



Snell
Advanced
Media

User Instruction Manual

IQSYN30

3G/HD/SD-SDI Frame Synchronizer with Embedded Audio
Processing

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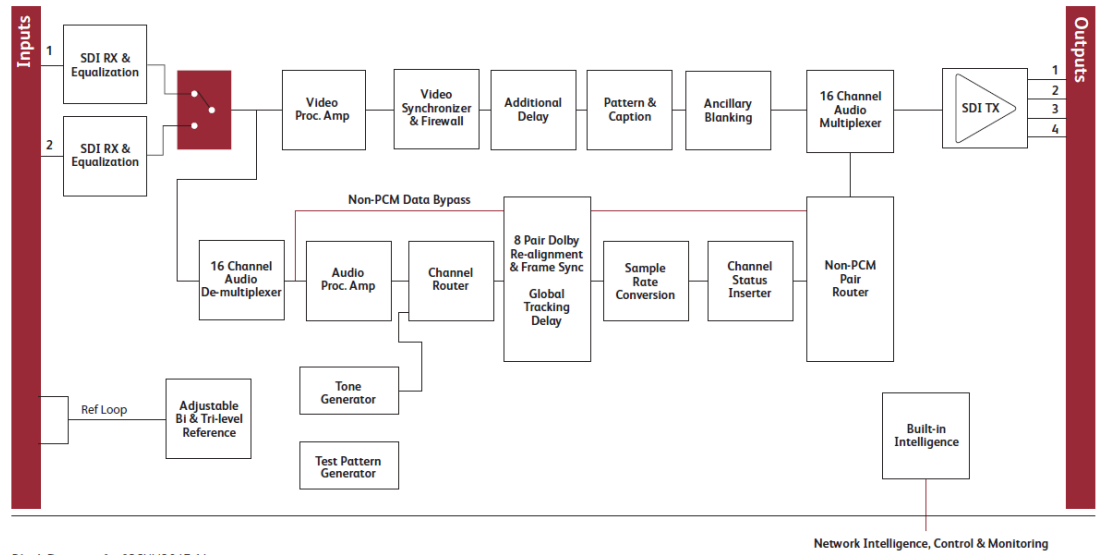
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1. Introduction

1.1 Module Description

The IQSYN30 provides frame synchronization for 3 Gbit/s SDI, HD-SDI 1.5 Gbit/s or SD-SDI 270 Mbit/s signals with 16-channel embedded audio processing. Including 2 SDI inputs with clean-switching functionality, agile synchronization and flexible audio processing features the IQSYN30 is ideal for general incoming line applications. A video processing amplifier provides complete control over the video levels, and audio processing features include audio delay, gain, invert and channel level routing.



1.2 Order Codes

Note: Modules with “A” order codes (for example, IQSYN1147-1A) can be fitted into either A- or B-style enclosures. Modules with “B” order codes (for example, IQSYN1147-1B) can only be fitted into B-style enclosures. See page 7.

The following product order codes are covered by this manual:

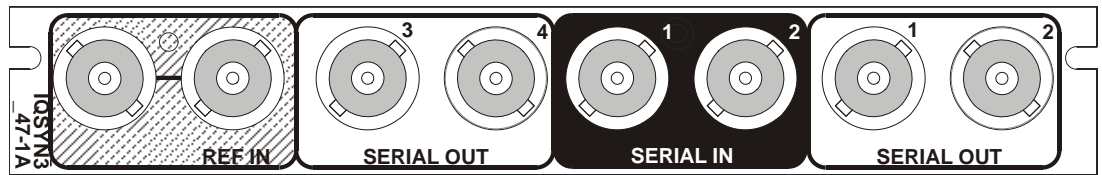
- IQSYN3047-1A** HD/SD-SDI Synchronizer with Embedded Audio Processing. 2 inputs,
- IQSYN3047-1B** 4 outputs, referenced loop-through.

- IQSYN3047-1A3** 3G/HD/SD-SDI Synchronizer with Embedded Audio Processing. 2
- IQSYN3047-1B3** inputs, 4 outputs, referenced loop-through.

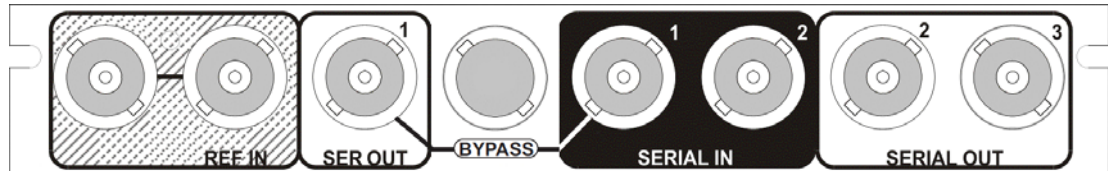
- IQSYN3000-1A3** 3G/HD/SD-SDI Synchronizer with Embedded Audio Processing. 2
- IQSYN3000-1B3** inputs, 3 outputs, referenced loop-through, relay bypass.

- IQSYN30-3G** Upgrade for IQSYN30 HD/SD-SDI Synchronizer to operate with
- 3 Gbit/s SDI signals.

1.3 Rear Panel View



IQSYN3047-1A(B)/IQSYN3047-1A(B)3



IQSYN3000-1A(B)3

Note: A relay bypass exists between serial input 1 and serial output 1. In the event of module removal, power failure, or certain types of module failure, the signal from serial input 1 to serial output 1 will bypass the module.

1.4 Enclosures

The module can be fitted into the enclosure types shown.

Important: Although IQ modules are interchangeable between enclosures, their rear panels are enclosure specific. An IQH3B enclosure accepts modules with either “A” or “B” order codes. An IQH3A or IQH1A enclosure accepts modules with “A” order codes only. See page 5.

1.4.1 B-style Enclosure



Enclosure order codes: IQH3B-S-0, IQH3B-S-P

Note: The IQH3B enclosure provides two internal analog reference inputs. These inputs are applicable to modules with “B” order codes only.

1.4.2 A-style Enclosures



Enclosure order code: IQH1A-S-P



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



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



Enclosure order code: IQH1A-S-P

1.5 Feature Summary

The IQSYN30 provides the following features:

- 3G/HD/SD-SDI synchronizer with up to 9 frames of video delay.
- Processing for 16 channels of embedded audio present on the incoming SDI stream with no disturbance during video synchronizer frame wraps or drops.
- Standards supported:
 - 3G-SDI to SMPTE 424M/425M level A and B compatible
 - HD-SDI to SMPTE 292M/274M/296M
 - SD-SDI to SMPTE 259M-C
- Loop-through reference capable of referencing to a bi-level or tri-level signal with auto detect functionality (common reference for both channels).
- Agile, router switching tolerant synchronizer operation.
- Precision genlock adjustment allowing you to time any SDI signal to pixel accuracy.
- Firewall for video and processed PCM audio to provide a continuous uninterrupted output.
- Channel level (Sub-frame) routing.
- Audio Proc. Amp features including independent gain, invert and mute control.
- Adjustable delay for selected audio channels.
- Any group of embedded audio may be passed unchanged, processed or blanked.
- Embedded Dolby E support – pair routing and Dolby E reframing.
- Re-align Dolby E guard band with video frame boundary prior to synchronization.
- Able to pass all ancillary data with independent HANC and VANC blanking control.
- Input loss detection – default output of black/pattern/freeze.
- Can be used as a video delay, up to 9 frames.
- Video processing amplifier controls including video gain, offset and hue.
- In-built test pattern and audio tone generators.
- 16x user memories, save/recall/rename.
- RollCall control and monitoring compatible with standard RollTrack, logging and reporting features.

2. Technical Specification

Inputs and Outputs	
Signal Inputs	
SDI Inputs	2x
Input 1 Cable Length	Up to 70 m Belden 1694A @ 3 Gbit/s Up to 160 m Belden 1694A @ 1.5 Gbit/s >350 m Belden 1694A @ 270 Mbit/s
Input 2 Cable Length	Up to 60 m Belden 1694A @ 3 Gbit/s Up to 100 m Belden 1694A @ 1.5 Gbit/s Up to 100 m Belden 1694A @ 270 Mbit/s
Analog Reference	1 x Analog Reference with passive loop-through Black (HD tri-level and SD bi-level) and Black Burst (SD bi-level) SD bi-level - RS170A HD Tri-level - SMPTE 240M, 274M and 296M
Signal Outputs	
SDI Outputs	4x
Controls	
Indicators	
Power	OK (Green)
CPU running	OK (Green flashing)
FPGA running	OK (Green flashing)
Status	OK (Green), Warning (Yellow), Error (Red)
Input 1	OK (Green), Loss (Off)
Input 2	OK (Green), Loss (Off)
Reference	OK (Green), Loss (Off), Std err (Flashing)
Genlock and Video Delay	
Genlock Mode	Free-run, Lock to Reference, Lock to input
Genlock H-Phase	$\pm 0.5H$ in 1 pixel steps.
Genlock V-Phase	$\pm 0.5F$ in 1 line steps
Video H-Delay	0-1 Line in 1 pixel steps
Video V-Delay	0-1 Frame in 1 line steps
Video Delay Frames	0-9 Frames
Video Controls	
Input Standard	1125(1080)/50P (A & B), 1125(1080)/59P (A & B), 1125(1080)/29i, 1125(1080)/25i, 750(720)/59P, 750(720)/50P, 525(480)/29i, 625(576)/25i
Default Video Output Type	Pattern, Freeze, Black
Default Video Output Standard	Last Known Good, 1125(1080)/50P (A & B), 1125(1080)/59P (A & B), 1125(1080)/29i, 1125(1080)/25i, 750(720)/59P, 750(720)/50P, 525(480)/29i, 625(576)/25i
Input Select	Input 1, Input 2

Manual Freeze	On/Off
Freeze	Field/Frame
VANC Data	Blank VANC
SD VANC Data	Line Blanking (23/336 in 625, 21, 22, 283 in 525)
ProcAmp Enable	On/Off
Black Level	±100 mV in steps of 0.8 mV
Hue Adjust	±180° in steps of 1°
Master Video Gain	±6 dB in steps of 0.1 dB
Y-Gain	±6 dB in steps of 0.1 dB
Cb/Cr Gain	±6 dB in steps of 0.1 dB
Y/C Timing	± 8 pixels in 2 pixel steps SD ± 16 pixels in 2 pixel steps HD
Picture Position	± 8 pixels in 2 pixel steps SD ± 16 pixels in 2 pixel steps HD
Pattern On	On/Off
Pattern Select	Black, Bars
Caption On	On/Off
Edit Caption	19 characters available

Audio Controls

Embedder Assignment

Group 1 to 4 Enable	On/Off
Pair 1 to 8 Source L / Non-PCM	Dis-embed 1_1 to 8_2, AES 1 to 8, Tone, Silence
Pair 1 to 8 Source R	Dis-embed 1_1 to 8_2, AES 1 to 8, Tone, Silence
Pair 1 to 8 Stereo	Link channel pairs
Pair 1 to 8 Polarity L/R	On/Off
Pair 1 to 8 Gain L/R	+12 dB to -72 dB in 0.1 dB steps
Pair 1 to 8 Non-PCM	On/Off

Processed Audio Delay Control

Coarse Manual Delay	Up to 1.75 s in 5 ms steps
Fine Manual Delay	± 0.25 s in 0.5 ms steps
Variable Audio Delay Control Source	Internal, Manual, RollTrack (14 to 17)

Dolby E

Dolby E Auto Align	On/Off
User Dolby E Line	On/Off

Tone

Tone Frequency	100 Hz to 10 kHz in 100 Hz steps
Channel Ident	On/Off (0.5 s interruption every 2 s, applied to right channel only)
HANC Data	Blank HANC (Removes all HANC data. Audio removed when embedders disabled)

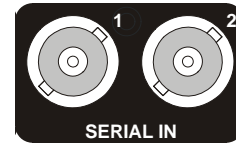
Audio Monitor	
Silent Level	Silence detection, 0 to -80 dB in steps of 1 dB
Overload Level	Signal overload detection, 0 to -80 dB in steps of 1 dB
Warning Timer	Time for above conditions to be true, 1 to 20 seconds in steps of 1 second
Other Controls	
User Memories	16x Save, Recall, Rename
Memory Naming	User configurable naming of memories 1-16
Information Window	Video Input Status, Audio Input Status, Reference Status
Specifications	
Electrical	3 Gbit/s SDI, SMPTE 424M 1.5 Gbit/s HD-SDI, SMPTE 292M 270 Mbit/s SDI, SMPTE 259M-C / DVB-ASI
Connector / Format	BNC/ 75 Ohm panel jack on standard IQ connector panel
Return Loss	>-15 dB (270 Mbit/s, 1.5 Gbit/s) >-10 dB (3 Gbit/s)
Output Jitter	SD-SDI 0.2 UI (10 Hz) / 0.2 UI (1 kHz) 3G/HD-SDI 1.0 UI (10 Hz) / 0.2 UI (100 kHz)
Reference Source	External - HD tri-level / SD bi-level / Input video syncs
Electrical	Black (HD tri-level and SD bi-level) and Black Burst (SD bi-level)
Connector / Format	BNC 75 Ohm panel jack on standard IQ connector panel
Analog Reference Return Loss	SD bi-level > 40 dB to 5.5 MHz HD tri-level > 35 dB to 30 MHz
Video Standards	
Standards	1125(1080)/50p (A & B), 1125(1080)/59p (A & B), 750(720)/50p, 750(720)/59p, 1125(1080)/25i, 1125(1080)/29i, 625(576)/25i, 525(480)/29i
Minimum Delay (Reference Clock of Free Run)	SD: 67 μ s HD: 28 μ s 3G-A: 15 μ s 3G-B: 25 μ s
Typical Delay (Input Lock)	Typical delay (input lock with Dolby E alignment off): 2 lines Typical delay (input lock with Dolby E alignment on): 1 frame
Synchronizer Hysteresis Window	5 μ s
Embedded Audio Handling	HD - 24-bit synchronous 48 kHz to SMPTE 299M SD - 20-bit synchronous 48 kHz to SMPTE 272-A
Embedded Audio Delay	Minimum (PCM) 2 ms Maximum (non-PCM) SD: 67 μ s HD: 28 μ s 3G-A: 15 μ s 3G-B: 25 μ s
Power Consumption	
Module Power Consumption	8.5 W max (A Frames) 8.5 PR (B Frames)

3. Connections

This section describes the physical input and output connections provided by the IQSYN30.

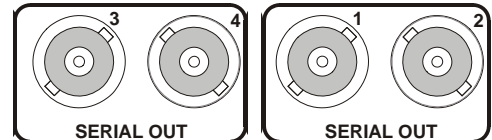
3.1 SDI Inputs

Serial digital input to the module is made to the module via BNC connectors which terminate in 75 Ohms.



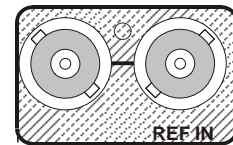
3.2 SDI Outputs

Serial digital output from the module is made to the module via BNC connectors which terminate in 75 Ohms.



3.3 Analog Reference Input

The external sync input to the module is made via the passive loop-through BNC connectors for 75 Ohms.



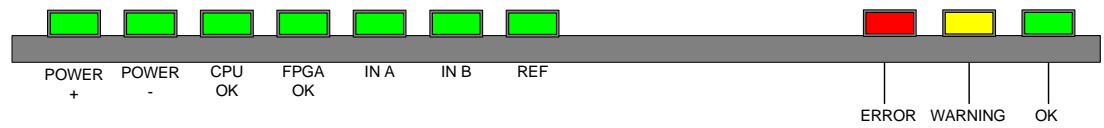
It should be noted that proper operation to the full specification can only be achieved with a correctly terminated, noise-free, stable, black sync reference input. Whilst lock may be achieved with an unsuitable sync source the increased jitter evident on the SDI output will affect locking and cable length performance at the receiving equipment.

Note: If the loop-through facility is not used, the unused BNC socket must be fitted with a 75 Ohm terminator.

Note: The IQSYN30 also has 75 R termination link for reference input located on the board.

4. Card Edge Controls

The LEDs on the edge of the module indicate its operating status.



LED	Color	Description
POWER +	Green	Indicates that a positive power supply is present.
POWER -	Green	Indicates that a negative power supply is present.
CPU OK	Green	This LED will flash to indicate that the CPU is running.
FPGA OK	Green	Flashes when the FPGA is running. When the module is booting, this LED is illuminated continuously, until the SDI is enabled.
IN A, IN B	Green	These LEDs are illuminated when valid input is present.
REF	Green	This LED indicates that a reference signal is present.
ERROR	Red	This LED indicates board fault conditions. When the module is booting, this LED is illuminated, until the SDI is enabled.
WARNING	Yellow	This LED is illuminated if one or more of the SDI inputs is not valid or if the reference signal is missing when the module is set to Lock to Reference.
OK	Green	Indicates that the module is operating correctly.

5. Controlling the IQSYN30 from the RollCall Control Panel

5.1 The Information Window

The information window is displayed in the upper-right corner of each screen and displays basic information about the video, audio and reference status of the module.

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

5.1.1 Video Status

When **Video Status** is selected, the video input status is displayed:



Name	Status	Description	Standard
IN1:	OK	Input signal received	Detected video input standard is displayed, e.g. 1080/29i (Blank if input lost).
IN2:	FAIL	Input signal failed	
	LOST MISM	No signal received Mismatch format detected	
OUT1:	OK	Output signal delivered	Selected video output standard is displayed, e.g. 1080/29i . A \$ symbol indicates that the caption is enabled. (Blank if disabled)
OUT2:	BLK	Black output delivered	
	FRZ PAT	Frozen output delivered Pattern output delivered	

5.1.2 Audio Input Status

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



Name	Status	Description
Audio Embed Input	P	Channel is a PCM audio input.
-----	?	No audio input is detected
	D	Signal is data (non-PCM, Dolby, etc.)
	E	Signal is Dolby E.
	V	V bit present.

5.1.3 Reference Status

When **Reference Status** is selected, the following information is displayed:

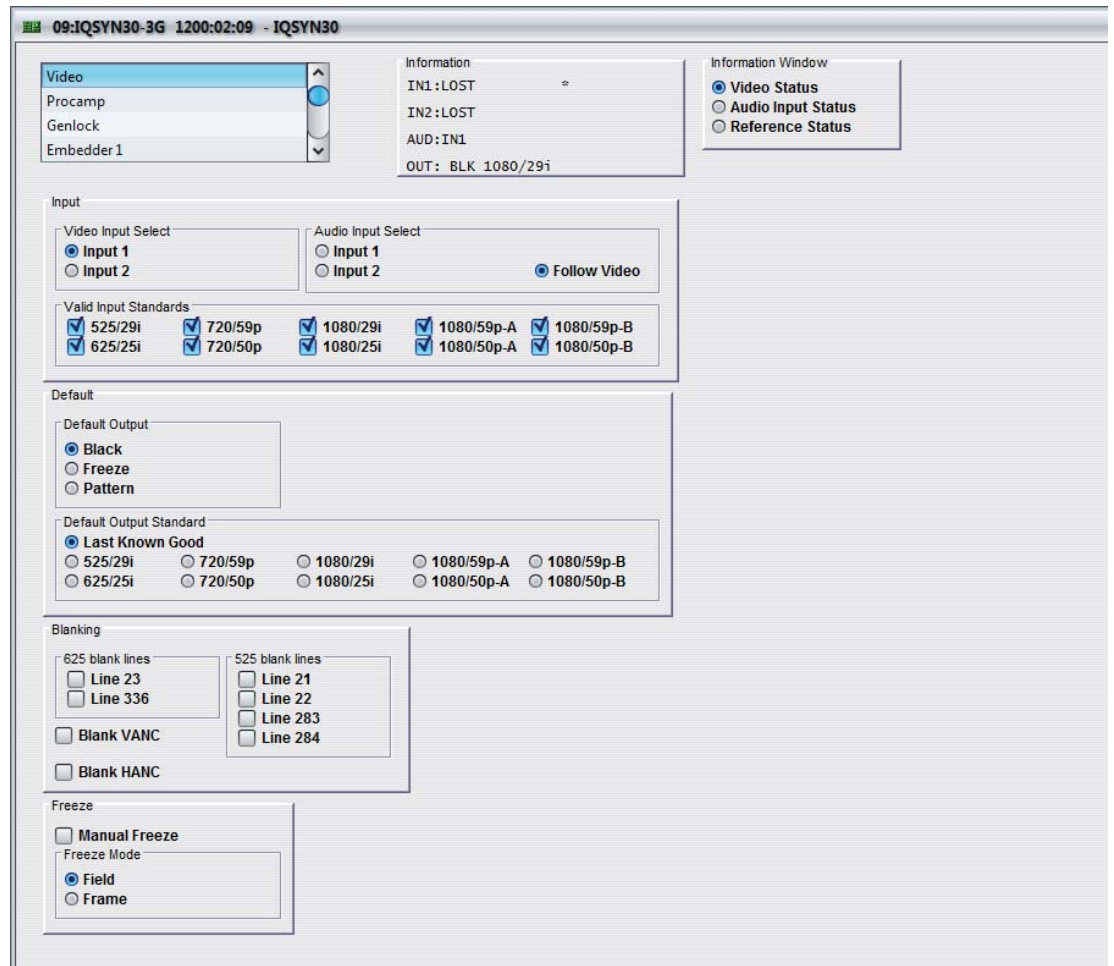


Name	Status	Description	Standard
REF:	FREE + STD	Free running	Displays the Reference standard.
	LOCK + STD	Locked to reference	
	Cross + STD	Cross lock to reference	

5.2 Video

The **Video** screen enables you to specify the settings for the serial data input:

- Valid Input standards.
- The default output standard.
- Any required ancillary blanking.
- Freeze options and apply a manual freeze to the output image.
- The default output.



5.2.1 Video Input Select

The **Video Input Select** control selects video from either Input 1 (SERIAL IN 1) or Input 2 (SERIAL IN 2) to be processed by the module.

5.2.2 Audio Input Select

The **Audio Input Select** control selects audio from either Input 1 or Input 2 to be processed by the module. If Follow Video is selected, the audio input will automatically match the video input selected.

5.2.3 Valid Input Standards

The **Valid Input Standards** check boxes specify the video input standards that the module will accept. The module will automatically detect the standard of the received input and block any signal that does not comply with these selected video formats.

By default, all input standards are selected.

5.2.4 Default Output

The **Default Output** control specifies the module's output in the event of signal loss at the input. Options are:

- **Black:** video out is a black screen
- **Freeze:** video output is frozen/paused
- **Pattern:** video output is a pre-determined test pattern or information screen

5.2.5 Default Output Standard

The **Default Output Standard** settings specify the output standard that the module will use if it cannot determine the correct output standard to use.

By default, the **Last Known Good** setting is selected, which uses the last valid output standard.

5.2.6 Blanking

The **Blanking** controls enable specific lines of VANC to be blanked.

- **625 blank lines:** Applied to 625 only, you can blank either or both of line 23 or line 336.
- **525 blank lines:** Applied to 525 only, you can blank any or all of lines 21, 22, 283, or 284.
- **Blank VANC:** Selecting this option blanks the following lines inclusively:

525: 11 – 20, 274 – 282

625: 7 – 22, 320 – 335

720: 8 – 25

1080i: 8 - 20, 570 – 583

1080P: 8 – 41

All VANC data from the end of the last active video line to the end of the RP168 switch line is always blanked, irrespective of this control.

- **Blank HANC:** Selecting this option removes all horizontal ancillary data including audio when the embedders are disabled and the audio is unprocessed.

5.2.7 Freeze

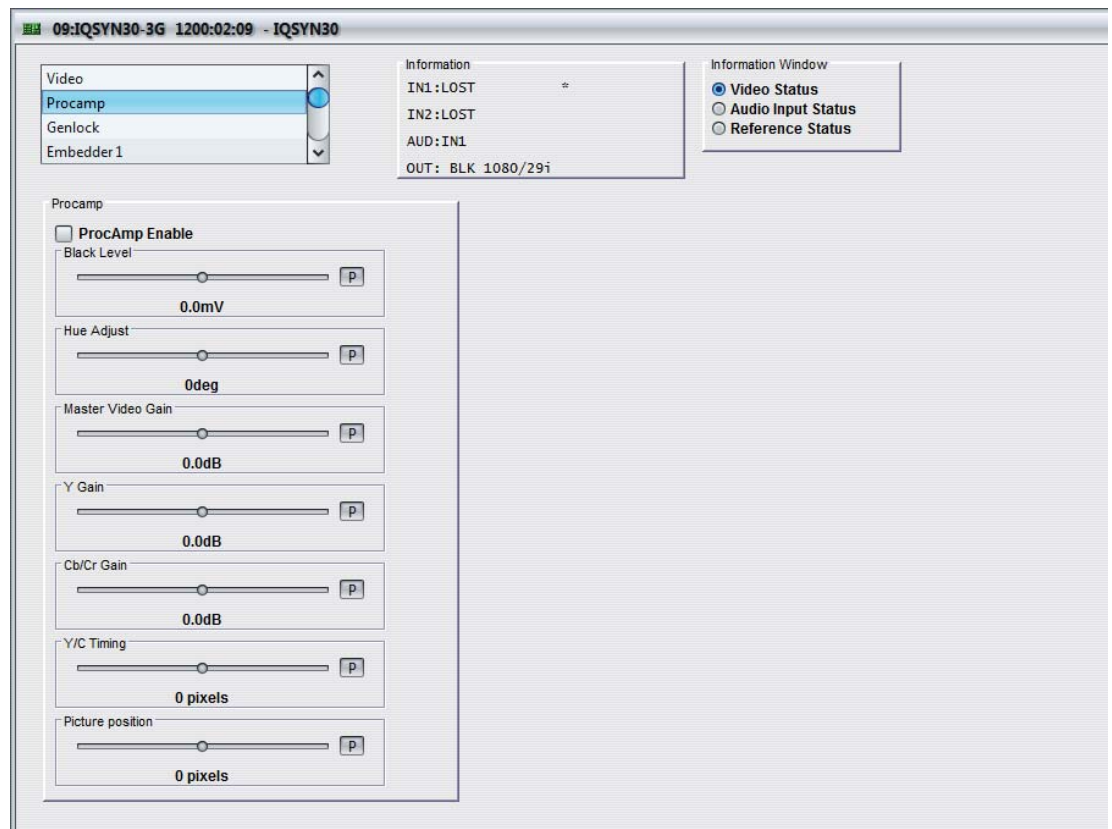
The **Manual Freeze** control freezes/pauses the output. Freeze type can be specified as either **Field** or **Frame**.

Note: This function is disabled on a power cycle of the module.

5.3 Procamps

The **Procamp** screen enables the processing amplifier settings to be adjusted:

- Black Level
- Hue Adjust
- Master Video Gain
- Y Gain (Luma)
- Cb/Cr Gain (Chroma)
- Y/C Timing
- Picture position



5.3.1 Procamp Enable

The **Procamp Enable** check box enables the video processing amplifier functions for the relevant channel. Clear the check box to disable the Procamp functions.

5.3.2 Black Level

The **Black Level** control allows the channel's black level to be adjusted over a range of ± 100 mV in steps of 0.8 mV. The preset value is 0.

5.3.3 Hue Adjust

The **Hue** control allows the channel's hue to be adjusted over a range of $\pm 180^\circ$ in steps of 1° . The preset value is 0.

5.3.4 Master Video Gain

The **Master Video Gain** control allows the video gain to be adjusted over a range of ± 6 dB in steps of 0.1 dB. The preset value is 0.

5.3.5 Y Gain

The **Y Gain** control allows the luma to be adjusted over a range of ± 6 dB in steps of 0.1 dB. The preset is 0.

5.3.6 Cb/Cr Gain

The **Cb/Cr Gain** control allows the chrominance to be adjusted over a range of ± 6 dB in steps of 0.1 dB. The preset value is 0.

5.3.7 Y/C Timing

The **Y/C Timing** control allows the luma/chroma timing to be adjusted over a range of:

- ± 8 pixels in 2 pixel steps in SD
- ± 16 pixels in 2 pixel steps in HD

The preset value is 0.

5.3.8 Picture Position

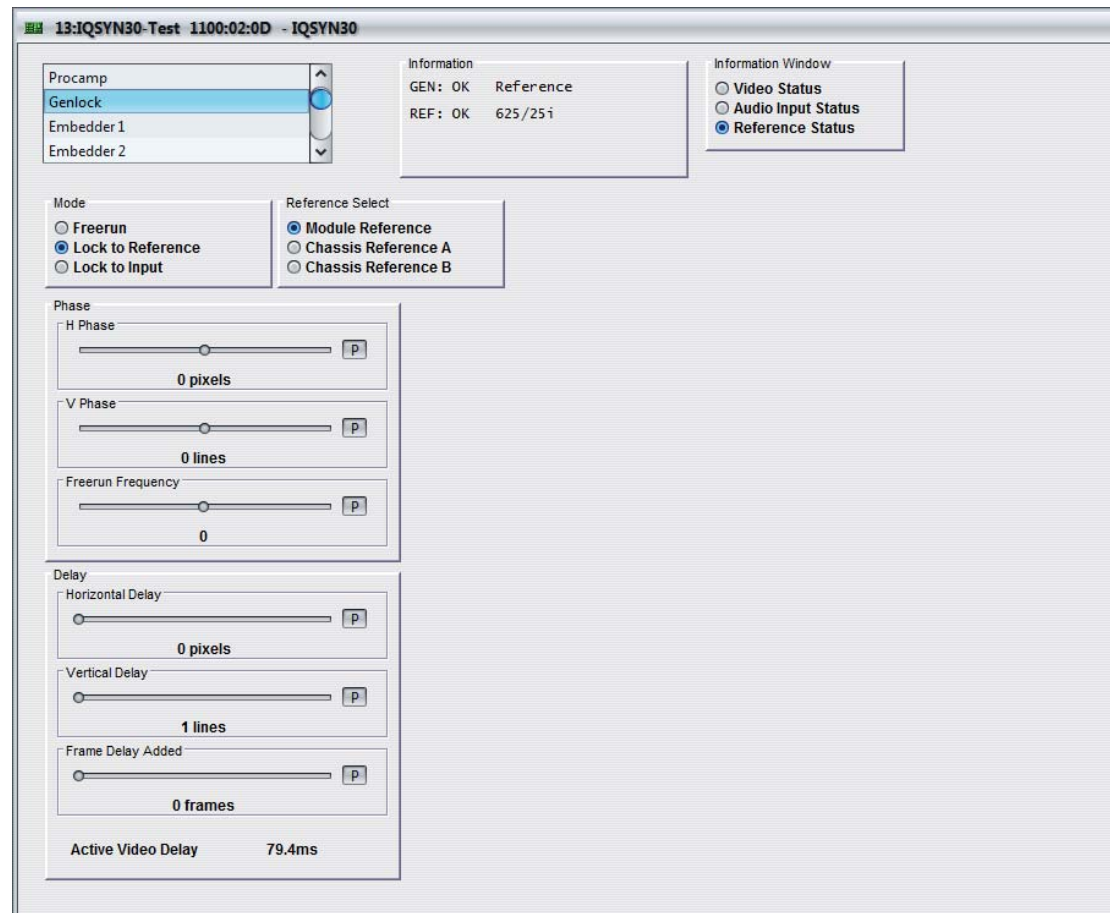
The **Picture Position** control allows the picture position to be adjusted over a range of:

- ± 8 pixels in 2 pixel steps SD
- ± 16 pixels in 2 pixel steps HD

The preset value is 0.

5.4 Genlock

The **Genlock** screen enables the module's generator lock (synchronizer) settings to be specified.



5.4.1 Mode

There are three main genlock modes:

- **Freerun:** When selected, the module's output will not be locked to any input signal. Instead, it will run nominally at the correct frame rate and synchronize input video to this.
- **Lock to Reference:** This is the default reference mode. When selected, the module will lock to an external tri-level / bi-level reference source. If the reference source is lost, the module will switch to Freerun mode. On return of the reference signal, the module will return to Lock to Reference mode.

Note: The module will clock lock to signals of different frame rates.

- **Lock to Input:** When selected, the module locks to Input 1. If Input 1 is lost, the reference mode will switch to Freerun. In this mode, the delay can be adjusted by changing the horizontal and vertical timing.

5.4.2 Reference Select

Enables the module to work with Reference A and Reference B on 3B frames.

5.4.3 Phase

Three phase controls are provided:

- **H Phase:** If the module is referenced locked, use the slider bar to adjust the horizontal genlock phase over a range of $\pm 0.5 H$ in 1 pixel steps. The preset value is 0.
- **V Phase:** If the module is referenced locked, use the slider bar to adjust the vertical genlock phase over a range of $\pm 0.5 F$ in 1 line steps. The preset value is 0.
- **Freerun Frequency:** The slider bar may be used to adjust the module's freerun frequency.

5.4.4 Delay

- **Horizontal Delay:** The slider bar may be used to adjust the horizontal delay over a range of 0 to 1 line in 1 pixel steps. The preset value is 0. Note that when the module is input locked, if the delay is set to lower than the latency, the delay will stop at the latency but this will not be indicated. Additionally, if the vertical delay is set to 0, the lowest horizontal delay will equal the latency of the module rather than the delay specified by this control.
- **Vertical Delay:** The slider bar may be used to add up to 1 frame of vertical delay in steps of 1 line. The preset value is 0.

5.4.5 Frame Delay Added

Up to 9 additional frames of delay may be selected using this slider bar. This delay can be added in all reference modes, including freerun.

The delay of non-PCM audio, or "pass-through" audio is also set by this control.

The delay, in ms, is displayed below this control.

5.4.6 Active Video Delay

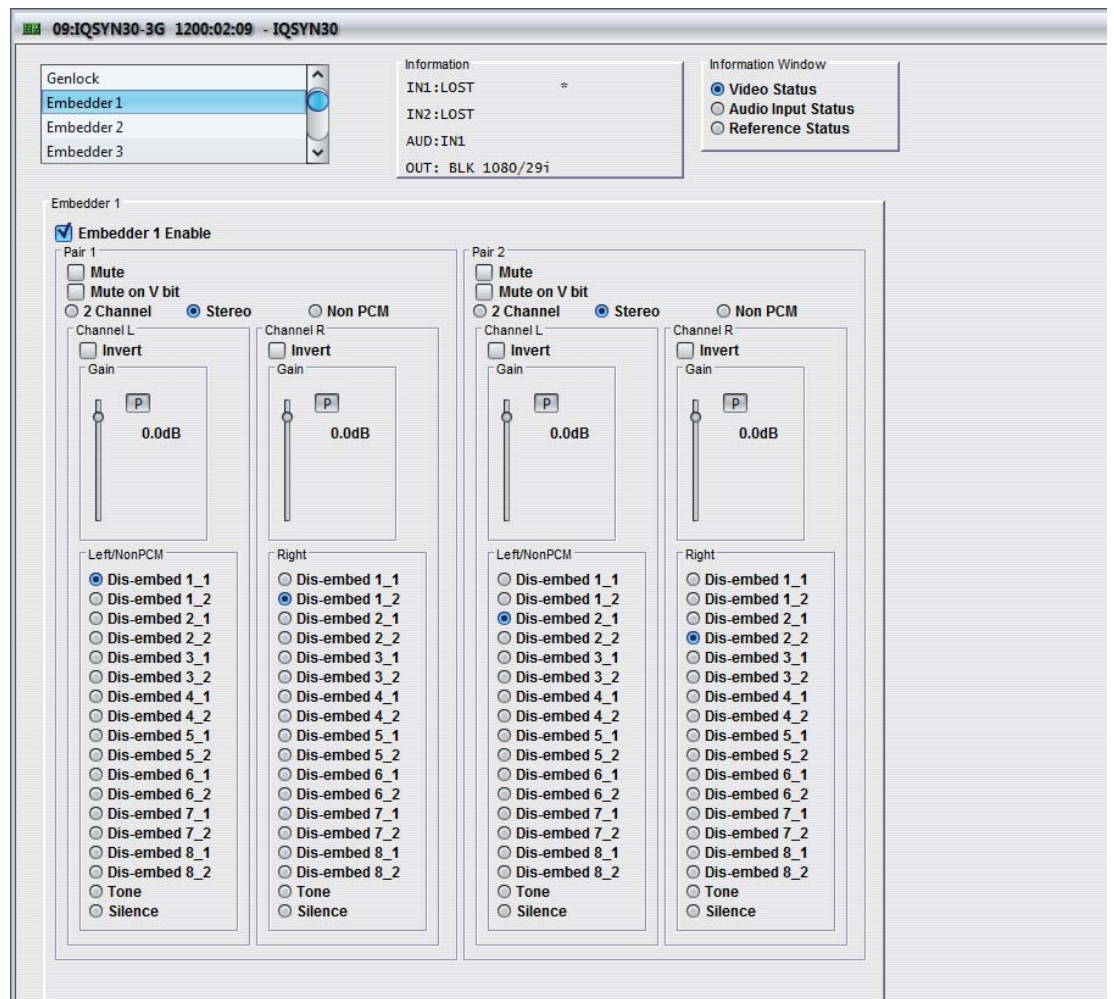
The total active video delay (in ms) is displayed at the bottom of this screen.

5.5 Embedder 1 to Embedder 4

Four embedder groups are provided. Each embedder group comprises two stereo audio pairs, each of which has a left and right channel. The settings on these screens enable you to:

- Enable or disable the embedder group.
- Apply a mute to a pair within the group.
- Configure each pair as either 2 Channel, Stereo, or Non PCM.
- Configure each channel within the pair.
- Specify the route for each channel.

With the exception of the Embedder Enable control, each control is duplicated for Pair 1 and Pair 2.



Note: The control templates for Embedder 1 to Embedder 4 comprise the same controls. To avoid repetition, in this manual, the controls are only described once.

5.5.1 Embedder N Enable

This option, when checked, enables the embedder group.

5.5.2 Pair 1 and Pair 2 Controls

These controls configure the audio pair and specify the output route.

- **Mute:** When selected, applies a mute to the audio output pair.
- **Mute on V bit:** When selected, applies a mute to the audio output pair when the validity bit (timeslot 28 in the audio 32-timeslot subframe) is not set to zero, i.e. when defective samples are detected.
- **2 Channel:** When selected, configures the pair as separate L/R channels.
- **Stereo:** When selected, configures the L/R channels as a stereo pair.
- **Non PCM:** Enables routing of non-PCM data with the Source L / Non-PCM selection.

If in Non-PCM mode and a PCM source is selected, it will bypass the sample rate converters and be routed to the output but the Procamp and Audio Delay controls will have no effect.

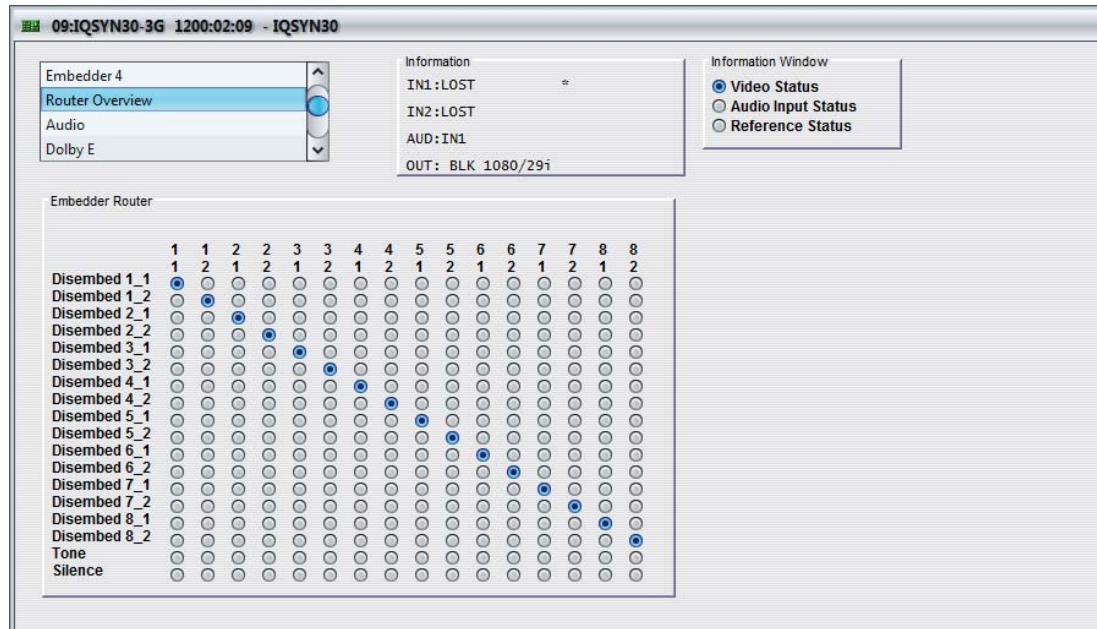
If set to PCM mode and a NonPCM source is selected, silence will be embedded.

- **Invert L / Invert R:** Inverts the signal (PCM sources only).
- **Gain L / Gain R:** The slider bar may be used to independently adjust the channel audio gain over a range of +12 dB to -72 dB in 0.1 dB steps (PCM only). The preset value is 0.
- **Left/NonPCM:** Routes the Left (PCM) or Non-PCM channel data to the option selected in the window. Options for the channel include a dis-embed path, a tone or silence.
- **Right:** Routes the Right (PCM) channel to the option selected in the window. Options for the channel include a dis-embed path, a tone or silence.

5.6 Router Overview

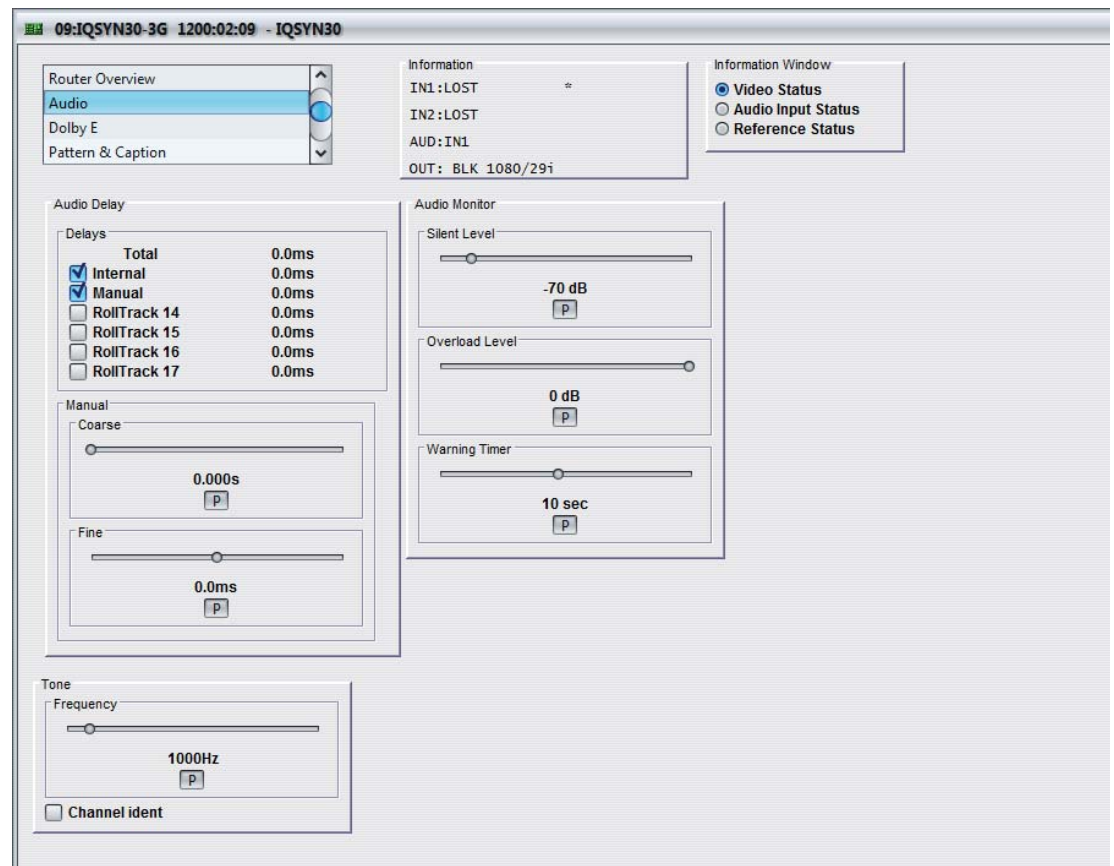
The **Router Overview** screen provides a summary of the embedder routing specified of the Embedder 1 to Embedder 4 screens. Changes that you make to the embedder routes on this screen are applied to the Embedder 1 to Embedder 4 screens (and vice versa). To apply more than simple routing, e.g. to use the gain or inversion controls, you must use the Embedder specific screens.

To specify a route on this screen, simply select it from the matrix.



5.7 Audio

The **Audio** screen enables the module audio settings to be configured.



5.7.1 Delays

These settings enable you to specify the amount of audio delay applied. The delay mechanisms are not exclusive of each other, the user is free to select any or all of the delay types, which will be added to create the module's total delay.

- **Internal:** The added delay is equal to the module's current video delay as set in the Genlock menu.
- **Manual:** Selecting this option applies a delay equal the value specified by the Manual Coarse and Manual Fine delays, which are described below.
- **RollTrack 14 to RollTrack 17:** RollTracks are signals sent between pieces of equipment so that they can work together in concert. For example two modules can exchange delay values through the RollTrack system. The delay used for the audio passing through this module could be set for example, by the delay through a video synchronizer. Delay values may be applied via RollTracks 14, 15, 16 and 17.

5.7.2 Manual Coarse and Manual Fine Delay Controls

The Manual Coarse and Manual Fine delay controls are added together to add a manual delay to the audio signal.

- **Manual Coarse:** This slider may be used to specify a delay of up to 1.75 s in 5 ms steps. The preset value for this control is 0.
- **Manual Fine:** This slider may be used to specify a delay of up to 1.75 s in 5 ms steps, while the Manual Fine control can be used to specify a delay of ± 0.25 s in 0.5 ms steps. The preset value for this control is 0.

5.7.3 Tone

- **Frequency:** This slider may be used to adjust the tone frequency for both L & R over a range of 100 Hz to 10 kHz in 100 Hz steps. The preset value for this control is 1 kHz.
- **Channel Ident:** When selected, this will identify the right channel by causing the tone to fluctuate (0.5s interruption every 2s).

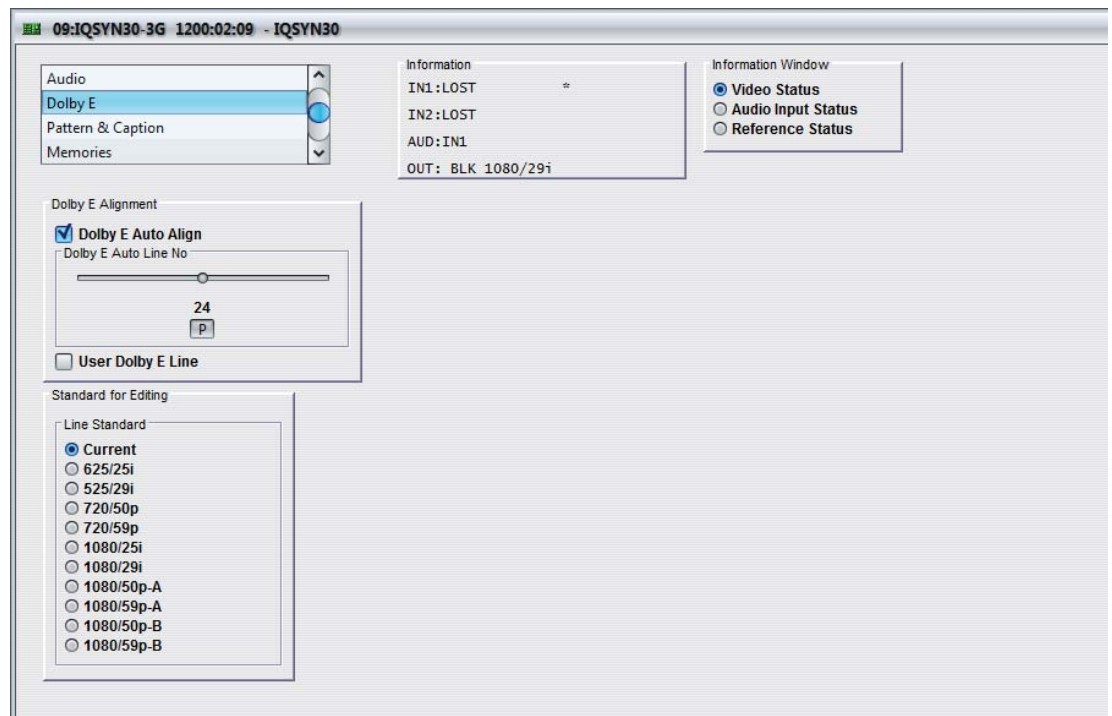
5.7.4 Audio Monitor

The Audio Monitor settings allow you to specify the level at which the audio signal is considered to have dropped to silence and the level at which the audio signal is considered to have risen to an overload condition.

- **Silent Level:** Use the slider bar to specify the level at which the signal is considered to have dropped to silence. The range of this control is 0 to -80 dB in steps of 1 dB and the preset value is -70 dB. The level set by this control must exist continuously for the time specified by the Warning Timer control for the signal to be considered silent.
- **Overload Level:** Use the slider bar to specify the level at which the signal is considered to have risen to an overload condition. The range of this control is 0 to -80 dB in steps of 1 dB and the preset value is 0 dB. The level set by this control must exist continuously for the time specified by the Warning Timer control for the signal to be considered overloaded.
- **Warning Timer:** Use the slider bar to specify the time that either of the above conditions must exist before considered to be true. The range of this control is 1 to 600 seconds in steps of 1 second. The preset value is 10 seconds.

5.8 Dolby E

The **Dolby E** screen enables the configuration of Dolby E settings.



5.8.1 Dolby E Alignment

- Dolby E Auto Align:** This option enables Dolby E automatic (i.e. Dolby recommended) alignment. When enabled, the Dolby E header is automatically aligned with the video frame boundary to ensure error-free video switching. The slider displays the relevant line number used for alignment. Realigned Dolby audio can be routed to any audio pair by means of the L/Non-PCM controls on the Audio Embedder screens if the embedded pair is set to Non-PCM. Note that “pass-through” Dolby E, where neither embedder in a group is enabled, will not be re-aligned.

Note: If Dolby E guard-band is out of spec, then Dolby E is re-aligned to that specified by Dolby.

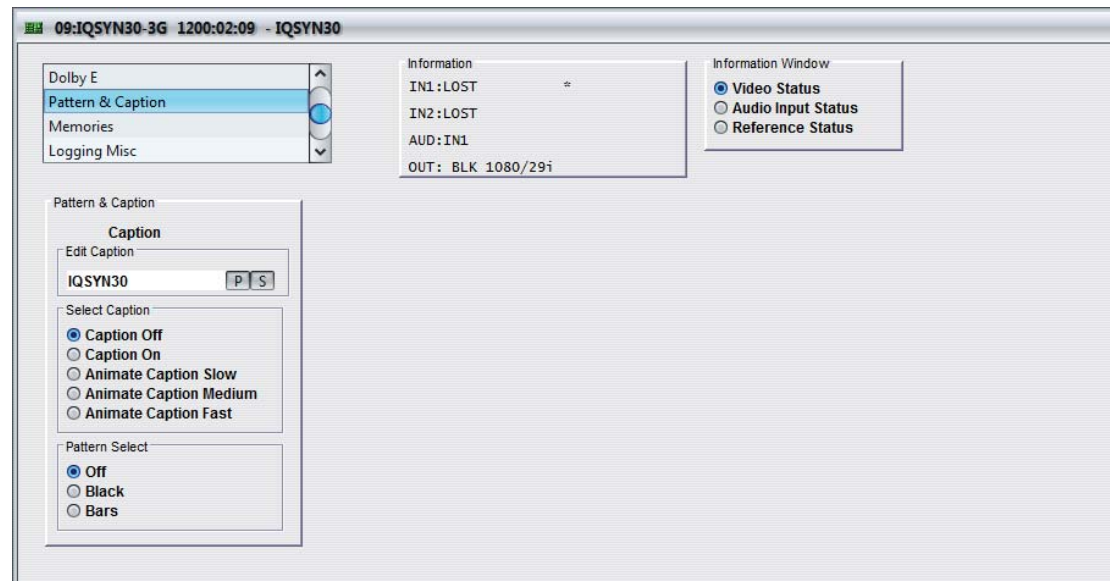
- User Dolby E Line:** This option enables manual selection of Dolby E line. The slider displays the relevant line number used for alignment, which may be changed manually by dragging the slider. Clicking the **P** button returns the line number to the preset (automatic) value.

5.8.2 Line Standard

By default the **Current** video line standard is always selected. A different line standard may be selected by clicking the relevant radio button. The associated line number for the chosen line standard will be displayed by the above slider control.

5.9 Pattern & Caption

The **Pattern & Caption** screen settings enables a caption to be specified, turned on and off and pattern generation to be enabled.



5.9.1 Edit Caption

In the **Edit Caption** text field, a caption of up to 19 characters may be entered to be displayed when the caption function is enabled.

Clicking the **S** button saves the caption as entered.

Clicking the **P** button returns the caption to the default preset value.

5.9.2 Select Caption

The radio buttons are used to turn the caption on and off, and to apply a slow, medium, or fast animation to the caption. This animation is a scrolling effect from right to left, also known as a “ticker-tape” effect.

When enabled, the caption will appear as white text on a black background in the lower portion of the picture.

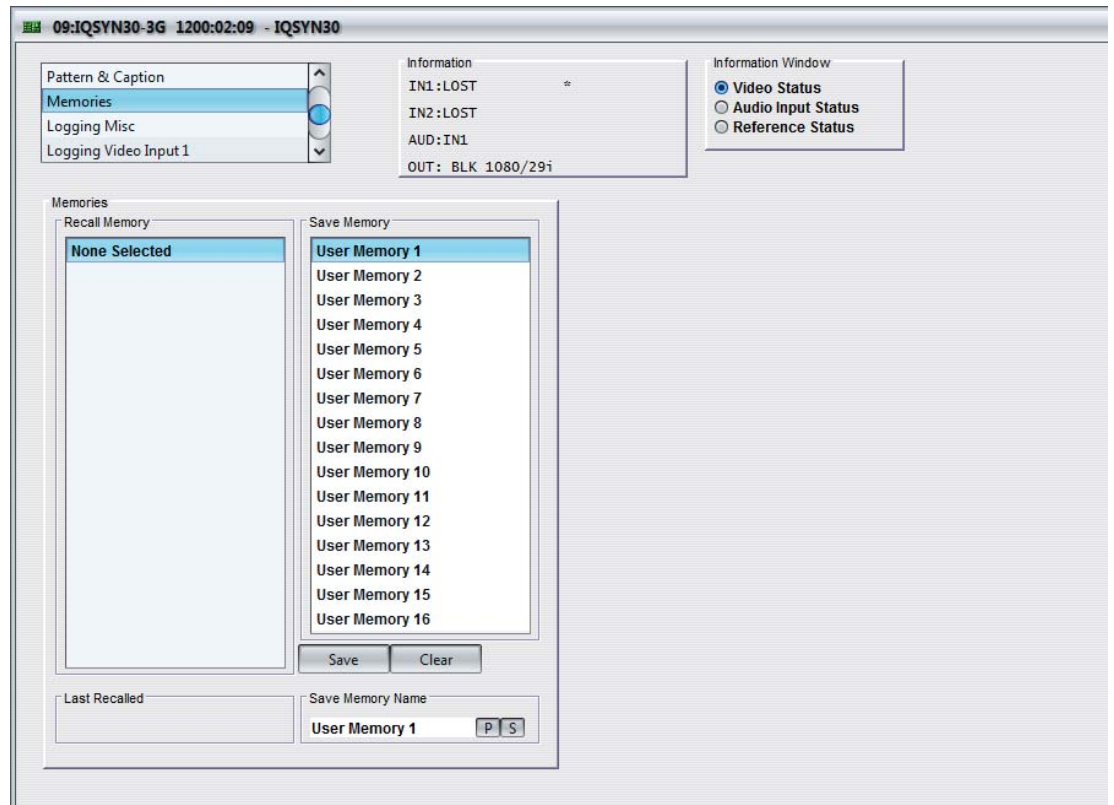
5.9.3 Pattern Select

The radio buttons enable / disable pattern generation. The options are:

- **Off**
- **Black**
- **Bars**

5.10 Memories

The **Memories** screen enables up to 16 setups to be saved and recalled later. Default memory names can be changed to provide more meaningful descriptions.



5.10.1 Recall Memory

This column lists the settings that have been previously saved. If no settings have been saved, **None Selected** is displayed.

To recall the settings saved in a memory:

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

Note: User memories do not recall log field states. I.e., whether a log value has been enabled or disabled.

5.10.2 Save Memory

This column lists the 16 pre-set memory names that are available for use.

To save settings:

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

5.10.3 Last Recalled

The **Last Recalled** pane displays the most recently recalled memory. If any of the settings have been changed since it was recalled, an asterisk will be displayed after the memory name.

5.10.4 Save Memory Name

This option enables the pre-set memory names to be changed (to something more memorable or meaningful), if required.

To change a memory name:

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

5.11 Logging

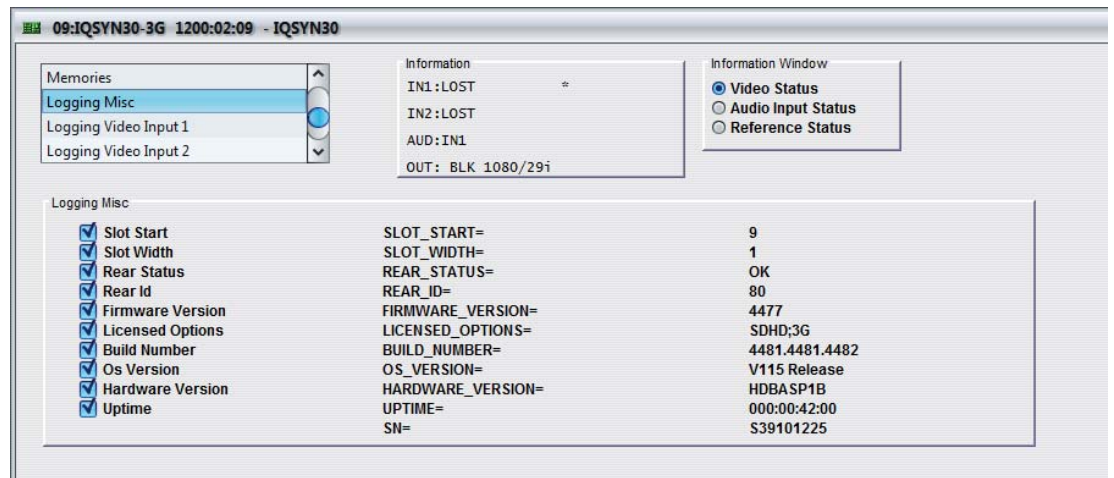
Information about several parameters can be made available to a logging device that is connected to the RollCall network.

Each logging screen comprises three columns:

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

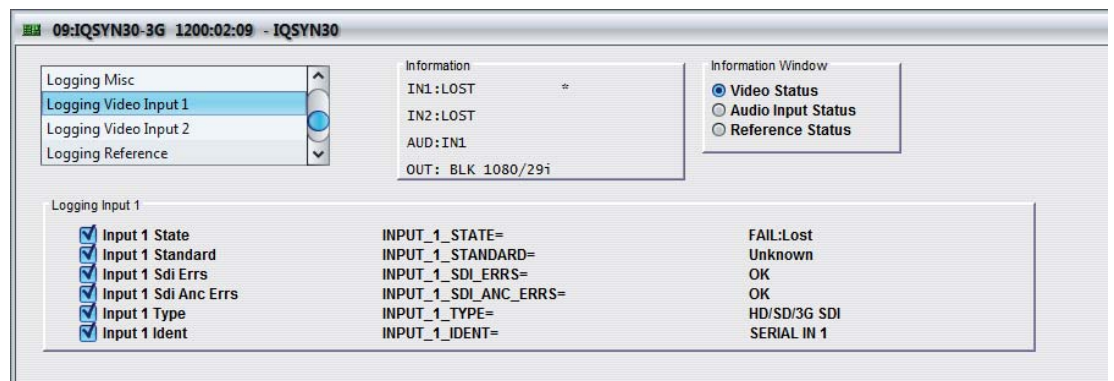
5.11.1 Logging Misc

The **Logging Misc** screen displays the current log information about the module's basic parameters.



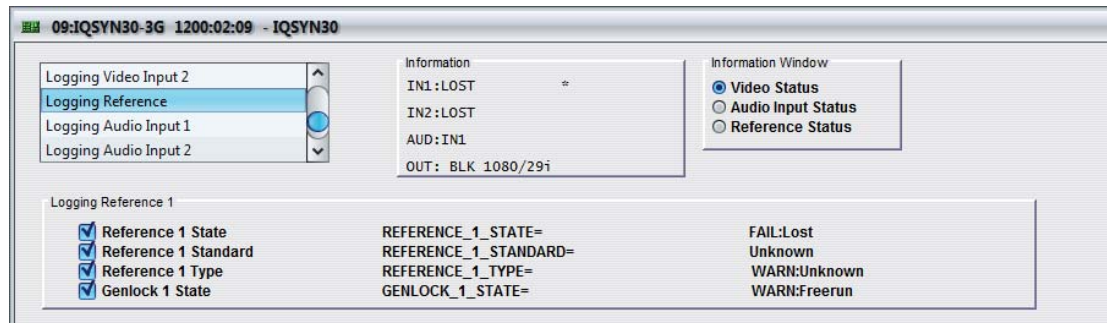
5.11.2 Logging Video Input 1 / 2

The **Logging Video Input 1 / 2** screens display the current log information for the relevant video inputs.



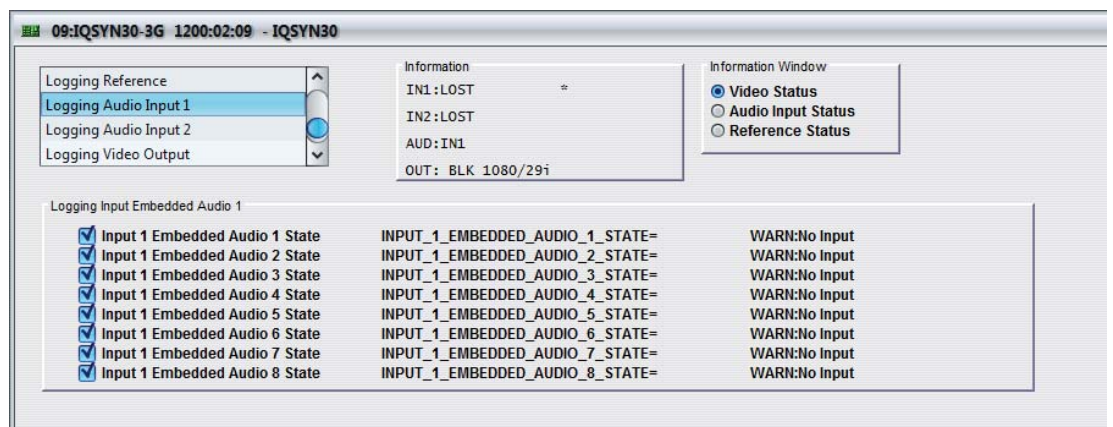
5.11.3 Logging Reference

The **Logging Reference** screen displays the current log information for the reference input.



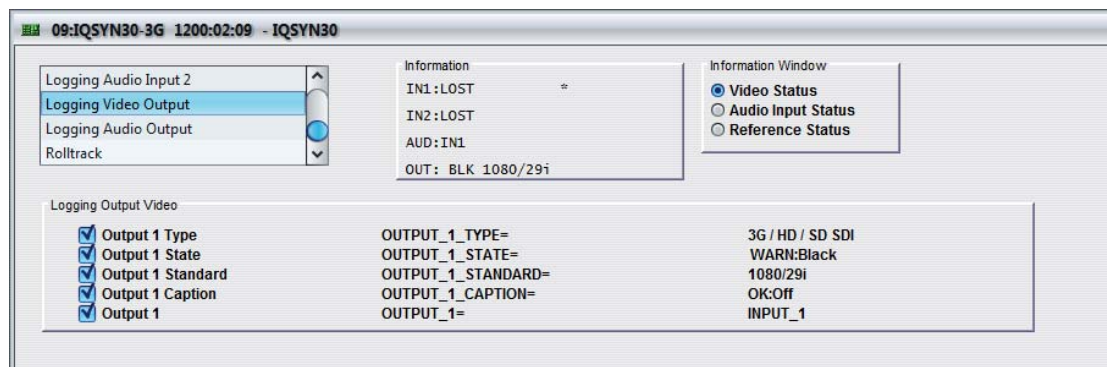
5.11.4 Logging Audio Input 1 / 2

The **Logging Audio Input 1 / 2** screens display the current log values for the eight audio pairs on each input.



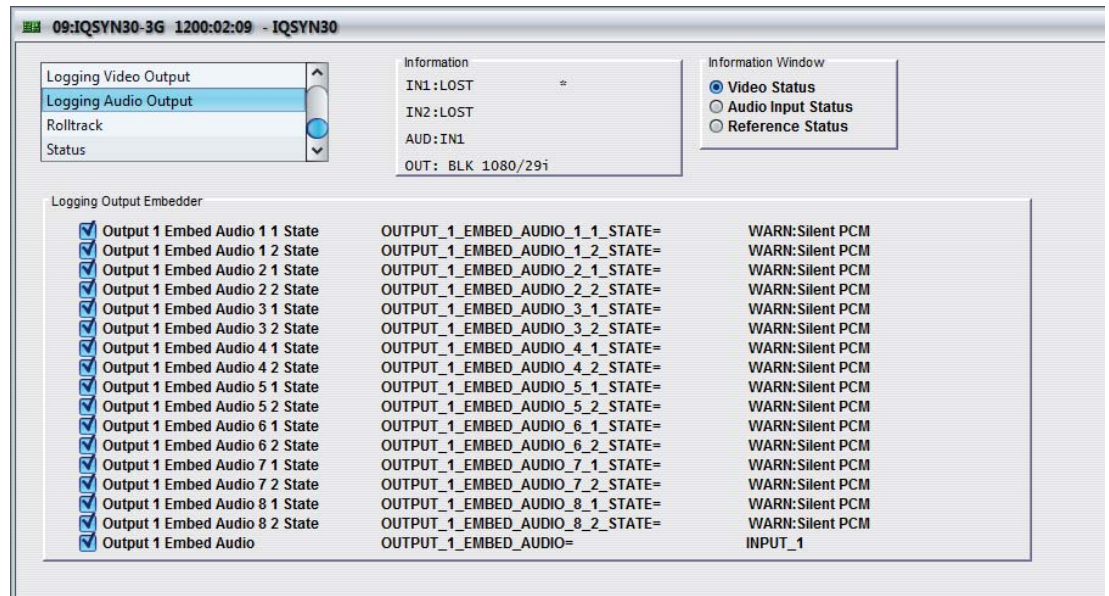
5.11.5 Logging Video Output

The **Logging Video Output** screen displays the current log information for the video output.



5.11.6 Logging Audio Output

The **Logging Audio Output** screen displays the current log values of the eight embedded output pairs.



5.11.7 Log Field Descriptions

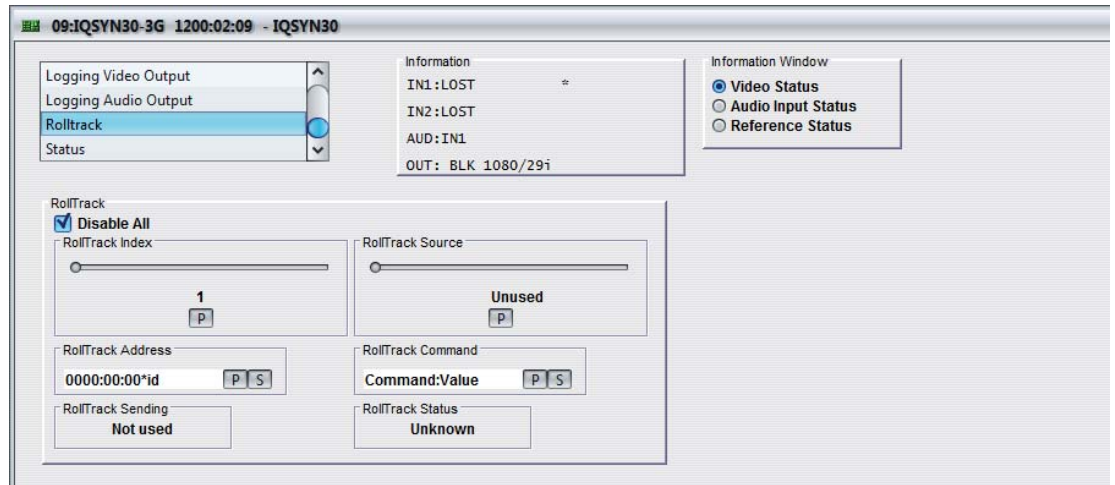
Log Field	Description
UPTIME=	Displays the time since the last restart in the format ddd:hh:mm:ss.
OS_VERSION=	Displays the operating system name and version. For example, KOS V115.
HARDWARE_VERSION=	Displays the hardware version number.
BUILD_NUMBER=	Displays the build number.
SN=	Displays the module serial number, which consists of an S followed by eight digits.
LICENSED_OPTIONS=	Displays any specially licensed options, if applicable.
FIRMWARE_VERSION=	Displays the FPGA version.
REAR_ID=	Displays a rear panel identifier number.
REAR_STATUS=	Display the status of the rear panel. Valid values are: <ul style="list-style-type: none"> • OK • FAIL:Lost
SLOT_WIDTH=	Displays the rear panel slot width. For example, 1 or 2.
SLOT_START=	Displays the rear panel slot start (boot-up) number.
INPUT_N_STATE=	Displays the current input state. Valid values are: <ul style="list-style-type: none"> • OK • WARN:Mismatch • FAIL:Lost <p>Note: WARN:Mismatch indicates that the input and output standards are not the same.</p>
INPUT_N_STANDARD=	This displays the current input signal standard. For example, 1080/29i. If the input standard is not recognized or supported the field will display: WARN:Unknown
INPUT_N_TYPE=	This displays the type of input as specified by the module's configuration. Valid values are 3G / HD /SD SDI.
INPUT_N_IDENT=	Display the input ID.
INPUT_N_SDI_ERRS=	Displays SDI errors. Valid values are: <ul style="list-style-type: none"> • OK • WARN
INPUT_N_SDI_ANC_ERRS=	Displays ANC errors. Valid values are: <ul style="list-style-type: none"> • OK • WARN

Log Field	Description
GENLOCK_1_STATE=	Displays the Genlock state. Valid values are: <ul style="list-style-type: none"> • OK:Reference • OK:Input • WARN:Freerun • WARN:CrossLock
REFERENCE_1_STATE=	Displays the reference state. Valid values are: <ul style="list-style-type: none"> • OK • FAIL:Lost
REFERENCE_1_STANDARD=	Displays the current video standard of the reference signal. For example, 1080/59P
REFERENCE_1_TYPE=	Displays the reference type. Valid values are: <ul style="list-style-type: none"> • OK:Tri-Level • OK:Bi-Level • WARN:Unknown
INPUT_1_EMBEDDED_AUDIO_1_STATE= to INPUT_1_EMBEDDED_AUDIO_8_STATE= ----- INPUT_2_EMBEDDED_AUDIO_1_STATE = to INPUT_2_EMBEDDED_AUDIO_8_STATE=	These fields display the current embedded input audio state. Valid values are: <ul style="list-style-type: none"> • OK:PCM • OK:Data • OK:DolbyE • WARN:No Input • FAIL:Lost
OUTPUT_N_TYPE=	3G / HD / SD SDI
OUTPUT_N_STATE=	<ul style="list-style-type: none"> • OK • WARN:Pattern • WARN:Black • WARN:Freeze
OUTPUT_N_STANDARD=	Displays the current output video standard.
OUTPUT_N_CAPTION=	<ul style="list-style-type: none"> • OK:Off • WARN:On
OUTPUT_N=	Displays the relevant input source for the output video.

Log Field	Description
OUTPUT_1_EMBED_AUDIO_1_1_STATE= to OUTPUT_1_EMBED_AUDIO_8_2_STATE=	These fields display the current embedded output audio state. Valid values are: <ul style="list-style-type: none"><li data-bbox="740 293 884 322">• OK:PCM<li data-bbox="740 349 884 378">• OK:Data<li data-bbox="740 405 911 434">• OK:DolbyE<li data-bbox="740 461 1002 490">• WARN:Silent PCM<li data-bbox="740 517 1043 546">• WARN:Overload PCM<li data-bbox="740 573 959 602">• FAIL:Input Lost
OUTPUT_1_EMBED_AUDIO=	Displays the relevant input source for the embedded output audio.

5.12 RollTrack

The **RollTrack** screen allows information to be sent, via the RollCall™ network, to other compatible units connected on the same network.



5.12.1 Disable All

When checked, all RollTrack items are disabled.

5.12.2 RollTrack Index

This slider enables up to 70 RollTrack outputs to be setup. Dragging the slider selects the RollTrack Index number, displayed below the slider. Clicking the **P** button selects the default preset value.

5.12.3 RollTrack Source

This slider enables the source of information that triggers the transmission of data to be selected. Dragging the slider selects the RollTrack source, displayed below the slider. Clicking the **P** button selects the default preset value. When no source is selected, **Unused** is displayed.

5.12.4 RollTrack Address

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

The address may be changed by typing the new destination in the text area and then selecting the **S** button to save the selection. Clicking the **P** button returns to the default preset destination.

The RollTrack address consists of 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-defined 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 unexpectedly.

5.12.5 RollTrack Command

This item enables a command to be sent to the selected destination unit.

The command may be changed by typing a code in the text area and then selecting the **S** button to save the selection. Clicking the **P** button returns to the default preset command.

The RollTrack command consists of two sets of numbers, for example: **84:156**.

- The first number (**84**) is the actual RollTrack command.
- The second number (**156**) is the value sent with the RollTrack command.

5.12.6 RollTrack Sending

A message is displayed here when the unit is actively sending a RollTrack command. Possible RollTrack Sending messages are:

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 SAM agent.

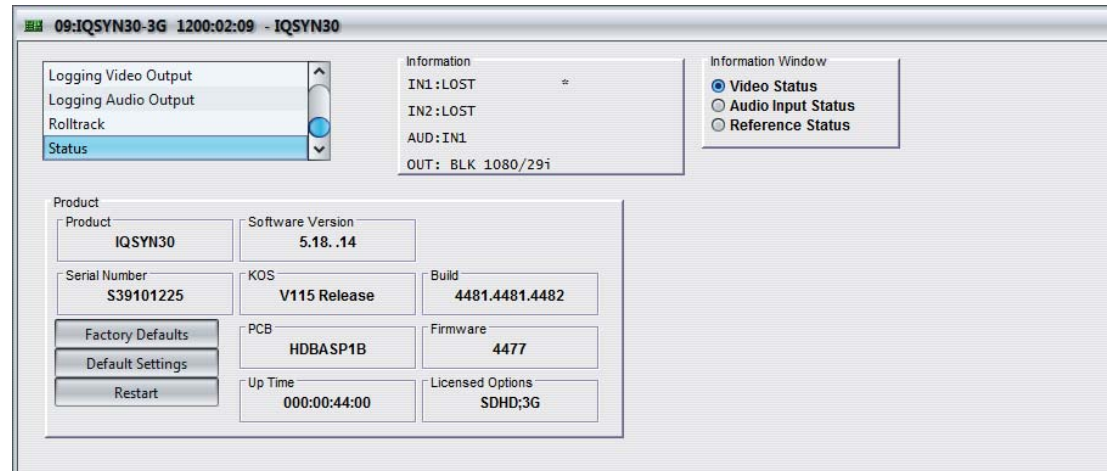
5.12.7 RollTrack Status

A message is displayed here to indicate the status of the currently selected RollTrack index. Possible RollTrack Status messages are:

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.
Bad	RollTrack message has not been correctly acknowledged at the destination unit. This could be because the destination unit is not of the type specified.
Disabled	RollTrack sending is disabled.

5.13 Status

The **Status** screen displays basic information about the module, such as the serial number and software versions. The functions on the screen may be used to restart the module or return all settings to their factory or default settings.



- **Product:** The name of the module.
- **Software Version:** The currently installed software version number.
- **Serial No:** The module serial number.
- **Build:** The factory build number. This number identifies all parameters of the module.
- **KOS:** The operating system version number.
- **PCB:** The Printed Circuit Board revision number.
- **Firmware:** The module firmware revision number.
- **Up Time:** The time since the module was last started.
- **Licensed Options:** The currently installed licensed options associated with the module.

5.13.1 Factory Defaults

The **Factory Defaults** button enables the module settings to be reset to their factory defaults.

Note: Resetting the module to its factory defaults also clears all the saved memory settings.

5.13.2 Default Settings

The **Default Settings** button enables module settings to be reset to their factory defaults, leaving user memories intact.

5.13.3 Restart

The **Restart** button enables the module to be rebooted, simulating a power-up/power-down cycle.