



User Instruction Manual

IQHIP00

HD/SD-SDI Hyperion Intelligent Processor Module

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1. Introduction

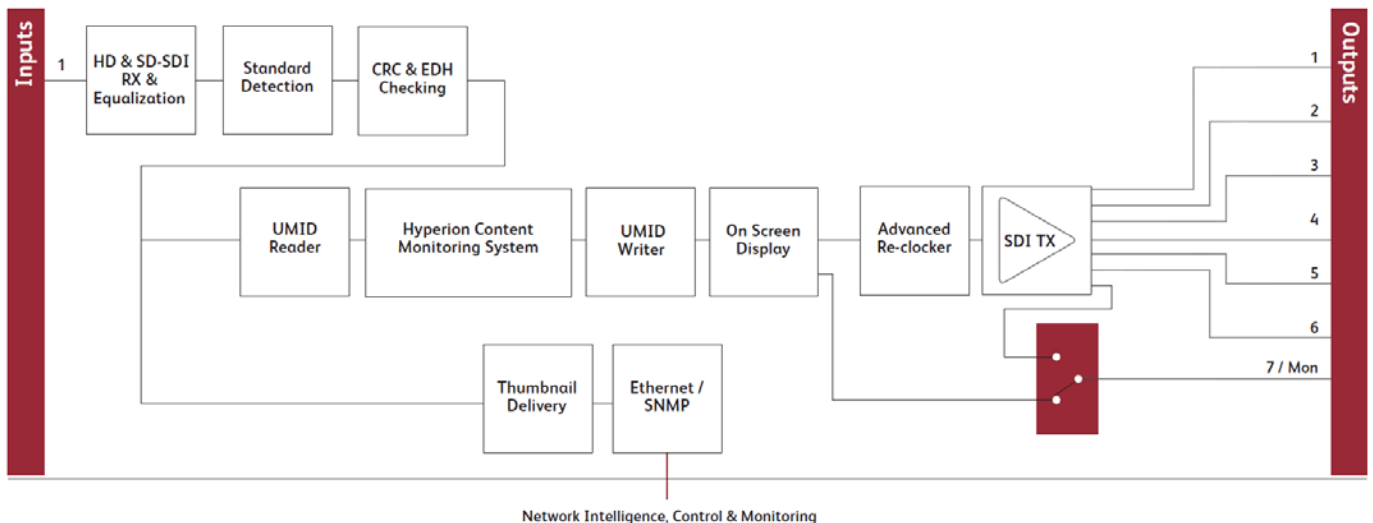
1.1 Module Description

The IQHIP00 is an advanced monitoring module with revolutionary Hyperion content QC capability. Hyperion is designed to continuously and automatically monitor signal content providing verification of whether legal and technical obligations are being met and to provide guidance as to whether the content is within the required parameters to be considered as valid. For video factors such as motion level within the content, the amount of darkness and amount of picture color are monitored. Audio factors reported include Dolby D/E or PCM audio presence, likeness and level information such as silent, quiet, loud and overload.

Picture regions can be monitored to allow for animated logos and on-screen graphics such as crawls. Alarm thresholds can all be adjusted allowing profiles to be set by the user for different material types (genres).

Content may be tracked through the broadcast chain by the insertion and reading of SMPTE UMIDs or Internal House Number, title and duration metadata. This data can be used to track content, verify that the correct content is being transmitted and even frame count the duration of every piece of content to ensure contractual obligations are being met. For ingest applications timecode information can also be interpreted and stamped on any Hyperion alarms to enable efficient location of QC alarms.

For remote content identification, delivery of video thumbnail images and audio level monitoring provide a secondary manual level of confidence that content is correct at both internal and remote locations. All alarms from this product can be integrated into the major Video display wall processors to streamline alarm reporting and reported through RollMap Infrastructure Management system or via SNMP to other vendor Control and Monitoring systems..



Block Diagram for IQHIP0026-1A

1.2 Order Codes

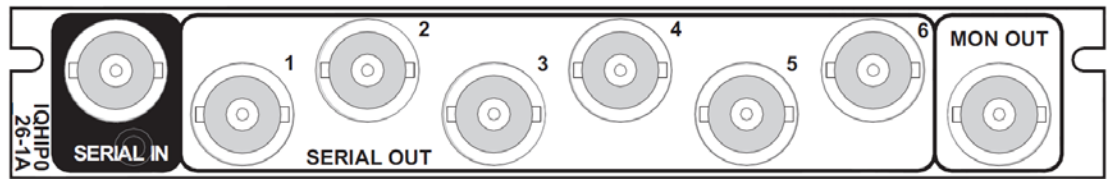
The following product order codes are covered by this manual:

- IQHIP0026-1A** Hyperion Intelligent processing and content monitoring module. 6 main HD/SD-SDI outputs, 1 main HD/SD-SDI or monitoring OSD output.

1.3 Rear Panel View

The following rear panel types are available:

IQHIP0026-1A



1.4 Enclosures

The IQHIP00 modules can only be fitted into the enclosures, shown below.

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



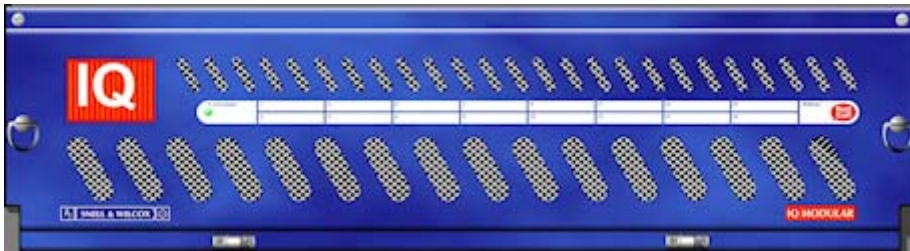
Enclosure order code IQH1A-S-P



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 IQHIP00 provides the following features:

- Does this module suit your application?
- Intelligent processing module with integrated Hyperion QC monitoring
- Dedicated monitoring output with OSD for hyperion audio/video alarms and audio level meter information
- Automated content QC, suited to:
 - Multi-channel playout facilities and complimentary monitoring of high value content
 - Automated ingest processes including timecode logging for accurate location of Hyperion alarms
 - Remote location monitoring such as business continuity sites and unmanned teleport facilities
- Real Time content QC against genre profiles ensure any on air issues are identified with minimal potential impact on revenue, such as scheduling errors or dropped frames on commercial content
- Remote monitoring over TCP/IP via video Thumbnails
- Legal and Technical validation of signal including detection and reporting of closed captions, content advisory rating, XDS Program data
- Automated ingest QC significantly increases throughput efficiency over manual QC processes
- Standards supported:
 - 625/50, 525/59
 - 720/50p, 1080/25i
 - 720/59p, 1080/29i
- Can be used for current SD systems that will later upgrade to HD

2. Technical Specification

Inputs and Outputs	
Signal Inputs	
Electrical	1.5 Gbps HD-SDI, SMPTE 292M, 270 Mbps SDI, SMPTE 259M-C
Connector / Format	BNC / 75 Ohm panel jack on standard Snell connector panel
Input Cable Length	Up to 140 m Belden 1694A @ 1.5 Gbps (40 m input cable length and 35 m output cable length, relay bypass version. Belden 1694A @ 1.5 Gbps) Up to 350 m Belden 1694A @ 270 Mbps
Signal Outputs	
Electrical	1.5 Gbps HD-SDI, SMPTE 292M, 270 Mbps SDI, SMPTE 259M-C
Connector/Format	BNC/ 75ohm panel jack on standard Snell connector panel HD / SD-SDI Outputs x 7 (1 selectable main or monitoring)
Return Loss	>-15 dB
Controls	
Indicators	
Power	OK (Green)
CPU	OK (Green flashing)
FPGA	OK (Yellow flashing)
Summary	OK (Green), Warning (Yellow), Error (Red)
Functions	
Main Output OSD	On/Off
Monitor Output OSD	On/Off
Monitor Output Select	Main/Monitoring
Video	Video Thumbnails over TCP/IP Motion Level (Stillish) Picture Darkness (Blackish) CRC/EDH Reporting Average Picture Level Luma High/Low Chroma High/Low Chroma/Luma Underflow Video Bit Depth Black Input Status Input Standard Freeze Detect

Audio	Audio Presence Audio Type Detection (PCM, Non-PCM, Dolby E, AC3, MPEG Audio (SMPTE 338M)) Audio Bit Depth Audio Level Metering Audio Silence Audio Quiet Audio Loud Audio Overload Audio Out of Phase (Polarity) Audio Mono/Stereo Detection
Metadata	SMPTE UMID (Insert, Report and Scrub) Program ID House Number Watermarking (Insert, Report and Scrub) Closed Captions Detection (CEA608, CEA708) Signaling detection (WSS, AFD (inc SMPTE 2016), VI) Content Advisory Rating (XDS, V-chip) ANC Timecode (720p, 1080i) VITC Timecode (525, 625) User Definable ANC Detectors Dolby E Guardband reporting Timecode Logging
On Screen Display	Picture Region Configuration On/Off Audio Level Meters Audio Presence and Type Content advisory system and rating 2 x 19 character caption generators Timecode display Average picture level
Specifications	
Electrical	
Standards Supported	625/50, 525/59 1080/25i, 1080/29i, 720/50p, 720/59p
Power Consumption	
Module Power Consumption	7 W (max.)

3. Connections

This section describes the physical input and output connections provided by the IQHIP00.

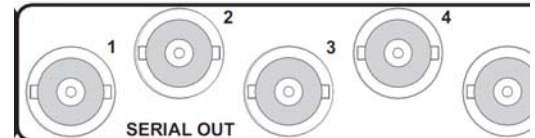
3.1 SDI Inputs

The serial digital input is made to the unit via a BNC connector that terminates in 75 Ohms.



3.2 SDI Outputs

The 6 serial digital outputs of the unit are made via BNC connectors that terminate in 75 Ohms.



3.3 Monitor Output

This monitor output is made via a BNC connector that terminates in 75 Ohms.



4. Card Edge LEDs

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



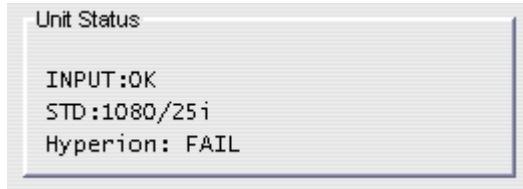
LED	Color	Description
POWER +	Green	Indicates that a positive power supply is present.
POWER -	Green	Indicates that a negative power supply is present.
CPU OK	Green	Flashes to indicate that the CPU is running.
ERROR	Red	This LED indicates no input.
WARNING	Yellow	This LED indicates Cyclic Redundancy Check (CRC) or Error Detection and Handling (EDH) errors are being detected.
OK	Green	Indicates that the module has a valid input signal.

5. Controlling the IQHIP00 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 input, standard and status of the hyperion module.

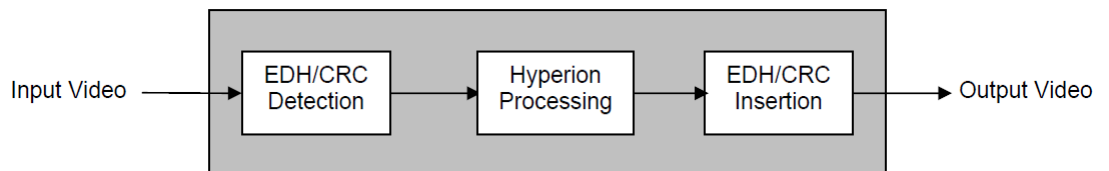
When **Video Status** is selected, the status of the video input and reference is displayed:



Name	Status	Description
INPUT:		Displays the status of the video input.
	OK	Valid input signal received. Detected standard of input signal, or last valid input signal, is displayed, e.g. 1080/29i.
	LOST	No input signal received.
	FAIL	Invalid input signal received, e.g. frame rate differs between input and output.
	MISM	Valid input signal received but different (mismatched) format to the selected output, e.g. input is 1080/29i and output is 1080/29p.
STD:		Displays the operating standard of the input, or last valid signal.
	Unknown	The input signal standard is not recognized.
	1080/25i	Operating standard is displayed, e.g. 1080/25i.
Hyperion:		Displays the summary status of the hyperion module. A FAIL report overrides a WARN report which overrides an OK report (see <i>Alarm Overview</i> below for further information).
	FAIL	If one or more alarms report FAIL.
	WARN	If one or more alarms report WARN.
	OK	If all alarms report OK.

5.1.1 EDH/CRC Detection/Insertion

The Hyperion Distribution Amplifier is capable of detecting CRC (HD-SDI) and EDH (SD-SDI) errors on incoming video streams. It also recalculates and inserts CRC and EDH checksums and data on the outgoing video.



5.1.2 Alarm Overview

Various alarm conditions may be selected by the user and reported as a summary alarm on the Information Window.

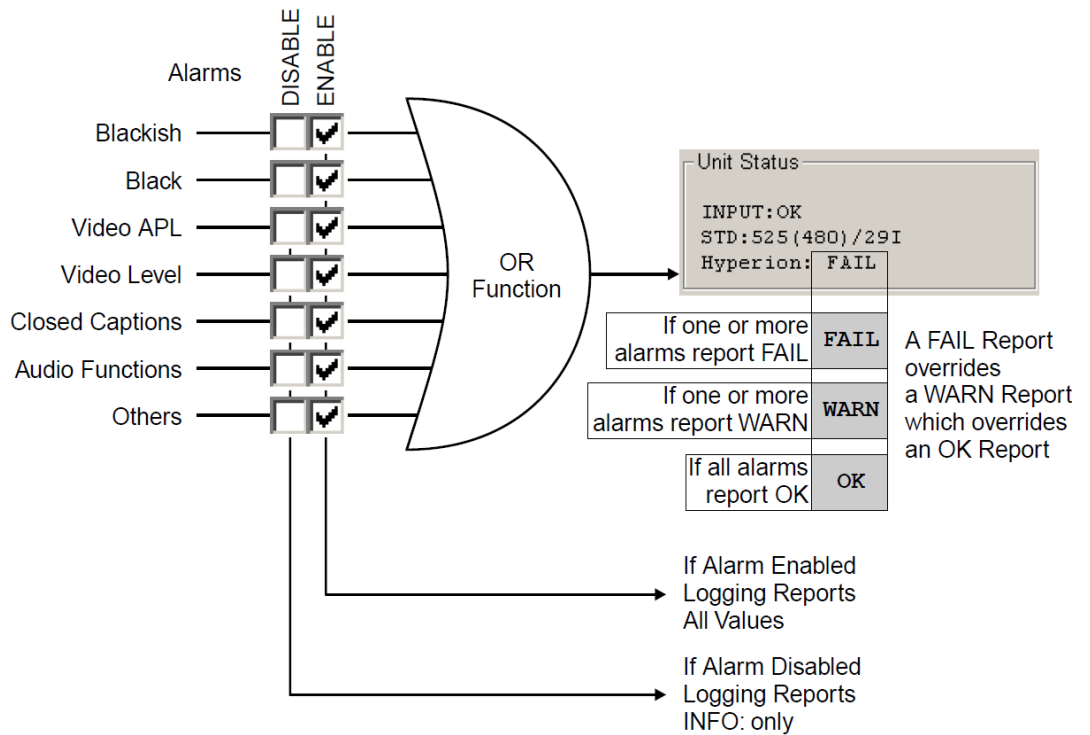
When **Enable Alarm** is checked, the detector reports all values for logging. When an alarm is disabled, the detector operates in the background but only reports INFO for logging.



All alarms are monitored and reported on with the following priority:

- If all alarms report OK the result is OK.
- If one or more alarm reports WARN the result is WARN and overrides any OK reports.
- If one or more alarm reports FAIL the result is FAIL and overrides any WARN or OK reports.

Selecting the **Reset** button will restart the fail count from zero. When the **Reset When OK** button is checked, the fail count is reset whenever the status is reported as OK.



Note: If the **Enable Updates** box is unchecked the fail count will not appear.

If the source signal has a time code, when an alarm occurs this code is recorded in the log.

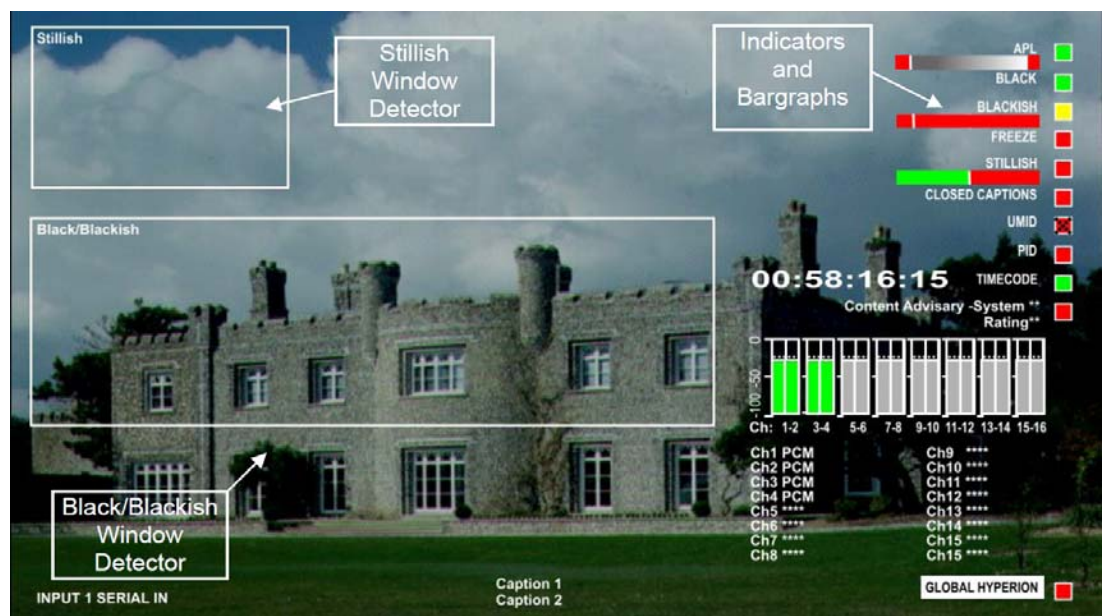
5.2 Black/Blackish

The Hyperion Black and Blackish modules provide a means of detecting dark or blackish areas within SDI SD or HD video. The Blackish function is different to the average picture luminosity in that the algorithm curve maps closer to the human eye, rather than a straight line as related to luminosity. Any small area that is brilliant white will trigger a large blackish response, whereas, the average picture luminosity for the same image would be very small. There are two blackish functions installed within Hyperion. The first, Black, is a blackish detector with a zero threshold. This detector is very selective and will be triggered if the whole window area is black. The second may have its threshold (see below) adjusted for custom blackish settings.

Many of the parameters require a condition to exist for a set duration before logging that there is an issue. These parameters feature 3 temporal controls; **Warning**, **Fail** and **Fail Hold** timers. Each timer is set by entering the number of fields/frames as a duration (the duration is in fields for interlace standards and in frames for progressive standards).

On-Screen Display Functions

When the on-screen display functions are enabled (see *On-Screen Display*), they will be visible on the outgoing video as show below.



Detector Windows

A HYPERION parameter with a detector window can either detect the parameter inside the window, outside the window or over the entire screen.

The controls that define the detector window are x and y start co-ordinates within the active area of the picture, and two length parameters: width and height.

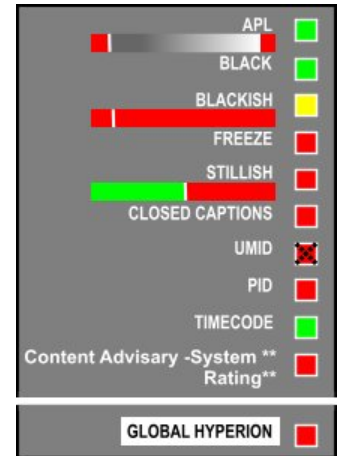
When a window is selected, the windowed area defined by the controls below will be visible on the outgoing video. Also visible at the top of the window will be a real time bar graph display of the detected value and below that a real time bar graph of Luminance APL.

Black/Blackish Color Indicators

When this function is enabled (see *On-Screen Display*), the On-screen indicator for the Black and Blackish detectors will be activated.

The color of the indicator has the following meanings:

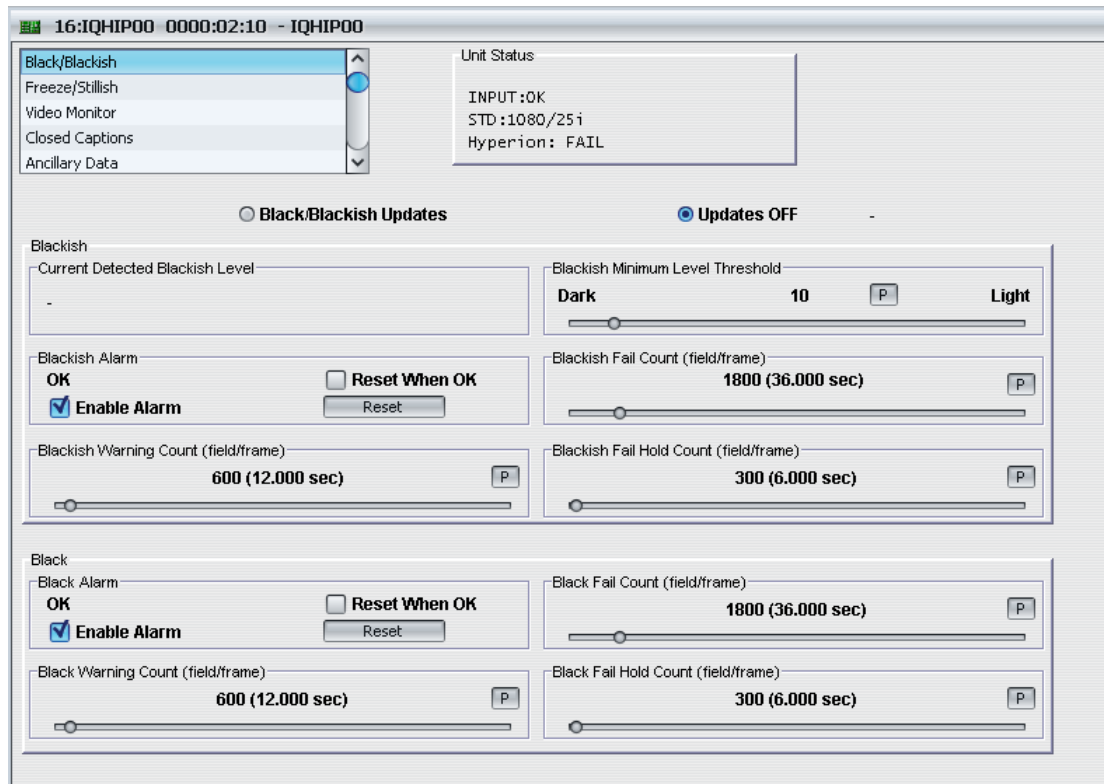
- **Green:** The module has not detected black or blackish video set by the thresholds in the set window as set by the 'black or blackish Warning/Fail' temporal controls.
- **Yellow:** The module has detected black or blackish video set by the thresholds in the set window as set by the 'black or blackish Warning' temporal controls.
- **Red:** The module has detected black or blackish video set by the thresholds in the set window as set by the 'black or blackish Fail' temporal controls.



Note: When an indicator function is disabled the boxes will contain an X.

Black Blackish Screen

The **Black/Blackish** screen enables the black/blackish areas within SDI-SD or -HD video to be monitored.



5.2.1 Black/Blackish Updates

When this button is selected, detector reports will be enabled for this function only. All other functions that have an update button will have reports disabled. This action will be active for a

maximum time of 5 minutes and the remaining time will be shown by the Timeout display; at the end of this time **Updates OFF** will be automatically selected.

Note: This button cannot be unchecked; to disable the updates check the **Updates OFF** button. When this button is checked the **Updates OFF** function will be implemented on all other screens; i.e. it is a global command.

At power up, and when Factory Defaults or Restart Unit are selected, **Updates OFF** will be automatically selected.

5.2.2 Current Detected Blackish Level

This will normally display three sets of figures (e.g. **85 < 88 < 90**). The first is the minimum level, the second is the current value and the third is the maximum level that has been detected over the monitoring period.

Note: When the monitoring period has ended (either by **Updates OFF** being selected or the timeout period exceeded) the second figure (current value) will be replaced by - - and **(held)** will be displayed indicating that the figures have been frozen.

This current blackish value is the dividing line between the blackish detector detecting blackish or not blackish. If the threshold setting is below this value, the detector will not detect blackish, if above, then the detector will detect blackish.

Note: Due to the slow update rate of this value, it should only be used as a very approximate indication of the level of blackish. A more accurate indication can be seen by using the Real Time on Screen Bar Graph (see *On-Screen Display*).

5.2.3 Blackish Minimum Level Threshold

This allows the degree of blackish level that triggers the detector, to be set. The range is from 0 to 100 units in 1-unit steps. Factory default is 10.

A visual indication of the set threshold against detected blackish can be seen by enabling the On Screen Window and real time bar graph (see *On-Screen Display*).

5.2.4 Blackish Alarm

This item allows alarm reporting to be enabled and shows the status of the Blackish alarm.

- **Enable Alarm:** When this option is checked, alarm status is reported and logged. When an alarm is disabled, the detector operates in the background but only reports INFO for logging
- **Reset When OK:** When this button is checked, the fail count is reset whenever the status is reported as OK.
- **Reset:** Selecting this button will restart the fail count from zero.

For more information on alarms, see "Alarm Overview" on page 13.

5.2.5 Blackish Warning Count (field/frame)

This slider sets the duration (in fields/frames) that the condition (exceeding the blackish threshold) has to be detected and maintained before a warning condition is reported. The range of control is from 7 to 16000 in 1-unit steps. Factory default is 600.

Note: The warning count cannot be set to be greater than the fail count. If the On-Screen Display is enabled, the yellow indicator will come on indicating a warning.

5.2.6 Blackish Fail Count (field/frame)

This slider sets the duration (in fields/frames) that the condition (exceeding the blackish threshold) has to be detected and maintained before a fail condition is reported. The range of control is from 7 to 16000 in 1-unit steps. Factory default is 1800.

Note: If the On-Screen Display is enabled, the red indicator will come on indicating a fail condition.

5.2.7 Blackish Fail Hold Count (field/frame)

This sets the duration (in fields/frames) that the condition (not exceeding the blackish threshold) has to be detected and maintained before the fail condition is cleared. The range of control is from 1 to 16000 in 1-unit steps. Factory default is 300.

Note: If the On-Screen Display is enabled, the green indicator will come on.

5.2.8 Black Alarm

This item allows alarm reporting to be enabled and shows the status of the Black alarm.

- **Enable Alarm:** When this option is checked, alarm status is reported and logged. When an alarm is disabled, the detector operates in the background but only reports INFO for logging
- **Reset When OK:** When this button is checked, the fail count is reset whenever the status is reported as OK.
- **Reset:** Selecting this button will restart the fail count from zero.

For more information on alarms, see “Alarm Overview” on page 13.

5.2.9 Black Warning Count (field/frame)

This slider sets the duration (in fields/frames) that the condition (exceeding the black threshold) has to be detected and maintained before a warning condition is reported. The range of control is from 7 to 16000 in 1-unit steps. Factory default is 600.

Note: The warning count cannot be set to be greater than the fail count.
If the On-Screen Display is enabled, the yellow indicator will come on indicating a warning.

5.2.10 Black Fail Count (field/frame)

This slider sets the duration (in fields/frames) that the condition (exceeding the black threshold) has to be detected and maintained before a fail condition is reported. The range of control is from 7 to 16000 in 1-unit steps. Factory default is 1800.

Note: If the On-Screen Display is enabled, the red indicator will come on indicating a fail condition.

5.2.11 Black Fail Hold Count (field/frame)

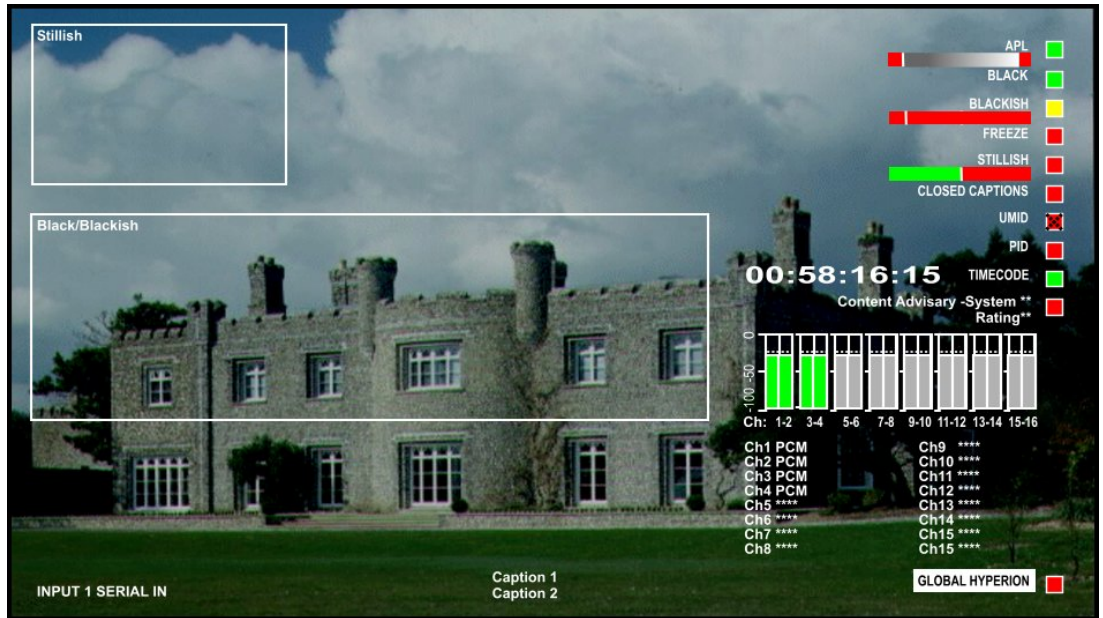
This sets the duration (in fields/frames) that the condition (not exceeding the blackish threshold) has to be detected and maintained before the fail condition is cleared. The range of control is from 1 to 16000 in 1-unit steps. Factory default is 300.

Note: If the On-Screen Display is enabled, the green indicator will come on.

5.3 Freeze/Stillish

This function detects video that has no and/or very little movement. The degree of movement that triggers the detector is set by the Stillish threshold setting. This detector has a single detector window to allow the detector to be focused upon a particular part of the video image.

A HYPERION parameter with a detector window can either detect the parameter inside the window, outside of the window or over the entire screen. The controls that define the detector window are x and y start co-ordinates within the active area of the picture, and two length parameters, Width and Height.



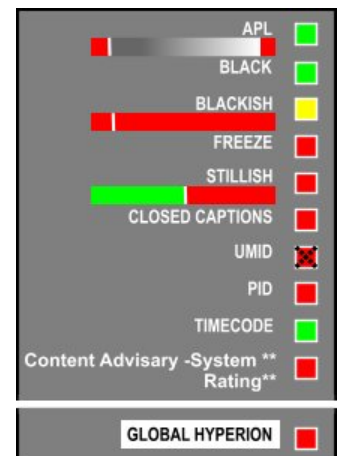
When a window is selected (see *On-Screen Display*), the windowed area defined by the controls below will be visible on the outgoing video. Also visible will be a real time bar graph display of the detected value.

Freeze/Stillish Color Indicators

When this function is enabled, the On-screen indicator for the Freeze/Stillish detector will be activated.

The color of the indicator has the following meanings:

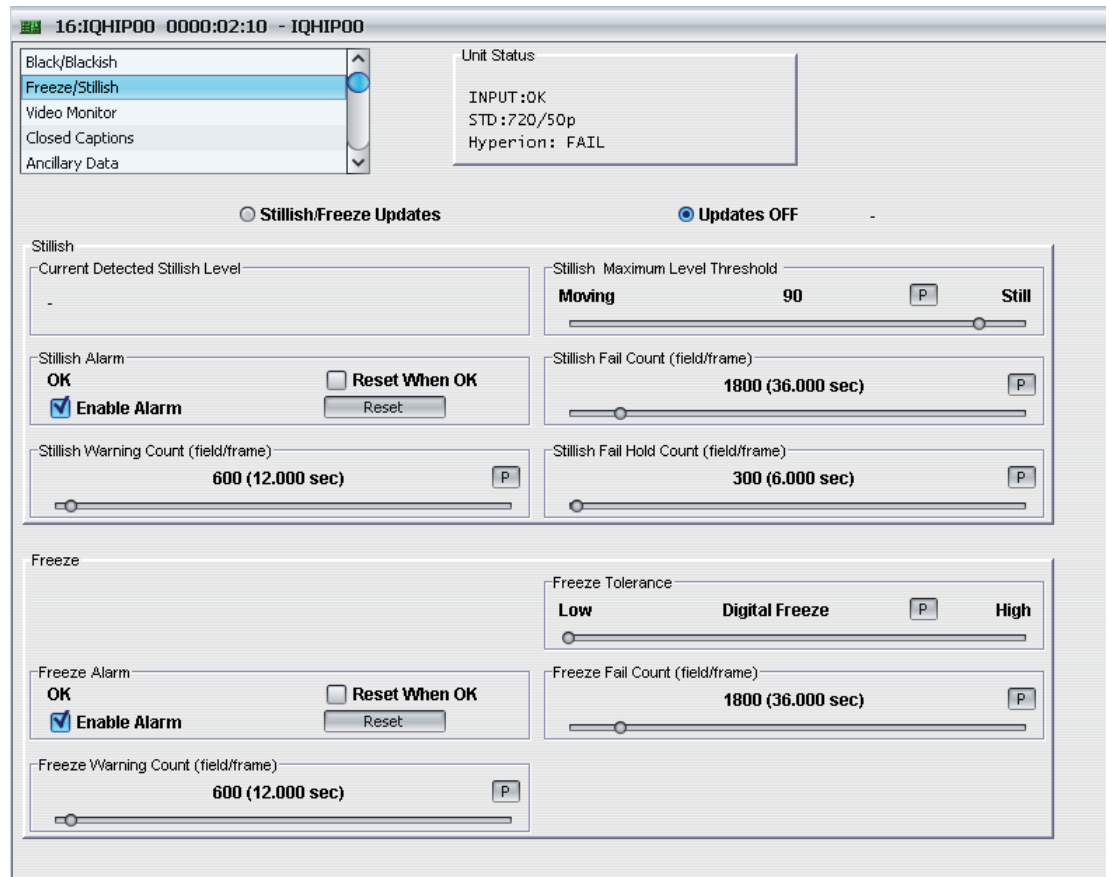
- **Green:** The module has not detected a freeze in the set window as set by the "freeze or stillish Warning/Fail" temporal controls.
- **Yellow:** The module has detected a freeze in the set window as set by the "freeze or stillish Warning" temporal controls.
- **Red:** The module has detected black or blackish video set by the thresholds in the set window as set by the 'freeze or stillish Fail' temporal controls.



Note: When an indicator function is disabled the boxes will contain an X.

Freeze/Stillish Screen

The **Freeze/Stillish** screen provides three temporal controls: warning, fail and fail hold. These are used to determine how long a true condition has to be detected and maintained before either a warning or a fail condition is reported.



5.3.1 Stillish/Freeze Updates

When checked, the detector reports will be enabled for this function only but for all other functions (that have an update button) the reports will be disabled. This action will be active for a maximum time of 5 minutes and the remaining time will be shown by the Timeout display; at the end of this time **Updates OFF** will be automatically selected.

Note: This button cannot be unchecked; to disable the updates check the **Updates OFF** button.

When this button is checked the **Updates OFF** function will be implemented on all other screens; i.e. it is a global command.

At power up and when Factory Defaults or Restart Unit are selected, **Updates OFF** will be selected.

5.3.2 Current Detected Stillish Level

This will display three sets of figures. The first is the minimum level, the second is the current value and the third is the maximum level that has been detected over the monitoring period.

Note: When the monitoring period has ended (either by **Updates OFF** being selected or the timeout period exceeded) the second figure (current value) will be replaced by - - and **(held)** will be displayed indicating that the figures have been frozen.

The current value is the current stillish level where 1 (minimum) indicates a very large amount of motion and 100 (maximum) indicates a complete video freeze.

Note: Due to the slow update rate of this value, it should only be used as a very approximate indication of the level of motion. A more accurate indication can be seen by using the Real Time on the Screen Bar Graph.

5.3.3 Stillish Minimum Level Threshold

This allows the degree of movement that triggers the detector to be set. The range is from 0 to 100 units in 1-unit steps. Factory default is 90.

A threshold setting of 100 would require still video to alarm.

A threshold setting of 1 would alarm unless the video is 100% moving (high movement rate).

A visual indication of the set threshold against detected motion can be seen by enabling the On Screen Display and real time bar graph.

5.3.4 Stillish Alarm

This item allows alarm reporting to be enabled and shows the status of the Stillish alarm.

- **Enable Alarm:** When this option is checked, alarm status is reported and logged. When an alarm is disabled, the detector operates in the background but only reports INFO for logging
- **Reset When OK:** When this button is checked, the fail count is reset whenever the status is reported as OK.
- **Reset:** Selecting this button will restart the fail count from zero.

For more information on alarms, see "Alarm Overview" on page 13.

5.3.5 Stillish Warning Count (field/frame)

This is the setting for how many Stillish flagged fields/frames (depending on whether the input video standard is of an interlaced or progressive type) the stillish detector module should go before flagging a WARNING. The range of control is from 12 to 16000 in 1-unit steps.

Note: The warning count cannot be set to be greater than the fail count.
If the On-Screen Display is enabled, the yellow indicator will come on indicating a warning.

5.3.6 Factory Stillish Fail Count (field/frame)

This is the setting for how many Stillish flagged fields/frames (depending on whether the input video standard is of an interlaced or progressive type) the stillish detector module should go before flagging a Fail. The range of control is from 12 to 16000 in 1-unit steps. Factory default is 1800.

Note: If the On Screen Indicators are enabled, the green/yellow indicators will extinguish and the red indicator will come on.

5.3.7 Stillish Fail Hold Count (field/frame)

This is the setting for how many NON stillish flagged fields/frames (depending on whether the input video standard is of an interlaced or progressive type) the stillish detector module should go before clearing the FAIL condition. The range of control is from 1 to 16000 in 1-unit steps. Factory default is 300.

Note: If the On-Screen Display is enabled, the green indicator will come on.

5.3.8 Freeze Alarm

This function detects true video freeze conditions, where successive fields or frames - dependant on video standard, either interlaced or progressive - are frozen. This function uses the same window for monitoring as is used for the Stillish detector.

- **Enable Alarm:** When this option is checked, alarm status is reported and logged. When an alarm is disabled, the detector operates in the background but only reports INFO for logging
- **Reset When OK:** When this button is checked, the fail count is reset whenever the status is reported as OK.
- **Reset:** Selecting this button will restart the fail count from zero.

For more information on alarms, see "Alarm Overview" on page 13.

5.3.9 Freeze Warning Count (field/frame)

This is the setting for how many frozen flagged fields/frames (depending on whether the input video standard is of an interlaced or progressive type) the Freeze detector module should go before flagging a WARNING. The range of control is from 12 to 16000 in 1-unit steps.

Note: The warning count cannot be set to be greater than the fail count.
If the On-Screen Display is enabled, the yellow indicator will come on indicating a warning.

5.3.10 Factory Tolerance

Under certain conditions, an image may appear to be static, when it is in fact not digitally frozen. For example, if a source has been compressed and then uncompressed, although it may appear to be static, due to compression artifacts, it is not digitally frozen. This control specifies the freeze sensitivity level, allowing the level of freeze detection to be specified.

When the slider bar is set to low, the words **Digital Freeze** are observed above it. Only an absolute pixel accurate digital freeze will trigger the detector.

When the slider bar is moved away from the extreme left the words **Digital Freeze** change to a number representing the sensitivity on a scale 1 to 10, 1 being the least tolerant, 10 being the most, i.e. On a setting of 10, a fair degree of movement is still deemed as frozen.

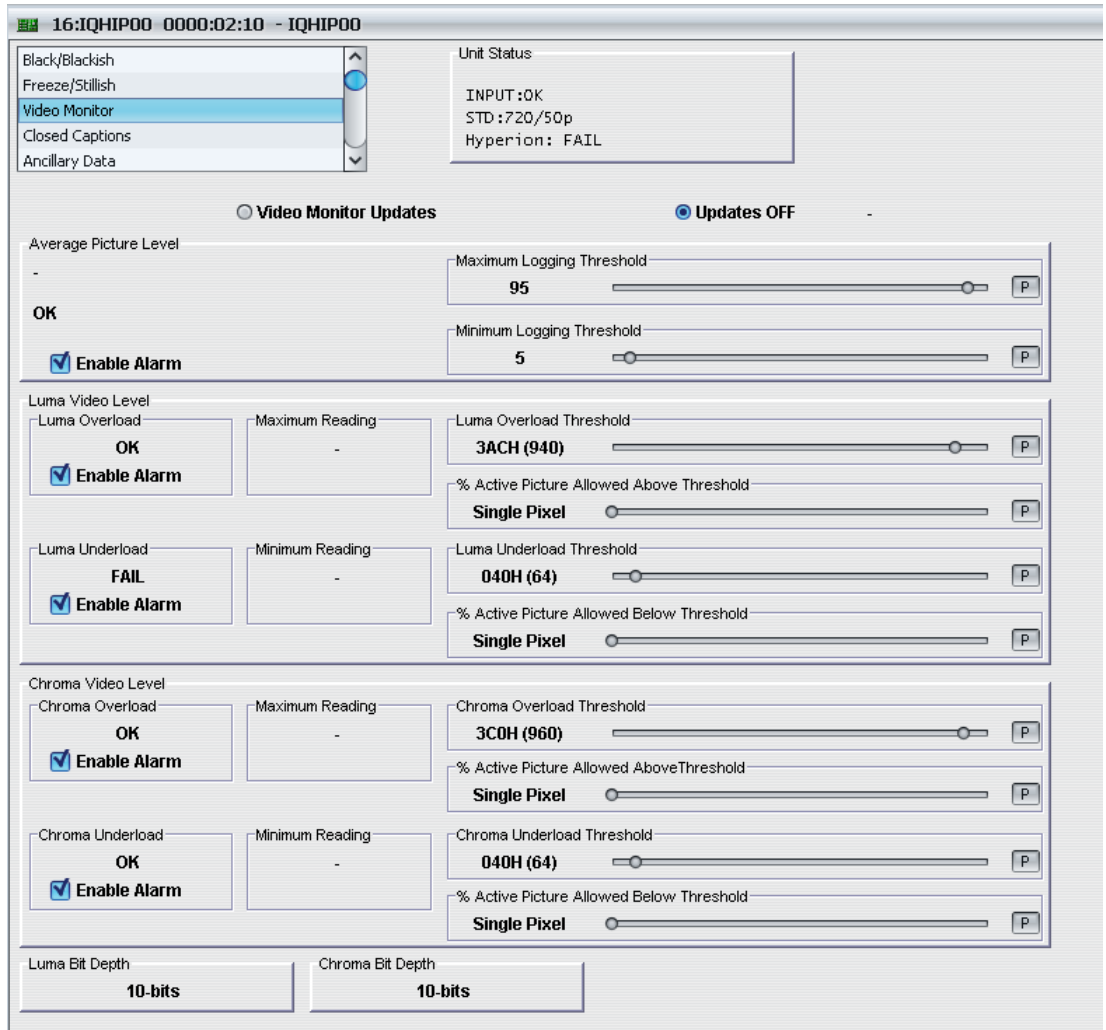
5.3.11 Freeze Fail Count (field/frame)

This is the setting for how many frozen flagged fields/frames (depending on whether the input video standard is of an interlaced or progressive type) the freeze detector module should go before flagging a Fail. The range of control is from 12 to 16000 in 1-unit steps. Factory default is 1800.

Note: If the On Screen Indicators are enabled, the green/yellow indicators will extinguish and the red indicator will come on.

5.4 Video Monitor

The **Video Monitor** screen enables the video luma and chroma to be monitored..



5.4.1 Video Monitor Updates

When checked, the detector reports will be enabled for this function only but for all other functions (that have an update button) the reports will be disabled. This action will be active for a maximum time of 5 minutes and the remaining time will be shown by the Timeout display; at the end of this time, **Updates OFF** will be automatically selected.

To disable the updates, select **Updates Off**.

Note:

When this button is checked, the **Updates OFF** function is be implemented on all other screens.

At power up and when Factory Defaults or Restart Unit are selected, **Updates OFF** will be automatically selected.

5.4.2 Average Picture Level

This will display the APL (Average Picture Level) of the luminance channel of the signal as a percentage (range 0 to 100).

It will display three sets of figures. The first is the minimum level, the second is the current value and the third is the maximum level that has been detected over the monitoring period.

Note: When the monitoring period has ended (either by **Updates OFF** being selected or the timeout period exceeded) the second figure (current value) will be replaced by - - and **(held)** will be displayed indicating that the figures have been frozen.

The level is the average level of the picture signal during active scanning time integrated over a frame period; defined as a percentage of the range between blanking and reference white level. This parameter is displayed in real time by the on-screen display.

- **Maximum Logging Threshold:** When the APL goes above the value (as a percentage) set by this control a logging signal will be generated. The range of control is from 0 to 100 in 1-unit steps. Factory default is 95.
- **Minimum Logging Threshold:** When the APL goes below the value (as a percentage) set by this control, a logging signal will be generated. The range of control is from 0 to 100 in 1-unit steps. Factory default is 5.
- **Enable Alarm:** When checked, the alarm status will be reported and logged.

For more information on alarms, see "Alarm Overview" on page 13

5.4.3 Luma Video Level

This will display the APL (Average Picture Level) of the luminance channel of the signal as a percentage (range 0 to 100). Overload and Underload detectors are used to search for data above or below a certain value in the luminance channel of the active picture in a SDI stream. The overload and underload threshold values can be set by adjusting the sliders, with the value displayed to the left in hex (decimal value in brackets).

- **Luma Overload Threshold:** can be set between the values of 000H (0) to 3FFH (1023) in 1-unit steps. Factory default is 3ACH (940).
- **% Active Picture Allowed Above Threshold:** The percentage of active picture pixels that need to exceed the threshold setting before the overload detector is triggered may be set using this control. The range of control is from a minimum of a single pixel and then from 1% to 99% in 1% steps. Preset is 1 pixel.
- **Luma Underload Threshold:** can be set between the values of 000H (0) to 3FFH (1023) in 1-unit steps. Factory default is 040H (64).
- **% Active Picture Allowed Below Threshold:** The percentage of active picture pixels that need to exceed the threshold setting before the underload detector is triggered may be set using this control. The range of control is from a minimum of a single pixel and then from 1% to 99% in 1% steps. Preset is 1 pixel.

If any data word in the active picture is above the overload threshold value, then the overload detector will display "FAIL". If not, it will display "OK".

5.4.4 Chroma Video Level

This will display the APL (Average Picture Level) of the chrominance channel of the signal as a percentage (range 0 to 100). Overload and Underload detectors are used to search for data above or below a certain value in the chrominance channel of the active picture in a SDI stream. The overload and underload threshold values can be set by adjusting the sliders, with the value displayed to the left in hex (decimal value in brackets).

- **Chroma Overload Threshold:** Can be set between the values of 000H (0) to 3FFH (1023) in 1-unit steps. Factory default is 3C0H (960).
- **% Active Picture Allowed Above Threshold:** The percentage of active picture pixels that need to exceed the threshold setting before the overload detector is triggered may be set using this control. The range of control is from a minimum of a single pixel and then from 1% to 99% in 1% steps. Preset is 1 pixel.
- **Chroma Underload Threshold:** Can be set between the values of 000H (0) to 3FFH (1023) in 1-unit steps. Factory default is 040H (64).

- **% Active Picture Allowed Below Threshold:** The percentage of active picture pixels that need to exceed the threshold setting before the underload detector is triggered may be set using this control. The range of control is from a minimum of a single pixel and then from 1% to 99% in 1% steps. Preset is 1 pixel.

If any data word in the active picture is above the underload threshold value, then the overload detector will display "FAIL". If not, it will display "OK".

5.4.5 Luma Bit Depth

Displays the apparent bit depth of the luminance channels of the active picture.

The detector operates by looking for activity on each bit of the video data in the active picture over a period of 1 frame. If activity is found on all the bits then "10-bit" will be displayed. If no activity is found on the bottom bit, then "9-bit" will be displayed. If there is no activity on the bottom bit and on the next bit up, then "8-bit" will be displayed, and if there is also no activity on any of the top 8 bits, then "Unknown" will be displayed (for example, if the active video is a flat field).

5.4.6 Chroma Bit Depth

Displays the apparent bit depth of the chrominance channels of the active picture.

The detector operates by looking for activity on each bit of the video data in the active picture over a period of 1 frame. If activity is found on all the bits then "10-bit" will be displayed. If no activity is found on the bottom bit, then "9-bit" will be displayed. If there is no activity on the bottom bit and on the next bit up, then "8-bit" will be displayed, and if there is also no activity on any of the top 8 bits, then "Unknown" will be displayed (for example, if the active video is a flat field).

5.5 Closed Captions

Hyperion closed caption detection consists of detection for 525 and for HD signals. In 525, the captions present will be EIA-608-B standard and in HD the captions will be EIA-708-B.

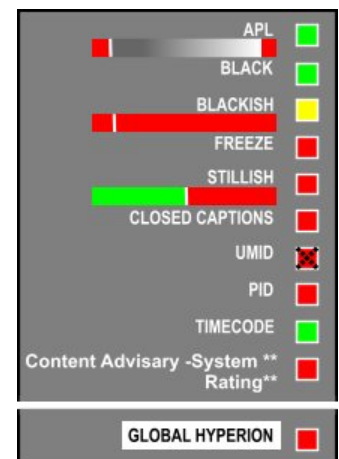
EIA-608-B captions are detected by looking for the run-in code, as described in section 5.2 of CEA 608-B, when carried on Line 21/field 1 and Line 284/field 2 of 525 line signals. When captions are indicated as present, the parity of the data output has been checked and is valid.

EIA-708-B captions are detected by identifying the DID (Data Identifier) and SDID (Secondary Data Identifier) of the appropriate VBI data packet. They can be decoded from any position on any line.

Closed Captions Indicators

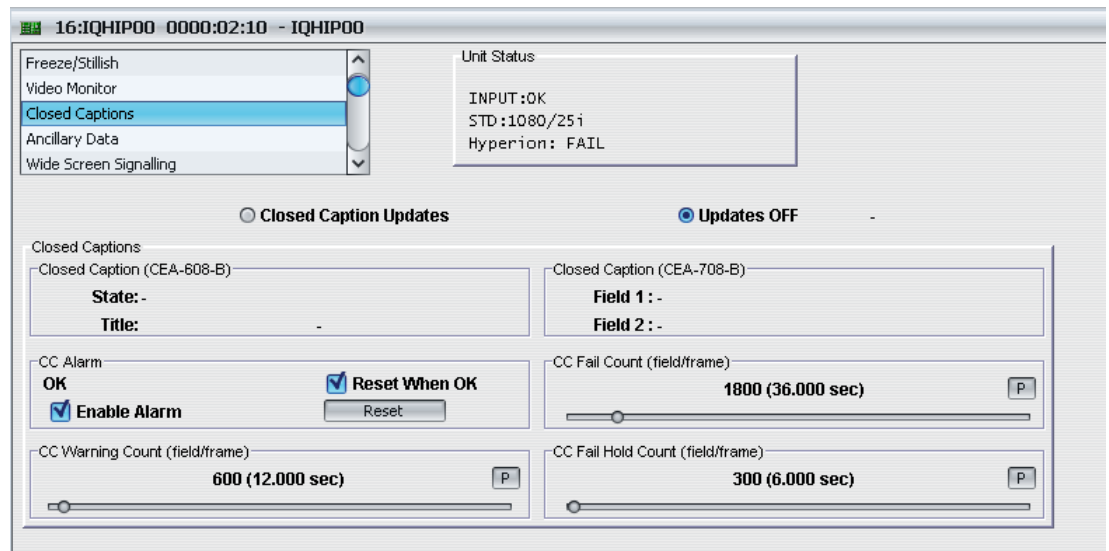
These are turned on via the Closed Caption Indicators function on the On Screen Display screen.

The fail count will set how long captions will have to be not present, for the red light to come on. The CC Warning Count will count how long captions will have to be not present before the yellow light will come on. Finally, the CC Fail Hold will count how long the captions have to be present before the Error will be reset and the display will switch from red to green.



Closed Captions Screen

The **Closed Captions** screen enables closed captions to be monitored



5.5.1 Closed Caption Updates

When checked, the detector reports will be enabled for this function only but for all other functions (that have an update button) the reports will be disabled. This action will be active for a maximum time of 5 minutes and the remaining time will be shown by the Timeout display; at the end of this time **Updates OFF** will be automatically selected.

To disable updates select **Updates OFF**.

Note: When this option is selected, the **Updates OFF** function will be implemented on all other screens.

At power up and when Factory Defaults or Restart Unit are selected, **Updates OFF** will be selected.

5.5.2 Closed Caption (CEA-608-B)

Field 1 will indicate CEA-608-B closed captions are present. ** indicates captions are not present.

5.5.3 Closed Caption (CEA-708-B)

Field 1, Field 2 will indicate CEA-708-B closed captions are present on which field. ** indicates captions are not present.

5.5.4 CC Alarm

The alarm shows the state of the Closed Caption detector followed by the frame count. Reset will restart the alarm function.

It can report one of the following states:

- **OK:** Captions are detected
- **Warn:** Captions have not been detected for more than the warning count
- **Fail:** Captions have not been detected for more than the Alarm Count

5.5.5 CC Fail Count (Field/frame)

This is the number of Closed Caption free fields/frames that will have to pass before the CC Alarm will change to the Fail state. The range of control is from 10 to 16000 in 1-unit steps. Factory default is 1800.

5.5.6 CC Warning Count (Field/frame)

This is the number of Closed Caption free frames that will have to pass before the CC Alarm will change to the Warning state. The range of control is from 10 to 16000 in 1-unit steps. Factory default is 600.

Note: The warning count cannot be set to be greater than the fail count.

5.5.7 CC Fail Hold Count (Field/frame)

This is the number of frames with Closed Captions present that will have to pass before the CC Alarm will reset from Fail to OK. The range of control is from 1 to 16000 in 1-unit steps. Factory default is 300.

- **Enable Alarm:** When this option is checked, alarm status is reported and logged. When an alarm is disabled, the detector operates in the background but only reports INFO for logging
- **Reset When OK:** When this button is checked, the fail count is reset whenever the status is reported as OK.
- **Reset:** Selecting this button will restart the fail count from zero.

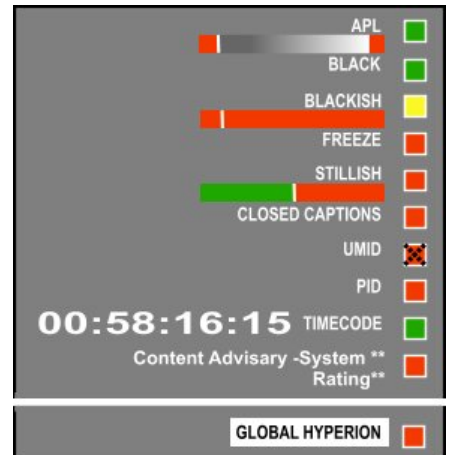
For more information on alarms, see "Alarm Overview" on page 13.

5.6 Ancillary Data

Ancillary Data Indicators

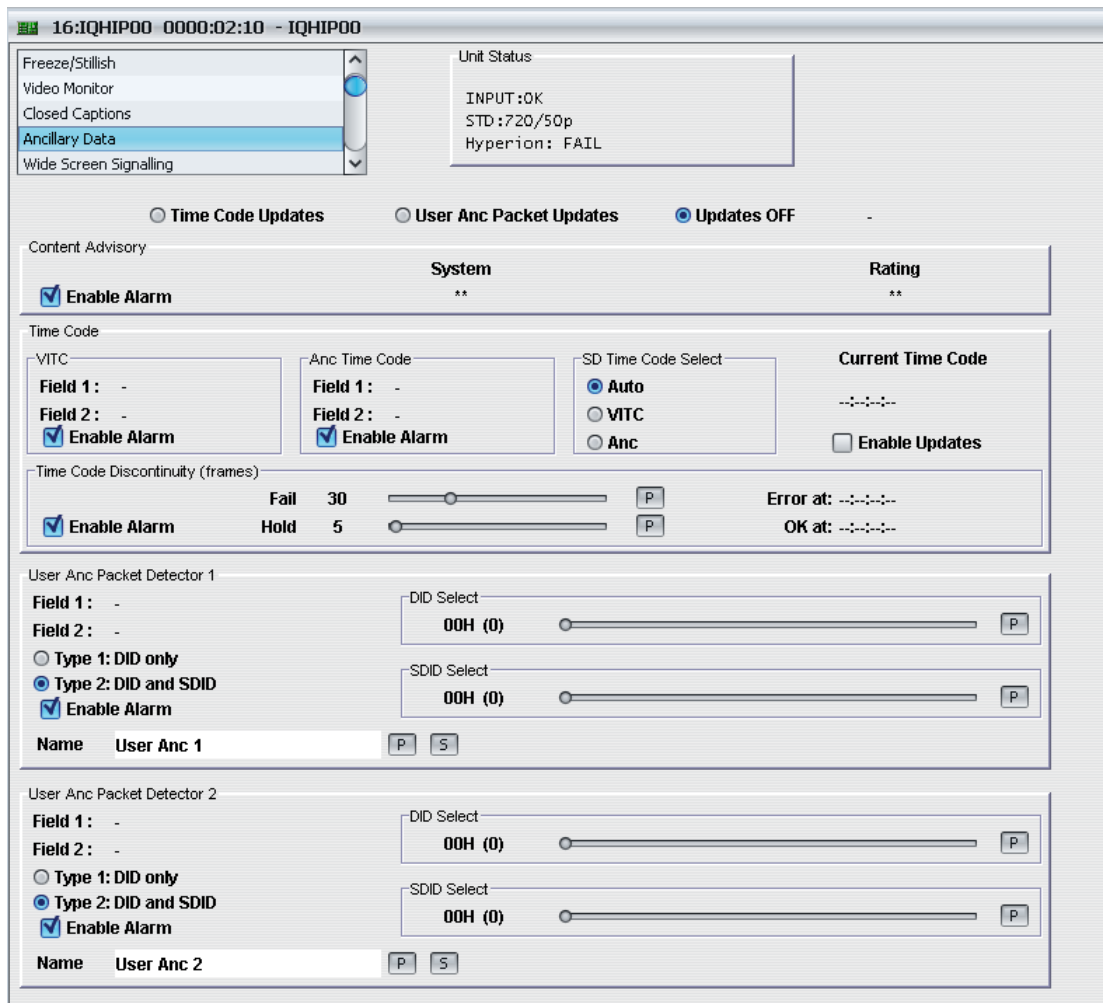
These are turned on via the Timecode function on the On Screen Display screen.

If VITC or Ancillary TimeCode are present, then the indicator will be green, if neither are present then the indicator will be red.



Ancillary Data Screen

The **Ancillary Data** screen enables ancillary data to be monitored.



5.6.1 Content Advisory

Content advisory information is data describing the age rating of programs transmitted. This can be carried in the EIA-608-B standard.

EIA-608-B data can then be carried in EIA-708-B packets, as discussed in section 4.3 of CEA 708 B. This also means that Content Advisory data can be carried in HD EIA-708-B Closed Captions. Hyperion can decode this information and display it on this screen.

When there is content advisory information, as outlined in section 9.5.1.5 of CEA-608-B, then this information is decoded and displayed on this screen. This will first state the ratings system that is being used (e.g. MPA, US TV Parental Guidelines, etc.) and then display the rating of the program being transmitted (e.g. TV-PG, TV-14, etc.).

Enable Alarm. When checked, the alarm status will be reported and logged.

For more information on alarms, see “Alarm Overview” on page 13.

5.6.2 Time Code and User Anc Packet Updates

When either of these are checked the detector reports will be enabled for that function only but for all other functions (that have an update button) the reports will be disabled. This action will be active for a maximum time of 5 minutes and the remaining time will be shown by the Timeout display; at the end of this time **Updates OFF** will be automatically selected.

To disable updates, select **Updates OFF**.

Note: When this button is selected, the **Updates OFF** function will be implemented on all other screens.

At power up and when Factory Defaults or Restart Unit are selected, **Updates OFF** will be selected.

This unit has two Time Code detectors, one for Vertical Interval Time Code (VITC) in SD, and one for Ancillary Time code in SD or HD.

5.6.3 VITC

This unit has two Time Code detectors, one for Vertical Interval Time Code (VITC) in SD, and one for Ancillary Time code in SD or HD.

The unit searches for VITC in all vertical interval blanking lines. It reports back whether or not valid VITC has been found, and if so, which line it has been found on in Field 1 and Field 2. If no VITC is found in a particular field, the output will display " ** ".

Enable Alarm. When checked, the alarm status will be reported and logged.

For more information on alarms, see “Alarm Overview” on page 13.

5.6.4 ANC Time Code

This unit has two Time Code detectors, one for Vertical Interval Time Code (VITC) in SD, and one for Ancillary Time code in SD or HD.

ANC Timecode can be decoded from any position on any line. The Ancillary TimeCode detector operates in a similar manner as VITC, looking for Ancillary Packets with a DID of 60h and an SDID also of 60h.

This reports back whether or not it has been found, and if so, which line it has been found on in Field 1 and Field 2. If none is found in a particular field, the output will display " ** ".

Enable Alarm. When checked, the alarm status will be reported and logged.

For more information on alarms, see “Alarm Overview” on page 13.

5.6.5 SD Time Code Select

This allows the SD time code type to be specified.

- **Auto:** The unit will automatically determine the time code type.
- **VITC:** VITC time codes will be used.
- **Anc:** ANC time codes will be used.

5.6.6 Current Time Code

If a Time Code is present, it will be displayed on the template and the On Screen Display. If none is found, ** ** ** ** is displayed.

5.6.7 Time Code Discontinuity (frames)

This detector looks for the presence of time code discontinuity over a specified number of frames. If a discontinuity is detected, the alarm will be triggered and will not be cleared until no further time code discontinuity is detected for the number of frames specified by the Hold control.

- **Enable Alarms:** When checked, the alarm status will be reported and logged. For more information on alarms, see “Alarm Overview” on page 13.
- **Fail:** Specifies the number of frames that a time code discontinuity must exist before the alarm is triggered.
- **Hold:** After the alarm has been triggered this specifies the number of frames that no time code discontinuity must exist before the alarm is cleared.
- **Error at:** Displays the time that the time code discontinuity occurred.
- **OK at:** Displays the time the alarm was cleared.

5.6.8 User Anc Packet Detector 1 and 2

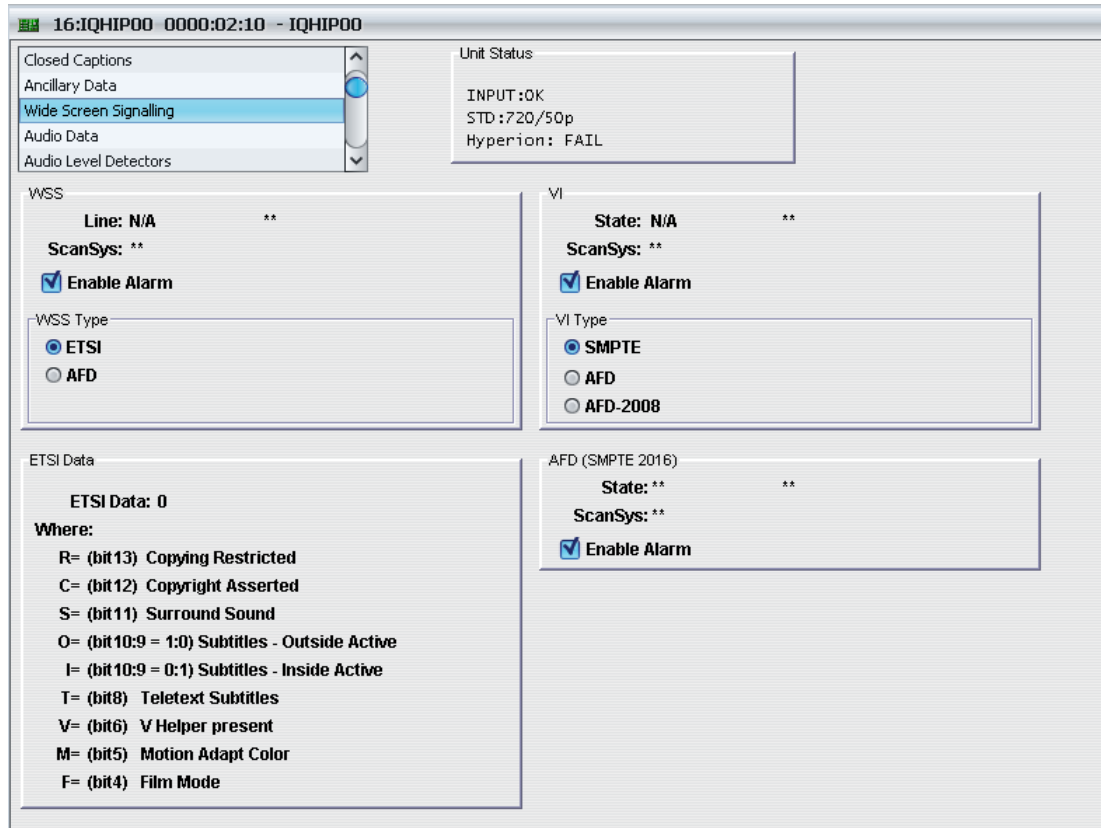
Hyperion also has two user-definable Ancillary Packet Detectors. These can be used to search for Ancillary packets anywhere in the video stream.

- **Type 1: DID only:** When selected, the detector will look for Type 1 packets (DID only). If found, the last line number in each field to contain the packet will be displayed in the template. If the packet is not found in a particular field, then ** will be displayed
- **Type 2: SDID only:** When selected, the detector will look for Type 1 packets (SDID and DID). If found, the last line number in each field to contain the packet will be displayed in the template. If the packet is not found in a particular field, then ** will be displayed
- **Enable Alarm:** When checked, the alarm status will be reported and logged.
- **Name:** The detector name may be changed from the defaults of User Anc 1,2. To change the name, type the new name in the text area and then select the Save (**S**) button to save the new name. Selecting Preset (**P**) will return the text to the default name.
- **DID Select:** The range of control is from 00H (0) to FFH (255) in 1-unit steps. Factory default is 00H (0).
- **SDID Select:** The range of control is from 00H (0) to FFH (255) in 1-unit steps. Factory default is 00H (0).

For more information on alarms, see “Alarm Overview” on page 13.

5.7 Wide Screen Signaling

The **Wide Screen Signaling** screen enables the Wide Screen Signaling (WSS), Video Index (VI), Active Format Descriptor (AFD) and ETSI standard information to be monitored..



5.7.1 WSS

This detector will look for the presence of WSS, whether in ETSI form or AFD, on lines 7 to 23 of 625 PAL video. If WSS is present the line number on which WSS was found will be displayed. If WSS is not found ** will be displayed.

It is important the correct WSS/VI type is selected. If it is not, it is possible that incorrect information will be decoded.

Enable Alarm. When checked, the alarm status will be reported and logged.

For more information on alarms, see “Alarm Overview” on page 13.

5.7.2 WSS Type

This enables the WSS type to be specified. Select one of the following types:

- **ETSI:** ETSI standard is used.
- **AFD:** Active Format Descriptor (AFD) standard is used.

Note: WSS is originally an ETSI standard, defined in ETSI 300 294. Video Index is defined by SMPTE in RP186. Both standards have their original data format as defined by ETSI and SMPTE respectively, but also they both have another format called Active Format Descriptor (AFD) which uses the same shell for transmission, but the data means different things.

5.7.3 VI

This detector will look for the presence of Video Index information, whether in SMPTE format or AFD format, on lines 11 and 324 of 625 PAL video and on lines 14 and 277 of 525 video.

If VI is found, OK will be displayed; if VI is not present ** will be displayed.

Enable Alarm. When checked, the alarm status will be reported and logged.

For more information on alarms, see “Alarm Overview” on page 13.

5.7.4 VI Type

This enables the VI type to be specified. Select one of the following types:

- **SMPTE**
- **AFD**
- **AFD 2008**

5.7.5 ETSI Data

This displays the ETSI data standard.

5.7.6 AFD (SMPTE 2016)

This displays the Active Format Descriptor standard.

Enable Alarm. When checked, the alarm status will be reported and logged.

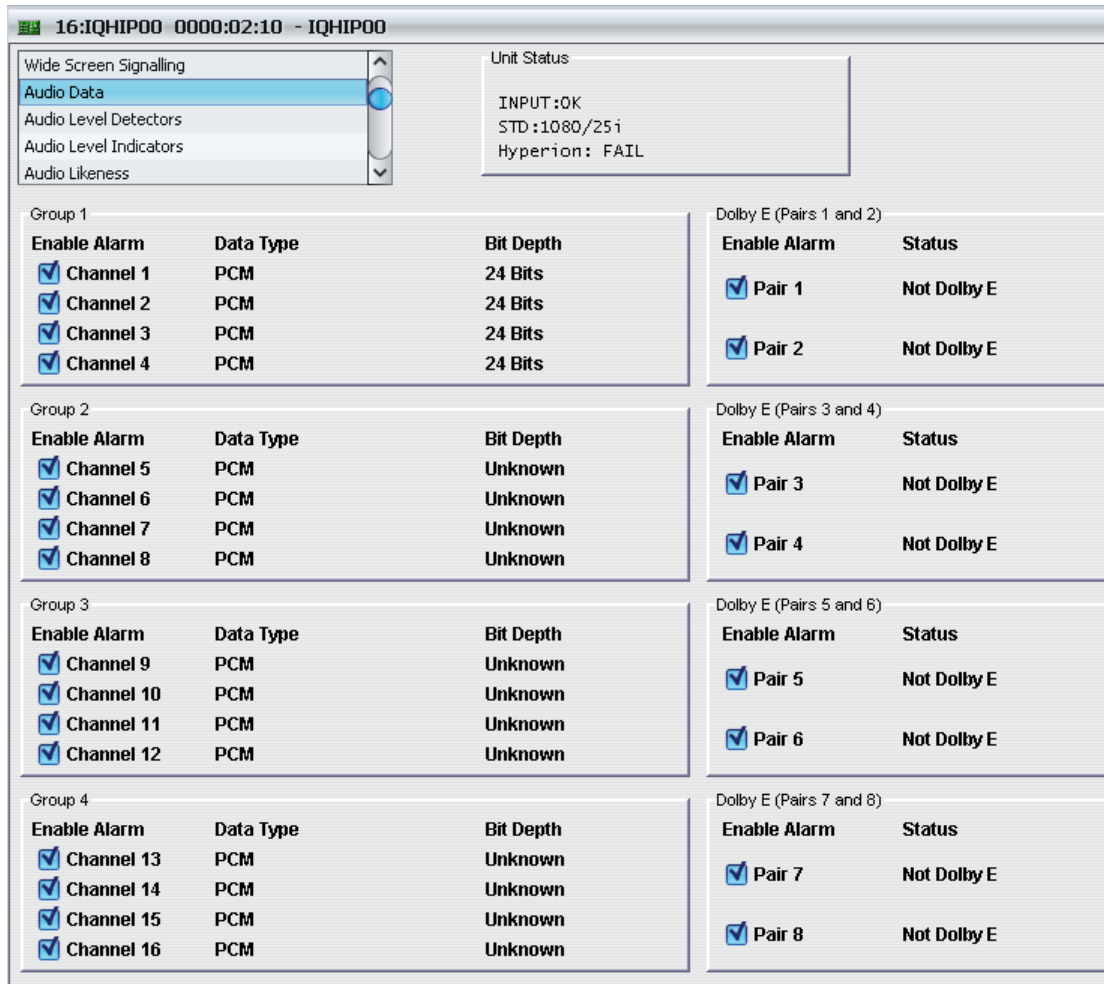
For more information on alarms, see “Alarm Overview” on page 13.

5.8 Audio Data

The module searches for audio packets transported in the video blanking, and can report back which audio groups and audio channels are present in the video stream. It can also report back what kind of audio is present in each channel, along with an effective audio bit depth for that channel.

Audio Data Screen

The **Audio Data** screen enables the group audio data to be monitored..



5.8.1 Group 1 to 4

Displayed are the 4 groups and 16 possible channels of embedded audio that have been found in the SDI stream.

The logging data for all 16 channels is on the Log Aud State RollCall screen.

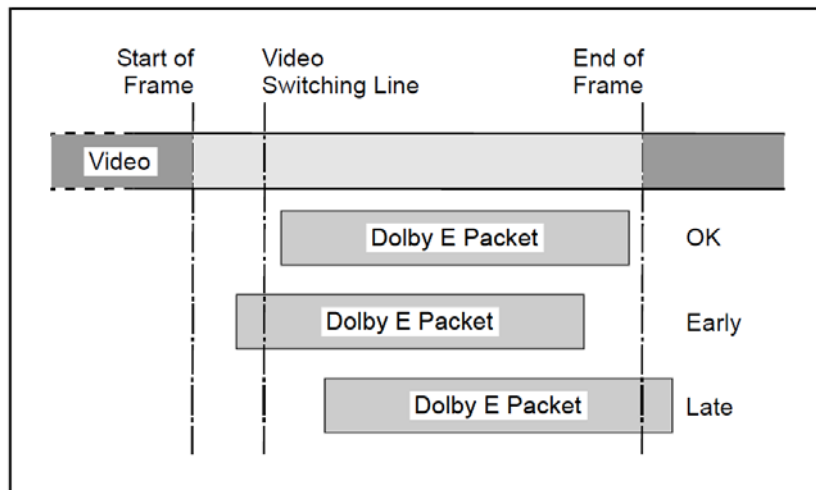
- **Enable Alarm:** When checked, the alarm status for that channel will be reported and logged. For more information on alarms, see "Alarm Overview" on page 13.
- **Data Type:** This displays what kind of audio data has been embedded in each of the 16 audio channels.
- **Bit Depth:** This displays the apparent bit depth of the Audio data in each channel. It operates by looking for activity on the 24 bits of audio data over a period of 1 video frame. If all the bits are found to be active then "24-bit" will be displayed. If the bottom 4 bits do not change at all then "20-bit" will be displayed. If the next 2 bits also remain constant then "18-bit" will be displayed, and if none of the bottom 8 bits change then "16-bit" will be displayed. If no activity is found in any of the 24 bits then "****" will be

displayed (for example, if the channel is not used, or if it is muted). This data is logged on the Log Aud Bit Depth RollCall screen.

5.8.2 Dolby E (Pairs 1 and 2) to Dolby E (Pairs 7 and 8)

This function reports whether or not SMPTE337M Dolby E audio packets are embedded in a safe position with regards to the video switching point. The information is calculated for each of the 8 possible Dolby E channel pairs.

As the diagram below shows, a Dolby E packet will be declared as "OK" if it starts after the video switching line and finishes before the end of the video frame.



If a packet starts before the video switching line, the module will report "Early" and if it finishes after the end of the video frame, the module will report "Late".

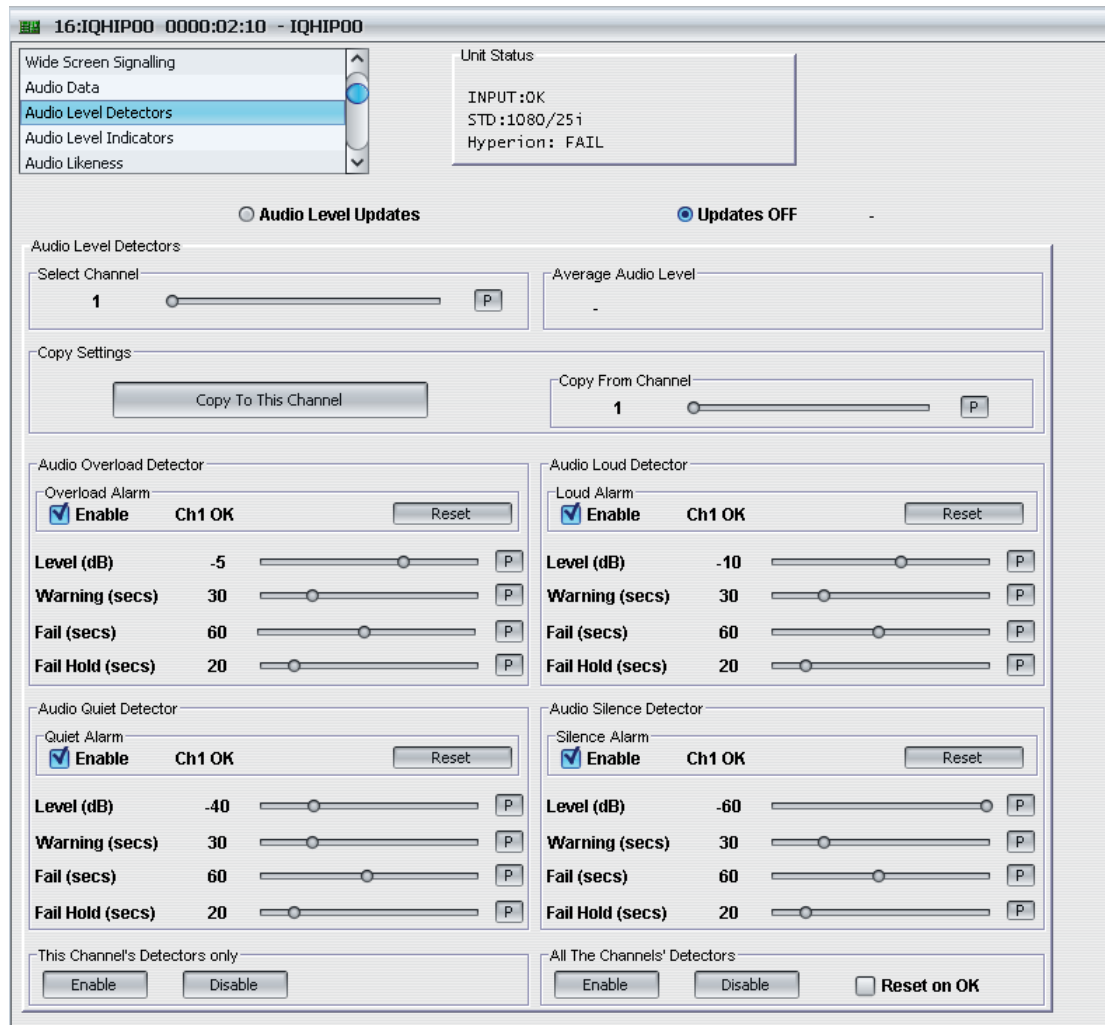
If the Dolby E is not locked to the video, "Out of Sync" will be reported, and if there is no Dolby E on a particular channel pair, the module will report "Not Dolby E".

5.9 Audio Level Detectors

Associated with each of the supported channels (1 to 16) are four level/time detectors.

Every second, the reported level is compared against the thresholds of the parameter selected for that channel. If the value satisfies the detector requirements (above/below set thresholds) the timers are incremented. If the timers reach the user defined limits logging messages of selected severity are issued. If the value does not pass the threshold requirements the timers are reset.

The **Audio Level Detectors** enables the detector parameters to be set up for the 16 audio channels..



5.9.1 Audio Level Updates

When checked the detector reports will be enabled for this function only but for all other functions (that have an update button) the reports will be disabled. This action will be active for a maximum time of 5 minutes and the remaining time will be shown by the Timeout display; at the end of this time **Updates OFF** will be automatically selected; at the end of this time **Updates OFF** will be automatically selected.

To disable the updates, **Updates OFF**.

Note: When this button is selected, the **Updates OFF** function will be implemented on all other screens.

At power up and when Factory Defaults or Restart Unit are selected, **Updates OFF** will be selected.

5.9.2 Select Channel

This scroll bar allows any of the 16 channels to be selected. The parameters for the selected channel may then be adjusted. Preset is Channel 1 selected.

5.9.3 Average Audio Level (dB)

This shows the average signal level of the selected audio channel, updated once per second.

The scaling is such that a Sine wave test tone of -20 dBFS peak will produce a reading close to -20 dB. The reading for a Square wave signal of -20 dBFS peak will be around -17 dB because its average level is higher.

The reading represents the peak of several short term block averages over the previous second, with 3 dB added so that 0 dBFS peak sine wave test tones produce a 'familiar' reading of about 0 dB.

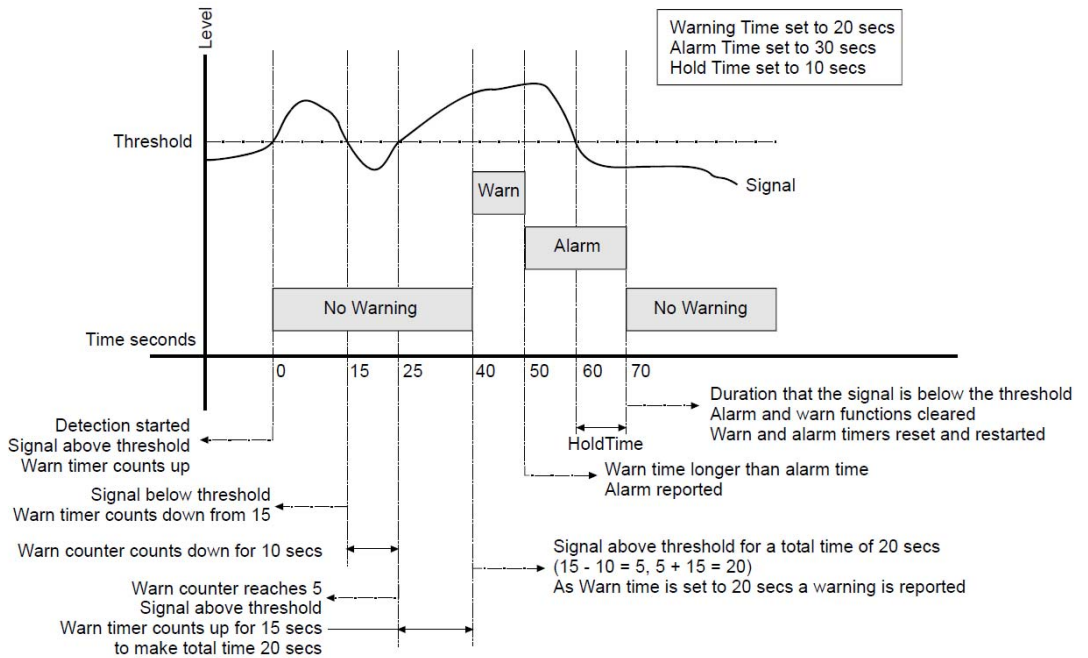
Note: ** will be shown if no audio is detected on the channel or if there is no video input.

5.9.4 Copy Settings/Copy from Channel

This allows the settings from any of the 16 channels to be applied to the currently displayed channel.

Use the **Copy From Channel** scroll bar to select the channel containing the desired settings and then select **Copy To This Channel**; the settings will then be applied to the channel currently displayed.

Performance of the Detectors

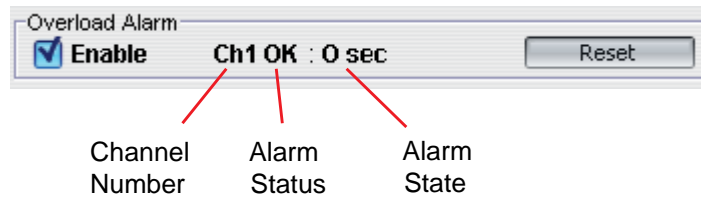


5.9.5 Audio Overload Detector

This allows the adjustment of parameters that are considered to represent an overload condition.

5.9.5.1 Overload Alarm

In this example this area shows the number of the selected audio channel (Ch1), the status of the alarm (OK) and the reported state (0 sec).



- **Enable:** When checked, the alarm status will be reported and logged. For more information on alarms, see “Alarm Overview” on page 13.
- **Channel Number:** Displays the selected Channel number.
- **Alarm Status:**
 - **OK:** A valid audio signal has been detected on the current channel.
 - ****:** No audio detected on the current channel.
 - **WARN:** The overload warning detector has been activated.
 - **FAIL:** The overload failure detector has been activated.
- **Alarm State:** Displays a time countdown related to the setting of the **Fail Hold** control.
- **Reset:** Selecting this button will restart the fail count from zero.

5.9.5.2 Level (dB)

This sets the level that if exceeded would represent an overload condition. The range of control is from 0 to -15 dB in 1 dB steps and preset is to -5 dB.

5.9.5.3 Warning (secs)

This sets the time the signal must exceed the **Level** threshold before the **Warn** state is reported. The range of control is from 1 to 120 seconds and preset is to 30 seconds.

Note: The warning count cannot be set to be greater than the fail count.

5.9.5.4 Fail (secs)

This sets the time the **Warn** state must exist before the **Fail** state is reported. The range of control is from 1 to 120 seconds and preset is to 60 seconds.

5.9.5.5 Fail Hold (secs)

This is the time the signal must not exceed the Level threshold before the **Warn** and **Fail** states are cleared. The range of control is from 1 to 120 seconds and preset is to 20 seconds.

5.9.6 Audio Loud Detector

This allows the adjustment of parameters that are considered to represent a loud condition.

- **Enable:** When checked, the alarm status will be reported and logged. For more information on alarms, see “Alarm Overview” on page 13.
- **Channel Number:** Displays the selected Channel number.
- **Alarm Status:**
 - **OK:** A valid audio signal has been detected on the current channel.
 - ****:** No audio detected on the current channel.
 - **WARN:** The loud warning detector has been activated.

- **FAIL:** The loud failure detector has been activated.
- **Alarm State:** Displays a time countdown related to the setting of the **Fail Hold** control.
- **Reset:** Selecting this button will restart the fail count from zero.

5.9.6.1 Level (dB)

This sets the level that if exceeded would represent a loud condition. The range of control is from 0 to -25 dB in 1 dB steps and preset is to -10 dB.

5.9.6.2 Warning (secs)

This sets the time the signal must exceed the Level threshold before the Warn state is reported. The range of control is from 1 to 120 seconds and preset is to 30 seconds.

Note: The warning count cannot be set to be greater than the fail count.

5.9.6.3 Fail (secs)

This sets the time the Warn state must exist before the Fail state is reported. The range of control is from 1 to 120 seconds and preset is to 60 seconds.

5.9.6.4 Fail Hold (secs)

This is the time the signal must not exceed the Level threshold before the Warn and Fail states are cleared. The range of control is from 1 to 120 seconds and preset is to 20 seconds.

5.9.7 Audio Quiet Detector

This allows the adjustment of parameters that are considered to represent a quiet condition.

- **Enable:** When checked, the alarm status will be reported and logged. For more information on alarms, see “Alarm Overview” on page 13.
- **Channel Number:** Displays the selected Channel number.
- **Alarm Status:**
 - **OK:** A valid audio signal has been detected on the current channel.
 - ****:** No audio detected on the current channel.
 - **WARN:** The quiet warning detector has been activated.
 - **FAIL:** The quiet failure detector has been activated.
- **Alarm State:** Displays a time countdown related to the setting of the **Fail Hold** control.
- **Reset:** Selecting this button will restart the fail count from zero.

5.9.7.1 Level (dB)

This sets the level that if the signal were below would represent a quiet condition. The range of control is from -10 to -50 dB in 1 dB steps and preset is to -40 dB.

5.9.7.2 Warning (secs)

This sets the time the signal must be below the Level threshold before the Warn state is reported. The range of control is from 1 to 120 seconds and preset is to 30 seconds.

Note: The warning count cannot be set to be greater than the fail count.

5.9.7.3 Fail (secs)

This sets the time the Warn state must exist before the Fail state is reported. The range of control is from 1 to 120 seconds and preset is to 60 seconds.

5.9.7.4 Fail Hold (secs)

This is the time the signal must not exceed the Level threshold before the Warn and Fail states are cleared. The range of control is from 1 to 120 seconds and preset is to 20 seconds.

5.9.8 Audio Silence Detector

This allows the adjustment of parameters that are considered to represent a silent condition.

- **Enable:** When checked, the alarm status will be reported and logged. For more information on alarms, see "Alarm Overview" on page 13.
- **Channel Number:** Displays the selected Channel number.
- **Alarm Status:**
 - **OK:** A valid audio signal has been detected on the current channel.
 - ****:** No audio detected on the current channel.
 - **WARN:** The silence warning detector has been activated.
 - **FAIL:** The silence failure detector has been activated.
- **Alarm State:** Displays a time countdown related to the setting of the **Fail Hold** control.
- **Reset:** Selecting this button will restart the fail count from zero.

5.9.8.1 Level (dB)

This sets the level that if the signal were below would represent a silent condition. The range of control is from -60 to -99 dB in 1 dB steps and preset is to -60 dB.

5.9.8.2 Warning (secs)

This sets the time the signal must be below the Level threshold before the Warn state is reported. The range of control is from 1 to 120 seconds and preset is to 30 seconds.

Note: The warning count cannot be set to be greater than the fail count.

5.9.8.3 Fail (secs)

This sets the time the Warn state must exist before the Fail state is reported. The range of control is from 1 to 120 seconds and preset is to 60 seconds.

5.9.8.4 Fail Hold (secs)

This is the time the signal must not exceed the Level threshold before the Warn and Fail states are cleared. The range of control is from 1 to 120 seconds and preset is to 20 seconds.

5.9.9 This Channel's Detectors only

- **Enable:** When selected, the alarms for only the currently selected channel (as displayed by the Select Channel function) will be enabled.
- **Disable:** When disabled the alarms for only the currently selected channel (as displayed by the Select Channel function) will be disabled.

5.9.10 All The Channels' Detectors

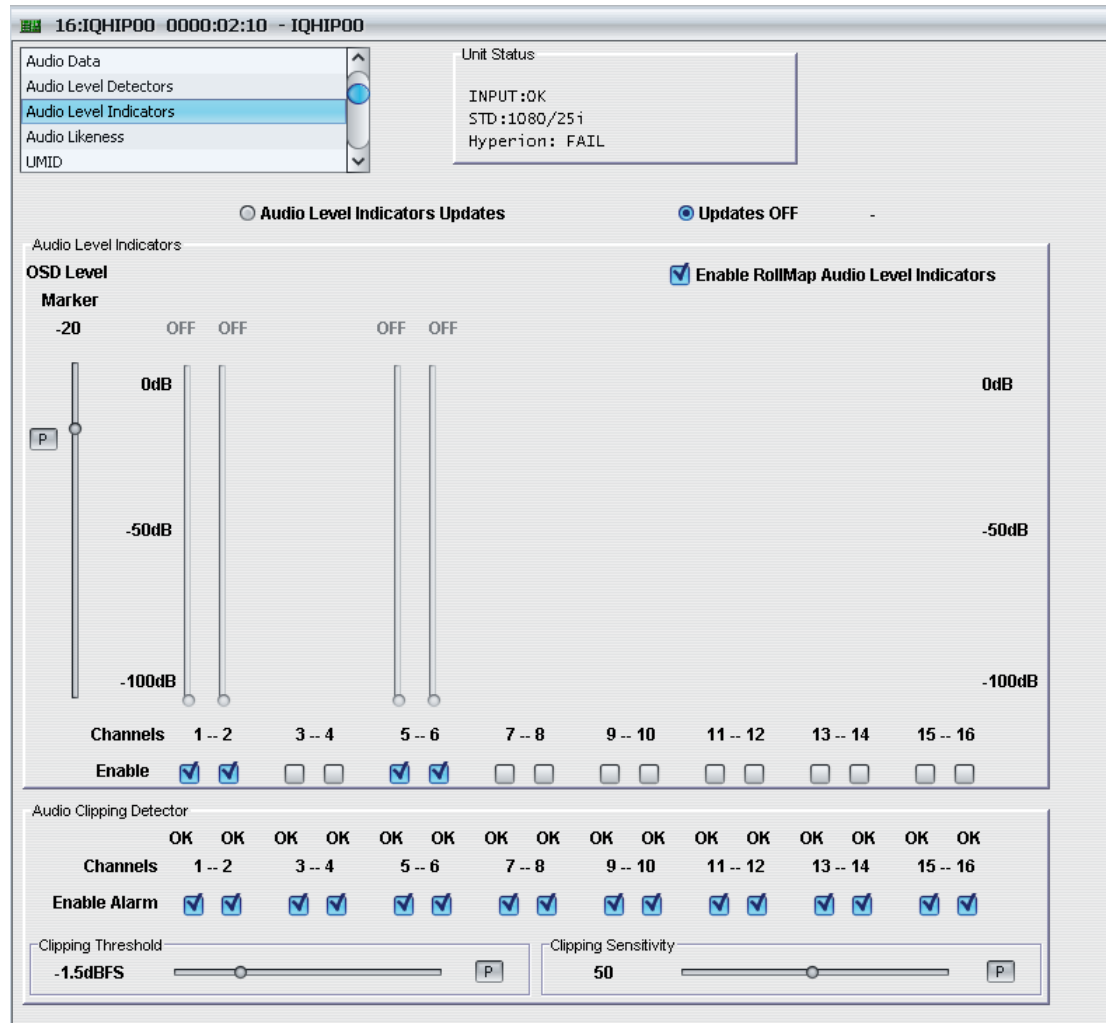
- **Enable:** When selected, the alarms for all channels will be enabled.
- **Disable:** When disabled, the alarms for all channels will be disabled.

Note: When an alarm is disabled, the detector still operates in the background but only reports INFO for logging.

- **Reset on OK:** When this button is checked, the fail count is reset whenever the status is reported as OK.

5.10 Audio Level Indicators

The **Audio Level Indicators** screen shows the amplitude of the 16 audio channels and duplicates the On Screen Display Audio Level Indicators. It also allows individual channel indicators to be displayed or to be turned off..



5.10.1 Audio Level Indicators Updates

When checked the detector reports will be enabled for this function only but for all other functions (that have an update button) the reports will be disabled. This action will be active for a maximum time of 5 minutes and the remaining time will be shown by the Timeout display; at the end of this time **Updates OFF** will be automatically selected; at the end of this time **Updates OFF** will be automatically selected.

To disable the updates, **Updates OFF**.

Note: When this button is selected, the **Updates OFF** function will be implemented on all other screens.

At power up and when Factory Defaults or Restart Unit are selected, **Updates OFF** will be selected.

5.10.2 Enable RollMap Audio Level Indicators

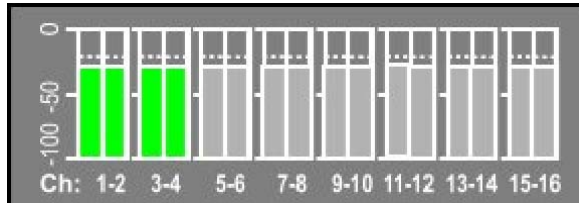
When RollMap Audio Level Indicators are connected, this option is automatically selected and cannot be disabled. When RollMap Audio Level Indicators are disconnected, the control is automatically disabled.

When RollMap Audio Level Indicators are not connected, you can deselect this option to stop sending audio data back to RollMap, reducing the amount of data that needs to be generated.

5.10.3 Audio Level Indictaors

5.10.3.1 Marker

This control allows a reference audio level to be set and will be seen as a dotted line at the top of the on screen bar graph display as shown below.



Using the slider, this level can be adjusted from -102 dB to 0 dB in steps of 1 dB. Preset value is -20 dB.

The amplitude of the audio channel is shown by the position of the indicator on the sliding bar or by the on screen bar graphs. The amplitude of the signal is sampled approximately 3-5 times a second and the level displayed by the on screen bar graphs and the sliding bar indicator. The bar covers a range of 0 dB to -100 dB and the numerical value (grayed out) is shown at the top of the bar.

5.10.3.2 Enable

These boxes allow the individual channel indicators to be displayed (checkbox selected) or turned off (checkbox cleared). In this example channels 7 and 8 have been disabled and do not appear on this screen.

Note that this action will not affect the on screen display and all channel level indicators will be displayed.

5.10.3.3 Non-PCM Signals

If a channel is a non-PCM signal, the sliding bar indicator will not appear on this screen even if it is enabled. Also the on screen bar graphs for channels with non-PCM signals will not be displayed.

5.10.4 Audio Clipping Detector

Each audio channel can be monitored for a clipping condition and the status reported.

5.10.4.1 Enable Alarm

When checked, the clipping condition for that channel will be reported and logged. The status will be shown above channel number.

5.10.5 Clipping Threshold

The level considered to be clipping that will trigger the alarm can be set with this control. The range of control is from 0 dBFS to -2 dBFS in steps of 0.5 dB and preset is to -1.5 dBFS.

5.10.6 Clipping Sensitivity

This allows the detection of a clipping condition to be modified for different types of audio signals.

A high setting will allow the detector to report a clipping condition for signals that only occasionally exceed the threshold level.

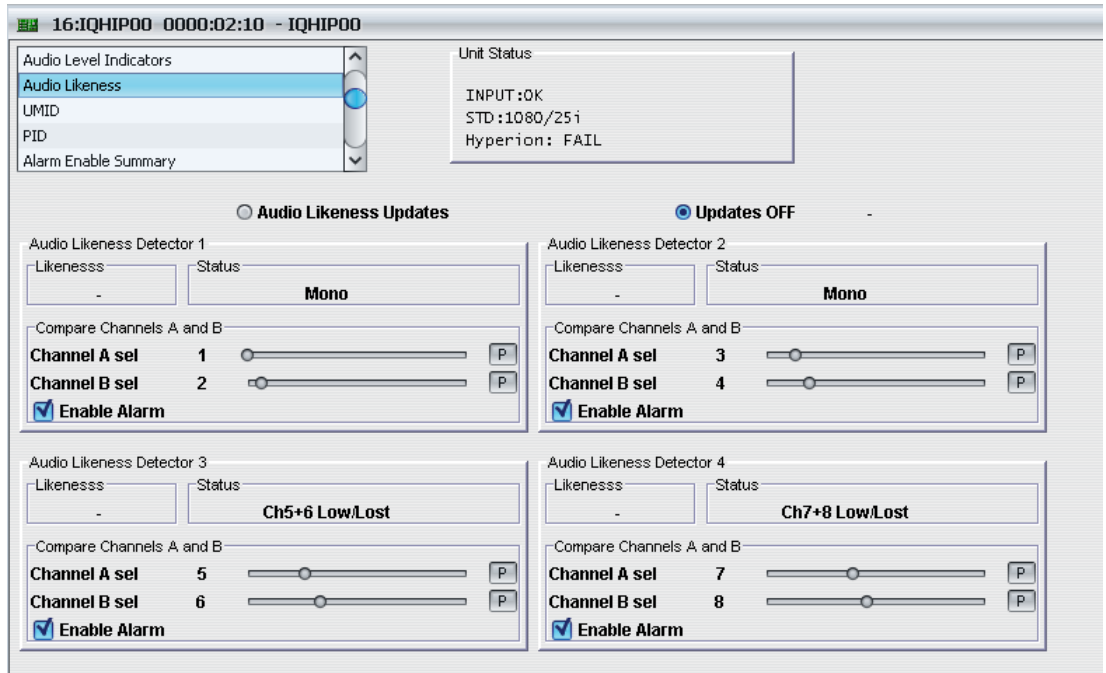
A low setting allows the detector to report a clipping condition for signals that regularly exceed the threshold level.

The sensitivity value can be set from 1 to 100 in steps of 1. Preset is to 50.

5.11 Audio Likeness

The **Audio Likeness** screen monitors the relationship between two selected channels, and determines whether the channels are the same (dual monophonic), stereo or largely unrelated. It also determines whether the polarities of the two channels match.

The detector reports a likeness number from -100 to +100. The larger the absolute value, the more alike the two channels are. If the two selected channels are virtually identical (2 x mono) the reported number will be 100 if their polarities match and -100 if one of them has been inverted..



5.11.1 Audio Likeness Updates

When checked, the detector reports will be enabled for this function only but for all other functions (that have an update button) the reports will be disabled. This action will be active for a maximum time of 5 minutes and the remaining time will be shown by the Timeout display; at the end of this time **Updates OFF** will be automatically selected; at the end of this time **Updates OFF** will be automatically selected.

To disable updates select **Updates OFF**.

Note: When this button is selected, the **Updates OFF** function will be implemented on all other screens.

At power up and when Factory Defaults or Restart Unit are selected, **Updates OFF** will be selected.

5.11.2 Audio Likeness Detector (1 to 4)

There are four likeness detectors.

5.11.2.1 Likeness

This displays the likeness number for the two channels that are being compared.

5.11.2.2 Status

This displays the name of the two channels being compared and the probable relationship between the channels. It may display:

- **Mono:** Identical channels, same polarity.
- **Stereo:** Similar channels, i.e. Stereo.
- **Wide:** Channels have little/no short term similarity.
- **Inverted Mono:** Identical channels, one channel reversed polarity.
- **Inverted Stereo:** Similar channels, i.e. Stereo one channel reversed polarity.
- **Inverted Wide:** Similar channels, i.e. Wide Stereo one channel reversed polarity.
- **Oh ~ (+~) Low/Lost:** A channel lost or at low level.

5.11.2.3 Compare Channels A and B

The two channels to be compared (Channels A and B) are selected using the two scroll bars. Any of the 16 audio channels may be selected for comparison. Preset (for Audio Likeness Detector 1) is Audio channel 1 selected for Channel A to be compared to Audio channel 2 for Channel B.

Enable Alarm. When checked, the alarm status will be reported and logged. For more information on alarms, see "Alarm Overview" on page 13.

5.12 UMID

A Unique Material Identifier (UMID) is a unique identifier for audio-visual material, which is locally created and globally unique. UMIDs can be inserted into ancillary packets and transported in a HD-SDI or SD-SDI video stream.

The Hyperion UMID operates with Basic 32-byte UMIDs (not the 64-byte extended version) and has three main functions:

- **Detector:** The module searches the vertical ancillary space for UMID packets, and reports back the value of the UMID that it finds and the line that it finds it on. It also reports back any errors in the packet, and counts the number of frames that a UMID has been consistently present for.
- **Deleter:** The module can be used to delete any UMIDs it finds in the Hyperion video stream. If enabled, it will mark UMID ancillary packets for deletion by setting the DID to 80h, and blank all the data held within the packet.
- **Generator:** The module can also be used to insert a new UMID ancillary packet onto a selected line in the active region of the vertical ancillary space of the Hyperion video stream.

The **UMID** screen enables monitoring of UMIDs.

The screenshot shows the UMID control interface with the following sections:

- Unit Status:** INPUT:OK, STD:1080/25i, Hyperion: FAIL
- Navigation:** Audio Level Indicators, Audio Likeness, **UMID**, PID, Alarm Enable Summary
- Control:** Enable Alarm, UMID Updates, Updates OFF
- UMID Reader:**
 - UMID: *** Found on Line: ***
 - Universal Label: Version Number: ***, Material Type: ***, Material Num Gen Method: ***, Instance Num Gen Method: ***
 - Instance Number: ** ** ** Count: -
 - Material Number: Bytes 1-4, 5-8, 9-12, 13-16 (all showing ** ** ** *)
 - Delete all UMIDs
- UMID Generator:**
 - Enable, Take button, Status: Pass
 - WARNING: UMID Generator will overwrite data already present on selected line!
 - Universal Label: Version Number (00H (0)), Material Type (01H (1)), Ident Material (00H (0)), Ident Instance (00H (0))
 - Instance Number: 3 bytes 00 00 00
 - Material Number: Bytes 1-4, 5-8, 9-12, 13-16 (all showing 00 00 00 00)
 - Line Number: 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

5.12.1 UMID Updates

When checked the detector reports will be enabled for this function only but for all other functions (that have an update button) the reports will be disabled. This action will be active for a maximum time of 5 minutes and the remaining time will be shown by the Timeout display; at the end of this time **Updates OFF** will be automatically selected; at the end of this time **Updates OFF** will be automatically selected.

To disable updates select **Updates OFF**.

Note: When this button is selected, the **Updates OFF** function will be implemented on all other screens.

At power up and when Factory Defaults or Restart Unit are selected, **Updates OFF** will be selected.

5.12.2 Enable Alarm

When checked, the alarm status will be reported and logged. For more information on alarms, see "Alarm Overview" on page 13.

5.12.3 UMID Reader

- **UMID:** This displays the status of UMIDs on the input video stream:
 - **"****":** No UMID found, or no input video.
 - **"Changing":** UMID value is changing or has recently changed.
 - **"OK":** UMID found with no errors.
 - **"Multiple Line Error":** Multiple UMIDs found (not allowed).
 - **"Checksum Error ":** Ancillary packet checksum error.
 - **"Length Error":** UMID is not 32 bytes long (Basic UMID Length).
- **Found on Line:** This displays the line number on which the UMID packet was found.

5.12.3.1 Universal Label

- **Version Number:** Displays the version number.
- **Material Type:** This defines the material type being identified.
- **Material Num(ber) Gen(eration) Method:** This identifies the method by which the material number is created.
- **Instance Num(ber) Gen(eration) Method:** This identifies the method by which the instance number is created.
- **Instance Number:** This shows the 3-byte UMID Instance number in hex format.
- **Material Number:** This shows the 16-byte UMID Material number in hex format as four sets of four bytes.
- **Delete all UMIDs:** Select to turn on the UMID Deleter. All UMID ancillary packets in the input video stream will be marked for deletion in the output video stream. They will have the DID set to 180h, the SDID set to 200h, the User Data Words overwritten with 200h, and the checksum recalculated.

5.12.4 UMID Generator

- **Enable:** Select to turn on the UMID Generator. A UMID packet will be generated in the active region of vertical blanking in every subsequent frame of the output video.
- **Take:** No changes in the value or line number of the generated UMID will take place until this button has been pressed (To ensure there are no "crossover" UMIDs generated while data is being changed).

5.12.4.1 Universal Label

This sets the adjustable parameters of the UMID Universal Label. Number next to the sliders is the hex value, with the decimal value in brackets.

- **Instance Number:** This is the 3-byte UMID Instance number, input in hex format.
- **Material Number:** This is the 16-byte UMID Material number, input in hex format as four sets of four bytes.
- **Status:** This displays the current status of the UMID Generator:
 - **"**":** No Input Video
 - **"Pass ":** Video is being passed through the module untouched
 - **"OK ":** Generator is enabled and working without error
 - **"Overwrite":** There is already a UMID present on the output Video and it is being overwritten by the generator
 - **"Multiple Lines":** There is already a UMID present on the output Video and a second one is being generated on a different line
 - **"Deleted":** Generator not enabled, previously generated UMIDs are deleted

5.12.4.2 Line Number

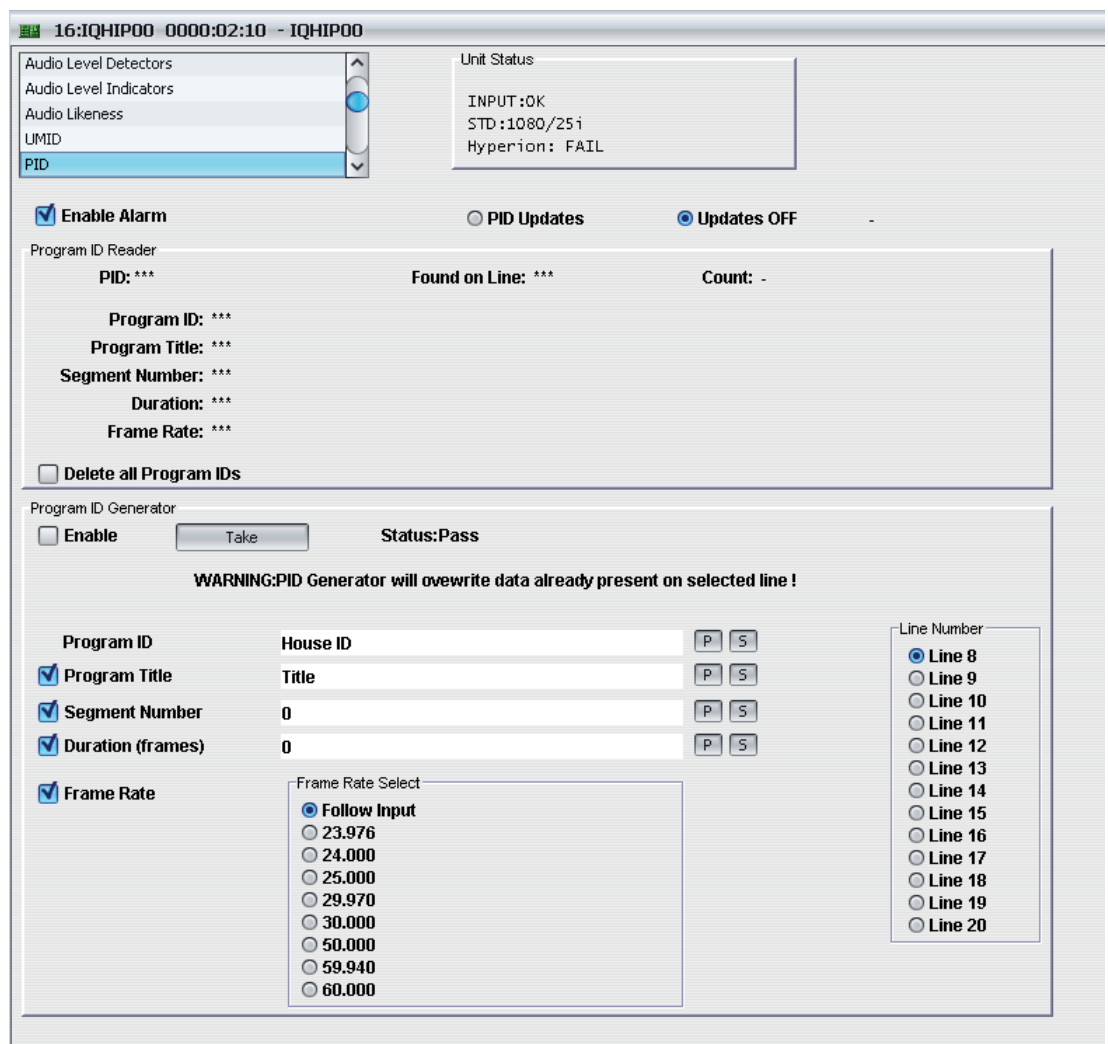
This selects which line of Vertical Blanking the UMID packet is generated.

5.13 PID

A Program Identification label (PID) can be used to store information about a video stream within the stream itself. House ID, program title, segment number, duration and frame rate can be embedded into the active region of vertical blanking of a video stream, using the Key-Length-Value (KLV) encoding method stored in an ancillary packet. The structure of the PID KLV Packet can be found in the Snell and Wilcox Metadata dictionary. All Snell and Wilcox PID packets must begin with a House ID, and can then have any combination of the other 4 data types, in any order. The Hyperion PID module has three main functions:

- **Detector:** The module searches the vertical ancillary space for a PID packet, and reports back the information that is stored in the PID that it finds, along with the line number that it finds the PID on. It also reports if there are any errors in the packet, and counts the number of frames that the current PID has been consistently present for.
- **Deleter:** The module can be used to delete any PID ancillary packets it finds in the video stream. If enabled, it will mark PID ancillary packets for deletion by setting the DID to 80h, and blank all the data held within the packet.
- **Generator:** The module can also be used to insert a new PID ancillary packet into a video stream, with house ID (compulsory) and any combination of program title, segment number, duration and frame rate, onto any line in the active region of the vertical ancillary space.

The **PID** screen enables monitoring of PIDs..



5.13.1 Enable Alarm

When checked, the alarm status will be reported and logged. For more information on alarms, see "Alarm Overview" on page 13.

5.13.2 PID Updates

When checked, the detector reports will be enabled for this function only but for all other functions (that have an update button) the reports will be disabled. This action will be active for a maximum time of 5 minutes and the remaining time will be shown by the Timeout display; at the end of this time **Updates OFF** will be automatically selected; at the end of this time **Updates OFF** will be automatically selected.

To disable the updates, select **Updates OFF**.

Note:

When this button is selected, the **Updates OFF** function will be implemented on all other screens.

At power up and when Factory Defaults or Restart Unit are selected, **Updates OFF** will be selected.

5.13.3 Program ID Reader

- **PID:** This displays the status of PIDs on the input video stream:
 - **"****":** No PID found, or no input video.
 - **"Changing":** PID is changing or has recently changed.
 - **"OK":** PID found with no errors.
 - **"Multiple Line Error":** Multiple PIDs found (not allowed).
 - **"Not Hyperion PID":** PID found is not a Snell and Wilcox Hyperion PID.
 - **"Inc House ID":** House ID Tag is incorrect (Should be 01).
 - **"Illegal Tag Value":** Tag Value is invalid (only 02, 03, 04, 05 are valid).
 - **"Inc Seg Num Len":** Segment Number Length is incorrect (should be 2 bytes).
 - **"Inc Duration Len":** Duration Length is incorrect (should be 8 bytes).
 - **"Inc Frame Rate Len":** Frame Rate Length is incorrect (should be 8 bytes).
 - **"Inc Data Count":** Ancillary Packet Data Count Incorrect.
 - **"Checksum Error":** Ancillary Packet Checksum Error.
- **Found on Line:** This displays the line number on which the PID packet was found.
- **Program ID: House ID:** This displays the House ID stored in the PID (Compulsory).
- **Program Title:** This displays the Program Title stored in the PID (***) means Program Title missing).
- **Segment Number:** This displays the Segment Number stored in the PID (***) means Segment Number missing).
- **Duration:** This displays the Duration stored in the PID (***) means Duration missing).
- **Frame Rate:** This displays the Frame Rate stored in the PID (***) means Frame Rate missing).
- **Count:** This displays the number of frames that the current PID has been present for. Resets to zero if the value of the PID changes or if the PID disappears, but will carry on counting if the line number of the PID is changed.
- **Delete all Program IDs:** Check this box to turn the PID Deleter on. All PID ancillary packets in the input video stream will be marked for deletion in the output video stream. They will have the DID set to 180h, the SDID set to 200h, the User Data Words overwritten with 200h, and the Checksum recalculated.

5.13.4 Program ID Generator

- **Enable:** Check this box to turn the PID Generator on. A PID packet will be generated in the active region of vertical blanking in every subsequent frame of the output video.
- **Take:** No changes in the value or line number of the generated PID will take place until this button has been pressed (To ensure there are no "crossover" PIDs generated while data is being changed).
- **Status:** This displays the current status of the PID Generator:
 - **"***":** No Input Video.
 - **"Pass":** Video is being passed through the module untouched.
 - **"OK ":** Generator is enabled and working without error.
 - **"Overwrite":** There is already a PID present on the output video and it is being overwritten by the generator.
 - **"Multiple Lines":** There is already a PID present on the output video and a second one is being generated on a different line.
- **Program ID:** Any combination of letters and numbers, up to a maximum of 19 characters. Always enabled.
- **Program Title:** Any combination of letters and numbers, up to a maximum of 19 characters. Enable by ticking the checkbox.
- **Segment Number:** An integer number up to the value of 65535. Enable by ticking the checkbox.
- **Duration (frames):** An integer number with a maximum length of 19 digits. Enable by ticking the checkbox.
- **Frame Rate:** When selected, the frame rate (as set by the Frame Rate Select function) will be included.

5.13.4.1 Frame Rate Select

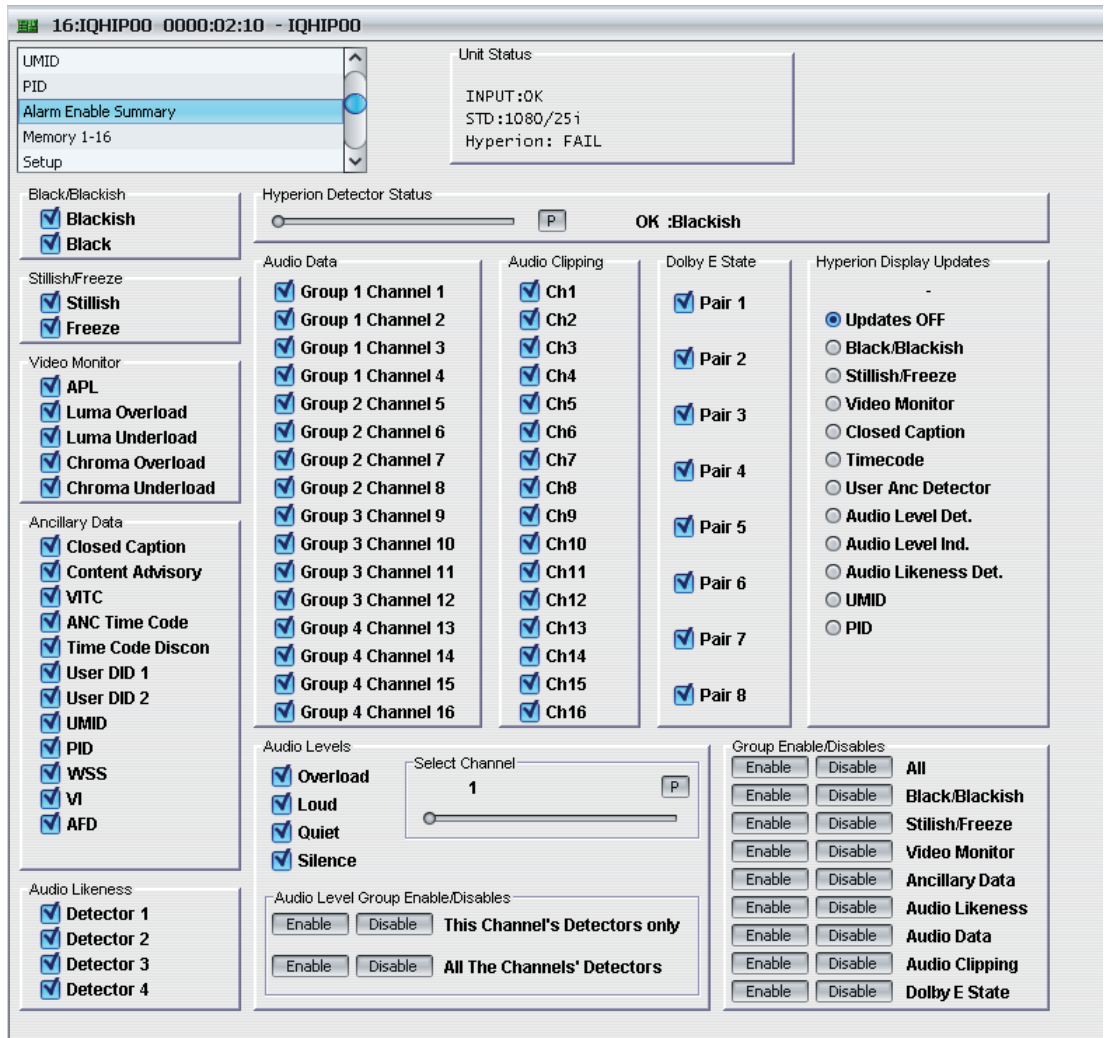
This allows a frame rate to be selected for the generated PID. If Follow Input is chosen the PID frame rate will be the same as the input signal.

5.13.4.2 Line Number:

This selects which line of Vertical Blanking the PID packet is generated on.

5.14 Alarm Enable Summary

The **Alarm Enable Summary** shows, on one screen, all the alarms and whether or not they are enabled. This screen can also be used to enable/disable the alarms, duplicating the functions of the individual screens..

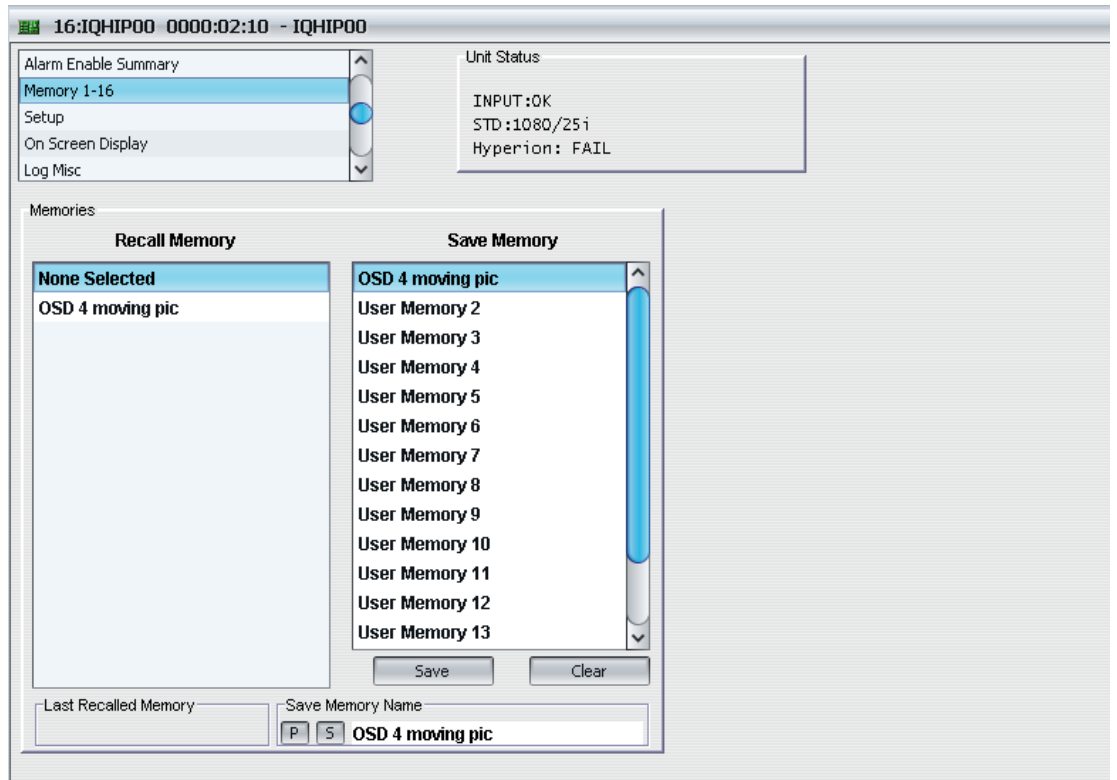


5.14.1 Hyperion Detector Status

This may be used to scroll through all the detectors and display their status.

5.15 Memory

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



5.15.1 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.

5.15.2 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.

5.15.3 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.

5.15.4 Save Memory Name

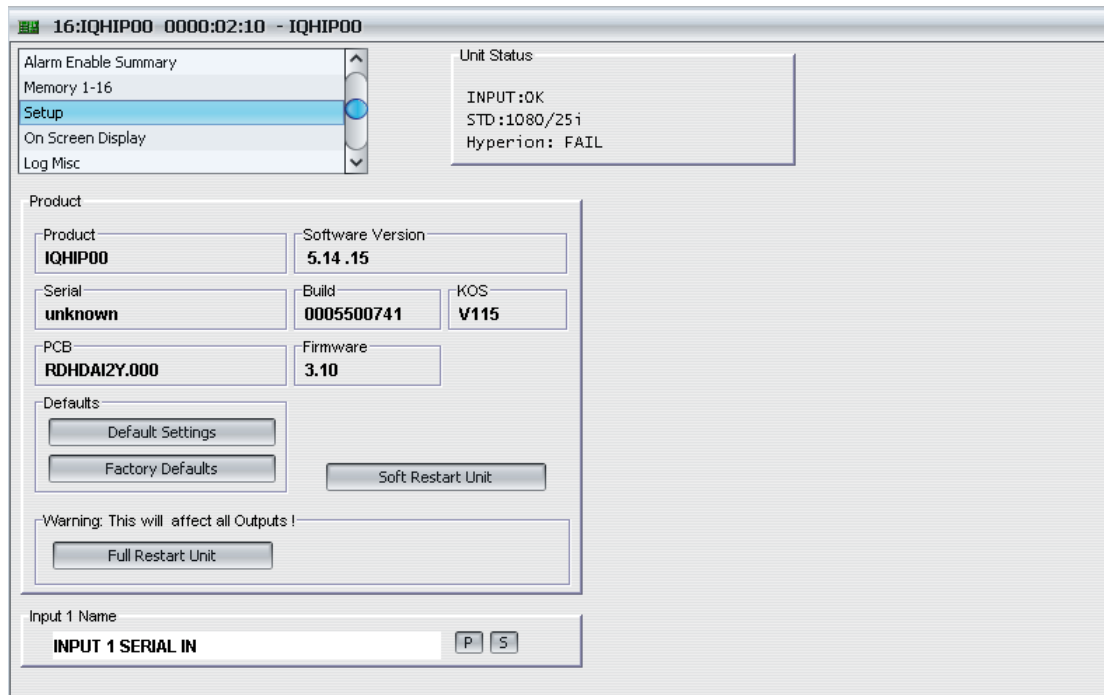
This option enables the pre-set memory names to be changed (to something more memorable or meaningful), if required.

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.

5.16 Setup

The **Setup** 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.
- **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.

5.16.1 Default Settings

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

5.16.2 Factory Defaults

The **Factory Defaults** button enables the module settings to be reset to their factory defaults. This operation may take a few seconds to implement.

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

5.16.3 Soft Restart Unit

(Only available at Supervisor level). This will reboot the unit simulating a power-down power-up cycle restoring power-up settings without disturbing the output picture. This function should be used to reboot the software if, for example, it fails to respond.

5.16.4 Full Restart Unit

(Only available at Supervisor level). This will reboot the unit simulating a power-down power-up cycle restoring power-up settings **but will produce disturbances on the output picture**. This function should be used to reboot the software if a Soft Restart does not solve the problem or if new software has been installed.

5.16.5 Input 1 Name

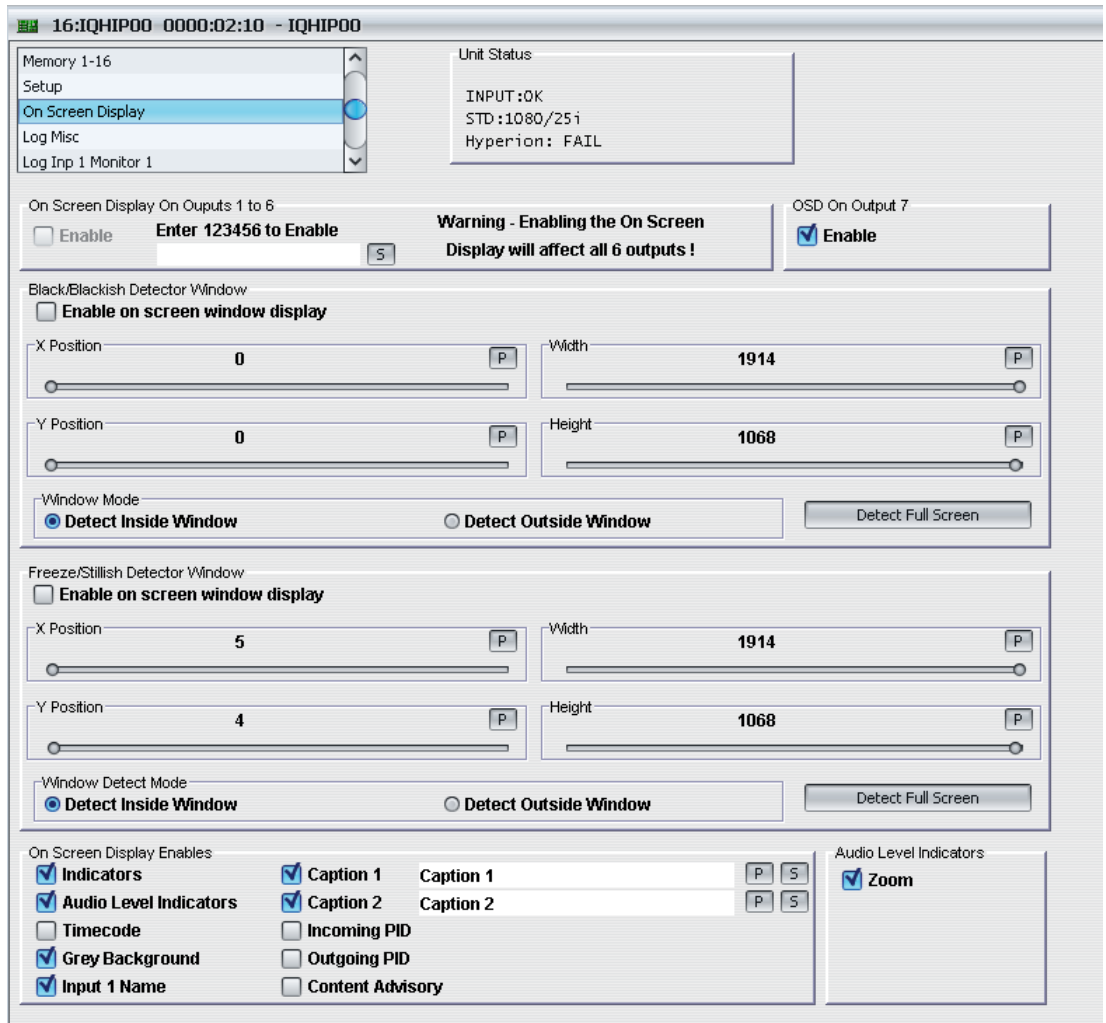
This is the name of the input signal that will appear on screen.

To change the name:

In the **Input 1 Name** field, type the new name, and then click the **S** button to save. To return the memory to its default preset value (INPUT 1 SERIAL IN), click **P** button.

5.17 On Screen Display

The **On Screen Display** screen enables control of hyperion content to be displayed on screen.



The OSD can be displayed on a single dedicated output (Output 7), on outputs 1-6 collectively, or on all seven outputs.

To display the OSD on Output 7 only:

In the **OSD On Output 7** section, select the **Enable** check box.

To prevent the OSD from being accidentally displayed on Outputs 1-6, a simple key must be entered before the OSD for these outputs can be enabled.

To display the OSD on Output 1-6:

In the **On Screen Display On Outputs 1-6** section, type **123456** in the text box, click the return button, and then select the **Enable** check box.

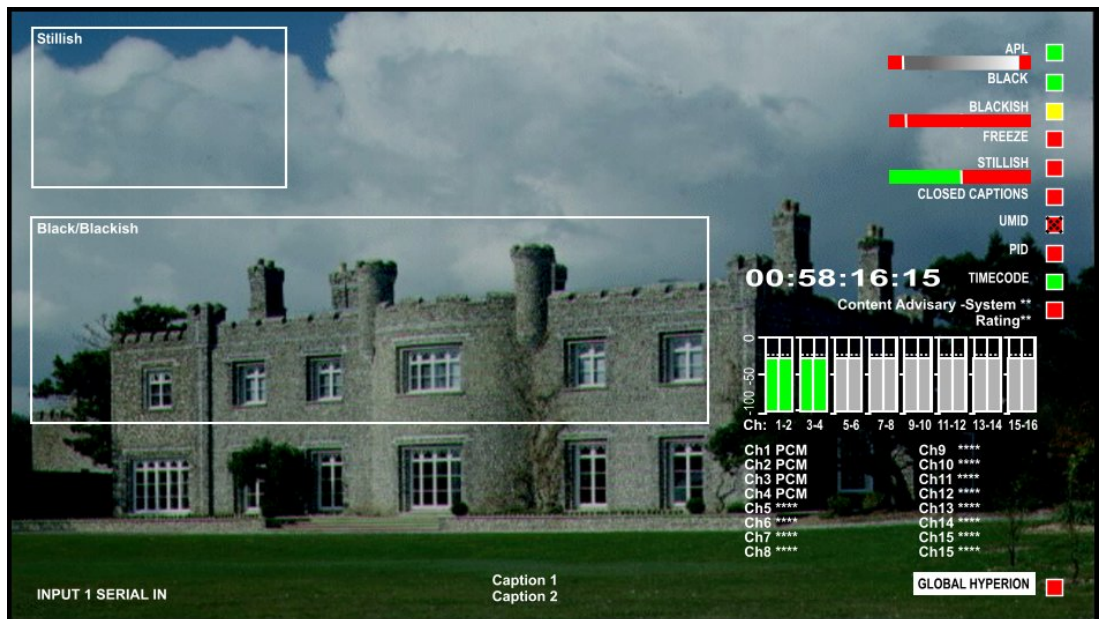
Note: The Enable check box must be checked within 4 seconds of clicking the return button. Enabling the On Screen Display will add the detector indicators and windows to outputs 1-6.

5.17.1 Detector Windows

A HYPERION parameter with a detector window can either detect the parameter inside the window, outside of the window or over the entire screen.

The controls that define the detector window are x and y start co-ordinates within the active area of the picture, and two length parameters, Width and Height.

- **Enable on screen window display:** When checked, the associated detector window will appear on the output picture.
- **X Position:** This denotes the horizontal starting position of the active windowed area measured from the top left hand corner. Note that the numerical range of the control is dependent on the operating standard. Preset is the minimum value.
- **Y Position:** This denotes the vertical size position of the active windowed area measured from the top left hand corner. Note that the numerical range of the control is dependent on the operating standard. Preset is the minimum value.
- **Width:** This denotes the horizontal size of the active windowed area. Note that the numerical range of the control is dependent on the operating standard. Preset is the maximum value.
- **Height:** This denotes the vertical size of the active windowed area. Note that the numerical range of the control is dependent on the operating standard. Preset is the maximum value.
- **Window (Detect) Mode:** This section provides controls for selection of **Detect Inside Window**, **Detect Outside Window** or **Detect Full Screen**.



5.17.2 On Screen Display Enables

When checked the associated function will be enabled and available for the on screen display.

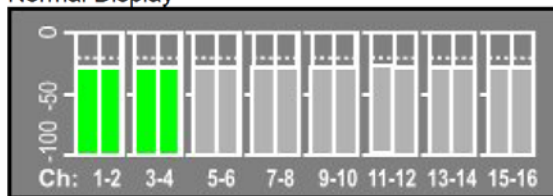
- **Indicators:** When checked, the Hyperion status boxes and bar graphs will appear on the screen.
- **Audio Level Detectors:** When checked, the audio monitoring bar graphs will appear on the screen.
- **Timecode:** When checked, the timecode readout will appear on screen.
- **Grey Background:** When checked, the picture area behind the indicators will become monochrome.

- **Input 1 Name:** When checked, the name of the input signal will appear on screen. This is the name entered using the renaming function on the **Setup** screen.
- **Caption 1 and 2:** When checked, this allows one or two captions to be displayed on the screen. To change the caption text, type the new name in the text area (the return symbol changes to red) and then select (return) to save the new name. The symbol will then become black again. The factory default text is **Caption 1** and **Caption 2**.
- **Incoming PID:** When checked any incoming Program Identification information (PID) will be displayed on the screen. If nothing has been detected asterisks will be displayed.
- **Outgoing PID:** When checked any outgoing Program Identification information (PID) will be displayed on the screen. If nothing has been detected asterisks will be displayed.
- **Content Advisory:** When checked, any content advisory information that has been detected in the input stream will be displayed on the screen. If nothing has been detected asterisks will be displayed.

5.17.3 Audio Level Meters

Normally, the range of the audio level meters is from 0 to -100 dB; if the Zoom function is checked the range becomes 0 to -50 dB. This allows the higher audio levels to be observed more easily.

Normal Display



Display with Zoom Enabled



5.18 Logging

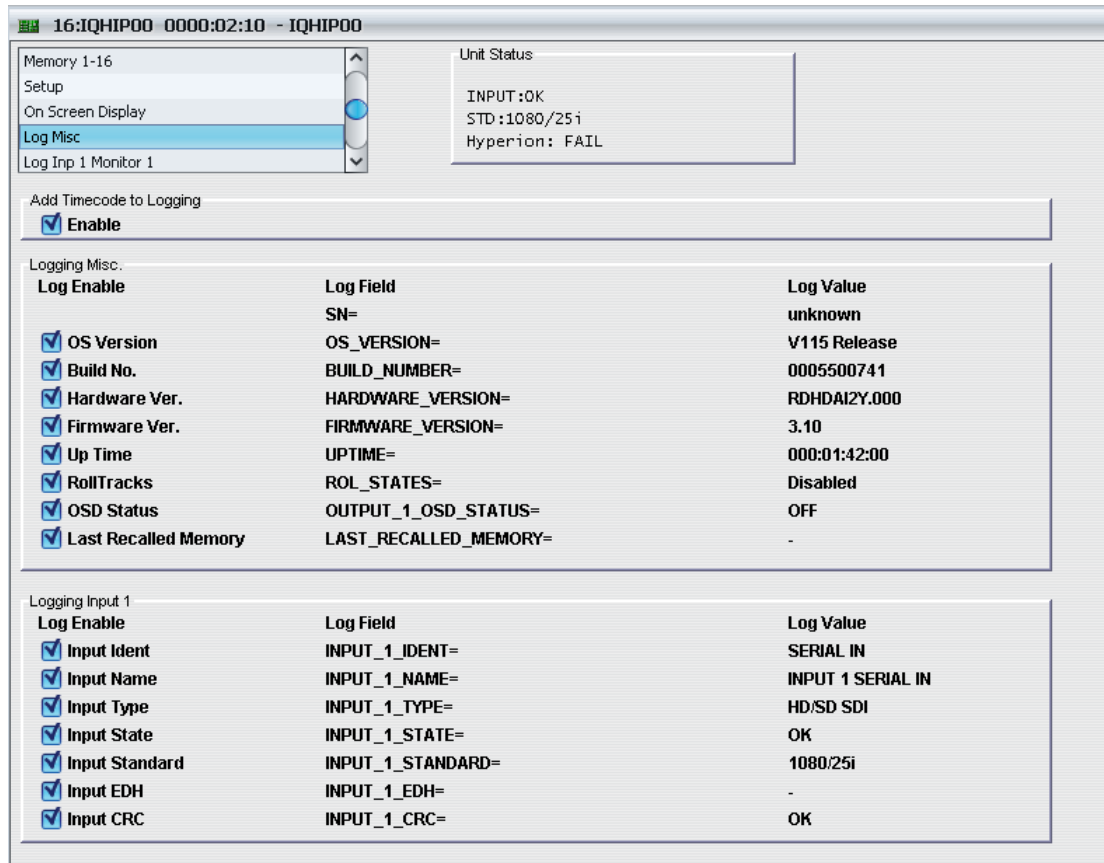
Information about several parameters can be made available to a logging device that is connected to the RollCall network.

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.

5.18.1 Log Misc

The **Log Misc** screen displays product information.



Log Field	Description
SN=	Displays the module serial number, which consists of an S followed by eight digits.
OS_VERSION=	Displays the operating system name and version. For example, V115.
BUILD_NUMBER=	Displays the build number.
HARDWARE_VERSION=	Displays the hardware version number.
FIRMWARE_VERSION=	Displays the firmware version number.
UPTIME=	Displays the time since the last restart in the format ddd:hh:mm:ss.

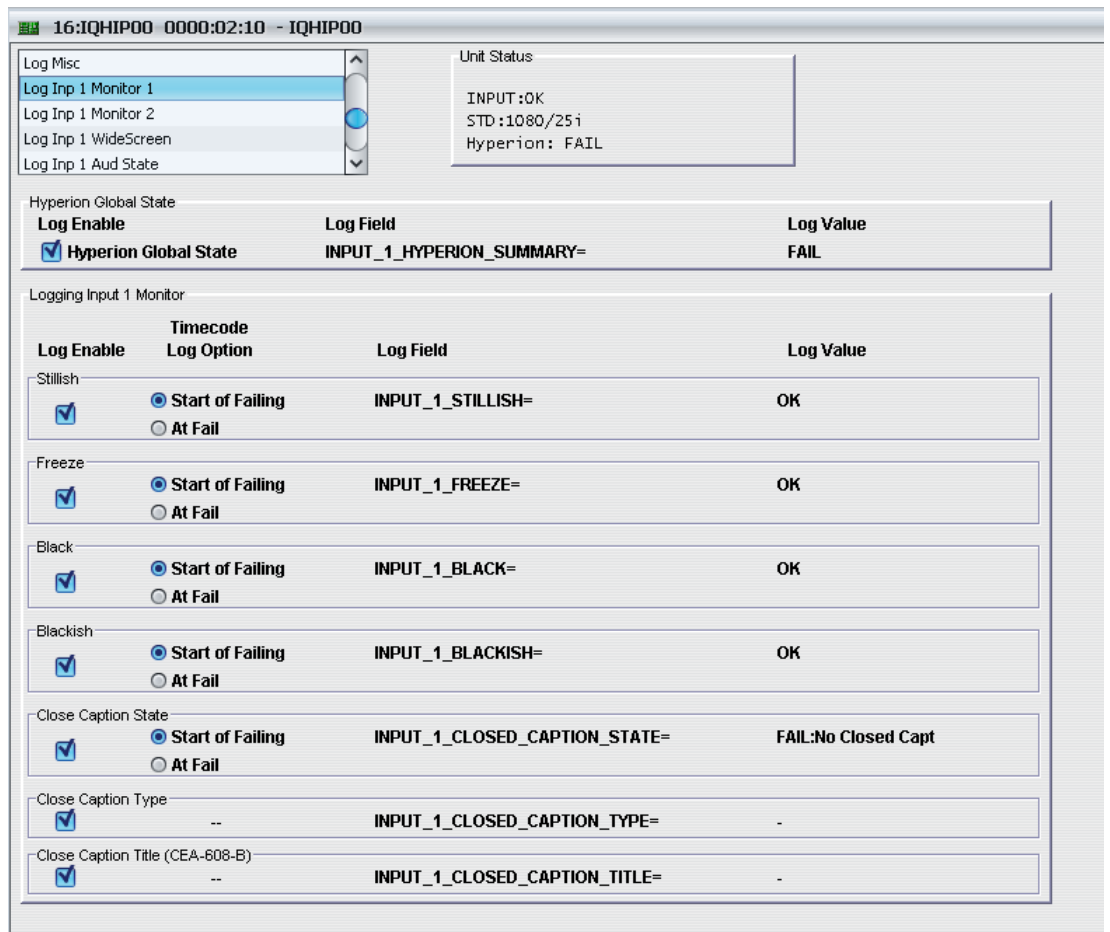
Log Field	Description
ROL_STATES=	Displays the RollCall status. Valid values are: <ul style="list-style-type: none"> • OK • FAIL:Lost • Disabled
OUTPUT_1_OSD_STATUS=	Displays the on screen display status. Valid values are: <ul style="list-style-type: none"> • OFF • WARN:ON
LAST_RECALLED_MEMORY=	Displays the last recalled memory.
Logging Input 1	
INPUT_1_IDENT=	Displays the identifier for Input 1.
INPUT_1_NAME=	Displays the name for Input 1.
INPUT_1_TYPE=	Displays the type for Input 1 (HD/SDI).
INPUT_1_STATE=	Displays the status of Input 1. Valid values are: <ul style="list-style-type: none"> • FAIL:Lost • OK
INPUT_1_STANDARD=	Displays the standard for Input 1. Valid values are: <ul style="list-style-type: none"> • WARN:No Input • UNKNOWN • Standard (525(480)29I, 625(576)/25I, 1125(1080)/29I, 750(720)/59P etc)
INPUT_1_EDH=	Displays the Error Detection and Handling for Input 1. Valid values are: <ul style="list-style-type: none"> • - • OK • WARN:EDH • Error • None
INPUT_1_CRC=	Displays the Cyclic Redundancy Check for Input 1. Valid values are: <ul style="list-style-type: none"> • - • OK • WARN:CRC • Error

Note:

The Hyperion Global State function is available on all Logging screens. Checking this on one screen will activate the function on all other screens.

5.18.2 Log Inp 1 Monitor 1

The **Log Inp 1 Monitor 1** screen enables various monitoring information to be logged for Input 1.



Log Field	Description
INPUT_1_HYPERION_SUMMARY=	Displays a the global state of the Hyperion reporting. Valid values are: <ul style="list-style-type: none"> • OK • WARN • FAIL
INPUT_1_STILLISH=	Displays the Stillish status for Input 1. Valid values are: <ul style="list-style-type: none"> • OK • WARN • FAIL
INPUT_1_FREEZE=	Displays the Freeze status for Input 1. Valid values are: <ul style="list-style-type: none"> • OK • WARN • FAIL

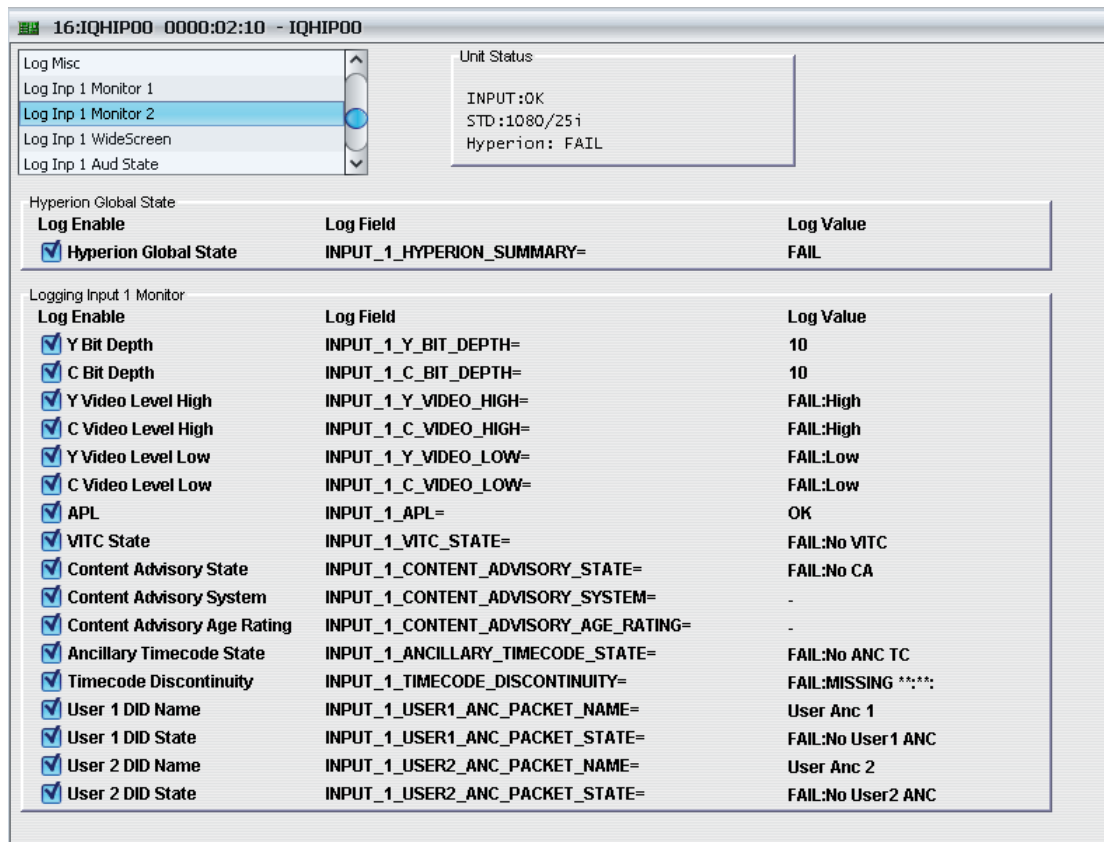
Log Field	Description
INPUT_1_BLACK=	Displays the Black status for Input 1. Valid values are: <ul style="list-style-type: none">• OK• WARN• FAIL
INPUT_1_BLACKISH=	Displays the Blackish status for Input 1. Valid values are: <ul style="list-style-type: none">• OK• WARN• FAIL
INPUT_1_CLOSED_CAPTION._STATE=	Displays the Closed Captions status for Input 1. Valid values are: <ul style="list-style-type: none">• OK• WARN• FAIL
INPUT_1_CLOSED_CAPTION_TYPE=	Displays the Closed Captions type for Input 1. Valid values are: <ul style="list-style-type: none">• OK• WARN• FAIL
INPUT_1_CLOSED_CAPTION_TITLE=	Displays the Closed Captions title for Input 1. Valid values are: <ul style="list-style-type: none">• OK• WARN• FAIL

Note:

The Hyperion Global State function is available on all Logging screens. Checking this on one screen will activate the function on all other screens.

5.18.3 Log Inp 1 Monitor 2

The **Log Inp 1 Monitor 2** screen enables various monitoring information to be logged for Input 1.



Log Field	Description
INPUT_1_HYPERION_SUMMARY=	Displays a the global state of the Hyperion reporting. Valid values are: <ul style="list-style-type: none"> • OK • WARN • FAIL
INPUT_1_Y_BIT_DEPTH=	Displays the luminance status for Input 1. Valid values are: <ul style="list-style-type: none"> • 10 • 9 • 8 • UNKNOWN
INPUT_1_C_BIT_DEPTH=	Displays the chrominance status for Input 1. Valid values are: <ul style="list-style-type: none"> • 10 • 9 • 8 • UNKNOWN
INPUT_1_VIDEO_Y_LEVEL_HIGH=	Displays the video luminance level high limit for Input 1. Valid values are: <ul style="list-style-type: none"> • OK • FAIL

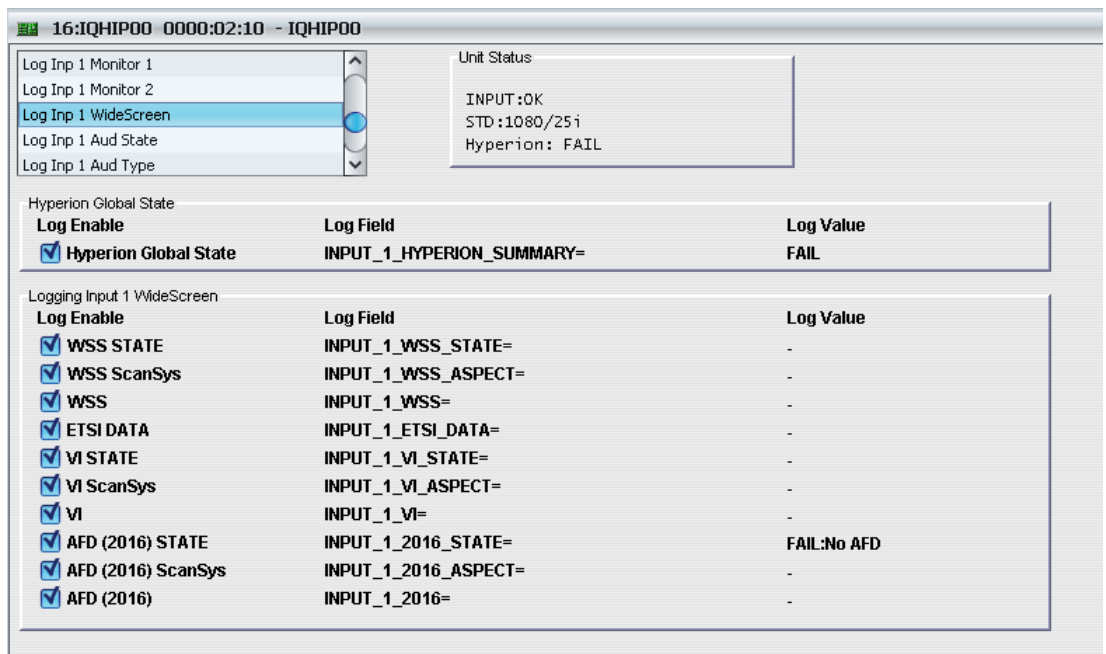
Log Field	Description
INPUT_1_VIDEO_C_LEVEL_HIGH=	Displays the video chrominance level high limit for Input 1. Valid values are: <ul style="list-style-type: none"> • OK • FAIL
INPUT_1_VIDEO_Y_LEVEL_LOW=	Displays the video luminance level low limit for Input 1. Valid values are: <ul style="list-style-type: none"> • OK • FAIL
INPUT_1_VIDEO_C_LEVEL_LOW=	Displays the video chrominance level low limit for Input 1. Valid values are: <ul style="list-style-type: none"> • OK • FAIL
INPUT_1_APL=	Displays the average picture level for Input 1. Valid values are: <ul style="list-style-type: none"> • OK • WARN:MINAPL • WARN:MAXAPL
INPUT_1_VITC_STATE=	Displays the VITC state for Input 1. Valid values are: <ul style="list-style-type: none"> • OK • FAIL
INPUT_1_CONTENT_ADVISORY_STATE=	Displays the content advisory state for Input 1. Valid values are: <ul style="list-style-type: none"> • OK • FAIL
INPUT_1_CONTENT_ADVISORY_SYSTEM=	Displays the content advisory system for Input 1. Valid values are: <ul style="list-style-type: none"> • OK • FAIL <p>Interpreted from CEA-608-B: Section 9.5.1.05h Content Advisory.</p>
INPUT_1_CONTENT_ADVISORY_AGE_RATING=	Displays the content advisory age rating for Input 1. Valid values are: <ul style="list-style-type: none"> • MPA • See table 20 • US PG • See table 21 • Other ** <p>Interpreted from CEA-608-B: Section 9.5.1.05h Content Advisory.</p>
INPUT_1_ANCILLARY_TIMECODE_STATE=	Displays the ancillary timecode state for Input 1. Valid values are: <ul style="list-style-type: none"> • OK • FAIL
INPUT_1_TIMECODE_DISCONTINUITY=	Displays the timecode discontinuity for Input 1. Valid values are: <ul style="list-style-type: none"> • OK • FAIL
INPUT_1_USER_1_ANC_PACKET_NAME=	Displays the user 1 ancillary packet name.

Log Field	Description
INPUT_1_USER_1_ANC_PACKET_STATE=	Displays the user 1 ancillary packet state for Input 1. Valid values are: <ul style="list-style-type: none"> OK FAIL
INPUT_1_USER_2_ANC_PACKET_NAME=	Displays the user 2 ancillary packet name.
INPUT_1_USER_2_ANC_PACKET_STATE=	Displays the user 2 ancillary packet state for Input 1. Valid values are: <ul style="list-style-type: none"> OK FAIL

Note: The Hyperion Global State function is available on all Logging screens. Checking this on one screen will activate the function on all other screens.

5.18.4 Log Inp 1 Widescreen

The **Log Inp 1 Widescreen** screen enables WSS for Input 1 to be logged.



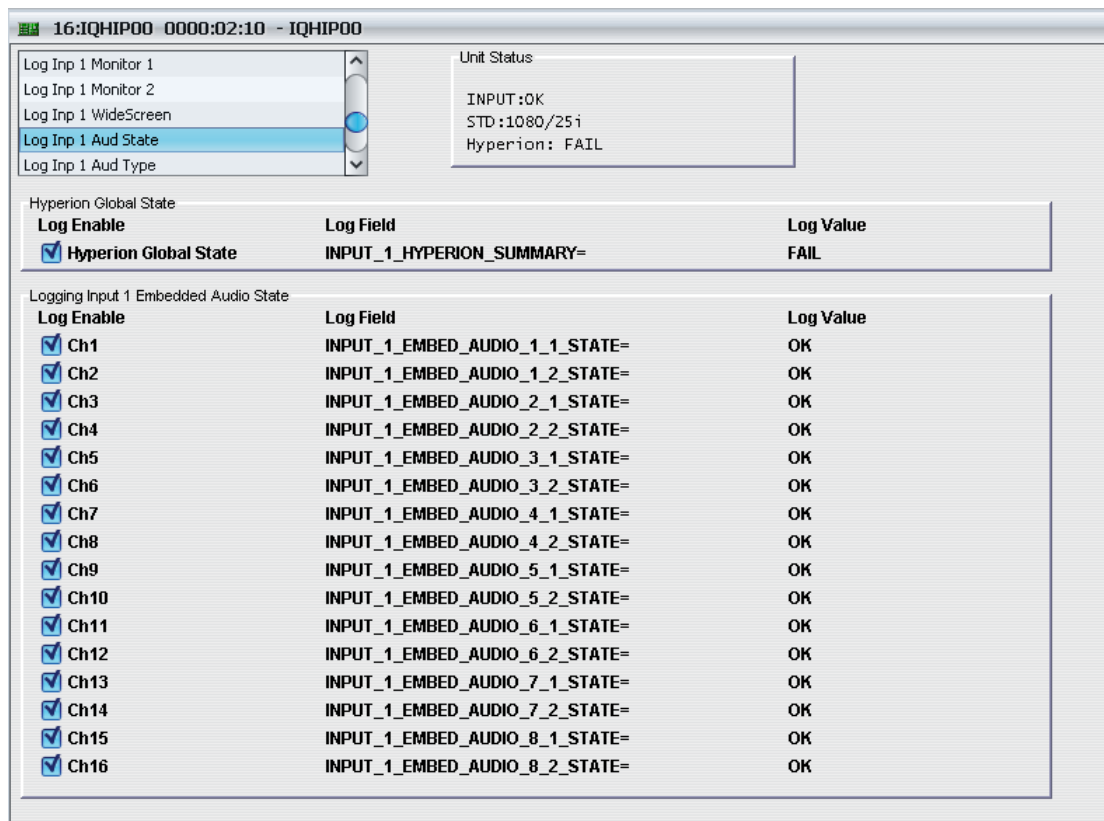
Log Field	Description
INPUT_1_HYPERION_SUMMARY=	Displays a the global state of the Hyperion reporting. Valid values are: <ul style="list-style-type: none"> OK WARN FAIL
INPUT_1_WSS_STATE=	Displays the WSS state for Input 1. Valid values are: <ul style="list-style-type: none"> OK FAIL
INPUT_1_WSS_ASPECT=	Displays the WSS aspect for Input 1.
INPUT_1_WSS=	Displays the WSS for Input 1.
INPUT_1_ETSI_DATA=	Displays the ETSI data for Input 1.

Log Field	Description
INPUT_1_VI_STATE=	Displays the VI state for Input 1. Valid values are: <ul style="list-style-type: none"> • OK • FAIL
INPUT_1_VI_ASPECT=	Displays the VI aspect for Input 1.
INPUT_1_VI=	Displays the VI for Input 1.
INPUT_1_2016_STATE=	Displays the 2016 state for Input 1. Valid values are: <ul style="list-style-type: none"> • OK • FAIL
INPUT_1_2016_ASPECT=	Displays the 2016 aspect for Input 1.
INPUT_1_2016=	Displays the 2016 for Input 1.

Note: The Hyperion Global State function is available on all Logging screens. Checking this on one screen will activate the function on all other screens.

5.18.5 Log Inp 1 Aud State

The **Log Inp 1 Aud State** screen enables the status of the 16 channels of embedded audio to be logged.

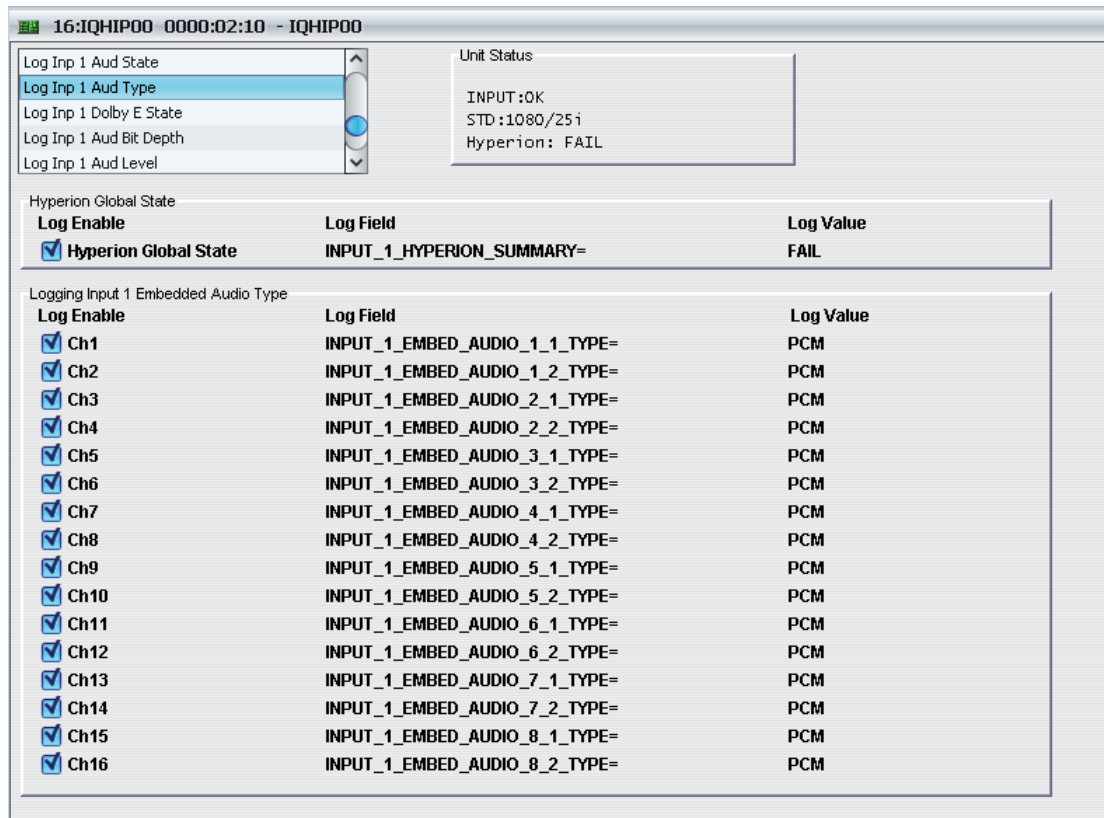


Log Field	Description
INPUT_1_HYPERION_SUMMARY=	Displays a the global state of the Hyperion reporting. Valid values are: <ul style="list-style-type: none"> • OK • WARN • FAIL
INPUT_EMBED_AUDIO_1_1_STATE= to INPUT_EMBED_AUDIO_8_2_STATE=	Displays the embedded audio channel state. Valid values are: <ul style="list-style-type: none"> • OK • WARN:No Input

Note: The Hyperion Global State function is available on all Logging screens. Checking this on one screen will activate the function on all other screens.

5.18.6 Log Inp 1 Aud Type

The **Log Inp 1 Aud Type** screen displays the current log information for the type of embedded audio output.



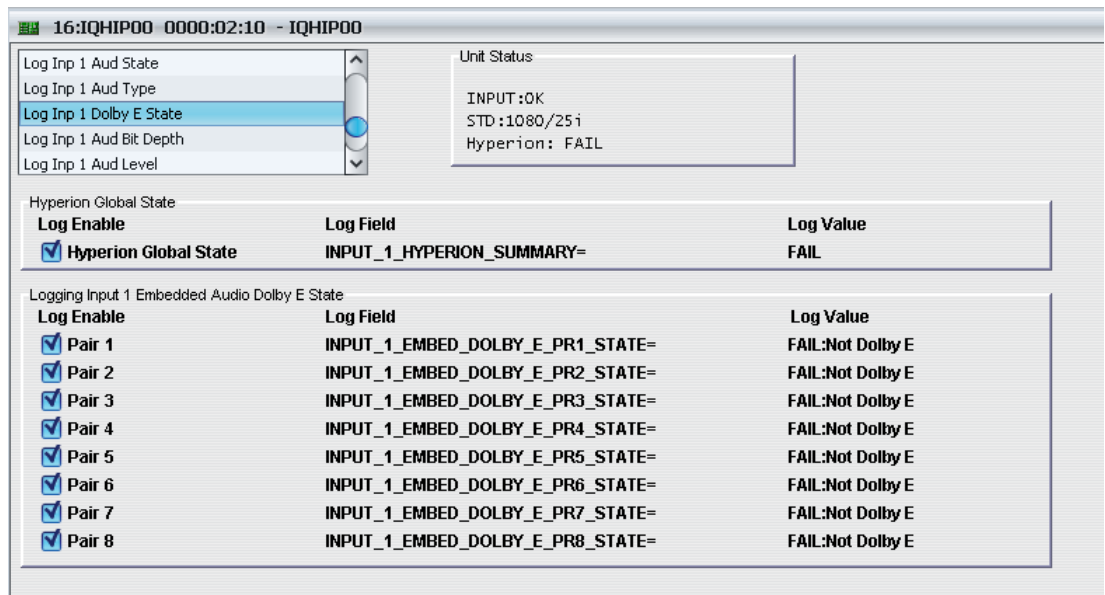
Log Field	Description
INPUT_1_HYPERION_SUMMARY=	Displays a the global state of the Hyperion reporting. Valid values are: <ul style="list-style-type: none"> • OK • WARN • FAIL

Log Field	Description
INPUT_EMBEDDED_AUDIO_1_1_TYPE= to INPUT_EMBEDDED_AUDIO_8_2_TYPE=	Displays the embedded audio channel type. Valid values are: <ul style="list-style-type: none"> • PCM • Dolby E • Dolby D (AC3) • WARN:No Input

Note: The Hyperion Global State function is available on all Logging screens. Checking this on one screen will activate the function on all other screens.

5.18.7 Log Inp 1 Dolby E State

The **Log Inp 1 Dolby E State** screen enables the state of the eight embedded Dolby E audio pairs to be logged.

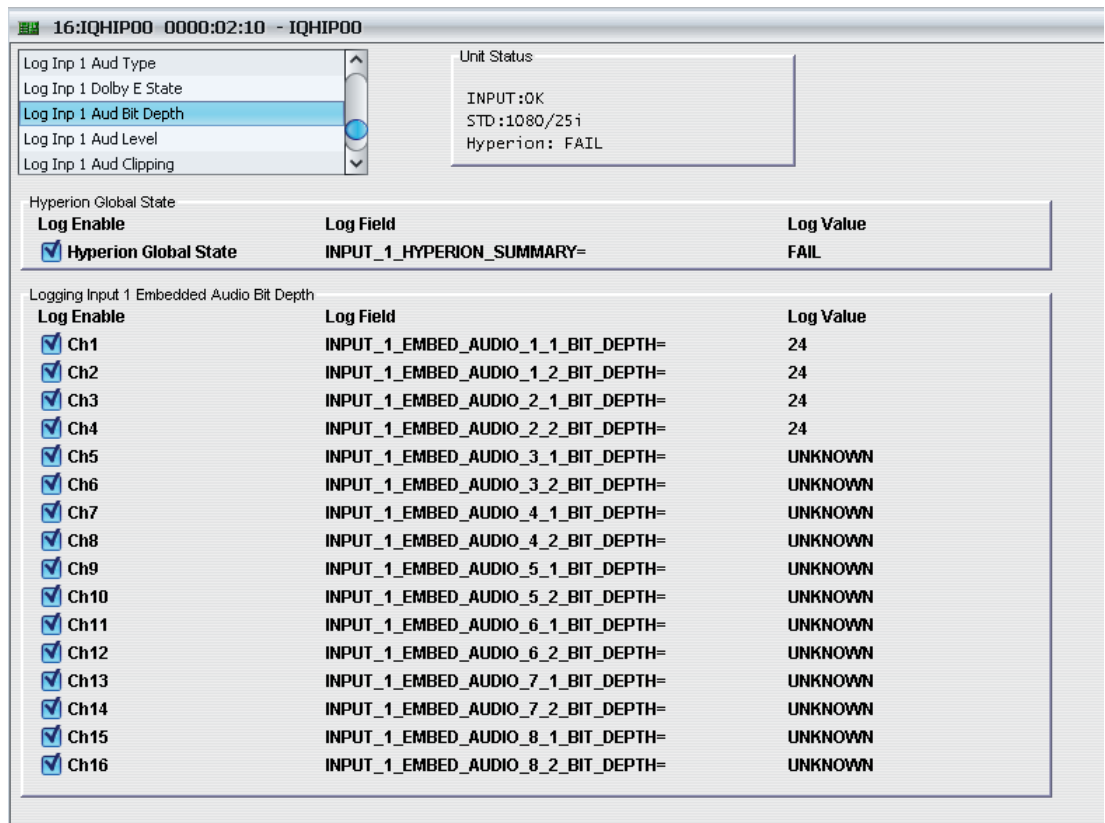


Log Field	Description
INPUT_1_HYPERION_SUMMARY=	Displays a the global state of the Hyperion reporting. Valid values are: <ul style="list-style-type: none"> • OK • WARN • FAIL
INPUT_1_EMBED_DOLBY_E_PR1__STATE= to INPUT_1_EMBED_DOLBY_E_PR8__STATE=	Displays the embedded audio channel type. Valid values are: <ul style="list-style-type: none"> • OK • WARN:Early • WARN:Late • WARN>Error • FAIL:Not Dolby E

Note: The Hyperion Global State function is available on all Logging screens. Checking this on one screen will activate the function on all other screens.

5.18.8 Log Inp 1 Aud Bit Depth

The **Log Inp 1 Aud Bit Depth** screen enables the bit depth of the 16 channels of embedded audio to be logged.

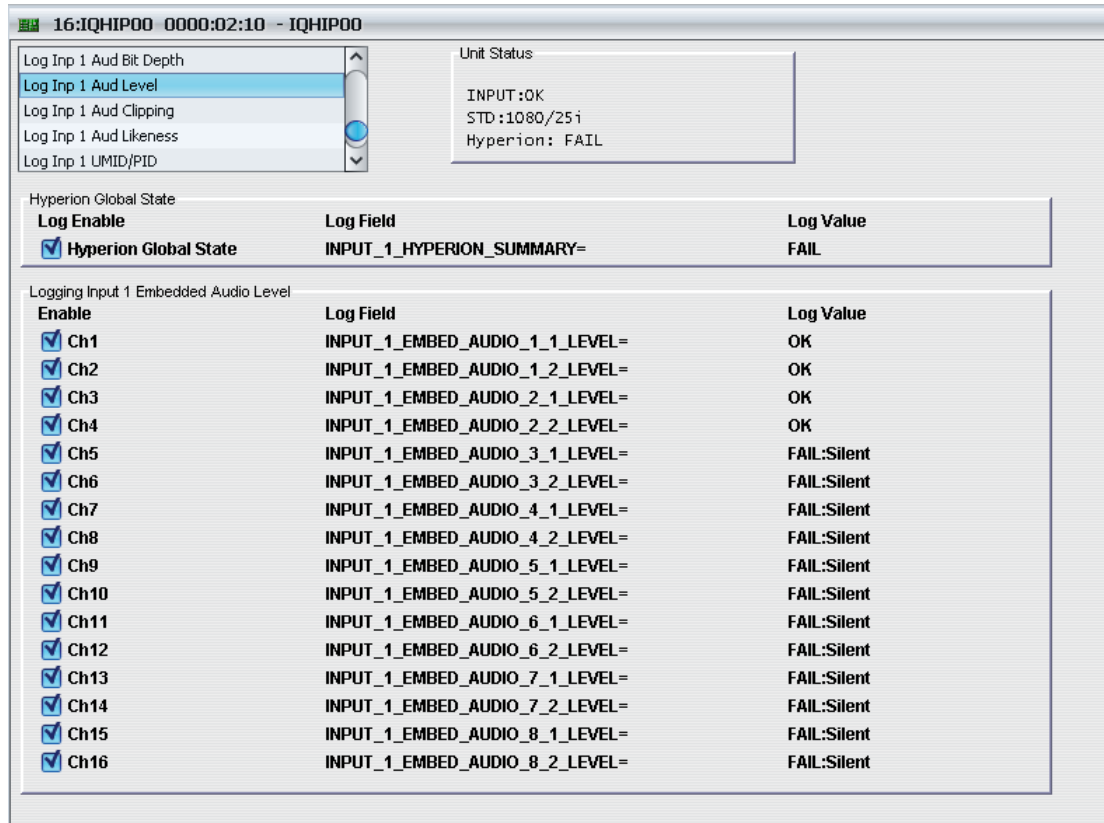


Log Field	Description
INPUT_1_HYPERION_SUMMARY=	Displays a the global state of the Hyperion reporting. Valid values are: <ul style="list-style-type: none"> • OK • WARN • FAIL
INPUT_EMBEDDED_AUDIO_1_1_BIT_DEPTH= to INPUT_EMBEDDED_AUDIO_8_2_BIT_DEPTH=	Displays the embedded audio channel bit depth. Valid values are: <ul style="list-style-type: none"> • 24 • 20 • 16 • UNKNOWN • WARN:No Input

Note: The Hyperion Global State function is available on all Logging screens. Checking this on one screen will activate the function on all other screens.

5.18.9 Log Inp 1 Aud Level

The **Log Inp 1 Aud Level** screen enables the levels of the 16 channels of embedded audio to be logged.

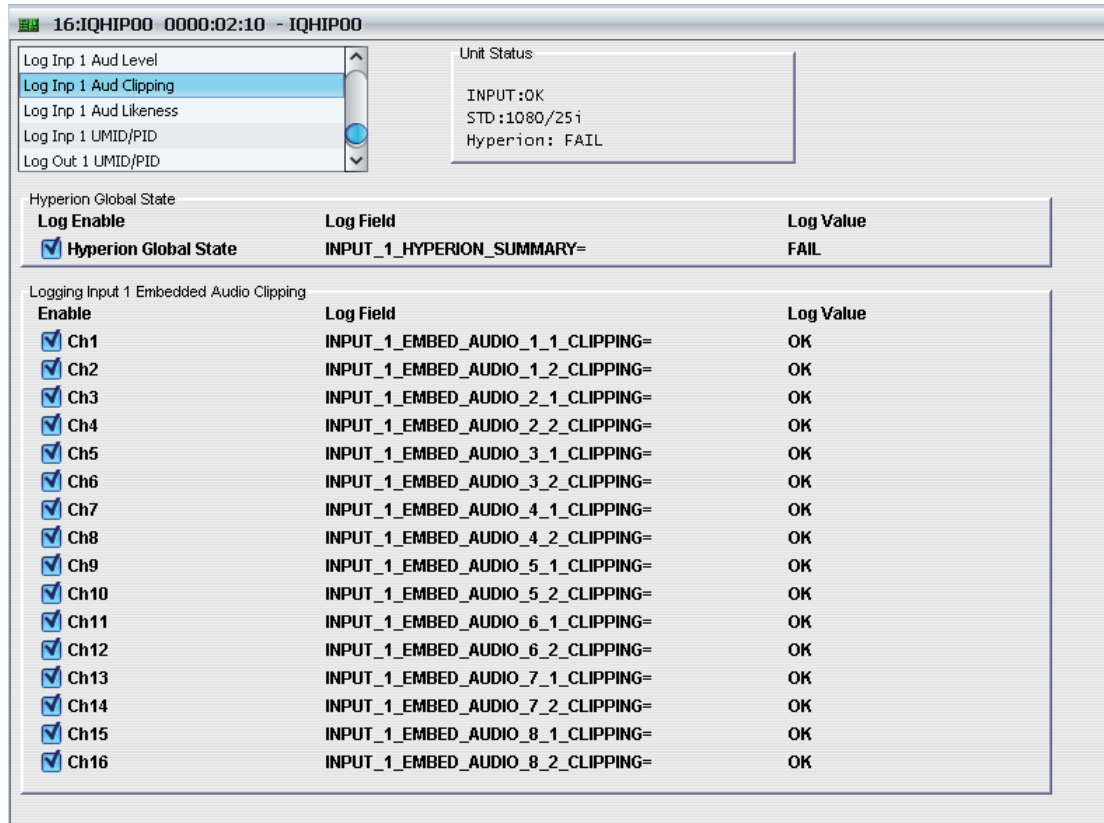


Log Field	Description
INPUT_1_HYPERION_SUMMARY=	Displays a the global state of the Hyperion reporting. Valid values are: <ul style="list-style-type: none"> • OK • WARN • FAIL
INPUT_EMBEDDED_AUDIO_1_1_LEVEL= to INPUT_EMBEDDED_AUDIO_8_2_LEVEL=	Displays the embedded audio level. Logs state of Overload, Loudness, Quiet and Silence detectors. Valid values are: <ul style="list-style-type: none"> • OK • WARN • FAIL • WARN:No Input • WARN:NON PCM

Note: The Hyperion Global State function is available on all Logging screens. Checking this on one screen will activate the function on all other screens.

5.18.10 Log Inp 1 Aud Clipping

The **Log Inp 1 Aud Clipping** screen enables the clipping state of the sixteen embedded audio channels to be logged.

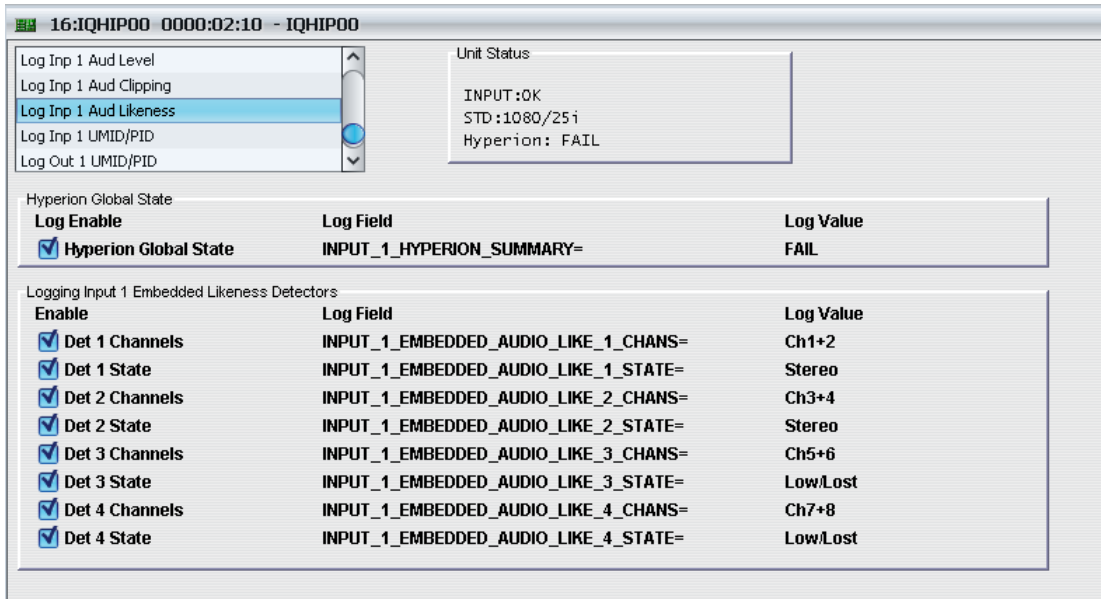


Log Field	Description
INPUT_1_HYPERION_SUMMARY=	Displays a the global state of the Hyperion reporting. Valid values are: <ul style="list-style-type: none"> • OK • WARN • FAIL
INPUT_1_EMBED_AUDIO_1_1_CLIPPING= INPUT_1_EMBED_AUDIO_1_2_CLIPPING= to INPUT_1_EMBED_AUDIO_8_1_CLIPPING= INPUT_1_EMBED_AUDIO_8_2_CLIPPING=	Displays the embedded audio clipping. Valid values are: <ul style="list-style-type: none"> • OK • WARN:No Input • WARN:NON PCM • WARN:Clipping

Note: The Hyperion Global State function is available on all Logging screens. Checking this on one screen will activate the function on all other screens.

5.18.11 Log Inp 1 Aud Likeness

The **Log Inp 1 Aud Likeness** screen enables the likeness parameters of the audio channels to be logged.

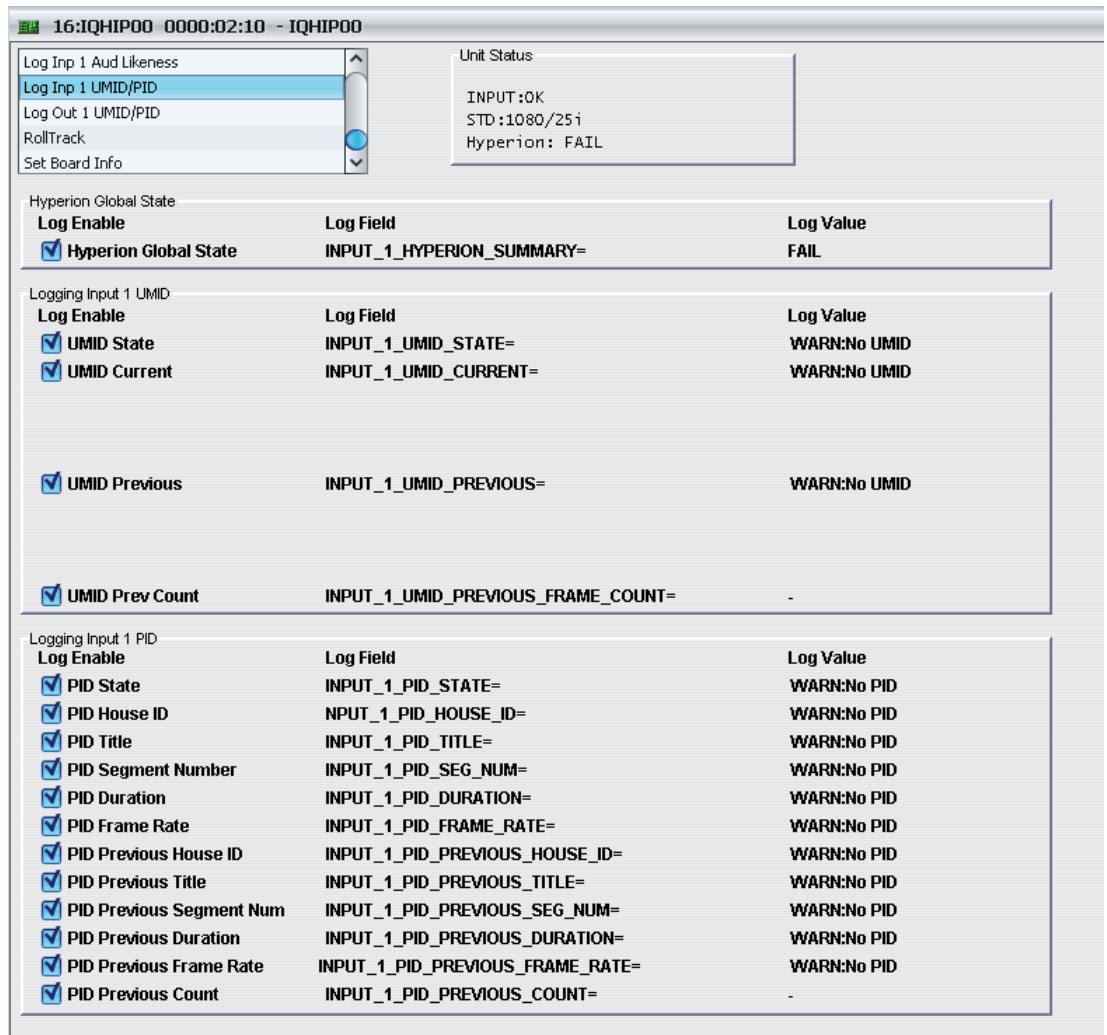


Log Field	Description
INPUT_1_HYPERION_SUMMARY=	Displays a the global state of the Hyperion reporting. Valid values are: <ul style="list-style-type: none"> • OK • WARN • FAIL
INPUT_EMBEDDED_AUDIO_LIKE_1_CHANS= to INPUT_EMBEDDED_AUDIO_LIKE_4_CHANS=	Displays the channels being compared.
INPUT_EMBED_AUDIO_LIKE_1_STATE= to INPUT_EMBEDDED_AUDIO_LIKE_4_STATE=	Displays a the global state of the Hyperion reporting. Valid values are: <ul style="list-style-type: none"> • Stereo • Mono • Wide • Inv_Stereo • Inv_Mono • Inv_Wide • WARN:Error • WARN:NON PCM

Note: The Hyperion Global State function is available on all Logging screens. Checking this on one screen will activate the function on all other screens.

5.18.12 Log Inp 1 UMID/PID

The **Log Inp 1 UMID/PID** screen enables the input UMID/PID parameters to be logged.



Log Field	Description
INPUT_1_HYPERION_SUMMARY=	Displays a the global state of the Hyperion reporting. Valid values are: <ul style="list-style-type: none"> • OK • WARN • FAIL
INPUT_1_UMID_STATE=	Displays a the UMID state. Valid values are: <ul style="list-style-type: none"> • OK • WARN • Changing
INPUT_1_UMID_CURRENT=	Displays a the current UMID. Valid values are: <ul style="list-style-type: none"> • String • WARN

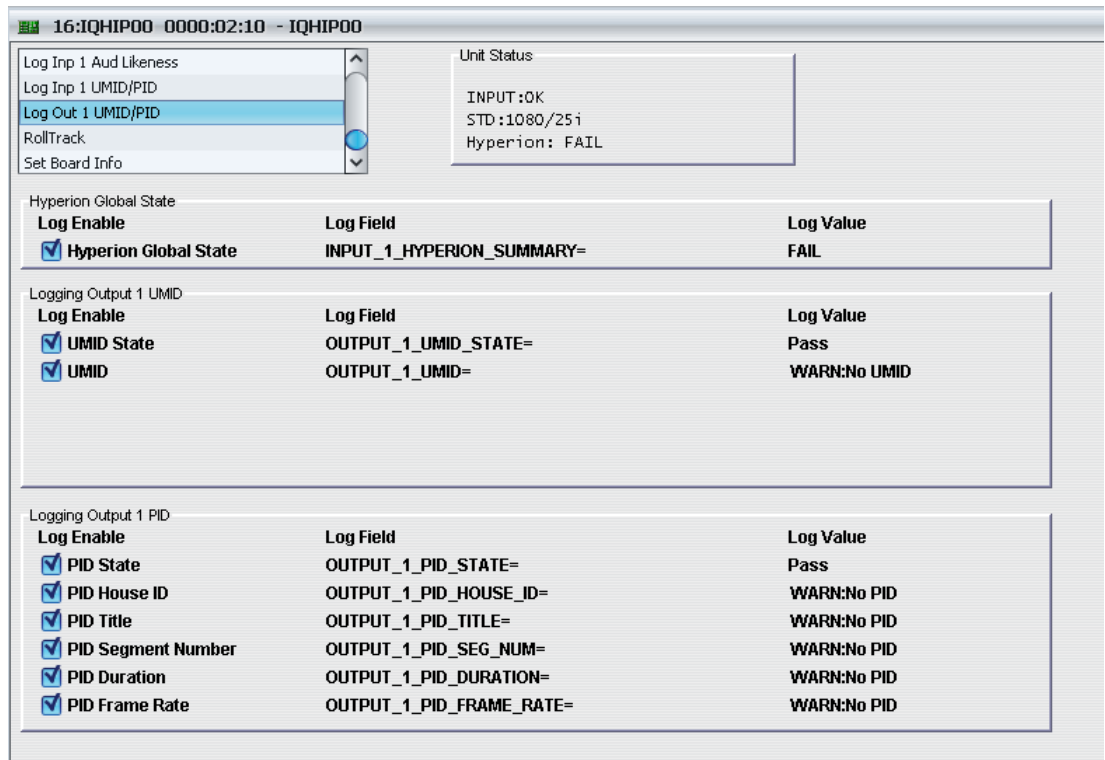
Log Field	Description
INPUT_1_UMID_PREVIOUS=	Displays the previous UMID. Valid values are: <ul style="list-style-type: none"> • String • WARN
INPUT_1_UMID_PREVIOUS_FRAME_COUNT=	Displays a the number of frames previous count.
Logging Input 1 PID	
INPUT_PID_STATE=	Displays the current PID state. Valid values are: <ul style="list-style-type: none"> • OK • WARN • Changing
INPUT_PID_HOUSE_ID=	Displays the PID house. Valid values are: <ul style="list-style-type: none"> • String • WARN
INPUT_PID_TITLE=	Displays the PID title. Valid values are: <ul style="list-style-type: none"> • String • WARN
INPUT_PID_SEG_NUM=	Displays the PID segment number. Valid values are: <ul style="list-style-type: none"> • String • WARN
INPUT_PID_DURATION=	Displays the PID duration. Valid values are: <ul style="list-style-type: none"> • String • WARN
INPUT_PID_FRAME_RATE=	Displays the PID frame rate. Valid values are: <ul style="list-style-type: none"> • String • WARN
INPUT_PID_PREVIOUS_HOUSE_ID=	Displays the previous house identifier. Valid values are: <ul style="list-style-type: none"> • String • WARN
INPUT_PID_PREVIOUS_TITLE=	Displays the previous title. Valid values are: <ul style="list-style-type: none"> • String • WARN
INPUT_PID_PREVIOUS_SEG_NUM=	Displays the previous segment number. Valid values are: <ul style="list-style-type: none"> • String • WARN
INPUT_PID_PREVIOUS_DURATION=	Displays the previous duration. Valid values are: <ul style="list-style-type: none"> • String • WARN

Log Field	Description
INPUT_PID_PREVIOUS_FRAME_RATE=	Displays the previous frame rate. Valid values are: <ul style="list-style-type: none"> String WARN
INPUT_PID_PREVIOUS_COUNT=	Displays the number of frames previous count.

Note: The Hyperion Global State function is available on all Logging screens. Checking this on one screen will activate the function on all other screens.

5.18.13 Log Out 1 UMID/PID

The **Log Out 1 UMID/PID** screen enables the output UMID/PID parameters to be logged.



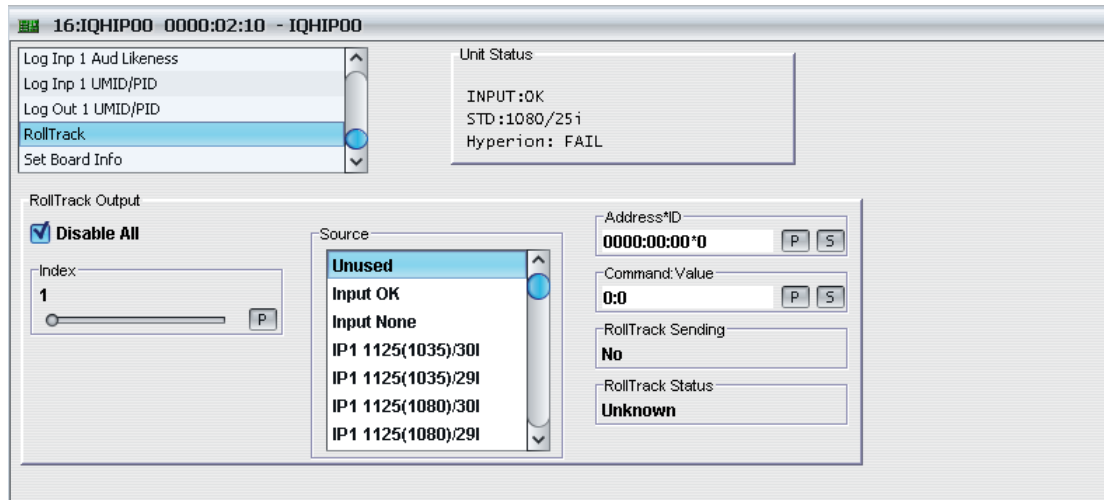
Log Field	Description
INPUT_1_HYPERION_SUMMARY=	Displays a the global state of the Hyperion reporting. Valid values are: <ul style="list-style-type: none"> OK WARN FAIL
OUTPUT_1_UMID_STATE=	Displays a the UMID state. Valid values are: <ul style="list-style-type: none"> OK PASS OVERWRITE DELETED WARN:Multiple Lines

Log Field	Description
OUTPUT_1_UMID=	Displays a the current UMID. Valid values are: <ul style="list-style-type: none"> • String • WARN:No UMID
Logging Output 1 PID	
OUTPUT_PID_STATE=	Displays the current PID state. Valid values are: <ul style="list-style-type: none"> • OK • PASS • OVERWRITE • DELETED • WARN:Multiple Lines
OUTPUT_PID_HOUSE_ID=	Displays the PID house. Valid values are: <ul style="list-style-type: none"> • String • WARN:No PID
OUTPUT_PID_TITLE=	Displays the PID title. Valid values are: <ul style="list-style-type: none"> • String • WARN:No PID
INPUT_PID_SEG_NUM=	Displays the PID segment number. Valid values are: <ul style="list-style-type: none"> • String • WARN:No PID
INPUT_PID_DURATION=	Displays the PID duration. Valid values are: <ul style="list-style-type: none"> • String • WARN:No PID
INPUT_PID_FRAME_RATE=	Displays the PID frame rate. Valid values are: <ul style="list-style-type: none"> • String • WARN:No PID

Note: The Hyperion Global State function is available on all Logging screens. Checking this on one screen will activate the function on all other screens.

5.19 RollTrack

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



5.19.1 Disable All

When checked, all RollTrack items are disabled.

5.19.2 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.

5.19.3 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

Unused	IP1 750(720)/60P
Input OK	IP1 750(720)/59P
Input None	iP1 525(480)/29i
iP1 1125(1035)/30i	iP1 625(576)/25i
iP1 1125(1035)/29i	IP1 1125(1080)/24sF
iP1 1125(1080)/30i	IP1 1125(1080)/23sF
iP1 1125(1080)/29i	IP1 750(720)/50P
iP1 1125(1080)/25i	IP1 750(720)/30P
IP1 1125(1080)/30P	IP1 750(720)/29P
IP1 1125(1080)/29P	IP1 750(720)/25P
IP1 1125(1080)/25P	Hyperion OK
IP1 1125(1080)/24P	Hyperion WARN
IP1 1125(1080)/23P	Hyperion FAIL
	Hyperion N/A

5.19.4 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-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.

Note: A segment address of **FFFF** is the module itself. For example, **FFFF:00:00** will address the RollTrack to itself.

5.19.5 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.

5.19.6 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 Snell agent.

5.19.7 RollTrack Status

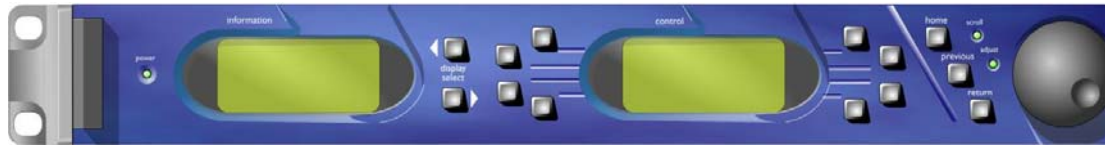
A message is displayed here to indicate the status of the currently selected RollTrack index. Possible RollTrack Status messages are:

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.

Appendix A. Operation from an Active Control Panel

A.1 Introduction

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

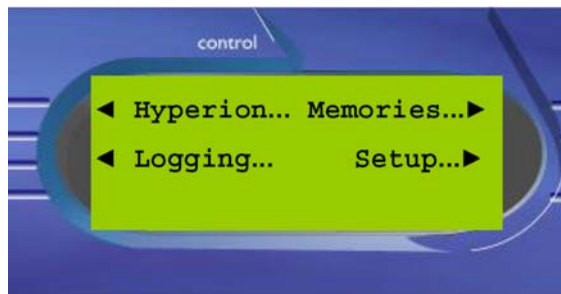


A.2 Menus

All operational parameters and selections are made using a system of menus displayed in two LCD windows.

The functions are the same as those described for the RollCall Templates.

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



Appendix B. Audio Likeness Detector

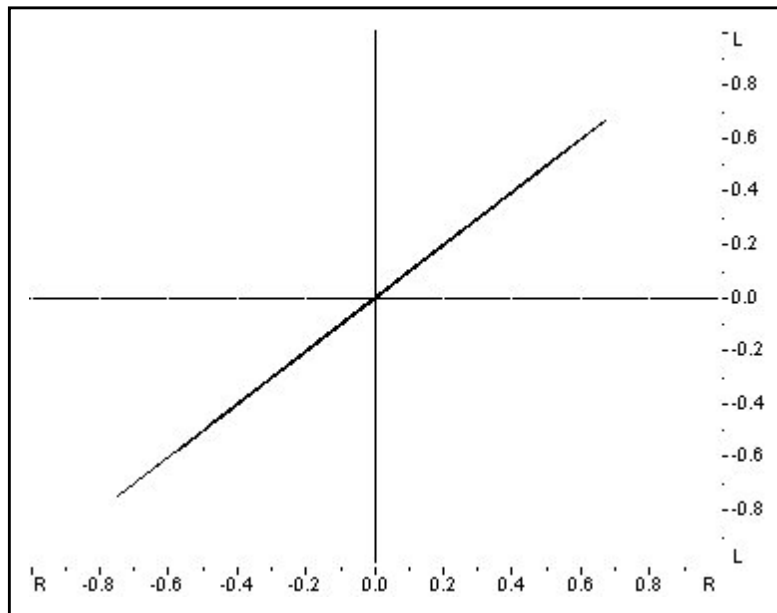
B.1 Monitoring Audio Likeness

The Audio Likeness Detector monitors the relationship between the two selected channels, and determines whether the channels are the same (dual monophonic), stereo or largely unrelated. It also determines whether the polarities of the two channels match.

The detector reports a likeness number from -100 to +100. The larger the absolute value, the more alike the two channels are. If the two selected channels are virtually identical (2 x mono) the reported number will be 100 if their polarities match and -100 if one of them has been inverted.

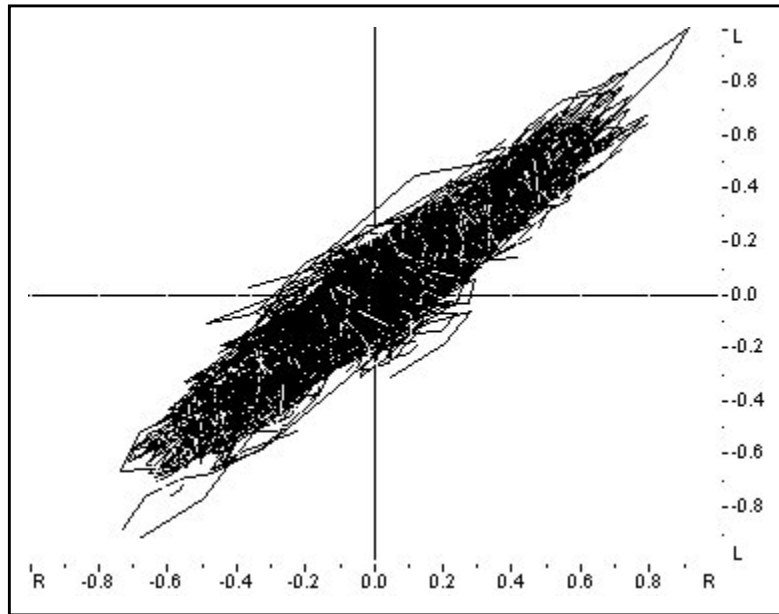
If the values of the Left and Right samples of a stereo pair are plotted as y versus x respectively a Lissajous Figure is produced. For audio applications this is sometimes referred to as a Phase Analysis Diagram, however the concept of phase is only valid when referring to a single frequency component which is common to both channels.

When the Left and Right samples are identical in value (i.e. mono x 2) a 45 degree line is produced. All of the sample pair points lie either in the upper right or lower left quadrants as shown below.



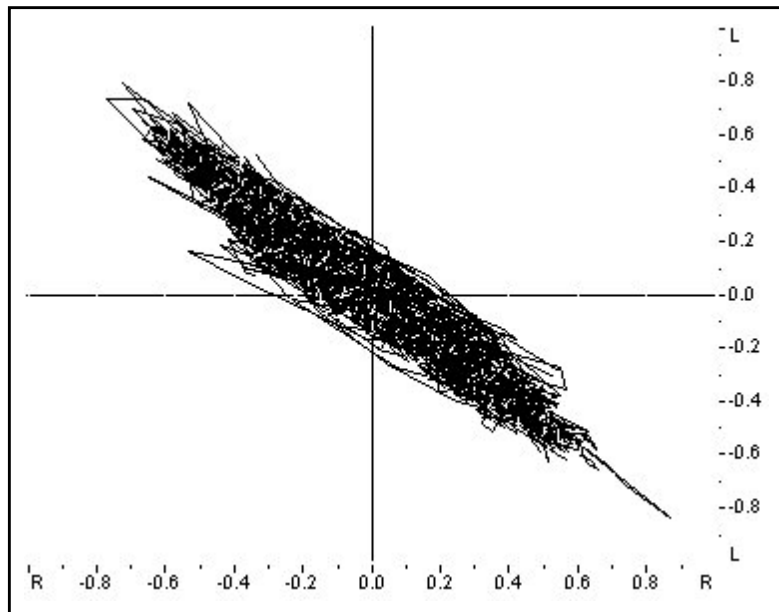
Mono: Likeness = +100

If the two channels form a stereo pair they are related but not identical. Many of the plotted points will be off the 45-degree line, but the underlying trend will remain as shown below.



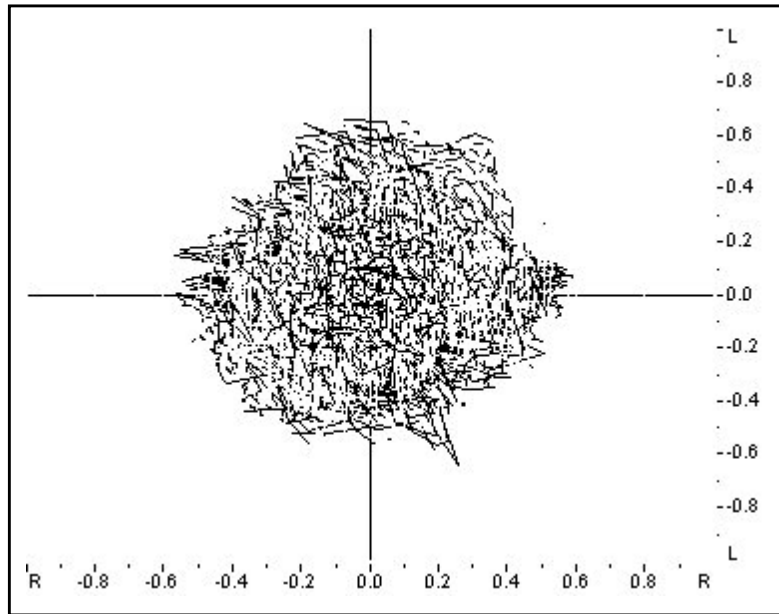
Stereo: Likeness = +70

If one of the channels becomes inverted (e.g. wires crossed on a balanced analog signal) the shape on the diagram will be reflected in either the x (Left inverted) or y (Right inverted) axis. The majority of the plotted points will now lie in the upper-left and lower-right quadrants as shown below.



Reversed: Stereo Likeness = -70.

If the two channels are unrelated the shape on the diagram becomes circular. There is a roughly even distribution of plot points across all four quadrants as shown below. Relative polarity has no meaning in this case.



Unrelated channels: Likeness = 0.

A simple timer and a set of thresholds determine logging state.

Value	Type	Description
+91 to +100	Mono	Identical channels, same polarity.
+25 to +90	Stereo	Similar channels, i.e. Stereo.
0 to +24	Wide	Channels have little/no short term similarity.
-1 to -24	Reverse Wide	Little/no similarity, but one may be inverted.
-25 to -90	Reverse Stereo	Stereo pair, but one has been inverted.
-91 to -100	Reverse Mono	Identical channels, but one has been inverted.

The short-term similarity between channels of a typical stereo pair varies and the likeness number can momentarily pass into the Wide and Mono bands, whereas true Mono and Wide pairs tend to stay within their bands. To reduce logging traffic the normal reporting state of the detector is Stereo and it will only report Mono or Wide if the Likeness number is in the appropriate ranges (positive or negative) for more than five seconds. As soon as the number goes back to the Stereo range the reported state will revert to Stereo (without a delay).

B.2 Limitations

The detector algorithm is robust against relative channel delays, but it is not immune. As relative delay is increased the likeness number reduces.

For example, if the two channels are identical (2 x mono) but one is delayed the likeness number will drop below 100. For large delays the detector will report that the channels are a Stereo pair.

Delays of such magnitude grossly distort the sound field and are very noticeable.

The detector algorithm looks at the short-term relationship between the selected channels.

On some material (e.g. classical music) the similarity between channels is only detectable over longer periods. In such cases where the stereo image is strongly divided between the channels this detector will report Wide.

Appendix C. Unique Material Identifier (UMID)

Extracts from SMPTE Standard for Television - Unique Material Identifier (UMID) SMPTE 330M-2004 © 2004 reproduced with the kind permission of the SMPTE.

5.1 Basic UMID

5.1.1 12-byte universal label

The first 12 bytes of the UMID shall provide identification of the UMID by the registered string value defined in table 1.

Table 1 – UMID universal label

Byte No.	Description	Value (hex)	Meaning
1	Object identifier	06 _h	Universal label start
2	Label size	0A _h	12-byte Universal label
3	Designation: ISO	2B _h	ISO registered
4	Designation: SMPTE	34 _h	SMPTE registered
5	Registry category	01 _h	Dictionaries
6	Specific category	01 _h	Metadata dictionaries
7	Structure	01 _h	Dictionary standard (SMPTE 335M)
8	Version number	VV _h	Version of the metadata dictionary (defined in SMPTE RP 210)
9	Class	01 _h	Identifiers and locators
10	Subclass	01 _h	Globally unique identifiers
11	Material type	XX _h	See 5.1.1.1
12	Number creation method	YY _h	See 5.1.1.2

NOTE – SMPTE 298M defines SMPTE labels as having a length of 16 bytes. The 12-byte UMID universal label is still a valid and unique ISO object identifier as defined in SMPTE 298M. When the UMID universal label is used in isolation, the 12-byte UMID universal label can be converted to a SMPTE label by padding with 4 bytes of null fill and changing the value of the label size in byte 2 from '0A_h' to '0E_h'.

5.1.1.1 Material type identification

Byte 11 of the UL defines the material type being identified as shown in table 2.

Table 2 – Material type identification

Byte value	Meaning	Examples and notes
01 _h	picture material	Deprecated
02 _h	audio material	Deprecated
03 _h	data material	Deprecated
04 _h	other material	Deprecated (originally not only picture, audio, or data material, but may be a combination of material types)
05 _h	single picture component	e.g. Y component
06 _h	Two or more picture components in a single container	e.g. interleaved Y, Cb and Cr components
08 _h	single audio component	e.g. mono audio
09 _h	two or more audio components in a single container	e.g. AES3 audio pair
0B _h	single auxiliary (or data) component	e.g. sub-titles only
0C _h	two or more auxiliary (or data) components in a single container	e.g. multiple sub-titles streams in different languages
0D _h	mixed group of components in a single container	e.g. video & stereo audio pair
0F _h	material type is not identified	

NOTE – The use of material types '01_h', '02_h', '03_h' and '04_h' are deprecated for use in systems using this revised standard. These values are preserved only for compatibility with SMPTE 330M-2000.

5.1.1.2 Number Creation Method Identification

Byte 12 of the UL identifies the methods by which the material and instance numbers are created. This byte is divided into top and bottom nibbles.

The top nibble occupies the 4 MSBs and the value shall be used to define the method of material number creation. The values used by this nibble shall be limited to the range 0 to 7h in order that byte 12 conforms to ASN.1 BER short form coding rules used by SMPTE 298M.

The bottom nibble occupies the 4 LSBs and the value shall be used to define the method of instance number creation. The values used by this nibble shall be limited to the range 0 to Fh.

The methods of material number generation are defined in Table 3 and the specifications of the defined methods are given in Annex A.

New material number generation methods may be added as a type 1 entity as defined in SMPTE 359M. Each addition shall provide the proposed value (within the range of values currently identified as "Reserved but not defined") for inclusion in Table 3 together with the supporting definition to be added to Annex A.

Table 3 – Identification of material number generation method

Value (hex)	Method
0	No defined method
1	SMPTE method
2	UUID/UL method
3	Masked method
4	IEEE 1394 network method
5-7	Reserved but not defined

The methods of instance number generation are defined in Table 4 and the specifications of the defined methods are given in Annex B.

New instance number generation methods may be added as a type 1 entity as defined in SMPTE 359M. Each addition shall provide the proposed value (within the range of values currently identified as "Reserved but not defined") for inclusion in Table 4 together with the supporting definition to be added to Annex B.

Table 4 – Identification of instance number generation method

Value (hex)	Method
0	No defined method
1	Local registration
2	24-bit PRS generator
3	Copy number and 16-bit PRS generator
4 ~ E	Reserved but not defined
F	Live stream