

***DENSITÉ series***

***HLP-1801***  
***HD/SD SDI Lip-synchronization Probe***  
***Guide to Installation and Operation***

M914-9900-101

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## Electromagnetic Compatibility



This equipment has been tested for verification of compliance with FCC Part 15, Subpart B requirements for Class A digital devices.

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**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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This equipment has been tested and found to comply with the requirements of the EMC directive 2004/108/CE:

- EN 55022 Radiated and conducted emissions – Class A
- EN 55024
- EN 61000-3-2 Limits for harmonic current emissions
- EN 61000-3-3 Limitation of voltage fluctuations and flicker
- EN 61000-4-2 Electrostatic discharge immunity
- EN 61000-4-5 Surge transient immunity
- EN 61000-4-11 Voltage dips, short interruptions and voltage variations immunity

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*GUIDE TO INSTALLATION AND OPERATION*

# 1 HLP-1801 HD/SD SDI Lip-synchronization Probe

## 1.1 Introduction

The HLP-1801 is a Densité HD/SD Audio/Video synchronization probe with two SDI inputs with embedded audio establishing Lip Sync detection and measurement for a specific channel between its origination and a selected probing point later in the signal path. This solution is ideal for playout facilities as well as Multiple System Operators (MSO) that are looking to improve the quality of their channels by performing electronic monitoring. As an example, the HLP-1801 can be used between the facility out signal and the set-top box return, or between the server out signal and the facility out signal.

Based on Miranda's fingerprinting technology, the HLP-1801 continuously computes fingerprints from the video and audio content for both input signals. By looking at the fingerprints, the HLP-1801 can detect content mismatch for video and each audio channel as well as it returns Video Delays and Lip Sync delays for each audio channel, all of this without the need to tag or watermark the signals.

A remote mode is also available for exporting the fingerprints over the network to iControl for analysis and comparison. This mode allows comparing multiple points over a distributed architecture (multi-site).

The probe allows an operator to set alarming thresholds for each video and audio channel and expresses detected delays in milliseconds. The HLP-1801 provides a way to group audio channels together allowing it to highlight intra-group delays as well. When used with Miranda's iControl family of products, the HLP-1801 displays all detected delays within a rich user interface.

## 1.2 Features

### POWERFUL LIP-SYNCHRONIZATION DETECTION AND ALARMING

- Two inputs HD/SD SDI with embedded audio: the origination signal and the probed signal
- Real-time computation of fingerprints from both inputs
- Powerful content matching and Lip Sync delay analysis
- Detection of up to -4/+4 seconds of delay
- Precision of delay measurement with a -1ms/+1ms accuracy
- A/V fingerprint generation and export for remote lip-sync measurement (an iControl option)

### MONITORING OF VIDEO AND AUDIO CHANNELS

- Video presence, format, freeze, black detection
- Audio presence, format, silence detection
- Monitoring of up to 16 embedded audio channels

### INPUT/OUTPUT

- Supports SMPTE 259M-C digital video signal with embedded 272M digital audio in the following formats:
  - HD 1080i (SMPTE 274M) at 59.94 and 50 Hz
  - HD 720p (SMPTE 296M) at 59.94 and 50 Hz
  - SD 525i (SMPTE 125M) at 59.94 Hz
  - SD 625i (ITU-R BT.656) at 50 Hz
- Two inputs, one output

### TRANSMISSION OVER IP FOR DISPLAY AND LISTENING

- Video program delay and Lip-sync delay
- Detection threshold settings per channel
- Accuracy and quality indicators, alarms and status

- Content comparison status between both inputs
- Streaming thumbnails with adjustable picture size and quality

### 1.3 Block Diagram

The following block diagram shows the HLP-1801

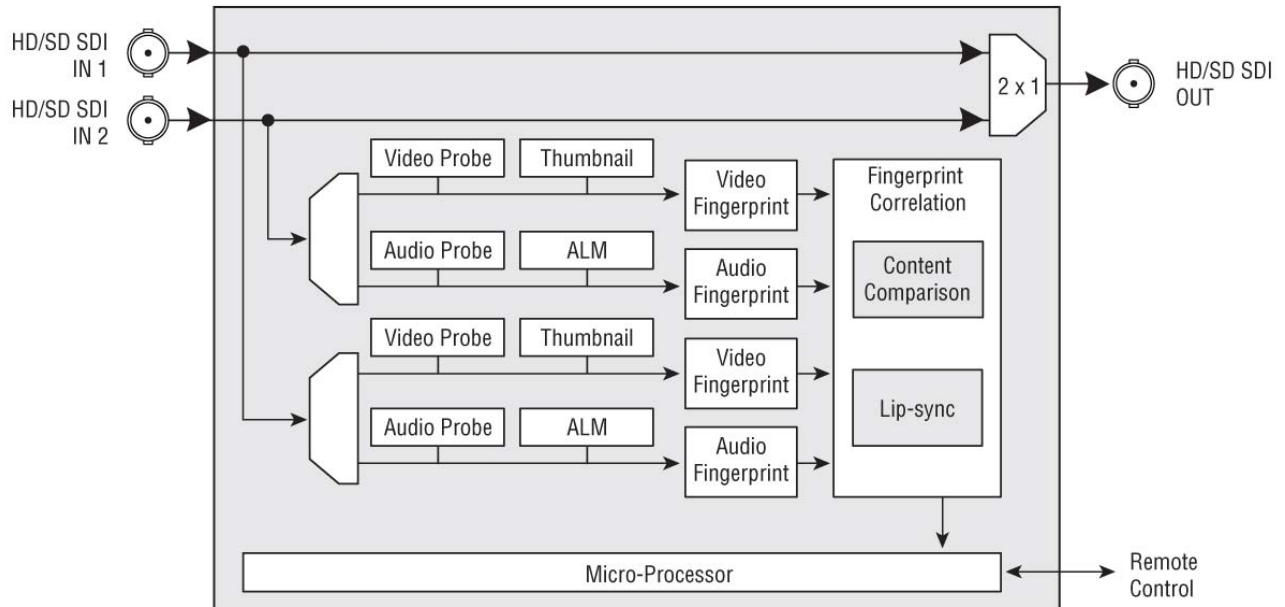


Figure 1.1 Functional block diagram HLP-1801

### 1.4 Front Card-edge Interface

The front card-edge of the HLP-1801 incorporates two elements:

- Status LED (see section 3.2)
- Select Button (see section 3.3)

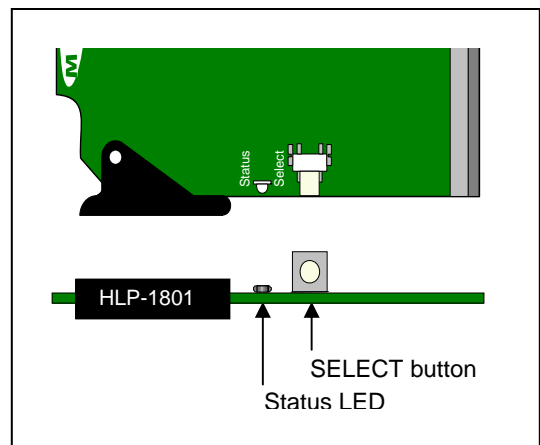


Figure 1.2 Front card-edge layout

## 2 Installation

### 2.1 Unpacking

Make sure the following items have been shipped with your HLP-1801. If any of the following items are missing, contact your distributor or Miranda Technologies Inc.

- HLP-1801 HD/SD SDI Lip-synchronization Probe
- HLP-1801-DRP or 3SRP modules are available

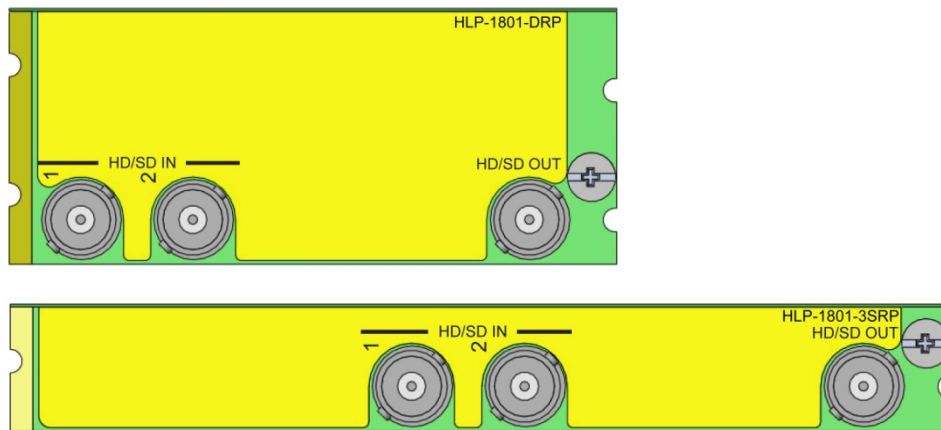
### 2.2 Installation in the Densité frame

The HLP-1801 and its associated rear connector panel must be mounted in a DENSITÉ frame. It is not necessary to switch off the frame's power when installing or removing the card. See the DENSITÉ Frame manual for detailed instructions for installing cards and their associated rear panels.

The HLP-1801 must be installed in the right-most of the 2 slots covered by the rear panel (as seen from the front of the frame) in a Densité 2 frame, in order to mate with the panel's connectors. If it is placed in the wrong slot, the front panel LED will flash red. Move the card to the designated slot for correct operation. No damage will result to the card should this occur.

### 2.3 Rear Panel Connectors

Connector panels for both Densité 2 and Densité 3 frames are available for the HLP-1801.



**Figure 2.2** HLP-1801 Rear Panels

#### HD/SD IN – serial digital HD/SD inputs

Connect serial digital video signals, conforming to the SMPTE 292M standard for HD input signals and SMPTE 259M standard for SD input signals, to the BNCs labeled **HD/SD IN 1** and **2**. The HLP-1801 will automatically switch to the detected line format.

#### HD/SD OUT – serial digital video output

The HLP-1801 provides a single HD/SD SDI video output on a BNC connector, labeled **HD/SD OUT**. The SDI video signal conforms to the SMPTE 292M and SMPTE 259M-C standard.

### 3 Operation

See Annex 2 on page 27 for an overview of points to remember when configuring and using the HLP-1801.

#### 3.1 Control options


The HLP-1801 can be controlled in two different ways:

- The local control panel and its push-buttons can be used to move through a menu of parameters and to adjust parameter values (see section 3.3).
- Miranda's iControl system can be used to access the card's operating parameters from a remote computer, using a convenient graphical user interface (GUI). (see section 3.4)














#### 3.2 Card-Edge Status LED

The status monitor LED is located on the front card-edge of the HLP-1801, and is visible through the front access door of the DENSITÉ frame. This multi-color LED indicates the status of the HLP-1801 by color, and by flashing/steady illumination.

The chart shows how the various error conditions that can be flagged on the HLP-1801 affect the LED status.

- If a cell is gray, the error condition cannot cause the LED to assume that status
- If more than one LED status is possible for a particular error condition, the status is configurable. See Section 3.4.10 for details.
- The factory default status is shown by a 

The LED will always show the most severe detected error status that it is configured to display, and in the chart error severity increases from left to right, with green representing no error/disabled, and flashing red the most severe error.

Error Condition	Status LED			
	Green	Yellow	Red	Flashing Red
FPGA error				
Dataflash error				
No Rear				
Carrier detect error input 1				
Carrier detect error input 2				
Video/TRS error input 1				
Video/TRS error input 2				
Silence detected In 1Channel 1				
...				
Silence detected In 1 Channel 16				
Silence detected In 2 Channel 1				
...				
Silence detected In 2 Channel 16				

 : Factory default.

If the LED is Flashing Yellow, it means that the card is selected for local control using the Densité frame's control panel. See Section 3.3 for details.



### 3.3 Local control using the Densité frame control panel

#### 3.3.1 Overview

Push the SELECT button on the HLP-1801 card edge (see Section 1.4) to assign the local control panel to operate the HLP-1801. Use the control panel buttons to navigate through the menu, as described below.

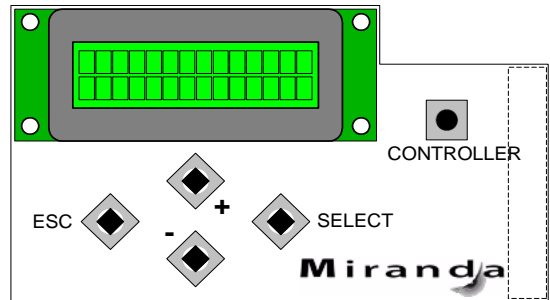
All of the cards installed in a Densité frame are connected to the frame's controller card, which handles all interaction between the cards and the outside world. There are no operating controls located on the cards themselves. The controller supports remote operation via its Ethernet ports, and local operation using its integrated control panel.

The local control panel is fastened to the controller card by a hinged connector, and when installed is located in the front center of the frame, positioned in front of the power supplies. The panel consists of a display unit capable of displaying two lines of text, each 16 characters in length, and five pushbuttons.

The panel is assigned to operate any card in the frame by pushing the SELECT button on the front edge of that card.

- Pushing the CONTROLLER button on the control panel selects the Controller card itself.
- The STATUS LED on the selected card flashes yellow.

The local control panel displays a menu that can be navigated using the four pushbuttons located beneath the display. The functionality of the pushbuttons is as follows:



**Figure 3-1** Densité Frame local control panel

[+] [-] Used for menu navigation and value modification

[SELECT] Gives access to the next menu level. When a parameter value is shown, pushing this button once enables modification of the value using the [+] and [-] buttons; a second push confirms the new value

[ESC] Cancels the effect of parameter value changes that have not been confirmed; pushing [ESC] causes the parameter to revert to its former value.

Pushing [ESC] moves the user back up to the previous menu level. At the main menu, [ESC] does *not* exit the menu system. To exit, re-push the [SELECT] button for the card being controlled.

If no controls are operated for 30 seconds, the controller reverts to its normal standby status, and the selected card's STATUS LED reverts to its normal operating mode.

#### 3.3.2 Menu for local control

The HLP-1801 has operating parameters which may be adjusted locally at the controller card interface.

- Press the SELECT button on the HLP-1801 front card edge to assign the Densité frame's local control panel to the HLP-1801
- Use the keys on the local control panel to step through the displayed menu to configure and adjust the HLP-1801.

The complete menu structure is shown in the Annex to this document, beginning on page 26.

### 3.4 Remote control using iControl

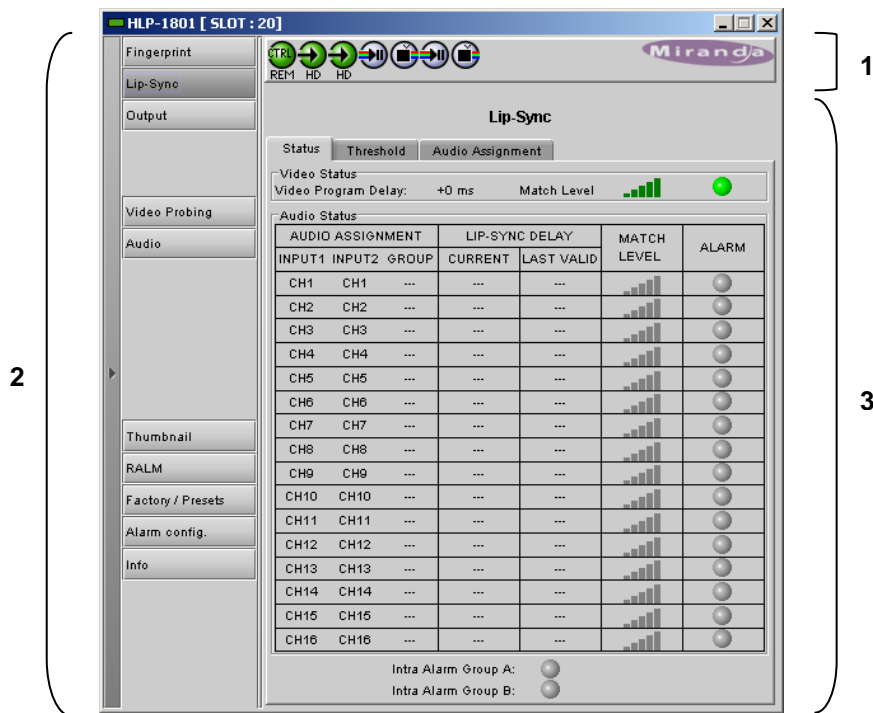
The operation of the HLP-1801 may be controlled using Miranda's iControl system.

- This manual describes the control panels associated with the HLP-1801 and their use.
- Please consult the iControl User's Guide for information about setting up and operating iControl.

In iControl Navigator or iControl Websites, double-click on the HLP-1801 icon to open the control panel.

#### 3.4.1 The iControl graphic interface window

The basic window structure for the HLP-1801 is shown in figure 3.2. The window identification line gives the card type (*HLP-1801*) and the slot number where the card installed in its Densité frame.



**Figure 3.2** HLP-1801 iControl graphic interface window:

There are three main sections in the window itself, identified in figure 3.2:

1. The top section displays icons on the left. These icons report different statuses such as card communication status, input signal and reference signal format and statuses. In some instances, they relate to conditions defined through parameters settings.



Icon #      1      2      3      4      5      6      7

Move the mouse over an icon and a status message appears below the icon providing additional information.







If there is an error, the error status message appears in the message area without mouse-over.













- If there are multiple errors, the error messages cycle so all can be seen
- The icon whose status or error message is shown is highlighted with a mauve background

The table below lists the various status icons that can appear, and how they are to be interpreted.

- In cases where there is more than one possible interpretation, read the error message in the iControl window to see which applies.

**Table –iControl Status Icon interpretation**

<b>Icon #1 – Manual Card Configuration</b>	
 <p>(green)</p>	Remote card control activated. The iControl interface can be used to operate the card
 <p>(yellow)</p>	Local card control active, The card is being controlled using the Densité frame control panel, as described in section 3.3. Any changes made using the iControl interface will have no effect on the card.
<b>Icon #2 – Input 1 status</b>	
 <p>(green)</p>	Signal detected and valid. <ul style="list-style-type: none"> <li>• Beneath the icon, the format will be indicated as HD or SD, and the specific format details will be listed if the cursor is moved over the icon.</li> </ul>
 <p>(red)</p>	Signal absent No rear Video/TRS error
<b>Icon #3 – Input 2 Status</b>	
 <p>(green)</p>	Signal detected and valid. <ul style="list-style-type: none"> <li>• Beneath the icon, the format will be indicated as HD or SD, and the specific format details will be listed if the cursor is moved over the icon.</li> </ul>
 <p>(red)</p>	Signal absent No rear Video/TRS error

<b>Icon #4 – Input 1 Freeze Detect</b>	
 (green)	OK
 (red)	Error
 (gray)	Off
<b>Icon #5 – Input 1 Black Detect</b>	
 (green)	OK
 (red)	Error
 (gray)	OFF
<b>Icon #6 – Input 2 Freeze Detect</b>	
 (green)	OK
 (red)	Error
 (gray)	Off
<b>Icon #7 – Input 2 Black Detect</b>	
 (green)	OK
 (red)	Error
 (gray)	OFF

- The left portion of the window displays access buttons for the various control panels on this HLP-1801. The buttons become highlighted when they are selected, and the main section of the window (3) then displays the control panel.
- The main section of the window contains the controls and indicators required to monitor and operate the HLP-1801, for the area of interest selected by the buttons in Section 2. It may contain multiple tabs if many controls and indicators are required.

Each of the panels associated with the groups accessed from the buttons in Section 2, and shown in Section 3, is described individually in the following sections.

### 3.4.2 The *Fingerprint* panel

The fingerprint panel is used to configure the parameters related to the fingerprinting of the video signals

The remote fingerprinting technology on this card functions in conjunction with iControl.

- iControl 4.0 and higher is required.***

See the iControl Version 4.00 User's Guide (Miranda document 226-99M00-271) for a description of Fingerprint management in iControl. The relevant text can be found in the section called 'Lip-Sync Detection and Monitoring' which is in the chapter titled 'Working with iControl as an Operator'

**Fingerprint Analysis** – use the pulldown list to select one of these options:

*Local* – the local fingerprint analysis mode enables the card-based fingerprint correlation module to produce the lip-sync measurements between the 2 local inputs. The results are displayed in the “Lip-Sync” panel.

*Remote* – the remote fingerprint analysis mode can be used to export the fingerprints to iControl for distributed and multi-point comparison. The fingerprint correlation is then performed within iControl and the results are made available in the iControl audio/video fingerprint analyzer. The remote fingerprint analysis disables the local card-based comparison.

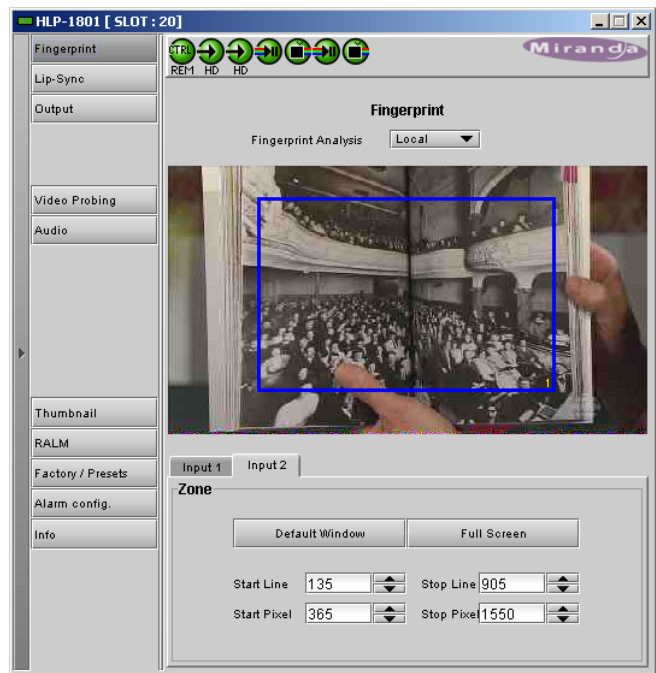
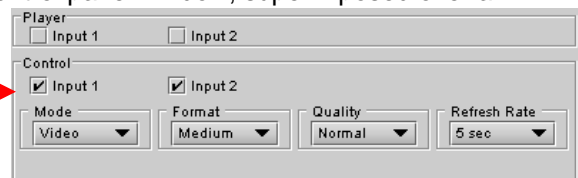


Figure 3.3 Fingerprint panel – Input tabs

#### Input 1 and Input 2 tabs

Select the area of the image within which fingerprint data will be calculated and streamed.

- The selected area is shown as a blue outline on the control panel window, superimposed over a thumbnail of the video.
- The thumbnail is only available when the Input Control box is selected in the Thumbnail panel. See section 3.4.7 on page 16.



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*Default Window* – a factory default is specified which is applied consistently to all Miranda fingerprinting devices. It places the window in the central “action area” of the image, generally avoiding letterboxes and static graphics that are usually found in the periphery of the image.

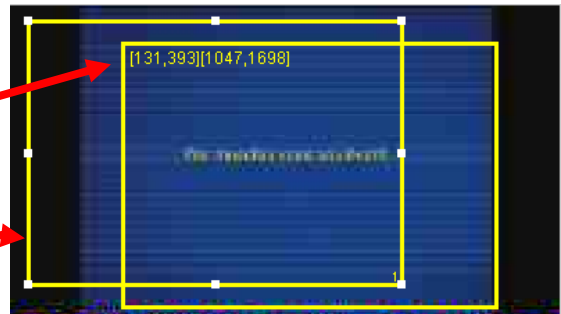
*Full Screen* – opens the window to include the complete video image.

*Start/Stop Line & Pixel* – allows the user to create a custom window in response to particular or unusual image content.

- The custom window can be placed anywhere within the picture.
- Type the value into the data box and Enter, or use the scroll arrows to change the value

*Use a mouse to resize* – you may also use your mouse to move and resize the window. Click within the blue frame and it will turn yellow and display control handles. Mouse over a handle until the cursor switches to an arrow icon, and then drag the handle to resize the window. When you are not over a handle, the 4-arrow cursor allows you to drag the window to a new location

- While you are resizing with the mouse, the start and stop line and pixel are shown in the top left of the frame area, in this format:  
[start line, start pixel][stop line, stop pixel]
- The original position of the frame remains visible, so the amount of change can easily be seen



### 3.4.3 The *Lip-Sync* panel

This panel provides control and monitoring of the lip-synchronization detection and reporting features of the HLP-1801.

**Note:** *The Lip-Sync panel is only available when “Local” is selected in the Fingerprint Analysis pull-down in the Fingerprint panel*

#### 3.4.3.1 Status tab

*Video Status:*

Video Program delay - Shows the delay between the reference and probed video signals, in ms.

- If the HLP-1801 has detected errors for *Freeze* or *Black*, either of which will prevent the lip-sync algorithm from functioning, the *Video Program Delay* reading will indicate the error type instead of a value. Note that error detection must be enabled at the *Video Probing* control panel before it can appear here. See sections 3.4.5.1 (freeze) and 3.4.5.2 (black) for instructions.

Match Level - The bar graph indicates the degree of timing match between the two signals.

- Color green for a good match (3-5 bars)
- Color yellow for a marginal match (2 bars)
- Color red for a poor match, or no match at all (1 bar)

The status icon to the right of the bar graph represents the status of the Video Delay Alarm whose threshold is set using the *Video Delay* slider in the Threshold tab.

*Audio Status:*

The table lists the audio assignments for the two inputs (as set up under the Audio Assignment tab), plus lip synchronization information, as follows:

Lip sync delay – current measurement in ms, plus the last valid measurement which is held when one of the sources is interrupted.

- If the HLP-1801 has detected a *Silence* error, which will prevent the lip-sync algorithm from functioning, the CURRENT column will indicate *Silence* instead of a value. Note that error detection must be enabled at the *Audio* control panel before it can appear here. See section 3.4.6 for instructions.
- If the HLP-1801 has detected non-PCM audio, the CURRENT column will indicate *NPCM* instead of a value.

Match level – a graphical indication of the degree of timing match between the two signals.

- Color green for a good match (3-5 bars)
- Color yellow for a marginal match (2 bars)
- Color red for a poor match or no match (1 bar)

Alarm – the icon indicates the alarm status associated with each audio channel as programmed in the threshold tab.

At the bottom of the panel, combined alarm status icons are shown for the two user-defined groups, A and B. See the Audio Assignment tab description in Section 3.4.3.3 for more information about these groups.



**Figure 3.4** Lip-Sync panel – Status tab

**3.4.3.2 Threshold tab**

Use the controls in this tab to set the threshold values for detected time difference – if the detected value is beyond the threshold value, an alarm will be triggered

*A/V Delay Alarm Threshold* – Compares the audio lipsync timing delay between input 1 and input 2.

The two sliders in this section allow the user to specify different thresholds for *Audio Lead* and *Audio Lag*, reflecting the difference in subjective tolerance for the two situations.

- Use the slider, or type a value directly into the data box
- Specify a value in the range 0 to 500 msec in either case

**Video Delay** – Use this alarm to detect an offset between the video signals that is greater than expected.

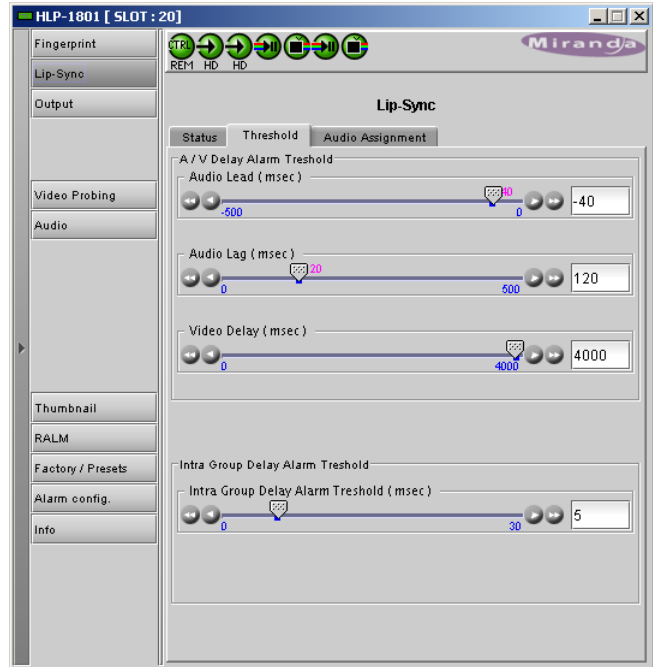
- Use the slider, or type a value directly into the data box
- Specify a value in the range 0 to 4000 msec.
- Note that the HLP-1801 cannot measure lip sync errors if the video signals are offset by more than 4 seconds.

**Intra Group Delay Alarm Threshold**

Use the slider to set the threshold for uniformity of timing accuracy among the channels in the group. The same setting applies to both Group A and Group B

- Use the slider, or type a value directly into the data box
- Specify a value in the range 0 to 30 msec in either case

Groups are discussed in the Audio Assignment tab section, immediately following.



**Figure 3.5** Lip-Sync panel – Threshold tab

**3.4.3.3 Audio Assignment tab**

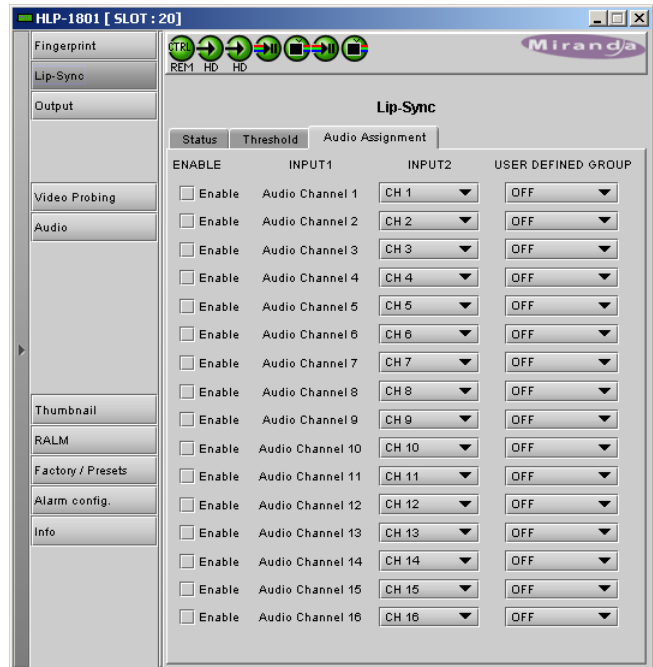
This tab allows the user to pair up channels between inputs 1 and 2 for timing comparisons. By default all 16 channels are matched with their numerical equivalents, but if it is known that channels have been shuffled during processing, the appropriate match-ups can be manually entered here.

The following resources are provided for each of the 16 audio channels:

**Enable** – click the check box to enable the measurement process on that channel

**Input 2** – use the pulldown to identify which shuffled channel on input 2 corresponds to the channel on input 1

**User Define Group** – use the pulldown to assign the channel to either Group A, Group B, or no group (OFF).



**Figure 3.6** Lip-Sync panel – Audio Assignment tab



**About Groups** – the two available groups – A and B – are used to assemble a collection of audio channels whose timing relationship amongst themselves can be measured independently of the individual channel timing measurements. This is useful, for example, for grouping together the channels that comprise a 5.1 channel audio signal, and verifying that their timing is very close. A separate threshold slider is provided for groups on the Threshold tab (it applies to both groups A and B), and a separate alarm is generated for each group.

**NOTE- DEBUG tab:** An extra tab named *Debug* may appear on the tab bar to the right of the *Audio Assignment* tab, as shown in figure 3.7. You can disable/enable it in the Factory/Presets control panel if you wish. See Section 3.4.9 for information.

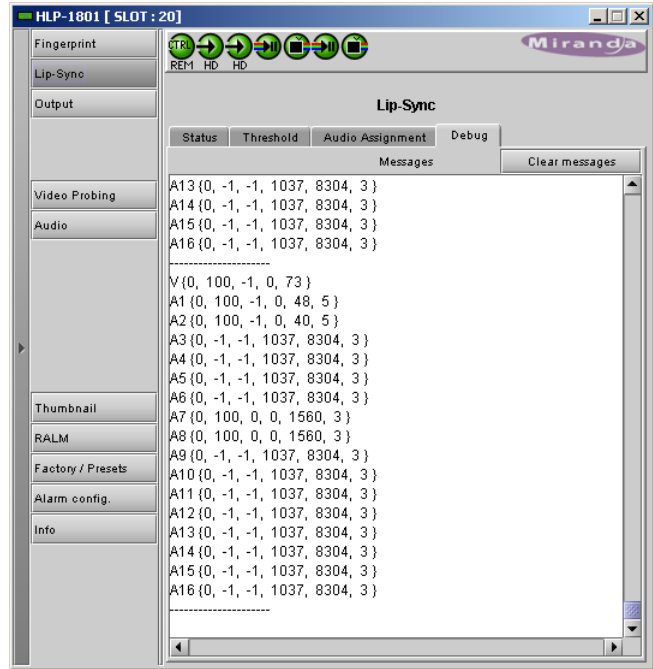


Figure 3.7 Lip-Sync panel – Debug tab

### 3.4.4 The Output panel

The HLP-1801 has a single output that could be used for monitoring.

Use the radio buttons to select which of the two inputs will be routed to the output

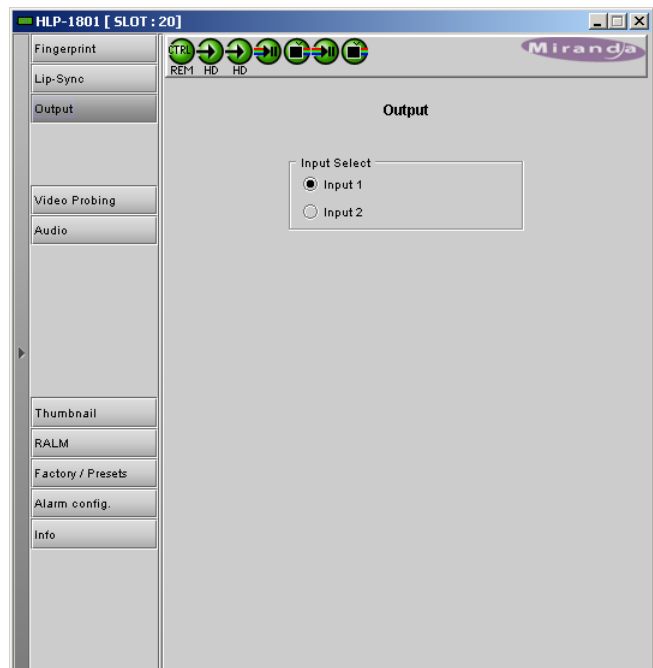


Figure 3.8 Output panel

### 3.4.5 The Video Probing panel

The HLP-1801 provides probing of two video signal states – Freeze and Black.

The Video Probing panel provides resources to configure the analysis and alarm generation process.

**Input 1 and Input 2 tabs** – Use the 4 scroll boxes to establish a rectangular zone in the screen within which the measurements will be conducted.

- Specify line numbers for the top and bottom, and pixel numbers for the sides
- You may also use your mouse to move and resize the window. Click within the blue frame and it will turn yellow and display control handles. Mouse over a handle until the cursor switches to an arrow icon, and then drag the handle to resize the window. When you are not over a handle, the 4-arrow cursor allows you to drag the window to a new location
- While you are resizing with the mouse, the start and stop line and pixel are shown in the top left of the window area, in this format:  
[start line, start pixel][stop line, stop pixel]
- The range of available values depends on the input format
- Click the Full Screen button to set all four values to reflect the full video screen
- A video thumbnail from the selected input is displayed in the player window, provided that the *Input Control* box for that input is checked in the Thumbnail panel (see section 3.4.7 on page 16).

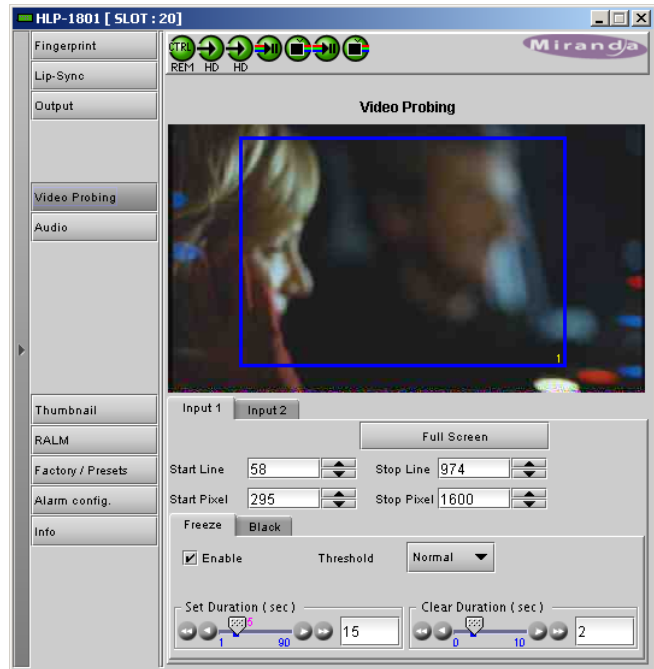


Figure 3.9 Video Probing panel

#### 3.4.5.1 Freeze detection

Controls on the Freeze tab allow configuration of freeze detection.

**Enable** – click in the check box to enable freeze detection

- Note – because the lip-sync detection algorithm does not work on frozen signals, enabling freeze detection is recommended. It will place a warning in the Lip-Sync panel when a freeze is detected, explaining to the user why lip sync detection is not functioning.

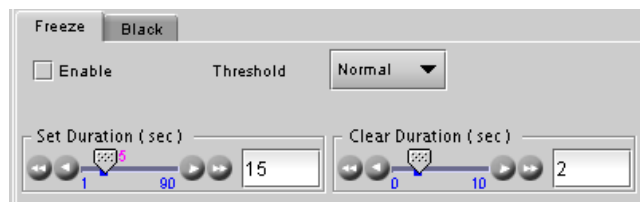


Figure 3.10 Video Probing panel – Freeze tab

**Threshold** – detection of a freeze is dependent on the amount of noise in the signal, since noise could be interpreted as movement. The Threshold control is therefore focussed on noise, and offers three settings that reflect typical signal/noise scenarios, expressed in terms of signal quality:

- Noisy
- Normal
- High

**Set Duration** – use the slider to set a duration during which a freeze must be continuously detected before an alarm is flagged

**Clear Duration** – use the slider to set a duration during which normal unfrozen video must be continuously detected before the freeze alarm is cleared

**3.4.5.2 Black Detection**

Controls on the Black tab allow configuration of black detection.

Enable – click in the check box to enable black detection

- Note – because the lip-sync detection algorithm does not work when the video is at black, enabling black detection is recommended. It will place a warning in the Lip-Sync panel when video black is detected, explaining to the user why lip sync detection is not functioning.

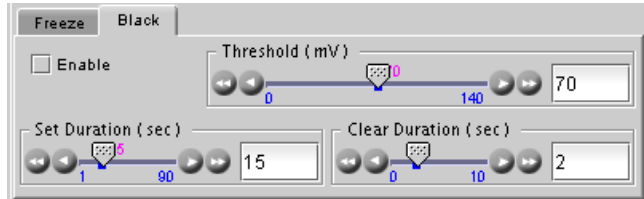


Figure 3.11 Video Probing panel – Black tab

Threshold – use the slider to establish a threshold below which all elements in the image (the portion within the detection zone) must fall before the image is considered to be black

Set Duration – use the slider to set a duration during which black must be continuously detected before an alarm is flagged

Clear Duration – use the slider to set a duration during which non-black video must be continuously detected before the black alarm is cleared

**3.4.6 The Audio panel**

The upper portion of the Audio panel shows the status of the audio groups, and of individual audio channels, associated with inputs 1 and 2.

The status is shown by the color of the icon:

- Green = OK
- Red = error, e.g. absent

Mouse over the icon to see the status in a pop-up window

**Input 1 and Input 2 tabs**

These panels enable silence detection on all 16 channels associated with each input. The 16 channels are divided between 2 tabs (1-8 and 9-16) for each input.

- Note – because the lip-sync detection algorithm does not work when the audio is silent, enabling silence detection is recommended. It will place a warning in the Lip-Sync panel when silence is detected, explaining to the user why lip sync detection is not functioning.



Figure 3.12 Audio panel – Input 1 tab

For each channel, set up the silence detection as follows:

**Enable** – click the check box to turn silence detection ON for this channel.

**Signal Threshold** – select the level below which audio will be considered to be absent. The pulldown offers these choices:

[-72dBFS, -66dBFS, -60dBFS, -54dBFS, -48dBFS]

**Delay** – select the time interval for which the signal must be continuously below the threshold before an audio silence alarm will be flagged

### Audio Type tab

The Audio Type tab reports the type of audio present at the input Audio Type Status:

- PCM – the audio channel carries PCM audio (orange)
- Dolby E – the audio channel carries Dolby E encoded audio (blue)
- AC3 – the audio channel carries Dolby Digital (AC-3) encoded audio (violet)
- NPCM – the audio channel carries non-PCM other than Dolby E or Dolby Digital (AC-3) (yellow).



Figure 3.13 Audio panel – Audio Type tab

**Note that lip-sync detection is only functional on PCM audio. The Lip-sync status tab will display NPCM instead of a value when non-PCM audio is detected.**

### 3.4.7 The Thumbnail panel

**Player** – click the check boxes to display thumbnail images for input 1, input 2 or both inputs in the player window. If both are selected, the two thumbnails will appear stacked vertically.

**Control** – Click the checkboxes to enable the control and display of the thumbnails for each input.

- **Note** – this box must be checked before a video thumbnail for the input can appear in the Video Probing and Fingerprint panels for this input

**Mode** – select between Video mode and Test mode. Use Video mode for normal operation.

**Format** – choose the thumbnail size: small, medium, large

**Quality** – choose the displayed image quality by selecting Poor, Normal or HiQ from the pulldown list

**Refresh Rate** – select the desired refresh rate from the pull-down box. The choices are:

[Fast, 1 sec, 2 sec, ..., 9 sec, 10 sec.]

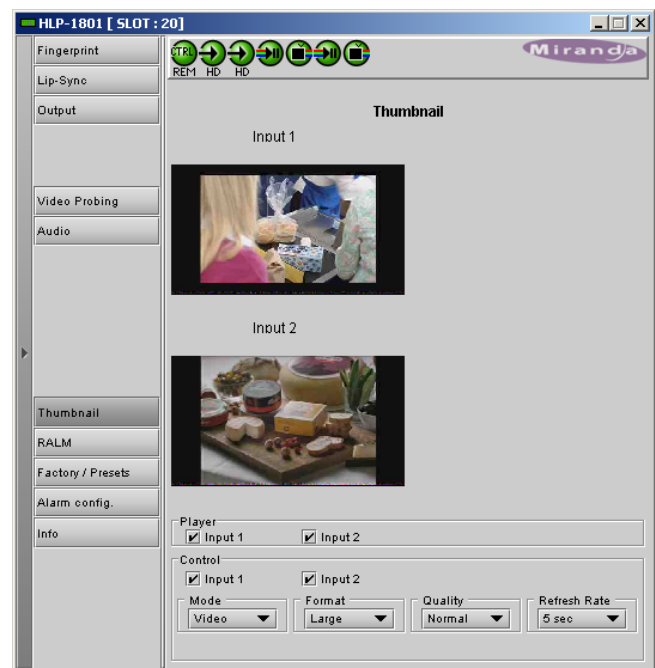


Figure 3.14 Thumbnail panel

### 3.4.8 The RALM panel

The Remote Audio Level Meter (RALM) panel displays audio level meters for up to 8 channels. Channels are displayed in pairs, so up to four meters will be present in the meter display window

The source for each meter is selected using the pull-downs in the RALM Remote Control area at the bottom of the control panel.

- Choices are OFF, Input 1 CH 1&2, and each pair up to Input 2 CH 15&16

The meter is divided into three zones, and the dividing points and color of each zone are individually configurable under the *Meter Ballistics Config* tab.

*Speed* – select the meter response from the pull-down list; options are [ fast, medium, slow ]

#### **RALM Connections tab**

Use the radio buttons to turn the meter display ON (RALM) or OFF for the indicated channels. The meter appears directly above the controls.

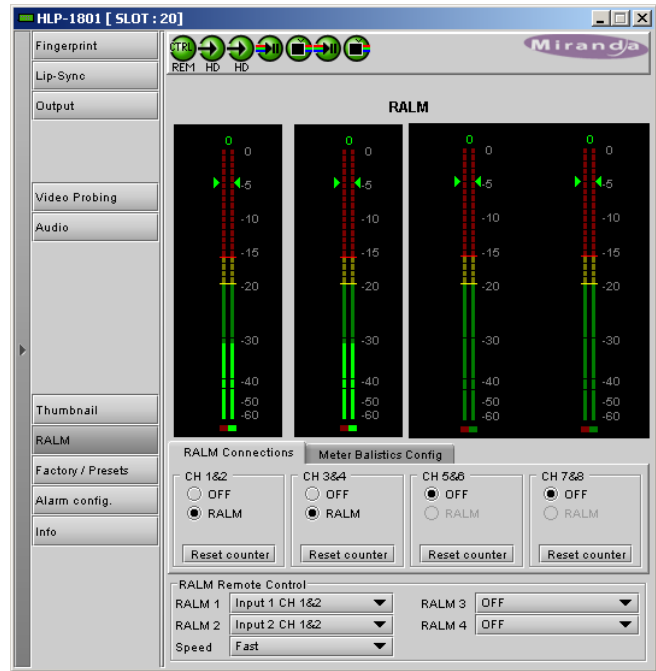


Figure 3.15 RALM panel – RALM Connections tab

*Reset Counter*: click this button to reset the overload counter on the RALM display to zero. See the next section for instructions on setting up the overload counter.

#### **Meter Ballistics Config tab**

*Type* – select a type of meter from the pull-down list

*Upper Zone Limits* – select the crossover level between the upper and middle zones of the meter (the range of values shown in the pull-down list depends on the type of meter selected)

*Lower Zone Limits* – select the crossover level between the middle and lower zones of the meter (the range of values shown in the pull-down list depends on the type of meter selected)

*Color samples* – the three samples show the current selected color for the upper, middle and lower zones of the meter.

- Click on the color sample of a zone to open a color selection panel to choose a different color for that zone

*Overload Cursor* – The overload cursor appears on the meter as an arrowhead in the meter scale. The two pull-down boxes set the position of the overload cursor on the left and right meters. If the audio level on either meter goes above the cursor, the Overload Counter at the top of the meter is incremented.

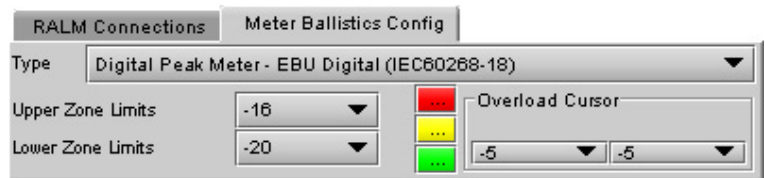


Figure 3.16 RALM panel – Meter Ballistics Config tab

The *Overload Counter* shows a running count of the number of overloads detected. It can be reset to zero by clicking the Reset Counter button in the RALM Connections tab.

The *Phasemeter* (located at the bottom of the RALM meter display) is a small meter that represents the phase correlation factor between the two channels of a pair.

Note – The level and phase meters are disabled for channels carrying non-PCM audio (Dolby E, Dolby Digital or other non-PCM types).

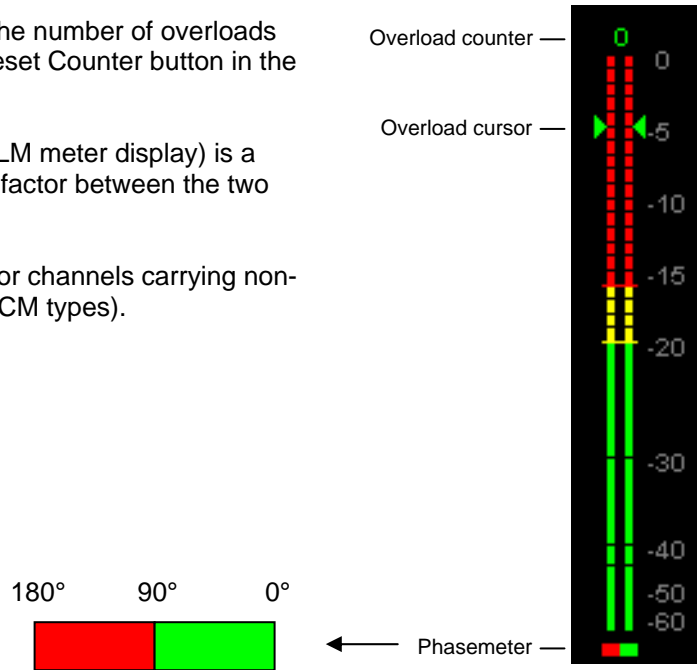


Figure 3.17 RALM meter display

### 3.4.9 The *Factory/Presets* panel

*Load Factory*: Clicking this button will restore the card to a factory default state.

- Note that User Presets are not changed

#### *User Presets*

The HLP-1801 has memory registers which can hold up to 5 user-defined parameter settings. **Select** any one of the five presets using the pull-down list.

Click **Load** to load the contents of the selected User Preset into the HLP-1801. All parameter settings and values will be replaced by the contents of the selected User Preset.

Click **Save** to store the current parameter settings and values from the HLP-1801 into the selected User Preset. The existing contents of the preset will be overwritten.

#### *Show Debug Panel*

Check the box to add a **Debug** tab to the Lip-Sync control panel. See section 3.4.3.

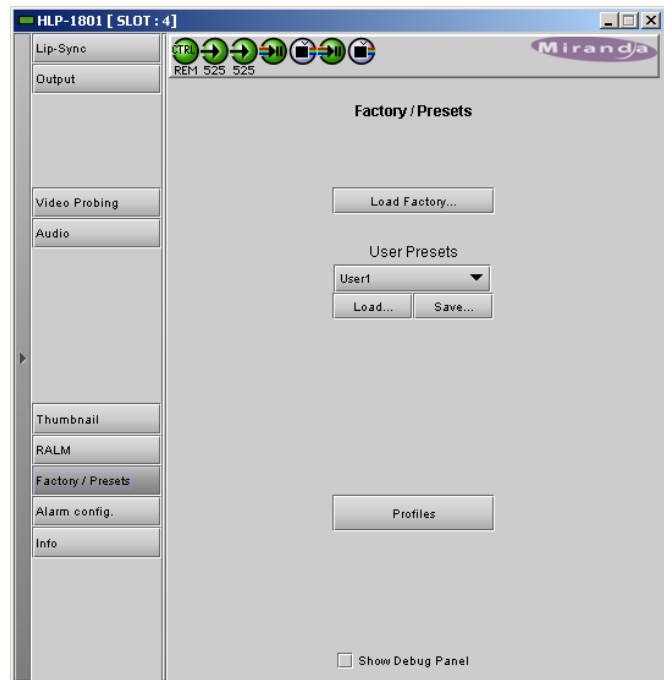
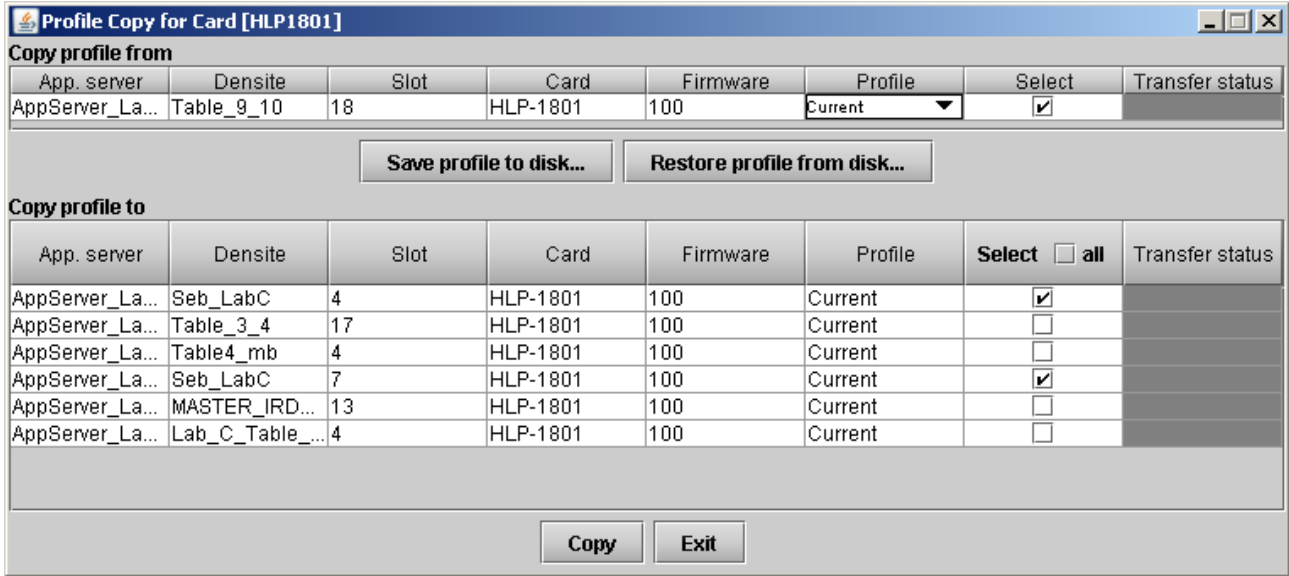


Figure 3.18 Factory/Presets panel

**Profiles**

This section provides the option to save and recover the entire card configuration (including user presets if desired) on an external disk, or to copy it to another HLP-1801 card.

Click on *Profiles* to open the Profile Copy window.



**Figure 3.19** Profile Copy for Card window

**Copy profile from section**

This line shows this HLP-1801 card, and identifies it by App server, Densité frame and slot number, card type and firmware version.

The *Profile* column has a pulldown that allows you to select which profiles you will work with, and gives these choices:

- Current, User1, User2, User3, User4, User5, All

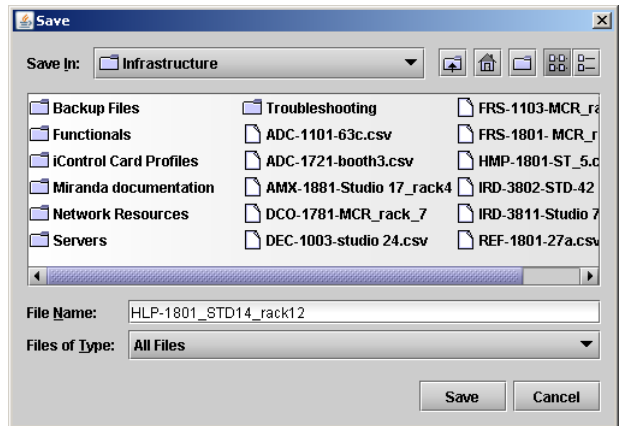
The *Select* column includes a checkbox, preselected as checked, to confirm that you want to work with the current card.

**Save Profile to Disk...**

Click this button to open a Save dialog allowing you to specify a file name and location to which the selected profiles for this card will be saved.

*Hint - It is a good idea to create a folder for these files, because they are not explicitly identified as HLP-1801 profiles, and will be difficult to find and identify if not clearly named and conveniently located.*

- Click the save button once the name and location have been identified in the Save box
- If the file is saved correctly, the Transfer Status box on the right of the *Copy profile from* line will indicate *Succeeded* against a green background
- If the file was not saved for some reason, the Transfer Status box to the right of the *Copy profile from* line will indicate *Failed* against a red background

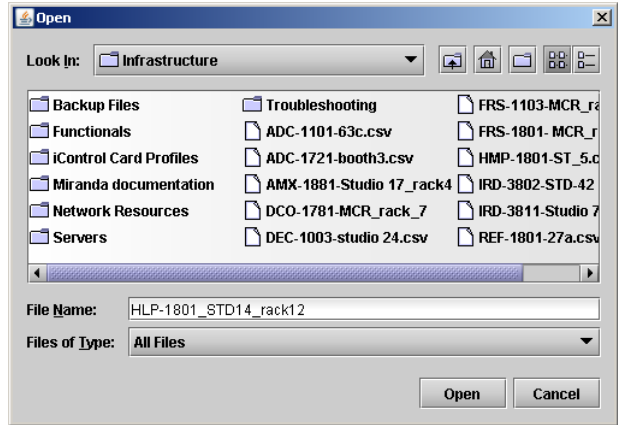


**Figure 3.20** Save Profile to Disk dialog

**Restore profiles from disk...**

Click this button to open an *Open* dialog box within which you can locate and select a valid HLP-1801 profile file.

- Click *Open* to read the contents of the file and to reconfigure this HLP-1801's profiles according to its contents
- While the reconfiguration is in progress, the Transfer Status box on the right of the *Copy profile from* line will indicate *Working* against a yellow background
- When the reconfiguration is complete, the Transfer Status box on the right of the *Copy profile from* line will indicate *Succeeded* against a green background



**Figure 3.21** Restore Profiles from Disk dialog

**Copy profile to section**

This line shows other HLP-1801 cards that are available on the iControl network, each identified by App server, Densité frame and slot number, card type and firmware version.

The *Profile* column shows the same information as is shown for the current card in the *Copy profile from* line, i.e.

- Current, User1, User2, User3, User4, User5, All

The *Select* column includes a checkbox to identify which HLP-1801 cards you wish to copy profiles into from the current card.

- For convenience, a *Select all* checkbox is provided in the column header

Click *Copy* to copy the selected profiles from this card into the selected other HLP-1801 cards

- While the profile copy operation is in progress, the Transfer Status box on the right of the *Copy profile to* line will indicate *Working* against a yellow background
- When the profile copy operation is complete, the Transfer Status box on the right of the *Copy profile to* line will indicate *Succeeded* against a green background

**3.4.10 The Alarm Config panel**

This panel allows the alarm reporting of the HLP-1801 to be configured. The panel opens in a new window when the button is clicked, and can be resized if needed.

The panel is organized in columns.

**Status/Name**

This contains an expandable tree listing all the alarms reported by this HLP-1801 card.

- Each alarm name includes an icon that shows its current status
- Some alarms may be text-only and the alarm status is shown in the name and not by a status icon – see some examples in the Lipsync section in the figure

The **Overall alarm** and **GSM contribution** columns contain pulldown lists that allow the level of contribution of each individual alarm to the alarm named in the column heading to be set.

- Click on the alarm icon to see the available levels; then click on one to select it.





• **Overall Alarm**

This column allows configuration of the contribution of each individual alarm to the Overall Alarm associated with this card. The Overall Alarm is shown in the upper left corner of the iControl panel, and also appears at the bottom of the Status/Name column.

• **GSM Contribution**

This column allows configuration of the contribution of each individual alarm to the GSM Alarm Status associated with this card. GSM is a dynamic register of all iControl system alarms, and is also an alarm provider for external applications. The possible values for this contribution are related to the Overall alarm contribution:

- If the Overall alarm contribution is selected as Disabled, the GSM alarm contribution can be set to any available value
- If the Overall alarm contribution is selected as any level other than disabled, the GSM contribution is forced to follow the Overall Alarm.

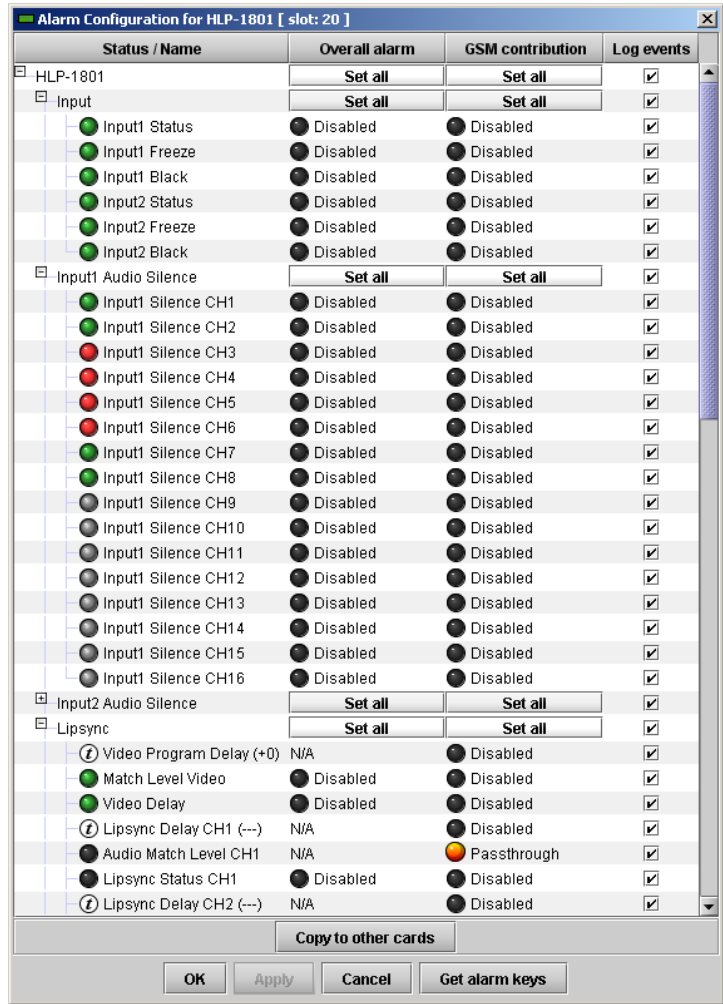


Figure 3.22 Alarm Configuration panel

**Levels associated with these alarms:**

The pulldown lists may contain some or all of the following options:

- Disabled
- Minor
- Major
- Critical
- Passthrough

- The alarm makes no contribution (black icon)
- The alarm is of minor importance (yellow icon)
- The alarm is of major importance (orange icon)
- The alarm is of critical importance (red icon)
- The alarm exists but has no effect (used for text and composite alarms)

**Shortcut:** if you click in one of the Set All boxes beside a section heading, you will open a pulldown that lets you assign a level to all alarms in that section of the column simultaneously.

**Log Events**

iControl maintains a log of alarm events associated with the card. The log is useful for troubleshooting and identifying event sequences. Click in the checkbox to enable logging of alarm events for each individual alarm.

At the bottom of the window are several other controls

**Copy to other cards**

Click this button to open a panel that allows the alarm configuration set for this card to be copied into another HLP-1801 card.

- Select one or more destination cards from the list in the window by clicking in the checkboxes, or all of them by clicking in the *All* checkbox
- Note that when you do a Copy Profile for this card (see Sect.3.4.9), the alarm configuration is copied along with all the other settings.

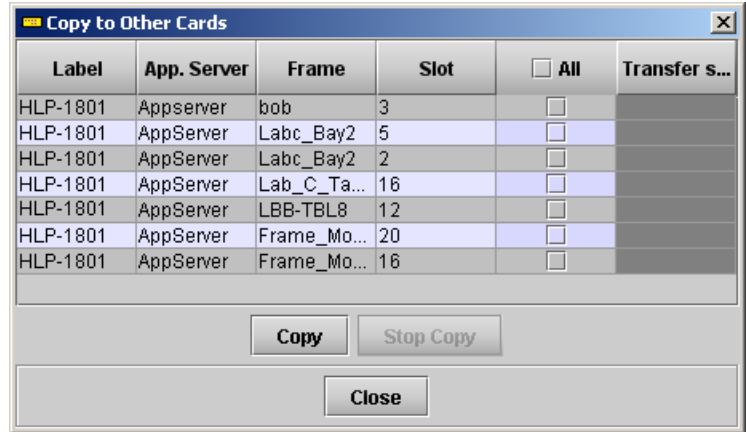


Figure 3.23 Copy to other cards

**Get alarm keys**

Click this button to open a save dialog where you can save a file containing a list of all alarms on this card and their current values, along with an Alarm Key for each. The alarm keys are useful for system integration and troubleshooting.

- The file is saved in.csv format

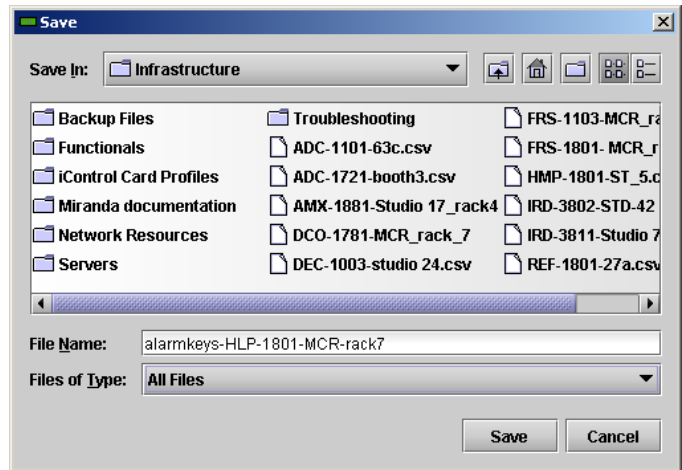


Figure 3.24 Get alarm keys save dialogue

**OK, Apply, Cancel**

- **OK** accepts the settings and closes the window once the card confirms that there are no errors.
- **Apply** accepts the settings, but leaves the window open
- **Cancel** closes the window without applying any changes, and leaves the previous settings intact.

### 3.4.11 The Info panel

The top two lines in this panel identify the model of this HLP-1801, and the rear panel that is currently installed.

When the HLP-1801 is included in an iControl environment, certain information about the card should be available to the iControl system. The user can enter labels and comments that will make this card easy to identify in a complex setup. This information is entered into data boxes in the Info control panel.

- Label: type the label that is shown for this HLP-1801 when it appears in iControl applications
- Short Label type the short-form label that iControl uses in some cases (8 characters)
- Source ID type a descriptive name for this HLP-1801
- Comments: type any desired text



Figure 3.25 Info panel

The remaining data boxes show manufacturing information about this card.

Three buttons in the panel give access to other information.

- Details...: Reports the Firmware version, service version, and panel version for this card

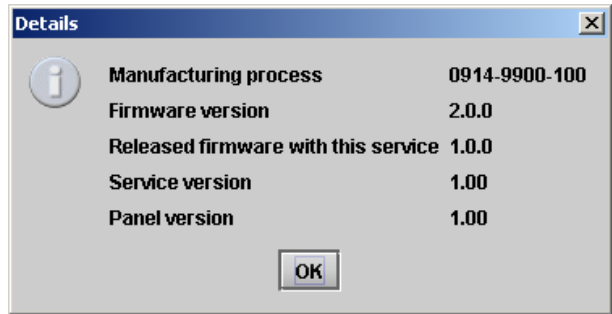


Figure 3.26 Details window

- Advanced...: Shows the Miranda LongID for this card. The Miranda LongID is the address of this HLP-1801 in the iControl network.

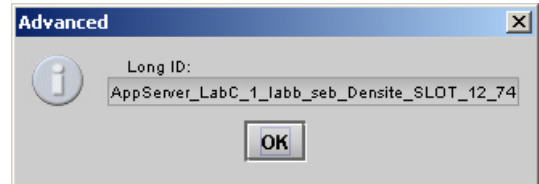


Figure 3.27 Advanced window

- Remote System Administration – opens the Joining Locators data box, which lists remote lookup services to which this HLP-1801 is registered.

**Add:** Force the iControl service for this HLP-1801 to register itself on a user-specified Jini lookup service, using the following syntax in the data box:

jini://<ip\_address>

where <ip\_address> is the ip address of the server running the lookup service, e.g.:

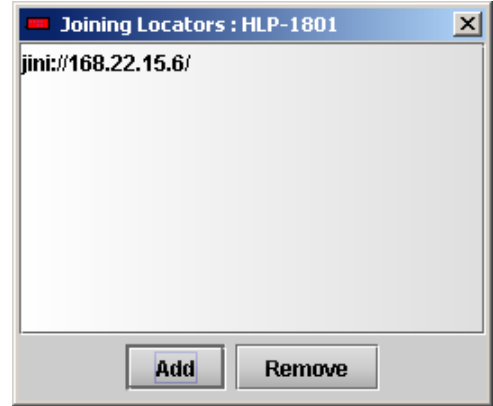
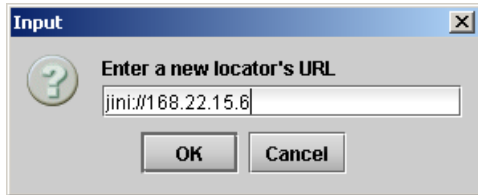
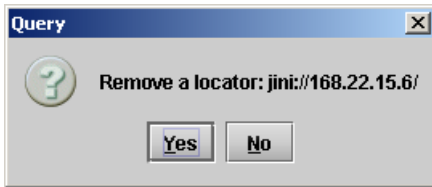


Figure 3.28 Joining Locators window

**Remove:** select one of the services listed in the window by clicking on it, and click *Remove* to open a query box allowing you to delete it from the window.



## 4 Specifications

### VIDEO INPUTS (2)

SIGNAL	SD: SMPTE 259M-C(270Mbps) HD: SMPTE 292M (1.485, 1.485/1.001 Gbps)
SUPPORTED FORMATS	SD: SMPTE-125M : 480i59.94 SD: EBU: 576i50 HD: SMPTE-274M: 1080i59.94, 1080i50 HD: SMPTE-296M: 720p59.94, 720p50
EMBEDDED AUDIO	SMPTE-299M-272
CABLE LENGTH	270 m Belden 1694A at 270 Mbps 110 m Belden 1694A at 1.485 Gbps
RETURN LOSS:	> 15 dB up to 1.2 GHz; 12dB at 1.2GHz up to 1.5GHz.

### VIDEO OUTPUT (1)

SIGNAL	SMPTE-259-C (270 Mbps) SMPTE 292M (1,485, 1,485/1,001 Gbps)
SUPPORTED FORMATS	SD: 480i59.94, 576i50 HD: SMPTE 274M: 1080i59.94, 1080i50 HD: SMPTE-296M: 720p59.94, 720p50
EMBEDDED AUDIO	SMPTE-299M SMPTE-272M
RETURN LOSS	> 15 dB up to 1.2 GHz; 12dB at 1.2GHz up to 1.5GHz
ADDED JITTER	<0.2UI (<100 kHz) for HD output <0.2UI (wideband) for SD output

### AUDIO PROCESSING PERFORMANCE

NUMBER OF CHANNELS	16 per input (4 Groups)
--------------------	-------------------------

### MISCELLANEOUS

SIGNAL PRESENCE THRESHOLD	From -72 to -48 DBFS (6 dB steps)
NO SIGNAL DELAY	From 0 to 255 s

### OTHER

POWER	6 W
PHYSICAL FORMAT	Densité

## ANNEX 1 – HLP-1801 Local Control Panel Menu

<b>Status</b>	General	No Rear / HLP-1801-DRP/HLP-1801-3SRP/Rear Mismatch / HW Failure / ...		
	Input 1	IN 1 No Carrier / IN 1 TRS Error / Video Fmt Detected/ Group Presence		
	Input 2	IN 1 No Carrier / IN 1 TRS Error / Video Fmt Detected/ Group Presence		
<b>User Presets</b>	Load	1-5		
	Save	1-5		
<b>Output</b>	Input 1 / Input 2			
<b>Audio</b>	Input 1	NSD Channel 1	Silence	On/Off Delay 3sec/.../255 sec Threshold -48 dB/.../-72 dB
		Channel x Channel 16		
	Input 2	NSD Channel 1	Silence	On/Off Delay 3sec/.../255 sec Threshold -48 dB/.../-72 dB
		Channel x Channel 16		
<b>Config alarm</b>	Input 1	Carrier Error	Alarm Level	Flash Red/Red/Yellow/Green
	Input 1	Video/TRS Error	Alarm Report	None/GPI
	Input 2	Carrier Error		
	Input 2	Video/TRS Error		
	Input 1	Ch. 1	Silence	
			...	
	Input 1	Ch. 16	Silence	
	Input 2	Ch. 1	Silence	
			...	
	Input 2	Ch. 16	Silence	
<b>Version</b>	HLP-1801 : « Version Number »			
<b>Factory Default</b>	Restore			

## ANNEX 2 – Operational Considerations

Here are some points to remember when using the HLP-1801 for lip-sync measurement.

- The compared signal feeds must have the same audio and video content for the algorithm to detect the lip-sync delay efficiently. The detection won't work on a static pattern like a color bar, or an audio signal without dynamics such as a test tone. The video freeze and audio silence errors are used to indicate those states to the user.
- The video content must have scene changes or significant movement. The more static the image is, the longer and harder it will be to calculate the lip-sync delay.
- The algorithm used is effective only with PCM audio. Lip-sync delay cannot be detected on Dolby-E or AC-3 encoded audio.
- In LOCAL mode, after a major change in the signals being analyzed (video format, source change or power on) it could take up to 1 minute 30 seconds for the algorithm to stabilize and lock on to the audio and video content. This time will vary according to the amount of dynamics in the video and audio content as noted above.
- In LOCAL mode, the delay measured is from input 2 with reference to input 1. A "+" delay sign means that input 2 is late versus input 1, while a "-" delay sign means that input 2 is ahead of input 1.
- The card is able to detect the delay even if both video inputs are not of the same video format. However, the match level will not be as good as with two identical formats and the card might take a little longer to lock. The worst case being SD <-> HD. This will specifically be the case when the aspect ratio of both sources is not the same. The custom window configuration tool might improve the behavior by selecting only the active portion of both inputs.
- A difference of +/- 30% in the amplitudes of the two video inputs will affect the ability of the algorithm to lock correctly
- In the same way, a difference of 30 dB or more between audio input levels will affect the detection.
- The precision of both video and lip-sync delay is +/- 2 msec.
- The range in which the card can measure the lip-sync delay is from +4 sec to -4 sec. This range includes the "video delay + lipsync delay" which means that the card will NOT be able to detect the lip-sync delay if both videos are offset by more than 4 seconds from each other even if the lip-sync delay is only a few milliseconds.