6210   De-emb 5              Static Display (no control)
1843   6211   De-emb 6              Static Display (no control)

1844   6212   De-emb 7              Static Display (no control)
1845   6213   De-emb 8              Static Display (no control)
1846   6214   nPCM 1                Static Display (no control)
1847   6215   nPCM 2                Static Display (no control)
1848   6216   nPCM 3                Static Display (no control)
1849   6217   nPCM 4                Static Display (no control)
184A   6218   nPCM 5                Static Display (no control)
184B   6219   nPCM 6                Static Display (no control)
184C   6220   nPCM 7                Static Display (no control)
184D   6221   nPCM 8                Static Display (no control)
184E   6222   ANALOG 1L             Static Display (no control)
184F   6223   ANALOG 1R             Static Display (no control)
1850   6224   ANALOG 2L             Static Display (no control)
1851   6225   ANALOG 2R             Static Display (no control)
1852   6226   BUS AL                Static Display (no control)
1853   6227   BUS AR                Static Display (no control)
1854   6228   BUS BL                Static Display (no control)
1855   6229   BUS BR                Static Display (no control)
1B59   7001   Software Version      Static Display (no control)
1B5A   7002   FPGA Sync Version     Static Display (no control)
1B5B   7003   FPGA Dec Version      Static Display (no control)
1B5D   7005   Serial Number         Static Display (no control)
1B60   7008   <Information Window>   1=Factory Default
1B61   7009   Build Number          Static Display (no control)
1DB0   7600   Luma Strength         min=0      max=31     Step=1
1DB1   7601   Chroma Strength       min=0      max=31     Step=1
1DB2   7602   <Threshold Mode>      0=Auto          1=Manual
1DB3   7603   Manual Threshold      min=0      max=15     Step=1
1DB4   7604   Auto Bias             min=-7     max=7      Step=1
1DB5   7605   <Delay Mode>          0=Normal Delay      1=Minimum Delay
1DB6   7606   Noise Measured        Static Display (no control)
1F40   8000   <Information Window>   1=Error Seconds Reset
1F41   8001   <Information Window>   1=Restart
1F4A   8010   <Information Window>   0=Input Status     1=EDH & ANC Status     2=Audio Input Status
1FA4   8100   <Default Output>      0=Pass Video    1=Freeze        2=Pattern        3=Pattern&Caption
2008   8200   <Default Pattern>     0=Black         1=EBU Color Bars    2=100% Color Bars    3=Ramp
                                    4=Multi-Burst    5=Pulse & Bar
2009   8201   Default Caption           Edit String
3202   12802  Animated Pattern             clear=0 set=1 (toggle=2)
```

### RollTrack Audio Delay Tracking

RollTrack is a feature of RollCall™ (Snell & Wilcox'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 & Wilcox RollCall™ compatible audio delay products to track delay introduced by RollCall™ compatible video processing products.

The current products that implement RollTrack Audio Delay Tracking are:

| Audio Delay Modules | Video Modules | Other Products | |
|---|---|---|---|
| IQBAAD | IQD1FSY | ALCHEMIST | MDD3000 |
| IQBADC | IQDMSDS | CPP100 | MDD550 |
| IQBDAC | IQDAFS | CPP200 | MDD560 |
| IQBDAD | IQDMSDS | NRS500 | MDD570 |
| IQBSYN | IQDMSDP | HD5050 | MDD2000 |
| IQBADCD | IQDSYN | | |

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.
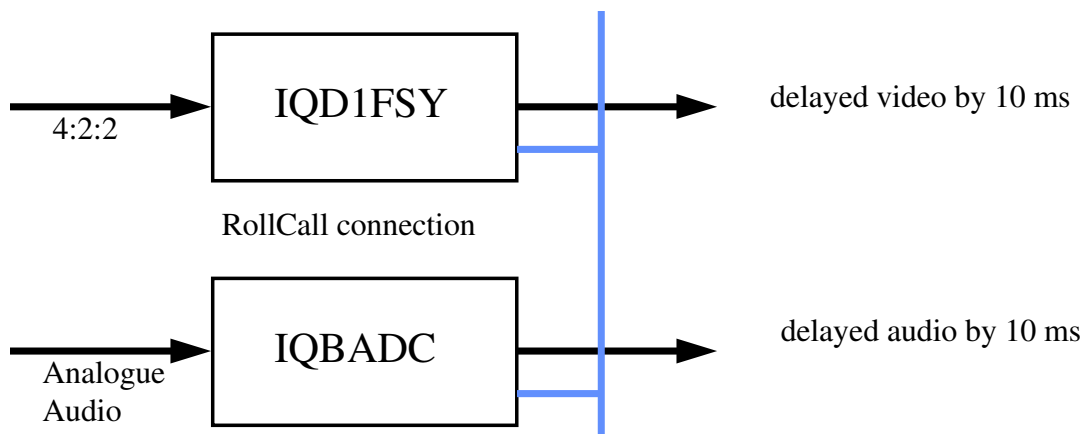


The next level of configuration is where there are multiple Frame Synchronizers (for example) each connected through RollCall™ to their own tracking Audio Delay. (It is worth stating that the synchronizers and audio delays do not have to be in the same enclosure; the addressing scheme, discussed later,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

```
4:2:2 ──▶ │ IQD1FSY │ ──▶   delayed video by 10 ms
                             changes to 20 ms

          RollCall network connection

Analogue
Audio ──▶ │ IQBADC │ ──▶     delayed audio by 10 ms
                             tracks to 20 ms

Analogue
Audio ──▶ │ IQBAAD │ ──▶     delayed audio by 10 ms
                             tracks to 20 ms
```
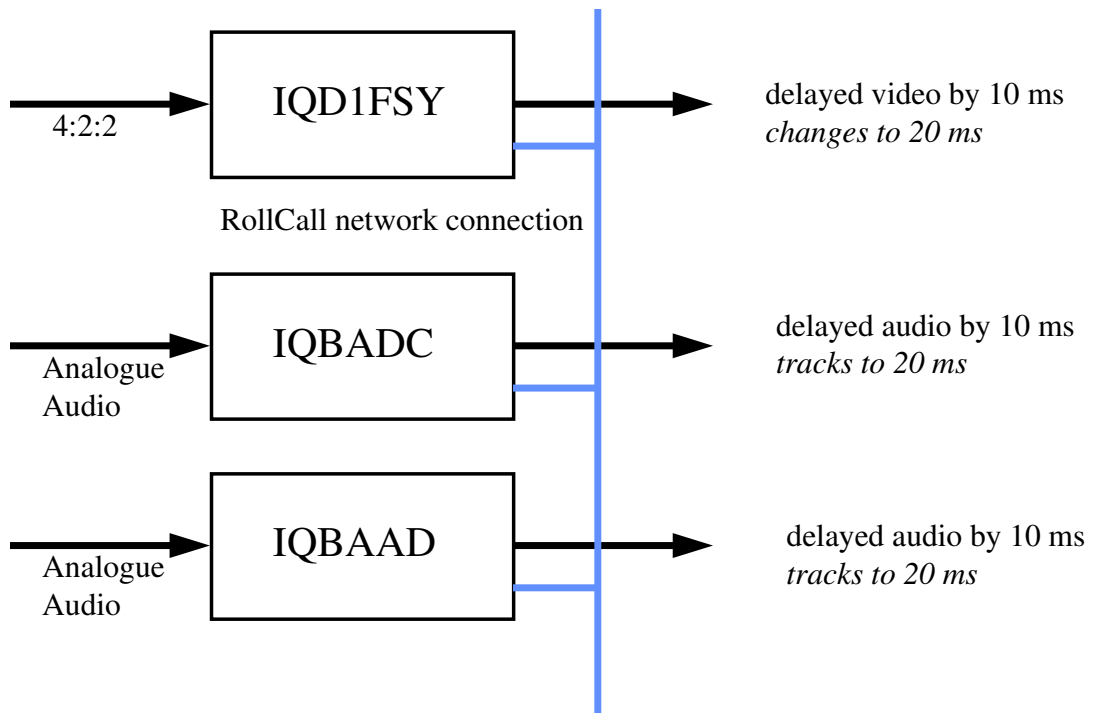
From one to eight audio delay products can be connected via RollCall™ to a single frame synchronizer, for example. If the synchronizer delay changes, then however many audio delays are connected will track the delay. The audio delays can also have a manual delay which will be added to the RollTrack delay.

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

```
▶│ IQDMSDA │─│ IQD1FSY │─│ IQD1FSY │─│ IQD1FSY │─
   Δ₁          Δ₂          Δ₃          Δ₄

              RollCall network connection

          │ IQBADC │
          Δm (= manual delay set
          in the BADC)

          Total delay:
          ΔT = Σ Δ1–4 + Δm
```

$\Delta_1$

$\Delta_2$

$\Delta_3$

$\Delta_4$

$\Delta_m$ (= manual delay set in the BADC)
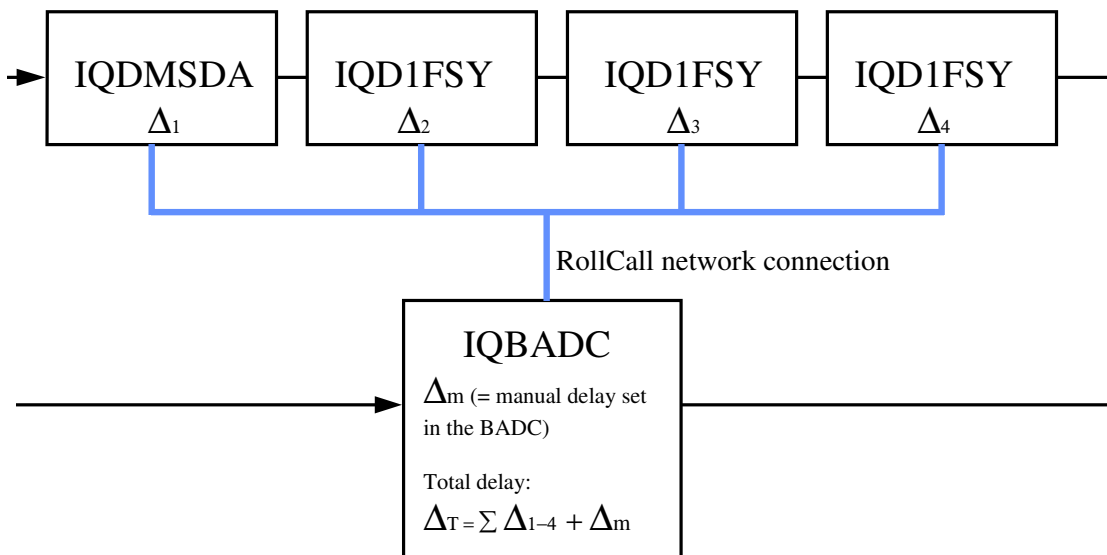
Total delay:
$\Delta_T = \sum \Delta_{1-4} + \Delta_m$

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.
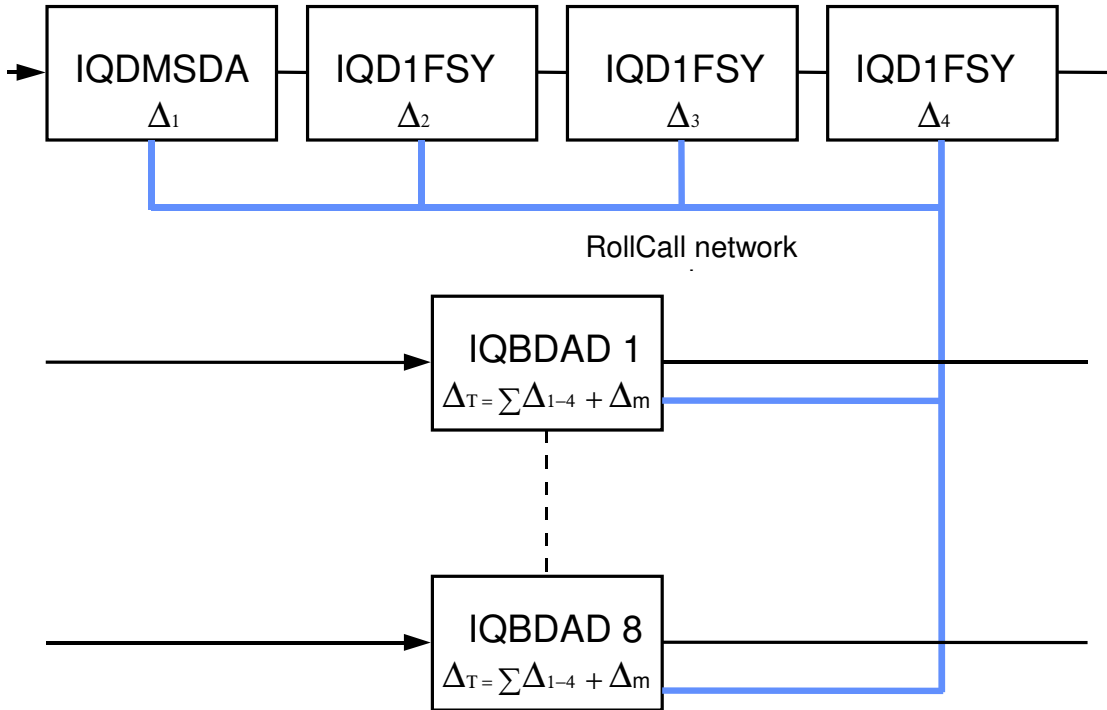


As any of the delay times change in the video path so will the audio delay time track this delay.
A virtual connection is made between from, say, an IQD1FSY to an IQBDAD by:

> 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   *nnnn:xx:yy\*z\*d*
> where   *nnnn* = network address and in most cases will be 0000(hex);
> > *xx* = IQ enclosure address (hex);
> > *yy* = 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

Video Input → Video Out Delayed by 10+13+19+5=47 ms

**IQD1FSY....1** Delay = 10 ms
Set Destination RollCall address (Network Code, Unit Code, Slot Location & Channel Allocation Number)
**Setup Menu** ▼ Audio_Delay
**Audio Delay** ▼ Unit_1....8
**Audio Delay** Unit_7 0000:10:05*14*54 OK

**IQD1FSY....2** Delay = 13 ms
Set Destination RollCall address (Network Code, Unit Code, Slot Location & Channel Allocation Number)
**Setup Menu** ▼ Audio_Delay
**Audio Delay** ▼ Unit_1....8
**Audio Delay** Unit_7 0000:10:05*15*54 OK

**IQD1FSY.....3** Delay = 19 ms
Set Destination RollCall address (Network Code, Unit Code, Slot Location & Channel Allocation Number)
**Setup Menu** ▼ Audio_Delay
**Audio Delay** ▼ Unit_1....8
**Audio Delay** Unit_7 0000:10:05*16*54 OK

**IQD1FSY.....4** Delay = 5 ms
Set Destination RollCall address (Network Code, Unit Code, Slot Location & Channel Allocation Number)
**Setup Menu** ▼ Audio_Delay
**Audio Delay** ▼ Unit_1....8
**Audio Delay** Unit_7 0000:10:05*17*54 OK

Note that units 1 to 8 are the particular audio delay units which the IQD1FSY will connect to.

**NETWORK**

**ID (Identification) Code**
This is the unique identification of the destination unit (a decimal number)

**Network Code**
This is the Network segment address (in Hex code) (in most csaes 0000)

**Enclosure Code**
This is a number (in Hex code) identifying the specific IQ enclosure

**Slot Number**
This is the slot number allocation (in Hex code) in the enclosure i.e. 1 to 6 in a 1U frame 1 to 16 in a 3U frame

**Channel Number**
*Use Nos. 14, 15, 16 and 17 for Audio Delay Cards* e.g. IQBAAD IQBADC IQBDAC IQBDAD

**Destination Address 0000:10:05**
Module fitted e.g. IQBDAD

| | Delay | |
|---|---|---|
| Ch 14 | 10 ms | |
| Ch 15 | 13 ms | |
| Ch 16 | 19 ms | |
| Ch 17 | 5 ms | |

Gateway

**Delay due to RollTrack = 47 ms**

Manual Delay

**Total Delay = Manual Delay + 47 ms**

Audio Input → Delayed Audio Out

***RollTrack Audio/Video Tracking System***

*Example showing four IQD1FSY units controlling an IQBDAD Audio delay module whose network address is 0000:10:05 and will be designated as Unit 7 from the IQD1FSY module.*

Video Input

Video Out
Delayed by 10 ms

**IQD1FSY....1**

Delay = 10 ms

Set Destination RollCall
address (Network Code,
Unit Code,
Slot Location
&
Channel Allocation
Number)

**Setup Menu**

▼ Audio_Delay

**Audio Delay**

▼ Unit_1

**Audio Delay Slot 1**

Unit_1
▼ 0000:10:01*14*54    ▲ ▲
                      OK

**Audio Delay Slot 3**

Unit_2
▼ 0000:10:03*14*51    ▲ ▲
                      OK

**Audio Delay Slot 5**

Unit_3
▼ 0000:10:05*14*52    ▲ ▲
                      OK

**Audio Delay Slot 15**

Unit_8
▼ 0000:10:0F*14*53    ▲ ▲
                      OK

**Network Code**

This is the Network
segment address
(in Hex code)
(in most cases 0000)

**Unit Code**

This is a number
(in Hex code) identifying
the specific IQ enclosure

**Slot Number**

This is the slot number
allocation (in Hex code)
in the enclosure
i.e. 1 to 6 in a 1U frame
1 to 16 in a 3U frame

**Channel Number**

*Use
Nos. 14, 15, 16 and 17
for Audio Delay Cards
e.g.
IQBAAD
IQBADC
IQBDAC
IQBDAD*

8 Channels of
Audio Input

*NETWORK*

**ID (Identification) Code**

This is the unique
identification of the
destination unit
(a decimal number)

**Destination Address  0000:10:(01....0F)*14**

Modules fitted e.g. IQBDAD, IQBAAD etc.

Delay Slot 1

10 ms

Gateway

Ch 14
Ch 15
Ch 16
Ch 17

Manual
Delay

**Delay due
to
RollTrack
= 10 ms**

Total Delay
=Manual Delay+ 10 ms

Delayed Audio
Out

Delay Slot 3

10ms

Gateway

Ch 14
Ch 15
Ch 16
Ch 17

Manual
Delay

**Delay due
to
RollTrack
= 10 ms**

Total Delay
=Manual Delay+ 10 ms

Delayed Audio
Out

Delay Slot...0F

Delayed Audio
Out

*RollTrack Audio/Video Tracking System*

*Example showing a single IQD1FSY unit controlling a
eight Audio delay modules*

## Manual Revision Record

| Date | Version No. | Issue No. | Change | Comments |
|------|-------------|-----------|--------|----------|
| 9-Dec-05 | 1 | 1 | | First issue ready for release |
| 31-Mar-06 | 1 | 2 | Second release software | New issue released |
| 08-Jun-06 | 1 | 3 | Pixel units for H Phase & Delay | New issue released |
| 14-Aug-06 | 1 | 4 | Packet Distribution note added | New issue released |
| 17-Oct-06 | 1 | 5 | Logging fields corrected | New issue released |
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