



Snell
Advanced
Media

User Instruction Manual

IQMUX34

3G/HD/SD-SDI Multiplexer for 8 Analog Channels

Information and Notices

Copyright and Disclaimer

Copyright protection claimed includes all forms and matters of copyrightable material and information now allowed by statutory or judicial law or hereinafter granted, including without limitation, material generated from the software programs which are displayed on the screen such as icons, screen display looks etc.

Information in this manual and software are subject to change without notice and does not represent a commitment on the part of SAM. The software described in this manual is furnished under a license agreement and can not be reproduced or copied in any manner without prior agreement with SAM or their authorized agents.

Reproduction or disassembly of embedded computer programs or algorithms prohibited.

No part of this publication can be transmitted or reproduced in any form or by any means, electronic or mechanical, including photocopy, recording or any information storage and retrieval system, without permission being granted, in writing, by the publishers or their authorized agents.

SAM operates a policy of continuous improvement and development. SAM reserves the right to make changes and improvements to any of the products described in this document without prior notice.

Contact Details

For details of our Regional Customer Support Offices, please visit the SAM website and navigate to Support/Contact Support.

www.s-a-m.com/support/contact-support/

Customers with a support contract should call their personalized number, which can be found in their contract, and be ready to provide their contract number and details.

Contents

- Information and Notices** 2
 - Copyright and Disclaimer 2
 - Contact Details 2
- 1. Introduction** 5
 - 1.1 Description 5
 - 1.2 Block Diagram 5
 - 1.3 Feature Summary 5
 - 1.4 Order Codes 6
 - 1.5 Rear Panel View 6
 - 1.6 Enclosures 7
 - 1.6.1 B-style Enclosure 7
 - 1.6.2 A-style Enclosures 7
- 2. Technical Specification** 8
- 3. Connections** 11
 - 3.1 SDI Inputs 11
 - 3.2 SDI Outputs 11
 - 3.3 Analog Audio Input - D-Type 11
 - 3.4 Analog Audio Input - Screw Terminals 12
- 4. Card Edge LEDs** 13
- 5. Controlling the IQMUX34 from the RollCall Control Panel** 14
 - 5.1 Information Window 14
 - 5.1.1 Video Status 14
 - 5.1.2 Audio Input Status 14
 - 5.2 Video 15
 - 5.2.1 Input Select 15
 - 5.2.2 Valid Input Standards 15
 - 5.2.3 Default Output 16
 - 5.2.4 Default Output Standard 16
 - 5.2.5 Blanking 16
 - 5.2.6 Freeze 16
 - 5.3 Procamp 17
 - 5.3.1 Procamp Enable 17
 - 5.3.2 Black Level 17
 - 5.3.3 Hue Adjust 17
 - 5.3.4 Master Video Gain 18
 - 5.3.5 Y Gain 18
 - 5.3.6 Cb/Cr Gain 18
 - 5.3.7 Y/C Timing 18
 - 5.3.8 Picture Position 18
 - 5.4 Video Delay 19
 - 5.4.1 Horizontal Delay 19
 - 5.4.2 Vertical Delay 19
 - 5.4.3 Frame Delay Added 19
 - 5.4.4 Active Video Delay 19
 - 5.5 Embedder 1 to Embedder 4 20
 - 5.5.1 Embedder N Enable 20
 - 5.5.2 Pair 1 and Pair 2 Controls 21
 - 5.6 Router Overview 22
 - 5.7 Audio 23
 - 5.7.1 Delays 23
 - 5.7.2 Manual Coarse and Manual Fine Delay Controls 23
 - 5.7.3 Tone 23

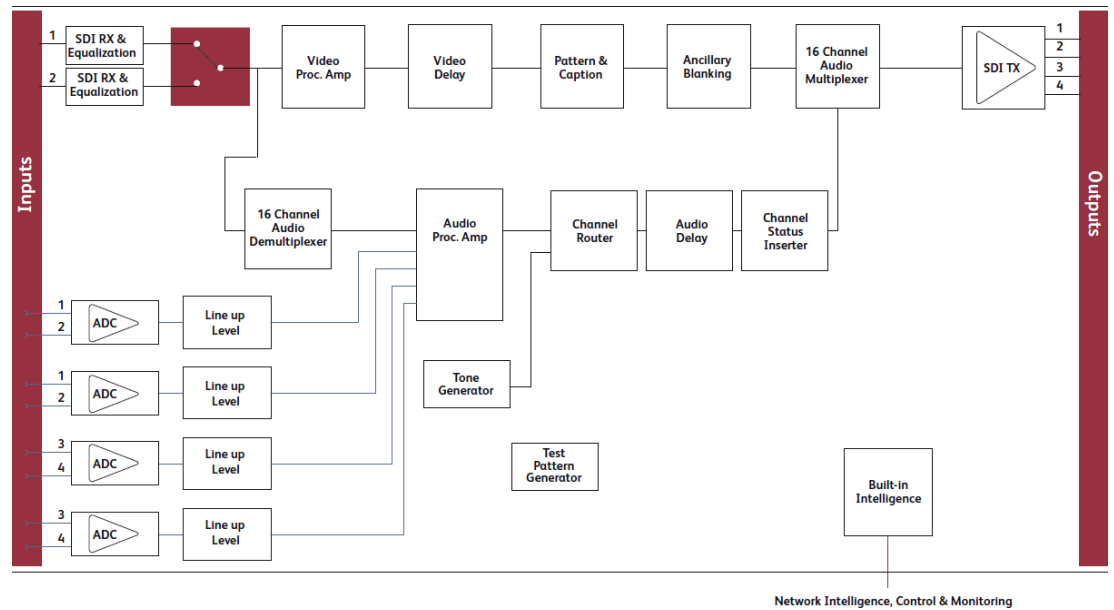
5.7.4 Audio Monitor	24
5.8 Analog Setup	25
5.8.1 Headroom	25
5.9 Pattern & Caption	26
5.9.1 Edit Caption	26
5.9.2 Select Caption	26
5.9.3 Pattern Select	26
5.10 Memories	27
5.10.1 Recall Memory	27
5.10.2 Save Memory	27
5.10.3 Last Recalled Memory	28
5.10.4 Save Memory Name	28
5.11 Logging	29
5.11.1 Logging Misc	29
5.11.2 Logging Video Input 1 and 2	29
5.11.3 Logging Audio Input 1 and 2	30
5.11.4 Logging Video Output	30
5.11.5 Logging Audio Output	30
5.11.6 Log Field Descriptions	31
5.12 RollTrack	33
5.12.1 Disable All	33
5.12.2 RollTrack Index	33
5.12.3 RollTrack Source	33
5.12.4 RollTrack Address	33
5.12.5 RollTrack Command	34
5.12.6 RollTrack Sending	34
5.12.7 RollTrack Status	34
5.13 Status	35
5.13.1 Factory Defaults	35
5.13.2 Default Settings	35
5.13.3 Restart	35

1. Introduction

1.1 Description

The IQMUX34 provides 4 or 8-channel analog audio multiplexing for HD-SDI 3 Gbit/s, 1.5 Gbit/s, or 270 Mbit/s SD-SDI signals. Audio processing features include audio delay, gain, invert, and channel level routing, while video delay and a video proc. amp are also included in the feature-set.

1.2 Block Diagram



1.3 Feature Summary

- 4/8-channel 3G/HD/SD-SDI multiplexer for analog audio inputs - via 25-way D-Type (8-channel) or screw terminals (4-channel)
- Standards supported:
 - 3G-SDI to SMPTE 424M/425M level A & B compatible
 - HD-SDI to SMPTE292M/274M/296M
 - SD-SDI to SMPTE259M-C
- Handles up to 16 channels of embedded audio present on the incoming SDI stream.
- Includes independent gain, invert, mute controls, channel level (sub-frame) routing, and adjustable delay for selected audio channels.
- Embedding continues on loss of SDI input (silence).
- Any group of embedded audio may be passed unchanged, processed, or blanked.
- Embedded Dolby E support – pair routing and delay.
- Up to nine frames of video delay and two seconds of audio delay.
- Video controls including video gain, offset, HANC and VANC blanking control.
- Input loss detection – default output of black/pattern.
- Transparent to all ancillary data inc. VANC metadata.
- In-built test pattern generator and audio tone generator.
- 16 user memories, save/recall/rename.
- Rollcall control and monitoring compatible.

1.4 Order Codes

Note: Modules with “A” order codes (for example, IQMUX3449-1**A**3) can be fitted into either A- or B-style enclosures. Modules with “B” order codes (for example, IQMUX3449-1**B**3) can only be fitted into B-style enclosures. See page 7.

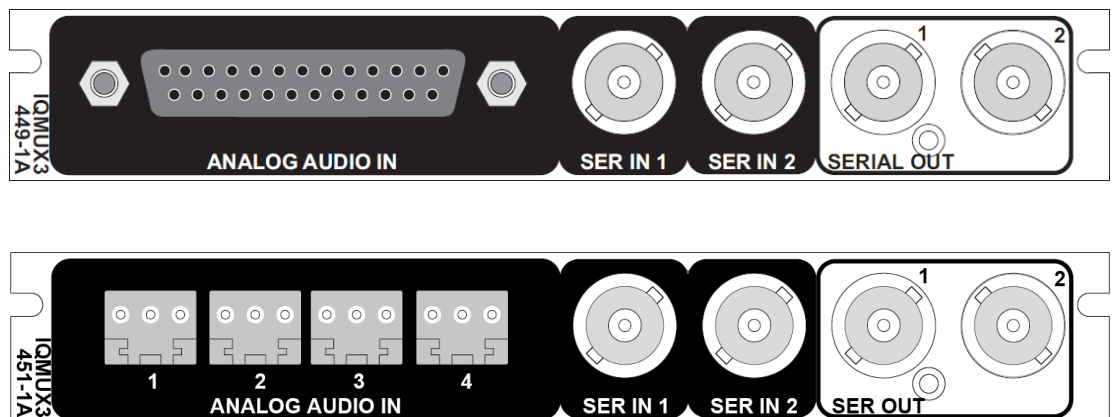
The following product order codes are covered by this manual:

IQMUX3449-1A3 3G/HD/SD-SDI 8-channel analog audio multiplexer. 2 SDI inputs, 2 SDI outputs, 8 balanced analog audio inputs.

IQMUX3451-1A 3G/HD/SD-SDI 4-channel analog audio multiplexer. 2 SDI inputs, 2 SDI outputs, 4 balanced analog audio screw terminal inputs.

1.5 Rear Panel View

The following rear panel types are available:



1.6 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 6.

1.6.1 B-style Enclosure



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

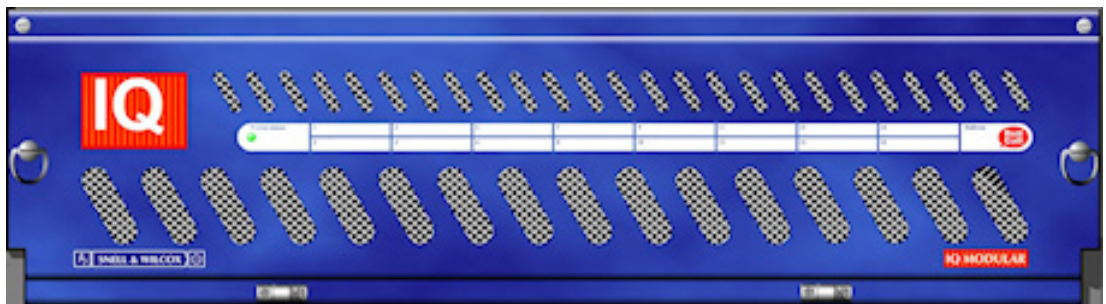
1.6.2 A-style Enclosures



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

2. Technical Specification

Inputs and Outputs

Signal Inputs

SDI Inputs	x 2
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

Audio Signal Inputs

Balanced Analog Audio Inputs	8 channels (25-Way D-Type)
------------------------------	----------------------------

Signal Outputs

SDI Outputs	x 2
-------------	-----

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)
Input 2	OK (green)

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
Video Select	Input 1, Input 2
Audio Select	Video Input 1, Video Input 2, Follow Video
Manual Freeze	On/Off
Freeze	Field/Frame
Video Delay Frames	0 to 9 F
VANC Data	Blank VANC
SD VANC Data	Line blanking (6 controls)
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/3G)
Picture Position	±8 pixels in 2 pixel steps (SD) ±16 pixels in 2 pixel steps (HD/3G)
Pattern On	On/Off
Pattern Select	75% Color Bars, Black
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	Dis-embed 1_1 to 8_2, Analog 1 to 8, Tone, Silence
Pair 1 to 8 Source R	Dis-embed 1_1 to 8_2, Analog 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

Tone

Frequency L/R	100 Hz to 10 kHz in 100 Hz steps
Channel Ident	On/Off
HANC Data	Blank HANC (Removes all HANC data, including audio, when embedders disabled)

Audio Monitoring

Silence Detect	0 to -80 dB in steps of 1 dB
Signal Overload Detect	0 to -80 dB in steps of 1 dB
Warning Timer	1 to 20 seconds in steps of 1 second

Audio Setup Controls

Analog Headroom	+12 dBU to +24 dBU
-----------------	--------------------

Note: Headroom level specified at 0 dBFS line-up level

Other Controls

User Memories	16x Save, Recall, Rename
Memory Naming	User configurable naming of memories 1–16

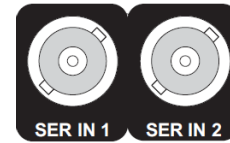
RollTrack Sources	Unused, Video Delay, Input Present, Input1 Select, Input2 Select, Input Loss, Output 525, Output 625, Output 720p, Output 1080i, Output 1080p, Output Freeze, Output Unfreeze, Output Pattern on, Output pattern off, Output Caption on, Output Caption off, Disemb (Pairs 1–8) PCM, Disemb (Pairs 1–8) Data, Disemb (Pairs 1–8) DolbyE, Disemb (Pairs 1–8) V bit, Disemb (Pairs 1–8) Loss
Information Window	Video Input Status, Audio Input Status
Factory Default	Resets all module settings to factory specified default values and clears memories
Default Settings	Resets all module settings to factory specified defaults but does not clear memories
Restart	Software restart of the module
Module Information	Reports following module information: Software version, Serial number, Build number, KOS version, Firmware version, PCB version
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)
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
Typical Video Delay	Typical delay (input lock with Dolby E alignment off): 2 lines Typical delay (input lock with Dolby E alignment on): 1 frame
Embedded Audio Handling	HD - 24-bit synchronous 48 kHz to SMPTE 299M SD - 20-bit synchronous 48 kHz to SMPTE 272M-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
Analog Audio Input (Balanced)	
Analog Input Impedance	40 k ohms
Distortion (THD+N)	-100 dB @ +2 dBu 800 Hz
Frequency Response	20 Hz to 20 KHz + 0.05 dB
Dynamic Range	114 dB typical
Power Consumption	
Module Power Consumption	9 W (A Frames) 9 PR (B Frames)

3. Connections

This section describes the physical input and output connections provided by the IQMUX34.

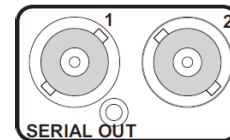
3.1 SDI Inputs

Serial digital input to the unit is made by means of two BNC connectors which terminate in 75 Ohms.



3.2 SDI Outputs

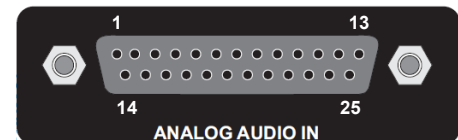
Serial digital output from the unit is made by means of two BNC connectors which terminate in 75 Ohms.



3.3 Analog Audio Input - D-Type

Analog audio input to the unit can be made by either a 25-way D-type connector or 4 screw terminals.

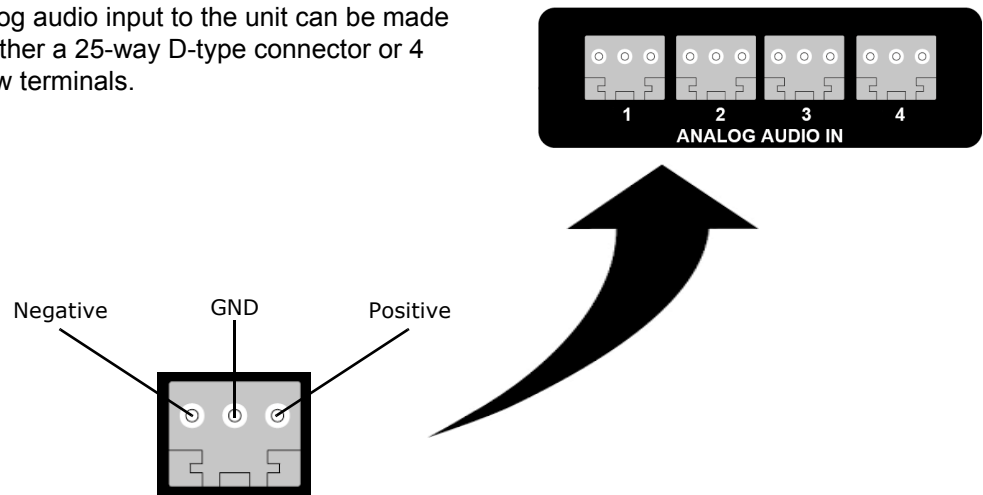
The table below details the pin connections.



Pin	Connection	Pin	Connection
1	CHASSIS	14	8 OUT GND
2	8 OUT+	15	8 OUT-
3	7 OUT+	16	7 OUT-
4	7 OUT GND	17	6 OUT GND
5	6 OUT+	18	6 OUT-
6	5 OUT+	19	5 OUT-
7	5 OUT GND	20	4 OUT GND
8	4 OUT+	21	4 OUT-
9	3 OUT+	22	3 OUT-
10	3 OUT GND	23	2 OUT GND
11	2 OUT+	24	2 OUT-
12	1 OUT+	25	1 OUT-
13	1 OUT GND		

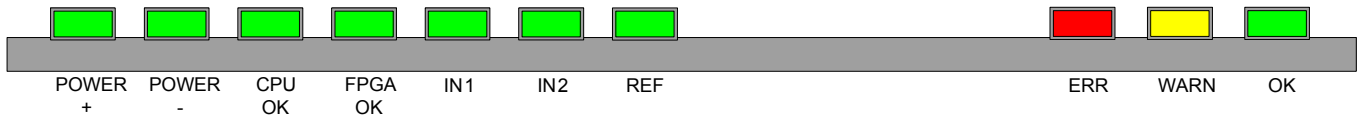
3.4 Analog Audio Input - Screw Terminals

Analog audio input to the unit can be made by either a 25-way D-type connector or 4 screw terminals.



4. Card Edge LEDs

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



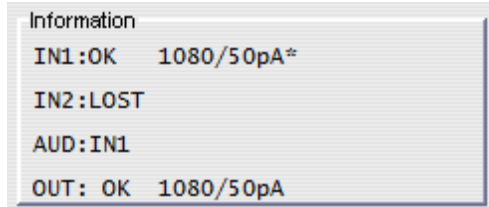
LED	Color	State	Indication
POWER +	Green	Illuminated	A positive power supply is present.
POWER -	Green	Illuminated	A negative power supply is present.
CPU OK	Green	Flashing	The CPU is running.
FPGA OK	Green	Illuminated	The unit is booting. LED stays illuminated until the SDI is enabled.
	Green	Flashing	The FPGA is running.
IN 1 & IN 2	Green	Illuminated	A valid input is present.
REF	Green	Illuminated	A valid reference signal is present.
	Green	Flashing	An incorrect frame rate reference is present.
ERR	Red	Illuminated	Board fault conditions. When the module is booting, this LED is illuminated until the SDI is enabled.
WARN	Yellow	Illuminated	Board warning conditions. LED is illuminated when one or more of the SDI inputs is not valid.
OK	Green	Illuminated	The module is operating correctly.

5. Controlling the IQMUX34 from the RollCall Control Panel

5.1 Information Window

The Information Window is in the upper-right corner of each screen and displays basic information about the input and output status of the module.

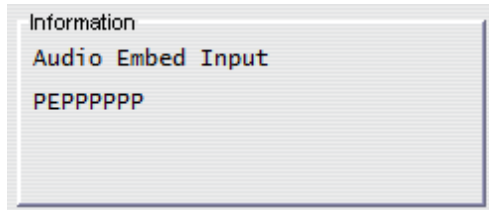
5.1.1 Video Status



When **Video Status** is selected, the Information Window displays the following information:

Name	Status	Description	Standard
IN1:	OK	Input signal received	Detected video input standard is displayed, for example, 1080/50p (Blank if input lost).
IN2:	FAIL	Input signal failed	
	LOST	No signal received	
	MISM	Mismatch format detected	
OUT:	OK	Output signal delivered	Selected video output standard is displayed, for example, 1080/50p. A \$ symbol indicates that the caption is enabled. (Blank if disabled).
	BLK	Black output delivered	
	FRZ	Frozen output delivered	
	PAT	Pattern output delivered	

5.1.2 Audio Input Status



When **Audio Input Status** is selected, the Information Window displays the following information:

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.).
Audio AES Input	E	Signal is Dolby E.
-----	V	V bit present on audio channel.

5.2 Video

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

- Valid input standards
- The default output standard
- Any required ancillary blanking
- Freeze options on the output image
- The default output

5.2.1 Input Select

The **Input Select** control selects either Input 1 (at connector SER IN 1) or Input 2 (at connector SER IN 2) to be processed by the module.

5.2.2 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.

5.2.3 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.

5.2.4 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.

5.2.5 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.

5.2.6 Freeze

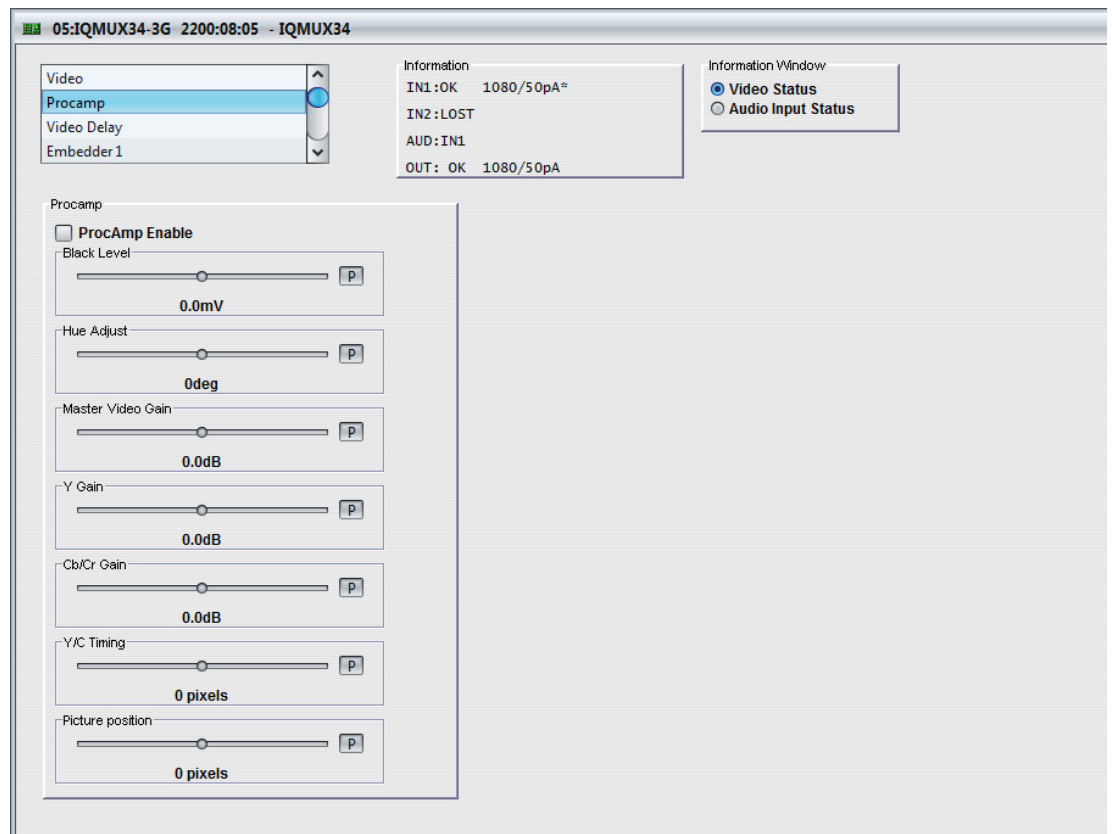
The **Manual Freeze** control freezes/pauses the output. Freeze type can be specified as either **Field** or **Frame**.

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

5.3 Procamp

The **Procamp** screen enables the following 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. 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 Adjust** 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 value 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/3G

The preset value is 0.

5.3.8 Picture Position

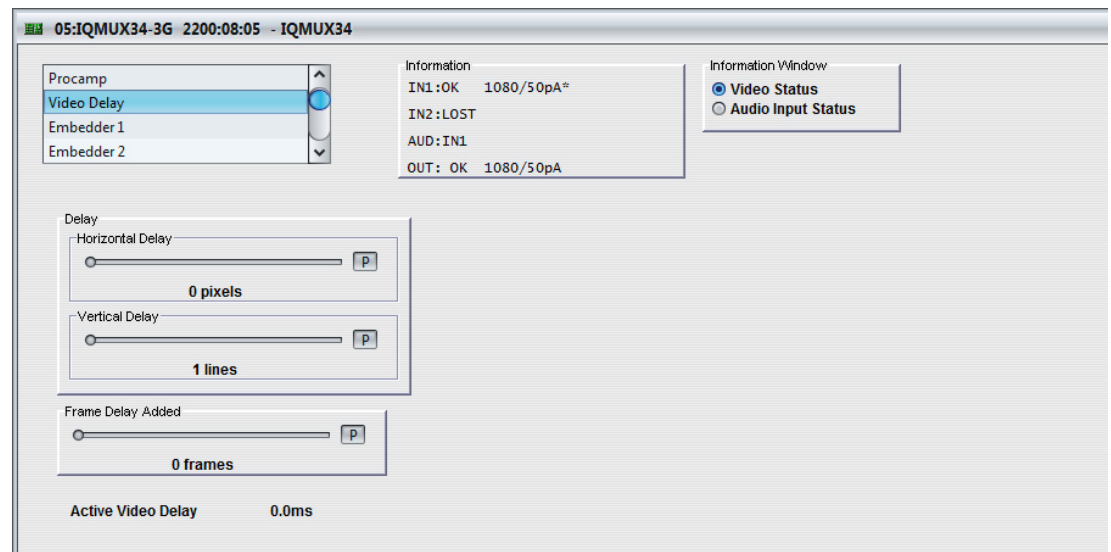
The **Picture Position** control allows the picture position to be adjusted over a range of:

- ± 8 pixels in 2 pixel steps SD
- ± 16 pixels in 2 pixel steps HD/3G

The preset value is 0.

5.4 Video Delay

The **Video Delay** screen enables the video delay mode to be specified.



5.4.1 Horizontal Delay

Use the slider bar to adjust the horizontal delay over a range of 0 to 1 line in 1 pixel steps. The preset value is 0.

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.

5.4.2 Vertical Delay

Use the slider bar to add up to 1 frame of vertical delay in steps of 1 line. The preset value is 0.

5.4.3 Frame Delay Added

You can specify up to nine additional frames of delay using this slider bar.

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.

5.4.4 Active Video Delay

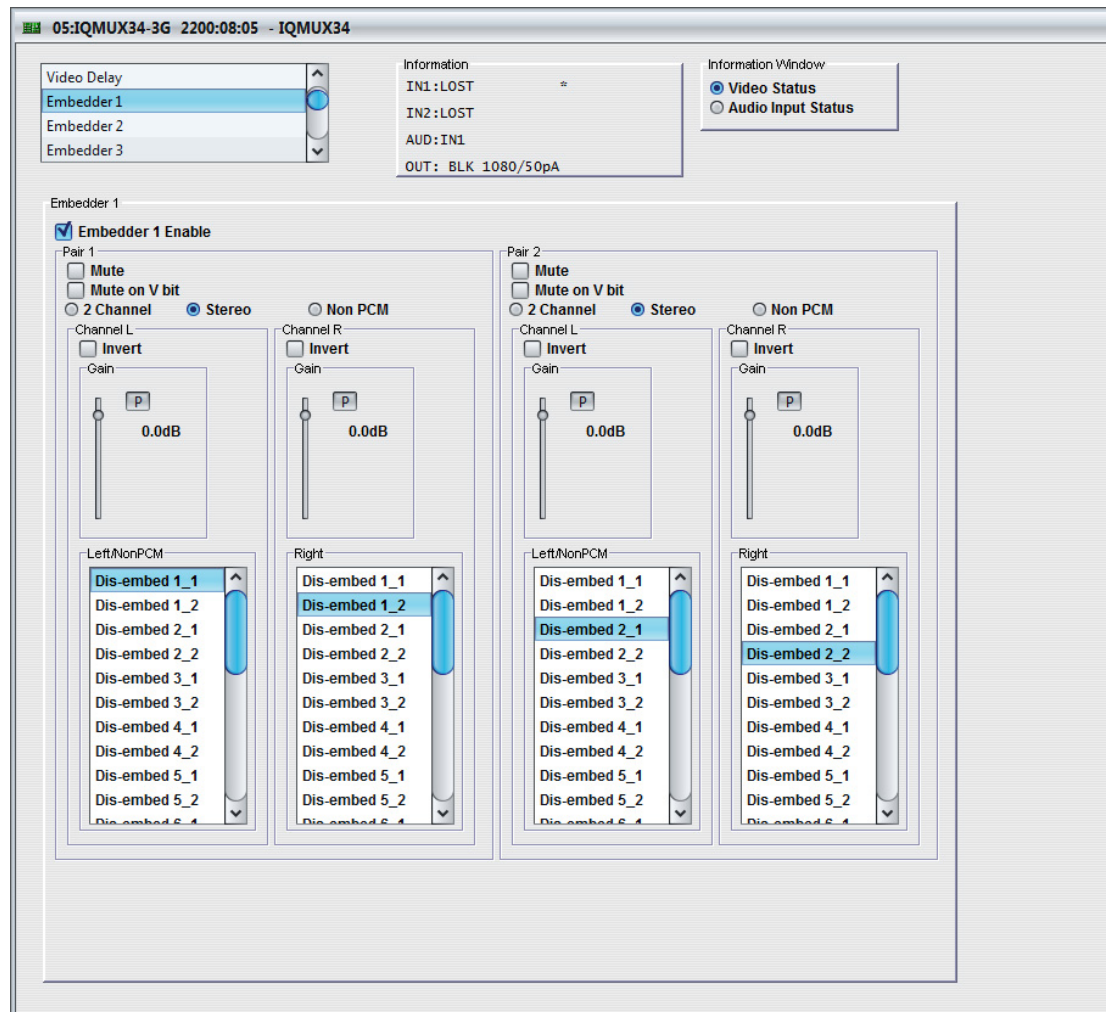
The total active video delay (in ms) is displayed at the bottom of this screen.

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, the controls are only described once in this manual.

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 a PCM source is selected, it will bypass the sample rate converters and be routed to the output. The Procamp and Audio Delay controls will have no effect.

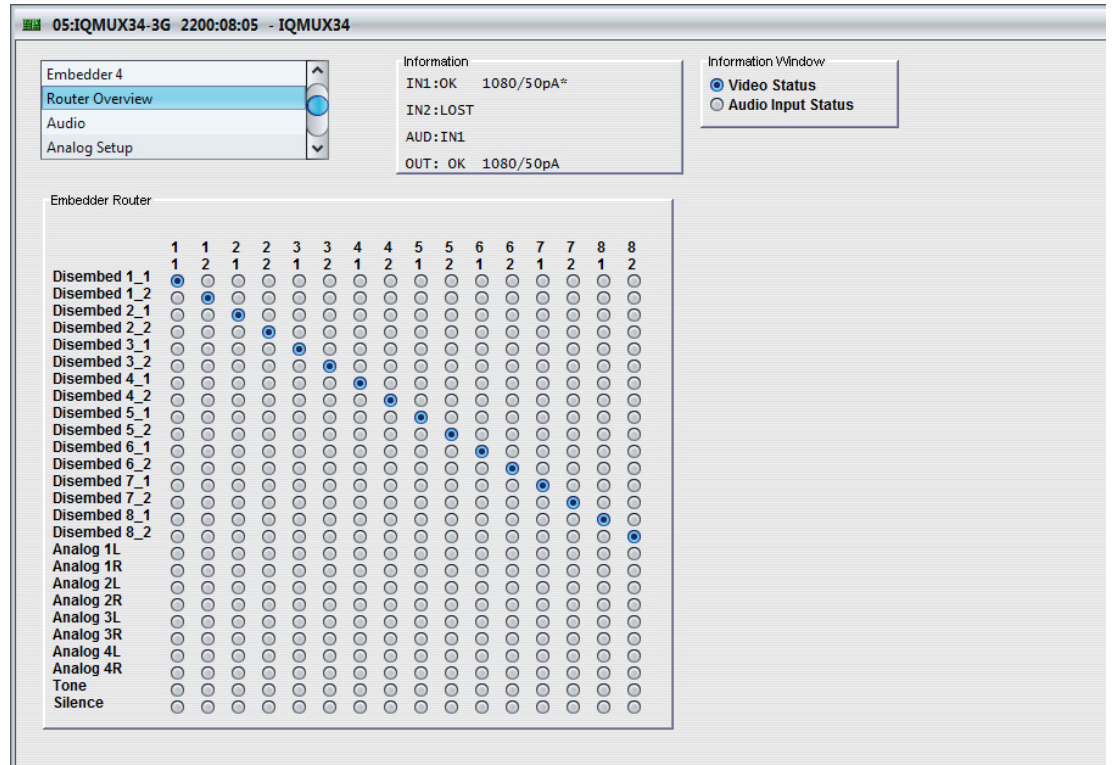
If in PCM mode a Non-PCM source is selected, silence will be embedded.

- **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

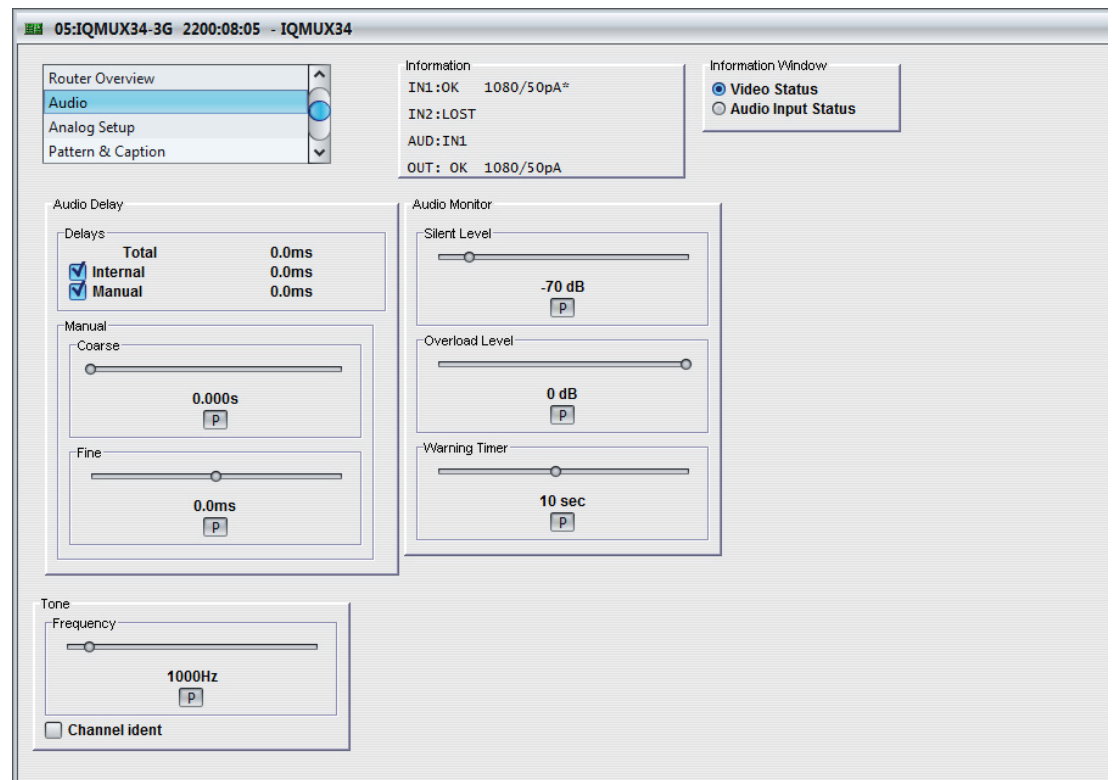
The **Router Overview** screen provides an overview of the embedder routing specified on the Embedder 1 to Embedder 4 screens. Changes that you make to the embedder routes on this screen are applied to the Embedder 1 to Embedder 4 screens (and vice versa). To apply more than simple routing, e.g. to use the gain or inversion controls, you must use the Embedder screens. See page 20.

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 Video Delay menu.
- **Manual:** Selecting this option applies a delay equal the value specified by the Manual Coarse and Manual Fine delays, which are described below.

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 ± 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.

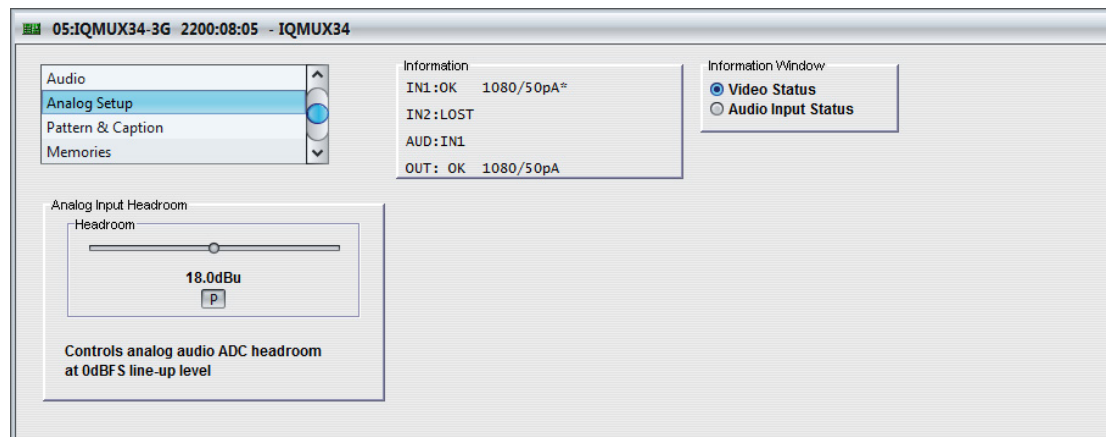
5.7.4 Audio Monitor

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 Analog Setup

The **Analog Setup** screen enables the analog audio ADC headroom to be set.

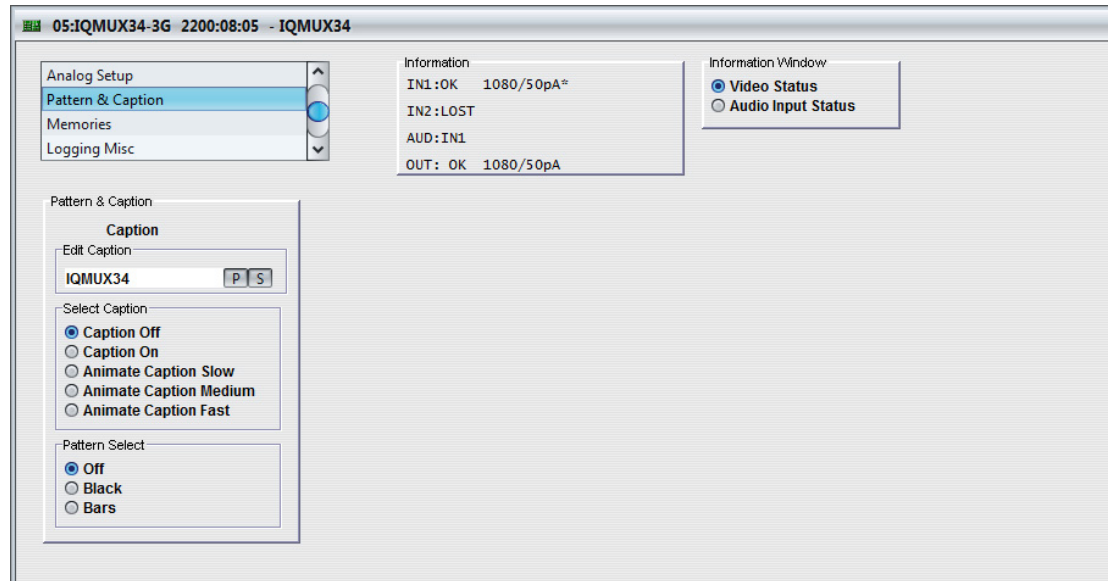


5.8.1 Headroom

Use the slider bar to adjust the analog audio ADC headroom over a range of +12 dBU to +24 dBU. The preset value is 18 dBU.

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

These radio buttons are used to turn the caption on and off, and to apply a slow, medium, or fast animation to the caption. 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

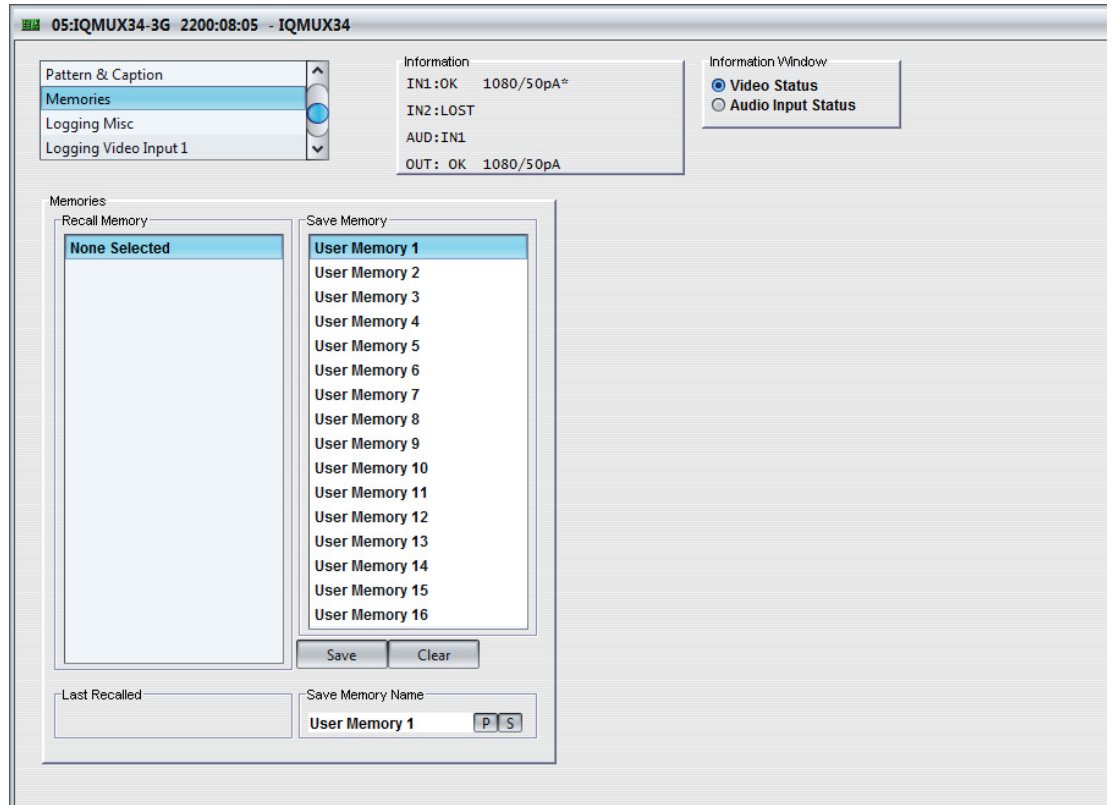
The radio buttons enable/disable pattern generation. The options are:

- 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” – that is, 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.

To clear a memory location:

- In the **Save Memory** column, select a memory location, and then click **Clear**. The current settings stored for that memory are cleared. After you clear a memory location, it disappears from the **Recall Memory** list.

5.10.3 Last Recalled Memory

The **Last Recalled Memory** 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

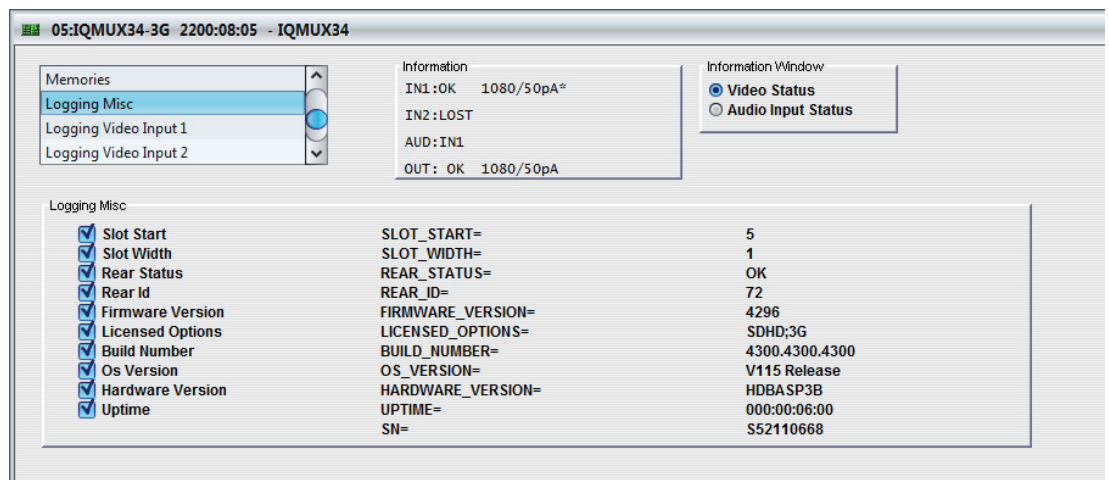
Information about several parameters can be made available to a logging device that is connected to the RollCall network.

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.

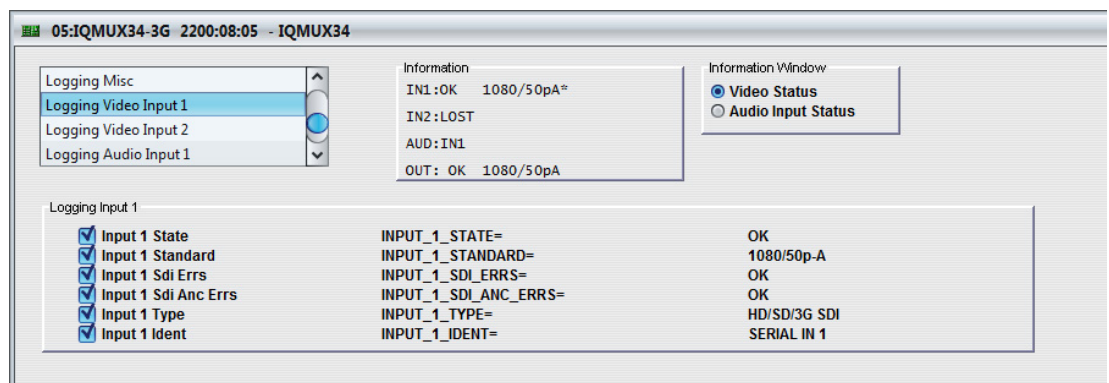
5.11.1 Logging Misc

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



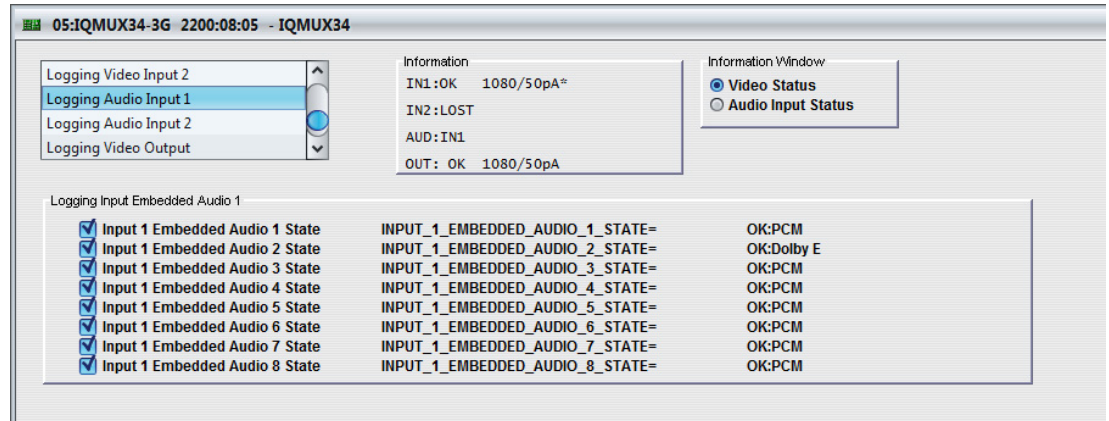
5.11.2 Logging Video Input 1 and 2

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



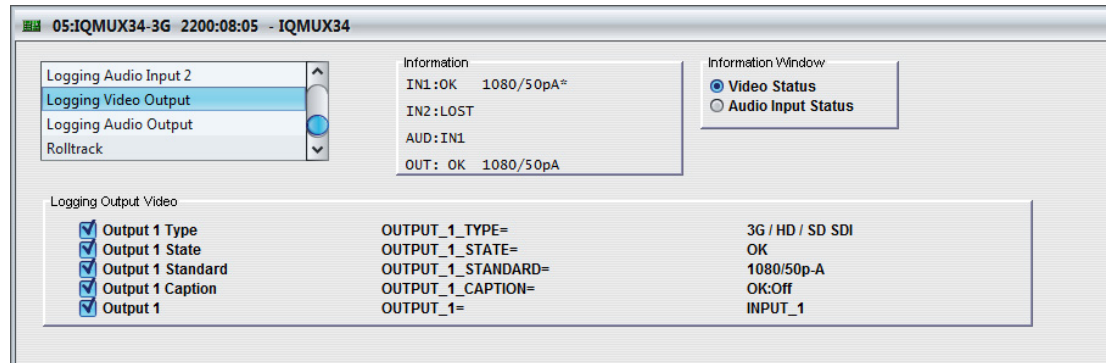
5.11.3 Logging Audio Input 1 and 2

The **Logging Audio Input** screens display the current log values for the eight audio pairs for each channel.



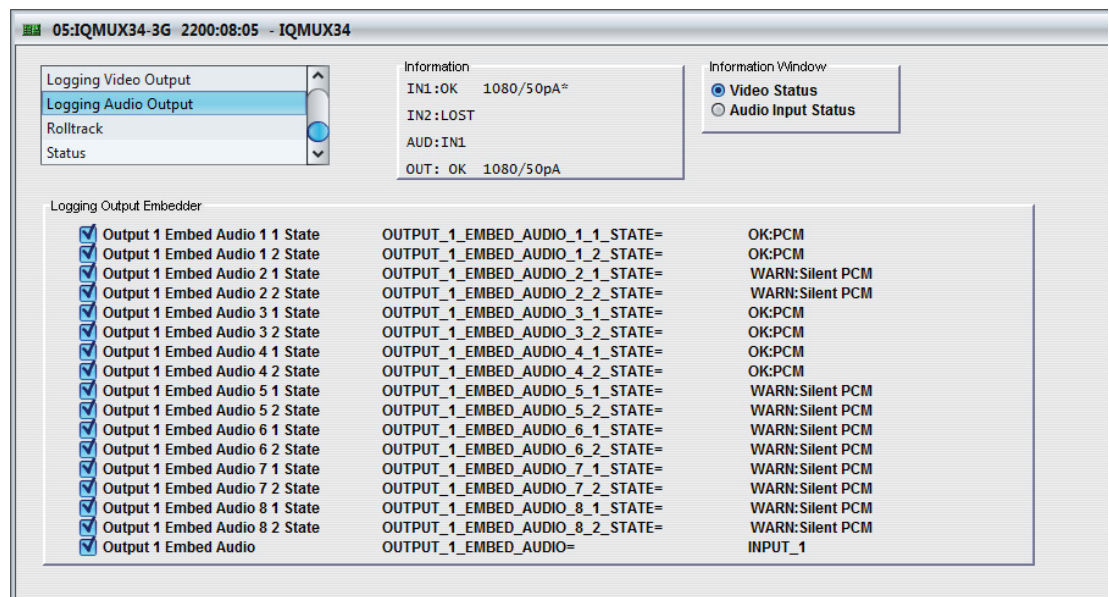
5.11.4 Logging Video Output

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



5.11.5 Logging Audio Output

The **Logging Audio Output** screen displays the current log information for the audio output.



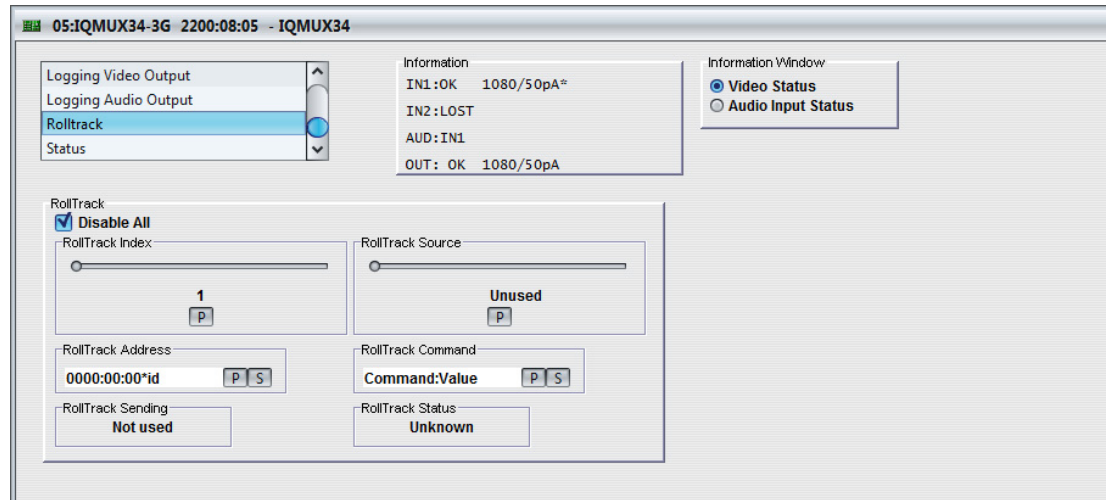
5.11.6 Log Field Descriptions

Log Field	Description
SLOT_START=	The first slot number the rear occupies. Use in conjunction with SLOT_WIDTH to determine the slots that the unit occupies.
SLOT_WIDTH=	The number of slots used by rear and module.1 or 2.
REAR_STATUS=	The status of the rear panel.
REAR_ID=	The rear panel type.
FIRMWARE_VERSION=	The FPGA version.
LICENSED_OPTIONS=	The licensed features installed in the module.
BUILD_NUMBER=	The software build number.
OS_VERSION=	The operating system version.
HARDWARE_VERSION	The hardware build version.
UPTIME=	Shows the time since the last restart (format ddd:hh:mm:ss).
INPUT_1_STATE=	The current input state. Valid values are: <ul style="list-style-type: none"> • OK • WARN:Mismatch - Indicates input and output standards are not the same. • FAIL:Lost • FAIL:Error
INPUT_1_STANDARD=	The current input signal standard. For example, 1080/29i. If the input standard is not recognized or supported the field displays: WARN:Unknown
INPUT_1_SDI_ERRS=	Displays SDI errors. Valid values are: <ul style="list-style-type: none"> • OK • WARN
INPUT_1_SDI_ANC_ERRS=	Displays ANC errors. Valid values are: <ul style="list-style-type: none"> • OK • WARN
INPUT_1_TYPE=	The type of input as specified by the unit's configuration. Valid values are 3G/HD/SD SDI.
INPUT_1_IDENT=	The identifier of the serial data input.
INPUT_1_EMBEDDED_AUDIO_1_STATE= to INPUT_1_EMBEDDED_AUDIO_8_STATE=	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_1_TYPE=	The type of output as specified by the unit's configuration. Valid values are 3G/HD/SD SDI.

Log Field	Description
OUTPUT_1_STATE=	The current output state. Valid values are: <ul style="list-style-type: none"> • OK • WARN:Pattern • WARN:Black • WARN:Freeze
OUTPUT_1_STANDARD=	The current output video standard.
OUTPUT_1_CAPTION=	The current output caption. Valid values are: <ul style="list-style-type: none"> • OK:Off • WARN:On
OUTPUT_1=	The relevant input source for the output video.
OUTPUT_1_EMBED_AUDIO_1_1_STATE= to OUTPUT_1_EMBED_AUDIO_8_2_STATE=	The current embedded output audio state. Valid values are: <ul style="list-style-type: none"> • OK:PCM • OK:Data • OK:DolbyE • WARN:Silent PCM • WARN:Overload PCM • FAIL:Input Lost

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 16 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-definable 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 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.

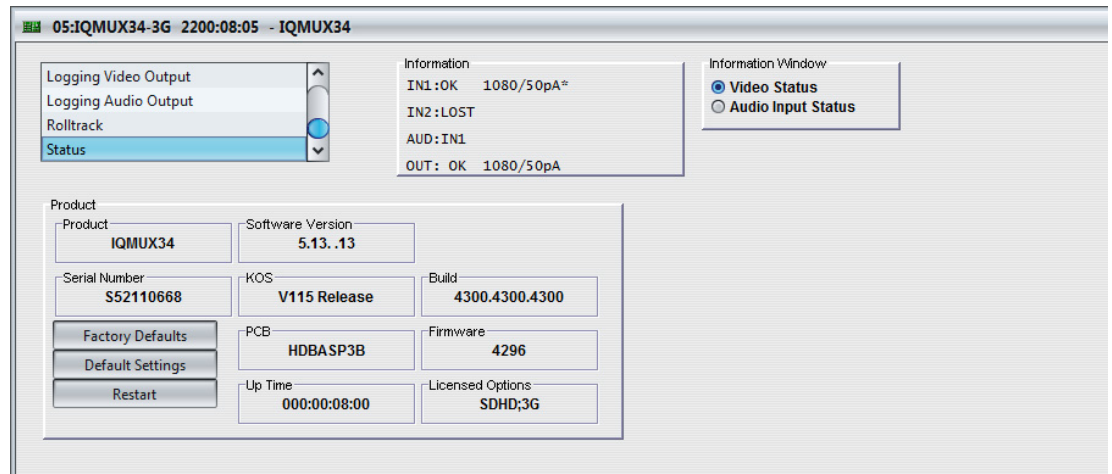
5.12.7 RollTrack Status

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 display basic information about the module, such as the serial number and software versions. Use the functions on the screen 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.
- **KOS:** The operating system version number.
- **Build:** The factory build number. This number identifies all parameters of the module.
- **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 installed licensed options.

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.